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FORM **BCA 8.12**
**FEMALE AND MINORITY DIRECTORS REPORT**
Business Corporation Act

Jesse White, Secretary of State
Department of Business Services
501 S. Second St., Rm. 350
Springfield, IL 62756
217-782-7808
www.cyberdriveillinois.com

**FILED**
JUN - 1 2020
JESSE WHITE
SECRETARY OF STATE

**PAID**
JUN 02 2020
EXPEDITED
SECRETARY OF STATE

Payment must be made by check or money order payable to Secretary of State.

**FILING FEE: $25.00** File prior to: May 1 Year: 2020 File #: F 5996-585-9 Approved:

Corporate Name: TELEPHONE AND DATA SYSTEMS, INC.
Registered Agent: C/O STEPHEN P. FITZELL
Registered Office: 1 SOUTH DEARBORN ST.
City, IL, ZIP: CHICAGO, IL 60603 County: COOK

**A COPY OF THE CORPORATION'S MOST RECENT SEC 10-K MUST ACCOMPANY THIS REPORT.**

1. Is the corporation a publicly held corporation with its principal executive office located in Illinois? ☑ YES ☐ NO

1a. Principal address of executive office in Illinois:

30 N. LASALLE STE., SUITE 4000 CHICAGO, IL 60602

2. Set forth data on specific qualifications, skills and experience that the corporation considers for its board of directors, nominees for the board of directors, and executive officers. (If additional space is required, please attach an additional page(s) as needed.)

SEE ATTACHMENT

3. Set forth the self-identified gender of each member of the board of directors. (If additional space is required, please attach an additional page(s) as needed.)

SEE ATTACHMENT

4. Set forth the race or ethnicity of each member of the board of directors. (If additional space is required, please attach an additional page(s) as needed.)

SEE ATTACHMENT

5. Set forth a description of the corporation's process for identifying and evaluating nominees for the board of directors, including whether and, if so, how demographic diversity is considered. (If additional space is required, please attach an additional page(s) as needed.)

SEE ATTACHMENT

6. Set forth a description of the corporation's process for identifying and appointing executive officers, including whether and, if so, how demographic diversity is considered. (If additional space is required, please attach an additional page(s) as needed.)

SEE ATTACHMENT

7. Set forth a description of the corporation's policies and practices for promoting diversity, equity and inclusion among the board of directors and executive officers. (If additional space is required, please attach an additional page(s) as needed.)

SEE ATTACHMENT

Under the penalty of perjury and as an authorized officer, I declare that this report, pursuant to provisions of the Business Corporation Act, has been examined by me and is, to the best of my knowledge and belief, true, correct and complete.

**Item 8 must be signed.**

8. By DocuSigned by: David Gillman AFD804AB5B384BC... DAVID D. GILLMAN - VICE PRESIDENT, TAX 4/22/2020 | 2:15 PM CDT
Any Authorized Officer's Signature Title Date

Telephone and Data Systems, Inc. ("TDS")
IL File No. F 5996-585-9
Form BCA 8.12 - Female and Minority Directors Report
2020

Attachment
Question 2

TDS believes good governance begins with an engaged and diverse board. TDS also believes that it is desirable for a board to have directors who can bring the benefit of diverse backgrounds, experience, skills, education, attributes and other characteristics to permit the board to have a variety of views and insights. TDS does not have any specific, minimum qualifications that the board believes must be met by a nominee for a position on the TDS board of directors. The TDS board believes that substantial judgment, diligence and care are required to identify and select qualified persons as directors. The TDS board has consistently sought to nominate to the board of directors eminently qualified individuals whom the board believes would provide substantial benefit and guidance to TDS.

The Corporate Governance and Nominating Committee (CGNC) considers and as reflected in its Code of Business Conduct, TDS values diversity and does not discriminate on the basis of gender, age, race, color, sexual orientation, religion, ancestry, national origin, marital status, disability, military or veteran status or citizenship status. In considering whether to recommend that individuals be nominated as director candidates, the CGNC takes into account all facts and circumstances, including diversity. Women and minorities comprise one-third of the current board.

Telephone and Data Systems, Inc. ("TDS")
IL File No. F 5996-585-9
Form BCA 8.12 - Female and Minority Directors Report
2020

Attachment
Questions 3 and 4

| Name | Gender | Race/Ethnicity |
|---|---|---|
| James W. Butman | Did not self identify | Did not self identify |
| LeRoy T. Carlson, Jr. | Male | Not a minority |
| Letitia G.C. Carlson, MD | Female | Not a minority |
| Prudence E. Carlson | Did not self identify | Did not self identify |
| Walter C.D. Carlson | Did not self identify | Did not self identify |
| Clarence A. Davis | Male | Black |
| Kimberly D. Dixon | Female | Not a minority |
| Kenneth R. Meyers | Male | Not a minority |
| George W. Off | Male | Not a minority |
| Christopher D. O'Leary | Did not self identify | Did not self identify |
| Wade Oosterman | Male | Not a minority |
| Mitchell H. Saranow | Did not self identify | Did not self identify |
| Gary L. Sugarman | Male | Not a minority |
| Herbert S. Wander | Did not self identify | Did not self identify |

**Telephone and Data Systems, Inc. ("TDS")**
**IL File No. F 5996-585-9**
**Form BCA 8.12 - Female and Minority Directors Report**
**2020**

**Attachment**
**Questions 5, 6 and 7**

**Question 5:**

Director Nomination Process: The CGNC charter provides that the committee will develop selection objectives and oversee the search for qualified individuals to serve on the board of directors and recommend to the board of directors prospective nominees and the re-nomination of incumbent directors. The committee does not nominate directors. The entire board of directors determines whether to nominate prospective nominees and re-nominate incumbent directors.

**Question 6:**

We believe that a diverse workforce improves organizational effectiveness and business performance by encouraging a broad spectrum of thoughts and ideas. At TDS, we actively support the attraction, development, and retention of a diverse range of employees.
As an Equal Employment Opportunity (EEO) employer, TDS considers applicants for positions without regard to race, color, religion, national origin, genetics, gender, age, disability, veteran status or any other basis prohibited by law. Valuing diversity and ensuring that there is no discrimination in any aspect of employment based on gender, age, race, color, sexual orientation, religion, ancestry, national origin, marital status, disability, genetic information, military status, veteran status, citizenship status or any other status protected by law of individuals authorized to work in the United States.

**Question 7:**

The attached TDS Code of Conduct provides a description of TDS' policies and practices for promoting diversity, equity and inclusion among the board of directors and officers.

October 2019

Dear Associates/Employees:

We are a successful Company because our customers believe in us. They trust us to do the right thing. With our reputation for excellent services and products, dependable performance and financial soundness, we can face the future with confidence. Our success depends on our continued excellence in all areas of our business, including adherence to the highest standards of business conduct.

Our Code of Business Conduct (the "Code") provides the guiding principles by which we conduct all of our business activities. Attached is the updated Code, which has been revised to reflect necessary changes. We request that you:

(1) Read the Code carefully and make sure that you understand its contents. If one of the provisions is not clear to you, be sure to ask for guidance or clarification.

(2) Follow the Code's guidelines in everything you do.

(3) If you are aware of or suspect an associate/employee or contractor/vendor with the Company is acting in violation of the Code, report it immediately. You can take comfort in knowing that there will be no retaliation against you for reporting a potential violation.

Any questions you may have concerning the Code or its administration should be referred to your immediate supervisor, Human Resources representative, Senior Vice President of Human Resources, Vice President – Internal Audit, President and CEO of TDS, or the Audit Committee of the TDS Board of Directors. You should also feel free to contact the Company's Ethics Line (800)589-3254 or visit the website located at https://tds.alertline.com to report any concerns or raise any questions, anonymously if you desire, concerning possible Code violations. The Ethics Line is managed by an outside third party to enhance confidentiality.

In addition, the Code is available on the Company's website to you and to all those who do business with the Company. We want our customers, suppliers and others to know the high standards under which we operate. They should expect this behavior from us and we expect them to follow the same high standards in doing business with us.

Thank you for your commitment to live up to the high standards we have set in our Code. It continues to guide each of us in the decisions we make every day.

Very truly yours,

LeRoy T. Carlson, Jr.
President and CEO

Daniel J. DeWitt
Senior Vice President of Human Resources

# Code of Business Conduct

## *Policy*

## INTRODUCTION

The key to our success has always been our associates'/employees' professionalism, performance and high standards of integrity and ethical conduct. If we are to continue building on our record of success, we must maintain these standards and preserve our well-deserved reputation for conducting our business in accordance with the highest principles of business ethics.

The cornerstone of that effort is our understanding of and compliance with the TDS Code of Business Conduct (the "Code"). The Code has been revised to reflect changes in the law and to increase emphasis in certain areas. The Code identifies:

- The principles by which the Company*, including all of its subsidiary operations, will conduct its business and its dealings with its customers, associates/employees, shareholders, suppliers, agents, affiliates, the communities in which we operate and the government associates/employees and agencies with whom we interact.

- The standards of conduct the Company expects of all associates/employees in carrying out our assigned responsibilities and obligations to the Company, the groups mentioned immediately above and ourselves.

- The important role associates/employees play in upholding the integrity of the Company by reporting any unlawful or unethical behavior that you see or suspect, either by an associate/ employee or a contractor/vendor with the Company. You may report such behavior to your supervisor or to the persons identified below under "Administration of the Code." In addition, anyone may submit an anonymous or confidential complaint or inquiry by calling the TDS Ethics Line (800)589-3254 or by visiting the website located at https://tds.alertline.com. If you report possible unlawful or unethical behavior, you will be protected from retaliation.

With this in mind, all associates/employees are required to abide by the standards set forth in the Code. If you have any questions regarding the Code, please contact your immediate supervisor, Human Resources representative, Senior Vice President of Human Resources, Vice President - Internal Audit, President and CEO of TDS, or the Audit Committee of the TDS Board of Directors. Once you have a good understanding of the Code's content, please complete the online Acknowledgment Form attached to the Code. By completing the Acknowledgment Form online, associates/employees agree to comply with all of the policies contained within the Code.
The Code is **not an employment contract** nor is it intended to be an all-inclusive policy statement on the part of the Company. The Company reserves the right to make the final interpretation of the policies it contains and to revise them as necessary. Annually, associates/employees will be asked to review the Code and complete a new Acknowledgment Form to indicate that they

* TDS and all of its subsidiary operations: United States Cellular Corporation, TDS Telecommunications Corporation, Suttle-Straus, OneNeck IT Solutions (OneNeck Data Center Holdings LLC, OneNeck IT Services Corporation), TDS Broadband (TDS Baja Broadband LLC and BendBroadband), and all newly added enterprises managed by TDS and its subsidiaries.

understand and agree to comply with the Code. In addition, the Company will continue to advise associates/employees of other policies, which must be followed for the good of the Company.

## GUIDING PRINCIPLES OF BUSINESS CONDUCT FOR ASSOCIATES/EMPLOYEES

The Company is committed to conducting all of its business affairs in a professional and ethical manner; to treating all groups, individuals and firms in accordance with the highest standards of honesty and integrity; to complying with all laws, rules and regulations affecting its business; and to using its assets and human resources only for legal and proper purposes. Among the guiding principles that the Company has developed to carry out these commitments are the following:

- ***Customers:***

  The Company's growth and progress have been achieved by providing high-quality services and products to our customers at reasonable prices. In accordance with this commitment, we will do everything possible to understand our customers' requirements and to satisfy them in a manner that fully meets or exceeds their expectations.

  While we are dedicated to being vigorous, effective competitors, we are also committed to conducting our marketing and sales efforts in accordance with the law and with the highest ethical standards. This means that all customers and potential customers will be treated professionally. None will be given gifts or entertained in a way that exceeds accepted and legal business practices, and, hence, might unduly influence them to do business with the Company. This commitment also means that the Company will not knowingly make any misrepresentation to customers, or engage in any other activities, which might illegally or unethically limit competition or otherwise serve to unfairly improve our competitive position.

- ***Associates/Employees:***

  All associates/employees will be treated fairly and equitably. This commitment includes:

  - Providing our associates/employees with fulfilling work and competitive compensation and benefits.

  - Valuing diversity and ensuring that there is no discrimination in any aspect of employment based on gender, age, race, color, sexual orientation, religion, ancestry, national origin, marital status, disability, genetic information, military status, veteran status, citizenship status or any other status protected by law of individuals authorized to work in the United States.

  - Encouraging open communications and empowerment.

  - Rewarding productivity, innovation, creativity and teamwork.

  - Administering our policies, compensation programs and benefit plans in an equitable and consistent manner.

- Assuring that all associates/employees are treated with dignity and respect, and have their rights as individuals protected.

- Encouraging an atmosphere that fosters cooperation, understanding and trust. Suggestions and ideas for improving any area of the business will be welcomed.

- Offering our associates/employees, consistent with business needs, appropriate opportunities for education, training, self-improvement and individual growth.

- Providing a safe, pleasant and healthy working environment that will fully comply with all environmental laws and regulations.

- Providing our associates/employees with effective and responsible supervision.

- Encouraging our associates/employees to live healthy lives.

- ***Shareholders:***

  One of the Company's most important responsibilities is to build shareholder value. This requires that the Company support its business units' efforts to maximize long-term profitable growth and development.

- ***Communities We Serve:***

  The Company is dedicated to good corporate citizenship as reflected internally and externally with the communities it serves. Hence, we will support, consistent with available resources, worthwhile civic, charitable and educational activities in the areas in which the Company's business units operate. We will also encourage our associates/employees to exercise their rights and duties as citizens, and to become involved in efforts to help advance the communities in which the Company's business units conduct business. Such activities, however, must not involve time expenditures that may result in reduced on-the-job effectiveness or involve conflict of interest situations.

  With regard to such activities that involve political contributions or activities, see "Political Contributions and Activities" below.

  Our commitment to good corporate citizenship also requires that we comply with all federal, state and local environmental protection laws, and carefully monitor the environmental aspects of our products, services, buildings, equipment and property.

- ***Suppliers:***

  The Company will select and continue to do business with suppliers, including agents, based on the price, quality and timeliness of the products and services they offer. Where appropriate, however, preference may be given to reasonably priced, high-quality suppliers located in the areas in which the Company's business units conduct business, and to TDS business units that submit closely competitive bids. The Company will also consider establishing and maintaining multiple sources of supply to better ensure continued deliveries and reasonably priced high-

quality products and services. The Company welcomes the opportunity to partner with minority, women, disabled and veteran business enterprises as certified vendors, where such vendors are competitive on price, quality and timeliness. In the event of supplier relationships with foreign-based companies, see the section of the Code below relating to the Foreign Corrupt Practices Act.

## GUIDELINES OF CONDUCT EXPECTED OF ALL ASSOCIATES/ EMPLOYEES

Among the Company's most important assets is our reputation for conducting our business in accordance with the highest ethical standards. Maintaining this reputation will require all associates/employees to act with honesty and integrity, and in a manner that reflects favorably on the Company. While no written policies or Code of Conduct can instill personal integrity or honesty, or cover all situations that associates/employees may encounter, the following guidelines set forth the conduct that is expected of all associates/employees of the Company as we carry out our duties and responsibilities for the Company:

- ***General:***

  All associates/employees are expected to conduct themselves in a manner that is conducive to the long-term growth and development of the Company. Such conduct will include:

  - Demonstrating a considerate, helpful and friendly attitude toward coworkers, customers and product and service providers; and helping to promote and maintain a cordial, collaborative, and inclusive work environment.

  - Reporting to work punctually and as scheduled. Absenteeism and tardiness increase the workload on colleagues, interfere with the flow of business, adversely affect morale and the quality of service to customers, and decrease productivity.

  - Refraining from any form of discrimination, racism, violence, abusive behavior or harassment, including sexual harassment; the use, possession, sale, purchase or transfer of unauthorized or illegal drugs (under either federal or state law) or substances; and the misuse of drugs/substances. Drinking alcoholic beverages while performing work functions is prohibited, whether on or off Company property, except when specifically permitted in moderation at Company-sanctioned events. Performing work functions while under the influence of illegal drugs/substances (under either federal or state law) or alcohol is prohibited. For clarity, performing work functions while under the influence of marijuana is illegal under federal law.

  - Performing all responsibilities conscientiously and efficiently, and seeking ways, as appropriate, to contribute in areas other than those specifically assigned.

  - Observing safety and security practices, rules and standards to ensure the safety and security of all. No associates/employees may possess or permit others to have explosive devices, firearms or other dangerous weapons, whether licensed, concealed or otherwise,

on Company premises, in Company vehicles or while engaged in any Company activity, unless any such restrictions are specifically prohibited under applicable law. In addition, the security of Company and customer premises, systems and proprietary or confidential information must be safeguarded at all times.

- Not accepting outside employment or becoming partially self-employed if this would or is reasonably likely to i) compromise the Company's interests or create a conflict of interest (for example, as would be the case if Company resources were used in such an endeavor), ii) adversely affect job performance and/or ability to fulfill all responsibilities to the Company, or iii) adversely affect the Company's image.

- Not stealing company assets, including but not limited to cash, inventory and equipment.

- Not attempting to justify an improper or illegal behavior by claiming it was ordered by someone in higher authority. No one, regardless of position, is permitted to direct an associate/employee to commit a wrongful act, and any such direction must be rejected and reported to a higher authority.

- ***Applicable Laws and Regulations:***

It is the Company's policy to obey local, state, federal and international laws, rules and regulations that apply to any aspect of the Company's operations, as well as to comply with standards of the New York Stock Exchange and other applicable self-regulatory organizations. This includes compliance with the United States Government's requirements relevant to federal contractors and subcontractors, if applicable, including its policy prohibiting trafficking in persons. Associates/employees must comply fully with all such applicable laws, rules and regulations; any violations of this section of the Code will subject the associate/employee to appropriate disciplinary action, up to and including discharge.

Since the laws governing our activities are often complex, any questions concerning their applicability and interpretation should be referred to the associate's/employee's unit senior Human Resources executive or CEO. It will be up to this individual to work with the General Counsel of TDS and/or its subsidiaries, to ensure that competent legal counsel is provided to the appropriate parties.

- ***Equal Employment Opportunity:***

The Company is fully committed to equal employment opportunity for all associates/ employees and applicants for employment. The Company will seek to ensure that there is no unlawful discrimination in hiring/recruitment practices, employment, transfer, promotion, training, working conditions, wages and salary administration, employee benefits, application of policies, termination or any other condition of employment or career development.

- ***Copyright Laws and License Agreements:***

  The violation of any copyright laws or the terms of any license agreement, including the unlawful duplication of copyrighted materials, is strictly forbidden. Some form of licensing agreement that describes the terms, conditions and allowed uses covers most of the software products purchased by the Company. Associates/employees must be aware of the restrictions on the use of software and abide by those restrictions.

- ***Antitrust Laws:***

  The Company is committed to a policy of vigorous and lawful competition based on the merits of the products and services we provide. The Company will fully comply with the federal and state antitrust laws that prohibit companies from engaging in anti-competitive or potentially anti-competitive practices.

  Any plans or activities, which would or might limit competition, such as pricing discussions with competitors, are strictly forbidden and are to be immediately reported to the associate's/employee's unit senior Human Resources executive or CEO. Additionally, any questions of what constitutes legal competition in the areas of sales and marketing, and legally permitted activity in the areas of competitor, customer or supplier relations, must be referred to one of these individuals. It will be up to this individual to work with the General Counsel of TDS, USCC or TDS Telecom to ensure that any such above mentioned plans, activities and issues are appropriately addressed.

- ***Foreign Corrupt Practices Act:***

  This law prohibits giving, paying, promising, offering or authorizing the payment of anything of value to foreign officials, political parties or candidates for foreign political office, in order to secure, retain or direct business. Payments made indirectly through an intermediary (for example, through a vendor with whom the Company is doing business), under circumstances indicating that such payments would be passed along for prohibited purposes, are also illegal. Associates/employees of the Company must strictly comply with this law. Additionally, any questions of what constitutes legally permitted activity with respect to giving, paying, promising, offering or authorizing the payment of anything of value to foreign officials, political parties or candidates for foreign political office in order to secure, retain or direct business must be referred to the associate's/employee's unit senior Human Resources executive or CEO. It will be up to this individual to work with the General Counsel of TDS, USCC or TDS Telecom to ensure that any such above mentioned plans, activities and issues are appropriately addressed. All transactions with foreign vendors must be conducted in compliance with Company policy.

- ***Federal Communications Commission (FCC) and State Regulatory Commission Regulations:***

  The Federal Communications Commission (FCC) and state regulatory commissions have established rules that govern the way the Company and its subsidiary operations provide many of the Company's products and services. The Company and its subsidiary operations will

comply with all federal and state commission rules and regulations applicable to their businesses.

- ***Insider Trading:***

  The use of inside information for personal gain is forbidden by Company policy and may be a violation of Securities and Exchange Commission regulations. These regulations make it illegal to buy or sell Company securities, or influence others to trade the Company's securities, based on information not generally known to the public. This also includes trading in the securities of another company on the basis of insider information involving that company. All securities transactions must be conducted in compliance with the Company's statement of Policy Regarding Insider Trading and Confidentiality (the Insider Trading Policy). While all associates/employees must abide by the Insider Trading Policy, those associates/employees subject to the Earnings Blackout Policy must obtain clearance from the appropriate individual designated in the Insider Trading Policy prior to entering into certain transactions. Any associate/employee with a question regarding the appropriateness of any prospective trade should contact the TDS Investor Relations Department.

- ***Confidentiality of Customer Communications :***

  The Company has the responsibility to protect the privacy and confidentiality of customer communications, including customer conversations and customer data, which are protected by federal and state laws that impose severe criminal and civil penalties on those who are in violation of the applicable statutes.

  More specifically, every customer communication transmitted through or stored in Company facilities or by third parties on behalf of the Company is confidential. This includes voicemails, text messages, videos/pictures, instant messages, electronic chats and emails. The substance, content or nature of any communication, or even the fact that there has been a communication, must not be divulged, except as allowed under applicable law or as may be legally required to government personnel. Any unauthorized use of customer information is strictly forbidden. Any requests that might appear to cause an associate/employee to violate these rules should be referred to a supervisor, Human Resources representative or senior Human Resources executive.

- ***Safeguarding of Confidential Personal Information:***

  The Company and its associates/employees are committed to compliance with all legal obligations and responsibilities to protect Confidential Personal Information.

  The Company, through its Privacy, Social Media, Information Classification, Information Handling, HIPAA and Security Policies, is committed to maintaining the privacy and security of Confidential Personal Information, which includes, but is not limited to, customers, associates/employees, suppliers, agents and other individuals' names, postal addresses, email addresses, phone numbers, social security numbers, payment card information, financial institution information, Proprietary Network Information, Protected Health Information or other data. The Company restricts access to Confidential Personal Information to individuals who need to know such information for legitimate business or other purposes. The Company

and its associates/employees understand that if Confidential Personal Information is wrongfully disclosed, this could violate the privacy of individuals, break laws, and cause the Company to be in violation of the law, which in turn could cause significant reputational and financial damage to the Company.

Nothing in this Section is intended to prohibit any legally protected disclosures, such as associates'/employees' communications about wages, hours and other terms and conditions of employment.

- ***Safeguarding of Company Information:***

The Company defines Company Information as information used by the Company in its business that is the result of some effort, expense, or investment by the Company. The Company, through its Privacy, Social Media, Information Classification, Information Handling, HIPAA and Security Policies is committed to maintaining the security of Company Information. Company Information must only be used for the proper conduct of the Company's business.

Company Information includes, but is not limited to, Confidential Personal Information (as described under "Safeguarding of Confidential Personal Information"); technical data about products, equipment or services; improvements; discoveries; inventions; pricing information; computer programs; flowcharts; financial results; budgets; marketing plans; data analysis; sales records; personnel records; systems, procedures and methods; and contracts with customers or suppliers (internal or external). Disclosing Company Information to unauthorized persons outside the Company is prohibited and may constitute a violation of law. Company Information should only be disclosed within the Company on a need-to-know basis and when there is no legal or internal rule against such disclosure.

Computing devices, cellphones including smartphones, tablets, software and information generated and stored electronically or otherwise must be adequately safeguarded. This includes safeguards against disruption, damage, loss, alteration, theft, fraudulent manipulation and unauthorized access to, modification of and disclosure of Company Information, regardless of the ownership of the computing or communication device. Additionally, this includes safeguards against disclosure of Company Information through social media. Security pass access and authorization codes and procedures must be adequately safeguarded. Strict adherence to the Company's Privacy, Social Media, Information Classification, Information Handling, HIPAA and Security Policies and other standards that address the protection of Company Information resources and communication networks is required of all associates/employees.

In the event that any Company Information (including but not limited to Confidential Personal Information) is disclosed, or suspected of being disclosed, to an unauthorized person or party, or lost, misplaced or stolen (including the loss, misplacement or theft of desktop or laptop computers, cellphones including smartphones, tablets or other devices in which such information may be stored), such event should be immediately reported in accordance with the documented data security event reporting process, or to a supervisor or Human Resources representative or senior Human Resources executive who will then report the matter in accordance with the data security event reporting process.

Inventions, discoveries, innovations, secret processes and trademark designs that are conceived during an associate's/employee's tenure with the Company, and which relate to the Company's business, are the Company's property. Consequently, they and any related patent applications must be promptly disclosed to a supervisor or Human Resources representative or senior Human Resources executive.

Associates/employees may not engage in unauthorized access, use, or disclosure of Confidential Information. In addition, associates/employees who leave the company continue to have an obligation to protect Company Information. Further, Company Information must remain at the Company or be promptly returned to the Company when an associate/employee leaves the Company.

Nothing in this Section is intended to prohibit any legally protected disclosures, such as associates'/employees' communications about wages, hours and other terms and conditions of employment, or protected disclosures of trade secrets to a Federal, State or local government official or to an attorney for the purpose of reporting or investigating a suspected violation of law.

- ***Retention of Records, Recording Information and Protecting Company Funds:***

Accurate, reliable, and complete Company records are required to efficiently manage the business and to meet the Company's legal and financial obligations. In particular, various regulatory and governmental bodies require the retention and preservation of certain reports and records dealing with Company business.

Accordingly:

- Records, files, correspondence and other information pertaining to Company affairs should be maintained and disposed of in compliance with applicable instructions and upon proper authorization as outlined in the Company's Enterprise Business Records Retention and Disposal Policy and the Business Records Retention Schedule, and applicable statutory and legal requirements. Unauthorized destruction, removal or otherwise misappropriating such materials is a violation of law and is as serious as misappropriating Company funds or other property. Associates/employees must not tamper with or alter records, files, correspondence and other information, nor remove or destroy them prior to the specified date in the Company's Enterprise Business Records Retention and Disposal Policy and the Business Records Retention Schedule, and associates/employees must comply with any notices to suspend destruction due to threatened or pending litigation or investigation.

- All reports and records, including those involving time spent or material used, vouchers, customer accounts, bills, payrolls, expense reports, P-Card statements, service indices and measurement plans must be accurate and complete. Close scrutiny is required to determine that the above items cover legitimate and appropriate Company expenses and that proper approvals have been given.

- Expense reports must be completed in a timely and accurate manner. Expenses must be properly documented, and only those that are reasonable, necessary to the Company's business and in accordance with the Company's reimbursement policy will be reimbursed.

- All assets, liabilities, revenues and expenses must be timely, fully and accurately recorded on the regular books of the Company. The creation of undisclosed or unrecorded funds, assets or liabilities, and/or their maintenance, for any purpose, is strictly prohibited.

- All internal and external reporting of financial and other information must be complete, timely and accurate.

- ***Use of Company Facilities, Equipment and Property:***

  It is vital that the Company's property and any property leased by or under management of the Company only be used for the proper conduct of the Company's business. Also, the Company's investment in software, hardware, equipment, materials, tools, supplies, vehicles and other resources must be protected from damage, misuse, vandalism and unauthorized removal or disposal. This requires that associates/employees do not:

  - Misuse or waste Company-owned, leased or managed property, such as by using it or permitting others to use it for personal gain or some other unethical or unlawful purpose.

  - Sell, transfer, remove or dispose of Company-owned, leased or managed property without obtaining maximum consideration for such property or without appropriate authorization.

  - Violate any Company policy or instruction for protecting Company software, hardware, equipment, materials, tools, supplies, vehicles and other resources against loss, theft, damage, misuse, vandalism and unauthorized removal or disposal.

  - Fail to immediately report any real or likely loss, theft, damage, misuse, vandalism or unauthorized removal or disposal of Company property.

- Associates/employees must use the Company's electronic communication devices such as computers, telephones, cellphones including smartphones, tablets and other devices in an appropriate manner and in accordance with the Company's Information Handling and Security Policies and any related policies that prescribe electronic communication devices. Associates/employees should have no expectation of privacy in any content they create, store, access or receive while using company-owned or leased electronic communication devices, systems or networks.

- ***Conflict of Interest Between Associates'/Employees' Responsibilities as Associates/ Employees and Their Private Interests:***

  All associates/employees must be able to carry out their duties and responsibilities on behalf of the Company without impairment or the appearance of impairment, by virtue of some activity, interest or relationship. In particular, associates/employees must avoid relationships with others that could conflict with their effectively carrying out their Company duties and responsibilities, might affect their independence or judgment, or which could otherwise give

rise to a conflict of interest or the appearance of one. This includes but is not limited to hiring a family member into an operation supervised at any level by another member of the family, unless specific authorization is given by the unit's senior Human Resources executive or CEO. In addition, TDS' Senior Vice President of Human Resources must be informed of such hiring.

With respect to non-Company relationships, associates/employees must avoid entering into any associations with any other person or business enterprise that could or might give the appearance of conflict with their Company duties or responsibilities, or that might tend to affect their independence or judgment with respect to transactions between the Company or one of its business units and any other person or business enterprise.

More specifically, relationships with outside vendors, suppliers, agents, contractors and other personnel that the Company does or seeks to do business with, or competitors and their personnel, must be disclosed in writing to the President and CEO of TDS or the President and CEO of the respective business unit (who shall promptly inform the President and CEO of TDS), and must not, in the view of the Company, adversely affect the business interests of the Company, create or appear to create a situation of divided loyalty, or reflect unfavorably on the associate/employee and/or the Company. Accordingly:

- No associate/employee or immediate family member of an associate/employee shall personally benefit, either directly or indirectly, from Company sales, purchases or other activities of the Company, except when such a transaction has been specifically approved in writing by the President and CEO of TDS or the President and CEO of the respective business unit (who shall promptly inform the President and CEO of TDS). This prohibition does not apply to normal incentive compensation programs and sales of used equipment, furniture or other property that have been approved by the associate's/employee's business unit senior Human Resources executive or CEO.

- No associate/employee shall have any material personal involvement with, or financial interest in, any business enterprise with which the Company competes or does business, except as follows:

  - ✓ An investment representing less than one percent of the outstanding securities of a publicly owned corporation;

  - ✓ A loan from an established financial institution at normal rates for such loans; or
  - ✓ The Company determines after full disclosure of all the facts that the personal involvement or financial interest reported does not conflict with the interests of the Company or could not reasonably be expected to influence the associate's/ employee's actions for or obligations to the Company.

- No associate/employee shall hold a position with, or perform work for, a competitor, customer, supplier, or agent, or shall provide any services to outside business enterprises that could adversely affect the proper performance of his/her work for the Company or that might jeopardize the interests of the Company. This prohibition includes but is not limited to, acting as an officer, director or consultant or other comparable capacity with an organization that the Company is currently doing or is seeking to do business with or is in competition with, without the specific written approval of the President and CEO of TDS

or the President and CEO of the respective business unit (who shall promptly inform the President and CEO of TDS).

- Associates/employees must use good judgment and act with moderation in all of their dealings with outside concerns with which the Company does business. More specifically, the guidelines below must be followed:

  - ✓ Associates/employees may accept entertainment, but only if the entertainment involves reasonable expenditures, occurs infrequently and would enhance or maintain a legitimate business relationship. This would include occasional attendance at athletic, theatrical and cultural functions.

  - ✓ Associates/employees may accept occasional meals or refreshment from outside concerns, should that be appropriate in the normal course of conducting business. Whenever possible, alternating meals and refreshments should be paid for by the Company on a reciprocal basis.

  - ✓ Associates/employees may only accept gifts of nominal value. An item has "nominal" value when it is promotional in nature, imprinted with corporate advertising and is also distributed to others in the Company as a promotional item. To be considered "nominal," any gift must have a retail value of $200 or less or be specifically approved by the President and CEO of TDS or the President and CEO of the respective business unit.

  Hence, associates/employees may not accept anything of value that is primarily intended to gain favor or influence. Rather, all gifts, entertainment, etc. must be reasonably related to a business relationship and be consistent with social norms and business customs. Things that associates/employees are prohibited to accept include bribes, "kickbacks," gifts of other than nominal value (as discussed immediately above), loans, money, special privileges, personal favors, services or benefits, and unusual hospitality or entertainment.

  If there is any doubt as to whether what is being offered is appropriate in light of the above guidelines, it should not be accepted or the decision should be referred to the associate's/employee's business unit senior Human Resources executive or CEO.

- No associate/employee shall place any Company business of any kind with another business enterprise in which the associate/employee, a member of his/her family or a close relative has a significant ownership position or serves in a leadership capacity, without the specific prior written approval of the President and CEO of TDS.

- Company business shall be awarded to suppliers or agents based on competitive bidding wherever feasible and on quality, cost, multiple sources of supply, and timeliness considerations, and not on the basis of personal friendship or favor. At least three qualified bidders shall be obtained whenever feasible and the lowest possible price shall be obtained for a given quality level.

In summary, all associates/employees are expected to avoid any investment or involvement that could adversely influence their actions on behalf of the Company, or give the appearance

of doing so. Any actual or potential conflict of interest situation, relating to the Company or Company business, should be immediately reported by the associate/employee to a supervisor or unit head for resolution.

- ***Corporate Opportunities:***

  Associates/employees are prohibited from taking for themselves opportunities that properly belong to the Company or are discovered through the use of Company property, information or position. Associates/employees owe a duty to the Company to advance its legitimate interests when the opportunity to do so arises.

- ***Political Contributions and Activities:***

  No Company funds or assets shall be used for federal political contributions; nor shall such assets or funds be used for state or local political contributions, even where permitted by applicable state or local laws, without the prior written approval of the President and CEO of TDS or the President and CEO of the respective business unit.

  The above prohibitions are in no way intended to discourage associates/employees from making personal contributions to candidates, parties or political action committees of their choice. However, political contributions must not be made with Company funds or reimbursed with Company funds by any means, direct or indirect, except as discussed in the preceding paragraph. Without the approval of the Government Relations officer of the business unit, associates/employees shall not solicit contributions for political candidates from other associates/employees. However, associates/employees may provide information regarding contributions to a Company-sponsored political action committee. In addition, associates/employees who elect to become involved in partisan political activities must also make it clear that they are not speaking or acting for the Company.

  Every jurisdiction in which the Company operates has a variety of rules that prohibit or severely restrict giving gifts to public officials/employees/associates and political candidates. There are exceptions, and the rules vary greatly between jurisdictions. Under no circumstances should an associate/employee either provide to or receive from a public official or political candidate any payment, gift or entertainment that might possibly be construed as improper or illegal, such as a bribe or kickback. Associates/employees should take care to avoid even the appearance of improper conduct in their relationships with public officials/members of their staffs and political candidates. Hence, any entertainment of, or other contact with, a public official or member of their staff, or political candidate must comply with the policies and limits set by applicable local, state and federal laws and regulations. Before any gift is made, an associate/employee must discuss the planned gift with his/her unit CEO or senior Human Resources executive and obtain approval. It is the responsibility of the business unit CEO or senior Human Resources executive to work with the unit Government Relations officer or with the General Counsel of TDS, USCC or TDS Telecom to ensure that competent legal advice is provided to the appropriate parties.

## ACCOUNTING, INTERNAL ACCOUNTING CONTROLS AND AUDITING MATTERS

The Audit Committees of the TDS and United States Cellular Boards of Directors are committed to ensuring full compliance by the Company with all applicable securities laws and regulations, accounting standards, accounting controls and audit practices. In that regard, each Audit Committee has established procedures for (i) the receipt, retention and treatment of complaints received by the Company regarding accounting, internal accounting controls or auditing matters, and (ii) the confidential, anonymous submission by associates/employees of concerns regarding questionable accounting or auditing matters. A further explanation of such matters can be found in this Code, under the headings "Retention of Records, Recording Information and Protecting Company Funds" (see above) and "Use of Company Facilities, Equipment and Property" (see above). Any associate/employee wishing to submit a report of the type contemplated in the procedures shall be free to do so without fear of dismissal or retaliation.

The term "questionable accounting or auditing matters" includes, without limitation, (i) fraud, deliberate error or misrepresentation in the preparation, evaluation, review or audit of any financial statement of the Company, (ii) fraud, deliberate error or misrepresentation in the recording and maintaining of financial records of the Company, (iii) deficiencies in or noncompliance with the Company's internal accounting and disclosure controls, (iv) misrepresentation or false statements to or by a senior officer or accountant regarding a matter contained in the Company's financial records, financial reports or audit reports, or (v) deviation from full and fair reporting of the Company's financial condition or results of operations.

Complaints and reports arising under this procedure may be made in the same manner as other complaints and reports arising under the Code, as described below in the section captioned "Administration of the Code." In addition, such complaints and reports may be made directly to the Company's Ethics Line (800)589-3254, or to the website located at https://tds.alertline.com, which is staffed by an independent outside service provider and to which contact may be made anonymously. Retaliation against any person who reports an unlawful or unethical act will not be tolerated.

## ADMINISTRATION OF THE CODE

In order for TDS to operate its various businesses according to the highest possible ethical standards, all associates/employees must take their responsibilities under this Code seriously, with respect to both their own personal conduct and that of their fellow associates/employees. Violations of the standards and policies contained in the Code will subject the associate/employee to appropriate disciplinary actions, up to and including discharge. Therefore, every associate/employee must:

- Understand the policies and practices contained in the Code and observe them at all times.
- Bring any substantive questions related to the Code, or its applicability to a given situation, or any other relevant ethical question or concern, to the attention of management. This Code will

provide guidance on many issues, but it does not cover all of the situations with which associates/employees will be confronted.

- Report any violation of the Code as well as any perceived irregularities in ethics or accounting transactions that may not be specifically covered by its policies and standards.

The associate/employee should refer such ethical questions and concerns to his/her immediate supervisor for resolution. If for any reason the associate/employee chooses not to do so, the matter may be referred to the Human Resources representative, Senior Vice President of Human Resources, Vice President - Internal Audit, President and CEO of TDS, or the Audit Committee* of the Company's Board of Directors. No waiver of any provision of the Code may be authorized by anyone unless such waiver is made in writing by one of the officers listed in the previous sentence (or as otherwise expressly provided in the Code) and is immediately copied to the Audit Committee or the TDS Board of Directors, as applicable. No waiver of the "Accounting, Internal Accounting Controls and Auditing Matters" section of this Code may be authorized by anyone except the Company's Board of Directors, acting as a group. Associates/employees may also report concerns or questions concerning possible violations of the Code to the Company's Ethics Line at (800)589-3254 or to the website located at https://tds.alertline.com. Such reports may be made anonymously, but should contain sufficient information to allow the Company to take appropriate action.

Company management is committed to administering the Code fairly, objectively and conscientiously. Reasonable efforts will be made to keep confidential the identity of associates/employees about whom or against whom an alleged violation of the Code has been made unless or until it has been determined that a violation has occurred that requires disciplinary action.

Associates/employees reporting a possible violation of the Code will be protected from retaliation, such as being demoted, suspended, threatened, harassed, mistreated or terminated. Confidentiality of the identity of the associate/employee reporting a possible violation will be maintained to the greatest extent possible.

Any associate/employee, who has initiated, participated in or encouraged retaliation against an associate/employee who reports known or suspected Code violations will be subject to disciplinary action up to and including discharge. An act of retaliation against any reporting associate/employee is, in and of itself, a violation of the Code and must be reported.

To ensure that the Code and its enforcement receive appropriate ongoing attention from Company management:

- Each TDS business unit will undertake various activities to ensure compliance with the Code, to include:

  - Requiring all new associates/employees to read the Code and complete an online Acknowledgment Form, as a condition of employment.

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* Information for contacting the Audit Committee members is available by contacting the Ethics Line at 800-589-3254 or the website located at https://tds.alertline.com.

- Requiring annually that all current associates/employees review the Code and complete an online Acknowledgment Form or more frequently than annually when there are revisions to the Code or as management determines is necessary to help ensure that associates/employees remain knowledgeable about the Code's standards and policies.

- Ensuring that all actual or alleged violations of the Code have been thoroughly reviewed and that appropriate action has been taken.

- The TDS Senior Vice President of Human Resources and the Internal Audit department will periodically remind each TDS business unit of their responsibilities with respect to the Code.

- The Internal Audit department, under the direction of the Audit Committees of both the TDS and United States Cellular Boards of Directors, will periodically monitor compliance with the Code.

- The Audit Committees of both the TDS and United States Cellular Boards of Directors will annually review the Internal Audit department's monitoring activities in connection with the Code. The Committees will also review any other material Code-related activities that occurred during the year, including any significant events concerning the standards and policies it contains. The Audit Committees findings will be reported to the Company's Boards of Directors.

## CONCLUSION

The continued success of TDS and its subsidiary operations and associated service companies requires that they retain the trust of their major constituencies: customers, associates/employees, shareholders, suppliers, agents, affiliates, communities in which we operate and the government associates/employees and agencies with whom we interact. To accomplish this goal, all associates/employees must conduct themselves with the highest standards of honesty, integrity and business ethics. To ensure this result, all associates/employees must read, understand and comply with this Code of Business Conduct.

# UNITED STATES
# SECURITIES AND EXCHANGE COMMISSION
# Washington, D.C. 20549
# FORM 10-K

**(Mark One)**

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
**For the fiscal year ended December 31, 2019**

**OR**

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
**For the transition period from to**
**Commission file number 001-14157**

**TELEPHONE AND DATA SYSTEMS, INC.**
(Exact name of Registrant as specified in its charter)

| **Delaware** | **36-2669023** |
|---|---|
| (State or other jurisdiction of incorporation or organization) | (IRS Employer Identification No.) |

**30 North LaSalle Street, Suite 4000, Chicago, Illinois 60602**
(Address of principal executive offices) (Zip code)

Registrant's telephone number, including area code: (312) 630-1900

Securities registered pursuant to Section 12(b) of the Act:

| Title of each class | Trading Symbol | Name of each exchange on which registered |
|---|---|---|
| Common Shares, $.01 par value | TDS | New York Stock Exchange |
| 6.625% Senior Notes due 2045 | TDI | New York Stock Exchange |
| 6.875% Senior Notes due 2059 | TDE | New York Stock Exchange |
| 7.000% Senior Notes due 2060 | TDJ | New York Stock Exchange |
| 5.875% Senior Notes due 2061 | TDA | New York Stock Exchange |

Securities registered pursuant to Section 12(g) of the Act: None

| | | |
|---|---|---|
| Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. | Yes ☒ | No ☐ |
| Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act. | Yes ☐ | No ☒ |
| Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. | Yes ☒ | No ☐ |
| Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). | Yes ☒ | No ☐ |

| Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act. | | | |
|---|---|---|---|
| Large accelerated filer | ☒ | Accelerated filer | ☐ |
| Non-accelerated filer | ☐ | Smaller reporting company | ☐ |
| | | Emerging growth company | ☐ |

| | |
|---|---|
| If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. | ☐ |

| | | | | |
|---|---|---|---|---|
| Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). | Yes | ☐ | No | ☒ |

As of June 28, 2019, the aggregate market values of the registrant's Common Shares and Series A Common Shares held by non-affiliates were approximately $3 billion and $3 million, respectively. For purposes hereof, it was assumed that each director, executive officer and holder of 10% or more of any class of voting equity security of Telephone and Data Systems, Inc. (TDS) is an affiliate. The June 28, 2019, closing price of the Common Shares was $30.40 as reported by the New York Stock Exchange. Because trading in the Series A Common Shares is infrequent, the registrant has assumed for purposes hereof that each Series A Common Share has a market value equal to one Common Share because the Series A Common Shares are convertible on a share-for-share basis into Common Shares.

The number of shares outstanding of each of the registrant's classes of common stock, as of January 31, 2020, is 107,543,600 Common Shares, $.01 par value, *and* 7,233,800 Series A Common Shares, $.01 par value.

**DOCUMENTS INCORPORATED BY REFERENCE**

Those sections or portions of the registrant's 2019 Annual Report to Shareholders (Annual Report), filed as *Exhibit* 13 hereto, and of the registrant's Notice of Annual Meeting of Shareholders and Proxy Statement (Proxy Statement) to be filed prior to April 30, 2020, for the 2020 Annual Meeting of *Shareholders* scheduled to be held May 21, 2020, are herein incorporated by reference into Parts II and III of this report.

**Telephone and Data Systems, Inc.**

**Annual Report on Form 10-K**
**For the Period Ended December 31, 2019**

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**Telephone and Data Systems, Inc.**
30 NORTH LASALLE STREET, SUITE 4000,
CHICAGO, ILLINOIS 60602
TELEPHONE (312) 603-1900

# PART I

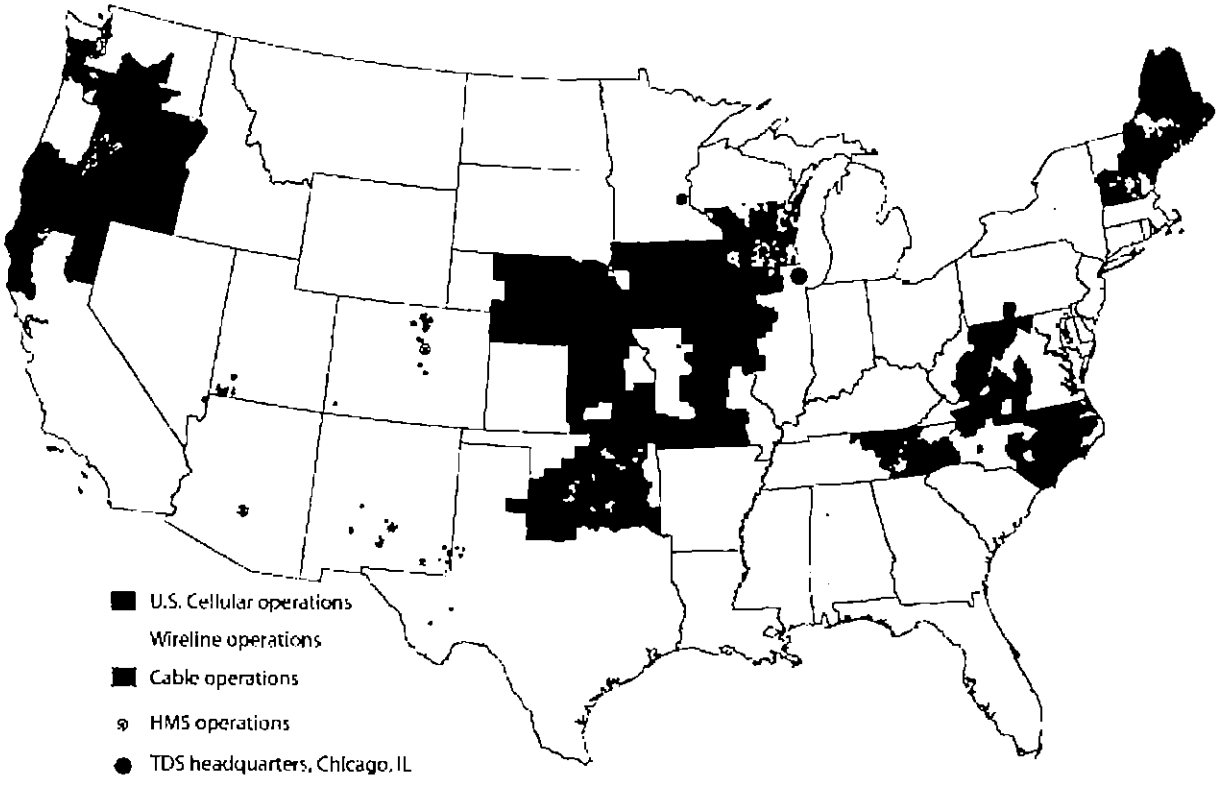
## Item 1. Business

Telephone and Data Systems, Inc. (TDS) provides high-quality communications services to customers with 4.9 million wireless connections and 1.2 million wireline and cable connections at December 31, 2019. TDS conducts all of its wireless operations through its majority-owned subsidiary, United States Cellular Corporation (U.S. Cellular). As of December 31, 2019, TDS owned 82% of the combined total of the outstanding Common Shares and Series A Common Shares of U.S. Cellular and controlled 96% of the combined voting power of both classes of U.S. Cellular common stock. TDS provides broadband, video and voice services through its wholly-owned subsidiary, TDS Telecommunications LLC (TDS Telecom). TDS was incorporated in 1968 and is incorporated in Delaware. TDS Common Shares trade under the ticker symbol "TDS" on the New York Stock Exchange (NYSE). U.S. Cellular Common Shares trade on the NYSE under the ticker symbol "USM."

Under listing standards of the NYSE, TDS is a "controlled company" as such term is defined by the NYSE. TDS is a controlled company because over 50% of the voting power for the election of directors of TDS is held by the trustees of the TDS Voting Trust.

TDS has three business segments: U.S. Cellular and TDS Telecom's Wireline and Cable. TDS operations also include the operations of its wholly-owned hosted and managed services (HMS) subsidiary, which operates under the OneNeck IT Solutions brand, and its wholly-owned printing subsidiary Suttle-Straus, Inc. (Suttle-Straus). HMS' and Suttle-Straus' financial results were not significant to TDS' operations. TDS' segments operate entirely in the United States. Additional information about TDS' segments is incorporated herein by reference from Note 20 — Business Segment Information in TDS' Annual Report to Shareholders, filed as Exhibit 13 hereto.

The map below highlights TDS' consolidated areas of operations:



# U.S. CELLULAR OPERATIONS

**General**

U.S. Cellular, incorporated under the state laws of Delaware in 1983, provides wireless telecommunications services to customers with 4.9 million connections in 20 states collectively representing a total population of 31 million. U.S. Cellular operates in one reportable segment, and all of its wireless operating markets are in the United States. U.S. Cellular's strategy is to attract and retain wireless customers through a value proposition comprised of a high-quality network, outstanding customer service, and competitive devices, plans, and pricing, all provided with a local focus.

**Customers, Services and Products**

*Customers.* U.S. Cellular provides service to postpaid and prepaid customers from a variety of demographic segments. U.S. Cellular focuses on retail consumers, government entities, and business customers located in its service territories. These customers are served primarily through U.S. Cellular's retail and direct sales channels. U.S. Cellular builds customer loyalty by offering high-quality network services, outstanding customer-focused support services, competitive pricing, and other benefits as discussed further in "Marketing, Customer Service, and Sales and Distribution Channels" below.

*Services.* U.S. Cellular's customers are able to choose from a variety of national plans with voice, messaging and data usage options and pricing that are designed to fit different customer needs, usage patterns and budgets. Helping a customer find the right plan is an important element of U.S. Cellular's brand positioning. U.S. Cellular's national plans price all domestic calls as local calls, regardless of where they are made or received in the United States, with no long distance or roaming charges, made possible by roaming agreements with other wireless carriers. See "Network Technology, Roaming, and System Design" section below for further discussion related to roaming.

U.S. Cellular offers advanced wireless solutions to consumers and business and government customers, including a growing suite of connected machine-to-machine (M2M) solutions and software applications across the categories of monitor and control (e.g., sensors and cameras), business automation/operations (e.g., e-forms), communication (e.g., enterprise messaging, back-up router for business continuity services) and asset management (e.g., navigation system, fleet management). U.S. Cellular intends to continue to further enhance these offerings for customers in 2020 and beyond.

*Devices and Products.* U.S. Cellular offers a comprehensive range of wireless devices such as handsets, tablets, mobile hotspots, home phones and routers for use by its customers. U.S. Cellular offers wireless devices that are compatible with its 4G LTE and third generation (3G) networks and are compliant with the Federal Communications Commission (FCC) enhanced wireless 911 requirements. In addition, U.S. Cellular also offers a wide range of accessories, including wireless essentials such as cases, screen protectors, chargers, and memory cards as well as an assortment of consumer electronics such as headphones, smart speakers, wearables and home automation products (e.g., cameras, sensors, and thermostats).

New postpaid handset sales to retail consumers are made primarily under equipment installment plans (EIP); business and government customers may continue to purchase equipment under alternative plans subject to a service contract. For certain installment plans, after a specified period of time or number of payments, the customer may have the right to upgrade to a new device prior to reaching the end of the installment term, thus enabling customers to access the latest smartphones and provide a better overall customer experience.

U.S. Cellular also offers accessories for purchase on installment plans. These plans allow new and existing postpaid customers to purchase certain accessories payable over a specified time period.

U.S. Cellular offers its Device Protection+ program, which includes overnight delivery of a replacement device for damaged, lost and stolen devices, and AppleCare services for Apple iOS customers. Its Device Protection+ Advanced program also includes local or on-demand repair for eligible devices. In addition, U.S. Cellular offers a Trade-In program through which U.S. Cellular buys customers' used equipment.

U.S. Cellular offers a full array of iconic smartphones with options for both Android and iOS customers. U.S. Cellular continues to bolster its expanding smartphone portfolio with the Samsung Galaxy S® 10e and Note10/Note10+, the iPhone® 11/11 Pro/11 Pro Max, the Google Pixel 4, and the Motorola Moto e6. Along with the iconic devices, U.S. Cellular supports the larger ecosystem of Samsung and Apple devices, such as the Samsung Galaxy Watch, the Samsung Gear Sport and the Apple Watch Series 5. For tablets, U.S. Cellular offers the full complement of iPads and the Samsung Galaxy Tab series. U.S. Cellular's smartphone offerings play a significant role in attracting customers and driving data service usage and revenues. U.S. Cellular also offers additional services and products that utilize U.S. Cellular's network, including feature phones, mobile hotspots, LTE home internet, LTE wireless routers, LTE wireless cameras, and home phones.

U.S. Cellular purchases wireless devices and accessory products from a number of original equipment manufacturers and distributors, including Samsung, Apple, Google, Motorola, LG, Inseego, Tessco, Voicecomm and Superior. U.S. Cellular manages relationships with its suppliers to ensure best possible pricing and identifies opportunities for promotional support. U.S. Cellular does not own significant product warehousing and distribution infrastructure; rather, it contracts with third party providers for the majority of its product warehousing, distribution and direct customer fulfillment activities. U.S. Cellular also contracts with third party providers for services related to its device service programs.

U.S. Cellular continuously monitors the financial condition of its wireless device and accessory suppliers. Since U.S. Cellular has a diversified portfolio of products from more than one supplier, U.S. Cellular does not expect the financial condition of any single supplier to affect its ability to offer a competitive portfolio of wireless devices and accessories for sale to customers.

**Marketing, Customer Service, and Sales and Distribution Channels**

*Marketing and Advertising.* U.S. Cellular's marketing plan is focused on acquiring, retaining and enhancing customer relationships by maintaining a high-quality wireless network, providing outstanding customer service, and offering a comprehensive portfolio of services and products built around customer needs at fair prices with a local focus. U.S. Cellular believes that creating positive relationships with its customers enhances their wireless experience and builds customer loyalty. In 2019, U.S. Cellular completed a brand refresh centered around its brand promise of doing what is right for customers, which is expressed through a new marketing campaign, 'Bringing Fairness to Wireless'. U.S. Cellular also introduced new Basic, Everyday and Even Better Unlimited plans. These plans allow customers to choose and customize plans to match their needs and lifestyles.

To attract new customers and retain existing customers, and increase their usage of U.S. Cellular's services, U.S. Cellular's advertising is directed at increasing the public awareness of the U.S. Cellular brand, knowledge of the outstanding network that works in places where other carriers do not have coverage, and understanding of the wireless services it offers. U.S. Cellular supplements its advertising with a focused public relations program that seeks to improve overall brand sentiment and awareness, encourages engagement, supports sales of services and products, and builds preference and loyalty for the U.S. Cellular brand. The approach combines national and local media relations in mainstream and social media channels with market-specific activities, events, and sponsorships.

U.S Cellular focuses its philanthropic and volunteer activities on K-12 STEM (Science, Technology, Engineering and Math) for youth in the communities U.S. Cellular serves. U.S Cellular also collaborates with organizations such as the Boys & Girls Clubs of America and JASON Learning. Since 2015, U.S. Cellular's The Future of Good program has demonstrated the commitment to fairness by highlighting and supporting young humanitarians that have taken extraordinary actions to make their communities a better place.

*Customer Service.* U.S. Cellular manages customer retention by focusing on outstanding customer service through the development of processes that are customer-friendly, extensive training of frontline sales and support associates and the implementation of retention programs.

U.S. Cellular operates four regional customer care centers in its operating markets with personnel who are responsible for customer service activities, and a national financial services center with personnel who perform credit and other customer payment activities. U.S. Cellular also contracts with third parties that provide additional customer care and financial services support.

*Sales and Distribution Channels.* U.S. Cellular supports a multi-faceted distribution program, including retail sales, direct sales, third-party national retailers, and independent agents, plus a website and telesales.

Company retail store locations are designed to market wireless services and products to the consumer and small business segments in a setting familiar to these types of customers. As of December 31, 2019, retail sales associates work in 262 U.S. Cellular-operated retail stores and kiosks. Direct sales representatives sell traditional wireless services as well as Internet of Things (IoT) and M2M products and solutions to medium- and large-sized businesses and government entities. Additionally, the U.S. Cellular website enables customers to purchase wireless services and devices online.

U.S. Cellular maintains an ongoing training program to improve the effectiveness of retail sales associates and direct sales representatives by focusing their efforts on obtaining customers by facilitating the sale of appropriate packages for the customer's expected usage and value-added services that meet the individual needs of the customer.

U.S. Cellular has relationships with exclusive and non-exclusive agents (collectively "agents"), which are independent businesses that obtain customers for U.S. Cellular on a commission basis. At December 31, 2019, U.S. Cellular had contracts with these businesses aggregating 448 locations. U.S. Cellular provides support and training to its agents to increase customer satisfaction and to ensure a consistent customer experience. U.S. Cellular's agents are generally in the business of selling wireless devices, wireless service plans and other related products. No single agent accounted for 10% or more of U.S. Cellular's operating revenues during the past three years.

U.S. Cellular services and products also are offered through third-party national and on-line retailers. Wal-Mart, Sam's Club, Cashland, Family Dollar and Dollar General offer U.S. Cellular services and products at select retail locations in U.S. Cellular's service areas. U.S. Cellular continues to explore new relationships with additional third-party retailers as part of its strategy to expand distribution.

*Seasonality.* Seasonality in operating expenses may cause operating income to vary from quarter to quarter. U.S. Cellular's operating expenses tend to be higher in the fourth quarter due to increased marketing and promotional activities during the holiday season.

**Competition**

The wireless telecommunication industry is highly competitive. U.S. Cellular competes directly with several wireless service providers in each of its markets. In general, there are between two and five competitors in each wireless market in which U.S. Cellular provides service, excluding resellers and mobile virtual network operators (MVNOs). In its footprint, U.S. Cellular competes to varying degrees against each of the national wireless companies: Verizon Wireless, AT&T Mobility, Sprint, and T-Mobile USA, in addition to a few smaller regional carriers and cable providers such as Comcast and Charter in specific areas of its footprint. All of the national competitors have substantially greater financial and other resources than U.S. Cellular. In addition, U.S. Cellular competes with other companies that use alternative communication technology and services to provide similar services and products.

Since each of these wireless competitors operates on systems using spectrum licensed by the FCC and has comparable technology and facilities, competition among wireless service providers for customers is principally on the basis of types of services and products, price, size of area covered, network quality, network speed and responsiveness of customer service. Types of services and products include non–wireless related services such as content offerings that are bundled with wireless services. U.S. Cellular employs a customer satisfaction strategy that includes maintaining an outstanding wireless network throughout its markets. U.S. Cellular owns and operates low-band spectrum (less than 1 GHz) that covers the majority of its footprint and enables more efficient coverage in rural areas (compared to spectrum above 1 GHz), which strengthens its network quality positioning. To the extent existing competitors or new entrants hold or acquire such spectrum in U.S. Cellular markets, U.S. Cellular could face increased competition over time. In addition, fifth generation (5G) technology will likely introduce increased competition from industry participants on bases such as network speed and new product offerings.

The use of national advertising and promotional programs by the top four wireless service providers and certain cable providers is a source of additional competitive and pricing pressures in all U.S. Cellular markets, even if those operators do not provide direct service in a particular market. Over the past year, competition among top carriers has continued to be robust, with the top four carriers and certain cable providers offering rich promotions related to both service plans and devices. In addition, in the current wireless environment, U.S. Cellular's ability to compete depends on its ability to continue to offer national voice and data plans. U.S. Cellular provides wireless services comparable to the national competitors, but the national wireless companies operate in a wider geographic area and are able to provide such services over a wider area on their own networks than U.S. Cellular can offer on its network. Although U.S. Cellular offers similar coverage area as these competitors, U.S. Cellular incurs roaming charges for data sessions and calls made in portions of the coverage area which are not part of its network, thereby increasing its cost of operations. U.S. Cellular depends on roaming agreements with other wireless carriers to provide voice and data roaming capabilities in areas not covered by U.S. Cellular's network. Similarly, U.S. Cellular provides roaming services on its network to other wireless carriers' customers who travel within U.S. Cellular's coverage areas and receives revenue from other carriers for the provision of these services.

Convergence of connectivity is taking place on many levels, including wireless devices that can act as wireless or wireline replacement devices and the incorporation of wireless "hot spot" technology in wireless devices making internet access seamless regardless of location. Although less directly a substitute for other wireless services, wireless data services such as Wi-Fi may be adequate for those who do not need mobile wide-area roaming or full two-way voice services. If the trend toward convergence continues, U.S. Cellular is at a competitive disadvantage to larger competitors, including the national wireless carriers, traditional cable companies, MVNOs and other potential large new entrants with much greater financial and other resources in adapting to such convergence. Cable companies compete in the wireless market; most notably, Comcast and Charter currently offer wireless services.

U.S. Cellular's approach in 2020 and in future years will be to focus on the unique needs and attitudes of its customers towards wireless service. U.S. Cellular will deliver high-quality services and products at competitive prices and intends to continue to differentiate itself by seeking to provide an overall outstanding customer experience, founded on a high-quality network. U.S. Cellular's ability to compete successfully in the future will depend upon its ability to anticipate and respond to changes related to new service offerings, consumer preferences, competitors' pricing strategies and new product offerings, technology, demographic trends, economic conditions and its access to adequate spectrum resources.

**Network Technology, Roaming, and System Design**

*Technology.* Wireless telecommunication systems transmit voice and data signals over networks of radio towers using radio spectrum licensed by the FCC. Access to local, regional, national and worldwide telecommunications networks is provided through system interconnections. A high-quality network, supported by continued investments in that network, will remain an important factor for U.S. Cellular to remain competitive.

VoLTE technology allows customers to utilize a 4G LTE network for both voice and data services, and offers enhanced services such as high definition voice and simultaneous voice and data sessions. VoLTE technology is now available to nearly 70% of U.S Cellular's subscribers, and deployments in additional operating markets are expected in 2020 and 2021.

5G technology is expected to help address customers' growing demand for data services as well as create opportunities for new services requiring high speed, reliability and low latency. U.S. Cellular is working with leading companies in the wireless infrastructure and handset ecosystem to provide rich 5G experiences for customers, initially focused on mobility services and using its low band spectrum. At the same time, U.S. Cellular has begun acquiring high band spectrum to further enable the delivery of additional 5G services in the future. U.S. Cellular has begun to deploy 5G technology in its network and expects to launch commercial 5G services in selected markets in 2020. In addition, in the markets in which U.S. Cellular is deploying 5G technology, customers using U.S. Cellular's 4G LTE network will experience faster network speeds due to the network modernization efforts.

*Roaming.* Inter-carrier roaming agreements are negotiated between wireless operators to enable customers who are in a wireless service area other than the customer's home service area to use wireless services in that service area. U.S. Cellular has entered into 4G LTE and VoLTE roaming agreements with national wireless companies and, as a result, a majority of customers currently have access to these services on a nationwide basis. In addition, U.S. Cellular offers a variety of international roaming options.

*System Design and Construction.* U.S. Cellular designs and constructs its systems in a manner it believes will permit it to provide high-quality service to substantially all types of compatible wireless devices. Designs are based on engineering studies which relate to specific markets, in support of the larger network. Network reliability is given careful consideration and extensive backup redundancy is employed in many aspects of U.S. Cellular's network design. Route diversity, redundant equipment, ring topology and extensive use of emergency standby power also are used to enhance network reliability and minimize service disruption from any particular network element failure.

U.S. Cellular has selected high-capacity, carrier-class digital wireless switching systems that are capable of serving multiple markets through a single mobile telephone switching office. Centralized equipment, used for network and data management, is located in high-availability facilities supported by multiple levels of power and network redundancy. U.S. Cellular's systems are designed to incorporate Internet Protocol (IP) packet-based Ethernet technology, which allows for increased data capacity and a more efficient network. Interconnection between the mobile telephone switching office and the cell sites utilizes Ethernet technology for nearly all 4G LTE sites, over fiber or microwave links.

Construction of wireless systems is capital-intensive, requiring substantial investment for land and improvements, buildings, towers, mobile telephone switching offices, cell site equipment, transport equipment, engineering and installation. U.S. Cellular primarily uses its own personnel to engineer each wireless system it owns and operates, and engages contractors to construct the facilities.

As a result of increasing demand for high–speed data and the deployment of 5G technology, U.S. Cellular expects to acquire additional wireless spectrum licenses and to make significant investments in its network to provide sufficient capacity and throughput.

The costs to develop the systems which U.S. Cellular operates (including the costs to acquire wireless spectrum licenses) have historically been financed primarily through proceeds from debt offerings, with cash generated by operations, and proceeds from the sales of wireless interests and other non-strategic assets.

**Business Development Strategy**

U.S. Cellular operates a regional wireless network. U.S. Cellular's interests in wireless spectrum licenses include both direct interests whereby U.S. Cellular is the licensee and investment interests in entities which are licensees; together, these direct and investment interests involve operating and non-operating wireless spectrum licenses covering 30 states and a total population of approximately 52 million at December 31, 2019.

U.S. Cellular's business development strategy is to obtain interests in or access to wireless spectrum licenses in its current operating markets and in areas that are adjacent to or in close proximity to its other wireless spectrum licenses, thereby building larger geographic operating market areas. U.S. Cellular believes that the acquisition of additional wireless spectrum licenses within its current operating markets will enhance its network capacity and speed to meet its customers' growing demand for data services. From time to time, U.S. Cellular has divested outright or included in exchanges for other wireless interests certain consolidated and investment interests that were considered less essential to its current and expected future operations. As part of its business development strategy, U.S. Cellular may periodically be engaged in negotiations relating to the acquisition, exchange or disposition of companies, strategic properties, investment interests or wireless spectrum.

The FCC conducts auctions through which additional spectrum is made available for the provision of wireless services. Historically, U.S. Cellular has participated in certain FCC auctions both directly and indirectly through its limited partnership interests. During 2018 and 2019, the FCC conducted two auctions of wireless spectrum licenses in the 28 GHz and 24 GHz bands. The 28 GHz auction (Auction 101) offered two 425 MHz wireless spectrum licenses in the 28 GHz band over portions of the United States that do not have incumbent licensees. The 24 GHz auction (Auction 102) offered up to seven 100 MHz wireless spectrum licenses in the 24 GHz band in Partial Economic Areas covering most of the United States. On June 3, 2019, the FCC announced by way of public notice that U.S. Cellular was the provisional winning bidder for 408 wireless spectrum licenses in Auction 101 and 282 wireless spectrum licenses in Auction 102 for an aggregate purchase price of $256 million. The wireless spectrum licenses from Auction 101 were granted by the FCC on October 2, 2019, and the wireless spectrum licenses from Auction 102 were granted by the FCC on December 11, 2019.

On July 11, 2019, the FCC released a Public Notice establishing procedures for an auction offering wireless spectrum licenses in the 37, 39 and 47 GHz bands (Auction 103). Auction 103 is offering 34 100 MHz blocks in the Upper 37 GHz, 39 GHz, and 47 GHz bands in all Partial Economic Areas. On September 9, 2019, U.S. Cellular filed an application to participate in Auction 103 and was announced as a qualified bidder on October 31, 2019. Bidding in this auction commenced on December 10, 2019. The initial phase of this auction closed on January 30, 2020 and the assignment phase commenced on February 18, 2020.

# TDS TELECOM OPERATIONS

**General**

TDS Telecom operates Wireline and Cable subsidiaries that provide communications services to 1.2 million connections. TDS Telecom's business objective is to provide a wide range of communications services to both residential and commercial customers.

**Growth Strategy**

Both Wireline and Cable share a common growth strategy to provide high-speed broadband services bundled with video entertainment and voice services. TDS Telecom is investing in fiber in new and existing markets to provide broadband speeds of up to 1 Gigabit per second (Gbps).

Increased fiber deployment provides the opportunity to deliver more robust residential and commercial products which drives future growth. Fiber builds in locations outside of its current markets allows TDS Telecom to target attractive, growing markets to increase its total footprint. TDS Telecom has scaled up its out-of-territory fiber builds beginning with a trial market in Sun Prairie, Wisconsin in 2017.

Construction is nearly complete in six additional communities around TDS Telecom's headquarters in Madison, Wisconsin which are a natural extension to Sun Prairie and existing ILEC markets. Eight additional communities create a Central Wisconsin cluster, also adjacent to existing ILEC markets. Coeur d'Alene, Idaho is the first out-of-territory in a new geographic region which is intended to be an anchor build for future markets and consists of four communities.

Similarly, in its Cable markets, TDS Telecom is focused on providing high-speed broadband services, offering up to 1 Gbps data speeds utilizing DOCSIS 3.1 network upgrades to its DOCSIS 3.0 network, and investing in fiber-to-the-home construction in new housing developments in these fast-growing communities.

TDS Telecom may also seek to grow its operations through the acquisition of businesses that support and complement its existing markets or create entirely new clusters of markets where TDS Telecom can succeed. TDS Telecom intends to avoid markets served by other fiber overbuilders or municipalities which have constructed their own networks with fiber to the home.

On December 31, 2019, TDS acquired substantially all of the assets of MI Connection Communications System, dba Continuum, for $80 million in cash, subject to working capital adjustments. Continuum is a cable company that passes approximately 40,000 service addresses in North Carolina and offers broadband, video and voice services, which complement the TDS Telecom portfolio of products.

**Core Network**

In order to provide IP-based services, TDS Telecom has developed and deployed an inter-regional data routing infrastructure using owned and leased fiber capacity which allows it to leverage its multi-terabit core network in both Wireline and Cable operations. This configuration, along with the continued development of an IP network that interconnects substantially all the existing service territories, provides redundancy and allows for next generation IP service offerings.

The TDS Telecom core network continues to standardize equipment and processes to increase efficiency in maintaining its network. TDS Telecom utilizes centralized monitoring and management of its network to reduce costs and improve service reliability. Network standardization has aided TDS Telecom in operating its 24-hours-a-day / 7-days-per-week Network Management Centers, which continuously monitor the network in an effort to proactively identify and correct network faults prior to any customer impact.

**Marketing, Customer Service, and Sales and Distribution Channels**

*Marketing.* TDS Telecom's marketing plan is focused on acquiring, retaining and growing customer relationships by maintaining a high-quality network, providing outstanding customer service, and offering a comprehensive portfolio of services and products built around customer needs at fair prices with a local focus. TDS Telecom uses digital marketing, targeted mailings and mass advertising to market services and products.

*Sales and Distribution Channels.* TDS Telecom operates and uses sales contact centers, direct sales forces, retail stores and sales agents to sell services and products to consumers and small business customers. Additionally, the TDS Telecom website enables customers to purchase services online. TDS Telecom is increasing its efforts to move more consumer transactions to the web.

*Customer Service.* TDS Telecom manages customer retention by focusing on outstanding customer service through the development of processes that are customer-friendly, and extensive training of front-line sales and support associates.

**Methods of Competition**

The competitive environment in the telecommunications industry has changed significantly as a result of technological advances, customer expectations, and changes to regulation. TDS Telecom continues to develop and maintain an efficient cost structure to ensure that it can compete with price-based initiatives from competitors. In addition to price, TDS Telecom competes based on a variety of factors including the reliability of its network, the diversity and range of its product offerings and customer service. In addition, TDS Telecom is selecting to grow in areas where it has determined customers are underserved in terms of these criteria.

# Wireline

### Operations

TDS Telecom is a broadband-centric telecommunications company that operates as an Incumbent Local Exchange Carrier (ILEC) in 25 states and as a Competitive Local Exchange Carrier (CLEC) in Illinois, Michigan, Minnesota, and Wisconsin. TDS Telecom also is bringing the future of fiber Internet, TV, and phone service to new out-of-territory markets through the operation of facilities-based ("overbuild") fiber-optic local networks. Wireline operations provide communications services to both residential and commercial customers. Wireline also provides services to wholesale customers, which are primarily interexchange carriers (companies that provide long-distance telephone and data services between local exchange areas) and wireless carriers that compensate TDS Telecom for the use of its facilities to originate and terminate their voice and data transmissions. Wireline operations are located across nearly 900 rural, suburban, and metropolitan communities within the U.S, with the largest concentrations of customers in the Upper Midwest and the Southeast.

Wireline focuses on broadband as the core component of its service offerings. Wireline believes that both residential and business customers have a strong preference to purchase complementary communications services from a single provider. The Wireline strategy is to focus on broadband bundled with video and voice services where it can build customer loyalty and promote growth.

### Customers, Services and Products

*Residential.* Wireline residential customer operations provide high-speed broadband, video and voice services. These services are bundled at competitive prices to encourage cross-selling within Wireline's customer base and to attract new customers. Approximately 78% of residential customers have at least two services.

- Broadband: TDS Telecom offers reliable high-speed internet connections and all-home Wi-Fi. Fiber technology is being deployed to select markets to provide internet speeds of up to 1 Gbps. In certain non-fiber markets, TDS Telecom is deploying fiber-to-the-node and copper-based vectoring / pair bonding technology to increase data speeds reaching up to 100 Mbps. Premium security and support services are available to enhance the customers' high-speed internet experience.

- Video: TDS Telecom offers advanced home TV entertainment powered by IPTV technology with crystal-clear picture and sound and robust options featuring popular digital cable channels and local favorites. TDS TV is a company branded all-digital TV service available in select TDS markets that provides customers with connected-home digital video recorders (DVR), video-on-demand, TV Everywhere and other enhanced applications and features. Where TDS TV is not available, TDS Telecom partners with a satellite TV provider to offer digital television.

- Voice: Call plans include local and long-distance telephone service, VoIP and enhanced services like find me follow me, collaboration, instant messaging and more. Many features are bundled with calling plans to give customers the best value.

*Commercial.* Wireline commercial customer operations provide broadband, IP-based services, and hosted voice and collaboration services to small- and medium-sized businesses. Wireline operations provide commercial customers with secure and reliable internet access, data connections and advanced voice service with VoIP features. TDS Telecom's commercial service focus is to lead with broadband bundled with a voice product from a suite of solutions and TDS TV for business.

*Wholesale.* Wireline operations continue to provide a high level of service to traditional interexchange and wireless carriers. Wireline's wholesale market focus is on access revenues, which is the compensation received from the interexchange carriers for carrying data and voice traffic on TDS Telecom's networks. Federal Connect America Fund (CAF) and state Universal Service Fund (USF) revenues, which support the cost of providing communication services in underserved high cost areas, are also included in wholesale service revenues.

To attract and retain customers in the video business, TDS Telecom is developing a next generation video platform called TDS TV+ which will enhance the customer experience by adding interfaces to mobile devices, personalized content recommendations, and network-based DVR functionality. TDS TV+ will be offered in its Wireline and Cable operations and will offer video content and features not available on existing TDS platforms.

In 2017, TDS began receiving $75 million per year for 10 years (with incremental funding for transition in the early years for certain states) for operating and maintaining its network along with the obligation to provide broadband service at various speeds to about 160,000 locations. In 2018 and 2019, the FCC increased annual support to $82 million, extended the term by two years through 2028 and required additional speed requirements. Continuing regulatory changes may affect the amounts of future Wireline wholesale revenues. See additional information in Risk Factors and information incorporated by reference from Exhibit 13 to this Form 10-K, Annual Report section "Regulatory Matters".

**Access Technology and System Design**

Wireline operates an integrated, highly reliable network that consists of central office host and remote sites, primarily equipped with digital and IP switches. Fiber optic and copper cable connect the host central offices with remote switches and ultimately with end customers. Wireline continues to upgrade and expand its telecommunications network to respond to the needs of its customers for greater bandwidth and advanced technologies. The network is transitioning from its legacy circuit-switched network to a highly reliable IP-based broadband network to facilitate the integration of broadband, video and voice services.

Wireline pursues a plan to deploy fiber-to-the-home technology, which enables significantly greater broadband speeds to selected residential subdivisions and to commercial customers, when the investment is economically justified. Fiber technology is deployed to provide internet speeds of up to 1 Gbps. In addition, in non-fiber markets, data speeds are increased using fiber-to-the-node and copper bonding / vectoring technology, providing speeds of 10 to 100 Mbps.

**Competition**

Wireline faces significant challenges, including competition from cable, low-cost voice providers, other wireline and wireless providers as well as decreases in compensation received for the use of TDS Telecom's networks.

Wireline has experienced customer connection and access minute declines due to competition from wireless carriers offering local and nationwide voice and data plans, from cable providers offering voice and data services via cable modems, from fiber overbuilders, and from other low-cost voice providers.

Cable companies have developed technological improvements that have allowed them to extend their competitive operations beyond major markets and have enabled them to provide a broader range of data and voice services over their cable networks. Cable companies have aggressively pursued the bundling of internet, video, voice and mobile service at discounted prices to attract customers from traditional telephone companies. In addition, cable companies continue to add value to their internet offerings by increasing speeds at little to no additional cost to the customer. Wireline estimates that 80% of its ILEC service addresses face active competition from cable providers at December 31, 2019. Cable companies are increasingly targeting commercial customers.

Wireless telephone service providers offering feature-rich wireless devices and improved networks including the latest 5G technology may constitute a significant source of voice and broadband competition. A growing segment of customers have chosen to completely forego the use of traditional wireline telephone service and instead rely solely on wireless service for voice communications services. This trend is more pronounced among residential customers, where voice connections comprise approximately 47% of total residential Wireline connections as of December 31, 2019. However, the majority of these voice connections bundle with other products, reducing the risk of churn. Some small businesses have followed the residential path by choosing wireless service and disconnecting wireline voice service.

While TDS Telecom positions itself as a high-quality telecommunications provider, it is also experiencing competition from Regional Bell Operating Companies (RBOCs) in areas where TDS Telecom competes as a CLEC using the incumbent carriers' infrastructure through access to unbundled network elements and resale. Approximately 17% of TDS Telecom's Wireline connections are within CLEC operations using leased facilities. The RBOCs are continuing to implement technological changes that could impede TDS Telecom's access to facilities used to provide CLEC communications services. In addition, the FCC has issued an order that eliminates the requirements that allow CLECs to access that infrastructure at wholesale rates. To mitigate these risks, TDS Telecom has refocused the business on serving customers who do not require leased facilities. See additional information in Risk Factors and information incorporated by reference from Exhibit 13 to this Form 10-K, Annual Report section "Regulatory Matters".

# Cable

### Operations

TDS Telecom entered the cable business with TDS' acquisition of Baja Broadband in 2013. Subsequently, in 2014, TDS acquired substantially all of the assets of a group of companies operating as BendBroadband, headquartered in Bend, Oregon. TDS Telecom's cable business leverages its Wireline core competencies in network management and customer focus, and operates under two brand names: TDS Cable in Colorado, New Mexico, Texas, and Utah; and BendBroadband in Oregon.

On December 31, 2019, TDS acquired substantially all of the assets of MI Connection Communications System, dba Continuum, for $80 million in cash, subject to working capital adjustments. Continuum is a cable company that passes approximately 40,000 service addresses in North Carolina and offers broadband, video and voice services, which complement the TDS Telecom portfolio of products.

Similar to Wireline, the Cable strategy is to expand its broadband services and leverage that growth by bundling with video and voice services. Through investment in plant upgrades and improvements in programming and customer service levels, TDS Telecom intends to strengthen its markets and continue to grow its revenue base.

### Customers, Services and Products

*Residential.* Cable offers advanced broadband, video and voice services. These services are actively bundled at competitive prices to encourage cross-selling within Cable's customer base and to attract new customers. Approximately 54% of residential customers subscribe to a bundle of services.

- Broadband: DOCSIS 3.0 technology is deployed to nearly all of Cable's service addresses which allows it to offer enhanced transmission speeds. TDS Telecom is offering 600 Mbps in almost all its markets with up to 1 Gbps service available in select markets. Access to 24/7 technical support and security features is also provided to broadband customers. In addition, DOCSIS 3.1 technology has been launched in certain markets and offers significantly higher speeds of up to 1 Gbps.

- Video: Customers have access to basic service, premium programming and high-definition television combined with DVR service. Cable introduced "CatchTV," a branded whole-home DVR solution. TDS Telecom is developing a next generation video platform called TDS TV+ which will enhance the customer experience by adding interfaces to mobile devices, personalized content recommendations and network-based DVR functionality.

- Voice: Telephony service uses IP to transport digitized voice signals over the same private network that brings cable television and broadband services to customers. All residential voice service customers have access to direct international calling and can subscribe to various long distance-plans.

*Commercial.* Business services are delivered over a robust network to provide broadband products, multi-line phone solutions and video. Cable provides advanced business services, including data networking, Ethernet, broadband access and VoIP services, to small- and medium-sized businesses.

### Access Technology and System Design

Cable's telecommunication systems are designed to transmit broadband, video and voice services using a hybrid fiber-coaxial network that consists of optical fiber transport from a headend facility to nodes where coaxial cable is then used to reach residential and business customers. In certain markets, Cable has an all-fiber network to the home or business. These fiber-rich networks offer substantial bandwidth capacity and, using DOCSIS 3.0 and next generation DOCSIS 3.1 technology, enable Cable to offer robust broadband and voice services as well as traditional and two-way video services. All Cable markets are connected to TDS Telecom's core network. This allows Cable to leverage existing internet connectivity, voice services, and support systems, which enhances reliability and redundancy and builds greater dependability as a service provider.

### Competition

The strategy of the Cable segment is focused on broadband to capitalize on the data needs of consumers. Cable seeks to be the leading provider of broadband and video services in its targeted markets. From a broadband perspective, Cable competes against the incumbent local telephone providers which primarily offer DSL-based services. Cable offers a superior, higher bandwidth data product using DOCSIS technology. Video competition is primarily from satellite providers, and on a limited basis, telephone companies that offer video services and compete for broadband and voice customers. Other telecommunications providers, including internet-based VoIP providers, fiber companies and wireless providers may compete directly for both residential and commercial voice and broadband service customers. Changes in consumer behavior or new technologies or both could cause consumers to reduce or cancel their cable video services and instead seek to obtain video on demand over the internet or through new technologies. Cable systems are operated under non-exclusive franchises; therefore, competing cable systems may be built in the same area.

# TDS — REGULATION

TDS' operations are subject to federal, state and local regulation. Key regulatory considerations are discussed below.

**U.S. Cellular**

TDS provides various wireless services, including voice and data services, pursuant to wireless spectrum licenses granted by the FCC. The construction, operation and transfer of wireless systems in the United States are regulated to varying degrees by the FCC pursuant to the Communications Act of 1934, as amended (Communications Act). The FCC currently does not require wireless carriers to comply with a number of statutory provisions otherwise applicable to common carriers that provide, originate or terminate interstate or international telecommunications. However, the FCC has enacted regulations governing construction and operation of wireless systems, licensing (including renewal of wireless spectrum licenses) and technical standards for the provision of wireless services under the Communications Act.

Wireless spectrum licenses segmented by geographic areas are granted by the FCC. The completion of acquisitions, involving the transfer of control of all or a portion of a wireless system, requires prior FCC approval. The FCC determines on a case-by-case basis whether an acquisition of wireless spectrum licenses is in the public interest. Wireless spectrum licenses are granted generally for a ten-year term or, in some cases, for a twelve-year or fifteen-year term. The FCC establishes the standards for conducting comparative renewal proceedings between a wireless license holder seeking renewal of its license and challengers filing competing applications. All of U.S. Cellular's wireless spectrum licenses for which it applied for renewal since 1995 have been renewed. U.S. Cellular expects to continue to meet the criteria of the FCC's license renewal process.

As part of its data services, U.S. Cellular provides internet access. Such internet access services may be subject to different regulatory requirements than other wireless services.

Although the Communications Act generally pre-empts state and local governments from regulating the entry of, or the rates charged by, wireless carriers, certain state and local governments regulate other terms and conditions of wireless services, including billing, termination of service arrangements, imposition of early termination fees, advertising, network outages, the use of handsets while driving, zoning, land use, privacy, data security and consumer protection. Further, the Federal Aviation Administration also regulates the siting, lighting and construction of transmitter towers and antennae.

**Wireline**

The FCC generally exercises jurisdiction over all facilities of, and services offered by, TDS Telecom's ILECs as telecommunications common carriers, to the extent they provide, originate or terminate interstate or international telecommunications. State public utility commissions generally exercise jurisdiction over intrastate telecommunications facilities and services. In addition, the Wireline business is subject to various other state and local laws, including laws relating to privacy, data security and consumer protection.

The Communications Act requires, among other things, that telecommunications common carriers offer interstate services when requested at just and reasonable rates at terms and conditions that are non-discriminatory. Maximum rates for regulated interstate services are prescribed by the FCC. In many states, local rates paid by end user customers and intrastate access charges paid by carriers continue to be subject to state commission approval.

TDS Telecom's CLEC and out-of-territory fiber operations are subject to similar but reduced regulation compared to ILECs.

In addition to traditional circuit-switched voice service that is fully regulated as a telecommunications common carrier service, TDS Telecom also provides Interconnected VoIP, which is currently subject to less regulation.

**Cable**

As a cable multiple systems operator (MSO), Cable is subject to regulation by the FCC, covering matters such as technical operations, administrative requirements, consumer protection, access by people with disabilities, customer privacy and content. The operation of cable systems requires the MSO to obtain franchises from state or local governmental authorities to occupy public rights of way with network facilities. These franchises typically are nonexclusive and limited in time, contain various conditions and limitations, and provide for the payment of fees to the local authority, determined generally as a standard percentage of revenues.

TDS' Cable operations also provide interconnected VoIP and broadband services, including internet access. The Interconnected VoIP and internet regulatory matters and issues described above under "Wireline" are substantially similar for cable providers.

**General**

Reference is made to Exhibit 13 to this Form 10-K under "Regulatory Matters" for information regarding any significant recent developments and proposals relating to the foregoing regulatory matters.

# TDS — OTHER ITEMS

**Employees**

TDS had approximately 9,400 full-time and part-time employees as of December 31, 2018, less than 1% of whom were represented by labor organizations.

***Location and Company Information***

TDS executive offices are located at 30 North LaSalle Street, Suite 4000, Chicago, Illinois 60602. TDS' telephone number is 312-630-1900. TDS' website address is www.tdsinc.com. TDS files with, or furnishes to, the Securities and Exchange Commission (SEC) annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, as well as various other information. Investors may access, free of charge, through the Investor Relations portion of the website, TDS' annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to such reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended (Exchange Act), as soon as reasonably practical after such material is filed electronically with the SEC. The public may also view electronic filings of TDS by accessing SEC filings at www.sec.gov.

U.S. Cellular executive offices are located at 8410 West Bryn Mawr Avenue, Chicago, Illinois 60631. U.S. Cellular's telephone number is 773-399-8900. U.S. Cellular's website address is www.uscellular.com. U.S. Cellular files with, or furnishes to, the SEC annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, as well as various other information. Investors may access, free of charge, through the Investor Relations portion of the website, U.S. Cellular's annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to such reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practical after such material is filed electronically with the SEC. The public may also view electronic filings of U.S. Cellular by accessing SEC filings at www.sec.gov.

# Item 1A. Risk Factors

## PRIVATE SECURITIES LITIGATION REFORM ACT OF 1995
## SAFE HARBOR CAUTIONARY STATEMENT

This Annual Report on Form 10-K, including exhibits, contains statements that are not based on historical facts and represent forward-looking statements, as this term is defined in the Private Securities Litigation Reform Act of 1995. All statements, other than statements of historical facts, that address activities, events or developments that TDS intends, expects, projects, believes, estimates, plans or anticipates will or may occur in the future are forward-looking statements. The words "believes," "anticipates," "estimates," "expects," "plans," "intends," "projects" and similar expressions are intended to identify these forward-looking statements, but are not the exclusive means of identifying them. Such forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause actual results, events or developments to be significantly different from any future results, events or developments expressed or implied by such forward-looking statements. Such risks, uncertainties and other factors include those set forth below under "Risk Factors" in this Form 10-K. Each of the following risks could have a material adverse effect on TDS' business, financial condition or results of operations. However, such factors are not necessarily all of the important factors that could cause actual results, performance or achievements to differ materially from those expressed in, or implied by, the forward-looking statements contained in this document. Other unknown or unpredictable factors also could have material adverse effects on future results, performance or achievements. TDS undertakes no obligation to update publicly any forward-looking statements whether as a result of new information, future events or otherwise. You should carefully consider the following risk factors and other information contained in, or incorporated by reference into, this Form 10-K to understand the material risks relating to TDS' business.

**Risk Factors**

**1) Intense competition in the markets in which TDS operates could adversely affect TDS' revenues or increase its costs to compete.**

Competition in the wireless industry is intense and is expected to intensify in the future due to multiple factors such as increasing market penetration, introduction of new products, new competitors and changing prices. There is competition in service plan pricing; handsets and other devices; network quality, coverage, speed and technologies, including 5G technology; distribution; new entrants; bundled services and products, such as content; and other categories. In particular, wireless competition includes aggressive service plan and device pricing, including pricing for unlimited plans, which could result in switching activity and churn. In addition, competition based on network speed may increase as customer demand for higher speeds increases. TDS' ability to compete effectively will depend, in part, on its ability to anticipate and respond to various competitive factors affecting the telecommunications industry. In addition, unlimited plans and other data pricing constructs across the industry may limit TDS' ability to monetize future growth in data usage. TDS anticipates that these competitive factors may cause the prices for services and products to decline and the costs to compete to increase.

TDS' primary competitors are national or global telecommunications companies that are larger than TDS, possess greater financial and other resources, possess more extensive coverage areas and more spectrum within their coverage areas, and market other services with their communications services that TDS does not offer. TDS' competitors are actively marketing their deployment of 5G and, as a result, are raising consumer awareness of the technology. If TDS cannot keep pace with its competitors in deploying 5G or other comparable offerings, or if TDS' deployment of 5G technology does not result in significant incremental revenues, TDS' financial condition, results of operations or ability to do business could be adversely affected. Further, other companies that currently are less competitive may also add more efficient low-band spectrum to become more competitive in TDS' primary markets. In particular, to the extent that existing competitors or new entrants acquire low-band (e.g., 600 MHz) spectrum or deploy newer wireless technologies in TDS markets, TDS could face increased competition over time. In addition, TDS may face competition from technologies that may be introduced in the future. New technologies, services and products that are more commercially effective than the technologies, services and products offered by TDS may be developed. Further, new technologies may be proprietary such that TDS is not able to adopt such technologies. There can be no assurance that TDS will be able to compete successfully in this environment.

Sources of competition to TDS' wireless business typically include two to five competing wireless telecommunications service providers in each market, wireline telecommunications service providers, cable companies, resellers (including MVNOs), and providers of other alternate telecommunications services. Many of TDS' wireless competitors and other competitors have substantially greater financial, technical, marketing, sales, purchasing and distribution resources than TDS.

Sources of competition to TDS' Wireline business include, but are not limited to, resellers of local exchange services, interexchange carriers, RBOCs, direct broadcast satellite providers, wireless communications providers, cable companies, access providers, CLECs, fiber overbuilders, VoIP providers and providers using other emerging technologies. The Wireline CLEC and out-of-territory business sources of competition include the sources identified above as well as the ILEC in each market, which enjoys competitive advantages, including its wireline connection to virtually all of the customers and potential customers of Wireline's CLEC business, its established brand name and its substantial financial resources. Wireline's CLEC business is typically required to discount services to win potential customers. Further, this business may be negatively impacted if it cannot provide levels of bandwidth prospective customers demand due in large part to lack of availability of IP-based wholesale services at competitive prices. In the future, TDS expects the number of its physical access lines served to continue to be adversely affected by wireless voice and broadband substitution, by cable company competition, and potentially by fiber overbuilders.

Some of the specific risks presented by certain Wireline competitors include:

- Cable companies - continued deployment of broadband technologies such as DOCSIS 3.0 and 3.1 and their further evolution that substantially increase broadband speeds, and offering these speeds to customers at relatively low prices, including speed upgrades for no additional charge, competition for video services, and bundling of wireless services.
- Wireless - the trend of customers "substituting" their wireline voice and broadband connections with a wireless device and wireless voice and broadband services continues.
- RBOCs - continue to be formidable competitors given their full suite of services, experience and strong financial resources.
- VoIP providers - are able to offer voice service at a very low price point.
- Fiber overbuilders - municipalities, neighboring ILECs, or other providers offering the same or higher data speeds at similar or lower price points.
- Other providers - competition to IPTV and broadband from broadcast television, satellite providers and on-line video services.

TDS' Cable business also provides broadband, video and voice services. Cable's business faces sources of competition similar to the Wireline business, but with some differences. In particular, Cable does not typically compete against another cable company for broadband services, but competes against fiber overbuilders and ILECs that primarily offer DSL-based services and may also offer fiber-based and other premium and enhanced data services. Cable provides VoIP services rather than traditional wireline voice connections and faces competition from other VoIP providers, but also faces competition from ILECs providing traditional wireline voice connections. With respect to video, Cable also competes against broadcast television, direct broadcast satellite providers, on-line video services, and wireline providers which have begun to upgrade their networks to provide video services in addition to voice and high-speed internet access services.

Sources of competition for HMS' business primarily include large technology companies, as well as smaller independent firms that focus on mid-market companies. In addition, new entrants may emerge and grow rapidly creating additional sources of competition or companies may choose to insource their IT services. The IT services market is large and complex, with a diverse array of segments in which performance and market dynamics vary considerably. As a result of these dynamics the IT services market is a highly competitive environment. Due to the competitive environment, in order to win new customer engagements, HMS may be required to assume greater potential contractual risk obligations, such as risks relating to the consequences of data breaches or unauthorized disclosure of confidential customer information. In the event of such incidents, the HMS business could be materially adversely affected.

If TDS does not adapt to compete effectively in such a highly competitive environment, such competitive factors could result in product, service, pricing or cost disadvantages and could have an adverse effect on TDS' business, financial condition or results of operations.

**2) A failure by TDS to successfully execute its business strategy (including planned acquisitions, spectrum acquisitions, fiber builds, divestitures and exchanges) or allocate resources or capital effectively could have an adverse effect on TDS' business, financial condition or results of operations.**

The successful execution of business strategies, the optimal allocation within TDS' portfolio of assets and optimal capital allocation decisions depend on various factors, many of which are not in TDS' control. TDS' ability to achieve projected financial results by implementing and executing its business strategies and optimally allocating its assets and capital could be affected by such factors. Such factors include but are not limited to pricing practices by competitors, relative scale, purchasing power, roaming and other strategic agreements, wireless device availability, timing of introduction of wireless devices, access to spectrum, emerging technologies, programming and retransmission costs, mid-market demand for cloud and hosted services, changes in tax or import tariff regulations and other factors. In addition, there is no assurance that U.S. Cellular's, TDS Telecom's or HMS' strategies will be successful. Even if TDS executes its business strategies as intended, such strategies may not be successful in the long term at achieving growth in customers, revenues, net income, or generating portfolio returns greater than TDS' cost of capital. In addition, if at some point a change in asset allocation is desired, TDS may be unable to alter asset allocation to meet growth and return goals in a timely and efficient manner. In such case, there would be an adverse effect on TDS' business, financial condition and results of operations. TDS' current forecast indicates that TDS will not achieve a return on capital that exceeds its cost of capital in the foreseeable future. See Item 1. Business for additional information on TDS' business strategy.

U.S. Cellular is a regional wireless carrier, but competes primarily against much larger national wireless carriers with much greater resources. Its business strategy in attempting to attract and retain wireless customers through a value proposition comprised of a high-quality network, outstanding customer service, and competitive devices, plans and pricing, all provided with a local focus has not resulted in, and in the future may not result in, performance that achieves returns in line with or above its cost of capital. U.S. Cellular's current forecast indicates that U.S. Cellular will not achieve a return on capital that exceeds its cost of capital in the foreseeable future. U.S. Cellular also might be unable to adopt technologies, services and products as fast as its larger competitors. As a result, consumers who are eager to adopt new technologies, services and products more quickly may select U.S. Cellular's competitors rather than U.S. Cellular as their service provider. To the extent that U.S. Cellular does not attract or retain these types of customers, U.S. Cellular could be at a competitive disadvantage and have a customer base that generates lower profit margins relative to its competition.

Wireline and Cable each provide broadband, video and voice services and, as a result, have certain risks in common, but also have certain risks that are specific to that segment. Both Wireline and Cable strive to offer the most competitive broadband connection in its markets in order to capitalize on data growth and the customers' need for higher broadband speeds. Wireline's DSL-based services have several limitations compared to DOCSIS technologies employed by cable companies. Where it is cost-effective, Wireline is deploying fiber technology which offers advantages over cable to provide broadband. Wireline is also faced with other significant challenges, including customer connection and access minute declines in traditional wireline voice services as well as decreases in intercarrier compensation received for the use of its networks. Wireline must continually adjust its cost structure as a result of these challenges. A failure to develop and maintain an efficient cost structure would have an adverse effect on the Wireline and Cable businesses. The inability to execute timely on its fiber deployments could have an adverse effect on Wireline's business. In addition, failure to deploy plant upgrades and new technology could result in opportunities for overbuilders to move into Wireline and Cable territories that are not upgraded and build similar or superior networks, which could have an adverse effect on TDS' business. Wireline and Cable's current forecasts indicate that Wireline and Cable will not achieve returns on capital that exceed their costs of capital in the foreseeable future.

Wireline's IPTV product and Cable's video service have significant costs and risks relating to programming and retransmission. Such costs have been increasing and these costs may not be able to be fully passed on to customers. In addition, both businesses are limited in their ability to obtain programming at favorable costs and terms due to their small scale. If Wireline or Cable fails to negotiate agreeable costs or terms with certain broadcast TV stations and cable networks, any resulting service interruptions could have an adverse effect on TDS' business. Further, changes in consumer behavior and/or new technologies are causing consumers to reduce or cancel their video services and instead seek to obtain video on demand over the internet or through new technologies. A wide range of regulatory or other issues also affect both businesses, including matters pertaining to set-top boxes, equipment connectivity, content regulation, closed captioning, pole attachments, privacy, copyright, technical standards, and municipal entry into video and broadband.

Although Cable's business development strategy includes evaluating opportunities for possible further acquisitions of desirable cable companies on attractive terms to increase the scale of its business, there is no assurance that such acquisitions will be available, or that this strategy will be successful.

HMS provides a wide range of IT services and has risks that are not shared with the other business segments. HMS' business strategy is to create, deliver and support a platform of IT products and services tailored for mid-sized business customers. HMS' current forecast indicates that it will not achieve a return on capital that exceeds its cost of capital in the foreseeable future. The HMS business is faced with a number of risks in its pursuit of its strategy, including: the rate of outsourcing IT needs and moving to the cloud by mid-sized business customers; the ability to sell recurring revenue services; the ability to attract new or retain existing customers; whether potential customers ascribe sufficient value to HMS' more customized cloud and hosted services compared to more commodity based offerings of larger competitors; HMS' limited scale when competing with larger competitors; and the impact of IT wage inflation.

A failure by TDS to execute its business strategies successfully or to allocate resources or capital optimally could have an adverse effect on TDS' businesses, financial condition or results of operations.

**3) Uncertainty in TDS' future cash flow and liquidity or the inability to access capital, deterioration in the capital markets, other changes in TDS' performance or market conditions, changes in TDS' credit ratings or other factors could limit or restrict the availability of financing on terms and prices acceptable to TDS, which could require TDS to reduce its construction, development or acquisition programs, reduce the amount of wireless spectrum licenses acquired, and/or reduce or cease share repurchases and/or the payment of dividends.**

TDS and its subsidiaries operate capital-intensive businesses. Historically, TDS has used internally-generated funds and also has obtained substantial funds from external sources for general corporate purposes. In the past, TDS' existing cash and investment balances, funds available under its revolving credit and receivables securitization agreements, funds from other financing sources, including term loans and other long-term debt, and cash flows from operating and certain investing and financing activities, including sales of assets or businesses, provided sufficient liquidity and financial flexibility for TDS to meet its normal day-to-day operating needs and debt service requirements, to finance the build-out and enhancement of markets and to fund acquisitions. There is no assurance that this will be the case in the future. It may be necessary from time to time to increase the amount of permissible borrowings under the existing revolving credit and receivables securitization agreements, to put in place new credit agreements, or to obtain other forms of financing in order to fund potential expenditures. TDS' liquidity would be adversely affected if, among other things, TDS is unable to obtain short or long-term financing on acceptable terms, TDS makes significant spectrum license purchases, TDS makes significant capital investments, TDS makes significant business acquisitions, the Los Angeles SMSA Limited Partnership (LA Partnership) discontinues or significantly reduces distributions compared to historical levels, or Federal USF and/or other regulatory support payments decline.

TDS' credit rating currently is sub-investment grade. TDS has incurred negative free cash flow (defined as Cash flows from operating activities less Cash paid for additions to property, plant and equipment) at times in the past and this could occur in the future. TDS may require substantial additional capital for, among other uses, funding day-to-day operating needs including working capital, acquisitions of providers of cable, wireless or wireline telecommunications services, IT services or other businesses, spectrum license or system acquisitions, capital expenditures, debt service requirements, the repurchase of shares, the payment of dividends, or making additional investments. There can be no assurance that sufficient funds will continue to be available to TDS or its subsidiaries on terms or at prices acceptable to TDS. Insufficient cash flows from operating activities, changes in TDS' credit ratings, defaults of the terms of debt or credit agreements, uncertainty of access to capital, deterioration in the capital markets, reduced regulatory capital at banks which in turn limits their ability to borrow and lend, other changes in the performance of TDS or in market conditions or other factors could limit or restrict the availability of financing on terms and prices acceptable to TDS, which could require TDS to reduce its acquisition, capital expenditure and business development programs, reduce the acquisition of wireless spectrum licenses, and/or reduce or cease share repurchases and/or the payment of dividends. TDS cannot provide assurance that circumstances that could have a material adverse effect on its liquidity or capital resources will not occur. Any of the foregoing would have an adverse impact on TDS' businesses, financial condition or results of operations.

**4) TDS has a significant amount of indebtedness which could adversely affect its financial performance and in turn adversely affect its ability to make payments on its indebtedness, comply with terms of debt covenants and incur additional debt.**

TDS has a significant amount of indebtedness and may need to incur additional indebtedness. TDS' level of indebtedness could have important consequences. For example, it (i) may limit TDS' ability to obtain additional financing for working capital, capital expenditures or general corporate purposes, particularly if the ratings assigned to its debt securities by rating organizations are revised downward; (ii) will require TDS to dedicate a substantial portion of its cash flow from operations to the payment of interest and principal on its debt, thereby reducing the funds available to TDS for other purposes including expansion through acquisitions, capital expenditures, marketing spending and expansion of its business; and (iii) may limit TDS' flexibility to adjust to changing business and market conditions and make TDS more vulnerable to a downturn in general economic conditions as compared to TDS' competitors. TDS' ability to make scheduled payments on its indebtedness or to refinance it will depend on its financial and operating performance which, in turn, is subject to prevailing economic and competitive conditions and other factors beyond its control. In addition, TDS' leverage may put it at a competitive disadvantage to some of its competitors that are not as leveraged.

The TDS and U.S. Cellular revolving credit agreements, the TDS and U.S. Cellular term loan agreements and the U.S. Cellular receivables securitization agreement require TDS or U.S. Cellular, as applicable, to comply with certain affirmative and negative covenants, including certain financial covenants. Depending on the actual financial performance of TDS and U.S. Cellular, there is a risk that TDS and/or U.S. Cellular could fail to satisfy the required financial covenants. If TDS or U.S. Cellular breach a financial or other covenant of any of these agreements, it would result in a default under that agreement, and could involve a cross-default under other debt instruments. This could in turn cause the affected lenders to accelerate the repayment of principal and accrued interest on any outstanding debt under such agreements and, if they choose, terminate the agreement. If appropriate, TDS and U.S. Cellular may request the applicable lenders for an amendment of financial covenants in the TDS and/or U.S. Cellular agreements, in order to provide additional financial flexibility to TDS and U.S. Cellular, and may also seek other changes to such agreements. There is no assurance that the lenders will agree to any amendments. If the lenders agree to amendments, this may result in additional payments or higher interest rates payable to the lenders and/or additional restrictions. Restrictions in such debt instruments may limit TDS' operating and financial flexibility.

As a result, TDS' level of indebtedness, restrictions contained in debt instruments and/or possible breaches of covenants, defaults, and acceleration of indebtedness could have an adverse effect on TDS' business, financial condition, revenues, results of operations and cash flows.

**5) Changes in roaming practices or other factors could cause TDS' roaming revenues to decline from current levels, roaming expenses to increase from current levels and/or impact TDS' ability to service its customers in geographic areas where TDS does not have its own network, which could have an adverse effect on TDS' business, financial condition or results of operations.**

TDS' revenues include roaming revenues related to the use of TDS' network by other wireless carriers' customers who travel within TDS' coverage areas. Changes in FCC rules or actions, industry practices or the network footprints of carriers due to mergers, acquisitions or network expansions could have an adverse effect on TDS' roaming revenues. For example, consolidation among other carriers which have network footprints that currently overlap TDS' network could decrease the amount of roaming revenues for TDS.

Similarly, TDS' wireless customers can access another carrier's network automatically only if the other carrier allows TDS' customers to roam on its network. TDS relies on roaming agreements with other carriers to provide roaming capability to its customers in areas of the U.S. and internationally outside of its service areas and to improve coverage within selected areas of TDS' network footprint. Such agreements cover traditional voice services as well as data services. Although TDS currently has long-term roaming agreements with certain other carriers, these agreements generally are subject to renewal and termination if certain events occur. FCC rules and orders impose certain requirements on wireless carriers to offer certain roaming arrangements to other carriers. However, carriers frequently disagree on what is required. Although TDS has entered into roaming agreements with national carriers, there is no assurance that TDS will be able to maintain these agreements and/or enter into new agreements with other carriers to provide roaming services or that it will be able to do so on reasonable or cost-effective terms.

Some competitors may be able to obtain lower roaming rates than TDS is able to obtain because they have larger data usage or call volumes or may be able to reduce roaming charges by providing service principally over their own networks. In addition, the quality of service that a wireless carrier delivers to a TDS customer while roaming may be inferior to the quality of service TDS provides, the price charged by TDS for an international roaming call may not be competitive with prices other wireless carriers charge for such call, TDS' customers may not be able to use some of the advanced features that TDS customers enjoy when making calls on TDS' network (e.g., voicemail notification or data applications), and TDS customers' service experience may be negatively impacted, particularly when accessing data services, upon reaching a defined allotment of high-speed usage. TDS' rate of adoption of new technologies, such as those enabling high-speed data and voice services, could affect its ability to enter into or maintain roaming agreements with other carriers. In addition, TDS' wireless technology may not be compatible with technologies used by other carriers, which may limit the ability of TDS to enter into voice or data roaming agreements with such other carriers. Carriers whose customers roam on TDS' network could switch their business to new operators, limit their high-speed usage or, over time, move traffic to their own networks. Changes in roaming usage patterns, rates for roaming usage, or roaming relationships with other carriers could have an adverse effect on TDS' roaming revenues and/or expenses.

To the extent that other carriers expand their networks in TDS' service areas, the roaming arrangements between TDS and these other carriers could become less strategic for them. That is, these other carriers will have fewer or less extensive geographic areas where roaming services are required by their customers and, as a result, the roaming arrangements could become less critical to serving their customer base. This presents a risk to TDS in that, to the extent TDS is not able to enter into economically viable roaming arrangements with these other carriers, this could impact TDS' ability to service its customers in geographic areas where TDS does not have its own network.

If TDS' roaming revenues decline, or its roaming expenses increase, or if TDS is unable to obtain or maintain roaming agreements with other carriers that contain pricing and other terms that are competitive and acceptable to TDS and that satisfy TDS' quality and interoperability requirements, its business, financial condition or results of operations could be adversely affected.

**6) A failure by TDS to obtain access to adequate radio spectrum to meet current or anticipated future needs and/or to accurately predict future needs for radio spectrum could have an adverse effect on TDS' business, financial condition or results of operations.**

TDS' wireless business depends on the ability to use portions of the radio spectrum licensed by the FCC. TDS could fail to obtain access to sufficient spectrum capacity, including spectrum needed to support 5G technology, in new or existing markets, whether through FCC auctions or other transactions, in order to meet the anticipated spectrum requirements associated with increased demand for existing services, especially increases in customer demand for data services, and to enable deployment of next-generation services. TDS believes that this increased demand for data services reflects a trend that will continue for the foreseeable future. Data usage, including usage under unlimited plans, could exceed current forecasts resulting in a need for increased investment in spectrum or network. TDS could fail to accurately forecast its future spectrum requirements considering changes in plan offerings, customer usage patterns, technology requirements and the expanded demands of new services. Such a failure could have an adverse impact on the quality of TDS' services or TDS' ability to roll out such future services in some markets, or could require that TDS curtail existing services in order to make spectrum available for next-generation services. Spectrum constrained providers could be effectively capped in increasing market share. As spectrum constrained providers gain customers, they use up their network capacity. Since they lack spectrum, they can respond to demand only by adding cell sites, which is capital intensive, adds fixed operating costs, is limited by zoning considerations, and ultimately may not be cost effective.

TDS may acquire access to spectrum through a number of alternatives, including acquisitions, exchanges and participation in spectrum auctions. TDS may participate in spectrum auctions conducted by the FCC in the future. As required by law, the FCC has conducted auctions for wireless spectrum licenses to use some parts of the radio spectrum. The decision to conduct auctions, and the determination of what spectrum frequencies will be made available for auction and the determination of geographic size of wireless spectrum licenses, are made by the FCC pursuant to laws that it administers. The FCC may not be able to allocate spectrum sufficient to meet the demands of all those wishing to obtain wireless spectrum licenses for new market entry or to expand their spectrum holdings to meet the expanding demand for data services or to address other spectrum constraints. Due to factors such as geographic size of wireless spectrum licenses and auction bidders that may raise prices beyond acceptable levels, TDS may not be successful in FCC auctions in obtaining access to the spectrum that it believes is necessary to implement its business and technology strategies.

In addition, newly auctioned spectrum may not be compatible with existing spectrum, and vendors may not create suitable products to use such spectrum. Further, access to wireless spectrum licenses won in FCC auctions may not be available on a timely basis. Such access is dependent upon the FCC actually granting wireless spectrum licenses won, which can be delayed for various reasons. Furthermore, newly licensed spectrum may not be available for immediate use since the radio operations of incumbent users, including in some cases government agencies, may need to be relocated to other portions of the radio spectrum, and/or the newly licensed spectrum may be subject to sharing and coordination obligations. TDS also may seek to acquire radio spectrum through purchases and exchanges with other licensees. However, TDS may not be able to acquire sufficient spectrum through these types of transactions, and TDS may not be able to complete any of these transactions on favorable terms.

**7) To the extent conducted by the FCC, TDS may participate in FCC auctions for additional spectrum or for funding in certain Universal Service programs in the future directly or indirectly and, during certain periods, will be subject to the FCC's anti-collusion rules, which could have an adverse effect on TDS.**

From time to time, the FCC has conducted auctions through which additional spectrum is made available for the provision of wireless services, or through which universal service support funding is dispersed. TDS has participated in such auctions in the past and may participate in other auctions conducted by the FCC in the future. FCC anti-collusion rules place certain restrictions on business communications and disclosures by participants in an FCC auction. These anti-collusion rules may restrict the normal conduct of TDS' business, TDS' acquisition, divestiture, exchange and other corporate development activity and/or disclosures by TDS relating to an FCC auction. The restrictions could have an adverse effect on TDS' business, financial condition or results of operations.

**8) Failure by TDS to timely or fully comply with any existing applicable legislative and/or regulatory requirements or changes thereto could adversely affect TDS' business, financial condition or results of operations.**

TDS' operations are subject to varying degrees of regulation by the FCC, state public utility commissions and other federal, state and local regulatory agencies and legislative bodies. Changes in the administration of the various regulatory agencies and legislative bodies could result in different policies with respect to many federal laws and regulations, including but not limited to changes to fiscal and tax policies, trade policies and tariffs on import goods. New or amended regulatory requirements could increase TDS' costs and divert resources from other initiatives. Adverse decisions, increased regulation, or changes to existing regulation by regulatory bodies could negatively impact TDS' operations by, among other things, permitting greater competition or limiting TDS' ability to engage in certain sales or marketing activities, or retention and recruitment of skilled resources. New regulatory mandates or enforcement may require unexpected or increased capital expenditures, lost revenues, higher operating expenses or other changes. Court decisions and rulemakings could have a substantial impact on TDS' operations, including rulemakings on broadband access to the internet, intercarrier access compensation, state and federal support funding, and treatment of VoIP traffic or unbundled network elements. Litigation and different objectives among federal and state regulators could create uncertainty and delay TDS' ability to respond to new regulations. Further, wireless spectrum licenses are subject to renewal by the FCC and could be revoked in the event of a violation of applicable laws or regulatory requirements. Also, although FCC rules relating to net neutrality have been repealed, some state legislators and regulators are seeking to or have already enacted state laws to reinstate net neutrality regulations and other rules. Interpretation and application of these rules, including conflicts between federal and state laws, may result in additional costs for compliance and may limit opportunities to derive profits from certain business practices or resources. For additional information related to TDS' regulatory environment, see Risk Factor Number 15 below and "Regulatory Matters" in Exhibit 13 to this Form 10-K.

TDS attempts to timely and fully comply with all regulatory requirements. However, TDS is unable to predict the future actions of the various legislative and regulatory bodies that govern TDS, but such actions could have adverse effects on TDS' business. Any failure by TDS to timely or fully comply with any regulatory requirements could adversely affect TDS' financial condition, results of operations or ability to do business.

**9) An inability to attract people of outstanding talent throughout all levels of the organization, to develop their potential through education and assignments, and to retain them by keeping them engaged, challenged and properly rewarded could have an adverse effect on TDS' business, financial condition or results of operations.**

TDS' businesses are highly technical and competition for skilled talent in the telecommunications and IT services industries is intense. Due to competition and/or limited supply for qualified management, technical, sales and other personnel, there can be no assurance that TDS will be able to continue to attract and/or retain people of outstanding potential for the development of its business. The loss of the services of existing key personnel due to competition and/or retirements as well as the failure to recruit additional qualified personnel in a timely manner could have an adverse effect on TDS' business, financial condition or results of operations.

The market for highly skilled leaders in the telecommunications industry also is extremely competitive. The future success of TDS and its businesses depends in substantial part on TDS' ability to recruit, hire, motivate, develop, and retain talented and highly skilled leaders for all areas of its organization. The loss of any of TDS' key leaders could have an adverse effect on its business, financial condition or results of operations. Effective succession planning is also important to TDS' long-term success. Failure to ensure effective transfer of knowledge and smooth transition involving key employees could also adversely affect TDS' business, financial condition and results of operations.

**10) TDS' assets and revenue are concentrated primarily in the U.S. telecommunications industry. Consequently, its operating results may fluctuate based on factors related primarily to conditions in this industry.**

The U.S. telecommunications industry is facing significant change and an uncertain operating environment. TDS' focus on the U.S. telecommunications industry, together with its positioning relative to larger competitors with greater resources within the industry, may represent increased risk for investors due to the lack of diversification. This could have an adverse effect on TDS' ability to attain and sustain long-term, profitable revenue growth and could have an adverse effect on its business, financial condition or results of operations.

**11) TDS' smaller scale relative to larger competitors that may have greater financial and other resources than TDS could cause TDS to be unable to compete successfully, which could adversely affect its business, financial condition or results of operations.**

There has been a trend in the telecommunications, IT services and related industries towards consolidation of service providers through acquisitions, reorganizations and joint ventures. This trend could continue, leading to larger competitors over time. TDS has smaller scale efficiencies compared to larger competitors. TDS may be unable to compete successfully with larger companies that have substantially greater financial, technical, marketing, sales, purchasing and distribution resources or that offer more services than TDS, which could adversely affect TDS' revenues and costs of doing business. Specifically, TDS' smaller scale relative to most of its competitors could have the following impacts, among others:

- Low profit margins and returns on investment that are below TDS' cost of capital;
- Increased operating costs due to lack of leverage with vendors;
- Inability to successfully deploy 5G or other wireless technologies, or to realize significant incremental revenues from their deployment;
- Limited opportunities for strategic partnerships as potential partners are focused on wireless, wireline, cable and IT services companies with greater scale and scope;
- Limited access to content, as well as limited ability to obtain acceptably priced content and programming;
- Limited ability to influence industry standards;
- Reduced ability to invest in research and development of new services and products;
- Vendors may deem TDS non-strategic and not develop or sell services and products to TDS, particularly where technical requirements differ from those of larger companies;
- Limited access to intellectual property; and
- Other limited opportunities such as for software development or third party distribution.

TDS' telecommunications businesses increasingly depend on access to content for data and access to new wireless devices being developed by vendors. TDS' ability to obtain such access depends in part on other parties. If TDS is unable to obtain timely access to new content or wireless devices being developed by vendors, its business, financial condition or results of operations could be adversely affected.

As a result of the foregoing, TDS' smaller scale relative to larger competitors could adversely affect TDS' business, financial condition or results of operations.

**12) Changes in various business factors, including changes in demand, consumer preferences and perceptions, price competition, churn from customer switching activity and other factors, could have an adverse effect on TDS' business, financial condition or results of operations.**

Changes in any of several factors could have an adverse effect on TDS' business, financial condition or results of operations. These factors include, but are not limited to:

- Demand for or usage of services, particularly data services;
- Consumer preferences, including internet speed and type of wireless devices;
- Consumer perceptions of network quality and performance;
- Consumer expectations for self-service options through digital means;
- The pricing of services, including an increase in price-based competition;
- Access to and cost of programming;
- The overall size and growth rate of TDS' customer base;
- Penetration rates;
- Churn rates;
- Selling expenses;
- Net customer acquisition and retention costs;
- Customers' ability to pay for services and the potential impact on bad debts expense;
- Roaming agreements and rates;
- Third-party vendor support;
- Capacity constraints;
- The mix of services and products offered by TDS and purchased by customers;
- The costs of providing services and products; and
- Mid-market demand for cloud and hosted services.

**13) Advances or changes in technology could render certain technologies used by TDS obsolete, could put TDS at a competitive disadvantage, could reduce TDS' revenues or could increase its costs of doing business.**

The telecommunications and IT services industries are experiencing significant changes in technologies and services expected by customers. In the telecommunications industry, this is evidenced by evolving industry standards, ongoing improvements in the capacity and quality of digital technology, shorter development cycles for new services and products, and enhancements and changes in end-user requirements and preferences. Widespread deployment of new technologies, including 5G and VoLTE technology, could cause the technology used on TDS' wireless networks and devices, including CDMA technology, traditional circuit-switched or IP-based networks, and cable networks to become less competitive or obsolete. Also, high-speed wireless networks (wireless broadband) represent a product offering and opportunity for TDS' wireless business, but also represent a risk for TDS' Wireline and Cable businesses as customers may elect to substitute their wireline or cable broadband connection with wireless broadband. Further, fixed-mobile convergence services that combine wireline broadband services with mobile services represent a competitive threat. If the trend toward convergence continues, TDS is at a competitive disadvantage to larger competitors, including the national wireless carriers and other potential large new entrants with much greater financial and other resources in adapting to such convergence. In addition, the IT services market is characterized by rapidly changing technology and services. Future technological changes or advancements may enable other technologies to equal or exceed TDS' current levels of service and render its system infrastructure obsolete. TDS may not be able to respond to such changes and implement new technology on a timely or cost-effective basis, which could reduce its revenues or increase its costs of doing business. If TDS cannot keep pace with these technological changes or other changes in the telecommunications or IT services industries over time, its financial condition, results of operations or ability to do business could be adversely affected.

**14) Complexities associated with deploying new technologies present substantial risk and TDS' investments in unproven technologies may not produce the benefits that TDS expects.**

TDS' wireless business has completed the transition to 4G LTE and has implemented 4G LTE as well as VoLTE roaming agreements with national carriers. VoLTE technology is now available to nearly 70% of U.S. Cellular's subscribers, and deployments in additional operating markets are expected in 2020 and 2021. In addition, TDS' wireless business has begun to deploy 5G technology in its network and expects to launch commercial 5G services in selected markets in 2020. The deployment of 5G technology will require substantial investments in TDS' wireless networks to remain competitive in the industry. Transition to 5G or other new technologies involves significant time, cost and risk, and anticipated products and revenues may not be realized. Furthermore, the wireless business experiences rapid technology changes and new services and products. If TDS fails to effectively deploy new wireless technologies, services or products on a timely basis, this could have an adverse impact on TDS' business, financial condition and results of operations.

TDS' Wireline business is deploying fiber-to-the-home technology, advanced wireline, broadband, and TDS TV+ services through fiber-to-the-node, copper bonding and vectoring technology. A significant amount of the product development and integration risks are borne by TDS. Further, the simultaneous rollout of these advanced services and technologies increases the execution risk. If TDS fails to effectively deploy new technologies and products on a timely basis, this could have an adverse impact on TDS' business, financial condition and results of operations.

Cable's business is also subject to complexities associated with deploying new technologies, such as DOCSIS 3.1, and involves substantial risk, including rapid technology changes. If Cable's business does not respond appropriately to technology changes, its competitive position may be adversely affected.

The HMS business is also continuously evaluating and deploying advances in technology relating to IT services. If HMS fails to effectively deploy new technologies and products on a timely basis, this could have an adverse impact on its business, financial condition and results of operations.

Furthermore, it is not certain that TDS' investments in various new, unproven technologies and the related service and product offerings will be effective. The markets for some of these services, products and solutions may still be emerging and the overall potential for these markets, including revenues to be realized, may be uncertain. If customer demand for these new services, products and solutions does not develop as expected, TDS' business, financial condition or results of operations could be adversely affected.

**15) TDS receives regulatory support and is subject to numerous surcharges and fees from federal, state and local governments, and the applicability and the amount of the support and fees are subject to great uncertainty, which could have an adverse effect on TDS' business, financial condition or results of operations.**

Telecommunications companies may be designated by states, or in some cases by the FCC, as an Eligible Telecommunications Carrier (ETC) to receive universal service support payments if they provide specified services in "high cost" areas. U.S. Cellular has been designated as an ETC in certain states and received $92 million in high cost support for service to high cost areas in 2019. TDS Telecom also received support under the Connect America Fund support program. In 2019, TDS Telecom received $86 million under all federal regulatory support programs.

In 2011, the FCC released an order (USF Order) to: reform its universal service and intercarrier compensation mechanisms; establish a new, broadband-focused support mechanism; and propose further rules to advance reform. For a discussion of the USF Order and risks to such regulatory support, see "Regulatory Matters - FCC Mobility Fund/5G Fund" in Exhibit 13 to this Form 10-K, which is incorporated by reference herein. If the foregoing regulatory support is reduced from current levels, this could have an adverse effect on TDS' business, financial condition or operating results.

In 2016, the FCC released an order modifying the existing USF program under which TDS Telecom receives annual support revenue in exchange for meeting defined build-out obligations. Build-out obligations under this program will require capital expenditures which are expected to be significant. There is no assurance that these build-outs will be fully funded by the support revenue received under the program. In addition, failure to meet the defined build-out obligations could result in reduced support revenue. For developments that will result in changes to the FCC's Alternative Connect America Cost Model (A-CAM) program see "Regulatory Matters - FCC Connect America Fund," in Exhibit 13 to this Form 10-K, which is incorporated by reference herein.

Telecommunications providers pay a variety of surcharges and fees on their gross revenues from interstate and intrastate services, including USF fees and common carrier regulatory fees.

The division of services between interstate services and intrastate services, including the divisions associated with Federal USF fees, is a matter of interpretation and in the future may be contested by the FCC or state authorities. The FCC in the future also may change the basis on which Federal USF fees are charged. The Federal government and many states also apply transaction-based taxes to sales of telecommunications services and products and to purchases of telecommunications services from various carriers. In addition, state regulators and local governments have imposed and may continue to impose various surcharges, taxes and fees on telecommunications services. The applicability of these surcharges and fees to TDS' services is uncertain in many cases and jurisdictions may contest whether TDS has assessed and remitted those monies correctly. Periodically, state and federal regulators may increase or change the surcharges and fees TDS currently pays. In some instances, TDS passes through these charges to its customers. However, Congress, the FCC, state regulatory agencies or state legislatures may limit the ability to pass through transaction-based tax liabilities, regulatory surcharges and regulatory fees imposed on TDS to customers. TDS may or may not be able to recover some or all of those taxes from its customers and the amount of taxes may deter demand for its services or increase its cost to provide service which could have an adverse effect on its business, financial condition or operating results.

**16) Changes in TDS' enterprise value, changes in the market supply or demand for wireless spectrum licenses, wireline or cable markets or IT service providers, adverse developments in the businesses or the industries in which TDS is involved and/or other factors could require TDS to recognize impairments in the carrying value of its wireless spectrum licenses, goodwill, franchise rights and/or physical assets or require re-evaluation of the indefinite-lived nature of such assets.**

A large portion of TDS' assets consists of indefinite-lived intangible assets in the form of wireless spectrum licenses and goodwill. TDS also has substantial investments in long-lived assets such as property, plant and equipment and franchise rights. TDS reviews its wireless spectrum licenses, goodwill and other long-lived assets for impairment annually or whenever events or circumstances indicate that the carrying amount of such assets may not be fully recoverable. An impairment loss may need to be recognized to the extent the carrying value of the assets exceeds the fair value of such assets. The amount of any such impairment loss could be significant and could have an adverse effect on TDS' reported financial results for the period in which the loss is recognized. The estimation of fair values requires assumptions by management about factors that are uncertain. Different assumptions for these factors could create materially different results.

**17) Costs, integration problems or other factors associated with acquisitions, divestitures or exchanges of properties or wireless spectrum licenses and/or expansion of TDS' businesses could have an adverse effect on TDS' business, financial condition or results of operations.**

As part of TDS' operating strategy, TDS from time to time may be engaged in the acquisition, divestiture or exchange of companies, businesses, strategic properties, wireless spectrum or other assets. TDS may change the markets in which it operates and the services that it provides through such acquisitions, divestitures and/or exchanges. In general, TDS may not disclose the negotiation of such transactions until a definitive agreement has been reached. These transactions commonly involve a number of risks, including:

- Identification of attractive companies, businesses, properties, spectrum or other assets for acquisition or exchange, and/or the selection of TDS' businesses or assets for divestiture or exchange;
- Competition for acquisition targets and the ability to acquire or exchange businesses at reasonable prices;
- Inability to make acquisitions that would achieve sufficient scale to be competitive with competitors with greater scale;
- Possible lack of buyers for businesses or assets that TDS desires to divest and the ability to divest or exchange such businesses or assets at reasonable prices;
- Ability to negotiate favorable terms and conditions for acquisitions, divestitures and exchanges;
- Significant expenditures associated with acquisitions, divestitures and exchanges;
- Risks associated with integrating new businesses or markets, including risks relating to cybersecurity and privacy;
- Ability to enter markets in which TDS has limited or no direct prior experience and competitors have stronger positions;
- Ability to integrate and manage TDS' different business operations and services, including wireless services, traditional wireline services, cable businesses and hosted and managed services businesses;
- Uncertain revenues and expenses associated with acquisitions, with the result that TDS may not realize the growth in revenues, anticipated cost structure, profitability, or return on investment that it expects;
- Difficulty of integrating the technologies, services, products, operations and personnel of the acquired businesses, or of separating such matters for divested businesses or assets;
- Diversion of management's attention;
- Disruption of ongoing business;
- Impact on TDS' cash and available credit lines for use in financing future growth and working capital needs;
- Inability to retain key personnel;
- Inability to successfully incorporate acquired assets and rights into TDS' service offerings;
- Inability to maintain uniform standards, controls, procedures and policies;

- Possible conditions to approval by the FCC, the Federal Trade Commission and/or the Department of Justice; and
- Impairment of relationships with employees, customers or vendors.

No assurance can be given that TDS will be successful with respect to its acquisition, divestiture or exchange strategies or initiatives. If TDS is not successful with respect to its acquisitions, divestitures or exchanges, its business, financial condition or results of operations could be adversely affected.

**18) A failure by TDS to complete significant network construction and systems implementation activities as part of its plans to improve the quality, coverage, capabilities and capacity of its network, support and other systems and infrastructure could have an adverse effect on its operations.**

TDS' business plan includes significant construction activities and enhancements to its network, support and other systems and infrastructure. Additionally, the deployment of new wireless technologies, including 5G, may require substantial investments in TDS' wireless network. As TDS deploys, expands and enhances its wireless network, it may need to acquire additional spectrum. Also, as TDS continues to build out and enhance its network, TDS must, among other things, continue to:

- Lease, acquire or otherwise obtain rights to cell and switch sites, transport facilities, data centers relating to IT services or other facilities;
- Obtain zoning variances or other local governmental or third-party approvals or permits for network construction;
- Complete and update the radio frequency design, including cell site design, frequency planning and network optimization, for each of TDS' wireless markets; and
- Improve, expand and maintain customer care, network management, billing and other financial and management systems.

Any difficulties encountered in completing these activities, as well as problems in vendor equipment availability, technical resources, system performance or system adequacy, could delay implementation and deployment of new technologies, delay expansion of operations and product capabilities in new or existing markets or result in increased costs. Failure to successfully deploy new technologies, including 5G, and/or build-out and enhance TDS' network, support facilities and other systems and infrastructure in a cost-effective manner, and in a manner that satisfies consumers' expectations, could have an adverse effect on TDS' business, business prospects, financial condition or results of operations.

TDS' Wireline and Cable businesses are devoting an increasing amount of capital for fiber overbuilds and out of territory construction. Difficulties in gaining acceptance from new market communities could cause delays or additional costs. Any difficulties in scaling up project management, engineering and construction resources could delay construction and expansion of operations in new or existing markets or result in increased costs. Failure to gain acceptance in new communities and successfully scale up resources could have an adverse effect on TDS' business, business prospects, financial condition or results of operations.

**19) Difficulties involving third parties with which TDS does business, including changes in TDS' relationships with or financial or operational difficulties of key suppliers or independent agents and third party national retailers who market TDS' services, could adversely affect TDS' business, financial condition or results of operations.**

TDS has relationships with independent agents and third party national retailers who market TDS' services. If such relationships are seriously harmed or if such parties experience financial difficulties, including bankruptcy, TDS' business, financial condition or results of operations could be adversely affected.

TDS depends upon certain vendors to provide it with equipment (including wireless devices), services or content that meet its quality and cost requirements on a timely basis to continue its network construction and upgrades, and to operate its business. TDS does not have operational or financial control over such key suppliers and has limited influence with respect to the manner in which these key suppliers conduct their businesses. If these key suppliers (i) experience financial difficulties or file for bankruptcy or experience other operational difficulties or (ii) deem TDS non-strategic and not develop or sell services and products to TDS, particularly where technical requirements differ from those of larger companies, they may not provide equipment, services or content to TDS on a timely basis, or at all, or they may otherwise fail to honor their obligations to TDS. Furthermore, consolidation among key suppliers may result in less competition and higher prices or the discontinuation of support for equipment owned by TDS.

Operation of TDS' supply chain and management of its inventory require accurate forecasting of customer growth and demand, which has become increasingly challenging. If overall demand for wireless devices or the mix of demand for wireless devices is significantly different than TDS' expectations, TDS could face inadequate or excess supplies of particular models of wireless devices. This could result in lost sales opportunities or an excess supply of inventory. Further, TDS' supply chain could be disrupted unexpectedly by raw material shortages, wars, natural disasters, disease or other factors. Any of these situations could adversely affect TDS' revenues, costs of doing business, results of operations or financial condition.

Also, TDS has other arrangements with third parties, including arrangements pursuant to which TDS outsources certain support functions to third party vendors. Operational problems associated with such functions, including any failure by the vendor to provide the required level of service under the outsourcing arrangements, including possible cyber-attacks or other breaches of network or information technology security or privacy, could have adverse effects on TDS' business, financial condition or results of operations.

**20) TDS has significant investments in entities that it does not control. Losses in the value of such investments could have an adverse effect on TDS' financial condition or results of operations.**

TDS has significant investments in entities that it does not control, including equity investments and interests in certain variable interest entities. TDS' interests in such entities do not provide TDS with control over the business strategy, financial goals, network build-out plans or other operational aspects of these entities. TDS cannot provide assurance that these entities will operate in a manner that will increase or maintain the value of TDS' investments, that TDS' proportionate share of income from these investments will continue at the current level in the future or that TDS will not incur losses from the holding of such investments. Losses in the values of such investments or a reduction in income from these investments could adversely affect TDS' financial condition or results of operations. In addition, certain investments have historically contributed significant cash flows to TDS and a reduction or suspension of such cash flows could adversely affect TDS' financial condition.

**21) A failure by TDS to maintain flexible and capable telecommunication networks or information technology, or a material disruption thereof, could have an adverse effect on TDS' business, financial condition or results of operations.**

TDS relies extensively on its telecommunication networks and information technology to operate and manage its businesses, process transactions and summarize and report results. These networks and technology are subject to obsolescence and, consequently, must be upgraded, replaced and/or otherwise enhanced over time. Enhancements must be more flexible and dependable than ever before. All of this is capital intensive and challenging. A failure by TDS to maintain flexible and capable telecommunication networks or information technology could have an adverse effect on TDS' business, financial condition or results of operations.

The increased provision of data services, including IPTV, has introduced significant new demands on TDS' network and also has increased complexities related to network management. As it relates to Wireline's networks, the transition to new IP-based networks from well-established time-division multiplexing networks requires new support tools and technician skills. Further, this transition requires the use of more leased facilities and partnerships which require enhanced network monitoring and controls. The IP-based networks also generally require more electronics on customers' premises which introduces more technical risks and makes diagnostics and repairs more difficult.

Further, the increased provision of data services on TDS' networks has created an increased level of risk related to quality of service. This is due to the fact that many customers increasingly rely on data communications to execute and validate transactions. As a result, redundancy and geographical diversity of TDS' network facilities are critical to providing uninterrupted service. Also, the speed of repair and maintenance procedures in the event of network interruptions is critical to maintaining customer satisfaction. TDS' ability to maintain high-quality, uninterrupted service to its customers is critical, particularly given the increasingly competitive environment and customers' ability to choose other service providers.

In addition, TDS' networks and information technology and the networks and information technology of vendors on which TDS relies are subject to damage or interruption due to various events, including power outages, computer, network and telecommunications failures, computer viruses, security breaches, hackers and other cyber security risks, catastrophic events, natural disasters, errors or unauthorized actions by employees and vendors, flawed conversion of systems, disruptive technologies and technology changes.

**22) TDS has experienced, and in the future expects to experience, cyber-attacks or other breaches of network or information technology security of varying degrees on a regular basis, which could have an adverse effect on TDS' business, financial condition or results of operations.**

TDS experiences cyber-attacks of varying degrees on a regular basis. These include cyber-attacks intended to wrongfully obtain private and valuable information, or cause other types of malicious events, including denial of service attacks which may cause TDS' services to be disrupted or unavailable to customers. TDS maintains administrative, technical and physical controls, as well as other preventative actions, to reduce the risk of security breaches. Although to date TDS has not discovered a material security breach, these efforts may be insufficient to prevent a material security breach stemming from future cyber-attacks. If TDS' or its vendors' networks and information technology are not adequately adapted to changes in technology or are damaged or fail to function properly, and/or if TDS' or its vendors' security is breached or otherwise compromised, TDS could suffer adverse consequences, including theft, destruction or other loss of critical and private data, including customer and/or employee data, interruptions or delays in its operations, inaccurate billings, inaccurate financial reporting, and significant costs to remedy the problems. If TDS' or its vendors' systems become unavailable or suffer a security breach of customer or other data, TDS may be required to expend significant resources and take various actions to address the problems, including notification under data privacy laws and regulations, may be subject to fines, sanctions and litigation, and its reputation and operating results could be adversely affected. Such events may also cause TDS to fail to satisfy service level commitments or trigger contractual obligations to customers of its IT services. TDS continues to experience denial of service attacks. Although TDS has implemented and continues to enhance its protection and recovery measures in response to such attacks, these efforts may be insufficient to prevent a material denial of service attack in the future. Any material disruption in TDS' networks or information technology, including security breaches, could have an adverse effect on TDS' business, financial condition or results of operations.

**23) Changes in facts or circumstances, including new or additional information, could require TDS to record adjustments to amounts reflected in the financial statements, which could have an adverse effect on TDS' business, financial condition or results of operations.**

The preparation of financial statements requires TDS to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. TDS bases its estimates on historical experience and on various other assumptions and information that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities. Actual results may differ from estimates under different assumptions or conditions. Changes in facts or circumstances, including new or additional information, could require TDS to record charges in excess of amounts accrued in the financial statements, if any, which could have an adverse effect on TDS' business, financial condition or results of operations.

**24) Disruption in credit or other financial markets, a deterioration of U.S. or global economic conditions or other events could, among other things, impede TDS' access to or increase the cost of financing its operating and investment activities and/or result in reduced revenues and lower operating income and cash flows, which would have an adverse effect on TDS' business, financial condition or results of operations.**

Disruptions in the credit and financial markets, declines in consumer confidence, increases in unemployment, declines in economic growth, increased tariffs on import goods and uncertainty about corporate earnings could have a significant negative impact on the U.S. and global financial and credit markets and the overall economy. Such events could have an adverse impact on financial institutions resulting in limited access to capital and credit for many companies. Furthermore, economic uncertainties make it very difficult to accurately forecast and plan future business activities. Changes in economic conditions, changes in financial markets, changes in U.S. trade policies, deterioration in the capital markets or other factors could have an adverse effect on TDS' business, financial condition, revenues, results of operations and cash flows.

**25) Settlements, judgments, restraints on its current or future manner of doing business and/or legal costs resulting from pending and future litigation could have an adverse effect on TDS' business, financial condition or results of operations.**

TDS is regularly involved in a number of legal and policy proceedings before the FCC and various state and federal courts. Such legal and policy proceedings can be complex, costly, protracted and highly disruptive to business operations by diverting the attention and energies of management and other key personnel.

The assessment of legal and policy proceedings is a highly subjective process that requires judgments about future events. Additionally, amounts ultimately received or paid upon settlement or resolution of litigation and other contingencies may differ materially from amounts accrued in the financial statements. Depending on a range of factors, these or similar proceedings could impose restraints on TDS' current or future manner of doing business. Such potential outcomes could have an adverse effect on TDS' financial condition, results of operations or ability to do business.

**26) The possible development of adverse precedent in litigation or conclusions in professional studies to the effect that radio frequency emissions from wireless devices and/or cell sites cause harmful health consequences, including cancer or tumors, or may interfere with various electronic medical devices such as pacemakers, could have an adverse effect on TDS' wireless business, financial condition or results of operations.**

Media reports and certain professional studies have suggested that certain radio frequency emissions from wireless devices may be linked to various health problems, including cancer or tumors, and may interfere with various electronic medical devices, including hearing aids and pacemakers. TDS is a party to and may in the future be a party to lawsuits against wireless carriers and other parties claiming damages for alleged health effects, including cancer or tumors, arising from wireless phones or radio frequency transmitters. Concerns over radio frequency emissions may discourage use of wireless devices or expose TDS to potential litigation. In addition, the FCC or other regulatory authorities may adopt regulations in response to concerns about radio frequency emissions. Any resulting decrease in demand for wireless services, costs of litigation and damage awards or regulation could have an adverse effect on TDS' business, financial condition or results of operations.

In addition, some studies have indicated that some aspects of using a wireless device while driving may impair a driver's attention in certain circumstances, making accidents more likely. These concerns could lead to potential litigation relating to accidents, deaths or serious bodily injuries, any of which could have an adverse effect on TDS' business, financial condition or results of operations.

**27) Claims of infringement of intellectual property and proprietary rights of others, primarily involving patent infringement claims, could prevent TDS from using necessary technology to provide products or services or subject TDS to expensive intellectual property litigation or monetary penalties, which could have an adverse effect on TDS' business, financial condition or results of operations.**

TDS faces possible effects of industry litigation relating to patents, other intellectual property or otherwise, that may restrict TDS' access to devices or network equipment critical to providing services to customers. If technology that TDS uses in products or services were determined by a court to infringe a patent or other intellectual property right held by another person, TDS could be precluded from using that technology and could be required to pay significant monetary damages. TDS also may be required to pay significant royalties to such person to continue to use such technology in the future. The successful enforcement of any intellectual property rights, or TDS' inability to negotiate a license for such rights on acceptable terms, could force TDS to cease using the relevant technology and offering services incorporating the technology. Any litigation to determine the validity of claims that TDS' products or services infringe or may infringe intellectual property rights of another, regardless of their merit or resolution, could be costly and divert the effort and attention of TDS' management and technical personnel. Regardless of the merits of any specific claim, TDS cannot give assurance that it would prevail in litigation because of the complex technical issues and inherent uncertainties in intellectual property litigation. Although TDS generally seeks to obtain indemnification agreements from vendors that provide it with technology, there can be no assurance that any claim of infringement will be covered by an indemnity or that TDS will be able to recover all or any of its losses and costs under any available indemnity agreements. Any claims of infringement of intellectual property and proprietary rights of others could prevent TDS from using necessary technology to provide its services or subject TDS to expensive intellectual property litigation or monetary penalties, which could have an adverse effect on TDS' business, financial condition or results of operations.

**28) Certain matters, such as control by the TDS Voting Trust and provisions in the TDS Restated Certificate of Incorporation, may serve to discourage or make more difficult a change in control of TDS or have other consequences.**

The TDS Restated Certificate of Incorporation and the TDS bylaws contain provisions which may serve to discourage or make more difficult a change in control of TDS without the support of the TDS Voting Trust and the TDS Board of Directors or without meeting various other conditions.

The TDS Restated Certificate of Incorporation authorizes the issuance of different series of common stock, which have different voting rights. The TDS Series A Common Shares have the power to elect approximately 75% (less one) of the directors and have ten votes per share in matters other than the election of directors. The TDS Common Shares (with one vote per share) vote as a separate group only with respect to the election of 25% (plus one) of the directors. In addition, the total percentage voting power in matters other than the election of directors of the Series A Common Shares and Common Shares are fixed, at 56.7% and 43.3%, respectively, subject to adjustment due to changes in the number of outstanding Series A Common Shares.

A substantial majority of the outstanding TDS Series A Common Shares are held in the TDS Voting Trust which expires on June 30, 2035. The TDS Voting Trust was created to facilitate the long-standing relationships among the trustees' certificate holders. By virtue of the number of shares held by them, the voting trustees have the power to elect eight directors based on the current TDS Board of Directors' size of twelve directors, and control a majority of the voting power of TDS with respect to matters other than the election of directors.

The existence of the TDS Voting Trust is likely to deter any potential unsolicited or hostile takeover attempts or other efforts to obtain control of TDS and may make it more difficult for shareholders to sell shares of TDS at higher than market prices. The trustees of the TDS Voting Trust have advised TDS that they intend to maintain the ability to keep or dispose of voting control of TDS.

The TDS Restated Certificate of Incorporation also authorizes the TDS Board of Directors to designate and issue TDS Undesignated Shares in one or more classes or series of preferred or common stock from time to time. Generally, no further action or authorization by the shareholders is necessary prior to the designation or issuance of the additional TDS Undesignated Shares authorized pursuant to the TDS Restated Certificate of Incorporation unless applicable laws or regulations would require such approval in a given instance. Such TDS Undesignated Shares could be issued in circumstances that would serve to preserve control of TDS' then existing management.

In addition, the TDS Restated Certificate of Incorporation includes a provision which authorizes the TDS Board of Directors to consider various factors, including effects on customers, taxes, and the long-term and short-term interests of TDS, in the context of a proposal or offer to acquire or merge the corporation, or to sell its assets, and to reject such offer if the TDS Board of Directors determines that the proposal is not in the best interests of the corporation based on such factors.

The provisions of the TDS Restated Certificate of Incorporation and the TDS bylaws and the existence of various classes of capital stock could prevent shareholders from profiting from an increase in the market value of their shares as a result of a change in control of TDS by delaying or preventing such change in control.

The provisions of the TDS Restated Certificate of Incorporation and the existence of different classes of capital stock and voting rights could result in the exclusion of TDS Common Shares from certain major stock indices at some point in the future, unless TDS is grandfathered by such stock indices or qualifies for some other exception.

**29) The market price of TDS' Common Shares is subject to fluctuations due to a variety of factors.**

Factors that may affect the future market price of TDS' Common Shares include:

- General economic conditions, including conditions in the credit and financial markets;
- Industry conditions;
- Fluctuations in TDS' quarterly customer additions, churn rate, revenues, results of operations or cash flows;
- Variations between TDS' actual financial and operating results and those expected by analysts and investors; and
- Announcements by TDS' competitors.

Any of these or other factors could adversely affect the future market price of TDS' Common Shares, or could cause the future market price of TDS' Common Shares to fluctuate from time to time.

**30) Any of the foregoing events or other events could cause revenues, earnings, capital expenditures and/or any other financial or statistical information to vary from TDS' forward-looking estimates by a material amount.**

From time to time, TDS may disclose forward-looking information, including estimates of future operating revenues; various measures of income before income taxes; and/or capital expenditures. Any such forward-looking information includes consideration of known or anticipated changes to the extent disclosed, but dynamic market conditions and/or other unknown or unanticipated events, including but not limited to the risks discussed above, could cause such estimates to differ materially from the actual amounts.

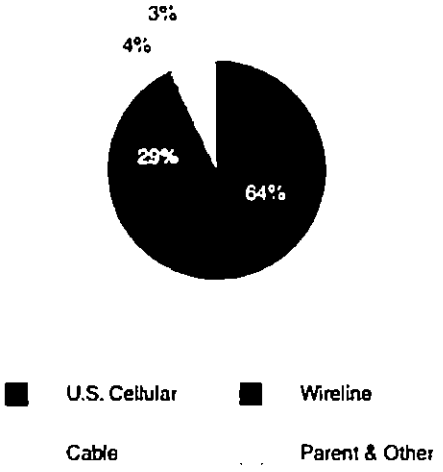
## Item 1B. Unresolved Staff Comments

None.

## Item 2. Properties

TDS has properties located throughout the United States. As of December 31, 2019, TDS' gross investment in property, plant and equipment was as follows:

**Property, Plant and Equipment**




U.S. Cellular's local business offices, cell sites, cell site equipment, connectivity centers, data centers, call centers and retail stores are located primarily in U.S. Cellular's operating markets. These properties are either owned or leased by U.S. Cellular, one of its subsidiaries, or the partnership, limited liability company or corporation which holds the license issued by the FCC.

Wireline owns or leases its physical assets consisting of telephone distribution networks, network electronic equipment, customer premises equipment, land and buildings.

Cable owns or leases its physical assets consisting of cable distribution networks, headends, customer premises equipment, land and buildings.

Parent and Other fixed assets consist of assets, which are either owned or leased, at TDS Corporate, HMS, and Suttle-Straus.

As of December 31, 2019, the gross investment in property, plant and equipment was $8,293 million at U.S. Cellular, $3,714 million at Wireline, $507 million at Cable, and $350 million at Parent & Other. See Note 10 — Property, Plant and Equipment in the Notes to Consolidated Financial Statements for additional information.

## Item 3. Legal Proceedings

TDS is involved or may be involved from time to time in legal proceedings before the FCC, other regulatory authorities, and/or various state and federal courts. If TDS believes that a loss arising from such legal proceedings is probable and can be reasonably estimated, an amount is accrued in the financial statements for the estimated loss. If only a range of loss can be determined, the best estimate within that range is accrued; if none of the estimates within that range is better than another, the low end of the range is accrued. The assessment of the expected outcomes of legal proceedings is a highly subjective process that requires judgments about future events. The legal proceedings are reviewed at least quarterly to determine the adequacy of accruals and related financial statement disclosures. The ultimate outcomes of legal proceedings could differ materially from amounts accrued in the financial statements. See Note 15 — Commitments and Contingencies in the Notes to Consolidated Financial Statements for further information.

## Item 4. Mine Safety Disclosures

Not applicable.

# PART II

## Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Market, holder, dividend and performance graph information is incorporated by reference from Exhibit 13 to this Form 10-K Annual Report section entitled "Shareholder Information."

TDS paid quarterly dividends per outstanding share of $0.165 in 2019, $0.160 in 2018 and $0.155 in 2017. TDS increased the dividend per share to $0.170 in the first quarter of 2020. TDS has no current plans to change its policy of paying dividends.

Information relating to Issuer Purchases of Equity Securities is set forth below.

On August 2, 2013, the Board of Directors of TDS authorized, and TDS announced by Form 8-K, a $250 million stock repurchase program for TDS Common Shares. Depending on market conditions, such shares may be repurchased in compliance with Rule 10b-18 of the Exchange Act, pursuant to Rule 10b5-1 under the Exchange Act, or pursuant to accelerated share repurchase arrangements, prepaid share repurchases, private transactions or as otherwise authorized. This authorization does not have an expiration date. TDS did not determine to terminate the foregoing Common Share repurchase program, or cease making further purchases thereunder, during the fourth quarter of 2019.

TDS determines whether to repurchase shares from time to time based on many considerations, including cash needed for other known or possible requirements, the stock price, market conditions, debt rating considerations, business forecasts, business plans, macroeconomic conditions, share issuances under compensation plans, provisions in governing and legal documents and other legal requirements, and other facts and circumstances. Subject to these considerations, TDS may approve the repurchase of its shares from time to time when circumstances warrant.

The maximum dollar value of shares that may yet be purchased under this program was $199 million as of December 31, 2019. There were no purchases made by or on behalf of TDS, and no open market purchases made by any "affiliated purchaser" (as defined by the SEC) of TDS, of TDS Common Shares during the quarter ended December 31, 2019.

## Item 6. Selected Financial Data

Incorporated by reference from Exhibit 13 to this Form 10-K Annual Report section entitled "Selected Consolidated Financial Data."

## Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

Incorporated by reference from Exhibit 13 to this Form 10-K Annual Report section entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations."

## Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Incorporated by reference from Exhibit 13 to this Form 10-K Annual Report section entitled "Market Risk."

## Item 8. Financial Statements and Supplementary Data

Incorporated by reference from Exhibit 13 to this Form 10-K Annual Report sections entitled "Consolidated Statement of Operations," "Consolidated Statement of Comprehensive Income," "Consolidated Statement of Cash Flows," "Consolidated Balance Sheet," "Consolidated Statement of Changes in Equity," "Notes to Consolidated Financial Statements," "Management's Report on Internal Control Over Financial Reporting," "Report of Independent Registered Public Accounting Firm," and "Consolidated Quarterly Information (Unaudited)."

## Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

# Item 9A. Controls and Procedures

**Evaluation of Disclosure Controls and Procedures**

TDS maintains disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) that are designed to ensure that information required to be disclosed in its reports filed or submitted under the Exchange Act is processed, recorded, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to TDS' management, including its principal executive officer and principal financial officer, as appropriate, to allow for timely decisions regarding required disclosure. In designing and evaluating the disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives.

As required by SEC Rule 13a-15(b), TDS carried out an evaluation, under the supervision and with the participation of management, including its principal executive officer and principal financial officer, of the effectiveness of the design and operation of TDS' disclosure controls and procedures as of the end of the period covered by this Annual Report. Based on this evaluation, the principal executive officer and principal financial officer have concluded that TDS' disclosure controls and procedures were effective as of December 31, 2019, at the reasonable assurance level.

**Management's Report on Internal Control over Financial Reporting**

Management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. TDS' internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with accounting principles generally accepted in the United States of America (GAAP). TDS' internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the issuer; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that receipts and expenditures of the issuer are being made only in accordance with authorizations of management and, where required, the board of directors of the issuer; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the issuer's assets that could have a material effect on the interim or annual consolidated financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Under the supervision and with the participation of TDS' management, including its principal executive officer and principal financial officer, TDS conducted an evaluation of the effectiveness of its internal control over financial reporting as of December 31, 2019, based on the criteria established in the 2013 version of *Internal Control — Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Management has concluded that TDS maintained effective internal control over financial reporting as of December 31, 2019, based on criteria established in the 2013 version of *Internal Control — Integrated Framework* issued by the COSO.

The effectiveness of TDS' internal control over financial reporting as of December 31, 2019, has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in the firm's report which is incorporated by reference into Item 8 of this Annual Report on Form 10-K from Exhibit 13 filed herewith.

**Changes in Internal Control over Financial Reporting**

There were no changes in TDS' internal control over financial reporting during the fourth quarter of 2019 that have materially affected, or are reasonably likely to materially affect, TDS' internal control over financial reporting.

# Item 9B. Other Information

The following information is being provided to update prior disclosures made pursuant to the requirements of Form 8-K, Item 2.03 – Creation of a Direct Financial Obligation or an Obligation Under an Off-Balance Sheet Arrangement of a Registrant.

Neither TDS nor U.S. Cellular borrowed or repaid any cash amounts under their revolving credit facilities in the fourth quarter of 2019 or through the filing date of this Form 10-K, and had no cash borrowings outstanding under their revolving credit facilities as of December 31, 2019, or as of the filing date of this Form 10-K.

Further, U.S. Cellular did not borrow or repay any cash amounts under its receivables securitization facility in the fourth quarter of 2019 or through the filing date of this Form 10-K, and had no cash borrowings outstanding under its receivables securitization facility as of December 31, 2019, or as of the filing date of this Form 10-K.

# PART III

## Item 10. Directors, Executive Officers and Corporate Governance

Incorporated by reference from Proxy Statement sections entitled "Election of Directors," "Corporate Governance" and "Executive Officers."

## Item 11. Executive Compensation

Incorporated by reference from Proxy Statement section entitled "Executive and Director Compensation."

## Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

Incorporated by reference from Proxy Statement sections entitled "Security Ownership of Certain Beneficial Owners and Management" and "Securities Authorized for Issuance under Equity Compensation Plans."

## Item 13. Certain Relationships and Related Transactions, and Director Independence

Incorporated by reference from Proxy Statement sections entitled "Corporate Governance" and "Certain Relationships and Related Transactions."

## Item 14. Principal Accountant Fees and Services

Incorporated by reference from Proxy Statement section entitled "Fees Paid to Principal Accountants."

# PART IV

## Item 15. Exhibits and Financial Statement Schedules

(a) The following documents are filed as part of this report:

(1) Financial Statements

| | |
|---|---|
| Consolidated Statement of Operations | Annual Report* |
| Consolidated Statement of Comprehensive Income | Annual Report* |
| Consolidated Statement of Cash Flows | Annual Report* |
| Consolidated Balance Sheet | Annual Report* |
| Consolidated Statement of Changes in Equity | Annual Report* |
| Notes to Consolidated Financial Statements | Annual Report* |
| Management's Report on Internal Control Over Financial Reporting | Annual Report* |
| Report of Independent Registered Public Accounting Firm — PricewaterhouseCoopers LLP | Annual Report* |
| Consolidated Quarterly Information (Unaudited) | Annual Report* |

*Incorporated by reference from Exhibit 13.

(2) Financial Statement Schedules

| | Location |
|---|---|
| Los Angeles SMSA Limited Partnership Financial Statements | S-1 |
| Report of Independent Registered Public Accounting Firm — Ernst & Young LLP | S-2 |
| Balance Sheets — As of December 31, 2019 and 2018 | S-3 |
| Statements of Income — For the Years Ended December 31, 2019, 2018 and 2017 | S-4 |
| Statements of Changes in Partners' Capital — For the Years Ended December 31, 2019, 2018 and 2017 | S-5 |
| Statements of Cash Flows — For the Years Ended December 31, 2019, 2018 and 2017 | S-6 |
| Notes to Financial Statements | S-7 |

All other schedules have been omitted because they are not applicable or not required or because the required information is shown in the financial statements or notes thereto.

(3) Exhibits

The exhibits set forth below are filed as a part of this Report. Compensatory plans or arrangements are identified below with an asterisk.

| Exhibit Number | Description of Documents |
|---|---|
| 3.1 | TDS' Restated Certificate of Incorporation, dated January 24, 2012, is hereby incorporated by reference to Exhibit 1 to TDS' Registration Statement on Form 8-A/A dated January 24, 2012. |
| 3.2 | TDS Restated Bylaws, as amended, are hereby incorporated by reference to Exhibit 3.1 to TDS' Current Report on Form 8-K dated May 23, 2019. |
| 4.1 | TDS' Restated Certificate of Incorporation is hereby incorporated as Exhibit 3.1. |
| 4.2 | TDS Restated Bylaws, as amended, are hereby incorporated as Exhibit 3.2. |
| 4.3(a) | Indenture for Senior Debt Securities between TDS and The Bank of New York Mellon Trust Company, N.A., formerly known as The Bank of New York Trust Company, N.A., as successor to BNY Midwest Trust Company (BNY) dated November 1, 2001, is hereby incorporated by reference to Exhibit 4 to TDS' Quarterly Report on Form 10-Q for the quarter ended September 30, 2001. |
| 4.3(b) | Third Supplemental Indenture dated March 31, 2005, by and between TDS and BNY, establishing TDS' 6.625% Senior Notes due 2045, is hereby incorporated by reference to Exhibit 4.1 to TDS' Current Report on Form 8-K dated March 23, 2005. |
| 4.3(c) | Fourth Supplemental Indenture dated November 16, 2010, by and between TDS and BNY, establishing TDS' 6.875% Senior Notes due 2059, is hereby incorporated by reference to Exhibit 4.1 to TDS' Current Report on Form 8-K dated November 16, 2010. |
| 4.3(d) | Fifth Supplemental Indenture dated March 21, 2011, by and between TDS and BNY, establishing TDS' 7% Senior Notes due 2060, is hereby incorporated by reference to Exhibit 4.1 to TDS' Current Report on Form 8-K dated March 21, 2011. |
| 4.3(e) | Sixth Supplemental Indenture dated November 26, 2012, by and between TDS and BNY, establishing TDS' 5.875% Senior Notes due 2061, is hereby incorporated by reference to Exhibit 4.1 to TDS' Current Report on Form 8-K dated November 26, 2012. |
| 4.4(a) | Revolving Credit Agreement, among TDS, Wells Fargo National Association, as administrative agent, and the other lenders thereto, dated as of May 10, 2018, including Schedules and Exhibits, including the form of the subsidiary Guaranty, is hereby incorporated by reference to Exhibit 4.1 to TDS' Current Report on Form 8-K dated May 10, 2018. |
| 4.4(b) | First Amendment to Revolving Credit Agreement among TDS, Wells Fargo National Association, as administrative agent, and the other lenders thereto, dated as of January 30, 2019, is hereby incorporated by reference to Exhibit 4.4(b) to U.S. Cellular's Annual Report on Form 10-K for the year ended December 31, 2018. |
| 4.5(a) | Revolving Credit Agreement, among U.S. Cellular, Toronto Dominion (Texas) LLC, as administrative agent, and the other lenders thereto, dated as of May 10, 2018, including Schedules and Exhibits, including the form of the subsidiary Guaranty and Subordination Agreement, is hereby incorporated by reference to Exhibit 4.1 to U.S. Cellular's Form 8-K dated May 10, 2018. |
| 4.5(b) | First Amendment to Revolving Credit Agreement, among U.S. Cellular, Toronto Dominion (Texas) LLC, as administrative agent, and the other lenders thereto, dated as of January 30, 2019, is hereby incorporated by reference to Exhibit 4.3(b) to U.S. Cellular's Annual Report on Form 10-K for the year ended December 31, 2018. |
| 4.6(a) | Indenture for Senior Debt Securities dated June 1, 2002, between U.S. Cellular and BNY is hereby incorporated by reference to Exhibit 4.1 to Form S-3 dated May 31, 2013 (File No. 333-188971). |
| 4.6(b) | Form of Third Supplemental Indenture dated as of December 3, 2003, between U.S. Cellular and BNY, relating to $444,000,000 of U.S. Cellular's 6.7% Senior Notes due 2033, is hereby incorporated by reference to Exhibit 4.1 to U.S. Cellular's Current Report on Form 8-K dated December 3, 2003. |
| 4.6(c) | Form of Fifth Supplemental Indenture dated as of June 21, 2004, between U.S. Cellular and BNY, relating to $100,000,000 of U.S. Cellular's 6.7% Senior Notes due 2033, is hereby incorporated by reference to Exhibit 4.1 to U.S. Cellular's Current Report on Form 8-K dated June 21, 2004. |
| 4.6(d) | Form of Sixth Supplemental Indenture dated as of May 9, 2011, between U.S. Cellular and BNY, relating to $342,000,000 of U.S. Cellular's 6.95% Senior Notes due 2060, is hereby incorporated by reference to Exhibit 4.1 to U.S. Cellular's Current Report on Form 8-K dated May 9, 2011. |
| 4.6(e) | Form of Seventh Supplemental Indenture dated as of December 8, 2014, between U.S. Cellular and BNY, relating to $275,000,000 of U.S. Cellular's 7.25% Senior Notes due 2063, is hereby incorporated by reference to Exhibit 2 to U.S. Cellular's Registration Statement on Form 8-A dated December 2, 2014. |

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| 4.6(f) | Form of Eighth Supplemental Indenture dated as of November 23, 2015, between U.S. Cellular and BNY, relating to $300,000,000 of U.S. Cellular's 7.25% Senior Notes due 2064, is hereby incorporated by reference to Exhibit 2 to U.S. Cellular's Registration Statement on Form 8-A dated November 17, 2015. |
| 4.7 | Indenture for Subordinated Debt Securities between TDS and BNY is hereby incorporated by reference to Exhibit 4.1 to TDS' Current Report on Form 8-K dated September 16, 2013. |
| 4.8 | Indenture for Subordinated Debt Securities between U.S. Cellular and BNY is hereby incorporated by reference to Exhibit 4.1 to U.S. Cellular's Current Report on Form 8-K dated September 16, 2013. |
| 4.9(a) | Amended and Restated Term Loan Credit Agreement, among U.S. Cellular and CoBank, ACB, as administrative agent, and the other lenders thereto, dated as of June 15, 2016, including Schedules and Exhibits, including the forms of the subsidiary Guaranty and Subordination Agreement, is hereby incorporated by reference to Exhibit 4.1 to U.S. Cellular's Form 8-K dated June 15, 2016. |
| 4.9(b) | First Amendment to Amended and Restated Term Loan Credit Agreement, among U.S. Cellular, CoBank, ACB, as administrative agent, and the other lenders thereto, dated as of May 10, 2018, is hereby incorporated by reference to Exhibit 4.2 to U.S. Cellular's Form 8-K dated May 10, 2018. |
| 4.9(c) | Second Amendment to Amended and Restated Term Loan Credit Agreement, among U.S. Cellular, CoBank, ACB, as administrative agent, and the other lenders thereto, dated as of January 30, 2019, is hereby incorporated by reference to Exhibit 4.6(c) to U.S. Cellular's Annual Report on Form 10-K for the year ended December 31, 2018. |
| 4.9(d) | Third Amendment to Amended and Restated Term Loan Credit Agreement, among U.S. Cellular, CoBank, ACB, as administrative agent, and the other lenders thereto, dated as of March 14, 2019, is hereby incorporated by reference to Exhibit 4.1 to U.S. Cellular's Current Report on Form 10-Q for the period ended March 31, 2019. |
| 4.10(a) | Master Indenture for asset-backed notes by and among USCC Master Note Trust, USCC Services, LLC and U.S. Bank National Association, as Indenture Trustee, dated December 20, 2017, is hereby incorporated by reference to Exhibit 4.1 to U.S. Cellular's Form 8-K dated December 20, 2017. |
| 4.10(b)** | Omnibus Amendment No. 1 to Master Indenture, Series 2017-VFN Indenture Supplement, Note Purchase Agreement, Receivables Purchase Agreement and Transfer and Servicing Agreement dated September 30, 2019 among USCC Master Note Trust, U.S. Bank National Association, as Indenture Trustee, USCC Services, LLC, USCC Receivables Funding LLC, USCC EIP LLC, and Royal Bank of Canada, as administrative agent for owners of the notes, is hereby incorporated by reference to Exhibit 4.3 to U.S. Cellular's Quarterly Report on Form 10-Q for the period ended September 30, 2019. |
| 4.11 | Supplemental Indenture for Series 2017-VFN Floating Rate Asset-Backed Notes by and among USCC Master Note Trust, USCC Services, LLC and U.S. Bank National Association, dated December 20, 2017, is hereby incorporated by reference to Exhibit 4.2 to U.S. Cellular's Form 8-K dated December 20, 2017. |
| 4.12 | Description of TDS' Securities. |
| 4.13 | Term Loan Credit Agreement, among TDS, CoBank, ACB, as administrative agent, and the lenders thereto, dated as of January 6, 2020, is hereby incorporated by reference to Exhibit 4.1 to TDS' Current Report on Form 8-K dated January 6, 2020. |
| 9.1 | Amendment and Restatement (dated April 22, 2005) of Voting Trust Agreement dated June 30, 1989, is hereby incorporated by reference to the Exhibit filed on Amendment No. 3 to Schedule 13D dated May 2, 2005, filed by the trustees of such voting trust with respect to TDS Common Shares. |
| 10.1(a)* | TDS Amended and Restated 2004 Long-Term Incentive Plan is hereby incorporated by reference to Exhibit 10.1 to TDS' Current Report on Form 8-K dated April 11, 2005. |
| 10.1(b)* | First Amendment to TDS Amended and Restated 2004 Long-Term Incentive Plan is hereby incorporated by reference to Exhibit 10.3 to TDS' Current Report on Form 8-K dated December 10, 2007. |
| 10.1(c)* | Second Amendment to TDS Amended and Restated 2004 Long-Term Incentive Plan is hereby incorporated by reference to Exhibit 10.4 to TDS' Current Report on Form 8-K dated December 10, 2007. |
| 10.1(d)* | Third Amendment to TDS Amended and Restated 2004 Long-Term Incentive Plan is hereby incorporated by reference to Exhibit 10.1 to TDS' Current Report on Form 8-K dated December 22, 2008. |
| 10.2(a)* | Telephone and Data Systems, Inc. 2011 Long-Term Incentive Plan is hereby incorporated by reference to Exhibit B to TDS' Notice of Annual Meeting of Shareholders and Proxy Statement dated April 18, 2014. |
| 10.2(b)* | Amendment No. 1 to Telephone and Data Systems, Inc. 2011 Long-Term Incentive Plan is hereby incorporated by reference to Exhibit A to TDS' Notice of Annual Meeting of Shareholders and Proxy statement dated April 18, 2014. |
| 10.2(c)* | Amendment No. 2 to Telephone and Data Systems, Inc. 2011 Long-Term Incentive Plan, is hereby incorporated by reference to Exhibit 10.2(c) to TDS' Annual Report on Form 10-K for the year ended December 31, 2018. |

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| 10.3(a)* | TDS Supplemental Executive Retirement Plan, as amended and restated, effective January 1, 2009, is hereby incorporated by reference to Exhibit 10.1 to TDS' Current Report on Form 8-K dated August 27, 2008. |
| 10.3(b)* | Amendment Number One to the Telephone and Data Systems, Inc. Supplemental Executive Retirement Plan, is hereby incorporated by reference to Exhibit 10.2 to Telephone and Data Systems, Inc.'s Current Report on Form 8-K dated March 15, 2012. |
| 10.3(c)* | Amendment Number Two to the Telephone and Data Systems, Inc. Supplemental Executive Retirement Plan, is hereby incorporated by reference to Exhibit 10.3 to Telephone and Data Systems, Inc.'s Current Report on Form 8-K dated November 3, 2014. |
| 10.4* | TDS' Amended and Restated Compensation Plan for Non-Employee Directors, dated December 7, 2017, is hereby incorporated by reference to Exhibit 10.4 to TDS' Annual Report on Form 10-K for the year ended December 31, 2017. |
| 10.5* | TDS Bonus Deferral and Stock Unit Match Program and Election Form is hereby incorporated by reference to Exhibit 10.6 to TDS' Annual Report on Form 10-K for the year ended December 31, 2012. |
| 10.6* | U.S. Cellular 2005 Long-Term Incentive Plan, as amended, is hereby incorporated by reference to Exhibit C to U.S. Cellular's Notice of Annual Meeting of Shareholders and Proxy Statement dated April 15, 2009. |
| 10.7(a)* | U.S. Cellular 2013 Long-Term Incentive Plan is hereby incorporated by reference to Exhibit B to U.S. Cellular's Notice of Annual Meeting of Shareholders and Proxy Statement dated April 12, 2016. |
| 10.7(b)* | Amendment No. 1 to U.S. Cellular 2013 Long-Term Incentive Plan is hereby incorporated by reference to Exhibit A to U.S. Cellular's Notice of Annual Meeting of Shareholders and Proxy Statement dated April 12, 2016. |
| 10.7(c)* | Amendment No. 2 to U.S. Cellular 2013 Long-Term Incentive Plan is hereby incorporated by reference to Exhibit 10.11(c) to U.S. Cellular's Annual Report on Form 10-K for the year ended December 31, 2018. |
| 10.8(a)* | U.S. Cellular Executive Deferred Compensation Interest Account Plan is hereby incorporated by reference to Exhibit 10.1 to U.S. Cellular's Current Report on Form 8-K dated December 10, 2007. |
| 10.8(b)* | First Amendment to U.S. Cellular Executive Deferred Compensation Interest Account Plan is hereby incorporated by reference to Exhibit 10.6 to U.S. Cellular's Current Report on Form 8-K dated December 9, 2008. |
| 10.8(c)* | Second Amendment to U.S. Cellular Executive Deferred Compensation Interest Account Plan is hereby incorporated by reference to Exhibit 10.12(c) to U.S. Cellular's Annual Report on Form 10-K for the year ended December 31, 2012. |
| 10.8(d)* | Election Form for U.S. Cellular Executive Deferred Compensation Interest Account Plan is hereby incorporated by reference to Exhibit 10.12(d) to U.S. Cellular's Annual Report on Form 10-K for the year ended December 31, 2012. |
| 10.9* | U.S. Cellular Form of Long-Term Incentive Plan Executive Deferred Compensation Agreement —Phantom Stock Account for officers is hereby incorporated by reference to Exhibit 10.5 to U.S. Cellular's Current Report on Form 8-K dated May 14, 2013. |
| 10.10(a)* | TDS 2007 Deferred Compensation Agreement between TDS and Kenneth R. Meyers dated December 26, 2006, is hereby incorporated by reference to Exhibit 99.1 to TDS' Current Report on Form 8-K dated January 1, 2007. |
| 10.10(b)* | Amendment to TDS 2007 Deferred Compensation Agreement between TDS and Kenneth R. Meyers is hereby incorporated by reference to Exhibit 10.4 to TDS Current Report on Form 8-K dated December 22, 2008. |
| 10.11* | Form of TDS Corporate Officer Long-Term Incentive Plan Stock Option Award Agreement for Officers, is hereby incorporated by reference to Exhibit 10.3 to TDS' Quarterly Report on Form 10-Q for the quarter ended March 31, 2016. |
| 10.12* | Form of TDS Corporate Officer Long-Term Incentive Plan Restricted Stock Unit Award Agreement is hereby incorporated by reference to Exhibit 10.2 to TDS' Current Report on Form 8-K dated May 1, 2015. |
| 10.13* | Form of 2016 TDS Performance Share Award Agreement, is hereby incorporated by reference to Exhibit 10.1 to TDS' Current Report on Form 8-K dated June 16, 2016. |
| 10.14* | Form of 2017 TDS Performance Share Award Agreement, is hereby incorporated by reference to Exhibit 10.2 to TDS' Current Report on Form 8-K dated May 24, 2017. |
| 10.15* | Form of 2018 TDS Performance Share Award Agreement, is hereby incorporated by reference to Exhibit 10.1 to TDS' Current Report on Form 8-K dated March 14, 2018. |
| 10.16* | Form of 2019 TDS Performance Share Award Agreement is hereby incorporated by reference to Exhibit 10.2 to TDS' Current Report on Form 8-K dated March 12, 2019. |

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| 10.17* | TDS Incentive Plan is hereby incorporated by reference to Exhibit A to TDS' Notice of Annual Meeting of Shareholders and Proxy Statement dated April 12, 2017. |
| 10.18* | TDS 2019 Officer Bonus Program is hereby incorporated by reference to Exhibit 10.1 to TDS' Current Report on Form 8-K dated March 12, 2019. |
| 10.19* | Amended and Restated Guidelines for the determination of Annual Bonus for President and Chief Executive Officer of TDS are hereby incorporated by reference to Exhibit 10.1 to TDS' Current Report on Form 8-K dated November 18, 2009. |
| 10.20* | Guidelines for the determination of Annual Bonus for President and Chief Executive Officer of U.S. Cellular are hereby incorporated by reference to Exhibit 10.2 to U.S. Cellular's Current Report on Form 8-K dated August 19, 2014. |
| 10.21* | Form of TDS Deferred Compensation Agreement is hereby incorporated by reference to Exhibit 10.1 to TDS' Current Report on Form 8-K dated December 21, 2009. |
| 10.22* | Change of Election Form for TDS Deferred Compensation Agreement is hereby incorporated by reference to Exhibit 10.2 to TDS' Current Report on Form 8-K dated December 21, 2009. |
| 10.23* | Pre 2005 Form of Deferred Compensation Agreement used by TDS Telecommunications LLC is hereby incorporated by reference to Exhibit 10.28 to TDS' Annual Report on Form 10-K for the annual period ended December 31, 2009. |
| 10.24(a)* | Post 2004 TDS Telecommunications LLC Executive Deferred Compensation Program, as amended and restated effective January 1, 2008, is hereby incorporated by reference to Exhibit 10.29 to TDS' Annual Report on Form 10-K for the annual period ended December 31, 2009. |
| 10.24(b)* | First Amendment to TDS Telecommunications LLC Executive Deferred Compensation Program dated October 8, 2008, is hereby incorporated by reference to Exhibit 10.30 to TDS' Annual Report on Form 10-K for the annual period ended December 31, 2009. |
| 10.25* | Current Initial Election Form and Post 2004 Payment Election Form for TDS Telecommunications LLC Executive Deferred Compensation Program is hereby incorporated by reference to Exhibit 10.31 to TDS' Annual Report on Form 10-K for the annual period ended December 31, 2009. |
| 10.26* | Current Annual Election Form for TDS Telecommunications LLC Executive Deferred Compensation Program is hereby incorporated by reference to Exhibit 10.32 to TDS' Annual Report on Form 10-K for the annual period ended December 31, 2009. |
| 10.27* | Form of U.S. Cellular 2013 Long-Term Incentive Plan 2019 Performance Award Agreement for the President and Chief Executive Officer of U.S. Cellular, is hereby incorporated by reference to Exhibit 10.2 to U.S. Cellular's Current Report on Form 8-K dated March 12, 2019. |
| 10.28* | Form of U.S. Cellular Long-Term Incentive Plan Restricted Stock Unit Award Agreement for the President and Chief Executive Officer of U.S. Cellular, is hereby incorporated by reference to Exhibit 10.2 to U.S. Cellular's Current Report on Form 8-K dated April 3, 2017. |
| 10.29* | Letter Agreement dated July 25, 2013, between U.S. Cellular and Kenneth R. Meyers is hereby incorporated by reference to Exhibit 10.1 to U.S. Cellular's Current Report on Form 8-K dated July 25, 2013. |
| 10.30** | 2019 Master Service Agreement effective October 1, 2019 between USCC Services, LLC and Amdocs Tethys Limited, is hereby incorporated by reference to Exhibit 10.6 to U.S. Cellular's Quarterly Report on Form 10-Q for the period ended September 30, 2019. |
| 10.31** | Amended and Restated Software License and Maintenance Agreement effective October 1, 2019 between USCC Services, LLC and Amdocs Tethys Limited is hereby incorporated by reference to Exhibit 10.9 to U.S. Cellular's Quarterly Report on Form 10-Q for the period ended September 30, 2019. |
| 10.32** | 2019 Master Statement of Work for Managed Services effective October 1, 2019 between USCC Services, LLC and Amdocs Tethys Limited, is hereby incorporated by reference to Exhibit 10.7 to U.S. Cellular's Quarterly Report on Form 10-Q for the period ended September 30, 2019. |
| 10.33** | 2019 Managed Services Statement of Work No. 1 effective October 1, 2019 between USCC Services, LLC and Amdocs Tethys Limited is hereby incorporated by reference to Exhibit 10.8 to U.S. Cellular's Quarterly Report on Form 10-Q for the period ended September 30, 2019. |
| 10.34 | Series 2017-VFN Note Purchase Agreement by and among USCC Receivables Funding LLC, as transferor, USCC Master Note Trust, as issuer, USCC Services, LLC, as Servicer, U.S. Cellular as guarantor, and Royal Bank of Canada, as administrative agent for owners of the notes, dated December 20, 2017, is hereby incorporated by reference to Exhibit 10.1 to U.S. Cellular's Form 8-K dated December 20, 2017. |

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| 10.35 | Performance Guaranty and Parent Undertaking Agreement by U.S. Cellular in favor of the Guaranteed Parties defined therein, dated December 20, 2017, is hereby incorporated by reference to Exhibit 10.2 to U.S. Cellular's Form 8-K dated December 20, 2017. |
| 10.36 | Amended and Restated Trust Agreement between USCC Receivables Funding LLC, as transferor, and Wilmington Trust, National Association, as Trustee, is hereby incorporated by reference to Exhibit 10.3 to U.S. Cellular's Form 8-K dated December 20, 2017. |
| 10.37* | Form of Consulting Agreement Effective June 1, 2018, between TDS and Douglas D. Shuma is hereby incorporated by reference to Exhibit 10.1 to TDS' Current Report on Form 8-K/A dated February 23, 2018, as filed with the SEC on May 23, 2018. |
| 10.38* | Summary of Letter Agreement between TDS and Douglas W. Chambers is hereby incorporated by reference to Exhibit 10.1 to TDS' Current Report on Form 8-K/A dated February 23, 2018, as filed with the SEC on June 4, 2018. |
| 10.39** | Omnibus Amendment No. 1 to Master Indenture, Series 2017-VFN Indenture Supplement, Note Purchase Agreement, Receivables Purchase Agreement and Transfer and Servicing Agreement dated September 30, 2019 among USCC Master Note Trust, U.S. Bank National Association, as Indenture Trustee, USCC Services, LLC, USCC Receivables Funding LLC, USCC EIP LLC, and Royal Bank of Canada, as administrative agent for owners of the notes, is hereby incorporated by reference to Exhibit 4.3 to U.S. Cellular's Quarterly Report on Form 10-Q for the period ended September 30, 2019. |
| 10.40* | Telephone and Data Systems, Inc. Executive Deferred Compensation Program, is hereby incorporated by reference to Exhibit 10.1 to TDS' Current Report on Form 8-K dated December 9, 2019. |
| 13 | Incorporated portions of 2019 Annual Report to Shareholders. |
| 21 | Subsidiaries of TDS. |
| 23.1 | Consent of Independent Registered Public Accounting Firm—PricewaterhouseCoopers LLP. |
| 23.2 | Consent of Independent Registered Public Accounting Firm—Ernst & Young LLP. |
| 31.1 | Principal executive officer certification pursuant to Rule 13a-14 of the Securities Exchange Act of 1934. |
| 31.2 | Principal financial officer certification pursuant to Rule 13a-14 of the Securities Exchange Act of 1934. |
| 32.1 | Principal executive officer certification pursuant to Section 1350 of Chapter 63 of Title 18 of the United States Code. |
| 32.2 | Principal financial officer certification pursuant to Section 1350 of Chapter 63 of Title 18 of the United States Code. |
| 101.INS | XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document. |
| 101.SCH | Inline XBRL Taxonomy Extension Schema Document |
| 101.PRE | Inline XBRL Taxonomy Extension Presentation Linkbase Document |
| 101.CAL | Inline XBRL Taxonomy Extension Calculation Linkbase Document |
| 101.LAB | Inline XBRL Taxonomy Extension Label Linkbase Document |
| 101.DEF | Inline XBRL Taxonomy Extension Definition Linkbase Document |
| 104 | Cover Page Interactive Data File - the cover page interactive data file does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline document. |
| * | Indicates a management contract or compensatory plan or arrangement |
| ** | Portions of this Exhibit have been omitted pursuant to Item 601(b)(10)(iv) of Regulation S-K promulgated under the Exchange Act. |

## Item 16. Form 10-K Summary

None.

# LOS ANGELES SMSA LIMITED PARTNERSHIP
# FINANCIAL STATEMENTS

TDS' subsidiary, U.S. Cellular, owns a 5.5% limited partnership interest in the Los Angeles SMSA Limited Partnership, and accounts for such interest by the equity method. The partnership's financial statements were obtained by U.S. Cellular as a limited partner.

## Report of Independent Registered Public Accounting Firm

To the Partners of Los Angeles SMSA Limited Partnership

**Opinion on the Financial Statements**

We have audited the accompanying balance sheets of Los Angeles SMSA Limited Partnership (the Partnership) as of December 31, 2019 and 2018, the related statements of income, changes in partners' capital and cash flows for each of the three years in the period ended December 31, 2019, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Partnership at December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019 in conformity with U.S. generally accepted accounting principles.

**Adoption of New Accounting Standards**

*ASU No. 2016-02*

As discussed in Note 2 to the financial statements, effective January 1, 2019, the Partnership changed its method of accounting for leases due to the adoption of Accounting Standards Update (ASU) No. 2016-02, Leases (Topic 842), and the related amendments, using the modified retrospective method.

*ASU No. 2014-09*

As discussed in Note 2 to the financial statements, effective January 1, 2018, the Partnership changed its method for recognizing revenue as a result of the adoption of ASU No. 2014-09, Revenue from Contracts with Customers (Topic 606), and the amendments in ASUs 2015-14, 2016-08, 2016-10 and 2016-12 using the modified retrospective method.

**Basis for Opinion**

These financial statements are the responsibility of the Partnership's management. Our responsibility is to express an opinion on the Partnership's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Partnership in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB and in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Ernst & Young LLP

We have served as the Partnership's auditor since 2014.

Orlando, Florida
February 25, 2020

**Los Angeles SMSA Limited Partnership**

Balance Sheets - As of December 31, 2019 and 2018

| (Dollars in thousands) | 2019 | 2018 |
|---|---|---|
| **ASSETS:** | | |
| CURRENT ASSETS: | | |
| Due from affiliate | $ 469,318 | $ 256,812 |
| Accounts receivable, net of allowances of $7,792 and $21,886 | 375,920 | 434,399 |
| Prepaid expenses and other | 277,193 | 203,571 |
| Total current assets | 1,122,431 | 894,782 |
| PROPERTY, PLANT AND EQUIPMENT - NET | 1,908,893 | 1,998,538 |
| WIRELESS LICENSES | 2,075,448 | 2,075,448 |
| OPERATING LEASE RIGHT-OF-USE ASSETS | 876,219 | — |
| OTHER ASSETS - NET | 217,859 | 432,483 |
| TOTAL ASSETS | $ 6,200,850 | $ 5,401,251 |
| **LIABILITIES AND PARTNERS' CAPITAL** | | |
| CURRENT LIABILITIES: | | |
| Accounts payable and accrued liabilities | $ 178,906 | $ 142,805 |
| Contract liabilities and other | 183,091 | 175,863 |
| Financing obligation | 13,348 | 13,185 |
| Current operating lease liabilities | 124,856 | — |
| Deferred rent | 7,407 | 13,347 |
| Total current liabilities | 507,608 | 345,200 |
| LONG TERM LIABILITIES: | | |
| Financing obligation | 110,392 | 111,868 |
| Non-current operating lease liabilities | 641,652 | — |
| Deferred rent | 78,108 | 143,586 |
| Other liabilities | 27,320 | 29,264 |
| Total long term liabilities | 857,472 | 284,718 |
| Total liabilities | 1,365,080 | 629,918 |
| PARTNERS' CAPITAL: | | |
| General Partner's interest | 1,934,308 | 1,908,533 |
| Limited Partners' interest | 2,901,462 | 2,862,800 |
| Total partners' capital | 4,835,770 | 4,771,333 |
| TOTAL LIABILITIES AND PARTNERS' CAPITAL | $ 6,200,850 | $ 5,401,251 |

See notes to financial statements.

**Los Angeles SMSA Limited Partnership**

Statements of Income - For the Years Ended December 31, 2019, 2018 and 2017

| (Dollars in thousands) | 2019 | 2018 | 2017 |
|---|---|---|---|
| OPERATING REVENUES: | | | |
| Service revenues | $ 3,853,965 | $ 3,766,062 | $ 3,791,371 |
| Equipment revenues | 1,091,380 | 1,153,954 | 982,251 |
| Other revenues | 360,907 | 275,896 | 246,322 |
| Total operating revenues | 5,306,252 | 5,195,912 | 5,019,944 |
| OPERATING EXPENSES: | | | |
| Cost of services (exclusive of depreciation) | 1,217,326 | 1,115,475 | 1,107,614 |
| Cost of equipment | 1,155,205 | 1,212,952 | 1,174,858 |
| Depreciation | 350,005 | 369,874 | 355,696 |
| Selling, general and administrative expense | 1,144,761 | 1,095,048 | 1,168,978 |
| Total operating expenses | 3,867,297 | 3,793,349 | 3,807,146 |
| OPERATING INCOME | 1,438,955 | 1,402,563 | 1,212,798 |
| OTHER (EXPENSE) INCOME: | | | |
| Interest income, net | 3,994 | 13,332 | 2,857 |
| Other (expense) income | (22,012) | 2,702 | 1,631 |
| Total other (expense) income | (18,018) | 16,034 | 4,488 |
| NET INCOME | $ 1,420,937 | $ 1,418,597 | $ 1,217,286 |
| Allocation of Net Income: | | | |
| General Partner | $ 568,375 | $ 567,439 | $ 486,914 |
| Limited Partners | 852,562 | 851,158 | 730,372 |

See notes to financial statements.

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**Los Angeles SMSA Limited Partnership**

Statements of Changes in Partners' Capital - For the Years Ended December 31, 2019, 2018 and 2017

(Dollars in thousands)

| | General Partner | Limited Partners | | | |
|---|---|---|---|---|---|
| | AirTouch Cellular Inc. | AirTouch Cellular Inc. | Cellco Partnership | United States Cellular Investment Corporation of Los Angeles | Total Partners' Capital |
| **BALANCE - January 1, 2017** | **$ 1,734,722** | **$ 1,834,468** | **$ 529,090** | **$ 238,624** | **$ 4,336,804** |
| Distributions | (450,000) | (475,875) | (137,250) | (61,875) | (1,125,000) |
| Net income | 486,914 | 514,912 | 148,509 | 66,951 | 1,217,286 |
| **BALANCE - December 31, 2017** | **$ 1,771,636** | **$ 1,873,505** | **$ 540,349** | **$ 243,600** | **$ 4,429,090** |
| ASC 606 opening balance sheet adjustment | 67,058 | 70,914 | 20,453 | 9,221 | 167,646 |
| Distributions | (497,600) | (526,212) | (151,768) | (68,420) | (1,244,000) |
| Net income | 567,439 | 600,067 | 173,069 | 78,022 | 1,418,597 |
| **BALANCE - December 31, 2018** | **$ 1,908,533** | **$ 2,018,274** | **$ 582,103** | **$ 262,423** | **$ 4,771,333** |
| Distributions | (542,600) | (573,800) | (165,492) | (74,608) | (1,356,500) |
| Net income | 568,375 | 601,057 | 173,353 | 78,152 | 1,420,937 |
| **BALANCE - December 31, 2019** | **$ 1,934,308** | **$ 2,045,531** | **$ 589,964** | **$ 265,967** | **$ 4,835,770** |

See notes to financial statements.

**Los Angeles SMSA Limited Partnership**

Statements of Cash Flows - For the Years Ended December 31, 2019, 2018 and 2017

| (Dollars in Thousands) | 2019 | 2018 | 2017 |
|---|---|---|---|
| CASH FLOWS FROM OPERATING ACTIVITIES: | | | |
| Net income | $ 1,420,937 | $ 1,418,597 | $ 1,217,286 |
| Adjustments to reconcile net income to net cash provided by operating activities: | | | |
| Depreciation | 350,005 | 369,874 | 355,696 |
| Imputed interest on financing obligation | 11,792 | 11,686 | 12,374 |
| Provision for uncollectible accounts | 44,329 | 43,847 | 56,505 |
| Changes in operating assets and liabilities: | | | |
| Accounts receivable | 14,150 | (39,867) | (36,907) |
| Prepaid expenses and other | (680,685) | (614,263) | (388,907) |
| Accounts payable and accrued liabilities | 20,724 | (2,541) | (54,321) |
| Contract liabilities and other | 7,228 | 25,715 | 14,531 |
| Other net changes | (79,885) | 31,672 | 2,524 |
| Net cash provided by operating activities | 1,108,595 | 1,244,720 | 1,178,781 |
| CASH FLOWS FROM INVESTING ACTIVITIES: | | | |
| Capital expenditures | (385,443) | (575,351) | (434,350) |
| Fixed asset transfers out | 140,458 | 130,228 | 15,648 |
| Collections on deferred purchase price and purchased receivables | — | 9,331 | 86,009 |
| Collections on beneficial interest - net | 718,501 | 483,924 | 229,330 |
| Change in due from affiliate | (212,506) | (37,974) | 63,008 |
| Net cash provided by investing activities | 261,010 | 10,158 | (40,355) |
| CASH FLOWS FROM FINANCING ACTIVITIES: | | | |
| Repayments of financing obligation | (13,105) | (10,878) | (13,426) |
| Distributions | (1,356,500) | (1,244,000) | (1,125,000) |
| Net cash used in financing activities | (1,369,605) | (1,254,878) | (1,138,426) |
| CHANGE IN CASH | — | — | — |
| CASH - Beginning of year | — | — | — |
| CASH - End of year | $ — | $ — | $ — |
| NONCASH TRANSACTIONS FROM OPERATING ACTIVITIES: | | | |
| Accruals for capital expenditures | $ 28,379 | $ 13,004 | $ 25,757 |

See notes to financial statements.

**Los Angeles SMSA Limited Partnership**

Notes to Financial Statements – For the Years Ended December 31, 2019, 2018 and 2017
(Dollars in Thousands)

## 1. ORGANIZATION AND MANAGEMENT

The principal activity of the Los Angeles SMSA Limited Partnership, a California Limited Partnership (Los Angeles SMSA) formed in 1984, is to provide cellular service in the Los Angeles metropolitan statistical area. Through March 2018, the financial statements included the accounts of the Los Angeles SMSA and Los Angeles Edge LLC, a wholly owned subsidiary of Los Angeles SMSA (collectively, the "Partnership"). Los Angeles Edge LLC was formed during 2015 and was a bankruptcy remote special purpose entity (SPE), created for the purpose of selling wireless device payment plan agreement receivables to third parties (see Wireless Device Payment Plans Note). The Los Angeles Edge LLC entity was dissolved on March 29, 2018 and as of this date the Partnership consists of only Los Angeles SMSA.

In accordance with the partnership agreement, AirTouch Cellular Inc., an affiliate of Cellco Partnership (Cellco), and general partner of the Partnership, is responsible for managing the operations of the Partnership.

The partners and their respective ownership percentages of the Partnership as of December 31, 2019 were as follows:

| | |
|---|---|
| General Partner: | |
| AirTouch Cellular Inc. | 40.0% |
| Limited Partners: | |
| AirTouch Cellular Inc. | 42.3% |
| Cellco Partnership | 12.2% |
| United States Cellular Investment Corporation of Los Angeles | 5.5% |

Cellco is an indirect, wholly-owned subsidiary of Verizon Communications Inc. (Verizon). Substantially all of the Partnership's transactions represent transactions with, or processed by, Cellco and/or certain other affiliates (collectively, Verizon Wireless).

## 2. SIGNIFICANT ACCOUNTING POLICIES

***Reclassification***

Certain prior year amounts have been reclassified to conform to the current year presentation.

***Use of estimates***

The financial statements are prepared using U.S. generally accepted accounting principles (GAAP), which requires management to make estimates and assumptions that affect reported amounts and disclosures. Actual results could differ from those estimates.

Examples of significant estimates include: the allowance for uncollectible accounts, the recoverability of property, plant and equipment and long-lived assets, the incremental borrowing rate for the operating lease liability, beneficial interest associated with sold device payment plan agreement receivables, and fair values of financial instruments.

***Revenue recognition***

The Partnership earns revenue from contracts with customers, primarily by providing access to and usage of the Verizon Wireless telecommunications network and selling equipment. These revenues are accounted for under Accounting Standards Update (ASU) 2014-09, Revenue from Contracts with Customers (Topic 606), which the Partnership adopted on January 1, 2018 using the modified retrospective approach. This standard update, along with related subsequently issued updates, clarifies the principles for recognizing revenue and develops a common revenue standard for GAAP. The standard update also amended the guidance for the recognition of costs to obtain customer contracts such that incremental costs of obtaining customer contracts are deferred and amortized consistent with the transfer of the related good or service.

The Partnership also earns revenues that are not accounted for under Topic 606 from leasing arrangements (such as those from towers) and the interest on equipment financed under a device payment plan agreement when sold to the customer by an authorized agent.

Wireless services are offered through a variety of plans on a postpaid or prepaid basis. For wireless service, the Partnership recognizes revenue using an output method, either as the service allowance units are used or as time elapses, because it reflects the pattern by which the performance obligations are satisfied through the transfer of service to the customer. Monthly service is generally billed in advance, which results in a contract liability. See Revenue and Contract Costs Note for additional information. For postpaid plans where monthly usage exceeds the allowance, the overage usage represents options held by the customer for incremental services and the usage-based fee is recognized when the customer exercises the option (typically on a month-to-month basis).

Equipment revenue related to wireless devices and accessories is generally recognized when the products are delivered to and accepted by the customer, as this is when control passes to the customer. In addition to offering the sale of equipment on a standalone basis, Verizon Wireless has two primary offerings through which customers pay for a wireless device in connection with a service contract: fixed-term plans and device payment plans.

Under a fixed-term plan, the customer is sold the wireless device without any upfront charge or at a discounted price in exchange for entering into a fixed-term service contract (typically for a term of 24 months or less). This plan is currently only offered to business customers.

Under a device payment plan, the customer is sold the wireless device in exchange for a non-interest bearing installment note, which is repaid by the customer, typically over a 24-month term, and concurrently enters into a month-to-month contract for wireless service. Customers may be offered certain promotions that provide billing credits applied over a specified term, contingent upon the customer maintaining service. The credits are included in the transaction price, which are allocated to the performance obligations based on their relative selling price, and are recognized when earned.

A financing component exists in both fixed-term plans and device payment plans because the timing of the payment for the device, which occurs over the contract term, differs from the satisfaction of the performance obligation, which occurs at contract inception upon transfer of the device to the customer. The significance of the financing component inherent in the fixed-term and device payment plan receivables is periodically assessed at the contract level, based on qualitative and quantitative considerations, related to customer classes. These considerations include assessing the commercial objective of plans, the term and duration of financing provided, interest rates prevailing in the marketplace, and credit risks of customer classes, all of which impact the selection of appropriate discount rates. Based on current facts and circumstances, the financing component in existing direct channel device payments and fixed-term contracts with customers is not significant and therefore is not accounted for separately. See Device Payment Note for additional information on the interest on equipment financed on a device payment plan agreement when sold to the customer by an authorized agent in the indirect channel.

Roaming revenue reflects service revenue earned by the Partnership when customers not associated with the Partnership operate in the service area of the Partnership and use the Partnership's network. The roaming rates with third-party carriers are based on agreements with such carriers. The roaming rates and methodology to determine roaming revenues charged by the Partnership to Verizon Wireless are established by Verizon Wireless and reviewed on a periodic basis and may not reflect current market rates (see Transactions with Affiliates and Related Parties Note).

Other revenues include non-service revenues such as regulatory fees, cost recovery surcharges, revenues associated with Verizon Wireless's device protection package, and interest on equipment financed under a device payment plan agreement when sold to the customer by an authorized agent. The Partnership recognizes taxes imposed by governmental authorities on revenue-producing transactions between the Partnership and its customers, which are passed through to the customers, on a net basis.

*Wireless contracts*

Total contract revenue, which represents the transaction price for service and equipment, is allocated between service and equipment revenue based on their estimated standalone selling prices. The standalone selling price of the device or accessory is estimated to be its retail price, excluding subsidies or conditional purchase discounts. The standalone selling price of service is estimated to be the price that is offered to customers on month-to-month contracts that can be cancelled at any time without penalty (i.e., when there is no fixed-term for service) or when service is procured without the concurrent purchase of a device. In addition, the Partnership also assesses whether the service term is impacted by certain legally enforceable rights and obligations in the contract with customers, such as penalties that a customer would have to pay to early terminate a fixed-term contract or billing credits that would cease if the month-to-month wireless service is canceled. The assessment of these legally enforceable rights and obligations involves judgment and impacts the determination of the transaction price and related disclosures.

From time to time, customers on device payment plans may be offered certain promotions that provide the right to upgrade to a new device after paying down a certain specified portion of the required device payment plan agreement amount and trading in their device in good working order. This trade-in right is accounted for as a guarantee obligation. The full amount of the trade-in right's fair value is recognized as a guarantee liability and results in a reduction to the revenue recognized upon the sale of the device. The guarantee liability was insignificant at December 31, 2019 and 2018. The total transaction price is reduced by the guarantee, which is accounted for outside the scope of Topic 606, and the remaining transaction price is allocated between the performance obligations within the contract.

Fixed-term plans generally include the sale of a wireless device at subsidized prices. This results in the creation of a contract asset at the time of sale, which represents the recognition of equipment revenue in excess of amounts billed.

For device payment plans, billing credits are accounted for as consideration payable to a customer and are included in the determination of total transaction price, resulting in a contract liability.

Verizon Wireless may provide a right of return on products and services for a short time period after a sale. These rights are accounted for as variable consideration when determining the transaction price, and accordingly the Partnership recognizes revenue based on the estimated amount to which the Partnership expects to be entitled after considering expected returns. Returns and credits are estimated at contract inception and updated at the end of each reporting period as additional information becomes available. Verizon Wireless also may provide credits or incentives on products and services for contracts with resellers, which are accounted for as variable consideration when estimating the amount of revenue to recognize. These amounts are insignificant to the financial statements.

For certain offers that also include third-party service providers, the Partnership evaluates whether the Partnership is acting as the principal or as the agent with respect to the goods or services provided to the customer. This principal versus agent assessment involves judgement and focuses on whether the facts and circumstances of the arrangement indicate that the goods or services were controlled by the Partnership prior to transferring them to the customer. To evaluate if the Partnership has control, various factors are considered including whether the Partnership is primarily responsible for fulfillment, bears risk of loss and has discretion over pricing.

***Operating expenses***

Operating expenses include expenses directly attributable to the Partnership, as well as an allocation of selling, general and administrative, and other operating expenses incurred by Verizon on behalf of the Partnership. Employees of Verizon provide services on behalf of the Partnership. These employees are not employees of the Partnership, therefore, operating expenses include allocated charges of salary and employee benefit costs for the services provided to the Partnership. Verizon Wireless believes such allocations, which are principally based on total subscribers, are calculated in accordance with the Partnership agreement and are determined using a reasonable method of allocating such costs (see Transactions with Affiliates and Related Parties Note).

Cost of roaming, included in cost of services, reflects costs incurred by the Partnership when customers associated with the Partnership operate and use a network in a service area not associated with the Partnership. The roaming rates with third-party carriers are based on agreements with such carriers. The roaming rates and methodology to determine roaming costs charged to the Partnership by Verizon Wireless are established by Verizon Wireless and reviewed on a periodic basis and may not reflect current market rates (see Transactions with Affiliates and Related Parties Note).

Cost of equipment is recorded upon sale of the related equipment at Verizon Wireless's cost basis. Inventory is owned by Verizon Wireless until the moment of sale and is not recorded in the financial statements of the Partnership.

***Maintenance and repairs***

The cost of maintenance and repairs, including the cost of replacing minor items not constituting substantial betterments, is charged principally to cost of services as these costs are incurred.

***Advertising costs***

Costs for advertising products and services, as well as other promotional and sponsorship costs, are allocated from Verizon Wireless and are charged to selling, general and administrative expenses in the periods in which they are incurred (see Transactions with Affiliates and Related Parties Note).

***Income taxes***

The Partnership is treated as a pass-through entity for income tax purposes and therefore, is not subject to federal, state or local income taxes. Accordingly, no provision has been recorded for income taxes in the Partnership's financial statements. The results of operations, including taxable income, gains, losses, deductions and credits, are allocated to and reflected on the income tax returns of the respective partners.

The Partnership files partnership income tax returns in the U.S. federal jurisdiction and various state and local jurisdictions. The Partnership remains subject to examination by tax authorities for tax years as early as 2016. It is reasonably possible that various current tax examinations could conclude or require reevaluations of the Partnership's tax positions during this period. An estimate of the range of the possible change cannot be made until these tax matters are further developed or resolved.

***Due to/from affiliate***

Due to/from affiliate principally represents the Partnership's cash position with Verizon. Verizon manages, on behalf of the Partnership, all operating, investing and financing activities of the Partnership. As such, the change in due to/from affiliate is reflected as a financing activity or an investing activity, respectively, in the statement of cash flows, based on the net position. In addition, cost of equipment and other operating expenses incurred by Verizon Wireless on behalf of the Partnership, as well as property, plant and equipment and wireless license transactions with Verizon Wireless, are charged to the Partnership through this account.

Interest income on due from affiliate and interest expense on due to affiliate are based on the short-term Applicable Federal Rate, which was approximately 2.1% and 2.3% for the years ended December 31, 2019 and 2018. In previous years, interest expense on due to affiliate balances was based on Verizon Wireless's average cost of borrowing from Verizon, which was approximately 4.7% in 2017. Interest income on due from affiliate was based on the short term Applicable Federal Rate which was 1.2% in 2017. Included in interest income, net is interest income of $14,818, $12,666, and $5,928, for the years ended December 31, 2019, 2018 and 2017, respectively, related to due from affiliate.

***Allowance for uncollectible accounts***

Accounts receivable are recorded in the financial statements at cost, net of an allowance for credit losses, with the exception of indirect-channel device payment plan loans. Allowances for uncollectible accounts receivable, including direct-channel device payment plan agreement receivables, are maintained for estimated losses resulting from the failure or inability of customers to make required payments. Indirect-channel device payment loans are considered financial instruments and are initially recorded at fair value net of imputed interest, and credit losses are recorded as incurred. Loan balances are assessed annually for impairment and an allowance is recorded if the loan is considered impaired.

The allowance for uncollectible accounts receivable is based on management's assessment of the collectability of specific customer accounts and includes consideration of the credit worthiness and financial condition of those customers. An allowance is recorded to reduce the receivables to the amount that is reasonably believed to be collectible.

Similar to traditional service revenue accounting treatment, direct-channel device payment plan agreement bad debt expense is recorded based on an estimate of the percentage of equipment revenue that will not be collected. This estimate is based on a number of factors, including historical write-off experience, credit quality of the customer base and other factors such as macroeconomic conditions. The aging of accounts with device payment plan agreement receivables is monitored and account balances are written-off if collection efforts are unsuccessful and future collection is unlikely.

***Property, plant and equipment, and depreciation***

Property, plant and equipment is recorded at cost. Property, plant and equipment is depreciated on a straight-line basis.

Leasehold improvements are amortized over the shorter of the estimated life of the improvement or the remaining term of the related lease, calculated from the time the asset was placed in service.

When depreciable assets are retired or otherwise disposed of, the related cost and accumulated depreciation are deducted from the property, plant and equipment accounts and any gains or losses on disposition are recognized in income. Transfers of property, plant and equipment between the Partnership and Verizon Wireless are recorded at net book value on the date of the transfer with an offsetting entry included in due from affiliate.

Interest expense, if any, associated with the construction of network-related assets is capitalized. Capitalized interest is reported as a reduction in interest expense and depreciated as part of the cost of the network-related assets.

Verizon Wireless and the Partnership continue to assess the estimated useful lives of property, plant and equipment and, though the timing and extent of current deployment plans are subject to ongoing analysis and modification, the current estimates of useful lives are believed to be reasonable.

***Other assets***

Other assets, net primarily includes beneficial interest and long-term device payment plan agreement receivables, net of allowances of $6,439 and $13,142 at December 31, 2019 and 2018, respectively.

***Impairment***

All long-lived assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of the asset may not be recoverable. If any indications of impairment are present, recoverability would be tested by comparing the carrying amount of the asset group to the net undiscounted cash flows expected to be generated from the asset group. If those net undiscounted cash flows do not exceed the carrying amount, the next step would be to determine the fair value of the asset and record an impairment, if any. The useful-life determinations for these long-lived assets are re-evaluated each year to determine whether events and circumstances warrant a revision to their remaining useful lives.

***Wireless licenses***

Wireless licenses provide the Partnership with the exclusive right to utilize the designated radio frequency spectrum to provide wireless communications services. In addition, Verizon Wireless maintains wireless licenses that provide the Partnership with the right to utilize Verizon Wireless's designated radio frequency spectrum to provide wireless communications services (see Transactions with Related Parties and Affiliates Note). While licenses are issued for a fixed time, generally ten years, such licenses are subject to renewal by the Federal Communications Commission (FCC). License renewals, which are managed by Verizon Wireless, have historically occurred routinely and at nominal cost. Moreover, Verizon Wireless determined that there are currently no legal, regulatory, contractual, competitive, economic or other factors that limit the useful lives of the wireless licenses. As a result, wireless licenses are treated as an indefinite-lived intangible asset. The useful life determination for wireless licenses is re-evaluated each year to determine whether events and circumstances continue to support an indefinite useful life.

The average remaining renewal period of the Partnership's wireless license portfolio was 6.6 years as of December 31, 2019.

Interest expense, if any, incurred while qualifying activities are performed to ready wireless licenses for their intended use is capitalized as part of wireless licenses. The capitalization period ends when the development is discontinued or substantially complete and the license is ready for its intended use.

Wireless license balances are tested for potential impairment annually or more frequently if impairment indicators are present. When evaluating wireless licenses for impairment, Verizon Wireless and the Partnership (to the extent it owns more than one license) aggregate wireless licenses into one single unit of accounting, since they are utilized on an integrated basis. Verizon Wireless allocates to the Partnership, based on a reasonable methodology, any impairment loss recognized by Verizon Wireless for licenses included in Verizon Wireless's national footprint.

In 2019, and 2017 Verizon Wireless performed a qualitative impairment assessment to determine whether it is more likely than not that the fair value of its aggregate wireless licenses was less than the carrying amount. As part of the assessment, several qualitative factors were considered, including market transactions, the business enterprise value of Verizon Wireless, macroeconomic conditions (including changes in interest rates and discount rates), industry and market considerations (including industry revenue and EBITDA (earnings before interest, taxes, depreciation and amortization) margin projections), the recent and projected financial performance of Verizon Wireless, as well as other factors.

In 2018, Verizon Wireless performed a quantitative impairment assessment for its aggregate wireless licenses, which consisted of comparing the estimated fair value of its aggregate wireless licenses to the aggregated carrying amount as of the test date.

Verizon Wireless's impairment assessments in 2019, 2018 and 2017 indicated that the fair value of its wireless licenses exceeded their carrying value and, therefore did not result in an impairment.

In 2019, 2018 and 2017, a qualitative impairment assessment similar to that described for Verizon Wireless was performed for the Partnership's aggregate wireless licenses which indicated that it is more likely than not that the fair value of the Partnership's wireless licenses remained above the carrying value and, therefore, did not result in an impairment.

***Financial instruments***

The carrying value of the Partnership's wireless device payment plan agreement receivables and beneficial interest approximates fair value.

***Fair value measurements***

Fair value of financial and non-financial assets and liabilities is defined as an exit price, representing the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. The three-tier hierarchy for inputs used in measuring fair value, which prioritizes the inputs used in the methodologies of measuring fair value for assets and liabilities, is as follows:

Level 1 - Quoted prices in active markets for identical assets or liabilities

Level 2 - Observable inputs, other than quoted prices, in active markets for identical assets and liabilities

Level 3 - No observable pricing inputs in the market

Financial assets and financial liabilities are classified in their entirety based on the lowest level of input that is significant to the fair value measurements. The assessment of the significance of a particular input to the fair value measurements requires judgment, and may affect the valuation of the assets and liabilities being measured and their categorization within the fair value hierarchy. As of December 31, 2019 and 2018, the Partnership did not have any assets or liabilities measured at fair value on a recurring basis.

***Distributions***

The Partnership is required to make distributions to its partners based upon the Partnership's operating results, due to/from affiliate status and financing needs, as determined by the General Partner at the date of the distribution, which are typically made in arrears.

***Recently adopted accounting standards***

The following Accounting Standard Updates (ASUs) were issued by the Financial Accounting Standards Board (FASB), and have been recently adopted by the Partnership.

| Description | Date of Adoption | Effect on Financial Statements |
|---|---|---|
| **ASU 2016-02, ASU 2018-01, ASU 2018-10, ASU 2018-11, ASU 2018-20 and ASU 2019-01, Leases (Topic 842)** | | |
| The FASB issued Topic 842 requiring entities to recognize assets and liabilities on the balance sheet for all leases, with certain exceptions. In addition, Topic 842 enables users of financial statements to further understand the amount, timing and uncertainty of cash flows arising from leases. Topic 842 allowed for a modified retrospective application and was early adopted as of the first quarter of 2019. Entities were required to apply the modified retrospective approach: (1) retrospectively to each prior reporting period presented in the financial statements with the cumulative-effect adjustment recognized at the beginning of the earliest comparative period presented; or (2) retrospectively at the beginning of the period of adoption (January 1, 2019) through a cumulative-effect adjustment. The modified retrospective approach includes a number of optional practical expedients that entities may elect to apply. | 1/1/2019 | The Partnership early adopted Topic 842 beginning on January 1, 2019, using the modified retrospective approach. The adoption of the standard had a significant impact on the balance sheet due to the recognition of operating lease liabilities, along with operating lease right-of-use-assets. The Partnership has recognized and measured leases without revising comparative period information or disclosure. |

The effect of the changes made to the balance sheet for the adoption of Topic 842 was as follows:

| | At December 31, 2018 | Adjustments due to Topic 842 | At January 1, 2019 |
|---|---|---|---|
| Prepaid expenses and other | $ 203,571 | $ (14,410) | $ 189,161 |
| Operating lease right-of-use asset | — | 783,217 | 783,217 |
| Other assets - net | 432,483 | (66,766) | 365,717 |
| Current operating lease liabilities | — | 87,958 | 87,958 |
| Deferred rent | 13,347 | (4,987) | 8,360 |
| Non-current operating lease liabilities | — | 676,887 | 676,887 |
| Deferred rent | 143,586 | (57,690) | 85,896 |
| Other liabilities | 29,264 | (127) | 29,137 |

In addition to the increase to the operating lease liabilities and right-of-use assets, Topic 842 also resulted in reclassifying the presentation of prepaid and deferred rent related to operating leases to operating lease right-of-use assets. The operating lease right-of-use assets amount also includes the balance of any prepaid lease payments, unamortized initial direct costs, and lease incentives.

The Partnership elected the package of practical expedients permitted under the transition guidance within the new standard. Accordingly, the Partnership has adopted these practical expedients and did not reassess: (1) whether an expired or existing contract is a lease or contains an embedded lease; (2) lease classification of an expired or existing lease; or (3) capitalization of initial direct costs for an expired or existing lease. In addition, the Partnership has elected the land easement transition practical expedient, and did not reassess whether an existing or expired land easement is a lease or contains a lease if it has not historically been accounted for as a lease.

The Partnership leases network equipment, including towers, distributed antenna systems, and small cells, real estate, connectivity mediums, which include dark fiber; equipment; and other various types of assets for use in operations under operating leases. The Partnership assesses whether an arrangement is a lease or contains a lease at inception. For arrangements considered leases or that contain a lease that is accounted for separately, the Partnership determines the classification and initial measurement of the right-of-use asset and lease liability at the lease commencement date, which is the date that the underlying asset becomes available for use.

For operating leases, the Partnership recognizes a right-of-use asset, which represents the right to use the underlying asset for the lease term, and a lease liability, which represents the present value of an obligation to make payments arising over the lease term. The present value of the lease payments is calculated using the incremental borrowing rate. The incremental borrowing rate is determined using a portfolio approach based on the rate of interest that Verizon would have to pay to borrow an amount equal to the lease payments on a collateralized basis over a similar term. Management uses Verizon's unsecured borrowing rate given that Verizon manages, on behalf of the Partnership, all operating, investing, and financing activities of the Partnership and risk-adjusts that rate to approximate a collateralized rate, which is updated on an annual basis.

In those circumstances where the Partnership is the lessee, the election was made to account for non-lease components associated with leases (e.g., common area maintenance costs) and lease components as a single lease component for substantially all of the asset classes.

Rent expense for operating leases is recognized on a straight-line basis over the term of the lease and is included in either cost of services or selling, general and administrative expenses in the statements of income, based on the use of the facility or equipment on which rent is being paid. Variable rent payments related to operating leases are expensed in the period incurred. The variable lease payments consist of payments dependent on various external indicators, including real estate taxes, common area maintenance charges and utility usage.

Operating leases with a term of 12 months or less are not recorded on the balance sheet; the Partnership recognizes rent expense for these leases on a straight-line basis over the lease term.

See the Leasing Arrangements Note for additional information related to leases, including disclosures required under Topic 842.

***Recently issued accounting standards***

The following ASU has recently been issued by the FASB.

| Description | Date Adoption Required | Effect on Financial Statements |
|---|---|---|
| **ASU 2016-13, ASU 2018-19, ASU 2019-04, ASU 2019-05, Financial Instruments - Credit Losses (Topic 326)** | | |
| In June 2016, the FASB issued this standard update which requires certain financial assets be measured at amortized cost net of an allowance for estimated credit losses such that the net receivable represents the present value of expected cash collection. In addition, this standard update requires that certain financial assets be measured at amortized cost reflecting an allowance for estimated credit losses expected to occur over the life of the assets. The estimate of credit losses must be based on all relevant information including historical information, current conditions and reasonable and supportable forecasts that affect the collectability of the amounts. An entity will apply the update through a cumulative effect adjustment to retained earnings as of the beginning of the first reporting period in which the guidance is effective (January 1, 2023). A prospective transition approach is required for debt securities for which an other-than-temporary impairment has been recognized before the effective date. Early adoption of this standard is permitted. | 1/1/2023 | Over the course of 2019, a cross-functional coordinated team has been evaluating the requirements and scoping the possible impacts that this standard update will have on various financial assets, which is expected to include, but is not limited to, the Partnership's device payment plan agreement receivables, beneficial interest, service receivables and contract assets. Although the evaluation of the standard update has not yet been finalized, the Partnership does not currently expect the impact of this standard update to be significant to the financial statements. The Partnership anticipates any impact will be primarily related to certain device payment plan agreement receivables and beneficial interest. |

***Subsequent events***

Events subsequent to December 31, 2019 have been evaluated through February 25, 2020, the date the financial statements were available to be issued.

## 3. REVENUE AND CONTRACT COSTS

The Partnership earns revenue from contracts with customers, primarily through the provision of telecommunications and other services and through the sale of wireless equipment. The Partnership accounts for these revenues under Topic 606 which was early adopted on January 1, 2018, using the modified retrospective approach. Revenue is disaggregated on the statements of income by products and services, which is viewed as the relevant categorization for the Partnership. There are also revenues earned that are not accounted for under Topic 606, including from leasing arrangements (such as those for towers) and the interest on equipment financed on a device payment plan agreement when sold to the customer by an authorized agent. Revenue from arrangements that were not accounted for under Topic 606 were insignificant to the financial statements for the years ended December 31, 2019 and 2018.

The Partnership applied the new revenue recognition standard to customer contracts not completed at the date of initial adoption. For incomplete contracts that were modified before the date of adoption, the Partnership elected to use the practical expedient available under the modified retrospective method, which allows aggregating the effect of all modifications when identifying satisfied and unsatisfied performance obligations, determining the transaction price and allocating transaction price to the satisfied and unsatisfied performance obligations for the modified contract at transition. Results for reporting periods beginning after January 1, 2018 are presented under Topic 606, while amounts reported for prior periods have not been adjusted and continue to be reported under accounting standards in effect for those periods. Results for reporting periods beginning after January 1, 2018 are presented under Topic 606, while amounts reported for prior periods have not been adjusted and continue to be reported under accounting standards in effect for those periods.

Prior to the adoption of Topic 606, the Partnership was required to limit the revenue recognized when a wireless device was sold to the amount of consideration that was not contingent on the provision of future services, which was typically limited to the amount of consideration received from the customer at the time of sale.

Under Topic 606, the total consideration in the contract is allocated between wireless equipment and service based on their relative standalone selling prices. This change primarily impacts our arrangements that include sales of wireless devices at subsidized prices in conjunction with a fixed-term plan, also known as the subsidy model, for service. Accordingly, under Topic 606, generally more equipment revenue is recognized upon sale of the equipment to the customer and less service revenue is recognized over the contract term than was previously recognized under the prior "Revenue Recognition" (Topic 605) standard. At the time the equipment is sold, this allocation results in the recognition of a contract asset equal to the difference between the amount of revenue recognized and the amount of consideration received from the customer. Verizon Wireless only offers new fixed-term plans with subsidized equipment pricing to business customers.

Topic 606 also requires the deferral of incremental costs incurred to obtain a customer contract, which are then amortized to expense, as a component of Selling, general and administrative expense, over the respective periods of expected benefit. As a result, a significant amount of sales commission costs, which were historically expensed as incurred under previous accounting, relating to contracts to provide wireless services, are now deferred and amortized under Topic 606.

Finally, under Topic 605, at the time of the sale of a device, risk adjusted interest is imputed on the device payment plan agreement receivables. The imputed interest is recorded as a reduction to the related accounts receivable and interest income was recognized over the financed device payment term. Under Topic 606, while there continues to be a financing component in both the fixed-term plans and device payment plans, also known as the installment model. This financing component for customer classes in the direct channels for wireless devices is not significant and therefore interest is no longer imputed for these contracts. This change results in additional revenue recognized upon the sale of wireless devices and no interest income recognized over the device payment term.

A reconciliation of the adjustments from the adoption of Topic 606 relative to Topic 605 on certain impacted financial statement line items in the statements of income for the year ended December 31, 2018 are as follows:

| | As reported | Balances without adoption of Topic 606 | Adjustments |
|---|---|---|---|
| **OPERATING REVENUE** | | | |
| Service revenue | $ 3,766,062 | $ 3,818,424 | $ (52,362) |
| Equipment revenue | 1,153,954 | 1,060,106 | 93,848 |
| Other | 275,896 | 278,334 | (2,438) |
| Total Operating Revenues | 5,195,912 | 5,156,864 | 39,048 |
| **OPERATING EXPENSES** | | | |
| Cost of equipment | 1,212,952 | 1,206,710 | 6,242 |
| Selling, general and administrative | 1,095,048 | 1,159,066 | (64,018) |
| **NET INCOME** | $ 1,418,597 | $ 1,321,773 | $ 96,824 |

**Remaining performance obligations**

When allocating the total contract transaction price to identified performance obligations, a portion of the total transaction price may relate to service performance obligations which were not satisfied or are partially satisfied as of the end of the reporting period. Below we disclose information relating to these unsatisfied performance obligations. The Partnership has elected to apply certain practical expedients available under Topic 606, including the option to exclude the expected revenues arising from unsatisfied performance obligations related to contracts that have an original expected duration of one year or less, which primarily relate to certain month-to-month service contracts.

Additionally, certain contracts provide customers the option to purchase additional services. The fee related to the additional services is recognized when the customer exercises the option (typically on a month-to-month basis).

Customer contracts are generally either month-to-month and cancellable at any time (typically under a device payment plan) or contain terms ranging from greater than one month to up to two years (typically under a fixed-term plan). Additionally, customers may incur charges based on usage or additional optional services in conjunction with entering into a contract that can be cancelled at any time and therefore are not included in the transaction price. When a service contract is longer than one month, the service contract term will generally be two years or less.

The customers also include other telecommunications companies who utilize Verizon Wireless's network to resell wireless service to their respective end customers. Reseller arrangements occur on a month-to-month basis or include a stated contract term, which generally extends longer than two years. Arrangements with a stated contract term generally include an annual minimum revenue commitment over the term of the contract for which revenues will be recognized in future periods.

**Accounts receivable and contract balances**

The timing of revenue recognition may differ from the time of billing to customers. Receivables presented in the balance sheet represent an unconditional right to consideration. Contract balances represent amounts from an arrangement when either the performance obligation has been satisfied by transferring goods and/or services to the customer in advance of receiving all or partial consideration for such goods and/or services from the customer, or the customer has made payment in advance of obtaining control of the goods and/or services promised to the customer in the contract.

Contract assets primarily relate to rights to consideration for goods and/or services provided to the customers but for which there is not an unconditional right at the reporting date. Under a fixed-term plan, the total contract revenue is allocated between wireless services and equipment revenues, as discussed above. In conjunction with these arrangements, a contract asset is created, which represents the difference between the amount of equipment revenue recognized upon sale and the amount of consideration received from the customer. The contract asset is recognized as accounts receivable as wireless services are provided and billed. The right to bill the customer is obtained as service is provided over time, which results in the right to the payment being unconditional. The contract asset balances are presented in the balance sheet as prepaid expenses and other, and other assets - net. Contract assets are assessed for impairment on an annual basis and an impairment charge is recognized to the extent the carrying amount is not recoverable. The impairment charge related to contract assets was insignificant for the years ended December 31, 2019 and 2018. Increases in the contract asset balances were primarily due to new contracts and increases in sales promotions recognized upfront, driven by customer activity related to wireless services, while decreases were due to reclassifications to accounts receivable due to billings on the existing contracts and insignificant impairment charges.

Contract liabilities arise when customers are billed and consideration is received in advance of providing the goods and/or services promised in the contract. The majority of the contract liability at each year end is recognized during the following year as these contract liabilities primarily relate to advanced billing of fixed monthly fees for service that are recognized within the following month when services are provided to the customer. The contract liability balances are presented in the balance sheet as contract liabilities and other, and other liabilities. Increases in contract liabilities were primarily due to increases in sales promotions recognized over time and upfront fees, as well as increases in deferred revenue related to advanced billings, while decreases in contract liabilities were primarily due to the satisfaction of performance obligations related to wireless services.

The balance of receivables from contracts with customers, contract assets and contract liabilities recorded in the balance sheet were as follows:

| | **At December 31, 2019** | At December 31, 2018 | At January 1, 2018 |
|---|---|---|---|
| Receivables(1) | **$ 284,102** | $ 206,856 | $ 211,388 |
| Device payment plan agreement receivables(2) | **101,486** | 162,619 | 1,678 |
| Contract assets | **38,358** | 41,193 | 46,964 |
| Contract liabilities | **190,886** | 178,905 | 148,797 |

(1) Balances do not include receivables related to the following contracts: leasing arrangements (such as towers) and the interest on equipment financed on a device payment plan agreement when sold to the customer by an authorized agent.

(2) Included in device payment plan agreement receivables presented in Device Payment Plans Note. Balances do not include receivables related to contracts completed prior to January 1, 2018 and receivables derived from the sale of equipment on a device payment plan through an authorized agent.

**Contract costs**

As discussed in the Significant Accounting Policies Note, Topic 606 requires the recognition of an asset for incremental costs to obtain a customer contract, which is then amortized to expense, over the respective period of expected benefit. The Partnership recognizes a contract asset for incremental commission costs paid to Verizon Wireless personnel and agents in conjunction with obtaining customer contracts. The costs are only deferred when it is determined the commissions are incremental costs that would not have been incurred absent the customer contract and are expected to be recovered. Costs to obtain a contract are amortized and recorded ratably as commission expense over the period representing the transfer of goods or services to which the assets relate. Costs to obtain contracts are amortized over the customers' estimated device upgrade cycle of two to three years, as such costs are typically incurred each time a customer upgrades their equipment.

The amortization periods for the costs incurred to obtain a customer contract are determined at a portfolio level due to the similarities within these customer contract portfolios.

Other costs, such as general costs or costs related to past performance obligations, are expensed as incurred.

Deferred contract costs are classified as current or non-current within prepaid expenses and other, and other assets - net, respectively. The balances of deferred contract costs as of December 31, 2019 and 2018, included in the balance sheet were as follows:

| | 2019 | 2018 |
|---|---|---|
| Assets | | |
| Prepaid expenses | $ 116,807 | $ 99,062 |
| Other assets - net | 67,117 | 70,062 |
| Total | $ 183,924 | $ 169,124 |

For the years ended December 31, 2019 and 2018, the Partnership recognized expense of $128,593 and $97,782, respectively, associated with the amortization of deferred contract costs, within selling, general and administrative expenses in the statements of income.

Deferred contract costs are assessed for impairment on an annual basis. An impairment charge is recognized to the extent the carrying amount of a deferred cost exceeds the remaining amount of consideration expected to be received in exchange for the goods and services related to the cost, less the expected costs related directly to providing those goods and services that have not yet been recognized as expenses. There have been no impairment charges recognized for the year ended December 31, 2019 and 2018.

## 4. WIRELESS DEVICE PAYMENT PLANS

Under the Verizon Wireless device payment program, eligible customers can purchase wireless devices under a device payment plan agreement. Customers that activate service on devices purchased under the device payment program pay lower service fees as compared to those under fixed-term service plans, and their device payment plan charge is included on their wireless monthly bill. Verizon Wireless only offers fixed-term plans to business customers.

***Wireless device payment plan agreement receivables***

The following table displays device payment plan agreement receivables, net, that are recognized in the accompanying balance sheets as of December 31, 2019 and 2018.

| | 2019 | 2018 |
|---|---|---|
| Device payment plan agreement receivables, gross | $ 185,173 | $ 332,680 |
| Unamortized imputed interest | (7,893) | (7,196) |
| Device payment plan agreement receivables, net of unamortized imputed interest | 177,280 | 325,484 |
| Allowance for credit losses | (7,674) | (24,869) |
| **Device payment plan agreement receivables, net** | $ 169,606 | $ 300,615 |
| | | |
| **Classified on the balance sheets:** | | |
| Accounts receivable, net | $ 95,441 | $ 159,289 |
| Other assets | 74,165 | 141,326 |
| **Device payment plan agreement receivables, net** | $ 169,606 | $ 300,615 |

Certain promotions are offered that allow a customer to trade in their owned device in connection with the purchase of a new device. Under these types of promotions, the customer receives a credit for the value of the trade-in device. In addition, the customer may be provided with additional future credits that will be applied against the customer's monthly bill as long as service is maintained. A liability is recognized for the customer's right to trade-in the device measured at fair value, which is determined by considering several factors, including the weighted-average selling prices obtained in recent resales of similar devices eligible for trade-in. Future credits are recognized when earned by the customer. Device payment plan agreement receivables, net does not reflect the trade-in device liability. At December 31, 2019 and 2018, the amount of the trade-in liability was insignificant to the financial statements.

For indirect channel contracts with customers, risk adjusted interest is imputed on the device payment plan agreement receivables. The imputed interest is recorded as a reduction to the related accounts receivable. Interest income, which is included within other revenue in the statements of income, is recognized over the financed device payment term. See Revenue and Contract Costs Note for additional information on financing considerations with respect to direct channel contracts with customers.

When originating device payment plan agreements for consumer customers, Verizon Wireless uses internal and external data sources to create a credit risk score to measure the credit quality of a customer and to determine eligibility for the device payment program. If a customer is either new to Verizon Wireless or has 45 days or less of customer tenure with Verizon Wireless, the credit decision process relies more heavily on external data sources. If the customer has more than 45 days of customer tenure with Verizon Wireless (an existing customer), the credit decision process relies on a combination of internal and external data sources. External data sources include obtaining a credit report from a national consumer credit reporting agency, if available. Verizon Wireless uses its internal data and/or credit data obtained from the credit reporting agencies to create a custom credit risk score. The custom credit risk score is generated automatically (except with respect to a small number of applications where the information needs manual intervention) from the applicant's credit data using Verizon Wireless's proprietary custom credit models, which are empirically derived and demonstrably and statistically sound. The credit risk score measures the likelihood that the potential customer will become severely delinquent and be disconnected for non-payment. For a small portion of new customer applications, a traditional credit report is not available from one of the national credit reporting agencies because the potential customer does not have sufficient credit history. In those instances, alternative credit data is used for the risk assessment.

Based on the custom credit risk score, Verizon Wireless assigns each customer to a credit class, each of which has specified offers of credit, including an account level spending limit and either a maximum amount of credit allowed per device or a required down payment percentage. During the fourth quarter of 2018, Verizon Wireless moved all consumer customers, new and existing, from a required down payment percentage, between zero and 100%, to a maximum amount of credit per device.

Subsequent to origination, the delinquency and write-off experience is monitored as key credit quality indicators for the portfolio of device payment plan agreement receivables and fixed-term service plans. The extent of collection efforts with respect to a particular customer are based on the results of proprietary custom empirically derived internal behavioral-scoring models that analyze the customer's past performance to predict the likelihood of the customer falling further delinquent. These customer-scoring models assess a number of variables, including origination characteristics, customer account history and payment patterns. Based on the score derived from these models, accounts are grouped by risk category to determine the collection strategy to be applied to such accounts. Collection performance results and the credit quality of device payment plan agreement receivables are continuously monitored based on a variety of metrics, including aging. An account is considered to be delinquent and in default status if there are unpaid charges remaining on the account on the day after the bill's due date.

At December 31, 2019 and 2018, the balance and aging of the device payment plan agreement receivables on a gross basis was as follows:

| | 2019 | 2018 |
|---|---|---|
| Unbilled | $ 172,049 | $ 317,307 |
| Billed: | | |
| Current | 10,605 | 12,270 |
| Past due | 2,519 | 3,103 |
| Device payment plan agreement receivables, gross | $ 185,173 | $ 332,680 |

Activity in the allowance for credit losses for the device payment plan agreement receivables was as follows:

| | 2019 | 2018 |
|---|---|---|
| Balance at January 1 | $ 24,869 | $ 33,897 |
| Provision for uncollectible accounts | 21,086 | 23,932 |
| Write-offs | (20,941) | (21,035) |
| Allowance related to receivables sold | (16,259) | (16,803) |
| Other | (1,081) | 4,878 |
| Balance at December 31 | $ 7,674 | $ 24,869 |

***Receivables purchase agreement***

In 2015 and 2016, Verizon Wireless established programs pursuant to a Receivables Purchase Agreement (original RPA) to sell from time to time, on an uncommitted basis, eligible device payment plan agreement receivables to a group of primarily relationship banks (Purchasers) on both a revolving and non-revolving basis, collectively the Programs. Under the Programs, Los Angeles SMSA would transfer the eligible receivables to Los Angeles Edge (Seller), who would transfer the device payment plan agreement receivables to the Purchasers for upfront cash proceeds and additional consideration upon settlement of the receivables, referred to as the deferred purchase price. In December 2017, the original RPA and all other related transaction documents were terminated and as of December 31, 2017 neither Verizon Wireless nor Los Angeles SMSA Limited Partnership have continuing involvement with any of the receivables sold under the original RPA program. There were no sales of device payment plan agreement receivables under the Programs during 2017 or thereafter.

Collections of deferred purchase price were $86,009 during 2017. During 2017, Verizon Wireless repurchased all outstanding receivables previously sold to the Purchasers in exchange for the obligation to pay the associated deferred purchase price to the wholly-owned subsidiaries that are bankruptcy remote special purpose entities. At December 31, 2017, the deferred purchase price receivable was fully satisfied. Collections following the repurchase of receivables was insignificant during 2019, $9,331 in 2018 and insignificant during 2017. Collections of both deferred purchase price and repurchased receivables were recorded within cash flows from investing activities in the statements of cash flows.

*Asset Backed Securities*

Beginning in September of 2016, Verizon Wireless has and continues to offer notes and enter into financing facilities collateralized by device payment plan agreement receivables (collectively, Asset Backed Securities or ABS arrangements) with a number of financial institutions (the Lenders), and through registered debt. In connection with these ABS arrangements, Los Angeles SMSA transfers device payment plan receivables to a trust entity through a two-step transfer - in which Los Angeles SMSA first sells eligible device payment plan receivables to Verizon ABS LLC, a securitization SPE wholly owned and consolidated by Verizon Wireless pursuant to a Receivable Purchase Agreement (RPA), and from Verizon ABS LLC to a designated trust entity (also wholly owned and consolidated by Verizon Wireless). Los Angeles SMSA has also entered into Transfer and Servicing Agreements with the Verizon ABS LLC and Verizon Wireless governing the ongoing servicing of the receivables after their sale to Verizon ABS LLC.

The receivables sold to the trust entity through this two step transfer are no longer considered assets of the Partnership. In exchange for the sale of these receivables, the Partnership receives upfront cash proceeds and a beneficial interest, which represents a form of deferred purchase price. The initial proceeds received from the ABS arrangements and the subsequent collection of beneficial interest are recorded within cash flows from operating activities and investing activities, respectively, on the statements of cash flows.

Under the terms of the ABS arrangements, the Lenders make advances under asset-backed loans backed by device payment plan agreement receivables. There is a two year revolving period, which may be extended, during which Verizon Wireless may transfer additional receivables to Verizon ABS LLC. Subject to certain conditions, Verizon Wireless may also remove receivables from Verizon ABS LLC. Verizon Wireless may prepay the outstanding amounts of the loans without penalty, but in certain cases, with breakage costs. In such instances, as a result of the True-up Trust agreements between Verizon Wireless, Los Angeles SMSA, and the other Verizon legal entities originating device payment plan receivables (collectively, the Originators), each Originator is required to contribute a proportional portion of the prepayment based on its respective share of the debt. In consideration for any such prepayment contributions, the Partnership receives additional beneficial interest in the sold receivables. Additionally, the Partnership may receive repayments of beneficial interest in the form of proportional draw downs as well as excess cash collections. The Partnership's net collections on beneficial interest are recorded within cash flows from investing activities on the statements of cash flows.

During 2019, 2018, and 2017, Verizon Wireless sold $935,829, $830,795, and $706,729, respectively, of device payment plan agreement receivables related to the Partnership, net of allowances and imputed interest, to Verizon ABS LLC, and received proceeds of $224,619, $358,148 and $368,238, respectively, received beneficial interest and recorded insignificant gains and losses. The Partnership had a short-term beneficial interest balance of $105,543 and $43,684 in prepaid expenses and other as of December 31, 2019 and 2018, respectively, as well as a long-term beneficial interest balance of $61,576 and $138,074, as of December 31, 2019 and 2018, respectively, which was recorded within other assets - net on the balance sheets.

*Variable interest entities (VIEs)*

VIEs are entities that lack sufficient equity to permit the entity to finance its activities without additional subordinated financial support from other parties, have equity investors that do not have the ability to make significant decisions relating to the entity's operations through voting rights, do not have the obligation to absorb the expected losses or do not have the right to receive the residual returns of the entity. The Partnership consolidates the assets and liabilities of VIEs when it is deemed to be the primary beneficiary. The primary beneficiary is the party that has the power to make the decisions that most significantly affect the economic performance of the VIE and has the obligation to absorb losses or the right to receive benefits that could potentially be significant to the VIE.

Under the ABS arrangements, the trust's sole business consists of holding collected receivables that are sold by the Partnership to Verizon Wireless under the terms of the ABS arrangements. The activity of servicing the receivables and distribution of the cash collected is the activity that has the most significant impact on the trust. Verizon Wireless is the master and special servicer for the receivables but does not have a direct variable interest in the trust. The Partnership holds a beneficial interest in the trust, which represents the residual interest in the trust and, as such are, variable interests. Since Verizon Wireless maintains decision making rights as servicer and has an obligation to absorb losses, it is the primary beneficiary in the trust.

*Beneficial interest*

Under the ABS arrangements, the beneficial interest is initially recorded at fair value, based on the remaining device payment amounts expected to be collected, adjusted, as applicable, for the time value of money and credit risk. The initial fair value measurements are considered to be Level 3 measurements within the fair value hierarchy. The collection of the beneficial interest is contingent on collections from customers.

*Continuing involvement*

Verizon Wireless has continuing involvement with the sold receivables as it services the receivables pursuant to the ABS arrangements on behalf of the Partnership. Verizon Wireless services the related receivables, including facilitating customer payment collection in exchange for an insignificant servicing fee. While servicing the receivables, the same policies and procedures are applied to the sold receivables that apply to owned receivables, and normal relationships are maintained with customers. The credit quality of the customers Verizon Wireless continues to service was consistent throughout the periods presented.

In addition, the Partnership has continuing involvement related to the sold receivables as the Partnership is responsible for absorbing additional credit losses pursuant to the ABS arrangements. Credit losses on receivables sold were $21,040 during 2019 and $17,359 during 2018. The Partnership's maximum exposure to loss related to the sold receivables is limited to the amount of the outstanding beneficial interest, which was $167,119 and $181,757 as of December 31, 2019 and 2018, respectively. The maximum exposure to loss represents an estimated loss that would be incurred under severe, hypothetical circumstances whereby the Partnership would not receive the total portion of the proceeds withheld by the trust. As the probability of these circumstances occurring is believed to be remote, the maximum exposure to loss is not an indication of the Partnership's expected loss.

The outstanding device payment plan agreement receivables derecognized from the Partnership's balance sheets, but which Verizon Wireless continues to service, was $822,169 and $690,576 at December 31, 2019 and 2018, respectively.

## 5. PROPERTY, PLANT AND EQUIPMENT, NET

Property, plant and equipment consists of the following at December 31, 2019 and 2018:

| | 2019 | 2018 |
|---|---|---|
| Land | $ 7,716 | $ 7,716 |
| Buildings and improvements (15-45 years) | 1,164,210 | 1,108,936 |
| Wireless plant and equipment (3-50 years) | 4,193,491 | 4,084,825 |
| Furniture, fixtures and equipment (3-10 years) | 56,029 | 58,986 |
| Leasehold improvements (5-7 years) | 503,158 | 494,914 |
| | 5,924,604 | 5,755,377 |
| Less: accumulated depreciation | (4,015,711) | (3,756,839) |
| Property, plant and equipment, net | $ 1,908,893 | $ 1,998,538 |

## 6. LEASING ARRANGEMENTS

Verizon Wireless, on behalf of the Partnership and the Partnership itself enter into various lease arrangements for network equipment, including towers, distributed antenna systems, and small cells; real estate; connectivity mediums, including dark fiber; equipment; and other various types of assets for use in operations. The leases have remaining lease terms ranging from 1 year to 28 years, some of which include options to extend the leases term for up to 25 years, and some of which include options to terminate the leases. For the majority of leases entered into during the current period, the Partnership concluded it is not reasonably certain that the Partnership would exercise the options to extend the lease or terminate the lease. Therefore, as of the lease commencement date, our lease terms generally do not include these options. The Partnership includes options to extend the lease within the lease term when it is reasonably certain that the option will be exercised.

The components of net lease cost were as follows:

| | Classification | For Year Ended December 31, 2019 |
|---|---|---|
| Operating lease cost(1) | Cost of services<br>Selling, general and administrative expense | $ 181,294 |
| Short-term lease cost(1) | Cost of services<br>Selling, general and administrative expense | 393 |
| Variable lease cost(1) | Cost of services<br>Selling, general and administrative expense | 4,954 |
| Sublease income | Other revenues | (420) |
| **Total net lease cost** | | $ 186,221 |

(1) All operating lease costs, including short-term and variable lease costs, are split between cost of services and selling, general and administrative expense in the statements of income based on the use of the facility that the rent is being paid on. See Significant Accounting Policies Note for additional information. Variable lease costs represent payments that are dependent on a rate or index, or on usage of the asset.

Supplemental disclosure for the statement of cash flows related to operating leases were as follows:

| | | For Year Ended December 31, 2019 |
|---|---|---|
| **Cash Flows from Operating Activities** | | |
| Cash paid for amounts included in the measurement of operating lease liabilities | $ | 143,413 |
| **Supplemental lease cash flow disclosures** | | |
| Operating lease right-of-use assets obtained in exchange for new operating lease liabilities | $ | 298,763 |

The weighted-average remaining lease term and the weighted-average discount rate of operating leases were as follows:

| | As of December 31, 2019 |
|---|---|
| Weighted-average remaining lease term (years) | 10 |
| Weighted-average discount rate | 3.90% |

The Partnership's maturity analysis of operating lease liabilities as of December 31, 2019 were as follows:

| Years | | As of December 31, 2019 |
|---|---|---|
| 2020 | $ | 152,772 |
| 2021 | | 132,808 |
| 2022 | | 116,020 |
| 2023 | | 101,884 |
| 2024 | | 83,820 |
| 2025 and thereafter | | 424,798 |
| **Total operating lease payments** | | 1,012,102 |
| Less interest | | (245,594) |
| **Present value of lease liabilities** | | 766,508 |
| Less current obligations | | (124,856) |
| **Long-term obligations** | $ | 641,652 |

As of December 31, 2019, the Partnership has legally obligated lease payments for various other operating leases that have not yet commenced for which the total obligation was not significant. The Partnership has certain rights and obligations for these leases, but have not recognized an operating lease right-of-use asset or an operating lease liability since they have not yet commenced.

**Disclosures related to Periods Prior to Adoption of Topic 842**

Total rent expense under operating leases amounted to $147,944 and $134,337 in 2018 and 2017, respectively.

## 7. TOWER MONETIZATION TRANSACTION

Prior to 2017, Verizon completed various transactions with unrelated third-parties pursuant to which the counterparties acquired exclusive rights to lease and operate certain Verizon Wireless towers and assumed the interest in the underlying ground leases related to the towers for an upfront cash payment. Under the terms of these arrangements, the counterparties have exclusive rights to lease and operate the towers over a long term period. In certain arrangements, the counterparty has fixed-price purchase options to acquire the towers based on their fair market values at the end of the lease terms. Verizon Wireless has subleased capacity on the third-party towers for use in its operations.

The Partnership participated in certain of these arrangements and received upfront payments that were accounted for as deferred rental income and as a financing obligation. The deferred rent represents unearned rental income and relates to the portion of the towers for which the right-of-use has passed to the counterparty. The deferred rental income is being recognized on a straight-line basis over the average lease term, which is included in other net changes within the operating section on the statements of cash flows. The financing obligation relates to the portion of the towers that continue to be occupied and used for the Partnership's network operations. Sublease payments are recorded as repayments of financing obligation within financing activities on the statements of cash flows. The Partnership continues to include the towers in property, plant and equipment, net in the balance sheets and depreciates them accordingly. In addition, the minimum future payments for the ground leases have been included in the Partnership's operating lease commitments (See Leasing Arrangements Note). As part of the rights obtained during the transaction, the counterparty is responsible for the payment of the ground leases, and the Partnership does not expect to be required to make payments unless the counterparty defaults, which the Partnership determined to be remote.

At December 31, 2019 and 2018, the deferred rental income related to the transactions were $85,515 and $84,944, respectively, recorded in deferred rent on the balance sheet.

## 8. CURRENT LIABILITIES

Accounts payable and accrued liabilities consist of the following as of December 31, 2019 and 2018.

| | 2019 | 2018 |
|---|---|---|
| Accounts payable | $ 164,285 | $ 130,668 |
| Accrued liabilities | 14,621 | 12,137 |
| Accounts payable and accrued liabilities | $ 178,906 | $ 142,805 |

Contract liabilities and other consists of the following as of December 31, 2019 and 2018:

| | 2019 | 2018 |
|---|---|---|
| Contract liabilities | $ 179,274 | $ 160,626 |
| Customer deposits | 3,531 | 14,737 |
| Guarantee liability | 286 | 500 |
| Contract liabilities and other | $ 183,091 | $ 175,863 |

## 9. TRANSACTIONS WITH AFFILIATES AND RELATED PARTIES

In addition to fixed-asset purchases, substantially all of service revenues, equipment revenues, other revenues, cost of services, cost of equipment and selling, general and administrative expenses of the Partnership represent transactions processed by Verizon Wireless on behalf of the Partnership, or represent transactions with affiliates. These transactions consist of: (1) revenues and expenses that pertain to the Partnership, which are processed by Verizon Wireless and directly attributed to or directly charged to the Partnership; (2) roaming revenue when customers of Verizon Wireless outside the Partnership use the network of the Partnership, or roaming cost when customers associated with the Partnership use the network of Verizon Wireless; (3) certain revenues and expenses processed or incurred by Verizon Wireless that are allocated to the Partnership principally based on total subscribers; and (4) service arrangements with Verizon Wireless, where the Partnership has the ability to utilize certain spectrum owned by Verizon Wireless. These transactions do not necessarily represent arm's-length transactions and may not represent all revenues and costs that would be present if the Partnership operated on a stand-alone basis. Verizon Wireless periodically reviews the methodology and allocation bases for allocating certain revenues, operating costs and selling, general and administrative expenses to the Partnership. Resulting changes, if any, in the allocated amounts have historically not been significant, other than the roaming revenue and cost impacts discussed below.

***Service revenues***

Service revenues include monthly customer billings processed by Verizon Wireless on behalf of the Partnership and roaming revenues relating to customers of other affiliated markets that are specifically identified to the Partnership. For the years ended December 31, 2019, 2018 and 2017, roaming revenues were $549,201, $527,038 and $510,521, respectively. During 2017, Verizon Wireless updated its roaming rates and methodology for determining roaming volumes charged for postpaid, prepaid and reseller roaming revenue, resulting in a net decrease of $145,797 in roaming revenue as compared to prior periods. Service revenues also include usage and certain revenue reductions, including revenue concessions and bill incentive credits, which are processed by Verizon Wireless, and allocated to the Partnership based on certain factors deemed appropriate by Verizon Wireless.

***Equipment revenues***

Equipment revenues include equipment sales processed by Verizon Wireless and specifically identified to the Partnership, as well as certain handset and accessory revenues, and contra-revenues, including equipment concessions and equipment manufacturer rebates, that are processed by Verizon Wireless and allocated to the Partnership based on certain factors deemed appropriate by Verizon Wireless. The Partnership also recognizes commission revenue on the sale of devices to customers whose service contract is with an affiliate market.

***Other revenues***

Other revenues include other fees and surcharges charged to the customer that are specifically identified to the Partnership.

***Cost of service***

Cost of services includes roaming costs relating to customers associated with the Partnership that are roaming in other affiliated markets and switch costs that are incurred by Verizon Wireless and allocated to the Partnership based on certain factors deemed appropriate by Verizon Wireless. For the years ended December 31, 2019, 2018 and 2017 roaming costs were $684,200, $651,083 and $637,264, respectively. During 2017, Verizon Wireless updated its roaming rates and methodology for determining roaming amounts charged for postpaid, prepaid and reseller roaming cost, resulting in a net decrease of $182,169 to roaming cost as compared to prior periods. Cost of service also includes cost of telecom and long-distance that are incurred by Verizon Wireless and allocated to the Partnership based on certain factors deemed appropriate by Verizon Wireless. The Partnership also has service arrangements to utilize additional spectrum owned by Verizon Wireless. See Significant Accounting Policies Note for further information regarding these arrangements.

***Cost of equipment***

Cost of equipment is recorded at Verizon Wireless's cost basis (see Significant Accounting Policies Note). Cost of equipment includes certain costs related to handsets, accessories and other costs incurred by Verizon Wireless and allocated to the Partnership based on certain factors deemed appropriate by Verizon Wireless.

***Selling, general and administrative***

Selling, general and administrative expenses include commissions, customer billing, customer care, and salaries that are specifically identified to the Partnership, as well as costs incurred by Verizon Wireless and allocated to the Partnership based on certain factors deemed appropriate by Verizon Wireless. The Partnership was allocated $108,020, $94,132 and $100,183 in advertising costs for the years ended December 31, 2019, 2018 and 2017, respectively.

***Property, plant and equipment***

Property, plant and equipment includes assets purchased by Verizon Wireless and directly charged to the Partnership, as well as assets transferred between Verizon Wireless and the Partnership (see Significant Accounting Policies Note).

***Spectrum service agreements***

The Partnership has also entered into certain agreements with Verizon Wireless to utilize certain wireless spectrum from Verizon Wireless that overlaps the Los Angeles metropolitan statistical area. Total expense under these wireless spectrum service arrangements amounted to $126,941, $126,288 and $125,608 in 2019, 2018 and 2017, respectively, which is included in cost of service in the statements of income.

Based on the terms of these service agreements as of December 31, 2019, future wireless spectrum service agreement obligations to Verizon Wireless are as follows:

| Years | Amount |
|---|---|
| 2020 | 127,620 |
| 2021 | 128,319 |
| 2022 | 129,031 |
| 2023 | 129,758 |
| 2024 | 130,500 |
| 2025 and thereafter | 855,035 |
| Total minimum payments | $ 1,500,263 |

**10. CONTINGENCIES**

Verizon Wireless and the Partnership are subject to lawsuits and other claims, including class actions, product liability, patent infringement, intellectual property, antitrust, partnership disputes and claims involving relations with resellers and agents. Verizon Wireless is also currently defending lawsuits filed against it and other participants in the wireless industry, alleging various adverse effects as a result of wireless phone usage. Various consumer class-action lawsuits allege that Verizon Wireless violated certain state consumer-protection laws and other statutes and defrauded customers through misleading billing practices or statements. These matters may involve indemnification obligations by third parties and/or affiliated parties covering all or part of any potential damage awards against Verizon Wireless and the Partnership and/or insurance coverage. All of the above matters are subject to many uncertainties, and the outcomes are not currently predictable.

The Partnership may incur or be allocated a portion of the damages that may result upon adjudication of these matters, if the claimants prevail in their actions. At December 31, 2019 and 2018, the Partnership had no accrual for any pending matters. An estimate of the reasonably possible loss or range of loss with respect to these matters as of December 31, 2019 cannot be made at this time due to various factors typical in contested proceedings, including: (1) uncertain damage theories and demands; (2) a less-than-complete factual record; (3) uncertainty concerning legal theories and their resolution by courts or regulators and (4) the unpredictable nature of the opposing party and its demands. Verizon Wireless and the Partnership continuously monitor these proceedings as they develop and will adjust any accrual or disclosure as needed. It is not expected that the ultimate resolution of any pending regulatory or legal matter in future periods will have a material effect on the financial condition of the Partnership, but it could have a material effect on the results of operations for a given reporting period.

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**SIGNATURES**

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

TELEPHONE AND DATA SYSTEMS, INC.

By: /s/ LeRoy T. Carlson, Jr.

LeRoy T. Carlson, Jr.
President and Chief Executive Officer
(principal executive officer)

By: /s/ Peter L. Sereda

Peter L. Sereda
Executive Vice President and Chief Financial Officer
(principal financial officer)

By: /s/ Anita J. Kroll

Anita J. Kroll
Vice President - Controller and Chief Accounting Officer
(principal accounting officer)

Dated: February 25, 2020

**Power of Attorney**

Each person whose signature appears below constitutes and appoints LeRoy T. Carlson, Jr. as his or her true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution for him or her and in his or her name, place, and stead, in any and all capacities to sign any and all amendments to this Annual Report on Form 10-K under the Securities Exchange Act of 1934, as amended, and to file the same, with all exhibits thereto, and other documents in connection therewith with the Securities and Exchange Commission, granting unto said attorney-in-fact and agent full power and authority to do so and perform each and every act and thing requisite or necessary to be done in and about the premises, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all the said attorney-in fact and agent or any of them, or their or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

| Signature | Title | Date |
|---|---|---|
| /s/ LeRoy T. Carlson, Jr.<br>LeRoy T. Carlson, Jr. | Director | February 25, 2020 |
| /s/ Letitia G. Carlson, M.D.<br>Letitia G. Carlson, M.D. | Director | February 25, 2020 |
| /s/ Prudence E. Carlson<br>Prudence E. Carlson | Director | February 25, 2020 |
| /s/ Walter C. D. Carlson<br>Walter C. D. Carlson | Director | February 25, 2020 |
| /s/ James W. Butman<br>James W. Butman | Director | February 25, 2020 |
| /s/ Clarence A. Davis<br>Clarence A. Davis | Director | February 25, 2020 |
| /s/ Kimberly D. Dixon<br>Kimberly D. Dixon | Director | February 25, 2020 |
| /s/ Kenneth R. Meyers<br>Kenneth R. Meyers | Director | February 25, 2020 |
| /s/ George W. Off<br>George W. Off | Director | February 25, 2020 |
| /s/ Christopher D. O'Leary<br>Christopher D. O'Leary | Director | February 25, 2020 |
| /s/ Wade Oosterman<br>Wade Oosterman | Director | February 25, 2020 |
| /s/ Gary L. Sugarman<br>Gary L. Sugarman | Director | February 25, 2020 |

**Exhibit 4.12**

# DESCRIPTION OF THE REGISTRANT'S SECURITIES REGISTERED PURSUANT TO SECTION 12 OF THE SECURITIES EXCHANGE ACT OF 1934

As of December 31, 2019, Telephone and Data Systems, Inc. has five classes of securities registered under Section 12 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"): (1) our Common Stock; (2) our 6.625% Senior Notes due 2045; (3) our 6.875% Senior Notes due 2059; (4) our 7.000% Senior Notes due 2060; and (5) our 5.875% Senior Notes due 2061.

## Description of Common Stock

The following description of our Common Stock is a summary and does not purport to be complete. It is subject to and qualified in its entirety by reference to our Restated Certificate of Incorporation (the "Certificate of Incorporation") and our Restated Bylaws, as amended (the "Bylaws"), each of which are incorporated by reference as an exhibit to the Annual Report on Form 10-K of which this Exhibit 4.12 is a part. We encourage you to read our Certificate of Incorporation, our Bylaws and the applicable provisions of Delaware General Corporation Law, as amended, for additional information.

### Authorized Capital Shares

Our authorized capital shares consist of 265,000,000 shares of common stock, $0.01 par value per share ("Common Stock"), 25,000,000 shares of series A common stock, $0.01 par value per share ("Series A Stock"), 4,720,599 shares of undesignated stock, $0.01 par value per share ("Undesignated Stock") and 279,401 shares of series preferred stock, $0.01 par value per share ("Preferred Stock"). The outstanding shares of our Common Stock are fully paid and nonassessable.

### Voting Rights

In the election of directors, holders of Common Stock have one vote per share and vote in the election of 25% of the total number of directors for the TDS Board of Directors rounded up to the next whole number. The holders of Series A Stock elect the remaining directors.

In matters other than the election of directors, the per share voting power of the Common Stock varies and is calculated in accordance with Section B.9. of Article IV of the Certificate of Incorporation. In matters other than the election of directors, the per share voting power of the Series Stock is ten votes per share.

In addition, the TDS Voting Trust controls a majority of the voting power of TDS in matters other than the election of certain directors. In general, only the affirmative vote of the TDS Voting Trust will be required to amend the TDS Restated Certificate of Incorporation, approve the sale of substantially all of the assets of TDS, approve the dissolution of TDS or approve any other matter required to be voted on by shareholders, except as required under the TDS Restated Certificate of Incorporation or the Delaware General Corporation Law. Certain matters on which shareholders would vote could involve a divergence or the appearance of a divergence of the interests between the holders of classes of common stock. Holders of Common Stock would not have a class vote in such matters except as required by law.

The merger or consolidation of TDS requires the approval of a majority of the voting power of Common Stock and Series A Stock, each voting separately as a class.

In matter other than the election of directors, the aggregate voting percentage of Series A Stock cannot increase above approximately 56.7% and the percentage could decrease because of the conversion of Series A Stock to Common Stock.

Our Common Stock does not have cumulative voting rights.

### Dividend Rights

Subject to the rights of holders of outstanding shares of Preferred Stock or Undesignated Stock, if any, the holders of Common Stock are entitled to receive dividends, if any, as may be declared from time to time by the Board of Directors in its discretion out of funds legally available for the payment of dividends.

### Liquidation Rights

Subject to any preferential rights of outstanding shares of Preferred Stock or Undesignated Stock, if any, holders of Common Stock and Series A Stock will share ratably in all assets legally available for distribution to our stockholders in the event of dissolution.

**Other Rights and Preferences**

Our Common Stock has no sinking fund provisions or preemptive, conversion or exchange rights.

Our Common Stock may be subject to redemption if, in the judgment of the Board such action is necessary to prevent the loss or secure the reinstatement of any license of franchise from any governmental agency held by TDS or any of its subsidiaries. The redemption price is the fair market value of such Common Stock as calculated in accordance with Section B.11. of Article IV of the Certificate of Incorporation.

Holders of Common Stock may act by written consent if shares representing not less than 90% of the voting power of the shares that would be necessary to authorize or take such action at a meeting at which all shares of capital stock of TDS entitled to vote thereon were present and voted.

**Limitations on Rights of Holders of Common Stock - Preferred Stock and Undesignated Stock**

The rights of holders of Common Stock may be materially limited or qualified by the rights of holders of Preferred Stock and Undesignated Stock that we may issue in the future.

The Board may, without further shareholder action, authorize the issuance of up to 4,720,599 of Undesignated Stock into common or preferred shares, in one or more classes or series, and to fix the designations, relative rights, preferences and limitations, including the dividend rate, redemption and sinking fund provisions, liquidation preferences, conversion rights and voting rights of each class or series.

**Anti-Takeover Effects of Certain Provisions of Delaware Law**

We are subject to the provisions of Section 203 of the Delaware General Corporation Law ("Delaware Section 203"). In general, the law prohibits a public Delaware corporation from engaging in a "business combination" with an "interested stockholder" for a period of three years after the date the person became an interested stockholder, unless:

- prior to such date, the board of directors approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;
- upon consummation of the transaction which resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced (excluding certain shares described in Delaware Section 203); or
- on or subsequent to such date, the business combination is approved by the board of directors and authorized at an annual or special meeting of stockholders by the affirmative vote of at least two-thirds of the outstanding voting stock that is not owned by the "interested stockholder."

Under Delaware Section 203, "Business combination" includes mergers, consolidations, asset sales and certain other transactions resulting in a financial benefit to a stockholder. An "interested stockholder" is defined generally as a person who, together with affiliates and associates, owns (or, within the prior three years, did own) 15% or more of a corporation's voting stock. Our Certificate of Incorporation does not exclude us from the restrictions imposed under Delaware Section 203 and Delaware Section 203 could prohibit or delay the accomplishment of mergers or other takeover or change in control attempts with respect to us and, accordingly, may discourage attempts to acquire us.

**Limitation of Liability**

Our Certificate of Incorporation provides that, to the full extent authorized by the Delaware General Corporation Law, directors of TDS will not be personally liable to the TDS or its shareholders for monetary damages for breach of fiduciary duty as a director.

**Listing**

The Common Stock is traded on The New York Stock Exchange under the trading symbol "TDS."

**Description of the Notes**

The following description of our 6.625% Senior Notes due 2045 (the "2045 Notes"), our 6.875% Senior Notes due 2059 (the "2059 Notes"), our 7.000% Senior Notes due 2060 (the "2060 Notes"), and our 5.875% Senior Notes due 2061 (the "2061 Notes" and, together with our 2045 Notes, 2059 Notes and 2060 Notes, the "notes"), is a summary and does not purport to be complete. It is subject to and qualified in its entirety by reference to the Indenture for Senior Debt Securities between TDS and The Bank of New York Mellon Trust Company, N.A. (the "Trustee"), formerly known as The Bank of New York Trust Company, N.A., as successor to BNY Midwest Trust Company (BNY) dated November 1, 2001 (the "Base Indenture"), as supplemented in the case of the 2045 Notes by *the third supplemental indenture* dated March 31, 2005, as supplemented in the case of the 2059 Notes by the fourth supplemental indenture dated November 16, 2010, as supplemented in the case of the 2060 Notes by the fifth supplemental indenture dated March 21, 2011, and as supplemented in the case of the 2061 Notes by the sixth supplemental indenture dated November 26, 2012 (the Base Indenture, as supplemented by the third, fourth, fifth and sixth supplemental indentures, the "indenture"), which are incorporated by reference as exhibits to the Annual Report on Form 10-K of which this Exhibit 4.12 is a part. The 2045 Notes, the 2059 Notes, the 2060 Notes and the 2061 Notes are each traded on The New York Stock Exchange under the trading symbols of "TDI," "TDE," "TDJ" and "TDA," respectively.

We encourage you to read the above referenced indenture, as supplemented, for additional information.

**General**

The following is a description of certain of the specific terms and conditions of the Indenture supplements with respect to each of the notes.

The 2045 Notes were issued in an aggregate principal amount of $116,250,000, which remains the aggregate principal amount outstanding. The 2059 Notes were issued in an aggregate principal amount of $225,000,000, which remains the aggregate principal amount outstanding. The 2060 Notes were issued in an aggregate principal amount of $300,000,000, which remains the aggregate principal amount outstanding. The 2061 Notes were issued in an aggregate principal amount of $195,000,000, which remains the aggregate principal amount outstanding.

The notes are senior unsecured obligations and rank equally with our other unsecured and unsubordinated debt from time to time outstanding. However, in certain circumstances the notes, other than the 2045 Notes, may become effectively subordinated to the claims of the of the holders of the 2045 Notes which have the benefit of covenants limiting secured debt and sale and leaseback transactions similar to, but more restrictive than, the limitations on secured debt and sale and leaseback transactions in the other notes. In the event TDS incurs secured debt or enters into a sale and leaseback transaction that is excepted from the covenant protection provided to the holders of the notes but not the 2045 Notes, the notes (other than the 2045 Notes) may become effectively subordinated to the claims of the holders of the 2045 Notes up to the value of the assets subject to the lien or sale and leaseback transaction In addition, because TDS is a holding company which conducts substantially all of its operations through subsidiaries, the right of creditors of TDS, including the holders of the notes, to participate in any distribution of the assets of any subsidiary upon its liquidation or reorganization or otherwise is subject to the prior claims of creditors of the subsidiary, except to the extent that claims of TDS itself as a creditor of the subsidiary may be recognized. As of December 31, 2019, our subsidiaries had approximately $1,552 million of long-term debt.

The maturity date of the 2045 Notes is March 31, 2045. The maturity date of the 2059 Notes is November 15, 2059. The maturity date of the 2060 Notes is March 15, 2060. The maturity date of the 2061 Notes is December 1, 2061.

The notes will be subject to legal defeasance and covenant defeasance as provided under the "Discharge, Defeasance and Covenant Defeasance" section set forth below.

The notes were issued in a form of one or more fully registered global securities, without coupons, in the name of a nominee of The Depository Trust Company (the "Depositary"), in denominations of $25.

TDS may redeem the notes, in whole or in party, at any time at a redemption price equal to 100% of the principal amount redeemed plus accrued and unpaid interest to the redemption date. TDS is not required to establish a sinking fund prior to redemption.

The Base Indenture does not limit the amount of debt securities that we may issue under the Base Indenture and provides that debt securities may be issued from time to time in one or more series.

**Interest and Principal**

The 2045 Notes bear interest at a fixed rate of 6.625% per annum and interest is paid quarterly on March 31, June 30, September 30 and December 31 of each year until maturity. The 2059 Notes bear interest at a fixed rate of 6.875% per annum and interest is paid quarterly on February 15, May 15, August 15 and November 15 of each year until maturity. The 2060 Notes bear interest at a fixed rate of 7% per annum and interest is paid quarterly on March 15, June 15, September 15 and December 15 of each year until maturity. The 2061 Notes bear interest at a fixed rate of 5.875% per annum and interest is paid quarterly on March 1, June 1, September 1 and December 1 of each year until maturity. Each of the above dates is referred to as an "interest payment date". We will pay interest on the notes to the persons in whose names the notes are registered at the close of business on the day immediately preceding the related interest payment date. Interest on the notes will be computed on the basis of twelve 30-day months and a 360-day year. If any interest payment date falls on a Saturday, Sunday, legal holiday or a day on which banking institutions in the City of New York are authorized by law to close, then payment of interest will be made on the next succeeding business day and no additional interest will accrue because of the delayed payment, except that, if such business day is in the next succeeding calendar year, such payment will be made on the immediately preceding business day, with the same force and effect as if made on such date.

**Optional Redemption**

At any time prior to the maturity date of the notes, we will have the right at our option to redeem the notes, in whole or in part, at any time or from time to time, on at least 30 days' but not more than 60 days' prior notice, at a redemption price, calculated by us, equal to 100% of the principal amount redeemed plus accrued and unpaid interest to the redemption date. The notes are not subject to any sinking fund provision.

**Book-Entry and Settlement**

The notes were issued in book-entry form through the facilities of the Depositary. Book-entry debt securities represented by a global security are not be exchangeable for certificated notes and will not otherwise be issuable as certificated notes.

Beneficial interests in the global securities are represented, and transfers of such beneficial interest are effected, through accounts of the Depositary acting on behalf of beneficial owners as direct or indirect participants.

Beneficial interests in the global securities will be shown on, and transfers of beneficial interests in the global securities are made only through, records maintained by the Depositary.

So long as the Depositary or its nominee is the registered owner of the global security, the Depositary or its nominee will be considered the sole owner or holder of the notes represented by such global security for all purposes under the notes and the Base Indenture and supplemental indenture pursuant to which the notes were issued. Except as provided below or as we may otherwise agree in our sole discretion, owners of beneficial interests in a global security will not be entitled to have notes represented by the global security registered in their names, will not receive or be entitled to receive physical delivery of notes in definitive form and will not be considered the owners or holders thereof under the Base Indenture or supplemental indenture pursuant to which the notes were issued. Accordingly, each person owning a beneficial interest in the global security must rely on the procedures of the Depositary and, if that person is not a participant, on the procedures of the participant through which that person owns its interest, to exercise any rights of a holder under the Base Indenture or supplemental indenture. Principal and interest payments on notes registered in the name of the Depositary or its nominee will be made to the Depositary or its nominee, as the case may be, as the registered owner of the global security representing such notes. None of TDS, the Trustee, any paying agent or the registrar for the Notes will have any responsibility or liability for any aspect of the records relating to or payments made on account of beneficial interests in such global security for such notes or for maintaining, supervising or reviewing any records relating to such beneficial interests.

**Trustee, Paying Agents and Security Registrar**

The Bank of New York Mellon Trust Company, N.A. is the trustee under the indentures governing the notes. The Trustee is a national banking association organized under and governed by the laws of the United States of America, and provides trust services and acts as indenture trustee for numerous corporate securities issuances, including for other series of debt securities of which we are the issuer. The Trustee is an affiliate of The Bank of New York Mellon Corp., which is one of a number of banks with which TDS and its subsidiaries maintain ordinary banking relationships including, in certain cases, credit facilities. In connection therewith, we utilize or may utilize some of the banking and other services offered by The Bank of New York Mellon Corp. or its affiliates, including The Bank of New York Mellon Trust Company, N.A., in the normal course of business, including securities custody services.

**Base Indenture Provisions:**

***Governing Law***

The Base Indenture and the notes are governed by, and construed in accordance with, the laws of the State of Illinois.

***Modification of the Indenture***

*With the Consent of Security holders.* The Base Indenture contains provisions permitting TDS and the Trustee, with the consent of the holders of not less than a majority in principal amount of debt securities of each series that are affected by the modification, to modify the Base Indenture or any supplemental indenture affecting that series or the rights of the holders of that series of debt securities.

However, no such modification, without the consent of the holder of each outstanding security affected thereby, may:

- extend the fixed maturity of any debt securities of any series;
- reduce the principal amount of any debt securities of any series;
- reduce the rate or extend the time of payment of interest on any debt securities of any series;
- reduce any premium payable upon the redemption of any debt securities of any series;
- reduce the amount of the principal of a discount security that would be due and payable upon a declaration of acceleration of the maturity of any debt securities of any series;
- reduce the percentage of holders of aggregate principal amount of debt securities which are required to consent to any such supplemental indenture; or
- reduce the percentage of holders of aggregate principal amount of debt securities which are required to waive any default and its consequences.

*Without the Consent of Security holders.* In addition, TDS and the Trustee may execute, without the consent of any holder of debt securities, any supplemental indenture for certain other usual purposes, including:

- to evidence the succession of another person to TDS or a successor to TDS, and the assumption by any such successor of the covenants of TDS contained in the Base Indenture or otherwise established with respect to the debt securities;
- to add to the covenants of TDS further covenants, restrictions, conditions or provisions for the protection of the holders of the debt securities of all or any series, and to make the occurrence, or the occurrence and continuance, of a default in any of such additional covenants, restrictions, conditions or provisions a default or an Event of Default, as described below, with respect to such series permitting the enforcement of all or any of the several remedies provided in the Indenture;
- to cure any ambiguity or to correct or supplement any provision contained in the Base Indenture or in any supplemental indenture which may be defective or inconsistent with any other provision contained in the Indenture or in any supplemental indenture, or to make such other provisions in regard to matters or questions arising under the Indenture as are not inconsistent with the provisions of the Base Indenture and will not adversely affect the rights of the holders of the notes of any series which are outstanding in any material respect;
- to change or eliminate any of the provisions of the Base Indenture or to add any new provision to the Base Indenture, except that such change, elimination or addition will become effective only as to debt securities issued pursuant to or subsequent to such supplemental indenture unless such change, elimination or addition does not adversely affect the rights of any security holder of outstanding debt securities in any material respect;
- to establish the form or terms of debt securities of any series as permitted by the Indenture;
- to add any additional Events of Default with respect to all or any series of outstanding debt securities;
- to add guarantees with respect to debt securities or to release a guarantor from guarantees in accordance with the terms of the applicable series of debt securities;
- to secure a series of debt securities by conveying, assigning, pledging or mortgaging property or assets to the Trustee as collateral security for such series of debt securities;
- to provide for uncertificated debt securities in addition to or in place of certificated debt securities;

- to provide for the authentication and delivery of bearer debt securities and coupons representing interest, if any, on such debt securities, and for the procedures for the registration, exchange and replacement of such debt securities, and for the giving of notice to, and the solicitation of the vote or consent of, the holders of such debt securities, and for any other matters incidental thereto;
- to evidence and provide for the acceptance of appointment by a separate or successor Trustee with respect to the debt securities and to add to or change any of the provisions of the Base Indenture as may be necessary to provide for or facilitate the administration of the trusts by more than one Trustee;
- to change any place or places where:
- the principal of and premium, if any, and interest, if any, on all or any series of debt securities will be payable,
- all or any series of debt securities may be surrendered for registration of transfer,
- all or any series of debt securities may be surrendered for exchange, and
- notices and demands to or upon TDS in respect of all or any series of debt securities and the Base Indenture may be served, which must be located in New York, New York or be the principal office of TDS;
- to provide for the payment by TDS of additional amounts in respect of certain taxes imposed on certain holders and for the treatment of such additional amounts as interest and for all matters incidental thereto;
- to provide for the issuance of debt securities denominated in a currency other than dollars or in a composite currency and for all matters incidental thereto; or
- to comply with any requirements of the SEC or the Trust Indenture Act of 1939, as amended.

***Consolidation, Merger and Sale of Assets***

The Base Indenture does not contain any covenant that restricts our ability to merge or consolidate with or into any other corporation, sell or convey all or substantially all of our assets to any person, firm or corporation or otherwise engage in restructuring transactions.

***Events of Default***

The Base Indenture provides that any one or more of the following described events, which has occurred and is continuing, constitutes an "Event of Default" with respect to each series of debt securities:

- failure for 30 days to pay interest on debt securities of that series when due and payable; or
- failure for three business days to pay principal or premium, if any, on debt securities of that series when due and payable whether at maturity, upon redemption, pursuant to any sinking fund obligation, by declaration or otherwise; or
- failure by TDS to observe or perform any other covenant (other than those specifically relating to another series) contained in the Indenture for 90 days after written notice to TDS from the Trustee or the holders of at least 33% in principal amount of the outstanding debt securities of that series; or
- certain events involving bankruptcy, insolvency or reorganization of TDS; or
- any other event of default provided for in a series of debt securities.

Except as may otherwise be set forth in a prospectus supplement, the Trustee or the holders of not less than 33% in aggregate outstanding principal amount of any particular series of debt securities may declare the principal due and payable immediately upon an Event of Default with respect to such series. Holders of a majority in aggregate outstanding principal amount of such series may annul any such declaration and waive the default with respect to such series if the default has been cured and a sum sufficient to pay all matured installments of interest and principal otherwise than by acceleration and any premium has been deposited with the Trustee.

The holders of a majority in aggregate outstanding principal amount of any series of debt securities have the right to direct the time, method and place of conducting any proceeding for any remedy available to the Trustee for that series.

Subject to the provisions of the Base Indenture relating to the duties of the Trustee in case an Event of Default will occur and be continuing, the Trustee will be under no obligation to exercise any of its rights or powers under the Base Indenture at the request or direction of any of the holders of the debt securities, unless such holders will have offered to the Trustee indemnity satisfactory to it.

The holders of a majority in aggregate outstanding principal amount of any series of debt securities affected thereby may, on behalf of the holders of all debt securities of such series, waive any past default, except as discussed in the following paragraph.

The holders of a majority in aggregate outstanding principal amount of any series of debt securities affected thereby may not waive a default in the payment of principal, premium, if any, or interest when due otherwise than by

- acceleration, unless such default has been cured and a sum sufficient to pay all matured installments of interest and principal otherwise than by acceleration and any premium has been deposited with the Trustee; or
- a call for redemption or any series of debt securities.

We are required to file annually with the trustee a certificate as to whether or not we are in compliance with all the conditions and covenants under the Base Indenture.

***Discharge, Defeasance and Covenant Defeasance***

Debt securities of any series may be defeased in accordance with their terms and, unless the supplemental indenture or company order establishing the terms of such series otherwise provides, as set forth below.

We at any time may terminate as to a series our obligations with respect to the debt securities of that series under any restrictive covenant which may be applicable to that particular series, commonly known as "covenant defeasance." All of our other obligations would continue to be applicable to such series.

We at any time may also terminate as to a series substantially all of our obligations with respect to the debt securities of such series and the Base Indenture, commonly known as "legal defeasance." However, in legal defeasance, certain of our obligations would not be terminated, including our obligations with respect to the defeasance trust and obligations to register the transfer or exchange of a security, to replace destroyed, lost or stolen debt securities and to maintain agencies in respect of the debt securities.

We may exercise our legal defeasance option notwithstanding our prior exercise of any covenant defeasance option.

If we exercise a defeasance option, the particular series will not be accelerated because of an event that, prior to such defeasance, would have constituted an Event of Default.

To exercise either of our defeasance options as to a series, we must irrevocably deposit in trust with the Trustee or any paying agent money, certain eligible obligations as specified in the Base Indenture, or a combination thereof, in an amount sufficient to pay when due the principal of and premium, if any, and interest, if any, due and to become due on the debt securities of such series that are outstanding.

Such defeasance or discharge may occur only if, among other things, we have delivered to the Trustee an opinion of counsel stating that:

- the holders of such debt securities will not recognize gain, loss or income for federal income tax purposes as a result of the satisfaction and discharge of the Base Indenture with respect to such series, and
- that such holders will realize gain, loss or income on such debt securities, including payments of interest thereon, in the same amounts and in the same manner and at the same time as would have been the case if such satisfaction and discharge had not occurred.

The amount of money and eligible obligations on deposit with the Trustee may not be sufficient to pay amounts due on the debt securities of that series at the time of an acceleration resulting from an Event of Default if:

- we exercise our option to effect a covenant defeasance with respect to the debt securities of any series, and
- the debt securities of that series are thereafter declared due and payable because of the occurrence of any Event of Default.

In such event, we would remain liable for such payments.

Exhibit 13

# Telephone and Data Systems, Inc.

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# Telephone and Data Systems, Inc.
# Management's Discussion and Analysis of Financial Condition and Results of Operations

## Executive Overview

The following Management's Discussion and Analysis (MD&A) should be read in conjunction with the audited consolidated financial statements and notes of Telephone and Data Systems, Inc. (TDS) for the year ended December 31, 2019, and with the description of TDS' business included herein. Certain numbers included herein are rounded to millions for ease of presentation; however, certain calculated amounts and percentages are determined using the unrounded numbers.

This report contains statements that are not based on historical facts, including the words "believes," "anticipates," "estimates," "expects," "plans," "intends," "projects" and similar expressions. These statements constitute and represent "forward looking statements" as this term is defined in the Private Securities Litigation Reform Act of 1995. Such forward looking statements involve known and unknown risks, uncertainties and other factors that may cause actual results, events or developments to be significantly different from any future results, events or developments expressed or implied by such forward looking statements. See Private Securities Litigation Reform Act of 1995 Safe Harbor Cautionary Statement for additional information.

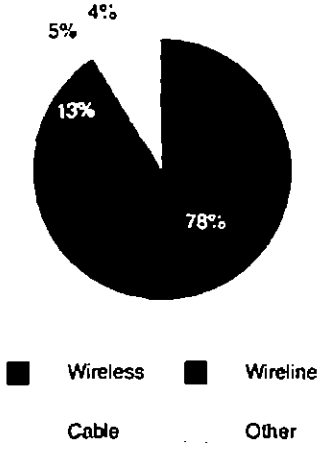
TDS uses certain "non-GAAP financial measures" and each such measure is identified in the MD&A. A discussion of the reason TDS determines these metrics to be useful and a reconciliation of these measures to their most directly comparable measures determined in accordance with accounting principles generally accepted in the United States of America (GAAP) are included in the Supplemental Information Relating to Non-GAAP Financial Measures section within the MD&A of this Form 10-K Report.

The following MD&A omits discussion of 2018 compared to 2017. Refer to Management's Discussion and Analysis of Financial Condition and Results of Operations in TDS' Annual Report on Form 10-K for the year ended December 31, 2018, filed with the SEC on February 22, 2019, for that discussion.

### General

TDS is a diversified telecommunications company that provides high-quality communications services to approximately 6 million connections nationwide. TDS provides wireless services through its 82%-owned subsidiary, United States Cellular Corporation (U.S. Cellular). TDS also provides wireline and cable services, through its wholly-owned subsidiary, TDS Telecommunications LLC (TDS Telecom). TDS' segments operate entirely in the United States. See Note 20 — Business Segment Information in the Notes to Consolidated Financial Statements for additional information about TDS' segments.

**2019 Operating Revenues by Segment**




### TDS Mission and Strategy

TDS' mission is to provide outstanding communications services to its customers and meet the needs of its shareholders, its people, and its communities. In pursuing this mission, TDS seeks to grow its businesses, create opportunities for its associates and employees, and build value over the long-term for its shareholders. Across all of its businesses, TDS is focused on providing exceptional customer experiences through best-in-class services and products and superior customer service.

TDS' long-term strategy calls for the majority of its capital to be reinvested in its operating businesses to strengthen their competitive positions and financial performance, while also returning value to TDS shareholders primarily through the payment of a regular quarterly cash dividend.

In 2019, TDS continued to focus on investing in the networks that are the backbone of its commitment to provide outstanding communications services to its customers. TDS believes these investments strengthen its competitive position and improve operating performance. TDS expects to continue to execute on its strategies to build strong, competitive businesses providing high-quality, data-focused services and products.

**Invest in the business to improve returns and pursue initiatives that align with long-term strategies**

Consistent with its strategy, TDS made significant investments in 2019 to improve the performance of its networks.

- U.S. Cellular continues to devote efforts to enhance its network capabilities. VoLTE technology is now available to nearly 70% of U.S Cellular's subscribers, and deployments in additional operating markets are expected in 2020 and 2021. VoLTE technology allows customers to utilize a 4G LTE network for both voice and data services and offers enhanced services such as high definition voice and simultaneous voice and data sessions.

- U.S. Cellular has begun to deploy 5G technology in its network and expects to launch commercial 5G services in selected markets in 2020. 5G technology is expected to help address customers' growing demand for data services as well as create opportunities for new services requiring high speed, reliability and low latency. U.S. Cellular is working with leading companies in the wireless infrastructure and handset ecosystem to provide rich 5G experiences for customers, initially focused on mobility services and using its low band spectrum. At the same time, as discussed below, U.S. Cellular has begun acquiring high band spectrum to enable the delivery of additional 5G services in the future. In addition to the deployment of 5G technology, U.S. Cellular is also modernizing its 4G LTE network to further enhance 4G LTE speeds.

- U.S. Cellular assesses its existing wireless interests on an ongoing basis with a goal of improving the competitiveness of its operations and maximizing its long-term return on capital. As part of this strategy, U.S. Cellular actively seeks attractive opportunities to acquire wireless spectrum, including pursuant to FCC auctions. In June 2019, the FCC announced that U.S. Cellular was the provisional winning bidder for 408 wireless spectrum licenses in its 28 GHz auction (Auction 101) and 282 wireless spectrum licenses in its 24 GHz auction (Auction 102) for an aggregate purchase price of $256 million. The wireless spectrum licenses from Auction 101 were granted by the FCC on October 2, 2019, and the wireless spectrum licenses from Auction 102 were granted by the FCC on December 11, 2019. On July 11, 2019, the FCC released a Public Notice establishing procedures for an auction offering wireless spectrum licenses in the 37, 39 and 47 GHz bands (Auction 103). Auction 103 is offering 34 100 MHz blocks in the Upper 37 GHz, 39 GHz, and 47 GHz bands in all Partial Economic Areas. On September 9, 2019, U.S. Cellular filed an application to participate in Auction 103 and was announced as a qualified bidder on October 31, 2019. Bidding in this auction commenced on December 10, 2019. The initial phase of this auction closed on January 30, 2020 and the assignment phase commenced on February 18, 2020.

- TDS Telecom's Wireline business continues to focus on driving growth in its broadband and video services by investing in fiber deployment in new out-of-territory markets and in existing markets. Construction has begun in two new out-of-territory clusters, mid-central Wisconsin and Idaho. With support from the FCC's A-CAM program and state broadband grants, Wireline is also deploying higher speed broadband to unserved and under-served service addresses in rural areas within its current markets.

- On December 31, 2019, TDS acquired substantially all of the assets of MI Connection Communications System, dba Continuum, for $80 million in cash, subject to working capital adjustments. Continuum is a cable company that passes approximately 40,000 service addresses in North Carolina and offers broadband, video and voice services, which complement the TDS Telecom portfolio of products.

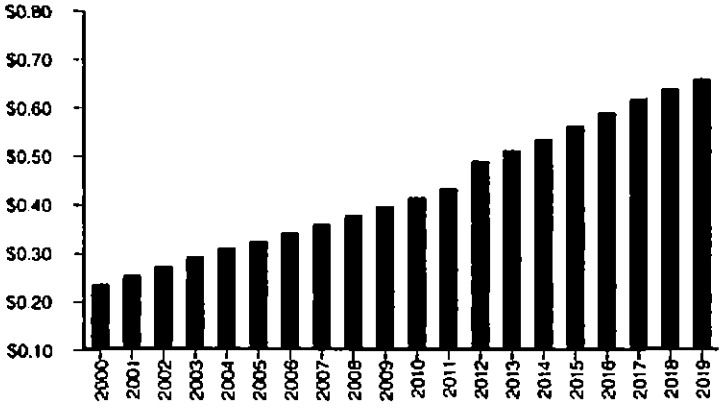
- TDS Telecom's Cable business continues to increase its broadband penetration by making network capacity investments and by offering more advanced services in its markets.

- TDS Telecom's Wireline and Cable businesses also are investing in a next generation video platform called TDS TV+ to enhance video services.

**Return value to shareholders**

During 2019, TDS paid $75 million in regular quarterly cash dividends. TDS increased the dividend per share paid to its investors by 3% in 2019 which marks the 45th consecutive year of dividend increases and in February 2020, TDS increased its quarterly dividend per share from $0.165 to $0.170. During 2019, U.S. Cellular repurchased 590,300 Common Shares for $21 million at an average cost per share of $35.45. At December 31, 2019, the total cumulative amount of U.S. Cellular Common Shares authorized to be purchased is 5,311,000. There were no TDS share repurchases in 2019. As of December 31, 2019, the maximum dollar value of TDS Common Shares that may yet be purchased under TDS' program was $199 million. There is no assurance that TDS will continue to increase the dividend rate or pay dividends and no assurance that TDS or U.S. Cellular will make any significant amount of share repurchases in the future.

**Annual Dividends Per TDS Share**



# Terms Used by TDS

The following is a list of definitions of certain industry terms that are used throughout this document:

- **4G LTE** – fourth generation Long-Term Evolution, which is a wireless technology that enables more network capacity for more data per user as well as faster access to data compared to third generation (3G) technology.
- **5G** – fifth generation wireless technology that is expected to help address customers' growing demand for data services as well as create opportunities for new services requiring high speed and reliability as well as low latency.
- **Account** – represents an individual or business financially responsible for one or multiple associated connections. An account may include a variety of types of connections such as handsets and connected devices.
- **Alternative Connect America Cost Model (A-CAM)** – a USF support mechanism for rate-of-return carriers, which provides revenue support through 2028. This support comes with an obligation to build defined broadband speeds to a certain number of locations.
- **Auctions 101, 102, and 103** – Auction 101 was an FCC auction of 28 GHz wireless spectrum licenses that started in November 2018 and concluded in January 2019. Auction 102 was an FCC auction of 24 GHz wireless spectrum licenses that started in March 2019 and concluded in May 2019. Auction 103 is an FCC auction of 37, 39, and 47 GHz wireless spectrum licenses that started in December 2019. The spectrum auctioned in each of these auctions, referred to as Millimeter Wave spectrum, is expected to be used primarily to deliver 5G technology.
- **Broadband Connections** – refers to the number of Wireline customers provided high-capacity data circuits via various technologies, including DSL and dedicated internet circuit technologies or the Cable billable number of lines into a building for high-speed data services.
- **Churn Rate** – represents the percentage of the connections that disconnect service each month. These rates represent the average monthly churn rate for each respective period.
- **Connected Devices** – non-handset devices that connect directly to the U.S. Cellular network. Connected devices include products such as tablets, wearables, modems, and hotspots.
- **DOCSIS** – Data Over Cable Service Interface Specification is an international telecommunications standard that permits the addition of high-bandwidth data transfer to an existing cable TV (CATV) system. DOCSIS 3.1 is a system specification that increases data transmission rates.
- **EBITDA** – refers to earnings before interest, taxes, depreciation, amortization and accretion and is used in the non-GAAP metric Adjusted EBITDA throughout this document. See Supplemental Information Relating to Non-GAAP Financial Measures within this MD&A for additional information.
- **Eligible Telecommunications Carrier (ETC)** – designation by states for providing specified services in "high cost" areas which enables participation in universal service support mechanisms.
- **Free Cash Flow** – non-GAAP metric defined as Cash flows from operating activities less Cash paid for additions to property, plant and equipment. See Supplemental Information Relating to Non-GAAP Financial Measures within this MD&A for additional information.
- **Gross Additions** – represents the total number of new connections added during the period, without regard to connections that were terminated during that period.
- **IPTV Connections** – represents the number of Wireline customers provided video services using IP networking technology.
- **ManagedIP Connections** – refers to the number of telephone handsets, data lines and IP trunks providing communications using IP networking technology.
- **Net Additions (Losses)** – represents the total number of new connections added during the period, net of connections that were terminated during that period.
- **OIBDA** – refers to operating income before depreciation, amortization and accretion and is used in the non-GAAP metric Adjusted OIBDA throughout this document. See Supplemental Information Relating to Non-GAAP Financial Measures within this MD&A for additional information.
- **Out-of-Territory Fiber Builds** – represents construction of facilities-based market expansions outside of TDS' ILEC and CLEC footprint.
- **Partial Economic Areas** – service areas of certain FCC wireless spectrum licenses based on geography.
- **Postpaid Average Revenue per Account (Postpaid ARPA)** – metric which is calculated by dividing total postpaid service revenues by the average number of postpaid accounts and by the number of months in the period.
- **Postpaid Average Revenue per User (Postpaid ARPU)** – metric which is calculated by dividing total postpaid service revenues by the average number of postpaid connections and by the number of months in the period.
- **Retail Connections** – the sum of U.S. Cellular postpaid connections and U.S. Cellular prepaid connections.
- **Tax Act** – refers to comprehensive federal tax legislation enacted on December 22, 2017, which made broad changes to the U.S. tax code. Now titled H.R.1, the Tax Act was originally identified as the Tax Cuts and Jobs Act of 2017.
- **Universal Service Fund (USF)** – a system of telecommunications collected fees and support payments managed by the FCC intended to promote universal access to telecommunications services in the United States.
- **U.S. Cellular Connections** – individual lines of service associated with each device activated by a customer. Connections include all types of devices that connect directly to the U.S. Cellular network.
- **Video Connections** – generally, a home or business receiving video programming counts as one video connection. In counting bulk residential or commercial connections, such as an apartment building or a hotel, connections are counted based on the number of units/rooms within the building receiving service.
- **Voice Connections** – refers to the individual circuits connecting a customer to Wireline's central office facilities that provide voice services or the Cable billable number of lines into a building for voice services.
- **VoLTE** – Voice over Long-Term Evolution is a technology specification that defines the standards and procedures for delivering voice communications and related services over 4G LTE networks.

- **Wireline Residential Revenue per Connection** – is calculated by dividing total Wireline residential revenue by the average number of Wireline residential connections and by the number of months in the period.

# Results of Operations — TDS Consolidated

| Year Ended December 31, | 2019 | 2018 | 2019 vs. 2018 |
|---|---|---|---|
| (Dollars in millions) | | | |
| **Operating revenues** | | | |
| U.S. Cellular | $ 4,022 | $ 3,967 | 1 % |
| TDS Telecom | 930 | 927 | – |
| All other[1] | 224 | 215 | 4 % |
| Total operating revenues | 5,176 | 5,109 | 1 % |
| **Operating expenses** | | | |
| U.S. Cellular | 3,910 | 3,809 | 3 % |
| TDS Telecom | 823 | 834 | (1)% |
| All other[1] | 264 | 261 | 1 % |
| Total operating expenses | 4,997 | 4,904 | 2 % |
| **Operating income (loss)** | | | |
| U.S. Cellular | 112 | 158 | (29)% |
| TDS Telecom | 107 | 93 | 15 % |
| All other[1] | (40) | (46) | 12 % |
| Total operating income | 179 | 205 | (13)% |
| **Investment and other income (expense)** | | | |
| Equity in earnings of unconsolidated entities | 168 | 160 | 5 % |
| Interest and dividend income | 29 | 26 | 15 % |
| Interest expense | (165) | (172) | 4 % |
| Other, net | — | 2 | N/M |
| Total investment and other income | 32 | 16 | 92 % |
| **Income before income taxes** | 211 | 221 | (5)% |
| Income tax expense | 64 | 46 | 37 % |
| **Net income** | 147 | 175 | (16)% |
| Less: Net income attributable to noncontrolling interests, net of tax | 26 | 40 | (36)% |
| **Net income attributable to TDS shareholders** | $ 121 | $ 135 | (10)% |
| Adjusted OIBDA (Non-GAAP)[2] | $ 1,122 | $ 1,079 | 4 % |
| Adjusted EBITDA (Non-GAAP)[2] | $ 1,319 | $ 1,267 | 4 % |
| Capital expenditures[3] | $ 1,032 | $ 767 | 35 % |

N/M - Percentage change not meaningful

1 Consists of corporate and other operations and intercompany eliminations.

2 Refer to Supplemental Information Relating to Non-GAAP Financial Measures within this MD&A for a reconciliation of this measure.

3 Refer to Liquidity and Capital Resources within this MD&A for additional information on Capital expenditures.

Refer to individual segment discussions in this MD&A for additional details on operating revenues and expenses at the segment level.

### Equity in earnings of unconsolidated entities

Equity in earnings of unconsolidated entities represents TDS' share of net income from entities in which it has a noncontrolling interest and that are accounted for using the equity method. TDS' investment in the Los Angeles SMSA Limited Partnership (LA Partnership) contributed $78 million and $77 million in 2019 and 2018, respectively.

**Income tax expense**

The effective tax rate on income before income taxes for 2019 was 30.3%. The effective tax rate includes the impact of federal and state tax, as well as other increases due primarily to nondeductible interest expenses.

TDS' effective tax rate on income before income taxes for 2018 was 21.0%. The effective tax rate was lower than a normalized rate inclusive of federal and state tax, due primarily to an income tax accounting method change that accelerated depreciation of certain assets for the 2017 tax year, resulting in discrete tax benefit recorded in 2018.

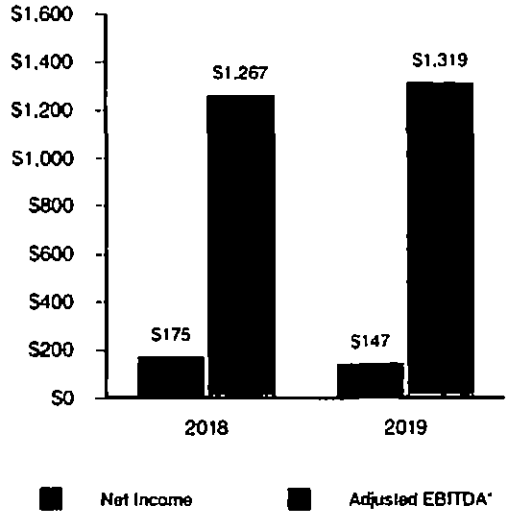
See Note 5 — Income Taxes in the Notes to Consolidated Financial Statements for additional information.

**Net income attributable to noncontrolling interests, net of tax**

| **Year Ended December 31,** | **2019** | 2018 |
|---|---|---|
| (Dollars in millions) | | |
| U.S. Cellular noncontrolling public shareholders' | **$ 23** | $ 26 |
| Noncontrolling shareholders' or partners' | **3** | 14 |
| Net income attributable to noncontrolling interests, net of tax | **$ 26** | $ 40 |

Net income attributable to noncontrolling interests, net of tax includes the noncontrolling public shareholders' share of U.S. Cellular's net income, the noncontrolling shareholders' or partners' share of certain U.S. Cellular subsidiaries' net income and other TDS noncontrolling interests.

**Earnings**
(Dollars in millions)




Net income decreased in 2019 due primarily to increased depreciation and other operating expenses, as well as higher income taxes and less gains recorded in 2019, partially offset by higher revenues. Adjusted EBITDA increased in 2019 due primarily to higher revenues, partially offset by higher selling, general and administrative expenses.

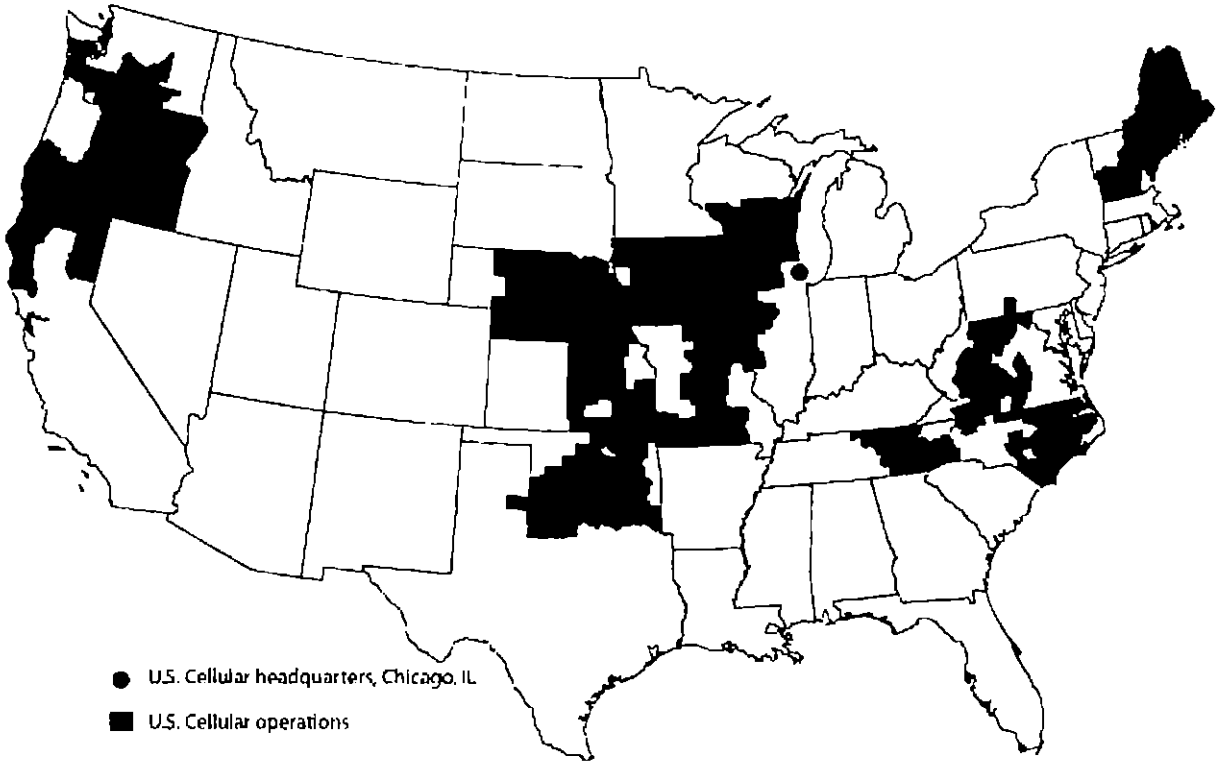
*Represents a non-GAAP financial measure. Refer to Supplemental Information Relating to Non-GAAP Financial Measures within this MD&A for a reconciliation of this measure.

# U.S. CELLULAR OPERATIONS

## Business Overview

U.S. Cellular owns, operates, and invests in wireless markets throughout the United States. U.S. Cellular is an 82%-owned subsidiary of TDS. U.S. Cellular's strategy is to attract and retain wireless customers through a value proposition comprised of a high-quality network, outstanding customer service, and competitive devices, plans, and pricing, all provided with a local focus.

### OPERATIONS




- Serves customers with 4.9 million connections including 4.4 million postpaid, 0.5 million prepaid and 0.1 million reseller and other connections
- Operates in 20 states
- Employs approximately 5,500 associates
- 4,166 owned towers
- 6,578 cell sites in service

**U.S. Cellular Mission and Strategy**

U.S. Cellular's mission is to provide exceptional wireless communication services which enhance consumers' lives, increase the competitiveness of local businesses, and improve the efficiency of government operations in the mid-sized and rural markets served.

U.S. Cellular continues to execute on its strategies to grow and protect its customer base, grow revenues, drive improvements in the overall cost structure, and invest in its network and system capabilities. Strategic efforts include:

- U.S. Cellular offers economical and competitively priced service plans and devices to its customers and is focused on increasing revenues from sales of related products such as accessories and device protection plans and from new services such as LTE home internet. In addition, U.S. Cellular is focused on expanding its solutions available to business and government customers, including a growing suite of connected machine-to-machine solutions and software applications across various categories.

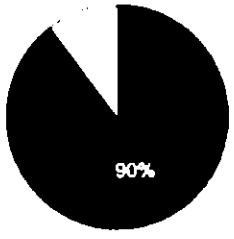
- U.S. Cellular continues to devote efforts to enhance its network capabilities. VoLTE technology is now available to nearly 70% of U.S Cellular's subscribers, and deployments in additional operating markets are expected in 2020 and 2021. VoLTE technology allows customers to utilize a 4G LTE network for both voice and data services and offers enhanced services such as high definition voice and simultaneous voice and data sessions.

- U.S. Cellular has begun to deploy 5G technology in its network and expects to launch commercial 5G services in selected markets in 2020. 5G technology is expected to help address customers' growing demand for data services as well as create opportunities for new services requiring high speed, reliability and low latency. U.S. Cellular is working with leading companies in the wireless infrastructure and handset ecosystem to provide rich 5G experiences for customers, initially focused on mobility services and using its low band spectrum. At the same time, as discussed below, U.S. Cellular has begun acquiring high band spectrum to enable the delivery of additional 5G services in the future. In addition to the deployment of 5G technology, U.S. Cellular is also modernizing its 4G LTE network to further enhance 4G LTE speeds.

- U.S. Cellular assesses its existing wireless interests on an ongoing basis with a goal of improving the competitiveness of its operations and maximizing its long-term return on capital. As part of this strategy, U.S. Cellular actively seeks attractive opportunities to acquire wireless spectrum, including pursuant to FCC auctions. In June 2019, the FCC announced that U.S. Cellular was the provisional winning bidder for 408 wireless spectrum licenses in its 28 GHz auction (Auction 101) and 282 wireless spectrum licenses in its 24 GHz auction (Auction 102) for an aggregate purchase price of $256 million. The wireless spectrum licenses from Auction 101 were granted by the FCC on October 2, 2019, and the wireless spectrum licenses from Auction 102 were granted by the FCC on December 11, 2019. On July 11, 2019, the FCC released a Public Notice establishing procedures for an auction offering wireless spectrum licenses in the 37, 39 and 47 GHz bands (Auction 103). Auction 103 is offering 34 100 MHz blocks in the Upper 37 GHz, 39 GHz, and 47 GHz bands in all Partial Economic Areas. On September 9, 2019, U.S. Cellular filed an application to participate in Auction 103 and was announced as a qualified bidder on October 31, 2019. Bidding in this auction commenced on December 10, 2019. The initial phase of this auction closed on January 30, 2020 and the assignment phase commenced on February 18, 2020.

# Operational Overview

**Retail Connections Composition**
**As of December 31, 2019**




| As of December 31, | 2019 | 2018 |
|---|---|---|
| **Retail Connections – End of Period** | | |
| Postpaid | **4,383,000** | 4,472,000 |
| Prepaid | **506,000** | 516,000 |
| **Total** | **4,889,000** | 4,988,000 |

| Year Ended December 31, | 2019 | 2018 | 2019 vs. 2018 |
|---|---|---|---|
| **Postpaid Activity and Churn** | | | |
| Gross Additions | | | |
| Handsets | **458,000** | 475,000 | (4)% |
| Connected Devices | **148,000** | 150,000 | (1)% |
| Total Gross Additions | **606,000** | 625,000 | (3)% |
| Net Additions (Losses) | | | |
| Handsets | **(24,000)** | 23,000 | N/M |
| Connected Devices | **(65,000)** | (69,000) | 6% |
| Total Net Additions (Losses) | **(89,000)** | (46,000) | (93)% |
| Churn | | | |
| Handsets | **1.04%** | 0.98% | |
| Connected Devices | **3.24%** | 2.96% | |
| Total Churn | **1.31%** | 1.25% | |

Postpaid net losses increased in 2019 due to lower handset gross additions and higher handset defections, which are due primarily to aggressive industry-wide competition on both service plans and devices.

Total postpaid churn increased in 2019 due primarily to higher handset defections.

**Postpaid Revenue**

| Year Ended December 31, | 2019 | 2018 | 2019 vs. 2018 |
|---|---|---|---|
| Average Revenue Per User (ARPU) | **$ 46.01** | $ 44.98 | 2% |
| Average Revenue Per Account (ARPA) | **$ 119.80** | $ 118.93 | 1% |

Postpaid ARPU and Postpaid ARPA increased in 2019 due primarily to (i) having proportionately more handset connections, which on a per-unit basis contribute more revenue than connected devices, (ii) a shift to higher priced service plans, and (iii) an increase in device protection plan revenue. Such factors were partially offset by an increase in sales promotion costs.

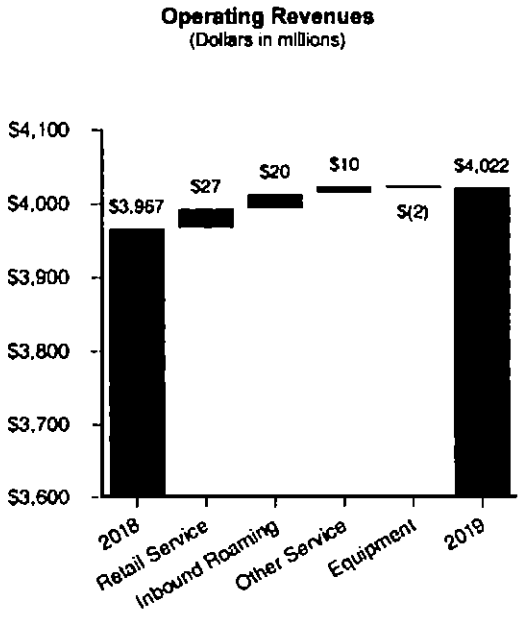
# Financial Overview — U.S. Cellular

| Year Ended December 31, | 2019 | 2018 | 2019 vs. 2018 |
|---|---|---|---|
| (Dollars in millions) | | | |
| Retail service | $ 2,660 | $ 2,623 | 1 % |
| Inbound roaming | 174 | 154 | 13 % |
| Other | 211 | 201 | 5 % |
| Service revenues | 3,035 | 2,978 | 2 % |
| Equipment sales | 987 | 989 | – |
| Total operating revenues | 4,022 | 3,967 | 1 % |
| | | | |
| System operations (excluding Depreciation, amortization and accretion reported below) | 756 | 758 | – |
| Cost of equipment sold | 1,028 | 1,031 | – |
| Selling, general and administrative | 1,406 | 1,388 | 1 % |
| Depreciation, amortization and accretion | 702 | 640 | 10 % |
| (Gain) loss on asset disposals, net | 19 | 10 | 80 % |
| (Gain) loss on sale of business and other exit costs, net | (1) | — | N/M |
| (Gain) loss on license sales and exchanges, net | — | (18) | 98 % |
| Total operating expenses | 3,910 | 3,809 | 3 % |
| | | | |
| **Operating Income** | $ 112 | $ 158 | (29)% |
| | | | |
| Net income | $ 133 | $ 164 | (19)% |
| Adjusted OIBDA (Non-GAAP)[1] | $ 832 | $ 790 | 5 % |
| Adjusted EBITDA (Non-GAAP)[1] | $ 1,015 | $ 963 | 5 % |
| Capital expenditures[2] | $ 710 | $ 515 | 38 % |

N/M - Percentage change not meaningful

1 Refer to Supplemental Information Relating to Non-GAAP Financial Measures within this MD&A for a reconciliation of this measure.

2 Refer to Liquidity and Capital Resources within this MD&A for additional information on Capital expenditures.




***Service revenues consist of:***

- Retail Service – Charges for voice, data and value added services and recovery of regulatory costs
- Inbound Roaming – Charges to other wireless carriers whose customers use U.S. Cellular's wireless systems when roaming
- Other Service – Amounts received from the Federal USF, tower rental revenues, and miscellaneous other service revenues

***Equipment revenues consist of:***

- Sales of wireless devices and related accessories to new and existing customers, agents, and third-party distributors

**Key components of changes in the statement of operations line items were as follows:**

**Total operating revenues**

Retail service revenues increased in 2019 primarily as a result of the increase in Postpaid ARPU as previously discussed in the Operational Overview section.

Inbound roaming revenues increased in 2019 primarily driven by data revenues, with significantly higher usage partially offset by lower rates.

Other service revenues increased in 2019, due primarily to an increase in tower rental revenues resulting from (i) an increase in new agreements and increases in rental rates and (ii) an out-of-period adjustment recorded in the third quarter of 2019. See Note 11 — Leases in the Notes to Consolidated Financial Statements for additional information.

**Selling, general and administrative expenses**

Selling, general and administrative expenses increased in 2019 due primarily to an increase in costs driven by information system initiatives, as well as an increase in bad debts expense.

**Depreciation, amortization and accretion**

Depreciation, amortization, and accretion increased in 2019 due to (i) additional network assets being placed into service and (ii) accelerated depreciation of certain assets due to changes in network technology, which will continue in 2020 and beyond.

**(Gain) loss on asset disposals, net**

Loss on asset disposals, net increased in 2019 due primarily to the disposal of technologically obsolete equipment.

**(Gain) loss on license sales and exchanges, net**

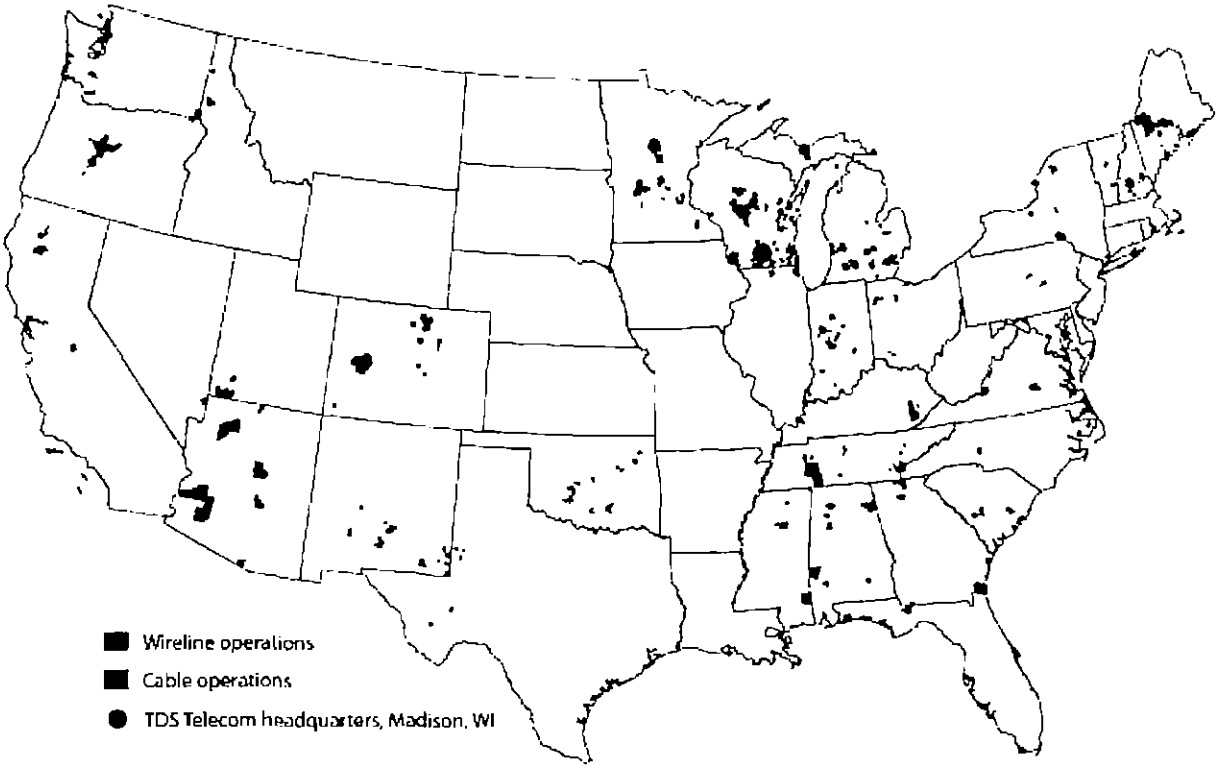
Net gains in 2018 were due to license sale and exchange transactions with various third parties.

# TDS TELECOM OPERATIONS

## Business Overview

TDS Telecom provides a wide range of communications services to residential and commercial customers. TDS Telecom operates in two segments: Wireline, which includes fiber out-of-territory builds, and Cable.

### OPERATIONS




- Serves 1.2 million connections in 32 states.
- Employs approximately 2,900 employees.
- Wireline operates incumbent local exchange carriers (ILEC), competitive local exchange carriers (CLEC) and out-of-territory builds in 27 states.
- Cable operates primarily in Colorado, New Mexico, North Carolina, Oregon, Texas and Utah.

**Trends and Developments**

***Growth Initiatives:***

- In 2017, TDS Telecom acquired and built an advanced fiber network in Sun Prairie, Wisconsin. Several additional locations are currently being built with fiber to expand its footprint into attractive markets that are underserved today. TDS Telecom's Madison, Wisconsin cluster will include an additional 27,000 services addresses, its Central Wisconsin cluster will include 36,000 service addresses, and its new Coeur d'Alene, Idaho cluster will include 42,000 service addresses. At the end of 2019, TDS Telecom has installed fiber to approximately 33,000 service addresses in these out-of-territory markets.

- TDS Telecom is also pursuing a strategy to invest in fiber in markets within its current footprint. Increased fiber deployment provides the opportunity to deliver more robust residential and consumer products which drives growth. At the end of 2019, TDS Telecom has installed fiber to approximately 207,000 service addresses within its existing footprint.

- On December 31, 2019, TDS acquired substantially all of the assets of MI Connection Communications System, dba Continuum, for $80 million in cash, subject to working capital adjustments. Continuum is a cable company that passes approximately 40,000 service addresses in North Carolina and offers broadband, video and voice services, which complement the TDS Telecom portfolio of products. TDS Telecom will continue to pursue acquisitions that meet its criteria of having favorable competitive environments, attractive market demographics and the ability to grow broadband penetration.

***Technology & Support Systems:***

- TDS Telecom's Wireline segment continues to upgrade and expand its network to respond to the needs of its customers for greater bandwidth and advanced technologies. At December 31, 2019, fiber has been deployed to approximately 30% of service addresses. Fiber technology allows broadband speeds of up to 1 Gigabit per second (Gbps). In non-fiber markets, TDS Telecom has deployed advanced technologies to increase data speeds up to 100 Megabits per second (Mbps) to reach approximately 38% of service addresses. TDS Telecom continues to utilize federal and state funding mechanisms in order to extend broadband service to unserved and underserved markets.

- TDS Telecom's Cable segment continues to make capacity investments in line with its strategy to increase broadband penetration in its markets. DOCSIS 3.0 technology is deployed to nearly all of Cable's service addresses which allows it to offer enhanced transmission speeds and TDS Telecom has begun to enable a next generation DOCSIS 3.1 broadband network that will offer significant higher speeds of up to 1 Gbps. TDS Telecom's Cable segment is also offering up to 1 Gbps service through fiber investments in new construction in its largest markets.

***Services and Products:***

- TDS Telecom's Wireline segment strives to be the preferred broadband provider in its markets with the ability to provide value-added bundling services with video and voice service options. TDS Telecom continues to invest in its network to offer higher speed data service and to expand its fiber footprint. At December 31, 2019, 67% of residential broadband connections had 10 Mbps or faster service and 30% had 100 Mbps or faster service.

- TDS Telecom's Wireline segment offers IPTV, branded as TDS TV, in order to leverage its high-speed network. TDS TV provides customers with connected-home DVRs, video-on-demand and TV Everywhere. TDS Telecom offers TDS TV in 40 markets, enabling 267,000 or roughly 34% of its service addresses. Where TDS TV is not available, TDS Telecom partners with a satellite TV provider to allow for triple or double play bundling.

- TDS Telecom's commercial operations lead with a broadband service bundled with voice and TDS TV for small- to medium-sized businesses.

- TDS Telecom's Cable segment seeks to expand broadband services and leverage that growth by bundling with video and voice services. In addition to providing enhanced broadband speeds through DOCSIS 3.1 technology, TDS Telecom also provides customers with a whole home entertainment solution branded as CatchTV.

# Financial Overview — TDS Telecom

| Year Ended December 31, | 2019 | 2018 | 2019 vs. 2018 |
|---|---|---|---|
| (Dollars in millions) | | | |
| Operating revenues | | | |
| Wireline | $ 683 | $ 699 | (2)% |
| Cable | 247 | 230 | 8 % |
| TDS Telecom operating revenues[1] | 930 | 927 | – |
| Operating expenses | | | |
| Wireline | 587 | 604 | (3)% |
| Cable | 236 | 231 | 2 % |
| TDS Telecom operating expenses[1] | 823 | 834 | (1)% |
| **TDS Telecom operating income** | $ 107 | $ 93 | 15 % |
| Net income | $ 92 | $ 89 | 4 % |
| Adjusted OIBDA (Non-GAAP)[2] | $ 300 | $ 303 | (1)% |
| Adjusted EBITDA (Non-GAAP)[2] | $ 313 | $ 313 | – |
| Capital expenditures[3] | $ 316 | $ 232 | 36 % |

Numbers may not foot due to rounding.

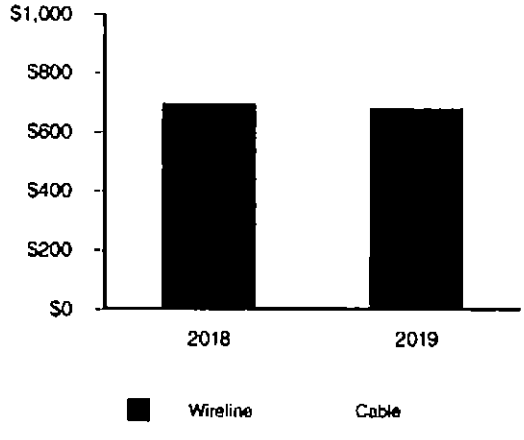
N/M - Percentage change not meaningful

1 Includes eliminations between the Wireline and Cable segments.

2 Refer to Supplemental Information Relating to Non-GAAP Financial Measures within this MD&A for a reconciliation of this measure.

3 Refer to Liquidity and Capital Resources within this MD&A for additional information on Capital expenditures.

**Operating Revenues**
(Dollars in millions)




Operating revenues were flat in 2019 as Wireline and Cable broadband growth and Wireline video connection growth were offset by declines in Wireline wholesale access revenue and voice and commercial revenues.

**Total operating expenses**

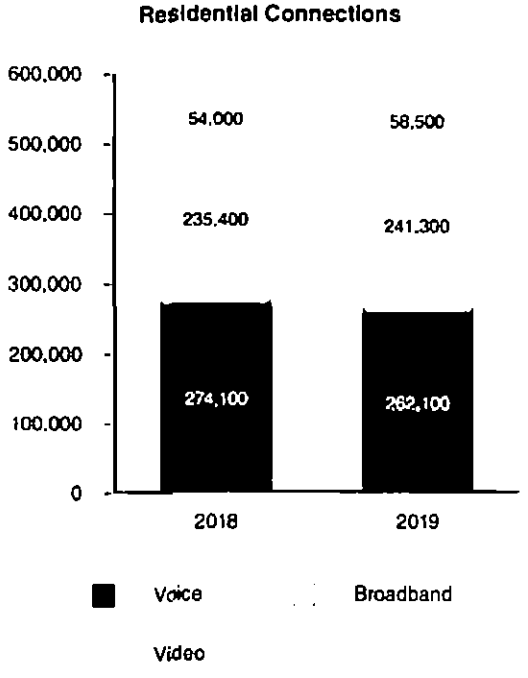
Operating expenses decreased in 2019 due primarily to decreases in employee-related expenses and depreciation expense and an increase in gain on the sale of assets.

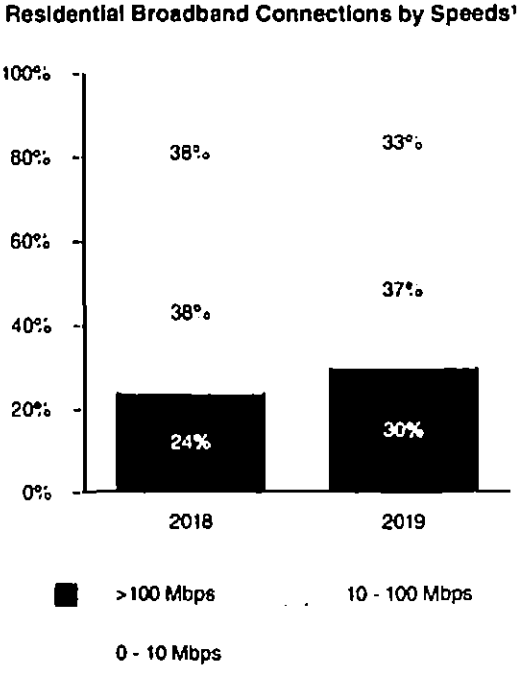
# WIRELINE OPERATIONS

## Business Overview

TDS Telecom's Wireline business provides broadband, video and voice services. These services are provided to residential, commercial, and wholesale customers in a mix of rural, small town and suburban markets, with the largest concentration of its customers in the Upper Midwest and the Southeast. TDS Telecom's residential strategy is to focus on broadband bundled with video and voice services. In its commercial business, TDS Telecom's focus is on small- to medium-sized businesses and its sales efforts emphasize providing broadband with an array of voice services.

## Operational Overview



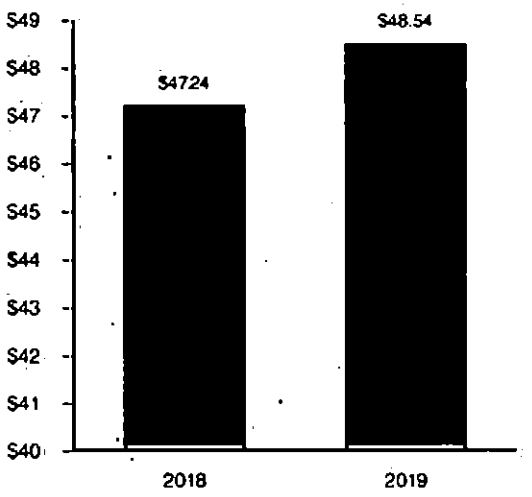




Total residential connections were relatively flat as growth in broadband and video connections were offset by the decline in voice connections.

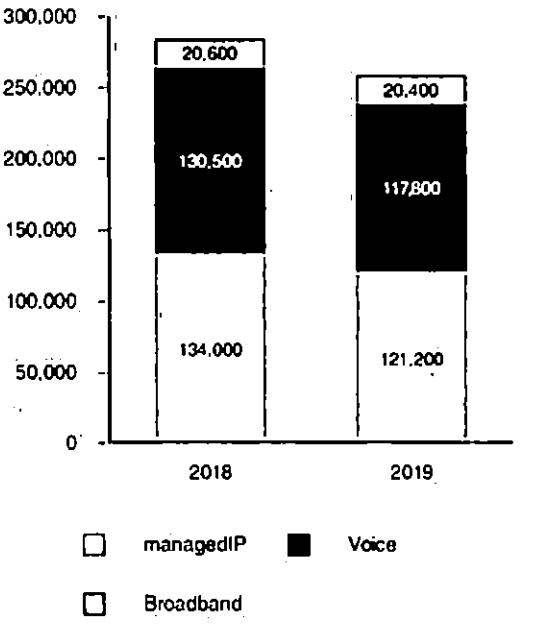
Residential broadband customers continue to choose higher speeds with 67% taking speeds of 10 Mbps or greater and 30% choosing speeds of 100 Mbps or greater.

1 Includes ILEC and out-of-territory

**Residential Revenue per Connection**




**Commercial Connections**




Residential revenue per connection increased 3% due to video and broadband connection growth as well as an increase in broadband speeds.

Total commercial connections decreased by 9% due primarily to declines in connections in CLEC markets.

# Financial Overview — Wireline

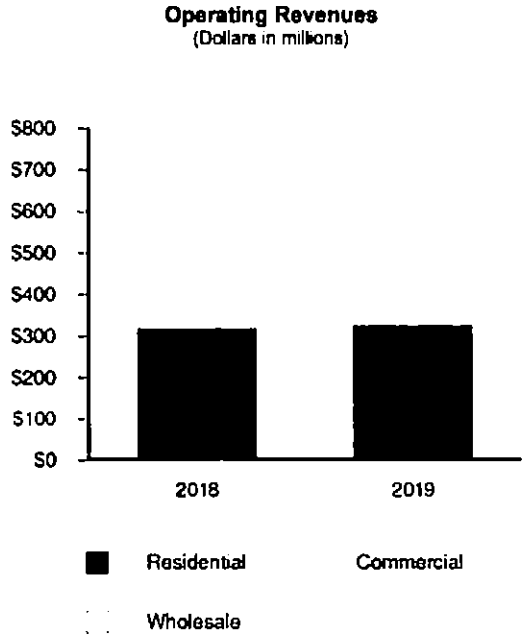
| Year Ended December 31, | 2019 | 2018 | 2019 vs. 2018 |
|---|---|---|---|
| (Dollars in millions) | | | |
| Residential | $ 328 | $ 321 | 2 % |
| Commercial | 168 | 184 | (9)% |
| Wholesale | 186 | 191 | (2)% |
| Service revenues | 682 | 697 | (2)% |
| Equipment and product sales | 1 | 2 | (26)% |
| Total operating revenues | 683 | 699 | (2)% |
| | | | |
| Cost of services (excluding Depreciation, amortization and accretion reported below) | 263 | 266 | (1)% |
| Cost of equipment and products | 1 | 1 | (24)% |
| Selling, general and administrative | 199 | 197 | 1 % |
| Depreciation, amortization and accretion | 132 | 142 | (7)% |
| (Gain) loss on asset disposals, net | (8) | (3) | N/M |
| Total operating expenses | 587 | 604 | (3)% |
| | | | |
| **Operating income** | $ 96 | $ 95 | 1 % |
| | | | |
| Income before income taxes | $ 110 | $ 106 | 3 % |
| Adjusted OIBDA (Non-GAAP)[1] | $ 220 | $ 234 | (6)% |
| Adjusted EBITDA (Non-GAAP)[1] | $ 231 | $ 243 | (5)% |
| Capital expenditures[2] | $ 243 | $ 176 | 38 % |

Numbers may not foot due to rounding.

N/M - Percentage change not meaningful

1 Refer to Supplemental Information Relating to Non-GAAP Financial Measures within this MD&A for a reconciliation of this measure.

2 Refer to Liquidity and Capital Resources within this MD&A for additional information on Capital expenditures.




***Residential revenues consist of:***

- Broadband services, including fiber- and copper-based high-speed internet, security and support services
- Video services, including IPTV and satellite offerings
- Voice services

***Commercial revenues consist of:***

- High-speed and dedicated business internet services
- Voice services

***Wholesale revenues consist of:***

- Network access services primarily to interexchange and wireless carriers for carrying data and voice traffic on TDS Telecom's network
- Federal and state USF support, including A-CAM

**Key components of changes in the statement of operations items were as follows:**

**Total operating revenues**

Residential revenues increased in 2019 due primarily to growth in broadband and video connections, as well as price increases, partially offset by a decline in voice connections. Broadband and video connections grew 3% and 8%, respectively, while voice connections declined 4%.

Commercial revenues decreased in 2019 due primarily to declining connections in CLEC markets.

Wholesale revenues decreased in 2019 due to decreases in legacy transport services, primarily for special access.

**Cost of services**

Cost of services decreased in 2019 due to lower employee-related expenses and decreases in the costs of provisioning legacy services, partially offset by increases in video programming charges and plant and maintenance expense.

**Selling, general and administrative**

Selling, general and administrative expenses increased in 2019 due primarily to increased legal and advertising expenses, offset by lower employee-related costs.

**Depreciation, amortization and accretion**

Depreciation, amortization and accretion decreased in 2019 as certain assets became fully depreciated, partially offset by depreciation on new fiber assets.

**(Gain) loss on asset disposals, net**

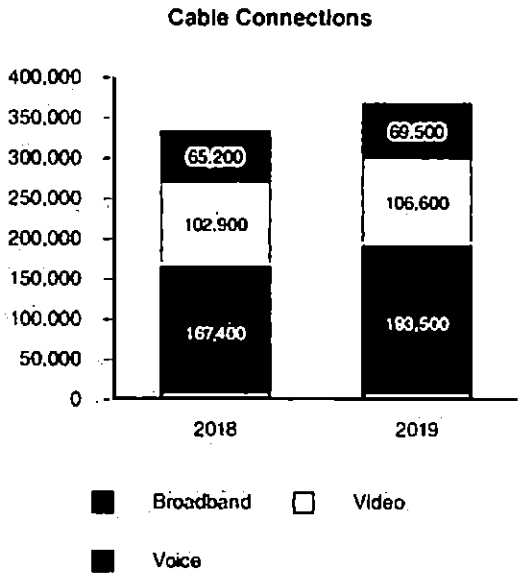
Gain on asset disposals increased due to the sale of fiber assets in certain CLEC markets.

# CABLE OPERATIONS

## Business Overview

TDS Telecom's Cable strategy is to expand its broadband services and leverage that growth by bundling with video and voice services. TDS Telecom seeks to be the leading provider of broadband services in its targeted markets by leveraging its core competencies in network management and customer focus.

## Operational Overview




Cable connections grew 10% in 2019 due to an increase in broadband connections and the acquisition of Continuum, which included 15,800 broadband connections, 9,400 video connections and 5,800 voice connections.

# Financial Overview — Cable

| Year Ended December 31, | 2019 | 2018 | 2019 vs. 2018 |
|---|---|---|---|
| (Dollars in millions) | | | |
| Residential | $ 205 | $ 188 | 9 % |
| Commercial | 43 | 42 | 3 % |
| Total operating revenues | 247 | 230 | 8 % |
| Cost of services (excluding Depreciation, amortization and accretion reported below) | 105 | 104 | 2 % |
| Selling, general and administrative | 62 | 57 | 8 % |
| Depreciation, amortization and accretion | 68 | 69 | (2)% |
| (Gain) loss on asset disposals, net | 1 | 1 | (48)% |
| Total operating expenses | 236 | 231 | 2 % |
| **Operating Income (loss)** | $ 11 | $ (2) | N/M |
| Income (loss) before income taxes | $ 13 | $ (1) | N/M |
| Adjusted OIBDA (Non-GAAP)[1] | $ 80 | $ 69 | 16 % |
| Adjusted EBITDA (Non-GAAP)[1] | $ 82 | $ 70 | 17 % |
| Capital expenditures[2] | $ 73 | $ 56 | 31 % |

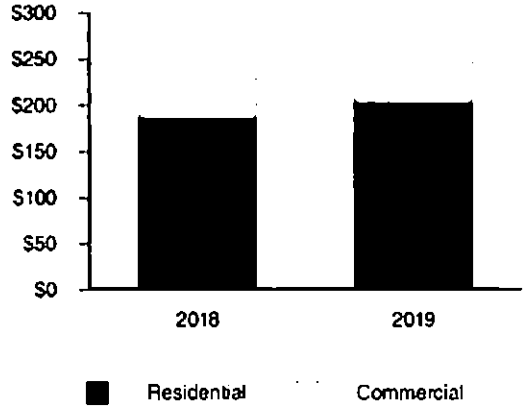
Numbers may not foot due to rounding.

N/M - Percentage change not meaningful

1 Refer to Supplemental Information Relating to Non-GAAP Financial Measures within this MD&A for a reconciliation of this measure.

2 Refer to Liquidity and Capital Resources within this MD&A for additional information on Capital expenditures.

**Operating Revenues**
(Dollars in millions)




**Residential and Commercial revenues consist of:**

- Broadband services, including high-speed internet, security and support services
- Video services including premium programming in HD, multi-room and TV Everywhere offerings
- Voice services

**Key components of changes in the statement of operations items were as follows:**

**Total operating revenues**

Residential and commercial revenues increased 8% in 2019 due to price increases and growth in broadband connections.

**Cost of services**

Cost of services increased 2% in 2019 due primarily to increases in maintenance activities.

**Selling, general and administrative**

Selling, general and administrative expenses increased in 2019 due primarily to higher employee-related expenses and closing costs related to the acquisition of Continuum.

**Depreciation, amortization and accretion**

Depreciation, amortization and accretion decreased in 2019 as certain assets became fully depreciated.

# Liquidity and Capital Resources

**Sources of Liquidity**

TDS and its subsidiaries operate capital-intensive businesses. Historically, TDS has used internally-generated funds and also has obtained substantial funds from external sources for general corporate purposes. In the past, TDS' existing cash and investment balances, funds available under its revolving credit and receivables securitization agreements, funds from other financing sources, including undrawn term loans and other long-term debt, and cash flows from operating and certain investing and financing activities, including sales of assets or businesses, provided sufficient liquidity and financial flexibility for TDS to meet its normal day-to-day operating needs and debt service requirements, to finance the build-out and enhancement of markets and to fund acquisitions. There is no assurance that this will be the case in the future. See Market Risk for additional information regarding maturities of long-term debt.

TDS has incurred negative free cash flow at times in the past and this could occur in the future. However, TDS believes that existing cash and investment balances, funds available under its revolving credit, term loan and receivables securitization agreements, and expected cash flows from operating and investing activities will provide sufficient liquidity for TDS to meet its normal day-to-day operating needs and debt service requirements for the coming year.

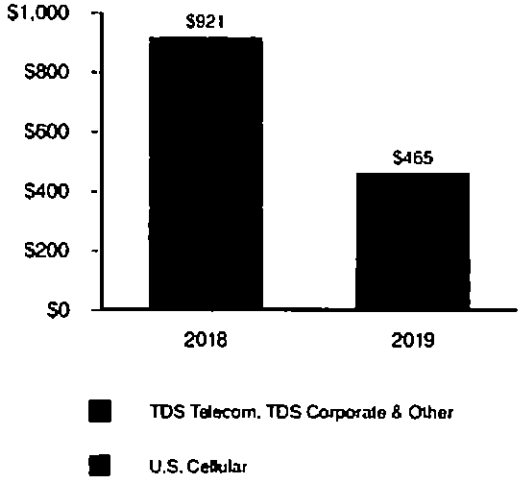
TDS may require substantial additional capital for, among other uses, funding day-to-day operating needs including working capital, acquisitions of providers of cable, wireless or wireline telecommunications services, IT services or other businesses, wireless spectrum license or system acquisitions, capital expenditures, debt service requirements, the repurchase of shares, the payment of dividends, or making additional investments, including new technologies and out of territory builds. It may be necessary from time to time to increase the size of the existing revolving credit agreements, to put in place new credit agreements, or to obtain other forms of financing in order to fund potential expenditures. TDS, through U.S. Cellular, expects to participate in a wireless spectrum auction in 2020 (see Regulatory Matters - Millimeter Wave Spectrum Auctions) and also expects capital expenditures in 2020 to be higher than in 2019, due primarily to investments at U.S. Cellular to enhance network speed and capacity and to continue deploying VoLTE and 5G technology on its network, and at TDS Telecom to increase levels of fiber investment. TDS' liquidity would be adversely affected if, among other things, TDS is unable to obtain financing on acceptable terms, TDS makes significant wireless spectrum license purchases, TDS makes significant business acquisitions, the LA Partnership discontinues or significantly reduces distributions compared to historical levels, or Federal USF and/or other regulatory support payments decline.

TDS' credit rating currently is sub-investment grade. There can be no assurance that sufficient funds will continue to be available to TDS or its subsidiaries on terms or at prices acceptable to TDS. Insufficient cash flows from operating activities, changes in TDS' credit ratings, defaults of the terms of debt or credit agreements, uncertainty of access to capital, deterioration in the capital markets, reduced regulatory capital at banks which in turn limits their ability to borrow and lend, other changes in the performance of TDS or in market conditions or other factors could limit or restrict the availability of financing on terms and prices acceptable to TDS, which could require TDS to reduce its acquisition, capital expenditure and business development programs, reduce the acquisition of wireless spectrum licenses, and/or reduce or cease share repurchases and/or the payment of dividends. Any of the foregoing developments would have an adverse impact on TDS' businesses, financial condition or results of operations. TDS cannot provide assurance that circumstances that could have a material adverse effect on its liquidity or capital resources will not occur.

### Cash and Cash Equivalents

Cash and cash equivalents include cash and money market investments. The primary objective of TDS' Cash and cash equivalents investment activities is to preserve principal. Cash held by U.S. Cellular is for use in its operations and acquisition, capital expenditure and business development programs. TDS does not have direct access to U.S. Cellular cash unless U.S. Cellular pays a dividend on its common stock. U.S. Cellular has no current intention to pay a dividend to its shareholders.

**Cash and Cash Equivalents**
(Dollars in millions)




At December 31, 2019, TDS' consolidated Cash and cash equivalents totaled $465 million compared to $921 million at December 31, 2018.

The majority of TDS' Cash and cash equivalents are held in bank deposit accounts and in money market funds that purchase only debt issued by the U.S. Treasury or U.S. government agencies across a range of eligible money market investments that may include, but are not limited to, government agency repurchase agreements, government agency debt, U.S. Treasury repurchase agreements, U.S. Treasury debt, and other securities collateralized by U.S. government obligations. TDS monitors the financial viability of the money market funds and the financial institutions with which TDS has deposits and believes that the credit risk associated with these funds and institutions is low.

### Financing

***Revolving Credit Agreements***

TDS and U.S. Cellular have unsecured revolving credit agreements available for general corporate purposes including acquisitions, wireless spectrum license purchases and capital expenditures. In May 2018, TDS entered into a $400 million revolving credit agreement with certain lenders and other parties and U.S. Cellular entered into a $300 million revolving credit agreement with certain lenders and other parties. Amounts under the revolving credit agreements may be borrowed, repaid and reborrowed from time to time until maturity in May 2023. As of December 31, 2019, there were no outstanding borrowings under the revolving credit agreements, except for letters of credit, and TDS and U.S. Cellular's unused capacity under their revolving credit agreements was $399 million and $298 million, respectively.

See Note 13 — Debt in the Notes to Consolidated Financial Statements for additional information regarding the revolving credit agreements.

***Term Loans***

On January 6, 2020, TDS entered into an unsecured $200 million senior term loan credit agreement. The term loan is available for general corporate purposes, including working capital and capital expenditures. As of February 25, 2020, no borrowings have been made under the agreement. The term loan may be drawn in one or more advances by the one-year anniversary of the date of the agreement; amounts not drawn by that time will cease to be available. The maturity date of the term loan is January 6, 2027 and would accelerate in the event of a change in control.

In January 2015, U.S. Cellular entered into an unsecured senior term loan credit agreement. This agreement was entered into for general corporate purposes, including working capital, spectrum purchases and capital expenditures. In July 2015, U.S. Cellular borrowed the full amount of $225 million available under this agreement in two separate draws. This term loan credit agreement was amended and restated in June 2016, and further amended in May 2018 and March 2019. In October 2019, U.S. Cellular made a $100 million principal prepayment on the outstanding balance of the loan. The remaining unpaid balance will be due and payable in January 2022.

See Note 13 — Debt in the Notes to Consolidated Financial Statements for additional information regarding the U.S. Cellular term loan.

***Receivables Securitization Agreement***

In December 2017, U.S. Cellular, through its subsidiaries, entered into a $200 million credit agreement to permit securitized borrowings using its equipment installment receivables for general corporate purposes. In September 2019, U.S. Cellular amended this agreement extending the expiration date of the agreement to December 15, 2021. There were no significant changes to other key terms of the agreement. U.S. Cellular entered into a performance guaranty whereby U.S. Cellular guarantees the performance of certain wholly-owned subsidiaries of U.S. Cellular under the agreement. Amounts under the receivables securitization agreement may be borrowed, repaid and reborrowed from time to time until maturity in December 2021, which may be extended from time to time as specified therein. As of December 31, 2019, there were no outstanding borrowings under the receivables securitization agreement, and the entire unused capacity of $200 million was available, subject to sufficient collateral to satisfy the asset borrowing base provisions of the agreement.

See Note 13 — Debt in the Notes to Consolidated Financial Statements for additional information regarding the receivables securitization agreement.

***Financial Covenants***

The TDS and U.S. Cellular revolving credit agreements, senior term loan agreements and the U.S. Cellular receivables securitization agreement require TDS or U.S. Cellular, as applicable, to comply with certain affirmative and negative covenants, which include certain financial covenants. In particular, under these agreements, TDS and U.S. Cellular are required to maintain the Consolidated Interest Coverage Ratio at a level not lower than 3.00 to 1.00 as of the end of any fiscal quarter. TDS and U.S. Cellular also were required to maintain the Consolidated Leverage Ratio at a level not to exceed 3.25 to 1.00 as of the end of any fiscal quarter through June 30, 2019. From July 1, 2019 and thereafter, the Consolidated Leverage Ratio is not to exceed 3.00 to 1.00 as of the end of any fiscal quarter. TDS and U.S. Cellular believe they were in compliance as of December 31, 2019, with all such financial covenants.

***Other Long-Term Financing***

TDS and U.S. Cellular each have an effective shelf registration statement on Form S-3 to issue senior or subordinated debt securities. The proceeds from any such issuances may be used for general corporate purposes, including: the possible reduction of other short-term or long-term debt; spectrum purchases; capital expenditures; acquisition, construction and development programs; working capital; additional investments in subsidiaries; or the repurchase of shares. The TDS shelf registration permits TDS to issue at any time and from time to time senior or subordinated debt securities in one or more offerings in an indeterminate amount. The U.S. Cellular shelf registration statement permits U.S. Cellular to issue at any time and from time to time senior or subordinated debt securities in one or more offerings, up to the amount registered, which is currently $500 million. The ability of TDS or U.S. Cellular to complete an offering pursuant to such shelf registration statements is subject to market conditions and other factors at the time.

TDS believes that it and/or its subsidiaries were in compliance as of December 31, 2019, with all covenants and other requirements set forth in the TDS and U.S. Cellular long-term debt indentures. The TDS and U.S. Cellular long-term debt indentures do not include any financial covenants. TDS and U.S. Cellular have not failed to make nor do they expect to fail to make any scheduled payment of principal or interest under such indentures.

Refer to Market Risk — Long-Term Debt for additional information regarding required principal payments and the weighted average interest rates related to TDS' Long-term debt.

TDS and U.S. Cellular, at their discretion, may from time to time seek to retire or purchase their outstanding debt through cash purchases and/or exchanges for other securities, in open market purchases, privately negotiated transactions, tender offers, exchange offers or otherwise. Such repurchases or exchanges, if any, will depend on prevailing market conditions, liquidity requirements, contractual restrictions and other factors. The amounts involved may be material.

See Note 13 — Debt in the Notes to Consolidated Financial Statements for additional information on long-term financing.

**Credit Ratings**

In certain circumstances, TDS' and U.S. Cellular's interest cost on their various agreements may be subject to increase if their current credit ratings from nationally recognized credit rating agencies are lowered, and may be subject to decrease if the ratings are raised. The agreements do not cease to be available nor do the maturity dates accelerate solely as a result of a downgrade in TDS' or U.S. Cellular's credit rating. However, downgrades in TDS' or U.S. Cellular's credit rating could adversely affect their ability to renew the agreements or obtain access to other credit agreements in the future.

TDS and U.S. Cellular are rated at sub-investment grade. TDS and U.S. Cellular's credit ratings as of December 31, 2019, and the dates such ratings were re-affirmed were as follows:

| Rating Agency | Rating | Outlook |
|---|---|---|
| Moody's (TDS) (re-affirmed September 2019) | Ba2 | stable outlook |
| Moody's (U.S. Cellular) (re-affirmed September 2019) | Ba1 | stable outlook |
| Standard & Poor's (re-affirmed October 2019) | BB | stable outlook |
| Fitch Ratings (re-affirmed June 2019) | BB+ | stable outlook |

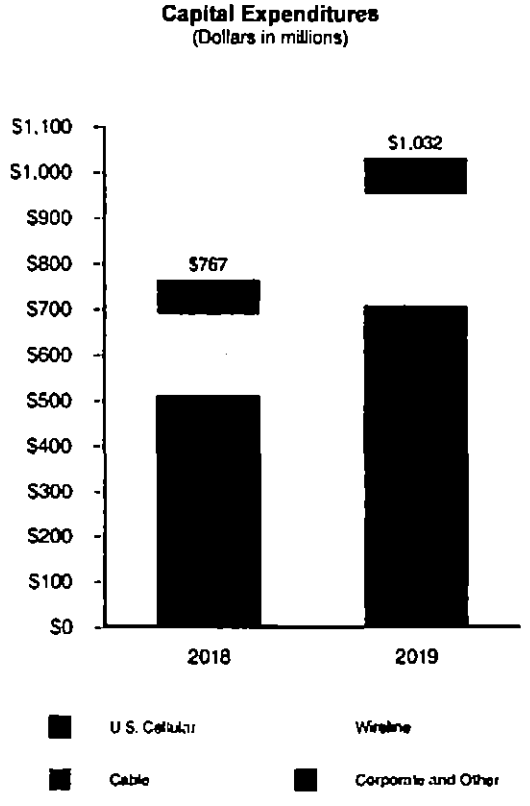
**Capital Requirements**

The discussion below is intended to highlight some of the significant cash outlays expected during 2020 and beyond and to highlight the spending incurred in prior years for these items. This discussion does not include cash required to fund normal operations, and is not a comprehensive list of capital requirements. Significant cash requirements that are not routine or in the normal course of business could arise from time to time.

***Capital Expenditures***

TDS makes substantial investments to acquire, construct and upgrade telecommunications networks and facilities to remain competitive and as a basis for creating long-term value for shareholders. In recent years, rapid changes in technology and new opportunities (such as 5G and VoLTE technology in the Wireless business and fiber in the Wireline business) have required substantial investments in potentially revenue-enhancing and cost-saving upgrades to TDS' networks to remain competitive; this is expected to continue in 2020 and future years with the continued deployment of 5G technology and VoLTE in the Wireless business, and the continued deployment of fiber in the Wireline business.

Capital expenditures (i.e., additions to property, plant and equipment and system development expenditures; excludes wireless spectrum license additions), which include the effects of accruals and capitalized interest, in 2019 and 2018 were as follows:




U.S. Cellular's capital expenditures in 2019 were $710 million compared to $515 million in 2018. In 2019, these capital expenditures were used for the following purposes:

- Enhance and maintain U.S. Cellular's network coverage, including continuing to deploy VoLTE technology in certain markets and providing additional speed and capacity to accommodate increased data usage by current customers;
- Begin deploying 5G technology on its network; and
- Invest in information technology to support existing and new services and products.

Capital expenditures for 2020 are expected to be between $850 million and $950 million. These expenditures are expected to be used for similar purposes as those listed above.

TDS Telecom's capital expenditures in 2019 were $316 million compared to $232 million in 2018. In 2019, these capital expenditures were used for the following purposes:

- Expand fiber deployment inside and outside of current footprint;
- Maintain and enhance existing infrastructure including build-out requirements to meet state broadband and A-CAM programs;
- Upgrade broadband capacity and speeds;
- Support success-based spending for broadband and video growth; and
- Build TDS TV+, a cloud-based video platform.

Capital expenditures in 2020 are expected to be between $300 million and $350 million. These expenditures are expected to be used for similar purposes as those listed above.

TDS intends to finance its capital expenditures for 2020 using primarily Cash flows from operating activities, existing cash balances and, if required, its receivables securitization, term loan and/or revolving credit agreements.

***Acquisitions, Divestitures and Exchanges***

TDS may be engaged from time to time in negotiations (subject to all applicable regulations) relating to the acquisition, divestiture or exchange of companies, properties, wireless spectrum licenses and other possible businesses. In general, TDS may not disclose such transactions until there is a definitive agreement. TDS assesses its business interests on an ongoing basis with a goal of improving the competitiveness of its operations and increasing its long-term return on capital. As part of this strategy, TDS reviews attractive opportunities to acquire additional wireless operating markets and wireless spectrum licenses, including pursuant to FCC auctions; and telecommunications, cable or other possible businesses.

In June 2019, the FCC announced by way of public notice that U.S. Cellular was the provisional winning bidder for 408 wireless spectrum licenses in its 28 GHz auction (Auction 101) and 282 wireless spectrum licenses in its 24 GHz auction (Auction 102) for an aggregate purchase price of $256 million. U.S. Cellular paid substantially all of the $256 million in the first half of 2019. The wireless spectrum licenses from Auction 101 were granted by the FCC on October 2, 2019, and the wireless spectrum licenses from Auction 102 were granted by the FCC on December 11, 2019.

On December 31, 2019, TDS acquired substantially all of the assets of MI Connection Communications System, dba Continuum, for $80 million in cash, subject to working capital adjustments. Continuum is a cable company that passes approximately 40,000 service addresses in North Carolina and offers broadband, video and voice services, which complement the TDS Telecom portfolio of products.

Total Cash paid for acquisitions and licenses was $346 million and $16 million in 2019 and 2018 respectively. Total Cash received from divestitures and exchanges was $41 million and $29 million in 2019 and 2018 respectively.

Subsequent to December 31, 2019, TDS committed to purchase assets in the amount of $146 million, subject to regulatory approval.

***Variable Interest Entities***

TDS consolidates certain "variable interest entities" as defined under GAAP. See Note 16 — Variable Interest Entities in the Notes to Consolidated Financial Statements for additional information related to these variable interest entities. TDS may elect to make additional capital contributions and/or advances to these variable interest entities in future periods in order to fund their operations.

***Common Share Repurchase Programs***

As of December 31, 2019, the maximum dollar value of TDS Common Shares that may yet be purchased under TDS' program was $199 million.

During 2019, U.S. Cellular repurchased 590,300 Common Shares for $21 million at an average cost per share of $35.45. At December 31, 2019, the total cumulative amount of U.S. Cellular Common Shares authorized to be purchased is 5,311,000.

Depending on its future financial performance, construction, development and acquisition programs, and available sources of financing, TDS and U.S. Cellular may not have sufficient liquidity or capital resources to make significant share repurchases. Therefore, there is no assurance that TDS and U.S. Cellular will make any significant share repurchases in the future.

For additional information related to the current TDS and U.S. Cellular repurchase authorizations, see Note 18 — Common Shareholders' Equity in the Notes to Consolidated Financial Statements.

***Off-Balance Sheet Arrangements***

TDS had no transactions, agreements or other contractual arrangements with unconsolidated entities involving "off-balance sheet arrangements," as defined by SEC rules, that had or are reasonably likely to have a material current or future effect on its financial condition, results of operations, liquidity, capital expenditures or capital resources.

***Dividends***

TDS paid quarterly dividends per outstanding share of $0.165 in 2019 and $0.160 in 2018. TDS increased the dividend per share to $0.170 in the first quarter of 2020. TDS has no current plans to change its policy of paying dividends.

## Contractual and Other Obligations

At December 31, 2019, the resources required for contractual obligations were as follows:

| | | Payments Due by Period | | | |
|---|---|---|---|---|---|
| | Total | Less Than 1 Year | 1 - 3 Years | 3 - 5 Years | More Than 5 Years |
| (Dollars in millions) | | | | | |
| Long-term debt obligations[1] | $ 2,390 | $ 9 | $ 84 | $ — | $ 2,297 |
| Interest payments on long-term debt obligations | 5,473 | 161 | 318 | 315 | 4,679 |
| Operating leases[2, 3] | 1,434 | 159 | 304 | 236 | 735 |
| Finance leases[2, 4] | 22 | 1 | 2 | 2 | 17 |
| Purchase obligations[5] | 2,408 | 1,065 | 1,203 | 103 | 37 |
| | $ 11,727 | $ 1,395 | $ 1,911 | $ 656 | $ 7,765 |

1 Includes current and long-term portions of debt obligations. The total long-term debt obligation differs from Total long-term debt, net due to finance leases, debt issuance costs and unamortized discounts. See Note 13 — Debt in the Notes to Consolidated Financial Statements for additional information.

2 Includes future lease costs related to telecommunications plant facilities, office space, retail sites, cell sites, data centers and equipment. See Note 11 — Leases in the Notes to Consolidated Financial Statements for additional information.

3 Includes $7 million of legally binding lease payments for leases signed but not yet commenced and excludes $20 million of legally binding lease payments for leases signed but not yet commenced for which the payment timing is unknown.

4 Includes $2 million of legally binding lease payments for leases signed but not yet commenced.

5 Includes obligations payable under non-cancellable contracts, commitments for device purchases, network facilities and transport services, agreements for software licensing, long-term marketing programs, as well as certain agreements to purchase goods or services. For certain contracts, TDS calculates its obligation based on termination fees that can be paid to exit the contract.

The table above excludes potential liabilities related to "unrecognized tax benefits" as defined by GAAP because TDS is unable to predict the outcome or period of settlement of such liabilities. Such unrecognized tax benefits were $49 million at December 31, 2019. See Note 5 — Income Taxes in the Notes to Consolidated Financial Statements for additional information.

See Note 15 — Commitments and Contingencies in the Notes to Consolidated Financial Statements for additional information.

# Consolidated Cash Flow Analysis

TDS operates a capital- and marketing-intensive business. TDS makes substantial investments to acquire wireless spectrum licenses and properties and to construct and upgrade communications networks and facilities as a basis for creating long-term value for shareholders. In recent years, rapid changes in technology and new opportunities have required substantial investments in potentially revenue-enhancing and cost-saving upgrades to TDS' networks. TDS utilizes cash on hand, cash from operating activities, cash proceeds from divestitures and dispositions of investments, and short-term and long-term debt financing to fund its acquisitions (including wireless spectrum licenses), construction costs, operating expenses and share repurchases. Cash flows may fluctuate from quarter to quarter and year to year due to seasonality, the timing of acquisitions and divestitures, capital expenditures and other factors. The following discussion summarizes TDS' cash flow activities in 2019 and 2018.

**2019 Commentary**

TDS' Cash, cash equivalents and restricted cash decreased $453 million. Net cash provided by operating activities was $1,016 million due to net income of $147 million plus non-cash items of $984 million and distributions received from unconsolidated entities of $162 million, including $75 million in distributions from the LA Partnership. This was offset by changes in working capital items which decreased net cash by $277 million. The more significant working capital changes were increases in accounts receivables and equipment installment plan receivables and a decrease in accounts payable.

Cash flows used for investing activities were $1,249 million. Cash paid for additions to property, plant and equipment totaled $957 million and Cash paid for acquisitions and licenses totaled $346 million. This was partially offset by cash received from the redemption of short-term Treasury bills of $29 million and Cash received from divestitures and exchanges of $41 million.

Cash flows used for financing activities were $220 million, reflecting a $100 million principal prepayment on the U.S. Cellular senior term loan, the repurchase of $21 million of U.S. Cellular Common Shares and ordinary activity such as the payment of dividends and the scheduled repayments of debt.

**2018 Commentary**

TDS' Cash, cash equivalents and restricted cash increased $305 million. Net cash provided by operating activities was $1,017 million due to net income of $175 million plus non-cash items of $906 million and distributions received from unconsolidated entities of $153 million, including $68 million in distributions from the LA Partnership. This was partially offset by changes in working capital items which decreased net cash by $217 million. The working capital changes were influenced primarily by a $149 million increase in equipment installment plan receivables.

Cash flows used for investing activities were $680 million. Cash paid for additions to property, plant and equipment totaled $776 million. This was partially offset by cash received from the redemption of shorter-term Treasury bills of $100 million.

Cash flows used for financing activities were $32 million, reflecting ordinary activity such as the payment of dividends and the scheduled repayments of debt, partially offset by cash proceeds from reissuance of Common Shares pursuant to stock-based compensation plans.

# Consolidated Balance Sheet Analysis

The following discussion addresses certain captions in the consolidated balance sheet and changes therein. This discussion is intended to highlight the significant changes and is not intended to fully reconcile the changes. Changes in financial condition during 2019 were as follows:

**Cash and cash equivalents**

See the Consolidated Cash Flow Analysis above for a discussion of cash and cash equivalents.

**Income taxes receivable**

Income taxes receivable increased $24 million due to estimated tax payments made in excess of the tax liability for the year. See Note 5 — Income Taxes in the Notes to Consolidated Financial Statements for additional information.

**Assets held for sale**

Assets held for sale decreased $54 million. Certain sale and exchange agreements that U.S. Cellular entered into in 2018 closed in the first quarter of 2019.

**Licenses**

Licenses increased $285 million due primarily to wireless spectrum licenses acquired through FCC auctions. See Note 8 — Intangible Assets in the Notes to Consolidated Financial Statements for additional information.

**Operating lease right-of-use assets**

Operating lease right-of-use assets increased $972 million due to the adoption of Accounting Standards Codification (ASC) 842. See Note 11 — Leases in the Notes to Consolidated Financial Statements for additional information.

**Short-term operating lease liabilities**

Short-term operating lease liabilities increased $116 million due to the adoption of ASC 842. See Note 11 — Leases in the Notes to Consolidated Financial Statements for additional information.

**Long-term operating lease liabilities**

Long-term operating lease liabilities increased $931 million due to the adoption of ASC 842. See Note 11 — Leases in the Notes to Consolidated Financial Statements for additional information.

**Other deferred liabilities and credits**

Other deferred liabilities and credits decreased $60 million due primarily to the adoption of ASC 842. See Note 11 — Leases in the Notes to Consolidated Financial Statements for additional information.

# Application of Critical Accounting Policies and Estimates

TDS prepares its consolidated financial statements in accordance with GAAP. TDS' significant accounting policies are discussed in detail in Note 1 — Summary of Significant Accounting Policies and Recent Accounting Pronouncements, Note 2 — Revenue Recognition and Note 11 — Leases in the Notes to Consolidated Financial Statements.

Management believes the application of the following critical accounting policies and the estimates required by such application reflect its most significant judgments and estimates used in the preparation of TDS' consolidated financial statements.

**Intangible Asset Impairment**

Licenses and Goodwill represent a significant component of TDS' consolidated assets. These assets are considered to be indefinite-lived assets and, therefore, are not amortized but rather are tested at least annually for impairment. TDS performs annual impairment testing of Licenses and Goodwill as of November 1 of each year, or more frequently if triggering events occur. Significant negative events, such as changes in any of the assumptions described below or decreases in forecasted cash flows, could result in an impairment in future periods. Licenses are tested for impairment at the level of reporting referred to as a unit of accounting. Goodwill is tested for impairment at the level of reporting referred to as a reporting unit.

See Note 8 — Intangible Assets in the Notes to Consolidated Financial Statements for information related to Licenses and Goodwill activity in 2019 and 2018.

***Wireless Spectrum Licenses – U.S. Cellular***

U.S. Cellular performs its annual impairment assessment of wireless spectrum licenses as of November 1 of each year, or more frequently if there are events or circumstances that cause U.S. Cellular to believe it is more likely than not that the carrying value of wireless spectrum licenses exceeds fair value. For purposes of its impairment testing, U.S. Cellular separated its FCC wireless spectrum licenses into eight units of accounting, which consisted of one unit of accounting for developed operating market wireless spectrum licenses (built wireless spectrum licenses) and seven geographic non-operating market wireless spectrum licenses (unbuilt wireless spectrum licenses). U.S. Cellular performed a quantitative impairment assessment in 2019, and a qualitative impairment assessment in 2018, to determine whether an impairment existed.

In 2019, a market approach was used to value the wireless spectrum license portfolio. Within each unit of accounting, the wireless spectrum licenses were pooled by type and by geographic area. The market approach calculates estimated market values using observable pricing multiples from wireless spectrum license purchase and auction transactions to estimate fair value for each pool of wireless spectrum licenses. The sum of the fair values of each of the pools represents the estimated fair value of U.S. Cellular's wireless spectrum licenses. The most significant assumption made in this process was the pricing multiples, which are units of value expressed in relation to the bandwidth and population covered by a wireless spectrum license. Based on the assessment, the fair values of the wireless spectrum license units of accounting exceeded their respective carrying values by amounts ranging from 39% to greater than 100%. It was determined that the carrying value of wireless spectrum licenses acquired through Auction 101 and 102 approximated fair value based on the recency of the auctions. Therefore, no impairment of wireless spectrum licenses existed.

In 2018, U.S. Cellular considered several qualitative factors, including analysts' estimates of wireless spectrum license values which contemplated recent spectrum auction results, recent U.S. Cellular and other market participant transactions and other industry and market factors. Based on this assessment, U.S. Cellular concluded that it was more likely than not that the fair value of the wireless spectrum licenses in each unit of accounting exceeded their respective carrying values. Therefore, no impairment of wireless spectrum licenses existed and no Step 1 quantitative impairment evaluation was completed.

***Goodwill – TDS Telecom***

TDS Telecom has recorded Goodwill as a result of the past acquisitions of wireline and cable businesses. For purposes of the 2019 and 2018 Goodwill impairment tests, TDS Telecom had two reporting units: Wireline and Cable.

Based on the results of the TDS Telecom annual Goodwill impairment assessment performed as of November 1, 2019, the fair values of the Wireline and Cable reporting units exceeded their carrying values. Therefore, no impairment of Goodwill was recorded for these reporting units.

The discounted cash flow approach and guideline public company method were used to value the Wireline and Cable reporting units. The discounted cash flow approach develops an indication of fair value using various inputs and considers current economic factors as well as risks specific to the industry and the reporting unit. The most significant assumptions made in this process were the revenue growth rate (shown as a compound annual growth rate in the table below), the terminal revenue growth rate and the discount rate. The guideline public company method develops an indication of fair value by calculating average market pricing multiples for selected publicly-traded companies. The developed multiples were applied to applicable financial measures of the respective reporting unit to determine fair value. The discounted cash flow approach and guideline public company method were weighted to arrive at the total fair value used for impairment testing. The weighting of methods was consistently applied in both 2019 and 2018.

For purposes of the discounted cash flow approach, the following table represents key assumptions used in estimating the fair value of the Wireline and Cable reporting units as of November 1, 2019. There are uncertainties associated with these key assumptions and potential events and/or circumstances that could have a negative effect on the key assumptions described below.

| Key Assumptions | Wireline | Cable |
|---|---|---|
| Revenue growth rate[1] | (2.2)% | 6.5% |
| Terminal revenue growth rate[1] | — % | 2.0% |
| Discount rate[2] | 6.0 % | 8.0% |

1 There are risks that could negatively impact the projected revenue growth rate, including but not limited to macroeconomic and industry factors.

2 The discount rate is derived based on a set of guideline public companies and is an indicator of the cost of capital for a market participant in TDS Telecom's industries. The discount rate may increase if borrowing costs rise, market participants weight more of their capital structure towards equity vs. debt, long-term risk free interest rates increase, Wireline's or Cable's risk in relation to its peers increases, or other elements affecting the estimated cost of equity or debt increase.

Provided all other assumptions remained the same, the Wireline and Cable discount rates would have to increase to 9.6% and 13.3%, respectively, to yield estimated fair values equal to their respective carrying values at November 1, 2019. Further, provided all other assumptions remained the same, the Wireline and Cable terminal revenue growth rate assumptions would need to decrease to negative 5.5% and negative 6.2%, respectively, to yield an estimate of fair value equal to the carrying value of the respective reporting units at November 1, 2019.

The Goodwill balances of the reporting units tested for impairment as of November 1, 2019, and the percentage by which the estimated fair value of the corresponding reporting units exceeded their carrying values, as a percentage of carrying value, was as follows:

| Reporting unit | Goodwill balance | Excess of estimated Fair Value over Carrying Value |
|---|---|---|
| (Dollars in millions) | | |
| Wireline | $ 409 | 31.0% |
| Cable | $ 100 | 54.4% |

**Income Taxes**

The amounts of income tax assets and liabilities, the related income tax provision and the amount of unrecognized tax benefits are critical accounting estimates because such amounts are significant to TDS' financial condition and results of operations.

The preparation of the consolidated financial statements requires TDS to calculate a provision for income taxes. This process involves estimating the actual current income tax liability together with assessing temporary differences resulting from the different treatment of items for tax purposes. These temporary differences result in deferred income tax assets and liabilities, which are included in TDS' Consolidated Balance Sheet. TDS must then assess the likelihood that deferred income tax assets will be realized based on future taxable income and, to the extent management believes that realization is not likely, establish a valuation allowance. Management's judgment is required in determining the provision for income taxes, deferred income tax assets and liabilities and any valuation allowance that is established for deferred income tax assets.

TDS recognizes the tax benefit from an uncertain tax position only if it is more likely than not that the tax position will be sustained on examination by the taxing authorities based on the technical merits of the position. The tax benefits recognized in the financial statements from such a position are measured based on management's judgment as to the possible outcome that has a greater than 50% cumulative likelihood of being realized upon ultimate resolution.

See Note 5 — Income Taxes in the Notes to Consolidated Financial Statements for additional information.

# Other Items

**Inflation**

Management believes that inflation affects TDS' business to no greater or lesser extent than the general economy.

**Seasonality**

TDS' profitability historically has been lower in the fourth quarter as a result of U.S. Cellular's significant marketing and promotional activity during the holiday season.

**Recently Issued Accounting Pronouncements**

See Note 1 — Summary of Significant Accounting Policies and Recent Accounting Pronouncements and Note 11 — Leases in the Notes to Consolidated Financial Statements for information on recently issued accounting pronouncements.

**Certain Relationships and Related Transactions**

See Note 22 — Certain Relationships and Related Transactions in the Notes to Consolidated Financial Statements.

# Regulatory Matters

### FCC Mobility Fund/5G Fund

In October 2011, the FCC adopted its USF/Intercarrier Compensation Transformation Order (USF Order). Pursuant to this order, U.S. Cellular's then current Federal USF support was to be phased down at the rate of 20% per year beginning July 1, 2012. The USF Order contemplated the establishment of a new mobile USF program (i.e., the Phase II Connect America Mobility Fund or "MF2") and provided for a pause in the phase down if that program was not timely implemented by July 2014. MF2 was not operational as of July 2014 and, therefore, as provided by the USF Order, the phase down was suspended at 60% of the baseline amount until such time as the FCC had taken steps to establish the MF2. In February 2017, the FCC adopted the MF2 Order addressing the framework for MF2 and the resumption of the phase down. The MF2 Order establishes a support fund of $453 million annually for ten years to be distributed through a market-based, multi-round reverse auction. For areas that receive support under MF2, legacy support to MF2 Auction winners will terminate and be replaced with MF2 support effective the first day of the month following release of the public notice closing the auction. Legacy support in areas where the legacy support recipient is not an MF2 winner will be subject to phase down over two years unless there is no winner in a particular census block, in which case it will be continued for one legacy support recipient only. The MF2 Order further states that the phase down of legacy support for areas that were not eligible for support under MF2 will commence on the first day of the month following the completion of the auction and will conclude two years later.

In August 2017, the FCC adopted the MF2 Challenge Process Order, which laid out procedures for establishing areas that would be eligible for support under the MF2 program. This included a collection process to be followed by a challenge window, a challenge response window, and finally adjudication of any coverage disputes. In September 2017, the FCC issued a public notice initiating the collection of 4G LTE coverage data. Responses submitting the collected data were due on January 4, 2018.

On February 27, 2018, the FCC issued public notices providing detailed challenge procedures and a schedule for the challenge process. Pursuant to these notices, the challenge window began on March 29, 2018, and closed on November 26, 2018. Under the MF2 Challenge Process Order, no earlier than thirty days after the FCC processes the challenges, the FCC would open a thirty-day challenge response window. Following the challenge response window, the FCC would then adjudicate any disputes. This entire process must be completed before an auction can be commenced.

On December 7, 2018, the FCC announced that it was investigating whether one or more carriers had submitted inaccurate maps. Pending the outcome of this investigation, the FCC suspended the challenge process. On December 4, 2019, the FCC released a staff report concluding that the maps submitted by carriers were too inaccurate to provide the basis for the MF2 auction. Contemporaneously with the release of this staff report, the Chairman of the FCC announced that he intended to propose the creation of a new fund for 5G deployment in rural areas with $9 billion in available funding. This new 5G fund would replace the MF2 fund. No further details are available but in a letter to Members of Congress dated January 24, 2020, the Chairman of the FCC stated that he planned to circulate a Notice of Proposed Rulemaking in the coming months for the Commission's consideration.

U.S. Cellular cannot predict at this time when the 5G fund auction will occur, if ever, when the phase down period for its existing legacy support from the Federal USF will commence, or whether the 5G fund auction will provide opportunities to U.S. Cellular to offset any loss in existing support.

### FCC Connect America Fund

In 2017, TDS began receiving $75 million per year for 10 years (with incremental funding for transition in the early years for certain states) for operating and maintaining its network along with the obligation to provide broadband service at various speeds to about 160,000 locations. In May 2018, TDS Telecom accepted an offer issued by the FCC to receive an additional $3 million of support per year for ten years retroactive to January 2017 along with corresponding build-out obligations. In December 2018, the FCC authorized additional funding for companies that elected Alternative Connect America Model (A-CAM) support. On February 25, 2019, as directed within the order, the Wireline Competition Bureau (the Bureau) released a public notice offering TDS Telecom an additional $198 million in funding along with additional buildout obligations and extended the term of the revised offer by two years until December 31, 2028, which TDS Telecom accepted. On April 29, 2019, the Bureau authorized and directed the Universal Service Administrative Company (USAC) to obligate and disburse this revised support to those carriers that accept this revised offer. The offer provides A-CAM support up to $200 per location which increases annual support under the program to $82 million excluding transitional amounts, retroactive to January 1, 2019, and extending through 2028.

### FCC Rulemaking – Restoring Internet Freedom

In December 2017, the FCC approved rules reversing or revising decisions made in the FCC's 2015 Open Internet and Title II Order (Restoring Internet Freedom). The 2017 action reversed the FCC's 2015 decision to reclassify Broadband Internet Access Services as telecommunications services subject to regulation under Title II of the Telecommunications Act. The 2017 action also reversed the FCC's 2015 restrictions on blocking, throttling and paid prioritization, and modified transparency rules relating to such practices. Several parties filed suit in federal court challenging the 2017 actions. On October 1, 2019, the Court of Appeals for the D.C. Circuit issued an order reaffirming the FCC in most respects, but limiting the FCC's ability to preempt state and local net neutrality laws.

A number of states, including certain states in which TDS operates, have adopted or considered laws intended to reinstate aspects of the foregoing net neutrality regulations that were reversed or revised by the FCC in 2017. To the extent such laws are enacted, it is expected that legal proceedings will be pursued challenging such laws, subject now to the DC Circuit ruling limiting the FCC's preemptive authority in this matter. TDS cannot predict the outcome of these proceedings or the impact on its business.

**Millimeter Wave Spectrum Auctions**

During 2018 and 2019, the FCC conducted two auctions of wireless spectrum licenses in the 28 GHz and 24 GHz bands. The 28 GHz auction (Auction 101) commenced on November 14, 2018 and closed on January 24, 2019. Auction 101 offered two 425 MHz wireless spectrum licenses in the 28 GHz band over portions of the United States that do not have incumbent licensees. The 24 GHz auction (Auction 102) commenced on March 14, 2019 and closed on May 28, 2019. Auction 102 offered up to seven 100 MHz wireless spectrum licenses in the 24 GHz band in Partial Economic Areas covering most of the United States. On June 3, 2019, the FCC announced by way of public notice that U.S. Cellular was the provisional winning bidder for 408 wireless spectrum licenses in Auction 101 and 282 wireless spectrum licenses in Auction 102 for an aggregate purchase price of $256 million. The wireless spectrum licenses from Auction 101 were granted by the FCC on October 2, 2019, and the wireless spectrum licenses from Auction 102 were granted by the FCC on December 11, 2019.

On July 11, 2019, the FCC released a Public Notice establishing procedures for an auction offering wireless spectrum licenses in the 37, 39 and 47 GHz bands (Auction 103). On August 21, 2019, the FCC released a Public Notice announcing that all 39 GHz incumbents have agreed to relinquish their wireless spectrum licenses in return for incentive payments. Consequently, Auction 103 is offering 34 100 MHz blocks in the Upper 37 GHz, 39 GHz, and 47 GHz bands in all Partial Economic Areas. On September 9, 2019, U.S. Cellular filed an application to participate in Auction 103 and was announced as a qualified bidder on October 31, 2019. Bidding in this auction commenced on December 10, 2019. The initial phase of this auction closed on January 30, 2020 and the assignment phase commenced on February 18, 2020.

**USTelecom Forbearance Petition**

In response to the USTelecom Forbearance Petition, the FCC took a series of actions to provide relief from rules adopted pursuant to the Telecommunications Act of 1996. On July 12, 2019, the FCC issued an Order granting partial forbearance relief from rules that require ILECs to provide dedicated transport facilities between wire centers to their competitors on an unbundled basis at regulated rates. On August 2, 2019, the FCC granted ILECs relief from adopted rules (i) a requirement they offer competitors "analog voice-grade copper loops" on an unbundled basis at regulated rates and (ii) a requirement they offer legacy services for resale at regulated rates. To enable CLECs and their customers to make alternative service arrangements following forbearance, the Order provides a three-year transition period during which time ILECs and CLECs may negotiate commercial agreements. As a result of these orders, CLECs could potentially see a change in prices for the use of facilities currently purchased from other ILECs. TDS Telecom is exploring the options available to it brought forward by these decisions.

# Private Securities Litigation Reform Act of 1995

## Safe Harbor Cautionary Statement

This Management's Discussion and Analysis of Financial Condition and Results of Operations and other sections of this Annual Report contain statements that are not based on historical facts and represent forward-looking statements, as this term is defined in the Private Securities Litigation Reform Act of 1995. All statements, other than statements of historical facts, that address activities, events or developments that TDS intends, expects, projects, believes, estimates, plans or anticipates will or may occur in the future are forward-looking statements. The words "believes," "anticipates," "estimates," "expects," "plans," "intends," "projects" and similar expressions are intended to identify these forward-looking statements, but are not the exclusive means of identifying them. Such forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause actual results, events or developments to be significantly different from any future results, events or developments expressed or implied by such forward-looking statements. Such risks, uncertainties and other factors include, but are not limited to, those set forth below. See "Risk Factors" in TDS' Annual Report on Form 10-K for the year ended December 31, 2019, for a further discussion of these risks. Each of the following risks could have a material adverse effect on TDS' business, financial condition or results of operations. However, such factors are not necessarily all of the important factors that could cause actual results, performance or achievements to differ materially from those expressed in, or implied by, the forward-looking statements contained in this document. Other unknown or unpredictable factors also could have material adverse effects on future results, performance or achievements. TDS undertakes no obligation to update publicly any forward-looking statements whether as a result of new information, future events or otherwise. Readers should evaluate any statements in light of these important factors.

- *Intense competition in the markets in which TDS operates could adversely affect TDS' revenues or increase its costs to compete.*
- *A failure by TDS to successfully execute its business strategy (including planned acquisitions, spectrum acquisitions, fiber builds, divestitures and exchanges) or allocate resources or capital effectively could have an adverse effect on TDS' business, financial condition or results of operations.*
- *Uncertainty in TDS' future cash flow and liquidity or the inability to access capital, deterioration in the capital markets, other changes in TDS' performance or market conditions, changes in TDS' credit ratings or other factors could limit or restrict the availability of financing on terms and prices acceptable to TDS, which could require TDS to reduce its construction, development or acquisition programs, reduce the amount of wireless spectrum licenses acquired, and/or reduce or cease share repurchases and/or the payment of dividends.*
- *TDS has a significant amount of indebtedness which could adversely affect its financial performance and in turn adversely affect its ability to make payments on its indebtedness, comply with terms of debt covenants and incur additional debt.*
- *Changes in roaming practices or other factors could cause TDS' roaming revenues to decline from current levels, roaming expenses to increase from current levels and/or impact TDS' ability to service its customers in geographic areas where TDS does not have its own network, which could have an adverse effect on TDS' business, financial condition or results of operations.*
- *A failure by TDS to obtain access to adequate radio spectrum to meet current or anticipated future needs and/or to accurately predict future needs for radio spectrum could have an adverse effect on TDS' business, financial condition or results of operations.*
- *To the extent conducted by the FCC, TDS may participate in FCC auctions for additional spectrum or for funding in certain Universal Service programs in the future directly or indirectly and, during certain periods, will be subject to the FCC's anti-collusion rules, which could have an adverse effect on TDS.*
- *Failure by TDS to timely or fully comply with any existing applicable legislative and/or regulatory requirements or changes thereto could adversely affect TDS' business, financial condition or results of operations.*
- *An inability to attract people of outstanding talent throughout all levels of the organization, to develop their potential through education and assignments, and to retain them by keeping them engaged, challenged and properly rewarded could have an adverse effect on TDS' business, financial condition or results of operations.*
- *TDS' assets and revenue are concentrated primarily in the U.S. telecommunications industry. Consequently, its operating results may fluctuate based on factors related primarily to conditions in this industry.*
- *TDS' smaller scale relative to larger competitors that may have greater financial and other resources than TDS could cause TDS to be unable to compete successfully, which could adversely affect its business, financial condition or results of operations.*
- *Changes in various business factors, including changes in demand, consumer preferences and perceptions, price competition, churn from customer switching activity and other factors, could have an adverse effect on TDS' business, financial condition or results of operations.*

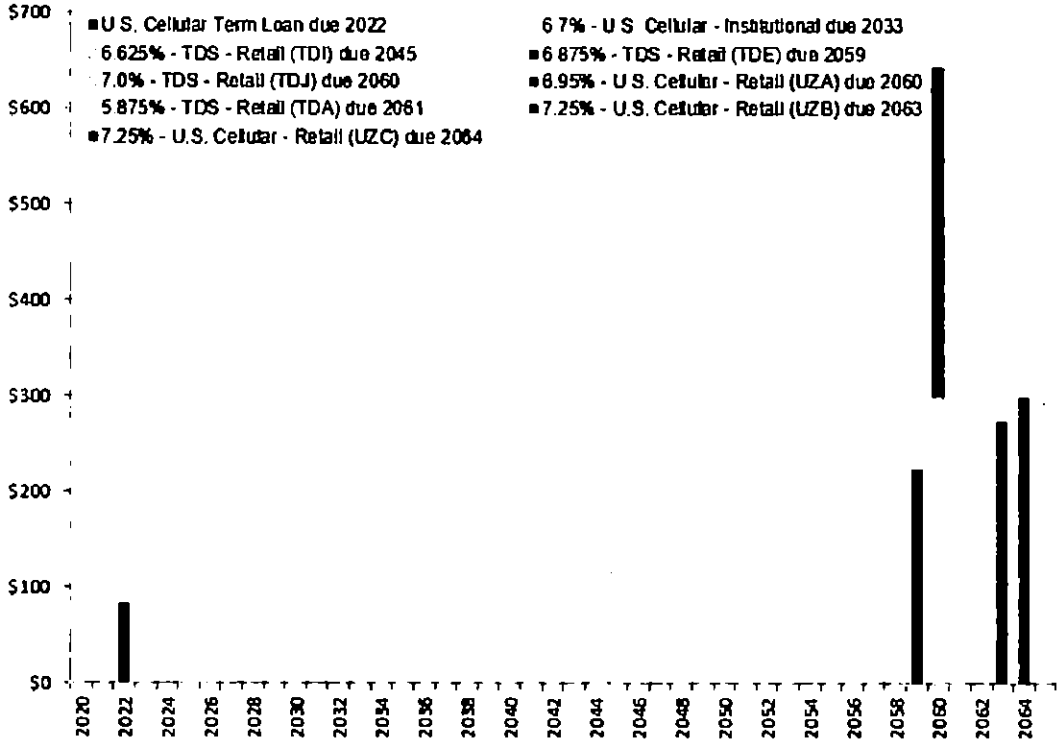
- *Advances or changes in technology could render certain technologies used by TDS obsolete, could put TDS at a competitive disadvantage, could reduce TDS' revenues or could increase its costs of doing business.*
- *Complexities associated with deploying new technologies present substantial risk and TDS' investments in unproven technologies may not produce the benefits that TDS expects.*
- *TDS receives regulatory support and is subject to numerous surcharges and fees from federal, state and local governments, and the applicability and the amount of the support and fees are subject to great uncertainty, which could have an adverse effect on TDS' business, financial condition or results of operations.*
- *Changes in TDS' enterprise value, changes in the market supply or demand for wireless spectrum licenses, wireline or cable markets or IT service providers, adverse developments in the businesses or the industries in which TDS is involved and/or other factors could require TDS to recognize impairments in the carrying value of its wireless spectrum licenses, goodwill, franchise rights and/or physical assets or require re-evaluation of the indefinite-lived nature of such assets.*
- *Costs, integration problems or other factors associated with acquisitions, divestitures or exchanges of properties or wireless spectrum licenses and/or expansion of TDS' businesses could have an adverse effect on TDS' business, financial condition or results of operations.*
- *A failure by TDS to complete significant network construction and systems implementation activities as part of its plans to improve the quality, coverage, capabilities and capacity of its network, support and other systems and infrastructure could have an adverse effect on its operations.*
- *Difficulties involving third parties with which TDS does business, including changes in TDS' relationships with or financial or operational difficulties of key suppliers or independent agents and third party national retailers who market TDS' services, could adversely affect TDS' business, financial condition or results of operations.*
- *TDS has significant investments in entities that it does not control. Losses in the value of such investments could have an adverse effect on TDS' financial condition or results of operations.*
- *A failure by TDS to maintain flexible and capable telecommunication networks or information technology, or a material disruption thereof, could have an adverse effect on TDS' business, financial condition or results of operations.*
- *TDS has experienced, and in the future expects to experience, cyber-attacks or other breaches of network or information technology security of varying degrees on a regular basis, which could have an adverse effect on TDS' business, financial condition or results of operations.*
- *Changes in facts or circumstances, including new or additional information, could require TDS to record adjustments to amounts reflected in the financial statements, which could have an adverse effect on TDS' business, financial condition or results of operations.*
- *Disruption in credit or other financial markets, a deterioration of U.S. or global economic conditions or other events could, among other things, impede TDS' access to or increase the cost of financing its operating and investment activities and/or result in reduced revenues and lower operating income and cash flows, which would have an adverse effect on TDS' business, financial condition or results of operations.*
- *Settlements, judgments, restraints on its current or future manner of doing business and/or legal costs resulting from pending and future litigation could have an adverse effect on TDS' business, financial condition or results of operations.*
- *The possible development of adverse precedent in litigation or conclusions in professional studies to the effect that radio frequency emissions from wireless devices and/or cell sites cause harmful health consequences, including cancer or tumors, or may interfere with various electronic medical devices such as pacemakers, could have an adverse effect on TDS' wireless business, financial condition or results of operations.*
- *Claims of infringement of intellectual property and proprietary rights of others, primarily involving patent infringement claims, could prevent TDS from using necessary technology to provide products or services or subject TDS to expensive intellectual property litigation or monetary penalties, which could have an adverse effect on TDS' business, financial condition or results of operations.*
- *Certain matters, such as control by the TDS Voting Trust and provisions in the TDS Restated Certificate of Incorporation, may serve to discourage or make more difficult a change in control of TDS or have other consequences.*
- *The market price of TDS' Common Shares is subject to fluctuations due to a variety of factors.*
- *Any of the foregoing events or other events could cause revenues, earnings, capital expenditures and/or any other financial or statistical information to vary from TDS' forward-looking estimates by a material amount.*

# Market Risk

**Long-Term Debt**

As of December 31, 2019, the majority of TDS' long-term debt was in the form of fixed-rate notes with remaining maturities ranging up to 45 years. Fluctuations in market interest rates can lead to significant fluctuations in the fair value of these fixed-rate notes.

The following chart presents the scheduled principal payments on long-term debt by maturity dates at December 31, 2019:




The following table presents the scheduled principal payments on long-term debt, finance lease obligations, and other installment arrangements, and the related weighted average interest rates by maturity dates at December 31, 2019:

| | Principal Payments Due by Period | |
|---|---|---|
| | Long-Term Debt Obligations[1] | Weighted-Avg. Interest Rates on Long-Term Debt Obligations[2] |
| (Dollars in millions) | | |
| 2020 | $ 10 | 1.0% |
| 2021 | 2 | 4.0% |
| 2022 | 83 | 3.6% |
| 2023 | — | 6.5% |
| 2024 | — | 6.5% |
| Thereafter | 2,303 | 6.9% |
| Total | $ 2,398 | 6.7% |

1 The total long-term debt obligation differs from Long-term debt in the Consolidated Balance Sheet due to unamortized debt issuance costs on all non-revolving debt instruments, unamortized discounts related to U.S. Cellular's 6.7% Senior Notes, and unamortized discounts related to the installment payment agreement. See Note 13 — Debt in the Notes to Consolidated Financial Statements for additional information.

2 Represents the weighted average stated interest rates at December 31, 2019, for debt maturing in the respective periods.

**Fair Value of Long-Term Debt**

At December 31, 2019 and 2018, the estimated fair value of long-term debt obligations, excluding finance lease obligations, other installment arrangements, the current portion of such long-term debt and debt financing costs, was $2,474 million and $2,309 million, respectively. See Note 3 — Fair Value Measurements in the Notes to Consolidated Financial Statements for additional information.

**Other Market Risk Sensitive Instruments**

The substantial majority of TDS' other market risk sensitive instruments (as defined in Item 305 of SEC Regulation S-K) are short-term, including Cash and cash equivalents. Accordingly, TDS believes that a significant change in interest rates would not have a material effect on such other market risk sensitive instruments.

# Supplemental Information Relating to Non-GAAP Financial Measures

TDS sometimes uses information derived from consolidated financial information but not presented in its financial statements prepared in accordance with U.S. GAAP to evaluate the performance of its business. Certain of these measures are considered "non-GAAP financial measures" under U.S. Securities and Exchange Commission Rules. Specifically, TDS has referred to the following measures in this Form 10-K Report:

- EBITDA
- Adjusted EBITDA
- Adjusted OIBDA
- Free cash flow

Following are explanations of each of these measures:

**EBITDA, Adjusted EBITDA and Adjusted OIBDA**

EBITDA, Adjusted EBITDA and Adjusted OIBDA are defined as net income adjusted for the items set forth in the reconciliation below. EBITDA, Adjusted EBITDA and Adjusted OIBDA are not measures of financial performance under GAAP and should not be considered as alternatives to Net income or Cash flows from operating activities, as indicators of cash flows or as measures of liquidity. TDS does not intend to imply that any such items set forth in the reconciliation below are non-recurring, infrequent or unusual; such items may occur in the future.

Adjusted EBITDA is a segment measure reported to the chief operating decision maker for purposes of making decisions about allocating resources to the segments and assessing their performance. See Note 20 — Business Segment Information in the Notes to Consolidated Financial Statements for additional information.

Management uses Adjusted EBITDA and Adjusted OIBDA as measurements of profitability and, therefore, reconciliations to applicable GAAP income measures are deemed appropriate. Management believes Adjusted EBITDA and Adjusted OIBDA are useful measures of TDS' operating results before significant recurring non-cash charges, gains and losses, and other items as presented below as they provide additional relevant and useful information to investors and other users of TDS' financial data in evaluating the effectiveness of its operations and underlying business trends in a manner that is consistent with management's evaluation of business performance. Adjusted EBITDA shows adjusted earnings before interest, taxes, depreciation, amortization and accretion, and gains and losses, while Adjusted OIBDA reduces this measure further to exclude Equity in earnings of unconsolidated entities and Interest and dividend income in order to more effectively show the performance of operating activities excluding investment activities. The following tables reconcile EBITDA, Adjusted EBITDA and Adjusted OIBDA to the corresponding GAAP measures, Net income or Income (loss) before income taxes and Operating income (loss). Income tax expense is not provided at the individual segment level for Wireline and Cable. TDS calculates income tax expense for TDS Telecom in total.

| **TDS - CONSOLIDATED** | **2019** | 2018 |
|---|---|---|
| (Dollars in millions) | | |
| **Net income (GAAP)** | **$ 147** | $ 175 |
| Add back or deduct: | | |
| Income tax expense | **64** | 46 |
| Interest expense | **165** | 172 |
| Depreciation, amortization and accretion | **932** | 883 |
| EBITDA (Non-GAAP) | **1,308** | 1,276 |
| Add back or deduct: | | |
| (Gain) loss on asset disposals, net | **12** | 9 |
| (Gain) loss on sale of business and other exit costs, net | **(1)** | — |
| (Gain) loss on license sales and exchanges, net | **—** | (18) |
| Adjusted EBITDA (Non-GAAP) | **1,319** | 1,267 |
| Deduct: | | |
| Equity in earnings of unconsolidated entities | **168** | 160 |
| Interest and dividend income | **29** | 26 |
| Other, net | **—** | 2 |
| Adjusted OIBDA (Non-GAAP) | **1,122** | 1,079 |
| Deduct: | | |
| Depreciation, amortization and accretion | **932** | 883 |
| (Gain) loss on asset disposals, net | **12** | 9 |
| (Gain) loss on sale of business and other exit costs, net | **(1)** | — |
| (Gain) loss on license sales and exchanges, net | **—** | (18) |
| **Operating income (GAAP)** | **$ 179** | $ 205 |

| U.S. CELLULAR | 2019 | 2018 |
|---|---|---|
| (Dollars in millions) | | |
| **Net Income (GAAP)** | $ 133 | $ 164 |
| Add back or deduct: | | |
| Income tax expense | 52 | 51 |
| Interest expense | 110 | 116 |
| Depreciation, amortization and accretion | 702 | 640 |
| EBITDA (Non-GAAP) | 997 | 971 |
| Add back or deduct: | | |
| (Gain) loss on asset disposals, net | 19 | 10 |
| (Gain) loss on sale of business and other exit costs, net | (1) | — |
| (Gain) loss on license sales and exchanges, net | — | (18) |
| Adjusted EBITDA (Non-GAAP) | 1,015 | 963 |
| Deduct: | | |
| Equity in earnings of unconsolidated entities | 166 | 159 |
| Interest and dividend income | 17 | 15 |
| Other, net | — | (1) |
| Adjusted OIBDA (Non-GAAP) | 832 | 790 |
| Deduct: | | |
| Depreciation, amortization and accretion | 702 | 640 |
| (Gain) loss on asset disposals, net | 19 | 10 |
| (Gain) loss on sale of business and other exit costs, net | (1) | — |
| (Gain) loss on license sales and exchanges, net | — | (18) |
| **Operating Income (GAAP)** | $ 112 | $ 158 |

| TDS TELECOM | 2019 | 2018 |
|---|---|---|
| (Dollars in millions) | | |
| **Net Income (GAAP)** | $ 92 | $ 89 |
| Add back or deduct: | | |
| Income tax expense | 30 | 16 |
| Interest expense | (3) | (2) |
| Depreciation, amortization and accretion | 200 | 212 |
| EBITDA (Non-GAAP) | 320 | 315 |
| Add back or deduct: | | |
| (Gain) loss on asset disposals, net | (7) | (2) |
| Adjusted EBITDA (Non-GAAP) | 313 | 313 |
| Deduct: | | |
| Interest and dividend income | 12 | 8 |
| Other, net | — | 2 |
| Adjusted OIBDA (Non-GAAP) | 300 | 303 |
| Deduct: | | |
| Depreciation, amortization and accretion | 200 | 212 |
| (Gain) loss on asset disposals, net | (7) | (2) |
| **Operating Income (GAAP)** | $ 107 | $ 93 |

Numbers may not foot due to rounding.

| WIRELINE | 2019 | 2018 |
|---|---|---|
| (Dollars in millions) | | |
| **Income before income taxes (GAAP)** | $ 110 | $ 106 |
| Add back or deduct: | | |
| Interest expense | (3) | (2) |
| Depreciation, amortization and accretion | 132 | 142 |
| EBITDA (Non-GAAP) | 239 | 247 |
| Add back or deduct: | | |
| (Gain) loss on asset disposals, net | (8) | (3) |
| Adjusted EBITDA (Non-GAAP) | 231 | 243 |
| Deduct: | | |
| Interest and dividend income | 10 | 7 |
| Other, net | — | 3 |
| Adjusted OIBDA (Non-GAAP) | 220 | 234 |
| Deduct: | | |
| Depreciation, amortization and accretion | 132 | 142 |
| (Gain) loss on asset disposals, net | (8) | (3) |
| **Operating income (GAAP)** | $ 96 | $ 95 |

Numbers may not foot due to rounding.

| CABLE | 2019 | 2018 |
|---|---|---|
| (Dollars in millions) | | |
| **Income (loss) before income taxes (GAAP)** | $ 13 | $ (1) |
| Add back: | | |
| Depreciation, amortization and accretion | 68 | 69 |
| EBITDA (Non-GAAP) | 81 | 69 |
| Add back or deduct: | | |
| (Gain) loss on asset disposals, net | 1 | 1 |
| Adjusted EBITDA (Non-GAAP) | 82 | 70 |
| Deduct: | | |
| Interest and dividend income | 2 | 1 |
| Adjusted OIBDA (Non-GAAP) | 80 | 69 |
| Deduct: | | |
| Depreciation, amortization and accretion | 68 | 69 |
| (Gain) loss on asset disposals, net | 1 | 1 |
| **Operating income (loss) (GAAP)** | $ 11 | $ (2) |

Numbers may not foot due to rounding.

**Free Cash Flow**

The following table presents Free cash flow, which is defined as Cash flow from operating activities less Cash paid for additions to property, plant and equipment. Free cash flow is a non-GAAP financial measure which TDS believes may be useful to investors and other users of its financial information in evaluating liquidity, specifically, the amount of net cash generated by business operations after deducting Cash paid for additions to property, plant and equipment.

| | 2019 | 2018 |
|---|---|---|
| (Dollars in millions) | | |
| **Cash flows from operating activities (GAAP)** | $ 1,016 | $ 1,017 |
| Less: Cash paid for additions to property, plant and equipment | 957 | 776 |
| Free cash flow (Non-GAAP) | $ 59 | $ 241 |

# Financial Statements

## Telephone and Data Systems, Inc.
## Consolidated Statement of Operations

| Year Ended December 31, | 2019 | 2018 | 2017 |
|---|---|---|---|
| (Dollars and shares in millions, except per share amounts) | | | |
| **Operating revenues** | | | |
| Service | $ 4,059 | $ 3,999 | $ 3,979 |
| Equipment and product sales | 1,117 | 1,110 | 1,065 |
| Total operating revenues | 5,176 | 5,109 | 5,044 |
| **Operating expenses** | | | |
| Cost of services (excluding Depreciation, amortization and accretion reported below) | 1,202 | 1,206 | 1,164 |
| Cost of equipment and products | 1,135 | 1,130 | 1,195 |
| Selling, general and administrative | 1,717 | 1,694 | 1,689 |
| Depreciation, amortization and accretion | 932 | 883 | 844 |
| Loss on impairment of goodwill | — | — | 262 |
| (Gain) loss on asset disposals, net | 12 | 9 | 21 |
| (Gain) loss on sale of business and other exit costs, net | (1) | — | (1) |
| (Gain) loss on license sales and exchanges, net | — | (18) | (22) |
| Total operating expenses | 4,997 | 4,904 | 5,152 |
| **Operating income (loss)** | 179 | 205 | (108) |
| **Investment and other income (expense)** | | | |
| Equity in earnings of unconsolidated entities | 168 | 160 | 137 |
| Interest and dividend income | 29 | 26 | 15 |
| Interest expense | (165) | (172) | (170) |
| Other, net | — | 2 | 4 |
| Total investment and other income (expense) | 32 | 16 | (14) |
| **Income (loss) before income taxes** | 211 | 221 | (122) |
| Income tax expense (benefit) | 64 | 46 | (279) |
| **Net income** | 147 | 175 | 157 |
| Less: Net income attributable to noncontrolling interests, net of tax | 26 | 40 | 4 |
| **Net income attributable to TDS shareholders** | $ 121 | $ 135 | $ 153 |
| **Basic weighted average shares outstanding** | 114 | 112 | 111 |
| **Basic earnings per share attributable to TDS shareholders** | $ 1.06 | $ 1.20 | $ 1.39 |
| **Diluted weighted average shares outstanding** | 116 | 114 | 112 |
| **Diluted earnings per share attributable to TDS shareholders** | $ 1.03 | $ 1.17 | $ 1.37 |

The accompanying notes are an integral part of these consolidated financial statements.

# Telephone and Data Systems, Inc.
## Consolidated Statement of Comprehensive Income

| Year Ended December 31, | 2019 | 2018 | 2017 |
|---|---|---|---|
| (Dollars in millions) | | | |
| **Net income** | $ 147 | $ 175 | $ 157 |
| **Net change in accumulated other comprehensive income** | | | |
| Change related to retirement plan | | | |
| Amounts included in net periodic benefit cost for the period | | | |
| Net actuarial gains | 1 | — | 2 |
| Prior service cost | — | (10) | (3) |
| Amortization of prior service cost | 1 | (1) | (2) |
| | 2 | (11) | (3) |
| Change in deferred income taxes | (1) | 3 | 1 |
| Change related to retirement plan, net of tax | 1 | (8) | (2) |
| Net change in accumulated other comprehensive income | 1 | (8) | (2) |
| **Comprehensive income** | 148 | 167 | 155 |
| Less: Net income attributable to noncontrolling interests, net of tax | 26 | 40 | 4 |
| **Comprehensive income attributable to TDS shareholders** | $ 122 | $ 127 | $ 151 |

The accompanying notes are an integral part of these consolidated financial statements.

# Telephone and Data Systems, Inc.
## Consolidated Statement of Cash Flows

| Year Ended December 31, | 2019 | 2018 | 2017 |
|---|---|---|---|
| (Dollars in millions) | | | |
| **Cash flows from operating activities** | | | |
| Net income | $ 147 | $ 175 | $ 157 |
| Add (deduct) adjustments to reconcile net income to net cash flows from operating activities | | | |
| Depreciation, amortization and accretion | 932 | 883 | 844 |
| Bad debts expense | 112 | 101 | 95 |
| Stock-based compensation expense | 59 | 54 | 46 |
| Deferred income taxes, net | 34 | 33 | (369) |
| Equity in earnings of unconsolidated entities | (168) | (160) | (137) |
| Distributions from unconsolidated entities | 162 | 153 | 136 |
| Loss on impairment of goodwill | — | — | 262 |
| (Gain) loss on asset disposals, net | 12 | 9 | 21 |
| (Gain) loss on sale of business and other exit costs, net | (1) | — | (1) |
| (Gain) loss on license sales and exchanges, net | — | (18) | (22) |
| Other operating activities | 4 | 4 | 3 |
| Changes in assets and liabilities from operations | | | |
| Accounts receivable | (49) | (39) | (61) |
| Equipment installment plans receivable | (97) | (149) | (261) |
| Inventory | (19) | (5) | 6 |
| Accounts payable | (60) | 2 | (7) |
| Customer deposits and deferred revenues | (9) | 8 | (4) |
| Accrued taxes | (17) | (29) | 37 |
| Other assets and liabilities | (26) | (5) | 31 |
| Net cash provided by operating activities | 1,016 | 1,017 | 776 |
| **Cash flows from investing activities** | | | |
| Cash paid for additions to property, plant and equipment | (957) | (776) | (685) |
| Cash paid for acquisitions and licenses | (346) | (16) | (218) |
| Cash received from investments | 29 | 100 | — |
| Cash paid for investments | (11) | (17) | (100) |
| Cash received from divestitures and exchanges | 41 | 29 | 21 |
| Other investing activities | (5) | — | 1 |
| Net cash used in investing activities | (1,249) | (680) | (981) |
| **Cash flows from financing activities** | | | |
| Repayment of long-term debt | (118) | (20) | (17) |
| TDS Common Shares reissued for benefit plans, net of tax payments | (6) | 42 | 4 |
| U.S. Cellular Common Shares reissued for benefit plans, net of tax payments | (9) | 18 | 1 |
| Repurchase of U.S. Cellular Common Shares | (21) | — | — |
| Dividends paid to TDS shareholders | (76) | (72) | (69) |
| Distributions to noncontrolling interests | (4) | (6) | (4) |
| Other financing activities | 13 | 6 | 8 |
| Net cash used in financing activities | (220) | (32) | (77) |
| **Net increase (decrease) in cash, cash equivalents and restricted cash** | (453) | 305 | (282) |
| **Cash, cash equivalents and restricted cash** | | | |
| Beginning of period | 927 | 622 | 904 |
| End of period | $ 474 | $ 927 | $ 622 |

The accompanying notes are an integral part of these consolidated financial statements.

# Telephone and Data Systems, Inc.
## Consolidated Balance Sheet — Assets

| December 31, | 2019 | 2018 |
|---|---|---|
| (Dollars in millions) | | |
| **Current assets** | | |
| Cash and cash equivalents | $ 465 | $ 921 |
| Short-term investments | — | 17 |
| Accounts receivable | | |
| Customers and agents, less allowances of $74 and $71, respectively | 1,005 | 992 |
| Other, less allowances of $2 and $2, respectively | 119 | 107 |
| Inventory, net | 169 | 150 |
| Prepaid expenses | 98 | 103 |
| Income taxes receivable | 36 | 12 |
| Other current assets | 29 | 28 |
| Total current assets | 1,921 | 2,330 |
| **Assets held for sale** | — | 54 |
| **Licenses** | 2,480 | 2,195 |
| **Goodwill** | 547 | 509 |
| **Other intangible assets, net of accumulated amortization of $167 and $168, respectively** | 239 | 253 |
| **Investments in unconsolidated entities** | 488 | 480 |
| **Property, plant and equipment** | | |
| In service and under construction | 12,864 | 12,074 |
| Less: Accumulated depreciation and amortization | 9,337 | 8,728 |
| Property, plant and equipment, net | 3,527 | 3,346 |
| **Operating lease right-of-use assets** | 972 | — |
| **Other assets and deferred charges** | 607 | 616 |
| **Total assets**[1] | $ 10,781 | $ 9,783 |

The accompanying notes are an integral part of these consolidated financial statements.

# Telephone and Data Systems, Inc.
## Consolidated Balance Sheet — Liabilities and Equity

| December 31, | 2019 | 2018 |
|---|---|---|
| (Dollars and shares in millions, except per share amounts) | | |
| **Current liabilities** | | |
| Current portion of long-term debt | $ 10 | $ 21 |
| Accounts payable | 374 | 365 |
| Customer deposits and deferred revenues | 189 | 197 |
| Accrued interest | 11 | 11 |
| Accrued taxes | 41 | 44 |
| Accrued compensation | 121 | 127 |
| Short-term operating lease liabilities | 116 | — |
| Other current liabilities | 100 | 114 |
| Total current liabilities | 962 | 879 |
| **Liabilities held for sale** | — | 1 |
| **Deferred liabilities and credits** | | |
| Deferred income tax liability, net | 676 | 640 |
| Long-term operating lease liabilities | 931 | — |
| Other deferred liabilities and credits | 481 | 541 |
| **Long-term debt, net** | 2,316 | 2,418 |
| **Commitments and contingencies** | | |
| **Noncontrolling interests with redemption features** | 11 | 11 |
| **Equity** | | |
| TDS shareholders' equity | | |
| Series A Common and Common Shares | | |
| Authorized 290 shares (25 Series A Common and 265 Common Shares) | | |
| Issued 133 shares (7 Series A Common and 126 Common Shares) | | |
| Outstanding 115 shares (7 Series A Common and 108 Common Shares) and 114 shares (7 Series A Common and 107 Common Shares), respectively | | |
| Par Value ($.01 per share) | 1 | 1 |
| Capital in excess of par value | 2,468 | 2,432 |
| Treasury shares, at cost, 18 and 19 Common Shares, respectively | (479) | (519) |
| Accumulated other comprehensive loss | (9) | (10) |
| Retained earnings | 2,672 | 2,656 |
| Total TDS shareholders' equity | 4,653 | 4,560 |
| Noncontrolling interests | 751 | 733 |
| Total equity | 5,404 | 5,293 |
| **Total liabilities and equity**[1] | $ 10,781 | $ 9,783 |

The accompanying notes are an integral part of these consolidated financial statements.

[1] The consolidated total assets as of December 31, 2019 and 2018, include assets held by consolidated variable interest entities (VIEs) of $915 million and $848 million, respectively, which are not available to be used to settle the obligations of TDS. The consolidated total liabilities as of December 31, 2019 and 2018, include certain liabilities of consolidated VIEs of $20 million and $21 million, respectively, for which the creditors of the VIEs have no recourse to the general credit of TDS. See Note

16 — Variable Interest Entities for additional information.

# Telephone and Data Systems, Inc.
## Consolidated Statement of Changes in Equity

| | TDS Shareholders | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Series A Common and Common shares | Capital in excess of par value | Treasury shares | Accumulated other comprehensive income (loss) | Retained earnings | Total TDS shareholders' equity | Noncontrolling interests | Total equity |
| (Dollars in millions, except per share amounts) | | | | | | | | |
| **December 31, 2018** | $ 1 | $ 2,432 | $ (519) | $ (10) | $ 2,656 | $ 4,560 | $ 733 | $ 5,293 |
| Cumulative effect of accounting changes | — | — | — | — | 2 | 2 | — | 2 |
| Net income attributable to TDS shareholders | — | — | — | — | 121 | 121 | — | 121 |
| Net income attributable to noncontrolling interests classified as equity | — | — | — | — | — | — | 26 | 26 |
| Other comprehensive income | — | — | — | 1 | — | 1 | — | 1 |
| TDS Common and Series A Common share dividends ($0.66 per share) | — | — | — | — | (75) | (75) | — | (75) |
| Dividend reinvestment plan | — | 1 | 20 | — | (6) | 15 | — | 15 |
| Incentive and compensation plans | — | — | 20 | — | (26) | (6) | — | (6) |
| Adjust investment in subsidiaries for repurchases, issuances and other compensation plans | — | 17 | — | — | — | 17 | (5) | 12 |
| Stock-based compensation awards | — | 18 | — | — | — | 18 | — | 18 |
| Distributions to noncontrolling interests | — | — | — | — | — | — | (3) | (3) |
| **December 31, 2019** | $ 1 | $ 2,468 | $ (479) | $ (9) | $ 2,672 | $ 4,653 | $ 751 | $ 5,404 |

The accompanying notes are an integral part of these consolidated financial statements.

# Telephone and Data Systems, Inc.
## Consolidated Statement of Changes in Equity

| | TDS Shareholders | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Series A Common and Common shares | Capital in excess of par value | Treasury shares | Accumulated other comprehensive income (loss) | Retained earnings | Total TDS shareholders' equity | Noncontrolling interests | Total equity |
| (Dollars in millions, except per share amounts) | | | | | | | | |
| **December 31, 2017** | $ 1 | $ 2,413 | $ (669) | $ (1) | $ 2,525 | $ 4,269 | $ 623 | $ 4,892 |
| Cumulative effect of accounting changes | — | — | — | (1) | 165 | 164 | 31 | 195 |
| Net income attributable to TDS shareholders | — | — | — | — | 135 | 135 | — | 135 |
| Net income attributable to noncontrolling interests classified as equity | — | — | — | — | — | — | 28 | 28 |
| Other comprehensive loss | — | — | — | (8) | — | (8) | — | (8) |
| TDS Common and Series A Common Share dividends ($0.64 per share) | — | — | — | — | (72) | (72) | — | (72) |
| Dividend reinvestment plan | — | 1 | 25 | — | (14) | 12 | — | 12 |
| Incentive and compensation plans | — | — | 125 | — | (83) | 42 | — | 42 |
| Adjust investment in subsidiaries for repurchases, issuances and other compensation plans | — | 1 | — | — | — | 1 | 54 | 55 |
| Stock-based compensation awards | — | 17 | — | — | — | 17 | — | 17 |
| Distributions to noncontrolling interests | — | — | — | — | — | — | (3) | (3) |
| **December 31, 2018** | $ 1 | $ 2,432 | $ (519) | $ (10) | $ 2,656 | $ 4,560 | $ 733 | $ 5,293 |

The accompanying notes are an integral part of these consolidated financial statements.

# Telephone and Data Systems, Inc.
## Consolidated Statement of Changes in Equity

| | TDS Shareholders | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Series A Common and Common shares | Capital in excess of par value | Treasury shares | Accumulated other comprehensive income | Retained earnings | Total TDS shareholders' equity | Preferred shares | Noncontrolling interests | Total equity |
| (Dollars in millions, except per share amounts) | | | | | | | | | |
| **December 31, 2016** | **$ 1** | **$ 2,386** | **$ (698)** | **$ 1** | **$ 2,454** | **$ 4,144** | **$ 1** | **$ 605** | **$ 4,750** |
| Net income attributable to TDS shareholders | — | — | — | — | 153 | 153 | — | — | 153 |
| Net income attributable to noncontrolling interests classified as equity | — | — | — | — | — | — | — | 4 | 4 |
| Other comprehensive loss | — | — | — | (2) | — | (2) | — | — | (2) |
| TDS Common and Series A Common Share dividends ($0.62 per share) | — | — | — | — | (69) | (69) | — | — | (69) |
| Redemption of Preferred shares | — | — | — | — | — | — | (1) | — | (1) |
| Dividend reinvestment plan | — | — | 13 | — | (1) | 12 | — | — | 12 |
| Incentive and compensation plans | — | — | 16 | — | (12) | 4 | — | — | 4 |
| Adjust investment in subsidiaries for repurchases, issuances and other compensation plans | — | 13 | — | — | — | 13 | — | 18 | 31 |
| Stock-based compensation awards | — | 14 | — | — | — | 14 | — | — | 14 |
| Distributions to noncontrolling interests | — | — | — | — | — | — | — | (4) | (4) |
| **December 31, 2017** | **$ 1** | **$ 2,413** | **$ (669)** | **$ (1)** | **$ 2,525** | **$ 4,269** | **$ —** | **$ 623** | **$ 4,892** |

The accompanying notes are an integral part of these consolidated financial statements.

## Telephone and Data Systems, Inc.
## Notes to Consolidated Financial Statements

# Note 1 Summary of Significant Accounting Policies and Recent Accounting Pronouncements

### Nature of Operations

Telephone and Data Systems, Inc. (TDS) is a diversified telecommunications company providing high-quality communications services to customers with 4.9 million wireless connections and 1.2 million wireline and cable connections at December 31, 2019. TDS conducts all of its wireless operations through its 82%-owned subsidiary, United States Cellular Corporation (U.S. Cellular). TDS provides wireline and cable services through its wholly-owned subsidiary, TDS Telecommunications LLC (TDS Telecom).

TDS has the following reportable segments: U.S. Cellular, Wireline, and Cable. TDS' non-reportable other business activities are presented as "Corporate, Eliminations and Other", which includes the operations of TDS' wholly-owned hosted and managed services (HMS) subsidiary, which operates under the OneNeck IT Solutions brand, and its wholly-owned printing subsidiary Suttle-Straus, Inc. (Suttle-Straus). HMS' and Suttle-Straus' financial results were not significant to TDS' operations. All of TDS' segments operate only in the United States. See Note 20 — Business Segment Information for summary financial information on each business segment.

### Principles of Consolidation

The accounting policies of TDS conform to accounting principles generally accepted in the United States of America (GAAP) as set forth in the Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC). Unless otherwise specified, references to accounting provisions and GAAP in these notes refer to the requirements of the FASB ASC. The consolidated financial statements include the accounts of TDS and subsidiaries in which it has a controlling financial interest, including U.S. Cellular and TDS Telecom. In addition, the consolidated financial statements include certain entities in which TDS has a variable interest that requires consolidation under GAAP. See Note 16 — Variable Interest Entities for additional information relating to TDS' VIEs. All material intercompany accounts and transactions have been eliminated.

### Use of Estimates

The preparation of consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect (a) the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and (b) the reported amounts of revenues and expenses during the reported period. Actual results could differ from those estimates. Significant estimates are involved in accounting for goodwill, indefinite-lived intangible assets and income taxes.

### Cash, Cash Equivalents and Restricted Cash

Cash and cash equivalents include cash and highly liquid investments with original maturities of three months or less. Cash and cash equivalents subject to contractual restrictions are classified as restricted cash. The following table provides a reconciliation of Cash and cash equivalents and restricted cash reported in the Consolidated Balance Sheet to the total of the amounts in the Consolidated Statement of Cash Flows.

| December 31, | 2019 | 2018 |
|---|---|---|
| (Dollars in millions) | | |
| Cash and cash equivalents | $ 465 | $ 921 |
| Restricted cash included in Other current assets | 9 | 6 |
| Cash, cash equivalents and restricted cash in the statement of cash flows | $ 474 | $ 927 |

### Accounts Receivable and Allowance for Doubtful Accounts

U.S. Cellular's accounts receivable consist primarily of amounts owed by customers for wireless services and equipment sales, including sales of certain devices and accessories under installment plans, by agents for sales of equipment to them and by other wireless carriers whose customers have used U.S. Cellular's wireless systems.

TDS Telecom's accounts receivable primarily consist of amounts owed by customers for services and products provided, by state and federal governments for grants and support funds, and by interexchange carriers for long-distance traffic, which TDS Telecom carries on its network.

The allowance for doubtful accounts is the best estimate of the amount of probable credit losses related to existing billed and unbilled accounts receivable. The allowance is estimated based on historical experience, account aging and other factors that could affect collectability. Accounts receivable balances are reviewed on either an aggregate or individual basis for collectability depending on the type of receivable. When it is probable that an account balance will not be collected, the account balance is charged against the allowance for doubtful accounts. TDS does not have any off-balance sheet credit exposure related to its customers.

### Inventory

Inventory consists primarily of wireless devices stated at the lower of cost, which approximates cost determined on the first-in first-out basis, or net realizable value. Net realizable value is determined by reference to the stand-alone selling price.

### Licenses

Licenses consist of direct and incremental costs incurred in acquiring Federal Communications Commission (FCC) wireless spectrum licenses that provide TDS with the exclusive right to utilize designated radio spectrum within specific geographic service areas to provide wireless service. Although wireless spectrum licenses are issued for a fixed period of time, generally ten years, or in some cases twelve or fifteen years, the FCC has granted license renewals routinely and at a nominal cost. The wireless spectrum licenses held by TDS expire at various dates. TDS believes that it is probable that its future wireless spectrum license renewal applications will be granted. TDS determined that there are currently no legal, regulatory, contractual, competitive, economic or other factors that limit the useful lives of the wireless spectrum licenses. Therefore, TDS has determined that wireless spectrum licenses are indefinite-lived intangible assets.

U.S. Cellular performs its annual impairment assessment of wireless spectrum licenses as of November 1 of each year or more frequently if there are events or circumstances that cause U.S. Cellular to believe it is more likely than not that the carrying value of wireless spectrum licenses exceeds fair value. For purposes of its impairment testing, U.S. Cellular separated its FCC wireless spectrum licenses into eight units of accounting. The eight units of accounting consisted of one unit of accounting for developed operating market wireless spectrum licenses (built wireless spectrum licenses) and seven geographic non-operating market wireless spectrum licenses (unbuilt wireless spectrum licenses).

U.S. Cellular performed a quantitative impairment assessment in 2019 and a qualitative impairment assessment in 2018 to determine whether the wireless spectrum licenses were impaired. Based on the impairment assessments performed, U.S. Cellular did not have an impairment of its wireless spectrum licenses in 2019 or 2018. See Note 8 — Intangible Assets for additional details related to wireless spectrum licenses.

### Goodwill

TDS has Goodwill as a result of its acquisition of wireline and cable companies. TDS performs its annual impairment assessment of Goodwill as of November 1 of each year or more frequently if there are events or circumstances that cause TDS to believe it is more likely than not that the carrying value of individual reporting units exceeds their respective fair values. Goodwill impairment loss will be measured as the amount by which a reporting unit's carrying amount exceeds its fair value. The loss recognized should not exceed the total amount of goodwill allocated to that reporting unit.

For purposes of conducting its Goodwill impairment tests, TDS Telecom identified two reporting units: Wireline and Cable. The discounted cash flow approach and guideline public company method were used to value the Wireline and Cable reporting units for the annual impairment tests. Based on the annual impairment assessments performed, Wireline and Cable did not have an impairment of their Goodwill in 2019 or 2018.

In 2017, TDS recorded goodwill impairments related to its U.S. Cellular and HMS reporting units, which reduced the carrying value of their respective Goodwill to zero.

See Note 8 — Intangible Assets for additional details related to Goodwill.

### Franchise Rights

TDS Telecom has franchise rights as a result of acquisitions of cable businesses. Franchise rights are intangible assets that provide their holder with the right to operate a business in a certain geographical location as sanctioned by the franchiser, usually a government agency. Franchise rights are generally granted for ten years and may be renewed for additional terms upon approval by the granting authority. TDS anticipates that future renewals of its franchise rights will be granted. Effective January 1, 2018, TDS prospectively changed its estimated useful life for franchise rights from indefinite-lived to fifteen years, due primarily to the effects of increasing competition and advancements in technology for delivering and consuming video programming. Commensurate with this change, TDS reviewed its franchise rights for impairment, and noted there was no impairment as of January 1, 2018. As a result, Depreciation, amortization and accretion increased $17 million, calculated on a straight-line basis, and Net income decreased $13 million or $0.11 per share (Basic and Diluted) for the year ended December 31, 2018. TDS reviews franchise rights for impairment whenever events or changes in circumstances indicate that the assets might be impaired. TDS re-evaluates the useful life of franchise rights each year to determine if changes in technology or other business changes would warrant a revision of its remaining useful life.

See Note 8 — Intangible Assets for additional details related to franchise rights.

### Investments In Unconsolidated Entities

For its equity method investments for which financial information is readily available, TDS records its equity in the earnings of the entity in the current period. For its equity method investments for which financial information is not readily available, TDS records its equity in the earnings of the entity on a one quarter lag basis.

**Property, Plant and Equipment**

Property, plant and equipment is stated at the original cost of construction or purchase including capitalized costs of certain taxes, payroll-related expenses, interest and estimated costs to remove the assets.

Expenditures that enhance the productive capacity of assets in service or extend their useful lives are capitalized and depreciated. Expenditures for maintenance and repairs of assets in service are charged to Cost of services or Selling, general and administrative expense, as applicable. Retirements and disposals of assets are recorded by removing the original cost of the asset (along with the related accumulated depreciation) from plant in service and recording it, together with proceeds, if any, and net removal costs (removal costs less an applicable accrued asset retirement obligation and salvage value realized), as a gain or loss, as appropriate. Certain Wireline segment assets use the group depreciation method. Accordingly, when a group method asset is retired in the ordinary course of business, the original cost of the asset and accumulated depreciation in the same amount are removed, with no gain or loss recognized on the disposition.

TDS capitalizes certain costs of developing new information systems. Software licenses that qualify for capitalization as an asset are accounted for as the acquisition of an intangible asset and the incurrence of a liability to the extent that the license fees are not fully paid at acquisition.

**Depreciation and Amortization**

Depreciation is provided using the straight-line method over the estimated useful life of the related asset, except for certain Wireline segment assets, which use the group depreciation method. The group depreciation method develops a depreciation rate based on the average useful life of a specific group of assets, rather than each asset individually. TDS depreciates leasehold improvement assets over periods ranging from one year to thirty years; such periods approximate the shorter of the assets' economic lives or the specific lease terms.

Useful lives of specific assets are reviewed throughout the year to determine if changes in technology or other business changes would warrant accelerating the depreciation of those specific assets. There were no material changes to the assigned useful lives of the various categories of property, plant and equipment in 2019, 2018 or 2017. However, depreciation for certain specific assets was accelerated due to changes in technology. See Note 10 — Property, Plant and Equipment for additional details related to useful lives.

**Impairment of Long-Lived Assets**

TDS reviews long-lived assets for impairment whenever events or changes in circumstances indicate that the assets might be impaired. U.S. Cellular has one asset group and TDS Telecom has two asset groups for purposes of assessing property, plant and equipment for impairment based on the integrated nature of its network, assets and operations. The cash flows generated by each of these groups is the lowest level for which identifiable cash flows are largely independent of the cash flows of other groups of assets and liabilities.

**Leases**

A lease is generally present in a contract if the lessee controls the use of identified property, plant or equipment for a period of time in exchange for consideration. See Note 11 — Leases for additional details related to leases.

**Agent Liabilities**

U.S. Cellular has relationships with agents, which are independent businesses that obtain customers for U.S. Cellular. At December 31, 2019 and 2018, U.S. Cellular had accrued $59 million and $63 million, respectively, in agent related liabilities. These amounts are included in Other current liabilities in the Consolidated Balance Sheet.

**Debt Issuance Costs**

Debt issuance costs include underwriters' and legal fees and other charges related to issuing and renewing various borrowing instruments and other long–term agreements, and are amortized over the respective term of each instrument. Debt issuance costs related to TDS' and U.S. Cellular's revolving credit agreements and U.S. Cellular's receivables securitization agreement are recorded in Other assets and deferred charges in the Consolidated Balance Sheet. All other debt issuance costs are presented as an offset to the related debt obligation in the Consolidated Balance Sheet.

**Asset Retirement Obligations**

TDS records asset retirement obligations for the fair value of legal obligations associated with asset retirements and a corresponding increase in the carrying amount of the related long-lived asset in the period in which the obligations are incurred. In periods subsequent to initial measurement, TDS recognizes changes in the liability resulting from the passage of time and updates to the timing or the amount of the original estimates. The liability is accreted to its estimated settlement date value over the period to the estimated settlement date. The change in the carrying amount of the long-lived asset is depreciated over the average remaining life of the related asset. See Note 12 — Asset Retirement Obligations for additional information.

**Treasury Shares**

Common Shares repurchased by TDS are recorded at cost as treasury shares and result in a reduction of equity. When treasury shares are reissued, TDS determines the cost using the first-in, first-out cost method. The difference between the cost of the treasury shares and reissuance price is included in Capital in excess of par value or Retained earnings.

**Revenue Recognition**

Revenues from sales of equipment and products are recognized when control has transferred to the customer, agent or third-party distributor. Service revenues are recognized as the related service is provided. See Note 2 — Revenue Recognition for additional information on TDS' policies related to Revenues.

**Advertising Costs**

TDS expenses advertising costs as incurred. Advertising costs totaled $227 million, $230 million and $228 million in 2019, 2018 and 2017, respectively.

**Income Taxes**

TDS files a consolidated federal income tax return. Deferred taxes are computed using the liability method, whereby deferred tax assets are recognized for future deductible temporary differences and operating loss carryforwards, and deferred tax liabilities are recognized for future taxable temporary differences. Both deferred tax assets and liabilities are measured using the enacted tax rates in effect when the temporary differences are expected to reverse. Temporary differences are the differences between the reported amounts of assets and liabilities and their tax bases. Deferred tax assets and liabilities are adjusted for the effects of changes in tax laws and rates on the date of enactment. Deferred tax assets are reduced by a valuation allowance when it is more likely than not that some portion or all of the deferred tax assets will not be realized. TDS evaluates income tax uncertainties, assesses the probability of the ultimate settlement with the applicable taxing authority and records an amount based on that assessment. Deferred taxes are reported as a net non-current asset or liability by jurisdiction. Any corresponding valuation allowance to reduce the amount of deferred tax assets is also recorded as non-current. See Note 5 — Income Taxes for additional information.

**Stock-Based Compensation and Other Plans**

TDS has established long-term incentive plans, dividend reinvestment plans, and a non-employee director compensation plan. The dividend reinvestment plan of TDS is not considered a compensatory plan and, therefore, recognition of compensation costs for grants made under this plan is not required. All other plans are considered compensatory plans; therefore, recognition of costs for grants made under these plans is required.

TDS recognizes stock compensation expense based upon the fair value of the specific awards granted using established valuation methodologies. The amount of stock compensation cost recognized on either a straight-line basis or graded attribution method is based on the portion of the award that is expected to vest over the requisite service period, which generally represents the vesting period. Stock-based compensation cost recognized has been reduced for estimated forfeitures. Forfeitures are estimated at the time of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates. See Note 19 — Stock-Based Compensation for additional information.

**Recently Issued Accounting Pronouncements**

In June 2016, the FASB issued Accounting Standards Update 2016-13, *Financial Instruments - Credit Losses: Measurement of Credit Losses on Financial Instruments* (ASU 2016-13). ASU 2016-13 requires entities to use a new forward-looking, expected loss model to estimate credit losses. It also requires additional disclosure relating to the credit quality of trade and other receivables, including information relating to management's estimate of credit allowances. TDS is required to adopt ASU 2016-13 on January 1, 2020, using the modified retrospective approach. The adoption of ASU 2016-13 is not expected to have a significant impact on TDS' financial position or results of operations.

In August 2018, the FASB issued Accounting Standards Update 2018-15, *Intangibles - Goodwill and Other - Internal-Use Software: Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract* (ASU 2018-15). ASU 2018-15 aligns the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the existing guidance for capitalizing implementation costs for an arrangement that has a software license. The service element of a hosting arrangement will continue to be expensed as incurred. Any capitalized implementation costs will be amortized over the period of the service contract. TDS is required to adopt ASU 2018-15 on January 1, 2020, either retrospectively or prospectively to eligible costs incurred on or after the date that this guidance is first applied. The adoption of ASU 2018-15 is not expected to have a significant impact on TDS' financial position or results of operations.

# Note 2 Revenue Recognition

**Change in Accounting Policy**

In May 2014, the FASB issued Accounting Standards Update 2014-09, *Revenue from Contracts with Customers* and subsequently amended the standard with several Accounting Standards Updates, collectively referred to as ASC 606. TDS adopted and applied the provisions of ASC 606 as of January 1, 2018, using a modified retrospective method. Under this method, the new accounting standard is applied only to the most recent period presented, recognizing the cumulative effect of the accounting change as an adjustment to the beginning balance of retained earnings. Accordingly, prior periods have not been recast to reflect the new accounting standard. The cumulative effect of applying the provisions of ASC 606 was an increase of $164 million to retained earnings as of January 1, 2018.

As a practical expedient, TDS groups similar contracts or similar performance obligations together into portfolios of contracts or performance obligations if doing so does not result in a significant difference from accounting for the individual contracts discretely. TDS applies this grouping method for the following types of transactions: device activation fees, contract acquisition costs, contract fulfillment costs, and certain customer promotions. Contract portfolios are recognized over the respective expected customer lives or terms of the contracts.

**Nature of goods and services**

The following is a description of principal activities from which TDS generates its revenues.

| Services and products | Nature, timing of satisfaction of performance obligations, and significant payment terms |
|---|---|
| Wireless services | Wireless service includes voice, messaging and data services. Revenue is recognized in Service revenues as wireless service is provided to the customer. Wireless services generally are billed and paid in advance on a monthly basis. |
| Wireless devices and accessories | U.S. Cellular offers a comprehensive range of wireless devices such as handsets, tablets, mobile hotspots, home phones and routers for use by its customers, as well as accessories. U.S. Cellular also sells wireless devices to agents and other third-party distributors for resale. U.S. Cellular frequently discounts wireless devices sold to new and current customers. U.S. Cellular also offers customers the option to purchase certain devices and accessories under installment contracts over a specified time period. For certain equipment installment plans, after a specified period of time, the customer may have the right to upgrade to a new device. Such upgrades require the customer to enter into an equipment installment contract for the new device, and transfer the existing device to U.S. Cellular. U.S. Cellular recognizes revenue in Equipment and product sales revenues when control of the device or accessory is transferred to the customer, agent or third-party distributor, which is generally upon delivery. |
| Wireless roaming | U.S. Cellular receives roaming revenues when other wireless carriers' customers use U.S. Cellular's wireless systems. U.S. Cellular recognizes revenue in Service revenues when the roaming service is provided. |
| Wireless Eligible Telecommunications Carrier (ETC) Revenues | Telecommunications companies may be designated by states, or in some cases by the FCC, as an ETC to receive support payments from the Universal Service Fund if they provide specified services in "high cost" areas. ETC revenues recognized in the reporting period represent the amounts which U.S. Cellular is entitled to receive for such period, as determined and approved in connection with U.S. Cellular's designation as an ETC in various states. |
| Wireless tower rents | U.S. Cellular receives tower rental revenues when another carrier leases tower space on a U.S. Cellular owned tower. U.S. Cellular recognizes revenue in Service revenues in the period during which the services are provided. |
| Wireline services | Wireline services include broadband, video and voice services. Revenue is recognized in Service revenues as service is provided to the customer. Wireline services are generally billed and paid in advance on a monthly basis. |
| Wireline wholesale revenues | Wholesale revenues include network access services primarily to interexchange and wireless carriers for carrying data and voice traffic on TDS Telecom's network, special access services and state and federal support payments, including A-CAM. Wholesale revenues are recorded as the related service is provided. |
| Cable services | Cable services include broadband, video and voice services. Revenue is recognized in Service revenues as service is provided to the customer. Cable services are generally billed and paid in advance on a monthly basis. |
| IT hardware sales | TDS recognizes equipment revenue when it no longer has any requirements to perform, when title has passed and when the products are accepted by the customer. |
| Hosted and managed services | HMS Service revenues consist of cloud and hosting solutions, managed services, Enterprise Resource Planning (ERP) application management, colocation services, and IT hardware related maintenance and professional services. Revenues related to these services are recognized as services are provided. |

**Significant Judgments**

Revenues from sales of equipment and products are recognized when control has transferred to the customer, agent or third-party distributor. Service revenues are recognized as the related service is provided. Services are deemed to be highly interrelated when the method and timing of transfer and performance risk are the same. Highly interrelated services that are determined to not be distinct have been grouped into a single performance obligation. Each month of services promised is a performance obligation. The series of monthly service performance obligations promised over the course of the contract are combined into a single performance obligation for purposes of the allocation.

TDS has made judgments regarding transaction price, including but not limited to issues relating to variable consideration, time value of money and returns. When determined to be significant in the context of the contract, these items are considered in the valuation of transaction price at contract inception or modification, as appropriate.

**Multiple Performance Obligations**

U.S. Cellular and TDS Telecom sell bundled service and equipment offerings. In these instances, TDS recognizes its revenue based on the relative standalone selling prices for each distinct service or equipment performance obligation, or bundles thereof. TDS estimates the standalone selling price of the device or accessory to be its retail price excluding discounts. TDS estimates the standalone selling price of wireless service to be the price offered to customers on month-to-month contracts.

**Equipment Installment Plans**

U.S. Cellular equipment revenue under equipment installment plan contracts is recognized at the time the device is delivered to the customer for the amount allocated to the equipment.

**Incentives**

Discounts, incentives, and rebates to agents and end customers that are deemed cash are recognized as a reduction of Operating revenues concurrently with the associated revenue.

From time to time, U.S. Cellular may offer certain promotions to incentivize customers to switch to, or to purchase additional services from, U.S. Cellular. Under these types of promotions, an eligible customer may receive an incentive in the form of a discount off additional services purchased shown as a credit to the customer's monthly bill. U.S. Cellular accounts for the future discounts as material rights at the time of the initial transaction by allocating and deferring revenue based on the relative proportion of the future discounts in comparison to the aggregate initial purchase. The deferred revenue will be recognized as service revenue in future periods.

**Amounts Collected from Customers and Remitted to Governmental Authorities**

TDS records amounts collected from customers and remitted to governmental authorities on a net basis within a liability account if the amount is assessed upon the customer and TDS merely acts as an agent in collecting the amount on behalf of the imposing governmental authority. If the amount is assessed upon TDS, then amounts collected from customers are recorded in Service revenues and amounts remitted to governmental authorities are recorded in Selling, general and administrative expenses in the Consolidated Statement of Operations. The amounts recorded gross in revenues that are billed to customers and remitted to governmental authorities totaled $78 million, $90 million and $80 million for 2019, 2018 and 2017, respectively.

**Disaggregation of Revenue**

In the following table, TDS' revenues are disaggregated by type of service, which represents the relevant categorization of revenues for TDS' reportable segments, and timing of recognition. Service revenues are recognized over time and Equipment sales are point in time.

| | | TDS Telecom | | | | |
|---|---|---|---|---|---|---|
| **Year Ended December 31, 2019** | **U.S. Cellular** | **Wireline** | **Cable** | **TDS Telecom Total[1]** | **Corporate, Eliminations and Other** | **Total** |
| (Dollars in millions) | | | | | | |
| Revenues from contracts with customers: | | | | | | |
| Type of service: | | | | | | |
| Retail service | $ 2,650 | $ — | $ — | $ — | $ — | $ 2,650 |
| Inbound roaming | 174 | — | — | — | — | 174 |
| Residential | — | 328 | 205 | 533 | — | 533 |
| Commercial | — | 168 | 41 | 209 | — | 209 |
| Wholesale | — | 185 | — | 185 | — | 185 |
| Other service | 137 | — | — | (1) | 72 | 208 |
| Service revenues from contracts with customers | 2,961 | 681 | 246 | 926 | 72 | 3,959 |
| Equipment and product sales | 987 | 1 | — | 1 | 129 | 1,117 |
| **Total revenues from contracts with customers[2]** | $ 3,948 | $ 682 | $ 246 | $ 927 | $ 201 | $ 5,076 |

| | | TDS Telecom | | | | |
|---|---|---|---|---|---|---|
| Year Ended December 31, 2018 | **U.S. Cellular** | **Wireline** | **Cable** | **TDS Telecom Total[1]** | **Corporate, Eliminations and Other** | **Total** |
| (Dollars in millions) | | | | | | |
| Revenues from contracts with customers: | | | | | | |
| Type of service: | | | | | | |
| Retail service | $ 2,623 | $ — | $ — | $ — | $ — | $ 2,623 |
| Inbound roaming | 154 | — | — | — | — | 154 |
| Residential | — | 321 | 188 | 509 | — | 509 |
| Commercial | — | 184 | 42 | 226 | — | 226 |
| Wholesale | — | 191 | — | 191 | — | 191 |
| Other service | 135 | — | — | (1) | 72 | 206 |
| Service revenues from contracts with customers | 2,912 | 696 | 230 | 925 | 72 | 3,909 |
| Equipment and product sales | 989 | 2 | — | 2 | 119 | 1,110 |
| **Total revenues from contracts with customers[2]** | $ 3,901 | $ 698 | $ 230 | $ 927 | $ 191 | $ 5,019 |

Numbers may not foot due to rounding.

1 TDS Telecom Total includes eliminations between the Wireline and Cable segments.

2 Revenue line items in this table will not agree to amounts presented in the Consolidated Statement of Operations as the amounts in this table only include revenue resulting from contracts with customers.

**Contract Balances**

For contracts that involve multiple element service and equipment offerings, the transaction price is allocated to each performance obligation based on its relative standalone selling price. When payment is collected in advance of delivery of goods or services, a contract liability is recorded. A contract asset is recorded when revenue is recognized in advance of TDS' right to receive consideration. Once there is an unconditional right to receive the consideration, TDS bills the customer under the terms of the respective contract and the amounts are recorded as receivables.

TDS recognizes Equipment and product sales revenue when the equipment is delivered to the customer and a corresponding contract asset or liability is recorded for the difference between the amount of revenue recognized and the amount billed to the customer in cases where discounts are offered. The contract asset or liability is reduced over the contract term as service is provided and billed to the customer.

The following table provides balances for contract assets from contracts with customers, which are recorded in Other current assets and Other assets and deferred charges in the Consolidated Balance Sheet, and contract liabilities from contracts with customers, which are recorded in Customer deposits and deferred revenues and Other deferred liabilities and credits in the Consolidated Balance Sheet.

| | December 31, 2019 | December 31, 2018 |
|---|---|---|
| (Dollars in millions) | | |
| Contract assets | $ 10 | $ 11 |
| Contract liabilities[1] | $ 197 | $ 187 |

1 The contract liability balance at December 31, 2018 differs from the amount reported in Note 2 — Revenue Recognition of the 2018 Form 10-K, as the previously reported amount included certain lease-related balances that did not result from contracts with customers.

Revenue recognized related to contract liabilities existing at January 1, 2019 was $164 million for the year ended December 31, 2019.

### Transaction price allocated to the remaining performance obligations

The following table includes estimated service revenues expected to be recognized related to performance obligations that are unsatisfied (or partially unsatisfied) at the end of the reporting period. These estimates represent service revenues to be recognized when services are delivered to customers pursuant to service plan contracts and under certain roaming agreements with other carriers. These estimates are based on contracts in place as of December 31, 2019, and may vary from actual results. As practical expedients, revenue related to contracts of less than one year, generally month-to-month contracts, and contracts with a fixed per-unit price and variable quantity, are excluded from these estimates.

| | Service Revenues |
|---|---|
| (Dollars in millions) | |
| 2020 | $ 367 |
| 2021 | 167 |
| Thereafter | 202 |
| Total | $ 736 |

**Contract Cost Assets**

TDS expects that commission fees paid as a result of obtaining contracts are recoverable and therefore TDS capitalizes these costs. As a practical expedient, costs with an amortization period of one year or less are not capitalized. TDS also incurs fulfillment costs, such as installation costs, where there is an expectation that a future benefit will be realized. Capitalized commission fees and fulfillment costs are amortized based on the timing of transfer of the goods or services to which the assets relate, typically the contract term. Contract cost asset balances, which are recorded in Other assets and deferred charges in the Consolidated Balance Sheet, were as follows:

| | December 31, 2019 | December 31, 2018 |
|---|---|---|
| (Dollars in millions) | | |
| Costs to obtain contracts | | |
| Sales commissions | $ 146 | $ 154 |
| Fulfillment costs | | |
| Installation costs | 11 | 10 |
| Total contract cost assets | $ 157 | $ 164 |

Amortization of contract cost assets was $126 million and $124 million for the year ended December 31, 2019 and December 31, 2018, respectively, and was included in Selling, general and administrative expenses and Cost of service expenses.

# Note 3 Fair Value Measurements

As of December 31, 2019 and 2018, TDS did not have any material financial or nonfinancial assets or liabilities that were required to be recorded at fair value in its Consolidated Balance Sheet in accordance with GAAP.

The provisions of GAAP establish a fair value hierarchy that contains three levels for inputs used in fair value measurements. Level 1 inputs include quoted market prices for identical assets or liabilities in active markets. Level 2 inputs include quoted market prices for similar assets and liabilities in active markets or quoted market prices for identical assets and liabilities in inactive markets. Level 3 inputs are unobservable. A financial instrument's level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement. A financial instrument's level within the fair value hierarchy is not representative of its expected performance or its overall risk profile and, therefore, Level 3 assets are not necessarily higher risk than Level 2 assets or Level 1 assets.

TDS has applied the provisions of fair value accounting for purposes of computing the fair value of financial instruments for disclosure purposes as displayed below.

| | Level within the Fair Value Hierarchy | December 31, 2019 | | December 31, 2018 | |
|---|---|---|---|---|---|
| | | Book Value | Fair Value | Book Value | Fair Value |
| (Dollars in millions) | | | | | |
| Cash and cash equivalents | 1 | $ 465 | $ 465 | $ 921 | $ 921 |
| Short-term investments | 1 | — | — | 17 | 17 |
| Long-term debt | | | | | |
| Retail | 2 | 1,753 | 1,796 | 1,753 | 1,596 |
| Institutional | 2 | 534 | 594 | 534 | 531 |
| Other | 2 | 84 | 84 | 182 | 182 |

The fair values of Cash and cash equivalents and Short-term investments approximate their book values due to the short-term nature of these financial instruments. Long-term debt excludes lease obligations, other installment arrangements, the current portion of Long-term debt and debt financing costs. The fair value of "Retail" Long-term debt was estimated using market prices for TDS' 7.0% Senior Notes, 6.875% Senior Notes, 6.625% Senior Notes and 5.875% Senior Notes, and U.S. Cellular's 7.25% 2063 Senior Notes, 7.25% 2064 Senior Notes and 6.95% Senior Notes. TDS' "Institutional" debt consists of U.S. Cellular's 6.7% Senior Notes which are traded over the counter. TDS' "Other" debt consists of a senior term loan credit agreement and other borrowings with financial institutions. TDS estimated the fair value of its Institutional and Other debt through a discounted cash flow analysis using the interest rates or estimated yield to maturity for each borrowing, which ranged from 3.55% to 6.25% and 5.03% to 8.00% at December 31, 2019 and 2018, respectively.

# Note 4 Equipment Installment Plans

TDS sells devices to customers under equipment installment plans over a specified time period. For certain equipment installment plans, after a specified period of time or amount of payments, the customer may have the right to upgrade to a new device and have the remaining unpaid equipment installment contract balance waived, subject to certain conditions, including trading in the original device in good working condition and signing a new equipment installment contract.

The following table summarizes equipment installment plan receivables as of December 31, 2019 and 2018.

| December 31, | 2019 | 2018 |
|---|---|---|
| (Dollars in millions) | | |
| Equipment installment plan receivables, gross | $ 1,008 | $ 974 |
| Allowance for credit losses | (84) | (77) |
| Equipment installment plan receivables, net | $ 924 | $ 897 |
| | | |
| **Net balance presented in the Consolidated Balance Sheet as:** | | |
| Accounts receivable — Customers and agents (Current portion) | $ 587 | $ 560 |
| Other assets and deferred charges (Non-current portion) | 337 | 337 |
| Equipment installment plan receivables, net | $ 924 | $ 897 |

TDS uses various inputs, including internal data, information from credit bureaus and other sources, to evaluate the credit profiles of its customers. From this evaluation, a credit class is assigned to the customer that determines the number of eligible lines, the amount of credit available, and the down payment requirement, if any. Customers assigned to credit classes requiring no down payment represent a lower risk category, whereas those assigned to credit classes requiring a down payment represent a higher risk category. A customer's assigned credit class is reviewed periodically and a change is made, if appropriate. The balance and aging of the equipment installment plan receivables on a gross basis by current credit category were as follows:

| | December 31, 2019 | | | December 31, 2018 | | |
|---|---|---|---|---|---|---|
| | Lower Risk | Higher Risk | Total | Lower Risk | Higher Risk | Total |
| (Dollars in millions) | | | | | | |
| Unbilled | $ 931 | $ 11 | $ 942 | $ 904 | $ 17 | $ 921 |
| Billed — current | 44 | 1 | 45 | 35 | 1 | 36 |
| Billed — past due | 20 | 1 | 21 | 15 | 2 | 17 |
| Equipment installment plan receivables, gross | $ 995 | $ 13 | $ 1,008 | $ 954 | $ 20 | $ 974 |

The activity in the allowance for credit losses for equipment installment plan receivables was as follows:

| | 2019 | 2018 |
|---|---|---|
| (Dollars in millions) | | |
| Allowance for credit losses, beginning of year | $ 77 | $ 65 |
| Bad debts expense | 82 | 71 |
| Write-offs, net of recoveries | (75) | (59) |
| Allowance for credit losses, end of year | $ 84 | $ 77 |

# Note 5 Income Taxes

TDS' current income taxes balances at December 31, 2019 and 2018, were as follows:

| December 31, | 2019 | 2018 |
|---|---|---|
| (Dollars in millions) | | |
| Federal income taxes receivable | $ 31 | $ 6 |
| Net state income taxes receivable | 5 | 6 |

Income tax expense (benefit) is summarized as follows:

| Year Ended December 31, | 2019 | 2018 | 2017 |
|---|---|---|---|
| (Dollars in millions) | | | |
| Current | | | |
| Federal | $ 15 | $ 10 | $ 77 |
| State | 15 | 3 | 13 |
| Deferred | | | |
| Federal | 36 | 24 | (366) |
| State | (2) | 9 | (3) |
| Total income tax expense (benefit) | $ 64 | $ 46 | $ (279) |

In December 2017, the Tax Act was signed into law. Following the guidance of FASB Accounting Standards Update 2018-05, *Income Taxes: Amendments to SEC Paragraphs Pursuant to SEC Staff Accounting Bulletin No. 118*, Income tax expense (benefit) for the year ended December 31, 2017, included a provisional estimate for the impact of the Tax Act on TDS' 2017 depreciation expense deduction. During 2018, TDS completed a full analysis of depreciation expense deductions related to fixed assets placed in service during 2017 and Income tax expense (benefit) for 2018 included a benefit of $4 million related to this adjustment.

A reconciliation of TDS' income tax expense computed at the statutory rate to the reported income tax expense, and the statutory federal income tax rate to TDS' effective income tax rate is as follows:

| Year Ended December 31, | 2019 | | 2018 | | 2017 | |
|---|---|---|---|---|---|---|
| | Amount | Rate | Amount | Rate | Amount | Rate |
| (Dollars in millions) | | | | | | |
| Statutory federal income tax expense and rate | $ 44 | 21.0 % | $ 46 | 21.0 % | $ (43) | 35.0 % |
| State income taxes, net of federal benefit[1] | 12 | 5.6 | 11 | 4.9 | 6 | (5.2) |
| Effect of noncontrolling interests | — | (0.1) | (1) | (0.4) | (2) | 1.6 |
| Federal income tax rate change[2] | — | — | (16) | (7.1) | (314) | 257.5 |
| Change in federal valuation allowance[3] | 7 | 3.1 | (1) | (0.3) | (5) | 4.3 |
| Goodwill impairment[4] | — | — | — | — | 71 | (58.2) |
| Nondeductible compensation | 4 | 1.9 | 9 | 4.1 | 10 | (8.1) |
| Tax credits | (4) | (1.9) | (1) | (0.6) | (1) | 0.8 |
| Other differences, net | 1 | 0.8 | (1) | (0.6) | (1) | 1.4 |
| Total income tax expense (benefit) and rate | $ 64 | 30.3 % | $ 46 | 21.0 % | $ (279) | 229.1 % |

1 State income taxes, net of federal benefit, include changes in unrecognized tax benefits as well as adjustments to the valuation allowance.

2 Federal income tax rate change due to the Tax Act reducing the federal income tax rate from 35% to 21% resulting in a tax benefit in 2018 due primarily to an income tax accounting method change that accelerated tax depreciation on certain assets for the 2017 tax year. The $314 million tax benefit in 2017 related to adjusting the deferred tax liability to the lower tax rate upon enactment of the Tax Act.

3 Change in federal valuation allowance in 2019 is due primarily to interest expense carryforwards not expected to be realized. The 2018 change also includes a change in judgment related to net operating loss carryforwards that are now realizable due to an internal restructuring.

4 Goodwill impairment reflects an adjustment to increase 2017 income tax expense by $71 million related to a portion of the impaired goodwill that is not amortizable for income tax purposes. See Note 8 — Intangible Assets for additional information related to the goodwill impairment.

Significant components of TDS' deferred income tax assets and liabilities at December 31, 2019 and 2018, were as follows[1]:

| December 31, | 2019 | 2018 |
|---|---|---|
| (Dollars in millions) | | |
| Deferred tax assets | | |
| Net operating loss (NOL) carryforwards | $ 168 | $ 159 |
| Lease liabilities | 251 | — |
| Asset retirement obligation | 74 | 67 |
| Other | 106 | 151 |
| Total deferred tax assets | 599 | 377 |
| Less valuation allowance | (152) | (135) |
| Net deferred tax assets | 447 | 242 |
| Deferred tax liabilities | | |
| Property, plant and equipment | 481 | 458 |
| Licenses/intangibles | 261 | 237 |
| Partnership investments | 132 | 134 |
| Lease assets | 226 | — |
| Other | 22 | 53 |
| Total deferred tax liabilities | 1,122 | 882 |
| Net deferred income tax liability | $ 675 | $ 640 |

1 Certain prior year deferred tax assets and liabilities have been reclassified to align with the current year presentation.

At December 31, 2019, TDS and certain subsidiaries had $2,861 million of state NOL carryforwards (generating a $151 million deferred tax asset) available to offset future taxable income. The state NOL carryforwards expire between 2020 and 2039. Certain subsidiaries had federal NOL carryforwards (generating a $17 million deferred tax asset) available to offset their future taxable income. The federal NOL carryforwards generally expire between 2020 and 2037, with the exception of federal NOLs generated after 2017, which do not expire. A valuation allowance was established for certain state NOL carryforwards and federal NOL carryforwards since it is more likely than not that a portion of such carryforwards will expire before they can be utilized.

A summary of TDS' deferred tax asset valuation allowance is as follows:

| | 2019 | 2018 | 2017 |
|---|---|---|---|
| (Dollars in millions) | | | |
| Balance at beginning of year | $ 135 | $ 147 | $ 122 |
| Charged to income tax expense | 17 | (5) | 25 |
| Charged to Retained earnings | — | (7) | — |
| Balance at end of year | $ 152 | $ 135 | $ 147 |

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

| | 2019 | 2018 | 2017 |
|---|---|---|---|
| (Dollars in millions) | | | |
| Unrecognized tax benefits balance at beginning of year | $ 49 | $ 46 | $ 42 |
| Additions for tax positions of current year | 8 | 8 | 6 |
| Additions for tax positions of prior years | — | 2 | 1 |
| Reductions for tax positions of prior years | (7) | (1) | (1) |
| Reductions for settlements of tax positions | (1) | — | — |
| Reductions for lapses in statutes of limitations | — | (6) | (2) |
| Unrecognized tax benefits balance at end of year | $ 49 | $ 49 | $ 46 |

Unrecognized tax benefits are included in Accrued taxes and Other deferred liabilities and credits in the Consolidated Balance Sheet. If these benefits were recognized, they would have reduced income tax expense in 2019, 2018 and 2017 by $39 million, $39 million and $37 million, respectively, net of the federal benefit from state income taxes.

TDS recognizes accrued interest and penalties related to unrecognized tax benefits in Income tax expense (benefit). The amounts charged to income tax expense related to interest and penalties resulted in an expense of $3 million, less than $1 million and $3 million in 2019, 2018 and 2017, respectively. Net accrued liabilities for interest and penalties were $21 million and $19 million at December 31, 2019 and 2018, respectively, and are included in Other deferred liabilities and credits in the Consolidated Balance Sheet.

TDS and its subsidiaries file federal and state income tax returns. With limited exceptions, TDS is no longer subject to federal and state income tax audits for the years prior to 2016.

## Note 6 Earnings Per Share

Basic earnings per share attributable to TDS shareholders is computed by dividing Net income attributable to TDS shareholders by the weighted average number of Common Shares outstanding during the period. Diluted earnings per share attributable to TDS shareholders is computed by dividing Net income attributable to TDS shareholders by the weighted average number of Common Shares outstanding during the period adjusted to include the effects of potentially dilutive securities. Potentially dilutive securities primarily include incremental shares issuable upon the exercise of outstanding stock options and the vesting of performance and restricted stock units.

The amounts used in computing basic and diluted earnings per share attributable to TDS shareholders were as follows:

| Year Ended December 31, | 2019 | 2018 | 2017 |
|---|---|---|---|
| (Dollars and shares in millions, except per share amounts) | | | |
| Net income attributable to TDS shareholders used in basic earnings per share | $ 121 | $ 135 | $ 153 |
| Adjustments to compute diluted earnings: | | | |
| Noncontrolling interest adjustment | (1) | (2) | — |
| Net income attributable to TDS shareholders used in diluted earnings per share | $ 120 | $ 133 | $ 153 |
| Weighted average number of shares used in basic earnings per share: | | | |
| Common Shares | 107 | 105 | 104 |
| Series A Common Shares | 7 | 7 | 7 |
| Total | 114 | 112 | 111 |
| Effects of dilutive securities | 2 | 2 | 1 |
| Weighted average number of shares used in diluted earnings per share | 116 | 114 | 112 |
| Basic earnings per share attributable to TDS shareholders | $ 1.06 | $ 1.20 | $ 1.39 |
| Diluted earnings per share attributable to TDS shareholders | $ 1.03 | $ 1.17 | $ 1.37 |

Certain Common Shares issuable upon the exercise of stock options or vesting of performance and restricted stock units were not included in weighted average diluted shares outstanding for the calculation of Diluted earnings per share attributable to TDS shareholders because their effects were antidilutive. The number of such Common Shares excluded was 2 million shares, 3 million shares and 4 million shares for 2019, 2018 and 2017, respectively.

## Note 7 Acquisitions, Divestitures and Exchanges

On December 31, 2019, TDS acquired substantially all of the assets of MI Connection Communications System, dba Continuum, for $80 million in cash, subject to working capital adjustments. Continuum is a cable company that passes approximately 40,000 service addresses in North Carolina and offers broadband, video and voice services, which complement the TDS Telecom portfolio of products. The operations of Continuum will be included in the Cable segment for reporting purposes. The goodwill recorded represents future economic benefits expected to be generated by the acquisition. The allocation of the purchase price was as follows:

| | | Allocation of Purchase Price | | |
|---|---|---|---|---|
| | Purchase Price | Goodwill[1] | Intangible Assets Subject to Amortization[2] | Net Tangible Assets (Liabilities) |
| (Dollars in millions) | | | | |
| Continuum | $ 80 | $ 38 | $ 9 | $ 33 |

1 The entire amount of Goodwill acquired in 2019 is amortizable for income tax purposes.

2 In 2019, at the date of acquisition, the weighted average amortization period for Intangible Assets Subject to Amortization acquired was approximately four years.

# Note 8 Intangible Assets

**Licenses**

TDS reviews attractive opportunities to acquire additional wireless spectrum, including pursuant to FCC auctions. TDS also may seek to divest outright or include in exchanges wireless spectrum that is not strategic to its long-term success. Prior to 2009, TDS accounted for U.S. Cellular's share repurchases as step acquisitions, allocating a portion of the share repurchase value to TDS' Licenses. Consequently, U.S. Cellular's Licenses on a stand-alone basis do not equal the TDS consolidated Licenses related to U.S. Cellular. Activity related to TDS' Licenses is presented below.

| (Dollars in millions) | U.S. Cellular | Wireline | Cable | Total |
|---|---|---|---|---|
| Balance at December 31, 2017 | $ 2,227 | $ 2 | $ 3 | $ 2,232 |
| Acquisitions | 8 | — | — | 8 |
| Transferred to Assets held for sale | (51) | — | — | (51) |
| Divestitures | (11) | — | — | (11) |
| Exchanges - Licenses received | 18 | — | — | 18 |
| Exchanges - Licenses surrendered | (1) | — | — | (1) |
| Balance at December 31, 2018 | 2,190 | 2 | 3 | 2,195 |
| Acquisitions | 267 | — | — | 267 |
| Divestitures | (10) | — | — | (10) |
| Exchanges - Licenses received | 26 | — | — | 26 |
| Exchanges - Licenses surrendered | — | — | — | — |
| Capitalized Interest | 2 | — | — | 2 |
| Balance at December 31, 2019 | $ 2,475 | $ 2 | $ 3 | $ 2,480 |

***Auctions 101 and 102***

In June 2019, the FCC announced by way of public notice that U.S. Cellular was the provisional winning bidder for 408 wireless spectrum licenses in its 28 GHz auction (Auction 101) and 282 wireless spectrum licenses in its 24 GHz auction (Auction 102) for an aggregate purchase price of $256 million. U.S. Cellular paid substantially all of the $256 million in the first half of 2019. The wireless spectrum licenses from Auction 101 were granted by the FCC on October 2, 2019, and the wireless spectrum licenses from Auction 102 were granted by the FCC on December 11, 2019.

**Goodwill**

Activity related to TDS' Goodwill is presented below.

| (Dollars in millions) | Wireline[1] | Cable | Total |
|---|---|---|---|
| Balance at December 31, 2017 | $ 409 | $ 100 | $ 509 |
| Other | — | — | — |
| Balance at December 31, 2018 | 409 | 100 | 509 |
| Acquisitions | — | 38 | 38 |
| Balance at December 31, 2019 | $ 409 | $ 138 | $ 547 |

[1] Accumulated impairment losses in prior periods were $29 million for Wireline.

**Goodwill — Interim Impairment Assessment in 2017**

*U.S. Cellular*

Based on 2017 developments, including wireless expansion plans announced by other companies and the results of the FCC's forward auction of 600 MHz wireless spectrum licenses and other FCC actions, U.S. Cellular anticipated increased competition for customers in its primary operating markets from new and existing market participants over the long term. In addition, the widening adoption of unlimited data plans and other data pricing constructs across the industry, including U.S. Cellular's introduction of unlimited plans in 2017, may limit the industry's ability to monetize future growth in data usage. These factors when assessed and considered as part of U.S. Cellular's annual planning process conducted in the third quarter of each year caused management to revise its long-range financial forecast in the third quarter of 2017. Based on the factors noted above, management identified a triggering event and performed a quantitative goodwill impairment test during the third quarter of 2017.

The results of the interim goodwill impairment test indicated that the carrying value of the U.S. Cellular reporting unit exceeded its fair value. Therefore, TDS recognized a loss on impairment of goodwill of $227 million to reduce the carrying value of goodwill for the U.S. Cellular reporting unit to zero in the third quarter of 2017.

*Other*

During the third quarter of 2017, due to slower than expected service revenue growth and revenue mix trending towards a higher proportion of lower margin revenue streams, management identified a triggering event related to its HMS operations and performed a quantitative goodwill impairment test.

TDS used a one-step quantitative approach that compared the fair value of its HMS operations to the carrying value. TDS weighted the discounted cash flow approach and guideline public company method to value the HMS operations. The discounted cash flow approach uses value drivers and considers risks specific to the industry as well as current economic factors. The guideline public company method develops an indication of fair value by calculating average market pricing multiples for selected publicly-traded companies. The developed multiples were applied to applicable financial measures of the HMS operations to determine fair value.

The results of the interim goodwill impairment test indicated that the carrying value of the HMS operations exceeded its fair value. Therefore, TDS recognized a loss on impairment of goodwill of $35 million to reduce the carrying value of goodwill for the HMS operations to zero in the third quarter of 2017.

**Other intangible assets**

Activity related to TDS' Other intangible assets is presented below.

| | **December 31, 2019** | | | December 31, 2018 | | |
|---|---|---|---|---|---|---|
| | **Gross Amount** | **Accumulated Amortization** | **Net Amount** | Gross Amount | Accumulated Amortization | Net Amount |
| (Dollars in millions) | | | | | | |
| Franchise rights | **$ 255** | **$ (34)** | **$ 221** | $ 255 | $ (17) | $ 238 |
| Customer lists and Trade name | **151** | **(133)** | **18** | 166 | (151) | 15 |
| Total | **$ 406** | **$ (167)** | **$ 239** | $ 421 | $ (168) | $ 253 |

As discussed in Note 1 — Summary of Significant Accounting Policies and Recent Accounting Pronouncements, effective January 1, 2018, TDS prospectively changed its assessment of useful life for its franchise rights from indefinite-lived to 15 years. Amortization expense for intangible assets was $24 million, $26 million and $11 million for the years ended December 31, 2019, 2018 and 2017, respectively. Based on the current balance of finite-lived intangible assets, the estimated amortization expense is $25 million, $21 million, $20 million, $19 million and $17 million for the years 2020 through 2024, respectively.

# Note 9 Investments in Unconsolidated Entities

Investments in unconsolidated entities consist of amounts invested in entities in which TDS holds a noncontrolling interest. TDS' investments in unconsolidated entities are accounted for using either the equity method or measurement alternative method as shown in the table below. The carrying value of measurement alternative method investments represents cost minus any impairments plus or minus any observable price changes.

| **December 31,** | **2019** | 2018 |
|---|---|---|
| (Dollars in millions) | | |
| Equity method investments: | | |
| Capital contributions, loans, advances and adjustments | **$ 116** | $ 116 |
| Cumulative share of income | **2,099** | 1,930 |
| Cumulative share of distributions | **(1,748)** | (1,587) |
| Total equity method investments | **467** | 459 |
| Measurement alternative method investments | **21** | 21 |
| Total investments in unconsolidated entities | **$ 488** | $ 480 |

The following tables, which are based on information provided in part by third parties, summarize the combined assets, liabilities and equity, and results of operations of TDS' equity method investments:

| December 31, | 2019 | 2018 |
|---|---|---|
| (Dollars in millions) | | |
| Assets | | |
| Current | $ 1,516 | $ 1,299 |
| Noncurrent | 5,776 | 5,010 |
| Total assets | $ 7,292 | $ 6,309 |
| | | |
| Liabilities and Equity | | |
| Current liabilities | $ 626 | $ 436 |
| Noncurrent liabilities | 1,132 | 405 |
| Partners' capital and shareholders' equity | 5,534 | 5,468 |
| Total liabilities and equity | $ 7,292 | $ 6,309 |

| Year Ended December 31, | 2019 | 2018 | 2017 |
|---|---|---|---|
| (Dollars in millions) | | | |
| Results of Operations | | | |
| Revenues | $ 6,929 | $ 6,801 | $ 6,585 |
| Operating expenses | 5,043 | 4,985 | 4,985 |
| Operating income | 1,886 | 1,816 | 1,600 |
| Other income (expense), net | (24) | 9 | (3) |
| Net income | $ 1,862 | $ 1,825 | $ 1,597 |

# Note 10 Property, Plant and Equipment

TDS' Property, plant and equipment in service and under construction, and related accumulated depreciation and amortization, as of December 31, 2019 and 2018, were as follows:

| December 31, | Useful Lives (Years) | 2019 | 2018 |
|---|---|---|---|
| (Dollars in millions) | | | |
| Land | N/A | $ 57 | $ 55 |
| Buildings | 5-40 | 527 | 523 |
| Leasehold and land improvements | 1-30 | 1,314 | 1,245 |
| Cable and wire | 15-35 | 1,996 | 1,884 |
| Network and switching equipment | 3-13 | 2,507 | 2,423 |
| Cell site equipment | 7-25 | 3,708 | 3,460 |
| Office furniture and equipment | 3-10 | 387 | 378 |
| Other operating assets and equipment | 3-12 | 174 | 193 |
| System development | 1-7 | 1,604 | 1,486 |
| Work in process | N/A | 590 | 427 |
| Total property, plant and equipment, gross | | 12,864 | 12,074 |
| Accumulated depreciation and amortization | | (9,337) | (8,728) |
| Total property, plant and equipment, net | | $ 3,527 | $ 3,346 |

Depreciation and amortization expense totaled $890 million, $839 million and $817 million in 2019, 2018 and 2017, respectively. In 2019, 2018 and 2017, (Gain) loss on asset disposals, net included charges of $12 million, $9 million and $21 million, respectively, related to disposals of assets, trade-ins of older assets for replacement assets and other retirements of assets from service in the normal course of business.

# Note 11 Leases

**Change in Accounting Policy**

In February 2016, the FASB issued Accounting Standards Update 2016-02, *Leases* and subsequently amended the standard with several Accounting Standards Updates, collectively referred to as ASC 842. This standard replaces the previous lease accounting standard under ASC 840 - *Leases* and requires lessees to record a right-of-use (ROU) asset and lease liability for the majority of leases. TDS adopted the provisions of ASC 842 on January 1, 2019, using a modified retrospective method. Under this method, TDS elected to apply the new accounting standard only to the most recent period presented, recognizing the cumulative effect of the accounting change, if any, as an adjustment to the beginning balance of retained earnings. Accordingly, prior periods have not been recast to reflect the new accounting standard. The cumulative effect of applying the provisions of ASC 842 had no material impact on retained earnings.

TDS elected transitional practical expedients for existing leases which eliminated the requirements to reassess existing lease classification, initial direct costs, and whether contracts contain leases. TDS also elected the practical expedient related to land easements that allows it to carry forward the accounting treatment for pre-existing land easement agreements.

The cumulative effect of the adoption of ASC 842 on TDS' Consolidated Balance Sheet as of January 1, 2019 is presented below.

| | December 31, 2018 | ASC 842 Adjustment | January 1, 2019 |
|---|---|---|---|
| (Dollars in millions) | | | |
| Prepaid expenses | $ 103 | $ (13) | $ 90 |
| Operating lease right-of-use assets | — | 975 | 975 |
| Other assets and deferred charges | 616 | (12) | 604 |
| Short-term operating lease liabilities | — | 112 | 112 |
| Other current liabilities | 114 | (8) | 106 |
| Long-term operating lease liabilities | — | 949 | 949 |
| Other deferred liabilities and credits | 541 | (103) | 438 |

In connection with the adoption of ASC 842, TDS recorded ROU assets and lease liabilities for its operating leases in its Consolidated Balance Sheet as of January 1, 2019. The amounts for ROU assets and lease liabilities initially were calculated as the discounted value of future lease payments. The difference between the ROU assets and the corresponding lease liabilities at January 1, 2019 as shown in the table above resulted from adjustments to ROU assets to account for various lease prepayments and straight-line expense recognition deferral balances which existed as of December 31, 2018. Finance leases are included in Property, plant and equipment and Long-term debt, net consistent with the presentation under prior accounting standards.

**Lessee Agreements**

A lease is generally present in a contract if the lessee controls the use of identified property, plant or equipment for a period of time in exchange for consideration. Nearly all of TDS' leases are classified as operating leases, although it does have a small number of finance leases. TDS' most significant leases are for land and tower spaces, network facilities, retail spaces, and offices.

TDS has agreements with both lease and nonlease components, which are accounted for separately. As part of the present value calculation for the lease liabilities, TDS uses an incremental borrowing rate as the rates implicit in the leases are not readily determinable. The incremental borrowing rates used for lease accounting are based on TDS' unsecured rates, adjusted to approximate the rates at which TDS would be required to borrow on a collateralized basis over a term similar to the recognized lease term. TDS applies the incremental borrowing rates to lease components using a portfolio approach based upon the length of the lease term and the reporting entity in which the lease resides. The cost of nonlease components in TDS' lease portfolio (e.g., utilities and common area maintenance) are not typically predetermined at lease commencement and are expensed as incurred at their relative standalone price.

Variable lease expense occurs when, subsequent to the lease commencement, lease payments are made that were not originally included in the lease liability calculation. TDS' variable lease payments are primarily a result of leases with escalations that are tied to an index. The incremental changes due to the index changes are recorded as variable lease expense and are not included in the ROU assets or lease liabilities.

The identified lease term determines the periods to which expense is allocated and also has a significant impact on the ROU asset and lease liability calculations. Many of TDS' leases include renewal and early termination options. At lease commencement, the lease terms include options to extend the lease when TDS is reasonably certain that it will exercise the options. The lease terms do not include early termination options unless TDS is reasonably certain to exercise the options. Certain asset classes have similar lease characteristics; therefore, TDS has applied the portfolio approach for lease term recognition for its tower space, retail, and certain ground lease asset classes.

The following table shows the components of lease cost included in the Consolidated Statement of Operations:

| (Dollars in millions) | Year Ended December 31, 2019 |
|---|---|
| Operating lease cost | $ 177 |
| Financing lease cost: | |
| Amortization of ROU assets | 2 |
| Interest on lease liabilities | 1 |
| Variable lease cost | 8 |
| Total lease cost | $ 188 |

The following table shows supplemental cash flow information related to lease activities:

| (Dollars in millions) | Year Ended December 31, 2019 |
|---|---|
| Cash paid for amounts included in the measurement of lease liabilities: | |
| Operating cash flows from operating leases | $ 172 |
| Operating cash flows from finance leases | 1 |
| ROU assets obtained in exchange for lease obligations: | |
| Operating leases | $ 132 |
| Finance leases | 10 |

The following table shows the classification of TDS' finance leases in its Consolidated Balance Sheet:

| (Dollars in millions) | December 31, 2019 |
|---|---|
| Finance Leases | |
| Property, plant and equipment | $ 20 |
| Less: Accumulated depreciation and amortization | 5 |
| Property, plant and equipment, net | $ 15 |
| Current portion of long-term debt | 1 |
| Long-term debt, net | $ 7 |
| Total finance lease liabilities | $ 8 |

The table below shows a weighted-average analysis for lease terms and discount rates for all leases:

| | December 31, 2019 |
|---|---|
| Weighted Average Remaining Lease Term | |
| Operating leases | 12 years |
| Finance leases | 24 years |
| | |
| Weighted Average Discount Rate | |
| Operating leases | 4.4 |
| Finance leases | 6.3 |

The maturities of lease liabilities are as follows:

| (Dollars in millions) | Operating Leases | Finance Leases |
|---|---|---|
| 2020 | $ 159 | $ 1 |
| 2021 | 159 | — |
| 2022 | 143 | 1 |
| 2023 | 127 | 1 |
| 2024 | 109 | 1 |
| Thereafter | 730 | 16 |
| Total lease payments[1] | $ 1,427 | $ 20 |
| Less: Imputed interest | 380 | 12 |
| Present value of lease liabilities | $ 1,047 | $ 8 |

[1] Lease payments exclude $29 million of legally binding lease payments for leases signed but not yet commenced.

**Lessor Agreements**

TDS' most significant lessor leases are for tower space and colocation space. All of TDS' lessor leases are classified as operating leases. A lease is generally present in a contract if the lessee controls the use of identified property, plant, or equipment for a period of time in exchange for consideration. TDS' lessor agreements with lease and nonlease components are generally accounted for separately; however, certain service agreements with insignificant lease components are accounted for as nonlease transactions.

The identified lease term determines the periods to which revenue is allocated over the term of the lease. Many of TDS' leases include renewal and early termination options. At lease commencement, lease terms include options to extend the lease when TDS is reasonably certain that lessees will exercise the options. Lease terms would not include periods after the date of a termination option that lessees are reasonably certain to exercise.

Variable lease income occurs when, subsequent to the lease commencement, lease payments are received that were not originally included in the lease receivable calculation. TDS' variable lease income is primarily a result of leases with escalations that are tied to an index. The incremental increases due to the index changes are recorded as variable lease income.

The following table shows the components of lease income which are included in Service revenues in the Consolidated Statement of Operations:

| (Dollars in millions) | Year Ended December 31, 2019 |
|---|---|
| Operating lease income[1] | $ 100 |

[1] During the third quarter of 2019, TDS recorded an out-of-period adjustment attributable to 2009 through the second quarter of 2019 due to errors in the timing of recognition of revenue for certain tower leases. This out-of-period adjustment had the impact of increasing operating lease income by $5 million for the year ended December 31, 2019. TDS determined that this adjustment was not material to any of the periods impacted.

The maturities of expected lease payments to be received are as follows:

| (Dollars in millions) | Operating Leases |
|---|---|
| 2020 | $ 87 |
| 2021 | 70 |
| 2022 | 44 |
| 2023 | 32 |
| 2024 | 16 |
| Thereafter | 17 |
| Total future lease maturities | $ 266 |

**Disclosures under ASC 840**

As of December 31, 2018, future minimum rental payments required under operating leases and rental receipts expected under operating leases that had noncancellable lease terms in excess of one year were as follows:

| | Operating Leases Future Minimum Rental Payments | Operating Leases Future Minimum Rental Receipts |
|---|---|---|
| (Dollars in millions) | | |
| 2019 | $ 170 | $ 59 |
| 2020 | 158 | 48 |
| 2021 | 142 | 35 |
| 2022 | 126 | 23 |
| 2023 | 110 | 10 |
| Thereafter | 784 | 7 |
| Total | $ 1,490 | $ 182 |

For 2018 and 2017, rent expense for noncancellable long-term leases was $189 million and $183 million, respectively; and rent expense under cancellable short-term leases was $12 million in each respective year.

# Note 12 Asset Retirement Obligations

U.S. Cellular is subject to asset retirement obligations associated with its leased cell sites, switching office sites, retail store sites and office locations. Asset retirement obligations generally include obligations to restore leased land, towers, retail store and office premises to their pre-lease conditions.

TDS Telecom owns poles, cable and wire and certain buildings and also leases office space and property used for housing central office switching equipment and fiber cable. These assets and leases often have removal or remediation requirements associated with them. For example, TDS Telecom's poles, cable and wire are often located on property that is not owned by TDS Telecom and may be subject to the provisions of easements, permits, or leasing arrangements. Pursuant to the terms of the permits, easements, or leasing arrangements, TDS Telecom is often required to remove these assets and return the property to its original condition at some defined date in the future.

Asset retirement obligations are included in Other deferred liabilities and credits in the Consolidated Balance Sheet.

In 2019 and 2018, U.S. Cellular and TDS Telecom performed a review of the assumptions and estimated costs related to asset retirement obligations. The results of the reviews (identified as Revisions in estimated cash outflows) and other changes in asset retirement obligations during 2019 and 2018, were as follows:

| | 2019 | 2018 |
|---|---|---|
| (Dollars in millions) | | |
| Balance at beginning of year | $ 307 | $ 283 |
| Additional liabilities accrued | 13 | 2 |
| Revisions in estimated cash outflows | 2 | 6 |
| Acquisition of assets | 1 | — |
| Disposition of assets | (1) | (1) |
| Accretion expense | 20 | 18 |
| Transferred to Liabilities held for sale | — | (1) |
| Balance at end of year | $ 342 | $ 307 |

# Note 13 Debt

**Revolving Credit Agreements**

At December 31, 2019, TDS and U.S. Cellular had revolving credit agreements available for general corporate purposes including acquisitions, spectrum purchases and capital expenditures. Amounts under the revolving credit agreements may be borrowed, repaid and reborrowed from time to time until maturity in May 2023. As of December 31, 2019, there were no outstanding borrowings under the revolving credit agreements, except for letters of credit. Interest expense representing commitment fees on the unused portion of the revolving lines of credit was $2 million in each of 2019, 2018 and 2017. The commitment fees are based on the unsecured senior debt ratings assigned to TDS and U.S. Cellular by certain ratings agencies.

The following table summarizes the revolving credit agreements as of December 31, 2019:

| | TDS | U.S. Cellular |
|---|---|---|
| (Dollars in millions) | | |
| Maximum borrowing capacity | $ 400 | $ 300 |
| Letters of credit outstanding | $ 1 | $ 2 |
| Amount borrowed | $ — | $ — |
| Amount available for use | $ 399 | $ 298 |

Borrowings under the revolving credit agreements bear interest either at a London Inter-bank Offered Rate (LIBOR) plus 1.75% or at an alternative Base Rate as defined in the revolving credit agreement plus 0.75%, at TDS' or U.S. Cellular's option. TDS and U.S. Cellular may select a borrowing period of either one, two, three or six months (or other period of twelve months or less if requested by TDS or U.S. Cellular and approved by the lenders). TDS' and U.S. Cellular's credit spread and commitment fees on their revolving credit agreements may be subject to increase if their current credit ratings from nationally recognized credit rating agencies are lowered, and may be subject to decrease if the ratings are raised.

In connection with U.S. Cellular's revolving credit agreement, TDS and U.S. Cellular entered into a subordination agreement dated May 10, 2018, together with the administrative agent for the lenders under U.S. Cellular's revolving credit agreement. Pursuant to this subordination agreement, (a) any consolidated funded indebtedness from U.S. Cellular to TDS will be unsecured and (b) any (i) consolidated funded indebtedness from U.S. Cellular to TDS (other than "refinancing indebtedness" as defined in the subordination agreement) in excess of $105 million and (ii) refinancing indebtedness in excess of $250 million will be subordinated and made junior in right of payment to the prior payment in full of obligations to the lenders under U.S. Cellular's revolving credit agreement. As of December 31, 2019, U.S. Cellular had no outstanding consolidated funded indebtedness or refinancing indebtedness that was subordinated to the revolving credit agreement pursuant to the subordination agreement.

The continued availability of the revolving credit agreements requires TDS and U.S. Cellular to comply with certain negative and affirmative covenants, maintain certain financial ratios and make representations regarding certain matters at the time of each borrowing.

The revolving credit agreements include the following financial covenants:

- Consolidated Interest Coverage Ratio may not be less than 3.00 to 1.00 as of the end of any fiscal quarter.
- Consolidated Leverage Ratio may not be greater than the ratios indicated as of the end of any fiscal quarter for each period specified below:

| Period | Ratios |
|---|---|
| From the agreement date of May 10, 2018 through June 30, 2019 | 3.25 to 1.00 |
| From July 1, 2019 and thereafter | 3.00 to 1.00 |

Certain TDS and U.S. Cellular wholly-owned subsidiaries have jointly and severally unconditionally guaranteed the payment and performance of the obligations of TDS and U.S. Cellular under the revolving credit agreements pursuant to a guaranty dated May 10, 2018. Other subsidiaries that meet certain criteria will be required to provide a similar guaranty in the future. TDS and U.S. Cellular believe that they were in compliance with all of the financial and other covenants and requirements set forth in their revolving credit agreements as of December 31, 2019.

**Term Loan**

In July 2015, U.S. Cellular borrowed $225 million on a senior term loan credit agreement in two separate draws. This agreement was entered into for general corporate purposes, including working capital, spectrum purchases and capital expenditures. This agreement was entered into in January 2015, amended and restated in June 2016, and further amended in May 2018 and March 2019. The interest rate on outstanding borrowings is reset at one, three or six month intervals at a rate of LIBOR plus 175 basis points. This credit agreement provides for the draws to be continued on a long-term basis under terms that are readily determinable. In October 2019, U.S. Cellular made a $100 million principal prepayment on the senior term loan. The remaining unpaid balance will be due and payable in January 2022. The senior term loan credit agreement contains financial covenants and subsidiary guarantees that are consistent with the revolving credit agreements described above. U.S. Cellular believes that it was in compliance with all of the financial and other covenants and requirements set forth in its term loan credit agreement as of December 31, 2019.

In connection with U.S. Cellular's term loan credit agreement, TDS and U.S. Cellular entered into a subordination agreement in June 2016 together with the administrative agent for the lenders under U.S. Cellular's term loan credit agreement, which is substantially the same as the subordination agreement for U.S. Cellular as described above under the "Revolving Credit Agreements." As of December 31, 2019, U.S. Cellular had no outstanding consolidated funded indebtedness or refinancing indebtedness that was subordinated to the term loan agreement pursuant to this subordination agreement.

**Receivables Securitization Agreement**

In December 2017, U.S. Cellular, through its subsidiaries, entered into a $200 million credit agreement to permit securitized borrowings using its equipment installment receivables for general corporate purposes, including acquisitions, spectrum purchases and capital expenditures. In connection with the receivables securitization agreement, U.S. Cellular formed a wholly-owned subsidiary, USCC Master Note Trust (Trust), which qualifies as a bankruptcy remote entity. Under the terms of the agreement, U.S. Cellular, through its subsidiaries, transfers eligible equipment installment receivables to the Trust. The Trust then utilizes the transferred assets as collateral for notes payables issued to third party financial institutions. Since U.S. Cellular retains effective control of the transferred assets in the Trust, any activity associated with this receivables securitization agreement will be treated as a secured borrowing. Therefore, TDS will continue to report equipment installment receivables and any related balances on the Consolidated Balance Sheet. Cash received from borrowings under the receivables securitization agreement will be reported as Debt. Refer to Note 16 — Variable Interest Entities for additional information.

U.S. Cellular entered into a performance guaranty whereby U.S. Cellular guarantees the performance of certain wholly-owned subsidiaries of U.S. Cellular under the receivables securitization agreement. Amounts under the receivables securitization agreement may be borrowed, repaid and reborrowed from time to time until maturity in December 2021, which may be extended from time to time as specified therein. As of December 31, 2019, there were no outstanding borrowings under the receivables securitization agreement, and the entire unused capacity of $200 million was available, subject to sufficient collateral to satisfy the asset borrowing base provisions of the agreement. Interest expense representing commitment fees on the unused portion of the agreement was $1 million, $1 million and zero for the years 2019, 2018 and 2017, respectively.

The continued availability of the receivables securitization agreement requires U.S. Cellular to comply with certain negative and affirmative covenants, maintain certain financial ratios and provide representations on certain matters at the time of each borrowing. The covenants include the same financial covenants for U.S. Cellular as described above under the "Revolving Credit Agreements." TDS believes that U.S. Cellular was in compliance as of December 31, 2019, with all of the financial covenants and requirements set forth in its receivables securitization agreement.

**Other Long-Term Debt**

*Long-term debt as of December 31, 2019 and 2018, was as follows:*

| | | | | December 31, 2019 | | | December 31, 2018 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Issuance date | Maturity date | Call date (any time on or after) | Principal Amount | Less Unamortized discounts and debt issuance costs | Total | Principal Amount | Less Unamortized discount and debt issuance costs | Total |
| (Dollars in millions) | | | | | | | | | |
| TDS Unsecured Senior Notes | | | | | | | | | |
| 6.625% | Mar 2005 | Mar 2045 | Mar 2010 | $ 116 | $ 3 | $ 113 | $ 116 | $ 3 | $ 113 |
| 6.875% | Nov 2010 | Nov 2059 | Nov 2015 | 225 | 7 | 218 | 225 | 7 | 218 |
| 7.000% | Mar 2011 | Mar 2060 | Mar 2016 | 300 | 9 | 291 | 300 | 9 | 291 |
| 5.875% | Dec 2012 | Dec 2061 | Dec 2017 | 195 | 7 | 188 | 195 | 7 | 188 |
| U.S. Cellular Unsecured Senior Notes | | | | | | | | | |
| 6.700% | Dec 2003 and June 2004 | Dec 2033 | Dec 2003 and June 2004 | $ 544 | $ 13 | $ 531 | $ 544 | $ 14 | $ 530 |
| 6.950% | May 2011 | May 2060 | May 2016 | 342 | 11 | 331 | 342 | 11 | 331 |
| 7.250% | Dec 2014 | Dec 2063 | Dec 2019 | 275 | 10 | 265 | 275 | 10 | 265 |
| 7.250% | Nov 2015 | Dec 2064 | Dec 2020 | 300 | 10 | 290 | 300 | 10 | 290 |
| Term Loan | Jul 2015 | Jan 2022 | | 83 | 1 | 82 | 191 | 1 | 190 |
| Finance lease obligations | | | | 8 | — | 8 | 8 | — | 6 |
| Installment payment agreement | | | | 8 | 1 | 7 | 15 | 1 | 14 |
| Other long-term notes | | Through 2021 | | 2 | — | 2 | 3 | — | 3 |
| **Total long-term debt** | | | | $ 2,398 | $ 72 | $ 2,326 | $ 2,512 | $ 73 | $ 2,439 |
| **Long-term debt, current** | | | | | | $ 10 | | | $ 21 |
| **Long-term debt, noncurrent** | | | | | | $ 2,316 | | | $ 2,418 |

TDS may redeem its callable notes and *U.S. Cellular may redeem its 6.95% Senior Notes, 7.25% 2063 Senior Notes and 7.25% 2064* Senior Notes, in whole or in part at any time after the respective call date, at a redemption price equal to 100% of the principal amount redeemed plus accrued and unpaid interest. U.S. Cellular may redeem the 6.7% Senior Notes, in whole or in part, at any time prior to maturity at a redemption price equal to the greater of (a) 100% of the principal amount of such notes, plus accrued and unpaid interest, or (b) the sum of the present values of the remaining scheduled payments of principal and interest thereon discounted to the redemption date on a semi-annual basis at the Treasury Rate plus 30 basis points.

Interest on the Senior Notes outstanding at December 31, 2019, is payable quarterly, with the exception of U.S. Cellular's 6.7% Senior Notes for which interest is payable semi-annually.

The annual requirements for principal payments on long-term debt are approximately $10 million, $2 million, $83 million, less than $1 million and less than $1 million for the years 2020 through 2024, respectively.

The covenants associated with TDS and its subsidiaries' long-term debt obligations, among other things, restrict TDS' ability, subject to certain exclusions, to *incur additional liens, enter into sale and leaseback* transactions, and sell, consolidate or merge assets.

TDS' and U.S. Cellular's long-term debt notes do not contain any provisions resulting in acceleration of the maturities of outstanding debt in the event of a change in TDS' or U.S. Cellular's credit rating.

# Note 14 Employee Benefit Plans

**Defined Contribution Plans**

TDS sponsors a qualified noncontributory defined contribution pension plan. The plan provides benefits for certain employees of TDS Corporate, TDS Telecom and U.S. Cellular. Under this plan, pension costs are calculated separately for each participant and are funded annually. Total pension costs were $17 million in 2019 and $16 million in 2018 and 2017. In addition, TDS sponsors a defined contribution retirement savings plan (401(k) plan). Total costs incurred from TDS' contributions to the 401(k) plan were $25 million in 2019, $28 million in 2018 and $27 million in 2017.

TDS also sponsors an unfunded nonqualified deferred supplemental executive retirement plan for certain employees to offset the reduction of benefits caused by the limitation on annual employee compensation under the tax laws.

**Other Post-Retirement Benefits**

TDS sponsors a defined benefit post-retirement plan that provides medical benefits to retirees and that covers certain employees of TDS Corporate and TDS Telecom, which is not significant to TDS' financial position or operating results. The plan is contributory, with retiree contributions adjusted annually. TDS recognizes the funded status of the plan as a component of Other assets and deferred charges in the Consolidated Balance Sheet as of December 31, 2019 and 2018. Changes in the funded status are included in Accumulated other comprehensive income (loss) in the Consolidated Balance Sheet before affecting such amounts for income taxes to the extent that such changes are not recognized in earnings as a component of net periodic benefit cost.

The post-retirement benefit fund invests mainly in mutual funds that hold U.S. equities, international equities, and debt securities. The post-retirement benefit fund does not hold any debt or equity securities issued by TDS, U.S. Cellular or any related parties. The fair value of the plan assets of the post-retirement benefit fund was $63 million and $55 million as of December 31, 2019 and 2018, respectively. The total plan benefit obligations were $55 million and $49 million as of December 31, 2019 and 2018, respectively. Therefore, the total funded status was an asset of $8 million and $6 million as of December 31, 2019 and 2018, respectively.

TDS is not required to set aside current funds for its future retiree health insurance benefits. The decision to contribute to the plan assets is based upon several factors, including the funded status of the plan, market conditions, alternative investment opportunities, tax benefits and other circumstances. In accordance with applicable income tax regulations, annual contributions to fund the costs of future retiree medical benefits may not exceed certain thresholds. TDS has not determined whether it will make a contribution to the plan in 2020.

# Note 15 Commitments and Contingencies

**Purchase Obligations**

TDS has obligations payable under non-cancellable contracts, commitments for device purchases, network facilities and transport services, agreements for software licensing, long-term marketing programs, as well as certain agreements to purchase goods or services. For certain contracts, TDS calculates its obligation based on termination fees that can be paid to exit the contract. Future minimum payments required under these commitments as of December 31, 2019 are as follows:

| | Purchase Obligations |
|---|---|
| (Dollars in millions) | |
| 2020 | $ 1,065 |
| 2021 | 448 |
| 2022 | 755 |
| 2023 | 63 |
| 2024 | 40 |
| Thereafter | 37 |
| Total | $ 2,408 |

Subsequent to December 31, 2019, TDS committed to purchase assets in the amount of $146 million, subject to regulatory approval. This amount is not included in the 2020 purchase obligations above, which are stated as of December 31, 2019.

**Indemnifications**

TDS enters into agreements in the normal course of business that provide for indemnification of counterparties. The terms of the indemnifications vary by agreement. The events or circumstances that would require TDS to perform under these indemnities are transaction specific; however, these agreements may require TDS to indemnify the counterparty for costs and losses incurred from litigation or claims arising from the underlying transaction. TDS is unable to estimate the maximum potential liability for these types of indemnifications as the amounts are dependent on the outcome of future events, the nature and likelihood of which cannot be determined at this time. Historically, TDS has not made any significant indemnification payments under such agreements.

**Legal Proceedings**

TDS is involved or may be involved from time to time in legal proceedings before the FCC, other regulatory authorities, and/or various state and federal courts. If TDS believes that a loss arising from such legal proceedings is probable and can be reasonably estimated, an amount is accrued in the financial statements for the estimated loss. If only a range of loss can be determined, the best estimate within that range is accrued; if none of the estimates within that range is better than another, the low end of the range is accrued. The assessment of the expected outcomes of legal proceedings is a highly subjective process that requires judgments about future events. The legal proceedings are reviewed at least quarterly to determine the adequacy of accruals and related financial statement disclosures. The ultimate outcomes of legal proceedings could differ materially from amounts accrued in the financial statements.

TDS has accrued $2 million and less than $1 million with respect to legal proceedings and unasserted claims as of December 31, 2019 and 2018, respectively. TDS is unable to estimate any contingent loss in excess of the amounts accrued.

In April 2018, the United States Department of Justice (DOJ) notified TDS that it was conducting inquiries of U.S. Cellular and TDS under the federal False Claims Act relating to U.S. Cellular's participation in wireless spectrum license auctions 58, 66, 73 and 97 conducted by the FCC. U.S. Cellular is/was a limited partner in several limited partnerships which qualified for the 25% bid credit in each auction. The investigation arose from civil actions under the Federal False Claims Act brought by private parties in the U.S. District Court for the Western District of Oklahoma. In November and December 2019, following the DOJ's investigation, the DOJ informed TDS and U.S. Cellular that it would not intervene in the above referenced actions. In addition, on December 5, 2019, the District Court unsealed the complaints. The private party plaintiffs have advised TDS and U.S. Cellular of their intent to pursue the matter and intent to serve the complaint on TDS and U.S. Cellular within the required 90 days of the Court's unsealing of the complaint. TDS and U.S. Cellular believe that U.S. Cellular's arrangements with the limited partnerships and the limited partnerships' participation in the FCC auctions complied with applicable law and FCC rules. At this time, TDS cannot predict the outcome of any proceeding.

# Note 16 Variable Interest Entities

**Consolidated VIEs**

TDS consolidates VIEs in which it has a controlling financial interest as defined by GAAP and is therefore deemed the primary beneficiary. A controlling financial interest will have both of the following characteristics: (a) the power to direct the VIE activities that most significantly impact economic performance; and (b) the obligation to absorb the VIE losses and the right to receive benefits that are significant to the VIE. TDS reviews these criteria initially at the time it enters into agreements and subsequently when events warranting reconsideration occur. These VIEs have risks similar to those described in the "Risk Factors" in TDS' Form 10-K for the year ended December 31, 2019.

During 2017, U.S. Cellular formed USCC EIP LLC (Seller/Sub-Servicer), USCC Receivables Funding LLC (Transferor) and the Trust, collectively the special purpose entities (SPEs), to facilitate a securitized borrowing using its equipment installment plan receivables. Under a Receivables Sale Agreement, U.S. Cellular wholly-owned, majority-owned and unconsolidated entities, collectively referred to as "affiliated entities", transfer device equipment installment plan contracts to the Seller/Sub-Servicer. The Seller/Sub-Servicer aggregates device equipment installment plan contracts, and performs servicing, collection and all other administrative activities related to accounting for the equipment installment plan contracts. The Seller/Sub-Servicer sells the eligible equipment installment plan receivables to the Transferor, a bankruptcy remote entity, which subsequently sells the receivables to the Trust. The Trust, which is bankruptcy remote and isolated from the creditors of U.S. Cellular, will be responsible for issuing asset-backed variable funding notes (Notes), which are collateralized by the equipment installment plan receivables owned by the Trust. Given that U.S. Cellular has the power to direct the activities of these SPEs, and that these SPEs lack sufficient equity to finance their activities, U.S. Cellular is deemed to have a controlling financial interest in the SPEs and, therefore, consolidates them. All transactions with third parties (e.g., issuance of the asset-backed variable funding notes) will be accounted for as a secured borrowing due to the pledging of equipment installment plan contracts as collateral, significant continuing involvement in the transferred assets, subordinated interests of the cash flows, and continued evidence of control of the receivables. Refer to Note 13 — Debt, Receivables Securitization Agreement for additional details regarding the securitization agreement for which these entities were established.

The following VIEs were formed to participate in FCC auctions of wireless spectrum licenses and to fund, establish, and provide wireless service with respect to any FCC wireless spectrum licenses won in the auctions:

- Advantage Spectrum, L.P. (Advantage Spectrum) and Sunshine Spectrum, Inc., the general partner of Advantage Spectrum; and
- King Street Wireless, L.P. (King Street Wireless) and King Street Wireless, Inc., the general partner of King Street Wireless.

These particular VIEs are collectively referred to as designated entities. The power to direct the activities that most significantly impact the economic performance of these VIEs is shared. Specifically, the general partner of these VIEs has the exclusive right to manage, operate and control the limited partnerships and make all decisions to carry on the business of the partnerships. The general partner of each partnership needs the consent of the limited partner, an indirect TDS subsidiary, to sell or lease certain wireless spectrum licenses, to make certain large expenditures, admit other partners or liquidate the limited partnerships. Although the power to direct the activities of these VIEs is shared, TDS has the most significant level of exposure to the variability associated with the economic performance of the VIEs, indicating that TDS is the primary beneficiary of the VIEs. Therefore, in accordance with GAAP, these VIEs are consolidated.

TDS also consolidates other VIEs that are limited partnerships that provide wireless service. A limited partnership is a variable interest entity unless the limited partners hold substantive participating rights or kick-out rights over the general partner. For certain limited partnerships, U.S. Cellular is the general partner and manages the operations. In these partnerships, the limited partners do not have substantive kick-out or participating rights and, further, such limited partners do not have the authority to remove the general partner. Therefore, these limited partnerships are also recognized as VIEs and are consolidated under the variable interest model.

The following table presents the classification and balances of the consolidated VIEs' assets and liabilities in TDS' Consolidated Balance Sheet.

| **December 31,** | **2019** | 2018 |
|---|---|---|
| (Dollars in millions) | | |
| **Assets** | | |
| Cash and cash equivalents | **$ 19** | $ 9 |
| Short-term investments | **—** | 17 |
| Accounts receivable | **637** | 609 |
| Inventory, net | **5** | 5 |
| Other current assets | **7** | 5 |
| Licenses | **647** | 647 |
| Property, plant and equipment, net | **95** | 88 |
| Operating lease right-of-use assets | **42** | — |
| Other assets and deferred charges | **347** | 347 |
| Total assets | **$ 1,799** | $ 1,727 |
| **Liabilities** | | |
| Current liabilities | **$ 30** | $ 31 |
| Long-term operating lease liabilities | **39** | — |
| Other deferred liabilities and credits | **13** | 15 |
| Total liabilities | **$ 82** | $ 46 |

**Unconsolidated VIEs**

TDS manages the operations of and holds a variable interest in certain other limited partnerships, but is not the primary beneficiary of these entities and, therefore, does not consolidate them under the variable interest model.

TDS' total investment in these unconsolidated entities was $5 million and $4 million at December 31, 2019 and 2018, respectively, and is included in Investments in unconsolidated entities in TDS' Consolidated Balance Sheet. The maximum exposure from unconsolidated VIEs is limited to the investment held by TDS in those entities.

**Other Related Matters**

TDS made contributions, loans and/or advances to its VIEs totaling $255 million, $152 million and $821 million during 2019, 2018 and 2017, respectively; of which $214 million in 2019, $116 million in 2018 and $790 million in 2017 are related to USCC EIP LLC as discussed above. TDS may agree to make additional capital contributions and/or advances to these or other VIEs and/or to their general partners to provide additional funding for operations or the development of wireless spectrum licenses granted in various auctions. TDS may finance such amounts with a combination of cash on hand, borrowings under its revolving credit agreement and/or other long-term debt. There is no assurance that TDS will be able to obtain additional financing on commercially reasonable terms or at all to provide such financial support.

The limited partnership agreements of Advantage Spectrum and King Street Wireless also provide the general partner with a put option whereby the general partner may require the limited partner, a subsidiary of U.S. Cellular, to purchase its interest in the limited partnership. The general partner's put options related to its interests in King Street Wireless became exercisable in 2019. The general partner's put options related to its interest in Advantage Spectrum will become exercisable in 2021 and 2022. The greater of the carrying value of the general partner's investment or the value of the put option, net of any borrowings due to TDS, is recorded as Noncontrolling interests with redemption features in TDS' Consolidated Balance Sheet. Also in accordance with GAAP, minority share of income or changes in the redemption value of the put options, net of interest accrued on the loans, are recorded as a component of Net income attributable to noncontrolling interests, net of tax, in TDS' Consolidated Statement of Operations.

During the first quarter of 2018, TDS recorded an out-of-period adjustment attributable to 2016 and 2017 due to errors in the application of accounting guidance applicable to the calculation of Noncontrolling interests with redemption features related to King Street Wireless, Inc. This out-of-period adjustment had the impact of increasing Net income attributable to noncontrolling interests, net of tax, by $6 million and decreasing Net income attributable to TDS shareholders by $6 million in 2018. TDS determined that this adjustment was not material to any of the periods impacted.

# Note 17 Noncontrolling Interests

The following schedule discloses the effects of Net income attributable to TDS shareholders and changes in TDS' ownership interest in U.S. Cellular on TDS' equity for 2019, 2018 and 2017:

| **Year Ended December 31,** | **2019** | 2018 | 2017 |
|---|---|---|---|
| (Dollars in millions) | | | |
| Net income attributable to TDS shareholders | **$ 121** | $ 135 | $ 153 |
| Transfers (to) from the noncontrolling interests | | | |
| Change in TDS' Capital in excess of par value from U.S. Cellular's issuance of U.S. Cellular shares | **(23)** | (30) | (12) |
| Change in TDS' Capital in excess of par value from U.S. Cellular's repurchase of U.S. Cellular shares | **6** | — | — |
| Net transfers (to) from noncontrolling interests | **(17)** | (30) | (12) |
| Change from net income attributable to TDS shareholders and transfers (to) from noncontrolling interests | **$ 104** | $ 105 | $ 141 |

**Mandatorily Redeemable Noncontrolling Interests in Finite-Lived Subsidiaries**

TDS' consolidated financial statements include certain noncontrolling interests that meet the GAAP definition of mandatorily redeemable financial instruments. These mandatorily redeemable noncontrolling interests represent interests held by third parties in consolidated partnerships, where the terms of the underlying partnership agreement provide for a defined termination date at which time the assets of the subsidiary are to be sold, the liabilities are to be extinguished and the remaining net proceeds are to be distributed to the noncontrolling interest holders and TDS in accordance with the respective partnership agreements. The termination dates of these mandatorily redeemable noncontrolling interests range from 2085 to 2092.

The estimated aggregate amount that would be due and payable to settle all of these noncontrolling interests, assuming an orderly liquidation of the finite-lived consolidated partnerships on December 31, 2019, net of estimated liquidation costs, is $20 million. This amount excludes redemption amounts recorded in Noncontrolling interests with redemption features in the Consolidated Balance Sheet. The estimate of settlement value was based on certain factors and assumptions which are subjective in nature. Changes in those factors and assumptions could result in a materially larger or smaller settlement amount. The corresponding carrying value of the mandatorily redeemable noncontrolling interests in finite-lived consolidated partnerships at December 31, 2019, was $5 million, and is included in Noncontrolling interests in the Consolidated Balance Sheet. The excess of the aggregate settlement value over the aggregate carrying value of these mandatorily redeemable noncontrolling interests is due primarily to the unrecognized appreciation of the noncontrolling interest holders' share of the underlying net assets in the consolidated partnerships. Neither the noncontrolling interest holders' share, nor TDS' share, of the appreciation of the underlying net assets of these subsidiaries is reflected in the consolidated financial statements.

# Note 18 Common Shareholders' Equity

**Common Stock**

Series A Common Shares are convertible on a share-for-share basis into Common Shares. In matters other than the election of directors, each Series A Common Share is entitled to ten votes per share, compared to one vote for each Common Share. The Series A Common Shares are entitled to elect eight directors, and the Common Shares elect four. TDS has reserved 7,234,000 Common Shares at December 31, 2019, for possible issuance upon conversion of Series A Common Shares.

The following table summarizes the number of Common and Series A Common Shares issued.

| | Common Shares | Series A Common Shares | Common Treasury Shares |
|---|---|---|---|
| (Shares in millions) | | | |
| Balance at December 31, 2016 | 126 | 7 | 23 |
| Dividend reinvestment, incentive and compensation plans | — | — | (1) |
| Balance at December 31, 2017 | 126 | 7 | 22 |
| Dividend reinvestment, incentive and compensation plans | — | — | (3) |
| Balance at December 31, 2018 | 126 | 7 | 19 |
| Dividend reinvestment, incentive and compensation plans | — | — | (1) |
| Balance at December 31, 2019 | 126 | 7 | 18 |

On August 2, 2013, the Board of Directors of TDS authorized a $250 million stock repurchase program for the purchase of TDS Common Shares from time to time pursuant to open market purchases, block transactions, private purchases or otherwise, depending on market conditions. This authorization does not have an expiration date. As of December 31, 2019, the maximum dollar value of TDS Common Shares that may yet be purchased under TDS' program was $199 million.

In November 2009, U.S. Cellular announced by Form 8-K that the Board of Directors of U.S. Cellular authorized the repurchase of up to 1,300,000 Common Shares on an annual basis beginning in 2009 and continuing each year thereafter, on a cumulative basis. In December 2016, the U.S. Cellular Board amended this authorization to provide that, beginning on January 1, 2017, the authorized repurchase amount with respect to a particular year will be any amount from zero to 1,300,000 Common Shares, as determined by the Pricing Committee of the Board of Directors, and that if the Pricing Committee did not specify an amount for any year, such amount would be zero for such year. The Pricing Committee has not specified any increase in the authorization since that time. The Pricing Committee also was authorized to decrease the cumulative amount of the authorization at any time, but has not taken any action to do so at this time. As of December 31, 2019, the total cumulative amount of Common Shares authorized to be purchased is 5,311,000. The authorization provides that share repurchases will be made pursuant to open market purchases, block purchases, private purchases, or otherwise, depending on market prices and other conditions. This authorization does not have an expiration date.

**Tax-Deferred Savings Plan**

At December 31, 2019,TDS has reserved 90,000 Common Shares for issuance under the TDS Tax-Deferred Savings Plan, a qualified profit-sharing plan pursuant to Sections 401(a) and 401(k) of the Internal Revenue Code. Participating employees have the option of investing their contributions and TDS' contributions in a TDS Common Share fund, a U.S. Cellular Common Share fund or certain unaffiliated funds.

# Note 19 Stock-Based Compensation

**TDS Consolidated**

The following table summarizes stock-based compensation expense recognized during 2019, 2018 and 2017:

| Year Ended December 31, | 2019 | 2018 | 2017 |
|---|---|---|---|
| (Dollars in millions) | | | |
| Stock option awards | $ 3 | $ 5 | $ 10 |
| Restricted stock unit awards | 33 | 30 | 29 |
| Performance share unit awards | 21 | 17 | 5 |
| Deferred compensation bonus and matching stock unit awards | — | — | 1 |
| Awards under Non-Employee Director compensation plan | 2 | 2 | 1 |
| Total stock-based compensation, before income taxes | 59 | 54 | 46 |
| Income tax benefit | (15) | (14) | (17) |
| Total stock-based compensation expense, net of income taxes | $ 44 | $ 40 | $ 29 |

At December 31, 2019, unrecognized compensation cost for all stock-based compensation awards was $49 million and is expected to be recognized over a weighted average period of 1.8 years.

The following table provides a summary of the classification of stock-based compensation expense included in the Consolidated Statement of Operations for the years ended:

| December 31, | 2019 | 2018 | 2017 |
|---|---|---|---|
| (Dollars in millions) | | | |
| Selling, general and administrative expense | $ 54 | $ 49 | $ 42 |
| Cost of services expense | 5 | 5 | 4 |
| Total stock-based compensation | $ 59 | $ 54 | $ 46 |

TDS' tax benefits realized from the exercise of stock options and the vesting of other awards totaled $13 million in 2019.

**TDS (Excluding U.S. Cellular)**

The information in this section relates to stock-based compensation plans using the equity instruments of TDS. Participants in these plans are employees of TDS Corporate and TDS Telecom and Non-employee Directors of TDS. Information related to plans using the equity instruments of U.S. Cellular are shown in the U.S. Cellular section following the TDS section.

Under the TDS Long-Term Incentive Plans, TDS may grant fixed and performance based incentive and non-qualified stock options, restricted stock, restricted stock units, and deferred compensation stock unit awards to key employees.

TDS had reserved 12,475,000 Common Shares at December 31, 2019, for equity awards granted and to be granted under the TDS Long-Term Incentive Plans in effect. At December 31, 2019, the only types of awards outstanding are fixed non-qualified stock option awards, restricted stock unit awards, performance share awards and deferred compensation stock unit awards.

TDS has also established a Non-Employee Directors' compensation plan under which it has reserved 225,000 TDS Common Shares at December 31, 2019, for issuance as compensation to members of the Board of Directors who are not employees of TDS.

TDS uses treasury stock to satisfy requirements for shares issued pursuant to its various stock-based compensation plans.

*Long-Term Incentive Plan – Stock Options*

Stock options granted to key employees are exercisable over a specified period not in excess of ten years. Stock options generally vest over periods up to three years from the date of grant. Stock options outstanding at December 31, 2019, expire between 2020 and 2029. However, vested stock options typically expire 30 days after the effective date of an employee's termination of employment for reasons other than retirement. Employees who leave at the age of retirement have 90 days (or one year if they satisfy certain requirements) within which to exercise their vested stock options. The exercise price of options equals the market value of TDS common stock on the date of grant.

TDS estimated the fair value of stock options granted in 2019, 2018 and 2017 using the Black-Scholes valuation model and the assumptions shown in the table below:

| | 2019 | 2018 | 2017 |
|---|---|---|---|
| Expected life | 6.2 years | 6.3 years | 6.4 years |
| Expected annual volatility rate | 29.0% | 28.6% | 30.4% |
| Dividend yield | 2.1% | 2.5% | 2.2% |
| Risk-free interest rate | 2.4% | 2.9% | 2.0% |
| Estimated annual forfeiture rate | 3.8% | 3.3% | 2.5% |

Pre-vesting forfeitures and expected life are estimated based on historical experience related to similar awards, giving considerations to the contractual terms of the stock-based awards, vesting schedules and expectations of future employee behavior. TDS believes that its historical experience provides the best estimates of future pre-vesting forfeitures and future expected life. The expected volatility assumption is based on historical volatility of TDS' common stock over a period commensurate with the expected life. The dividend yield assumption is equal to the dividends declared in the most recent year as a percentage of the share price on the date of grant. The risk-free interest rate assumption is determined using the U.S. Treasury Yield Curve Rate with a term length that approximates the expected life of the stock options.

A summary of TDS stock options (total and portion exercisable) and changes during 2019 is presented in the tables and narrative below.

| Common Share Options | Number of Options | Weighted Average Exercise Prices | Aggregate Intrinsic Value (in millions) | Weighted Average Remaining Contractual Life (in years) |
|---|---|---|---|---|
| Outstanding at December 31, 2018 | 4,763,000 | $ 26.57 | | |
| (3,270,000 exercisable) | | $ 26.12 | | |
| Granted | 208,000 | $ 30.72 | | |
| Exercised | (826,000) | $ 27.25 | | |
| Forfeited | (54,000) | $ 27.70 | | |
| Outstanding at December 31, 2019 | 4,091,000 | $ 26.63 | $ 4 | 5.0 |
| (2,896,000 exercisable) | | $ 26.32 | $ 4 | 3.7 |

The weighted average grant date fair value per share of the TDS stock options granted in 2019, 2018 and 2017 was $7.70, $6.33 and $7.06, respectively. The aggregate intrinsic value of TDS stock options exercised in 2019, 2018 and 2017 was $7 million, $14 million and $1 million, respectively. The aggregate intrinsic value at December 31, 2019, presented in the table above represents the total pre-tax intrinsic value (the difference between TDS' closing stock prices and the exercise price, multiplied by the number of in-the-money options) that would have been received by option holders had all options been exercised on December 31, 2019.

*Long-Term Incentive Plans – Restricted Stock Units*

TDS also grants restricted stock unit awards to key employees. Each outstanding restricted stock unit is convertible into one Common Share Award. The restricted stock unit awards currently outstanding were granted in 2017, 2018 and 2019 and will vest in 2020, 2021 and 2022, respectively.

TDS estimates the fair value of restricted stock units by reducing the grant-date price of TDS' shares by the present value of the dividends expected to be paid on the underlying shares during the requisite service period, discounted at the appropriate risk-free interest rate, since employees are not entitled to dividends declared on the underlying shares while the restricted stock is unvested. The fair value is then recognized as compensation cost on a straight-line basis over the requisite service periods of the awards, which is generally the vesting period.

A summary of TDS nonvested restricted stock units and changes during 2019 is presented in the table below:

| Common Restricted Stock Units | Number | Weighted Average Grant Date Fair Value |
|---|---|---|
| Nonvested at December 31, 2018 | 1,212,000 | $ 25.73 |
| Granted | 425,000 | $ 28.81 |
| Vested | (355,000) | $ 27.87 |
| Forfeited | (49,000) | $ 26.11 |
| Nonvested at December 31, 2019 | 1,233,000 | $ 26.16 |

The total fair values as of the respective vesting dates of restricted stock units vested during 2019, 2018 and 2017 were $11 million, $9 million and $9 million, respectively. The weighted average grant date fair value per share of the restricted stock units granted in 2019, 2018 and 2017 was $28.81, $23.87 and $25.97, respectively.

*Long-Term Incentive Plans – Performance Share Units*

Beginning in 2016, TDS granted performance share units to certain TDS executive officers, and beginning in 2019, to certain key TDS Corporate and TDS Telecom employees. Each recipient may be entitled to shares of TDS common stock equal to 0% to 200% of a communicated target award depending on the achievement of predetermined performance-based and market-based operating targets over three years. Performance-based operating targets for the TDS awards include Total Revenue and Return on Capital. Market-based operating targets are measured against TDS' total shareholder return relative to a defined peer group. Performance-based operating targets for the TDS Telecom employees' awards include Total Revenue, Return on Capital and Adjusted EBITDA Margin Percent. Performance shares accumulate dividend equivalents, which are forfeitable if the performance metrics are not achieved. If the predetermined performance-based and market-based operating targets are met, the TDS units granted in 2017, 2018 and 2019 will vest in 2020, 2021 and 2022, respectively, and the TDS Telecom employees' units granted in 2019 will vest in 2022.

TDS estimates fair value of performance-based operating targets using TDS' closing stock price on the date of grant. An estimate of the number of performance units expected to vest based upon achieving the performance-based operating targets is made and the fair value is expensed on a straight-line basis over the requisite service period. Each reporting period these estimates are reviewed and stock compensation expense is adjusted accordingly to reflect the new estimates of total units expected to vest. If any part of the performance share units do not vest as a result of the established performance-based operating targets not being achieved, the related stock compensation expense is reversed.

TDS estimates the market-based operating target's fair value using an internally developed valuation model. This estimated fair value approximated TDS' closing stock price at the date of grant for market-based share units granted in 2019, 2018 and 2017. This market-based operating target value determined at the date of grant is expensed on a straight-line basis over the requisite service period and the stock compensation expense is not adjusted during the performance period for the subsequent changes in the value of the market-based unit awards and will not be reversed even if the market-based operating target is not achieved.

A summary of TDS nonvested performance share units and changes during 2019 is presented in the table below:

| Common Performance Share Units | Number | Weighted Average Grant Date Fair Value |
|---|---|---|
| Nonvested at December 31, 2018 | 350,000 | $ 27.38 |
| Granted | 229,000 | $ 30.72 |
| Vested | (99,000) | $ 29.45 |
| Change in units based on approved performance factors | 6,000 | $ 29.45 |
| Forfeited | (7,000) | $ 30.33 |
| Accumulated dividend equivalents | 10,000 | $ 28.26 |
| Nonvested at December 31, 2019 | 489,000 | $ 28.53 |

The total fair value of performance share units that vested during 2019 was $4 million. No performance share units vested during 2018 or 2017. The weighted average grant date fair value per share of the performance share units granted in 2019, 2018 and 2017 was $30.72, $25.70 and $27.79, respectively.

*Long-Term Incentive Plans – Deferred Compensation Stock Units*

Certain TDS employees may elect to defer receipt of all or a portion of their annual bonuses and to receive a company matching contribution on the amount deferred. All bonus compensation that is deferred by employees electing to participate is immediately vested and is deemed to be invested in TDS Common Share units. The amount of TDS' matching contribution depends on the portion of the annual bonus that is deferred. Participants receive a 25% stock unit match for amounts deferred up to 50% of their total annual bonus and a 33% match for amounts that exceed 50% of their total annual bonus; such matching contributions also are deemed to be invested in TDS Common Share units and vest over three years.

The total fair values of deferred compensation stock units that vested during 2019, 2018 and 2017 were less than $1 million in each respective year. The weighted average grant date fair value per share of the deferred compensation stock units granted in 2019, 2018 and 2017 was $31.05, $28.96 and $27.13, respectively. As of December 31, 2019, there were 96,000 vested but unissued deferred compensation stock units valued at $2 million.

*Compensation of Non-Employee Directors*

TDS issued 28,000, 32,000 and 27,000 Common Shares under its Non-Employee Director plan in 2019, 2018 and 2017, respectively.

*Dividend Reinvestment Plans*

TDS had reserved 464,000 Common Shares at December 31, 2019, for issuance under Automatic Dividend Reinvestment and Stock Purchase Plans and 183,000 Series A Common Shares for issuance under the Series A Common Share Automatic Dividend Reinvestment Plan. These plans enabled holders of TDS' Common Shares to reinvest cash dividends in Common Shares and holders of Series A Common Shares to reinvest cash dividends in Series A Common Shares. The purchase price of the shares is 95% of the market value, based on the average of the daily high and low sales prices for TDS' Common Shares on the New York Stock Exchange for the ten trading days preceding the date on which the purchase is made. These plans are considered non-compensatory plans; therefore, no compensation expense is recognized for stock issued under these plans.

**U.S. Cellular**

The information in this section relates to stock-based compensation plans using the equity instruments of U.S. Cellular. Participants in these plans are employees of U.S. Cellular and Non-employee Directors of U.S. Cellular. Information related to plans using the equity instruments of TDS are shown in the previous section.

U.S. Cellular has established the following stock-based compensation plans: Long-Term Incentive Plans and a Non-Employee Director compensation plan.

Under the U.S. Cellular Long-Term Incentive Plans, U.S. Cellular may grant fixed and performance based incentive and non-qualified stock options, restricted stock, restricted stock units, and deferred compensation stock unit awards to key employees. At December 31, 2019, the only types of awards outstanding are fixed non-qualified stock option awards, restricted stock unit awards, performance share awards and deferred compensation stock unit awards.

Under the Non-Employee Director compensation plan, U.S. Cellular may grant Common Shares to members of the Board of Directors who are not employees of U.S. Cellular or TDS.

At December 31, 2019, U.S. Cellular had reserved 12,867,000 Common Shares for equity awards granted and to be granted under the Long-Term Incentive Plans and 123,000 Common Shares for issuance under the Non-Employee Director compensation plan.

U.S. Cellular uses treasury stock to satisfy requirements for Common Shares issued pursuant to its various stock-based compensation plans.

*Long-Term Incentive Plans – Stock Options*

Stock options granted to key employees are exercisable over a specified period not in excess of ten years. Stock options generally vest over a period of three years from the date of grant. Stock options outstanding at December 31, 2019, expire between 2020 and 2026. However, vested stock options typically expire 30 days after the effective date of an employee's termination of employment for reasons other than retirement. Employees who leave at the age of retirement have 90 days (or one year if they satisfy certain requirements) within which to exercise their vested stock options. The exercise price of options equals the market value of U.S. Cellular Common Shares on the date of grant.

U.S. Cellular did not grant stock option awards in 2019, 2018 or 2017.

A summary of U.S. Cellular stock options outstanding (total and portion exercisable) and changes during 2019 is presented in the table below:

| Common Share Options | Number of Options | Weighted Average Exercise Price | Aggregate Intrinsic Value (in millions) | Weighted Average Remaining Contractual Life (in years) |
|---|---|---|---|---|
| Outstanding at December 31, 2018 | 806,000 | $ 43.10 | | |
| (420,000 exercisable) | | $ 42.39 | | |
| Exercised | (339,000) | $ 44.27 | | |
| Expired | (7,000) | $ 45.87 | | |
| Outstanding at December 31, 2019 | 460,000 | $ 42.20 | $ — | 4.9 |
| (460,000 exercisable) | | $ 42.20 | $ — | 4.9 |

The aggregate intrinsic value of U.S. Cellular stock options exercised in 2019, 2018 and 2017 was $3 million, $19 million and $1 million, respectively. The aggregate intrinsic value at December 31, 2019, presented in the table above represents the total pre-tax intrinsic value (the difference between U.S. Cellular's closing stock price and the exercise price multiplied by the number of in-the-money options) that would have been received by option holders had all options been exercised on December 31, 2019.

*Long-Term Incentive Plans – Restricted Stock Units*

Restricted stock unit awards granted to key employees generally vest after three years. The restricted stock unit awards currently outstanding were granted in 2017, 2018 and 2019 and will vest in 2020, 2021 and 2022, respectively.

U.S. Cellular estimates the fair value of restricted stock units based on the closing market price of U.S. Cellular shares on the date of grant. The fair value is then recognized as compensation cost on a straight-line basis over the requisite service periods of the awards, which is generally the vesting period.

A summary of U.S. Cellular nonvested restricted stock units at December 31, 2019, and changes during the year then ended is presented in the table below:

| Common Restricted Stock Units | Number | Weighted Average Grant Date Fair Value |
|---|---|---|
| Nonvested at December 31, 2018 | 1,569,000 | $ 39.74 |
| Granted | 478,000 | $ 46.81 |
| Vested | (525,000) | $ 42.99 |
| Forfeited | (61,000) | $ 39.38 |
| Nonvested at December 31, 2019 | 1,461,000 | $ 40.90 |

The total fair value of restricted stock units that vested during 2019, 2018 and 2017 was $25 million, $16 million and $11 million, respectively. The weighted average grant date fair value per share of the restricted stock units granted in 2019, 2018 and 2017 was $46.81, $38.19 and $38.04, respectively.

*Long-Term Incentive Plans – Performance Share Units*

Beginning in 2017, U.S. Cellular granted performance share units to key employees. The performance share units vest after three years. Each recipient may be entitled to shares of U.S. Cellular common stock equal to 50% to 200% of a communicated target award depending on the achievement of predetermined performance-based operating targets over the performance period, which is a one-year period beginning on January 1 in the year of grant to December 31 in the year of grant. The remaining time through the end of the vesting period is considered the "time-based period". Performance-based operating targets include Simple Free Cash Flow, Consolidated Total Operating Revenues and Postpaid Handset Voluntary Defections. Subject to vesting during the time-based period, the performance share unit award agreement provides that in no event shall the award be less than 50% of the target opportunity as of the grant date. The performance share units currently outstanding were granted in 2017, 2018 and 2019 and will vest in 2020, 2021 and 2022, respectively.

U.S. Cellular estimates the fair value of performance share units using U.S. Cellular's closing stock price on the date of grant. An estimate of the number of performance share units expected to vest based upon achieving the performance-based operating targets is made and the aggregate fair value is expensed on a straight-line basis over the requisite service period. Each reporting period, during the performance period, the estimate of the number of performance share units expected to vest is reviewed and stock compensation expense is adjusted as appropriate to reflect the revised estimate of the aggregate fair value of the performance share units expected to vest.

A summary of U.S. Cellular's nonvested performance share units and changes during 2019 is presented in the table below:

| Common Performance Share Units | Number | Weighted Average Grant Date Fair Value |
|---|---|---|
| Nonvested at December 31, 2018 | 768,000 | $ 37.78 |
| Granted | 323,000 | $ 46.43 |
| Vested | (5,000) | $ 37.92 |
| Change in units based on approved performance factors | 188,000 | $ 38.81 |
| Forfeited | (29,000) | $ 38.55 |
| Nonvested at December 31, 2019 | 1,245,000 | $ 40.16 |

The total fair value of performance share units that vested during 2019 was less than $1 million. No performance share units vested during 2018 or 2017. The weighted average grant date fair value per share of the performance share units granted in 2019, 2018 and 2017 was $46.43, $38.81 and $36.92, respectively.

*Long-Term Incentive Plans – Deferred Compensation Stock Units*

Certain U.S. Cellular employees may elect to defer receipt of all or a portion of their annual bonuses and to receive a company matching contribution on the amount deferred. All bonus compensation that is deferred by employees electing to participate is immediately vested and is deemed to be invested in U.S. Cellular Common Share stock units. The amount of U.S. Cellular's matching contribution depends on the portion of the annual bonus that is deferred. Participants receive a 25% match for amounts deferred up to 50% of their total annual bonus and a 33% match for amounts that exceed 50% of their total annual bonus; such matching contributions also are deemed to be invested in U.S. Cellular Common Share stock units and vest over three years.

The total fair value of deferred compensation stock units that vested during 2019, 2018 and 2017 was less than $1 million in each respective year. The weighted average grant date fair value per share of the deferred compensation stock units granted in 2018 and 2017 was $40.72 and $36.02, respectively. There were no deferred compensation stock units granted during 2019. As of December 31, 2019, there were 34,000 vested but unissued deferred compensation stock units valued at $1 million.

*Compensation of Non-Employee Directors*

U.S. Cellular issued 13,000, 18,000 and 15,000 Common Shares in 2019, 2018 and 2017, respectively, under its Non-Employee Director compensation plan.

# Note 20 Business Segment Information

U.S. Cellular and TDS Telecom are billed for services they receive from TDS, consisting primarily of information processing, accounting and finance, and general management services. Such billings are based on expenses specifically identified to U.S. Cellular and TDS Telecom and on allocations of common expenses. Management believes the method used to allocate common expenses is reasonable and that all expenses and costs applicable to U.S. Cellular and TDS Telecom are reflected in the accompanying business segment information on a basis that is representative of what they would have been if U.S. Cellular and TDS Telecom operated on a stand-alone basis. TDS has re-evaluated internal reporting roles with regard to its HMS business unit and, as a result, has changed its reportable segments. Effective January 1, 2018, HMS is no longer reported under TDS Telecom, but is reported as a part of Corporate, Eliminations and Other. Prior periods have been recast to conform to the revised presentation.

Financial data for TDS' reportable segments for 2019, 2018 and 2017, is as follows. See Note 1 — Summary of Significant Accounting Policies and Recent Accounting Pronouncements for additional information.

| | | TDS Telecom | | | | |
|---|---|---|---|---|---|---|
| **Year ended or as of December 31, 2019** | **U.S. Cellular** | **Wireline** | **Cable** | **TDS Telecom Total[1]** | **Corporate, Eliminations and Other** | **Total** |
| (Dollars in millions) | | | | | | |
| **Operating revenues** | | | | | | |
| Service | $ 3,035 | $ 682 | $ 247 | $ 928 | $ 96 | $ 4,059 |
| Equipment and product sales | 987 | 1 | — | 1 | 129 | 1,117 |
| Total operating revenues | 4,022 | 683 | 247 | 930 | 224 | 5,176 |
| Cost of services (excluding Depreciation, amortization and accretion expense reported below) | 756 | 263 | 105 | 368 | 78 | 1,202 |
| Cost of equipment and products | 1,028 | 1 | — | 1 | 106 | 1,135 |
| Selling, general and administrative | 1,406 | 199 | 62 | 260 | 51 | 1,717 |
| Depreciation, amortization and accretion | 702 | 132 | 68 | 200 | 30 | 932 |
| (Gain) loss on asset disposals, net | 19 | (8) | 1 | (7) | — | 12 |
| (Gain) loss on sale of business and other exit costs, net | (1) | — | — | — | — | (1) |
| **Operating income (loss)** | 112 | 96 | 11 | 107 | (40) | 179 |
| Equity in earnings of unconsolidated entities | 168 | — | — | — | 2 | 168 |
| Interest and dividend income | 17 | 10 | 2 | 12 | — | 29 |
| Interest expense | (110) | 3 | — | 3 | (58) | (165) |
| **Income (loss) before income taxes** | 185 | 110 | 13 | 122 | (96) | 211 |
| Income tax expense (benefit)[2] | 52 | | | 30 | (18) | 64 |
| **Net income** | 133 | | | 92 | (78) | 147 |
| **Add back:** | | | | | | |
| Depreciation, amortization and accretion | 702 | 132 | 68 | 200 | 30 | 932 |
| (Gain) loss on asset disposals, net | 19 | (8) | 1 | (7) | — | 12 |
| (Gain) loss on sale of business and other exit costs, net | (1) | — | — | — | — | (1) |
| Interest expense | 110 | (3) | — | (3) | 58 | 165 |
| Income tax expense (benefit)[2] | 52 | | | 30 | (18) | 64 |
| **Adjusted EBITDA[3]** | $ 1,015 | $ 231 | $ 82 | $ 313 | $ (9) | $ 1,319 |
| | | | | | | |
| Investments in unconsolidated entities | $ 447 | $ 4 | $ — | $ 4 | $ 37 | $ 488 |
| Total assets[4] | $ 8,164 | $ 1,471 | $ 734 | $ 2,196 | $ 421 | $ 10,781 |
| Capital expenditures | $ 710 | $ 243 | $ 73 | $ 316 | $ 6 | $ 1,032 |

| Year ended or as of December 31, 2018[5] | U.S. Cellular | TDS Telecom Wireline | TDS Telecom Cable | TDS Telecom Total[1] | Corporate, Eliminations and Other | Total |
|---|---|---|---|---|---|---|
| (Dollars in millions) | | | | | | |
| **Operating revenues** | | | | | | |
| Service | $ 2,978 | $ 697 | $ 230 | $ 925 | $ 96 | $ 3,999 |
| Equipment and product sales | 989 | 2 | — | 2 | 119 | 1,110 |
| Total operating revenues | 3,967 | 699 | 230 | 927 | 215 | 5,109 |
| Cost of services (excluding Depreciation, amortization and accretion expense reported below) | 758 | 266 | 104 | 369 | 79 | 1,206 |
| Cost of equipment and products | 1,031 | 1 | — | 1 | 98 | 1,130 |
| Selling, general and administrative | 1,388 | 197 | 57 | 254 | 52 | 1,694 |
| Depreciation, amortization and accretion | 640 | 142 | 69 | 212 | 31 | 883 |
| (Gain) loss on asset disposals, net | 10 | (3) | 1 | (2) | 1 | 9 |
| (Gain) loss on license sales and exchanges, net | (18) | — | — | — | — | (18) |
| **Operating income (loss)** | 158 | 95 | (2) | 93 | (46) | 205 |
| Equity in earnings of unconsolidated entities | 159 | — | — | — | 1 | 160 |
| Interest and dividend income | 15 | 7 | 1 | 8 | 3 | 26 |
| Interest expense | (116) | 2 | — | 2 | (58) | (172) |
| Other, net | (1) | 3 | — | 2 | 1 | 2 |
| **Income (loss) before income taxes** | 215 | 106 | (1) | 105 | (99) | 221 |
| Income tax expense (benefit)[2] | 51 | | | 16 | (21) | 46 |
| **Net income (loss)** | 164 | | | 89 | (78) | 175 |
| **Add back:** | | | | | | |
| Depreciation, amortization and accretion | 640 | 142 | 69 | 212 | 31 | 883 |
| (Gain) loss on asset disposals, net | 10 | (3) | 1 | (2) | 1 | 9 |
| (Gain) loss on license sales and exchanges, net | (18) | — | — | — | — | (18) |
| Interest expense | 116 | (2) | — | (2) | 58 | 172 |
| Income tax expense (benefit)[2] | 51 | | | 16 | (21) | 46 |
| **Adjusted EBITDA[3]** | $ 963 | $ 243 | $ 70 | $ 313 | $ (9) | $ 1,267 |
| | | | | | | |
| Investments in unconsolidated entities | $ 441 | $ 4 | $ — | $ 4 | $ 35 | $ 480 |
| Total assets | $ 7,274 | $ 1,304 | $ 639 | $ 1,934 | $ 575 | $ 9,783 |
| Capital expenditures | $ 515 | $ 176 | $ 56 | $ 232 | $ 20 | $ 767 |

| Year ended or as of December 31, 2017 | U.S. Cellular | TDS Telecom: Wireline | TDS Telecom: Cable | TDS Telecom: TDS Telecom Total[1] | Corporate, Eliminations and Other | Total |
|---|---|---|---|---|---|---|
| (Dollars in millions) | | | | | | |
| **Operating revenues** | | | | | | |
| Service | $ 2,978 | $ 713 | $ 206 | $ 917 | $ 84 | $ 3,979 |
| Equipment and product sales | 912 | 1 | — | 1 | 152 | 1,065 |
| Total operating revenues | 3,890 | 714 | 206 | 919 | 235 | 5,044 |
| Cost of services (excluding Depreciation, amortization and accretion expense reported below) | 732 | 258 | 98 | 355 | 77 | 1,164 |
| Cost of equipment and products | 1,071 | 2 | — | 2 | 122 | 1,195 |
| Selling, general and administrative[6] | 1,412 | 194 | 54 | 248 | 29 | 1,689 |
| Depreciation, amortization and accretion | 615 | 151 | 44 | 195 | 34 | 844 |
| Loss on impairment of goodwill[7] | 370 | — | — | — | (108) | 262 |
| (Gain) loss on asset disposals, net | 17 | 1 | 2 | 3 | 1 | 21 |
| (Gain) loss on sale of business and other exit costs, net | (1) | — | — | — | — | (1) |
| (Gain) loss on license sales and exchanges, net | (22) | — | — | — | — | (22) |
| **Operating income (loss)** | (304) | 108 | 8 | 116 | 80 | (108) |
| Equity in earnings of unconsolidated entities | 137 | — | — | — | — | 137 |
| Interest and dividend income | 8 | 5 | — | 5 | 2 | 15 |
| Interest expense | (113) | — | — | — | (57) | (170) |
| Other, net[6] | — | 3 | — | 3 | 1 | 4 |
| **Income (loss) before income taxes** | (272) | 117 | 8 | 125 | 25 | (122) |
| Income tax expense (benefit)[2] | (287) | | | (13) | 21 | (279) |
| **Net income (loss)** | 15 | | | 138 | 4 | 157 |
| **Add back:** | | | | | | |
| Depreciation, amortization and accretion | 615 | 151 | 44 | 195 | 34 | 844 |
| Loss on impairment of goodwill[7] | 370 | — | — | — | (108) | 262 |
| (Gain) loss on asset disposals, net | 17 | 1 | 2 | 3 | 1 | 21 |
| (Gain) loss on sale of business and other exit costs, net | (1) | — | — | — | — | (1) |
| (Gain) loss on license sales and exchanges, net | (22) | — | — | — | — | (22) |
| Interest expense | 113 | — | — | — | 57 | 170 |
| Income tax expense (benefit)[2] | (287) | | | (13) | 21 | (279) |
| **Adjusted EBITDA[3]** | $ 820 | $ 269 | $ 54 | $ 323 | $ 9 | $ 1,152 |
| Investments in unconsolidated entities | $ 415 | $ 4 | $ — | $ 4 | $ 34 | $ 453 |
| Total assets | $ 6,841 | $ 1,260 | $ 644 | $ 1,897 | $ 557 | $ 9,295 |
| Capital expenditures | $ 469 | $ 146 | $ 55 | $ 201 | $ 24 | $ 694 |

Numbers may not foot due to rounding.

1 TDS Telecom Total includes eliminations between the Wireline and Cable segments.

2 Income tax expense (benefit) is not provided at the individual segment level for Wireline and Cable. TDS calculates income tax expense for "TDS Telecom Total".

3 Adjusted earnings before interest, taxes, depreciation, amortization and accretion (Adjusted EBITDA) is a segment measure reported to the chief operating decision maker for purposes of making decisions about allocating resources to the segments and assessing their performance. Adjusted EBITDA is defined as net income, adjusted for the items set forth in the reconciliation above. TDS believes Adjusted EBITDA is a useful measure of TDS' operating results before significant recurring non-cash charges, gains and losses, and other items as presented above as they provide additional relevant and useful information to investors and other users of TDS' financial data in evaluating the effectiveness of its operations and underlying business trends in a manner that is consistent with management's evaluation of business performance.

4 As of January 1, 2019, U.S. Cellular adopted ASC 842 using a modified retrospective method. Under this method, the new accounting standard is applied only to the most recent period presented. As a result, 2019 includes the impacts of ASC 842, but prior periods remain as previously reported. See Note 11 — Leases for additional information.

5 As of January 1, 2018, TDS adopted the new revenue recognition accounting standard, ASC 606, using a modified retrospective approach. Under this method, the new accounting standard is applied only to the most recent period presented. As a result, 2018 amounts include the impacts of ASC 606, but prior periods remain as previously reported.

6 ASU 2017-07, regarding net periodic pension cost and net periodic postretirement benefit cost was adopted as of January 1, 2018, and applied retrospectively. All prior year numbers have been recast to conform to this standard.

7 During 2017, U.S. Cellular recorded a goodwill impairment of $370 million while TDS recorded a goodwill impairment of the U.S. Cellular reporting unit of $227 million. Prior to 2009, TDS accounted for U.S. Cellular's share repurchases as step acquisitions, allocating a portion of the share repurchase value to TDS' Goodwill. Further, goodwill of the U.S. Cellular reporting unit was impaired at the TDS level in 2003 but not at U.S. Cellular. Consequently, U.S. Cellular's goodwill on a stand-alone basis and any resulting impairments of goodwill does not equal the TDS consolidated goodwill related to U.S. Cellular. The TDS adjustment of $143 million is included in "Corporate, Eliminations and Other." During 2017, TDS also recorded a goodwill impairment of $35 million related to its HMS operations included in "Corporate, Eliminations and Other." For further information on the goodwill impairment see Note 8 — Intangible Assets.

# Note 21 Supplemental Cash Flow Disclosures

Following are supplemental cash flow disclosures regarding interest paid and income taxes paid.

| Year Ended December 31, | 2019 | 2018 | 2017 |
|---|---|---|---|
| (Dollars in millions) | | | |
| Interest paid | $ 162 | $ 168 | $ 167 |
| Income taxes paid, net of refunds received | 44 | 40 | 56 |

Following are supplemental cash flow disclosures regarding transactions related to stock-based compensation awards. In certain situations, TDS and U.S. Cellular withhold shares that are issuable upon the exercise of stock options or the vesting of restricted shares to cover, and with a value equivalent to, the exercise price and/or the amount of taxes required to be withheld from the stock award holder at the time of the exercise or vesting. TDS and U.S. Cellular then pay the amount of the required tax withholdings to the taxing authorities in cash.

TDS:

| Year Ended December 31, | 2019 | 2018 | 2017 |
|---|---|---|---|
| (Dollars in millions) | | | |
| Common Shares withheld | 814,000 | 676,000 | 121,000 |
| Aggregate value of Common Shares withheld | $ 29 | $ 21 | $ 3 |
| Cash receipts upon exercise of stock options | 2 | 48 | 7 |
| Cash disbursements for payment of taxes | (8) | (6) | (3) |
| Net cash receipts (disbursements) from exercise of stock options and vesting of other stock awards | $ (6) | $ 42 | $ 4 |

U.S. Cellular:

| Year Ended December 31, | 2019 | 2018 | 2017 |
|---|---|---|---|
| (Dollars in millions) | | | |
| Common Shares withheld | 452,000 | 1,550,000 | 145,000 |
| Aggregate value of Common Shares withheld | $ 23 | $ 73 | $ 6 |
| Cash receipts upon exercise of stock options | 1 | 29 | 5 |
| Cash disbursements for payment of taxes | (10) | (11) | (4) |
| Net cash receipts (disbursements) from exercise of stock options and vesting of other stock awards | $ (9) | $ 18 | $ 1 |

# Note 22 Certain Relationships and Related Transactions

The following persons are partners of Sidley Austin LLP, the principal law firm of TDS and its subsidiaries: Walter C.D. Carlson, a trustee and beneficiary of a voting trust that controls TDS, the non-executive Chairman of the Board and member of the Board of Directors of TDS and a director of U.S. Cellular, a subsidiary of TDS and certain subsidiaries of TDS; and Stephen P. Fitzell, the General Counsel and/or an Assistant Secretary of TDS and U.S. Cellular and certain other subsidiaries of TDS. Walter C.D. Carlson does not provide legal services to TDS or its subsidiaries. TDS, U.S. Cellular and their subsidiaries incurred legal costs from Sidley Austin LLP of $10 million, $10 million and $11 million in 2019, 2018 and 2017, respectively.

The Audit Committee of the Board of Directors of TDS is responsible for the review and evaluation of all related-party transactions as such term is defined by the rules of the New York Stock Exchange.

# Note 23 Subsequent Events

On January 6, 2020, TDS entered into an unsecured $200 million senior term loan credit agreement. As of February 25, 2020, no borrowings have been made under the agreement. The term loan may be drawn in one or more advances by the one-year anniversary of the date of the agreement; amounts not drawn by that time will cease to be available. The maturity date of the term loan is January 6, 2027 and would accelerate in the event of a change in control.

The term loan is available for general corporate purposes, including working capital and capital expenditures. The continued availability of the term loan facility requires TDS to comply with certain negative and affirmative covenants, maintain certain financial ratios and make representations regarding certain matters at the time of each borrowing.

# Reports of Management

**Management's Responsibility for Financial Statements**

Management of Telephone and Data Systems, Inc. has the responsibility for preparing the accompanying consolidated financial statements and for their integrity and objectivity. The statements were prepared in accordance with accounting principles generally accepted in the United States of America and, in management's opinion, were fairly presented. The financial statements included amounts that were based on management's best estimates and judgments. Management also prepared the other information in the annual report and is responsible for its accuracy and consistency with the financial statements.

PricewaterhouseCoopers LLP, an independent registered public accounting firm, has audited these consolidated financial statements in accordance with the standards of the Public Company Accounting Oversight Board (United States) and has expressed herein its unqualified opinion on these financial statements.

/s/ LeRoy T. Carlson, Jr.

LeRoy T. Carlson, Jr.
President and Chief Executive Officer
(principal executive officer)

/s/ Peter L. Sereda

Peter L. Sereda
Executive Vice President and Chief Financial Officer
(principal financial officer)

/s/ Anita J. Kroll

Anita J. Kroll
Vice President - Controller and Chief Accounting Officer
(principal accounting officer)

**Management's Report on Internal Control Over Financial Reporting**

Management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. TDS' internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with accounting principles generally accepted in the United States of America (GAAP). TDS' internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the issuer; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that receipts and expenditures of the issuer are being made only in accordance with authorizations of management and, where required, the Board of Directors of the issuer; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the issuer's assets that could have a material effect on the interim or annual consolidated financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Under the supervision and with the participation of TDS' management, including its principal executive officer and principal financial officer, TDS conducted an evaluation of the effectiveness of its internal control over financial reporting as of December 31, 2019, based on the criteria established in the 2013 version of *Internal Control — Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Management has concluded that TDS maintained effective internal control over financial reporting as of December 31, 2019, based on criteria established in the 2013 version of *Internal Control — Integrated Framework* issued by the COSO.

The effectiveness of TDS' internal control over financial reporting as of December 31, 2019, has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in the firm's report included herein.

/s/ LeRoy T. Carlson, Jr.

LeRoy T. Carlson, Jr.
President and Chief Executive Officer
(principal executive officer)

/s/ Peter L. Sereda

Peter L. Sereda
Executive Vice President and Chief Financial Officer
(principal financial officer)

/s/ Anita J. Kroll

Anita J. Kroll
Vice President - Controller and Chief Accounting Officer
(principal accounting officer)

# Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of Telephone and Data Systems, Inc.

***Opinions on the Financial Statements and Internal Control over Financial Reporting***

We have audited the accompanying consolidated balance sheet of Telephone and Data Systems, Inc. and its subsidiaries ("the Company") as of December 31, 2019 and 2018, and the related consolidated statements of operations, comprehensive income, changes in equity, and cash flows for each of the three years in the period ended December 31, 2019, including the related notes (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, based on our audits and the report of other auditors, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

We did not audit the financial statements of Los Angeles SMSA Limited Partnership, a 5.5% equity investment of the Company, which is reflected in the consolidated financial statements of the Company as an equity method investment of $265,200,000 and $262,100,000 as of December 31, 2019 and 2018, respectively, and income from equity investments of $77,800,000, $76,900,000 and $66,200,000 for each of the three years in the period ended December 31, 2019. The financial statements of Los Angeles SMSA Limited Partnership were audited by other auditors whose report thereon has been furnished to us, and our opinion on the financial statements expressed herein, insofar as it relates to the amounts included for Los Angeles SMSA Limited Partnership, is based solely on the report of the other auditors.

*Changes in Accounting Principles*

As discussed in Notes 11 and 2 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019 and the manner in which it accounts for revenue from contracts with customers in 2018.

***Basis for Opinions***

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits and the report of other auditors provide a reasonable basis for our opinions.

***Definition and Limitations of Internal Control over Financial Reporting***

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

***Critical Audit Matters***

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that (i) relate to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

*Intangible Asset Impairment Assessment - U.S. Cellular Licenses*

As described in Notes 1 and 8 to the consolidated financial statements, the Company's consolidated licenses balance was $2,480 million as of December 31, 2019, of which $2,475 million relates to the U.S. Cellular licenses. Management performs its annual impairment assessment of licenses as of November 1 of each year or more frequently if there are events or circumstances that cause management to believe it is more likely than not that the carrying value of licenses exceeds fair value. For purposes of its impairment testing of licenses, management separated its FCC licenses into eight units of accounting, which consisted of one unit of accounting for developed operating market wireless spectrum licenses (built wireless spectrum licenses) and seven geographic non-operating market wireless spectrum licenses (unbuilt wireless spectrum licenses). As disclosed by management, a market approach was used to estimate the fair value of each pool of wireless spectrum licenses. The key assumption utilized in estimating the fair value of each pool of wireless spectrum licenses was the pricing multiples, which are units of value expressed in relation to the bandwidth and population covered by a wireless spectrum license.

The principal considerations for our determination that performing procedures relating to the intangible asset impairment assessment for the U.S. Cellular licenses is a critical audit matter are there was significant judgment by management when developing the estimate of fair value for each pool of licenses. This in turn led to a high degree of auditor judgment, effort and subjectivity in performing procedures and evaluating audit evidence related to management's significant assumption relating to the pricing multiples for the wireless spectrum license portfolio used in the fair value estimate. In addition, the audit effort involved the use of professionals with specialized skill and knowledge to assist in performing these procedures and evaluating the audit evidence obtained.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's annual intangible asset impairment assessment, including controls over the valuation of the Company's pool of licenses. These procedures also included, among others, testing management's process for developing the fair value estimate, evaluating the appropriateness of the market approach, testing the completeness, accuracy, and relevance of underlying data used in the market approach and evaluating the significant assumption used by management relating to the pricing multiples for the wireless spectrum license portfolio. Evaluating management's assumption related to the pricing multiples involved evaluating whether the assumption used by management was reasonable by considering (i) the current and past performance of each pool of licenses, (ii) consistency with external market and industry data, and (iii) whether the assumption was consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in the evaluation of the Company's market approach.

*Goodwill Impairment Assessment - TDS Telecom (Wireline and Cable Reporting Units)*

As described in Notes 1 and 8 to the consolidated financial statements, the Company's consolidated goodwill balance was $547 million as of December 31, 2019, of which $409 million relates to the Wireline reporting unit and $138 million to the Cable reporting unit. Management performs its annual impairment assessment as of November 1 of each year or more frequently if there are events or circumstances that cause management to believe it is more likely than not that the carrying value of individual reporting units exceeds their respective fair values. Goodwill impairment loss will be measured as the amount by which a reporting unit's carrying amount exceeds its fair value. As disclosed by management, the discounted cash flow approach and guideline public company method was used to value the Wireline and Cable reporting units for the annual impairment tests. The discounted cash flow approach uses various inputs and considers current economic factors as well as risks specific to the industry and the reporting unit. The significant assumptions made by management in this process were the revenue growth rates, the terminal revenue growth rates and the discount rates. The guideline public company method develops an indication of fair value by calculating average market pricing multiples for selected publicly-traded companies. The developed multiples were applied by management to applicable financial measures of the respective reporting unit to determine fair value. The discounted cash flow approach and guideline public company method were weighted to arrive at the total fair value used for impairment testing.

The principal considerations for our determination that performing procedures relating to the goodwill impairment assessment of the Wireline and Cable reporting units is a critical audit matter are there was significant judgment by management when developing the fair value of the reporting units. This in turn led to a high degree of auditor judgment, effort and subjectivity in performing procedures and evaluating audit evidence related to management's cash flow projections and significant assumptions, including the revenue growth rates, terminal growth rates and discount rates. In addition, the audit effort involved the use of professionals with specialized skill and knowledge to assist in performing these procedures and evaluating the audit evidence obtained.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's annual goodwill impairment assessment, including controls over the valuation of the Company's reporting units. These procedures also included, among others, testing management's process for developing the fair value estimates, evaluating the appropriateness of the discounted cash flow model, testing the completeness, accuracy, and relevance of underlying data used in the model, and evaluating the significant assumptions used by management, including the revenue growth rates, terminal growth rates and discount rates. Evaluating the significant assumption related to the revenue growth rates involved evaluating whether the assumption used was reasonable by considering (i) the current and past performance of the reporting units, (ii) consistency with external market and industry data, and (iii) whether the assumption was consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in the evaluation of the discounted cash flow model and certain significant assumptions, including the discount rates and terminal growth rates.

/s/ PricewaterhouseCoopers LLP
Chicago, Illinois
February 25, 2020

We have served as the Company's auditor since 2002.

# Telephone and Data Systems, Inc.
## Selected Consolidated Financial Data

| Year Ended or at December 31, | 2019[1] | 2018[2, 3] | 2017 | 2016 | 2015 |
|---|---|---|---|---|---|
| (Dollars and shares in millions, except per share amounts) | | | | | |
| **Statement of Operations data** | | | | | |
| Operating revenues | $ 5,176 | $ 5,109 | $ 5,044 | $ 5,155 | $ 5,210 |
| Loss on impairment of goodwill | — | — | 262 | — | — |
| (Gain) loss on sale of business and other exit costs, net | (1) | — | (1) | (1) | (136) |
| (Gain) loss on license sales and exchanges, net | — | (18) | (22) | (20) | (147) |
| Operating income (loss) | 179 | 205 | (108) | 108 | 427 |
| Income tax expense (benefit) | 64 | 46 | (279) | 40 | 172 |
| Net income | 147 | 175 | 157 | 52 | 263 |
| Net income attributable to noncontrolling interests, net of tax | 26 | 40 | 4 | 9 | 44 |
| Net income attributable to TDS shareholders | 121 | 135 | 153 | 43 | 219 |
| Net income attributable to TDS common shareholders | $ 121 | $ 135 | $ 153 | $ 43 | $ 218 |
| Basic earnings per share attributable to TDS shareholders | $ 1.06 | $ 1.20 | $ 1.39 | $ 0.39 | $ 2.02 |
| Diluted earnings per share attributable to TDS shareholders | $ 1.03 | $ 1.17 | $ 1.37 | $ 0.39 | $ 1.98 |
| Dividends per Common and Series A Common Share | $ 0.66 | $ 0.64 | $ 0.62 | $ 0.59 | $ 0.56 |
| **Balance Sheet data** | | | | | |
| Total assets | $ 10,781 | $ 9,783 | $ 9,295 | $ 9,446 | $ 9,422 |
| Net long-term debt, excluding current portion | 2,316 | 2,418 | 2,437 | 2,433 | 2,440 |
| Total TDS shareholders' equity | $ 4,653 | $ 4,560 | $ 4,269 | $ 4,144 | $ 4,126 |

1 As of January 1, 2019, TDS adopted ASC 842 using a modified retrospective method. Under this method, the new accounting standard is applied only to the most recent period presented. As a result, the period after this adoption date includes the impacts of ASC 842, but prior periods remain as previously reported. See Note 11 — Leases for additional information.

2 As of January 1, 2018, TDS adopted the new revenue recognition accounting standard, ASC 606, using a modified retrospective approach. Under this method, the new accounting standard is applied only to the most recent period presented. As a result, periods after this adoption date include the impacts of ASC 606, but prior periods remain as previously reported.

3 ASU 2017-07, regarding net periodic pension cost and net periodic postretirement benefit cost was adopted as of January 1, 2018, and applied retrospectively. All prior year numbers have been recast to conform to this standard.

## Telephone and Data Systems, Inc.
## Consolidated Quarterly Information (Unaudited)

| 2019 | Quarter Ended March 31 | June 30 | September 30 | December 31 |
|---|---|---|---|---|
| (Dollars in millions, except per share amounts) | | | | |
| Operating revenues | $ 1,257 | $ 1,261 | $ 1,321 | $ 1,336 |
| (Gain) loss on asset disposals, net | (5) | 5 | 6 | 6 |
| (Gain) loss on sale of business and other exit costs, net | (2) | — | — | — |
| (Gain) loss on license sales and exchanges, net | (2) | — | 2 | — |
| Operating income | 94 | 48 | 29 | 8 |
| Income tax expense (benefit) | 34 | 16 | 15 | (1) |
| Net income | 70 | 39 | 23 | 15 |
| Net income attributable to TDS shareholders | $ 59 | $ 33 | $ 18 | $ 12 |
| Basic earnings per share attributable to TDS shareholders | $ 0.52 | $ 0.29 | $ 0.15 | $ 0.10 |
| Diluted earnings per share attributable to TDS shareholders | $ 0.50 | $ 0.28 | $ 0.15 | $ 0.10 |

| 2018 | Quarter Ended March 31 | June 30 | September 30 | December 31 |
|---|---|---|---|---|
| (Dollars in millions, except per share amounts) | | | | |
| Operating revenues | $ 1,225 | $ 1,255 | $ 1,297 | $ 1,332 |
| (Gain) loss on asset disposals, net | 2 | 2 | — | 5 |
| (Gain) loss on license sales and exchanges, net | (7) | (11) | — | — |
| Operating income | 80 | 61 | 51 | 13 |
| Income tax expense (benefit) | 24 | 21 | 5 | (2) |
| Net income | 57 | 44 | 53 | 20 |
| Net income attributable to TDS shareholders | $ 39 | $ 33 | $ 46 | $ 16 |
| Basic earnings per share attributable to TDS shareholders | $ 0.35 | $ 0.30 | $ 0.41 | $ 0.14 |
| Diluted earnings per share attributable to TDS shareholders | $ 0.34 | $ 0.29 | $ 0.41 | $ 0.14 |

Due to rounding, the sum of quarterly results may not equal the total for the year.

# Telephone and Data Systems, Inc.
# Shareholder Information

### Stock and Dividend Information

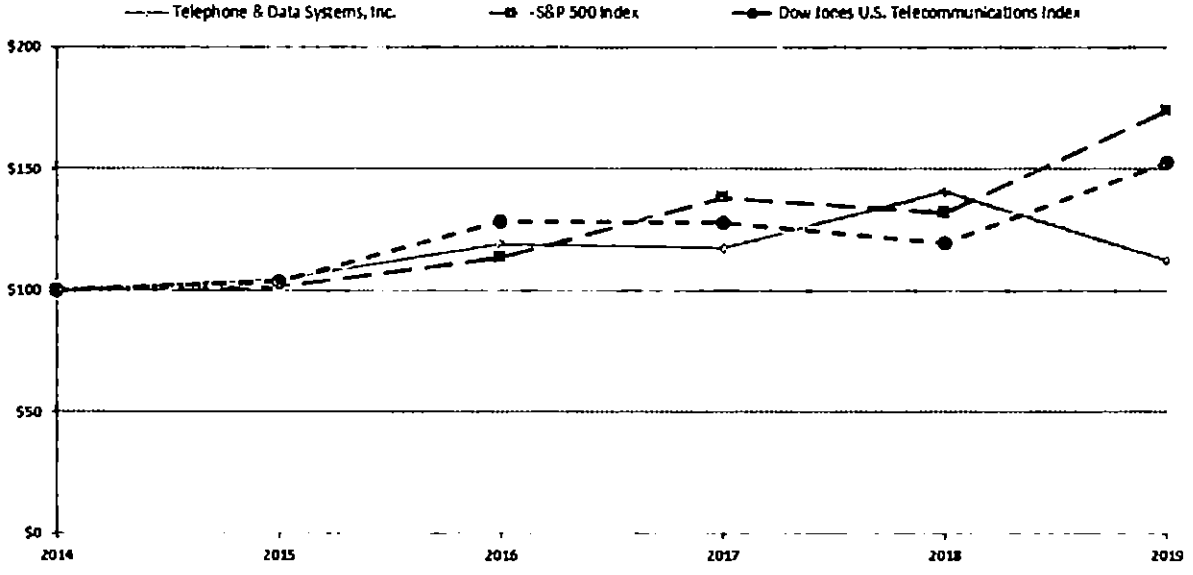
TDS' Common Shares are listed on the New York Stock Exchange under the symbol "TDS." As of January 31, 2020, the last trading day of the month, TDS Common Shares were held by 1,610 record owners, and the Series A Common Shares were held by 67 record owners.

TDS has paid cash dividends on its common stock since 1974, and paid dividends of $0.66 per Common and Series A Common Share during 2019. During 2018, TDS paid dividends of $0.64 per Common and Series A Common Share.

The Common Shares of United States Cellular Corporation, an 82%-owned subsidiary of TDS, are listed on the NYSE under the symbol "USM."

### Stock Performance Graph

The following chart provides a comparison of TDS' cumulative total return to shareholders (stock price appreciation plus dividends) during the previous five years to the returns of the Standard & Poor's 500 Composite Stock Price Index and the Dow Jones U.S. Telecommunications Index.




Note: Cumulative total return assumes reinvestment of dividends.

| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|
| Telephone and Data Systems Common Shares (NYSE: TDS) | $ 100 | $ 104.68 | $ 119.27 | $ 117.62 | $ 140.65 | $ 112.55 |
| S&P 500 Index | 100 | 101.38 | 113.51 | 138.29 | 132.23 | 173.86 |
| Dow Jones U.S. Telecommunications Index | 100 | 103.52 | 128.32 | 127.96 | 119.35 | 152.63 |

The comparison above assumes $100.00 invested at the close of trading on the last trading day preceding the first day of 2014, in TDS Common Shares, S&P 500 Index and the Dow Jones U.S. Telecommunications Index.

### Dividend Reinvestment Plan

TDS' dividend reinvestment plans provide its common shareholders with a convenient and economical way to participate in the future growth of TDS. Holders of record of ten (10) or more Common Shares may purchase Common Shares with their reinvested dividends at a five percent discount from market price. Common Shares may also be purchased on a monthly basis through optional cash payments by participants in this plan. The initial ten (10) shares cannot be purchased directly from TDS. An authorization card and prospectus will be mailed automatically by the transfer agent to all registered record holders with ten (10) or more shares. Once enrolled in the plan, there are no brokerage commissions or service charges for purchases made under the plan.

**Investor relations**

TDS' annual report, SEC filings and news releases are available to investors, securities analysts and other members of the investment community. These reports are provided, without charge, upon request to our Investor Relations department at the address below. Investors may also access these and other reports through the Investor Relations portion of the TDS website (*www.tdsinc.com*).

Questions regarding lost, stolen or destroyed certificates, consolidation of accounts, transferring of shares and name or address changes should be directed to:

Julie Mathews, IRC, Director — Investor Relations
Telephone and Data Systems, Inc.
30 North LaSalle Street, Suite 4000
Chicago, IL 60602
312.592.5341
*julie.mathews@tdsinc.com*

General inquiries by investors, securities analysts and other members of the investment community should be directed to:

Jane W. McCahon, Senior Vice President — Corporate Relations and Corporate Secretary
Telephone and Data Systems, Inc.
30 North LaSalle Street, Suite 4000
Chicago, IL 60602
312.592.5379
*jane.mccahon@tdsinc.com*

**Directors and executive officers**

See "Election of Directors" and "Executive Officers" sections of the Proxy Statement issued in 2020 for the 2020 Annual Meeting.

**Principal counsel**

Sidley Austin LLP, Chicago, Illinois

**Transfer agent**

Computershare Trust Company, N.A.
462 South 4th Street, Suite 1600
Louisville, KY 40202
877.337.1575

**Independent registered public accounting firm**

PricewaterhouseCoopers LLP

Visit TDS' web site at *www.tdsinc.com*

Exhibit 21

# TELEPHONE AND DATA SYSTEMS, INC.
## SUBSIDIARY COMPANIES
December 31, 2019

| SUBSIDIARY COMPANIES | STATE OF ORGANIZATION |
|---|---|
| **U.S. CELLULAR** | |
| UNITED STATES CELLULAR CORPORATION | DELAWARE |
| BANGOR CELLULAR TELEPHONE, L.P. | DELAWARE |
| CALIFORNIA RURAL SERVICE AREA #1, INC. | CALIFORNIA |
| CEDAR RAPIDS CELLULAR TELEPHONE, L.P. | DELAWARE |
| CELLVEST, INC. | DELAWARE |
| CENTRAL CELLULAR TELEPHONES, LTD. | ILLINOIS |
| CHAMPLAIN CELLULAR, INC. | NEW YORK |
| COMMUNITY CELLULAR TELEPHONE COMPANY | TEXAS |
| CROWN POINT CELLULAR, INC. | NEW YORK |
| DUBUQUE CELLULAR TELEPHONE, L.P. | DELAWARE |
| HARDY CELLULAR TELEPHONE COMPANY | DELAWARE |
| INDIANA RSA # 5, INC. | INDIANA |
| INDIANA RSA NO. 4 LIMITED PARTNERSHIP | INDIANA |
| INDIANA RSA NO. 5 LIMITED PARTNERSHIP | INDIANA |
| IOWA RSA # 3, INC. | DELAWARE |
| IOWA RSA # 9, INC. | DELAWARE |
| IOWA RSA # 12, INC. | DELAWARE |
| JACKSONVILLE CELLULAR PARTNERSHIP | NORTH CAROLINA |
| JACKSONVILLE CELLULAR TELEPHONE COMPANY | NORTH CAROLINA |
| KANSAS #15 LIMITED PARTNERSHIP | DELAWARE |
| KENOSHA CELLULAR TELEPHONE, L.P. | DELAWARE |
| LAB465, LLC | ILLINOIS |
| MADISON CELLULAR TELEPHONE COMPANY | WISCONSIN |
| MAINE RSA # 1, INC. | MAINE |
| MAINE RSA # 4, INC. | MAINE |
| MCDANIEL CELLULAR TELEPHONE COMPANY | DELAWARE |
| MINNESOTA INVCO OF RSA # 7, INC. | DELAWARE |
| NEWPORT CELLULAR, INC. | NEW YORK |
| NH #1 RURAL CELLULAR, INC. | NEW HAMPSHIRE |
| OREGON RSA #2, INC. | OREGON |
| PCS WISCONSIN, LLC | WISCONSIN |
| RACINE CELLULAR TELEPHONE COMPANY | WISCONSIN |
| TENNESSEE NO. 3, LIMITED PARTNERSHIP | TENNESSEE |
| TEXAHOMA CELLULAR LIMITED PARTNERSHIP | TEXAS |
| TEXAS INVCO OF RSA # 6, INC. | DELAWARE |
| TOWNSHIP CELLULAR TELEPHONE, INC. | DELAWARE |
| UNITED STATES CELLULAR INVESTMENT CO. OF OKLAHOMA CITY, LLC. | OKLAHOMA |
| UNITED STATES CELLULAR INVESTMENT COMPANY, LLC | DELAWARE |
| UNITED STATES CELLULAR INVESTMENT CORPORATION OF LOS ANGELES | INDIANA |
| UNITED STATES CELLULAR OPERATING COMPANY LLC | DELAWARE |
| UNITED STATES CELLULAR OPERATING COMPANY OF BANGOR | MAINE |
| UNITED STATES CELLULAR OPERATING COMPANY OF CEDAR RAPIDS | DELAWARE |
| UNITED STATES CELLULAR OPERATING COMPANY OF CHICAGO, LLC | DELAWARE |

| | |
|---|---|
| UNITED STATES CELLULAR OPERATING COMPANY OF DUBUQUE | IOWA |
| UNITED STATES CELLULAR OPERATING COMPANY OF KNOXVILLE | TENNESSEE |
| UNITED STATES CELLULAR OPERATING COMPANY OF MEDFORD | OREGON |
| UNITED STATES CELLULAR OPERATING COMPANY OF YAKIMA | WASHINGTON |
| UNITED STATES CELLULAR TELEPHONE COMPANY (GREATER KNOXVILLE), L.P. | TENNESSEE |
| USCC DISTRIBUTION CO., LLC | DELAWARE |
| USCC EIP LLC | DELAWARE |
| USCC FINANCIAL L.L.C. | ILLINOIS |
| USCC FIRST RESPONDER, INC. | DELAWARE |
| USCC MASTER NOTE TRUST | DELAWARE |
| USCC PURCHASE, LLC | DELAWARE |
| USCC RECEIVABLES FUNDING LLC | DELAWARE |
| USCC SERVICES, LLC | DELAWARE |
| USCC WIRELESS INVESTMENT, INC. | DELAWARE |
| USCCI CORPORATION | DELAWARE |
| USCIC OF FRESNO | CALIFORNIA |
| USCOC NEBRASKA/KANSAS, INC. | DELAWARE |
| USCOC NEBRASKA/KANSAS, LLC | DELAWARE |
| USCOC OF CENTRAL ILLINOIS, LLC | ILLINOIS |
| USCOC OF CHICAGO REAL ESTATE HOLDINGS, LLC | DELAWARE |
| USCOC OF CUMBERLAND, LLC | DELAWARE |
| USCOC OF GREATER IOWA, LLC | DELAWARE |
| USCOC OF GREATER MISSOURI, LLC | DELAWARE |
| USCOC OF GREATER NORTH CAROLINA, LLC | DELAWARE |
| USCOC OF GREATER OKLAHOMA, LLC | OKLAHOMA |
| USCOC OF JACKSONVILLE, LLC | DELAWARE |
| USCOC OF LACROSSE, LLC | WISCONSIN |
| USCOC OF OREGON RSA # 5, INC. | DELAWARE |
| USCOC OF PENNSYLVANIA RSA NO. 10-B2, LLC | DELAWARE |
| USCOC OF RICHLAND, INC. | WASHINGTON |
| USCOC OF SOUTH CAROLINA RSA # 4, INC. | SOUTH CAROLINA |
| USCOC OF TEXAHOMA, INC. | TEXAS |
| USCOC OF VIRGINIA RSA # 3, INC. | VIRGINIA |
| USCOC OF WASHINGTON-4, INC. | DELAWARE |
| VERMONT RSA NO. 2-B2, INC. | DELAWARE |
| WASHINGTON RSA # 5, INC. | WASHINGTON |
| WESTELCOM CELLULAR, INC. | NEW YORK |
| WESTERN SUB-RSA LIMITED PARTNERSHIP | DELAWARE |
| YAKIMA MSA LIMITED PARTNERSHIP | DELAWARE |
| | |
| **TDS TELECOMMUNICATIONS** | |
| TDS TELECOMMUNICATIONS LLC | DELAWARE |
| | |
| **INCUMBENT LOCAL EXCHANGE COMPANIES** | |
| AMELIA TELEPHONE CORPORATION | VIRGINIA |
| ARCADIA TELEPHONE COMPANY | OHIO |
| ARIZONA TELEPHONE COMPANY | ARIZONA |
| ARVIG TELEPHONE COMPANY | MINNESOTA |
| ASOTIN TELEPHONE COMPANY | WASHINGTON |
| BADGER TELECOM, LLC | DELAWARE |
| BLACK EARTH TELEPHONE COMPANY, LLC | DELAWARE |

| | |
|---|---|
| BLUE RIDGE TELEPHONE COMPANY | GEORGIA |
| BONDUEL TELEPHONE COMPANY, LLC | DELAWARE |
| BRIDGE WATER TELEPHONE COMPANY | MINNESOTA |
| BURLINGTON, BRIGHTON & WHEATLAND TELEPHONE COMPANY, LLC | DELAWARE |
| BUTLER TELEPHONE COMPANY, INC. | ALABAMA |
| CALHOUN CITY TELEPHONE COMPANY, INC. | MISSISSIPPI |
| CAMDEN TELEPHONE AND TELEGRAPH COMPANY, INC. | GEORGIA |
| CAMDEN TELEPHONE COMPANY, INC. | INDIANA |
| CENTRAL STATE TELEPHONE COMPANY, LLC | DELAWARE |
| CHATHAM TELEPHONE COMPANY | MICHIGAN |
| COBBOSSEECONTEE TELEPHONE COMPANY | MAINE |
| COMMUNICATION CORPORATION OF MICHIGAN | MICHIGAN |
| COMMUNICATIONS CORPORATION OF INDIANA | INDIANA |
| COMMUNICATIONS CORPORATION OF SOUTHERN INDIANA | INDIANA |
| CONCORD TELEPHONE EXCHANGE, INC. | TENNESSEE |
| CONTINENTAL TELEPHONE COMPANY | OHIO |
| DELTA COUNTY TELE-COMM, INC. | COLORADO |
| DEPOSIT TELEPHONE COMPANY, INC. | NEW YORK |
| DICKEYVILLE TELEPHONE, LLC | DELAWARE |
| EASTCOAST TELECOM OF WISCONSIN, LLC | DELAWARE |
| EDWARDS TELEPHONE COMPANY, INC. | NEW YORK |
| GRANTLAND TELECOM, LLC | DELAWARE |
| HAMPDEN TELEPHONE COMPANY | MAINE |
| HAPPY VALLEY TELEPHONE COMPANY | CALIFORNIA |
| HARTLAND & ST. ALBANS TELEPHONE COMPANY | MAINE |
| HOLLIS TELEPHONE COMPANY, INC. | NEW HAMPSHIRE |
| HOME TELEPHONE COMPANY, INC. | INDIANA |
| HORNITOS TELEPHONE CO. | CALIFORNIA |
| HUMPHREYS COUNTY TELEPHONE COMPANY | TENNESSEE |
| ISLAND TELEPHONE COMPANY | MICHIGAN |
| KEARSARGE TELEPHONE COMPANY | NEW HAMPSHIRE |
| LESLIE COUNTY TELEPHONE COMPANY | KENTUCKY |
| LEWIS RIVER TELEPHONE COMPANY, INC. | WASHINGTON |
| LEWISPORT TELEPHONE COMPANY | KENTUCKY |
| LITTLE MIAMI COMMUNICATIONS CORPORATION | OHIO |
| LUDLOW TELEPHONE COMPANY | VERMONT |
| MAHANOY & MAHANTANGO TELEPHONE COMPANY | PENNSYLVANIA |
| MCCLELLANVILLE TELEPHONE COMPANY, INC. | SOUTH CAROLINA |
| MCDANIEL TELEPHONE COMPANY | WASHINGTON |
| MERRIMACK COUNTY TELEPHONE COMPANY | NEW HAMPSHIRE |
| MID-AMERICA TELEPHONE, LLC | OKLAHOMA |
| MID-PLAINS TELEPHONE, LLC | DELAWARE |
| MID-STATE TELEPHONE COMPANY | MINNESOTA |
| MIDWAY TELEPHONE COMPANY, LLC | DELAWARE |
| MOSINEE TELEPHONE COMPANY, LLC | DELAWARE |
| MT. VERNON TELEPHONE COMPANY, LLC | DELAWARE |
| MYRTLE TELEPHONE COMPANY, INC. | MISSISSIPPI |
| NELSON-BALL GROUND TELEPHONE COMPANY | GEORGIA |
| NEW CASTLE TELEPHONE COMPANY | VIRGINIA |
| NORTHFIELD TELEPHONE COMPANY | VERMONT |
| NORWAY TELEPHONE COMPANY, INC. | SOUTH CAROLINA |

| | |
|---|---|
| OAKMAN TELEPHONE COMPANY, INC. | ALABAMA |
| OAKWOOD TELEPHONE COMPANY | OHIO |
| OKLAHOMA COMMUNICATION SYSTEMS, LLC | OKLAHOMA |
| PEOPLES TELEPHONE COMPANY, INC. | ALABAMA |
| PERKINSVILLE TELEPHONE COMPANY, INC. | VERMONT |
| PORT BYRON TELEPHONE COMPANY | NEW YORK |
| POTLATCH TELEPHONE COMPANY | IDAHO |
| QUINCY TELEPHONE COMPANY | FLORIDA |
| RIVERSIDE TELECOM, LLC | DELAWARE |
| S & W TELEPHONE COMPANY, INC. | INDIANA |
| SALEM TELEPHONE COMPANY | KENTUCKY |
| SCANDINAVIA TELEPHONE COMPANY, LLC | DELAWARE |
| SHIAWASSEE TELEPHONE COMPANY | MICHIGAN |
| SOMERSET TELEPHONE COMPANY | MAINE |
| SOUTHEAST MISSISSIPPI TELEPHONE COMPANY, INC. | MISSISSIPPI |
| SOUTHEAST TELEPHONE CO. OF WISCONSIN, LLC | DELAWARE |
| SOUTHWESTERN TELEPHONE COMPANY | ARIZONA |
| ST. STEPHEN TELEPHONE COMPANY | SOUTH CAROLINA |
| STOCKBRIDGE & SHERWOOD TELEPHONE COMPANY, LLC. | DELAWARE |
| STRASBURG TELEPHONE COMPANY | COLORADO |
| SUGAR VALLEY TELEPHONE COMPANY | PENNSYLVANIA |
| TELLICO TELEPHONE COMPANY, INC. | TENNESSEE |
| TENNESSEE TELEPHONE COMPANY | TENNESSEE |
| TENNEY TELEPHONE COMPANY, LLC | DELAWARE |
| THE FARMERS TELEPHONE COMPANY, LLC | DELAWARE |
| THE HOME TELEPHONE COMPANY OF PITTSBORO, INC. | INDIANA |
| THE ISLAND TELEPHONE COMPANY | MAINE |
| THE MERCHANTS AND FARMERS TELEPHONE COMPANY | INDIANA |
| THE STATE LONG DISTANCE TELEPHONE COMPANY, LLC | DELAWARE |
| THE VANLUE TELEPHONE COMPANY | OHIO |
| THE WEST PENOBSCOT TELEPHONE & TELEGRAPH COMPANY | MAINE |
| TIPTON TELEPHONE COMPANY, INC. | INDIANA |
| TOWNSHIP TELEPHONE COMPANY, INC. | NEW YORK |
| TRI-COUNTY TELEPHONE COMPANY, INC. | INDIANA |
| UNION TELEPHONE COMPANY | NEW HAMPSHIRE |
| UTELCO, LLC | DELAWARE |
| VERNON TELEPHONE COMPANY, INC. | NEW YORK |
| VIRGINIA TELEPHONE COMPANY | VIRGINIA |
| WARREN TELEPHONE COMPANY | MAINE |
| WAUNAKEE TELEPHONE COMPANY, LLC | DELAWARE |
| WEST POINT TELEPHONE COMPANY, INCORPORATED | INDIANA |
| WILLISTON TELEPHONE COMPANY | SOUTH CAROLINA |
| WILTON TELEPHONE COMPANY, INC. | NEW HAMPSHIRE |
| WINSTED TELEPHONE COMPANY | MINNESOTA |
| WINTERHAVEN TELEPHONE COMPANY | CALIFORNIA |
| WOLVERINE TELEPHONE COMPANY | MICHIGAN |

| | |
|---|---|
| **OTHER COMPANIES** | |
| TDS LONG DISTANCE CORPORATION | DELAWARE |
| TDS METROCOM, LLC | DELAWARE |
| TDS PURCO LLC | DELAWARE |

| | |
|---|---|
| TDS TELECOM SERVICE LLC | IOWA |
| TRI-COUNTY COMMUNICATIONS CORPORATION | INDIANA |
| | |
| **TDS GROUP** | |
| AFFILIATE FUND | DELAWARE |
| AIRADIGM COMMUNICATIONS, INC. | WISCONSIN |
| INTERLINX COMMUNICATION, LLC | DELAWARE |
| M.C.T. COMMUNICATIONS, INC. | NEW HAMPSHIRE |
| NATIONAL TELEPHONE & TELEGRAPH COMPANY | DELAWARE |
| ONENECK DATA CENTER HOLDINGS LLC | DELAWARE |
| ONENECK IT SERVICES CORPORATION | DELAWARE |
| ONENECK IT SOLUTIONS LLC | DELAWARE |
| ONENECK UK LIMITED | UNITED KINGDOM |
| SUTTLE-STRAUS, INC. | WISCONSIN |
| TDS BROADBAND LLC | DELAWARE |
| TDS BROADBAND SERVICE LLC | DELAWARE |
| TONAQUINT NETWORKS, LLC | DELAWARE |
| ZOLO BROADCASTING LLC | DELAWARE |

**Exhibit 23.1**

**CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

We hereby consent to the incorporation by reference in the Registration Statements on Form S-3 (Nos. 333-231181, 333-219697, and 333-219698) and Form S-8 (Nos. 333-58127, 333-179702, 333-179703, 333-185143, 333-190330, 333-197793 and 333-226550) of Telephone and Data Systems, Inc. of our report dated February 25, 2020, relating to the financial statements and the effectiveness of internal control over financial reporting, which appears in the 2019 Annual Report to Shareholders, which is incorporated by reference in this Annual Report on Form 10-K.

/s/ PricewaterhouseCoopers LLP
Chicago, Illinois
February 25, 2020

**Exhibit 23.2**

**CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

We consent to the incorporation by reference in the following Registration Statements of Telephone and Data Systems, Inc.:

(1) Registration Statement (Form S-3 No. 333-231181),
(2) Registration Statement (Form S-8 No. 333-58127),
(3) Registration Statement (Form S-8 No. 333-179702),
(4) Registration Statement (Form S-8 No. 333-179703),
(5) Registration Statement (Form S-8 No. 333-185143),
(6) Registration Statement (Form S-8 No. 333-190330),
(7) Registration Statement (Form S-8 No. 333-197793),
(8) Registration Statement (Form S-3 No. 333-219697),
(9) Registration Statement (Form S-3 No. 333-219698), and
(10) Registration Statement (Form S-8 No. 333-226550);

of our report dated February 25, 2020, with respect to the financial statements of Los Angeles SMSA Limited Partnership included in this Annual Report (Form 10-K) of Telephone and Data Systems, Inc. for the year ended December 31, 2019.

/s/ Ernst & Young LLP

Orlando, Florida
February 25, 2020

**Exhibit 31.1**

**Certification of principal executive officer**

I, LeRoy T. Carlson, Jr., certify that:

1. I have reviewed this annual report on Form 10-K of Telephone and Data Systems, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
   a. designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
   b. designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
   c. evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
   d. disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
   a. all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
   b. any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 25, 2020

/s/ LeRoy T. Carlson, Jr.

LeRoy T. Carlson, Jr.
President and Chief Executive Officer
(principal executive officer)

**Exhibit 31.2**

**Certification of principal financial officer**

I, Peter L. Sereda, certify that:

1. I have reviewed this annual report on Form 10-K of Telephone and Data Systems, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
   a. designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
   b. designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
   c. evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
   d. disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
   a. all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
   b. any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 25, 2020

/s/ Peter L. Sereda

Peter L. Sereda
Executive Vice President and Chief Financial Officer
(principal financial officer)

**Exhibit 32.1**

**Certification Pursuant to Section 1350 of Chapter 63**
**of Title 18 of the United States Code**

I, LeRoy T. Carlson, Jr., the principal executive officer of Telephone and Data Systems, Inc., certify that (i) the annual report on Form 10-K for the year ended December 31, 2019, fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and (ii) the information contained in the Form 10-K fairly presents, in all material respects, the financial condition and results of operations of Telephone and Data Systems, Inc.

/s/ LeRoy T. Carlson, Jr.

LeRoy T. Carlson, Jr.

February 25, 2020

A signed original of this written statement required by Section 906 of the Sarbanes-Oxley Act of 2002 has been provided to Telephone and Data Systems, Inc. and will be retained by Telephone and Data Systems, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.

**Exhibit 32.2**

**Certification Pursuant to Section 1350 of Chapter 63 of Title 18 of the United States Code**

I, Peter L. Sereda, the principal financial officer of Telephone and Data Systems, Inc., certify that (i) the annual report on Form 10-K for the year ended December 31, 2019, fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and (ii) the information contained in the Form 10-K fairly presents, in all material respects, the financial condition and results of operations of Telephone and Data Systems, Inc.

/s/ Peter L. Sereda

Peter L. Sereda

February 25, 2020

A signed original of this written statement required by Section 906 of the *Sarbanes-Oxley Act of 2002* has been provided to Telephone and Data Systems, Inc. and will be retained by Telephone and Data Systems, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.