Financial Statements

Telephone and Data Systems, Inc.
Consolidated Statement of Operations

Year Ended December 31,	2022	2021	2020
(Dollars and shares in millions, except per share amounts)			
Operating revenues			
Service	**$ 4,240**	$ 4,216	$ 4,136
Equipment and product sales	**1,173**	1,113	1,089
Total operating revenues	**5,413**	5,329	5,225
Operating expenses			
Cost of services (excluding Depreciation, amortization and accretion reported below)	**1,245**	1,267	1,244
Cost of equipment and products	**1,320**	1,205	1,110
Selling, general and administrative	**1,768**	1,677	1,681
Depreciation, amortization and accretion	**929**	895	909
Loss on impairment of licenses	**3**	—	—
(Gain) loss on asset disposals, net	**27**	26	27
(Gain) loss on sale of business and other exit costs, net	**(1)**	(2)	—
(Gain) loss on license sales and exchanges, net	**—**	—	(5)
Total operating expenses	**5,291**	5,068	4,966
Operating income	**122**	261	259
Investment and other income (expense)			
Equity in earnings of unconsolidated entities	**159**	182	181
Interest and dividend income	**17**	11	15
Gain (loss) on investments	**—**	—	2
Interest expense	**(174)**	(232)	(168)
Other, net	**1**	(1)	(1)
Total investment and other income (expense)	**3**	(40)	29
Income before income taxes	**125**	221	288
Income tax expense	**53**	33	19
Net income	**72**	188	269
Less: Net income attributable to noncontrolling interests, net of tax	**10**	32	43
Net income attributable to TDS shareholders	**62**	156	226
TDS Preferred Share dividends	**69**	39	—
Net income (loss) attributable to TDS common shareholders	**$ (7)**	$ 117	$ 226
Basic weighted average shares outstanding	**114**	115	114
Basic earnings (loss) per share attributable to TDS common shareholders	**$ (0.07)**	$ 1.03	$ 1.97
Diluted weighted average shares outstanding	**114**	116	115
Diluted earnings (loss) per share attributable to TDS common shareholders	**$ (0.07)**	$ 1.00	$ 1.93

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,	2022	2021	2020
(Dollars in millions)			
Net income	**$ 72**	$ 188	$ 269
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 (losses)	**(4)**	9	3
Amortization of prior service cost and unrecognized net gain	**4**	4	3
	—	13	6
Change in deferred income taxes	**—**	(4)	(1)
Change related to retirement plan, net of tax	**—**	9	5
Net change in accumulated other comprehensive income	**—**	9	5
Comprehensive income	**72**	197	274
Less: Net income attributable to noncontrolling interests, net of tax	**10**	32	43
Comprehensive income attributable to TDS shareholders	**$ 62**	$ 165	$ 231

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,	2022	2021	2020
(Dollars in millions)			
Cash flows from operating activities			
Net income	**$ 72**	$ 188	$ 269
Add (deduct) adjustments to reconcile net income to net cash flows from operating activities			
Depreciation, amortization and accretion	**929**	895	909
Bad debts expense	**138**	60	77
Stock-based compensation expense	**42**	49	53
Deferred income taxes, net	**47**	52	190
Equity in earnings of unconsolidated entities	**(159)**	(182)	(181)
Distributions from unconsolidated entities	**145**	180	189
Loss on impairment of licenses	**3**	—	—
(Gain) loss on asset disposals, net	**27**	26	27
(Gain) loss on sale of business and other exit costs, net	**(1)**	(2)	—
(Gain) loss on license sales and exchanges, net	**—**	—	(5)
(Gain) loss on investments	**—**	—	(2)
Other operating activities	**10**	61	3
Changes in assets and liabilities from operations			
Accounts receivable	**(69)**	(22)	(16)
Equipment installment plans receivable	**(199)**	(116)	(54)
Inventory	**(90)**	(25)	12
Accounts payable	**32**	(69)	173
Customer deposits and deferred revenues	**48**	43	4
Accrued taxes	**127**	(49)	(120)
Other assets and liabilities	**53**	14	4
Net cash provided by operating activities	**1,155**	1,103	1,532
Cash flows from investing activities			
Cash paid for additions to property, plant and equipment	**(1,161)**	(1,131)	(1,338)
Cash paid for acquisitions, licenses and other intangible assets	**(614)**	(1,308)	(172)
Cash received from divestitures and exchanges	**8**	3	26
Advance payments for license acquisitions	**—**	(20)	(30)
Other investing activities	**(16)**	(6)	3
Net cash used in investing activities	**(1,783)**	(2,462)	(1,511)
Cash flows from financing activities			
Issuance of long-term debt	**1,154**	1,543	1,250
Repayment of long-term debt	**(332)**	(2,081)	(110)
Issuance of short-term debt	**110**	—	—
Repayment of short-term debt	**(50)**	—	—
Issuance of TDS Preferred Shares	**—**	1,110	—
TDS Common Shares reissued for benefit plans, net of tax payments	**(4)**	(5)	(3)
UScellular Common Shares reissued for benefit plans, net of tax payments	**(5)**	(16)	(11)
Repurchase of TDS Common Shares	**(40)**	(8)	(14)
Repurchase of UScellular Common Shares	**(43)**	(31)	(23)
Dividends paid to TDS shareholders	**(151)**	(119)	(78)
Payment of debt and equity issuance costs	**(2)**	(62)	(41)
Distributions to noncontrolling interests	**(3)**	(3)	(2)
Payments to acquire additional interest in subsidiaries	**—**	—	(11)
Cash paid for software license agreements	**(23)**	(9)	(2)
Other financing activities	**2**	2	2
Net cash provided by financing activities	**613**	321	957
Net increase (decrease) in cash, cash equivalents and restricted cash	**(15)**	(1,038)	978
Cash, cash equivalents and restricted cash			
Beginning of period	**414**	1,452	474
End of period	**$ 399**	$ 414	$ 1,452

The accompanying notes are an integral part of these consolidated financial statements.

Telephone and Data Systems, Inc.
Consolidated Balance Sheet — Assets

December 31,	2022	2021
(Dollars in millions)		
Current assets		
Cash and cash equivalents	**$ 360**	$ 367
Accounts receivable		
Customers and agents, less allowances of $74 and $60, respectively	**1,069**	1,058
Other, less allowances of $3 and $2, respectively	**112**	93
Inventory, net	**268**	178
Prepaid expenses	**102**	103
Income taxes receivable	**59**	184
Other current assets	**58**	61
Total current assets	**2,028**	2,044
Assets held for sale	**26**	18
Licenses	**4,699**	4,097
Goodwill	**547**	547
Other intangible assets, net of accumulated amortization of $112 and $91, respectively	**204**	197
Investments in unconsolidated entities	**495**	479
Property, plant and equipment		
In service and under construction	**14,971**	14,265
Less: Accumulated depreciation and amortization	**10,211**	9,904
Property, plant and equipment, net	**4,760**	4,361
Operating lease right-of-use assets	**995**	1,040
Other assets and deferred charges	**796**	710
Total assets[1]	**$ 14,550**	$ 13,493

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,	2022	2021
(Dollars and shares in millions, except per share amounts)		
Current liabilities		
Current portion of long-term debt	**$ 19**	$ 6
Accounts payable	**506**	481
Customer deposits and deferred revenues	**285**	236
Accrued interest	**12**	10
Accrued taxes	**46**	45
Accrued compensation	**144**	137
Short-term operating lease liabilities	**146**	141
Other current liabilities	**356**	124
Total current liabilities	**1,514**	1,180
Deferred liabilities and credits		
Deferred income tax liability, net	**969**	921
Long-term operating lease liabilities	**908**	960
Other deferred liabilities and credits	**813**	759
Long-term debt, net	**3,731**	2,928
Commitments and contingencies		
Noncontrolling interests with redemption features	**12**	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 112 shares (7 Series A Common and 105 Common Shares) and 115 shares (7 Series A Common and 108 Common Shares), respectively		
Par Value ($0.01 per share)	**1**	1
Capital in excess of par value	**2,551**	2,496
Preferred Shares, .279 shares authorized, par value $0.01 per share, .0444 shares outstanding (.0168 Series UU and .0276 Series VV)	**1,074**	1,074
Treasury shares, at cost, 21 and 18 Common Shares, respectively	**(481)**	(461)
Accumulated other comprehensive income	**5**	5
Retained earnings	**2,699**	2,812
Total TDS shareholders' equity	**5,849**	5,927
Noncontrolling interests	**754**	807
Total equity	**6,603**	6,734
Total liabilities and equity[1]	**$ 14,550**	$ 13,493

The accompanying notes are an integral part of these consolidated financial statements.

[1] The consolidated total assets as of December 31, 2022 and 2021, include assets held by consolidated variable interest entities (VIEs) of $1,236 million and $1,456 million, respectively, which are not available to be used to settle the obligations of TDS. The consolidated total liabilities as of December 31, 2022 and 2021, include certain liabilities of consolidated VIEs of $23 million and $21 million, respectively, for which the creditors of the VIEs have no recourse to the general credit of TDS. See Note 15 — 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	Preferred Shares	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, 2021	**$ 1**	**$ 2,496**	**$ 1,074**	**$ (461)**	**$ 5**	**$ 2,812**	**$ 5,927**	**$ 807**	**$ 6,734**
Net income attributable to TDS shareholders	—	—	—	—	—	62	62	—	62
Net income attributable to noncontrolling interests classified as equity	—	—	—	—	—	—	—	9	9
TDS Common and Series A Common share dividends ($0.72 per share)	—	—	—	—	—	(82)	(82)	—	(82)
TDS Preferred share dividends ($1,656 per Series UU share and $1,500 per Series VV share)	—	—	—	—	—	(69)	(69)	—	(69)
Repurchase of Common Shares	—	—	—	(40)	—	—	(40)	—	(40)
Dividend reinvestment plan	—	2	—	3	—	(3)	2	—	2
Incentive and compensation plans	—	18	—	17	—	(21)	14	—	14
Adjust investment in subsidiaries for repurchases, issuances and other compensation plans	—	35	—	—	—	—	35	(59)	(24)
Distributions to noncontrolling interests	—	—	—	—	—	—	—	(3)	(3)
December 31, 2022	**$ 1**	**$ 2,551**	**$ 1,074**	**$ (481)**	**$ 5**	**$ 2,699**	**$ 5,849**	**$ 754**	**$ 6,603**

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	Preferred Shares	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, 2020	**$ 1**	**$ 2,482**	**—**	**$ (477)**	**$ (4)**	**$ 2,802**	**$ 4,804**	**$ 789**	**$ 5,593**
Net income attributable to TDS shareholders	—	—	—	—	—	156	156	—	156
Net income attributable to noncontrolling interests classified as equity	—	—	—	—	—	—	—	32	32
Other comprehensive income	—	—	—	—	9	—	9	—	9
TDS Common and Series A Common Share dividends ($0.70 per share)	—	—	—	—	—	(80)	(80)	—	(80)
Issuance of Preferred Shares, net of costs	—	—	1,074	—	—	—	1,074	—	1,074
TDS Preferred share dividends ($1,380 per Series UU share and $558 per Series VV share)	—	—	—	—	—	(39)	(39)	—	(39)
Repurchase of Common Shares	—	—	—	(8)	—	—	(8)	—	(8)
Dividend reinvestment plan	—	—	—	3	—	(1)	2	—	2
Incentive and compensation plans	—	22	—	21	—	(26)	17	—	17
Adjust investment in subsidiaries for repurchases, issuances and other compensation plans	—	(8)	—	—	—	—	(8)	(11)	(19)
Distributions to noncontrolling interests	—	—	—	—	—	—	—	(3)	(3)
December 31, 2021	**$ 1**	**$ 2,496**	**$ 1,074**	**$ (461)**	**$ 5**	**$ 2,812**	**$ 5,927**	**$ 807**	**$ 6,734**

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, 2019	**$ 1**	**$ 2,468**	**$ (479)**	**$ (9)**	**$ 2,672**	**$ 4,653**	**$ 751**	**$ 5,404**
Cumulative effect of accounting changes	—	—	—	—	(2)	(2)	—	(2)
Net income attributable to TDS shareholders	—	—	—	—	226	226	—	226
Net income attributable to noncontrolling interests classified as equity	—	—	—	—	—	—	43	43
Other comprehensive income	—	—	—	5	—	5	—	5
TDS Common and Series A Common Share dividends ($0.68 per share)	—	—	—	—	(78)	(78)	—	(78)
Repurchase of Common Shares	—	—	(14)	—	—	(14)	—	(14)
Dividend reinvestment plan	—	—	3	—	—	3	—	3
Incentive and compensation plans	—	21	13	—	(16)	18	—	18
Adjust investment in subsidiaries for repurchases, issuances and other compensation plans	—	(7)	—	—	—	(7)	(3)	(10)
Distributions to noncontrolling interests	—	—	—	—	—	—	(2)	(2)
December 31, 2020	**$ 1**	**$ 2,482**	**$ (477)**	**$ (4)**	**$ 2,802**	**$ 4,804**	**$ 789**	**$ 5,593**

The accompanying notes are an integral part of these consolidated financial statements.

Note 1 Summary of Significant Accounting Policies

Nature of Operations

Telephone and Data Systems, Inc. (TDS) is a diversified telecommunications company providing high-quality communications services to customers with 4.7 million retail wireless connections and 1.2 million broadband, video and voice connections at December 31, 2022. TDS conducts all of its wireless operations through its 84%-owned subsidiary, United States Cellular Corporation (UScellular). TDS provides broadband, video and voice services through its wholly-owned subsidiary, TDS Telecommunications LLC (TDS Telecom).

TDS has the following reportable segments: UScellular and TDS Telecom. 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 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 19 — 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 UScellular 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 15 — Variable Interest Entities for additional information relating to TDS' VIEs. 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.

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. Restricted cash primarily consists of balances required under the receivables securitization agreement. See Note 12 — Debt for additional information related to the receivables securitization agreement. 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,	**2022**	2021
(Dollars in millions)		
Cash and cash equivalents	**$ 360**	$ 367
Restricted cash included in Other current assets	**39**	47
Cash, cash equivalents and restricted cash in the statement of cash flows	**$ 399**	$ 414

Accounts Receivable and Allowance for Credit Losses

UScellular'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 and third-party distributors for sales of equipment to them and by other wireless carriers whose customers have used UScellular'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 and data traffic, which TDS Telecom carries on its network.

TDS estimates expected credit losses related to accounts receivable balances based on a review of available and relevant information including current economic conditions, projected economic conditions, historical loss experience, account aging, and other factors that could affect collectability. Expected credit losses are determined for each pool of accounts receivable balances that share similar risk characteristics. The allowance for credit losses is the best estimate of the amount of expected credit losses related to existing accounts receivable. 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 a first-in first-out basis, or net realizable value. Net realizable value is determined by reference to the stand-alone selling price.

Cloud-Hosted Arrangements

TDS' cloud-hosted arrangements that are service contracts consist primarily of software used to perform administrative functions. Implementation costs related to TDS' cloud-hosted arrangements, which are recorded in Prepaid expenses and Other assets and deferred charges in the Consolidated Balance Sheet, were as follows:

December 31,	**2022**	2021
(Dollars in millions)		
Implementation costs, gross	**$ 109**	$ 87
Accumulated amortization	**(49)**	(30)
Implementation costs, net	**$ 60**	$ 57

These costs are amortized over the period of the service contract, which is generally three to five years. Amortization of implementation costs was $19 million, $17 million and $11 million for the years ended December 31, 2022, 2021 and 2020, respectively, and was included in Selling, general and administrative expenses.

Licenses

Licenses consist of direct and incremental costs incurred in acquiring Federal Communications Commission (FCC) wireless spectrum licenses that generally provide UScellular 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 UScellular expire at various dates. UScellular believes that it is probable that its future wireless spectrum license renewal applications will be granted. UScellular 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, UScellular has determined that wireless spectrum licenses are indefinite-lived intangible assets.

UScellular 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 UScellular to believe it is more likely than not that the carrying value of wireless spectrum licenses exceeds fair value. For purposes of the 2022 impairment test, UScellular had one unit of accounting as a result of aggregating all developed operating market wireless spectrum licenses (built wireless spectrum licenses) and non-operating market wireless spectrum licenses (unbuilt wireless spectrum licenses), and for the 2021 test, UScellular had eight units of accounting, which consisted of one unit of accounting for built wireless spectrum licenses and seven unbuilt wireless spectrum licenses. UScellular believes this change in units of accounting assessed for impairment better reflects the integrated use of licenses as part of its national interdependent network. This change does not impact the results of the impairment assessment for the current or prior years.

UScellular performed a qualitative impairment assessment to determine whether the wireless spectrum licenses were impaired. In 2022 and 2021, UScellular considered several qualitative factors, including analyst estimates of wireless spectrum license values which contemplated recent spectrum auction results, recent UScellular and other market participant transactions, and other industry and market factors. Based on these assessments, UScellular concluded that it was more likely than not that the fair value of the unit of accounting exceeded its carrying value. Therefore, no quantitative impairment evaluation was completed. See Note 7 — Intangible Assets for additional details related to wireless spectrum licenses.

Goodwill

TDS has Goodwill as a result of past business acquisitions. 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 test, TDS Telecom has one reporting unit. TDS Telecom performed a qualitative impairment assessment in 2022 and 2021. Based on the annual impairment assessments performed, TDS Telecom did not have an impairment of its Goodwill in 2022 or 2021.

See Note 7 — Intangible Assets for additional details related to Goodwill.

Franchise Rights

TDS Telecom has franchise rights as a result of past 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. 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. Franchise rights are included in Other intangible assets in the Consolidated Balance Sheet.

See Note 7 — 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 TDS Telecom 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.

Software licenses that qualify for capitalization as an asset are accounted for as the acquisition of a fixed 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 TDS Telecom 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 2022, 2021 or 2020. However, in 2022, 2021 and 2020, depreciation for certain specific assets was accelerated due to changes in technology. See Note 9 — 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. UScellular and TDS Telecom each have one asset group 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 10 — Leases for additional details related to leases.

Agent Liabilities

UScellular has relationships with agents, which are independent businesses that obtain customers for UScellular. At December 31, 2022 and 2021, UScellular had accrued $53 million and $51 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 UScellular's revolving credit agreements and UScellular'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 11 — 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 $196 million, $203 million and $213 million in 2022, 2021 and 2020, 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 18 — Stock-Based Compensation for additional information.

Note 2 Revenue Recognition

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	UScellular 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. UScellular also sells wireless devices to agents and other third-party distributors for resale. UScellular frequently discounts wireless devices sold to new and current customers. UScellular 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 UScellular. UScellular 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	UScellular receives roaming revenues when other wireless carriers' customers use UScellular's wireless systems. UScellular 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 UScellular is entitled to receive for such period, as determined and approved in connection with UScellular's designation as an ETC in various states.
Wireless tower rents	UScellular receives tower rental revenues when another carrier leases tower space on a UScellular owned tower. UScellular recognizes revenue in Service revenues in the period during which the services are provided.
Activation fees	TDS charges its end customers activation fees in connection with the sale of certain services and equipment. Activation fees are deferred and recognized over the period benefitted.
Wireline and cable services	Wireline and cable services include broadband, video and voice services. Revenue is recognized in Service revenues as service is provided to the customer. Wireline and cable services are generally billed and paid in advance on a monthly basis.
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.
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 and related maintenance and professional services. Revenues related to these services are recognized as services are provided.

Significant Judgments

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.

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 revenue allocation.

TDS has made judgments regarding transaction price, including but not limited to issues relating to variable consideration, time value of money, returns and non-cash consideration. 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

UScellular and TDS Telecom each 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.

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, UScellular may offer certain promotions to incentivize customers to switch to, or to purchase additional services from, UScellular. 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. UScellular 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 $88 million, $95 million and $82 million for 2022, 2021 and 2020, 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 and product sales are recognized at a point in time.

Year Ended December 31, 2022	UScellular	TDS Telecom	Corporate, Eliminations and Other	Total
(Dollars in millions)				
Revenues from contracts with customers:				
Type of service:				
Retail service	$ 2,793	$ —	$ —	$ 2,793
Inbound roaming	67	—	—	67
Residential	—	669	—	669
Commercial	—	173	—	173
Wholesale	—	173	—	173
Other service	172	—	73	245
Service revenues from contracts with customers	3,032	1,015	73	4,120
Equipment and product sales	1,044	1	128	1,173
Total revenues from contracts with customers[1]	$ 4,076	$ 1,016	$ 201	$ 5,293

Year Ended December 31, 2021	UScellular	TDS Telecom	Corporate, Eliminations and Other	Total
(Dollars in millions)				
Revenues from contracts with customers:				
Type of service:				
Retail service[2,3]	$ 2,757	$ —	$ —	$ 2,757
Inbound roaming	110	—	—	110
Residential	—	641	—	641
Commercial	—	183	—	183
Wholesale	—	178	—	178
Other service[2]	165	—	73	238
Service revenues from contracts with customers	3,032	1,002	73	4,107
Equipment and product sales	1,007	1	105	1,113
Total revenues from contracts with customers[1]	$ 4,039	$ 1,003	$ 178	$ 5,220

Year Ended December 31, 2020	UScellular	TDS Telecom	Corporate, Eliminations and Other	Total
(Dollars in millions)				
Revenues from contracts with customers:				
Type of service:				
Retail service[2]	$ 2,681	$ —	$ —	$ 2,681
Inbound roaming	152	—	—	152
Residential	—	594	—	594
Commercial	—	194	—	194
Wholesale	—	184	—	184
Other service[2]	157	—	69	226
Service revenues from contracts with customers	2,990	972	69	4,031
Equipment and product sales	970	1	118	1,089
Total revenues from contracts with customers[1]	$ 3,960	$ 973	$ 187	$ 5,120

Numbers may not foot due to rounding.

[1] 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

[2] For 2021 and 2020, amounts have been adjusted to reclassify $8 million and $5 million, respectively, of Internet of Things (IoT) and Reseller revenues from Retail service to Other service.

[3] During the third quarter of 2021, UScellular recorded a $9 million out-of-period error related to the timing of recognition of regulatory fee billings. This adjustment had the impact of increasing Service revenue by $9 million in 2021. UScellular determined that this adjustment was not material to any of the periods impacted.

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 consideration is received 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 records such amounts as receivables, and then bills the customer under the terms of the respective contract.

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,	**2022**	2021
(Dollars in millions)		
Contract assets	**$ 12**	$ 10
Contract liabilities	**$ 395**	$ 289

Revenue recognized related to contract liabilities existing at January 1, 2022 was $216 million for the year ended December 31, 2022.

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, 2022, 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)	
2023	$ 412
2024	169
Thereafter	108
Total	$ 689

Contract Cost Assets

TDS expects that commission fees paid as a result of obtaining contracts are recoverable and therefore TDS defers and amortizes these costs. As a practical expedient, costs with an amortization period of one year or less are expensed as incurred. TDS also incurs fulfillment costs, such as installation costs, where there is an expectation that a future benefit will be realized. Deferred 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,	**2022**	2021
(Dollars in millions)		
Costs to obtain contracts		
Sales commissions	**$ 144**	$ 139
Fulfillment costs		
Installation costs	**8**	10
Total contract cost assets	**$ 152**	$ 149

Amortization of contract cost assets was $113 million, $116 million and $120 million for the years ended December 31, 2022, 2021 and 2020, respectively, and was included in Selling, general and administrative expenses and Cost of services expenses.

Note 3 Fair Value Measurements

As of December 31, 2022 and 2021, 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, 2022		December 31, 2021	
		Book Value	Fair Value	Book Value	Fair Value
(Dollars in millions)					
Long-term debt					
Retail	2	**$ 1,500**	**$ 899**	$ 1,500	$ 1,594
Institutional	2	**536**	**395**	535	659
Other	2	**1,753**	**1,753**	944	944

Long-term debt excludes lease obligations, 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 UScellular Senior Notes, which are traded on the New York Stock Exchange. TDS' "Institutional" debt consists of UScellular's 6.7% Senior Notes which are traded over the counter. TDS' "Other" debt consists of term loan credit agreements, receivables securitization agreement and in 2022, an export credit financing agreement. 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 3.52% to 8.28% and 1.31% to 4.40% at December 31, 2022 and 2021, respectively.

The fair values of Cash and cash equivalents, restricted cash and short-term debt approximate their book values due to the short-term nature of these financial instruments.

Note 4 Equipment Installment Plans

UScellular 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.

December 31,	**2022**	2021
(Dollars in millions)		
Equipment installment plan receivables, gross	**$ 1,211**	$ 1,085
Allowance for credit losses	**(96)**	(72)
Equipment installment plan receivables, net	**$ 1,115**	$ 1,013
Net balance presented in the Consolidated Balance Sheet as:		
Accounts receivable — Customers and agents (Current portion)	**$ 646**	$ 639
Other assets and deferred charges (Non-current portion)	**469**	374
Equipment installment plan receivables, net	**$ 1,115**	$ 1,013

UScellular 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. These credit classes are grouped into four credit categories: lowest risk, lower risk, slight risk and higher risk. A customer's assigned credit class is reviewed periodically and a change is made, if appropriate. An equipment installment plan billed amount is considered past due if not paid within 30 days.

The balance and aging of the equipment installment plan receivables on a gross basis by credit category were as follows:

	December 31, 2022					December 31, 2021				
	Lowest Risk	**Lower Risk**	**Slight Risk**	**Higher Risk**	**Total**	Lowest Risk	Lower Risk	Slight Risk	Higher Risk	Total
(Dollars in millions)										
Unbilled	**$ 1,016**	**$ 98**	**$ 22**	**$ 5**	**$ 1,141**	$ 896	$ 94	$ 24	$ 5	$ 1,019
Billed — current	**41**	**5**	**2**	**—**	**48**	40	5	1	1	47
Billed — past due	**13**	**6**	**2**	**1**	**22**	10	6	2	1	19
Total	**$ 1,070**	**$ 109**	**$ 26**	**$ 6**	**$ 1,211**	$ 946	$ 105	$ 27	$ 7	$ 1,085

The balance of the equipment installment plan receivables as of December 31, 2022 on a gross basis by year of origination were as follows:

	2020	2021	2022	**Total**
(Dollars in millions)				
Lowest Risk	$ 43	$ 303	$ 724	**$ 1,070**
Lower Risk	3	28	78	**109**
Slight Risk	—	4	22	**26**
Higher Risk	—	1	5	**6**
Total	$ 46	$ 336	$ 829	**$ 1,211**

Activity for the years ended December 31, 2022 and 2021, in the allowance for credit losses for equipment installment plan receivables was as follows:

	2022	2021
(Dollars in millions)		
Allowance for credit losses, beginning of year	**$ 72**	$ 78
Bad debts expense	**100**	38
Write-offs, net of recoveries[1]	**(76)**	(44)
Allowance for credit losses, end of year	**$ 96**	$ 72

[1] Write-offs increased in 2022 as customer payment behavior returned to pre-COVID-19 pandemic levels.

Note 5 Income Taxes

TDS' current income taxes balances at December 31, 2022 and 2021, were as follows:

December 31,	**2022**	2021
(Dollars in millions)		
Federal income taxes receivable	**$ 56**	$ 179
Net state income taxes receivable	**3**	5

Income tax expense (benefit) is summarized as follows:

Year Ended December 31,	**2022**	2021	2020
(Dollars in millions)			
Current			
Federal	**$ 1**	$ 2	$ (175)
State	**5**	(21)	4
Deferred			
Federal	**32**	59	179
State	**15**	(7)	11
Total income tax expense (benefit)	**$ 53**	$ 33	$ 19

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,	**2022**		2021		2020	
	Amount	**Rate**	Amount	Rate	Amount	Rate
(Dollars in millions)						
Statutory federal income tax expense and rate	**$ 26**	**21.0 %**	$ 47	21.0 %	$ 60	21.0 %
State income taxes, net of federal benefit[1]	**16**	**12.8**	(23)	(10.3)	11	4.0
Change in federal valuation allowance[2]	**7**	**5.7**	7	3.1	—	—
Loss carryback benefit of CARES Act[3]	**—**	**—**	—	—	(60)	(21.0)
Nondeductible compensation	**7**	**5.6**	6	2.9	9	3.0
Tax credits	**(2)**	**(1.9)**	(2)	(0.8)	(2)	(0.6)
Other differences, net	**(1)**	**(0.6)**	(2)	(0.8)	1	—
Total income tax expense (benefit) and rate	**$ 53**	**42.6 %**	$ 33	15.1 %	$ 19	6.4 %

[1] State income taxes, net of federal benefit, include changes in unrecognized tax benefits as well as adjustments to state valuation allowances. State taxes increased in 2022 due primarily to valuation allowance adjustments. State taxes in 2021 are a net benefit due primarily to the reduction of tax accruals resulting from expirations of state statute of limitations for prior tax years.

[2] Change in federal valuation allowance is due primarily to current year interest expense from partnership investments that carryforward but may not be realized.

[3] The CARES Act provided a 5-year carryback of net operating losses generated in years 2018-2020. As the statutory federal tax rate applicable to certain years within the carryback period is 35%, carryback to those years provided a tax benefit in excess of the current federal statutory rate of 21%.

Significant components of TDS' deferred income tax assets and liabilities at December 31, 2022 and 2021, were as follows:

December 31,	**2022**	2021[1]
(Dollars in millions)		
Deferred tax assets		
Net operating loss (NOL) carryforwards	**$ 250**	$ 226
Lease liabilities	**265**	277
Contract liabilities	**63**	38
Interest expense carryforwards	**74**	31
Asset retirement obligation	**116**	101
Other	**129**	122
Total deferred tax assets	**897**	795
Less valuation allowance	**(177)**	(149)
Net deferred tax assets	**720**	646
Deferred tax liabilities		
Property, plant and equipment	**805**	751
Licenses/intangibles	**419**	364
Partnership investments	**173**	155
Lease assets	**245**	255
Other	**43**	40
Total deferred tax liabilities	**1,685**	1,565
Net deferred income tax liability	**$ 965**	$ 919
Presented in the Consolidated Balance Sheet as:		
Deferred income tax liability, net	**$ 969**	$ 921
Other assets and deferred charges	**(4)**	(2)
Net deferred income tax liability	**$ 965**	$ 919

[1] Certain prior year deferred tax assets and liabilities have been reclassified to align with the current year presentation.

At December 31, 2022, TDS and certain subsidiaries had $3,508 million of state NOL carryforwards (generating a $177 million deferred tax asset) available to offset future taxable income. The state NOL carryforwards expire between 2023 and 2042. TDS and certain subsidiaries had $344 million of federal NOL carryforwards (generating a $72 million deferred tax asset) available to offset future taxable income. The federal NOL carryforwards generally expire between 2023 and 2037, with the exception of federal NOLs generated after 2017, which do not expire. A valuation allowance was established for certain federal and state NOL carryforwards since it is more likely than not that a portion of such carryforwards will expire before they can be utilized.

At December 31, 2022, TDS and certain subsidiaries had $384 million of state interest limitation carryforwards (generating a $16 million deferred tax asset) available to offset future taxable income. The state interest limitation carryforwards generally do not expire. TDS and certain subsidiaries had $277 million of federal interest limitation carryforwards (generating a $58 million deferred tax asset) available to offset future taxable income. The federal interest limitation carryforwards do not expire. A valuation allowance was established for certain federal and state interest limitation carryforwards since it is more likely than not that a portion of such carryforwards will not be utilized.

A summary of TDS' deferred tax asset valuation allowance is as follows:

	2022	2021	2020
(Dollars in millions)			
Balance at beginning of year	**$ 149**	$ 158	$ 152
Charged to Income tax expense	**28**	(9)	6
Balance at end of year	**$ 177**	$ 149	$ 158

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

	2022	2021	2020
(Dollars in millions)			
Unrecognized tax benefits balance at beginning of year	**$ 37**	$ 54	$ 49
Additions for tax positions of current year	**6**	8	8
Additions for tax positions of prior years	**1**	—	3
Reductions for tax positions of prior years	**—**	(3)	(1)
Reductions for settlements of tax positions	**—**	(2)	—
Reductions for lapses in statutes of limitations	**(6)**	(20)	(5)
Unrecognized tax benefits balance at end of year	**$ 38**	$ 37	$ 54

Unrecognized tax benefits are included in Accrued taxes and Other deferred liabilities and credits in the Consolidated Balance Sheet. If these benefits were recognized at each respective year end period, they would have reduced income tax expense in 2022, 2021 and 2020 by $30 million, $30 million and $43 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 nominal expense in 2022, a benefit of $10 million in 2021, and an expense of $2 million in 2020. Net accrued liabilities for interest and penalties were $13 million at both December 31, 2022 and 2021, 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 2019.

Note 6 Earnings Per Share

Basic earnings (loss) per share attributable to TDS common shareholders is computed by dividing Net income (loss) attributable to TDS common shareholders by the weighted average number of Common Shares outstanding during the period. Diluted earnings (loss) per share attributable to TDS common shareholders is computed by dividing Net income (loss) attributable to TDS common 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 common shareholders were as follows:

Year Ended December 31,	**2022**	2021	2020
(Dollars and shares in millions, except per share amounts)			
Net income (loss) attributable to TDS common shareholders used in basic earnings (loss) per share	**$ (7)**	$ 117	$ 226
Adjustments to compute diluted earnings (loss):			
Noncontrolling interest adjustment	**(1)**	(1)	(3)
Net income (loss) attributable to TDS common shareholders used in diluted earnings (loss) per share	**$ (8)**	$ 116	$ 223
Weighted average number of shares used in basic earnings (loss) per share:			
Common Shares	**107**	108	107
Series A Common Shares	**7**	7	7
Total	**114**	115	114
Effects of dilutive securities	**—**	1	1
Weighted average number of shares used in diluted earnings (loss) per share	**114**	116	115
Basic earnings (loss) per share attributable to TDS common shareholders	**$ (0.07)**	$ 1.03	$ 1.97
Diluted earnings (loss) per share attributable to TDS common shareholders	**$ (0.07)**	$ 1.00	$ 1.93

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 common shareholders because their effects were antidilutive. The number of such Common Shares excluded was 5 million shares, 4 million shares and 5 million shares for 2022, 2021 and 2020, respectively.

Note 7 Intangible Assets

Licenses

TDS reviews opportunities to acquire additional wireless spectrum, including pursuant to FCC auctions. TDS also may seek to divest outright or exchange wireless spectrum that is not strategic to its long-term success. Prior to 2009, TDS accounted for UScellular's share repurchases as step acquisitions, allocating a portion of the share repurchase value to TDS' Licenses. Consequently, UScellular's Licenses on a stand-alone basis do not equal the TDS consolidated Licenses related to UScellular. Activity related to TDS' Licenses is presented below.

	UScellular	**TDS Telecom**	**Total**
(Dollars in millions)			
Balance at December 31, 2020	$ 2,633	$ 5	$ 2,638
Acquisitions	1,464	—	1,464
Transferred to Assets held for sale	(18)	—	(18)
Capitalized interest	13	—	13
Balance at December 31, 2021	4,092	5	4,097
Acquisitions	595	—	595
Impairment[1]	(3)	—	(3)
Transferred to Assets held for sale	1	—	1
Exchanges - Licenses received	1	—	1
Capitalized interest	8	—	8
Balance at December 31, 2022	$ 4,694	$ 5	$ 4,699

[1] Impairment charge relates to licenses in markets where UScellular no longer expects to meet FCC buildout requirements.

Auction 107

In February 2021, the FCC announced by way of public notice that UScellular was the provisional winning bidder for 254 wireless spectrum licenses in the 3.7-3.98 GHz bands (Auction 107) for $1,283 million. UScellular paid $30 million of this amount in 2020 and the remainder in March 2021. The wireless spectrum licenses from Auction 107 were granted by the FCC in July 2021. Additionally, UScellular expects to be obligated to pay approximately $185 million in total from 2021 through 2024 related to relocation costs and accelerated relocation incentive payments. Such additional costs were accrued and capitalized at the time the licenses were granted, and are adjusted as necessary as the estimated obligation changes. UScellular paid $36 million and $8 million related to the additional costs in October 2021 and September 2022, respectively. At December 31, 2022, the remaining estimated payments of approximately $133 million and $8 million are included in Other current liabilities and Other deferred liabilities and credits, respectively, and at December 31, 2021, the remaining payments of approximately $17 million and $128 million are included in Other current liabilities and Other deferred liabilities and credits, respectively, in the Consolidated Balance Sheet. The spectrum must be cleared by incumbent providers before UScellular can access it. UScellular does not expect to have access to this spectrum until late 2023.

Auction 110

In January 2022, the FCC announced by way of public notice that UScellular was the provisional winning bidder for 380 wireless spectrum licenses in the 3.45-3.55 GHz band (Auction 110) for $580 million. UScellular paid $20 million of this amount in 2021 and the remainder in January and February 2022. The advance payment was included in Other assets and deferred charges in the December 31, 2021 Consolidated Balance Sheet. The wireless spectrum licenses from Auction 110 were granted by the FCC on May 4, 2022.

Goodwill

The Goodwill balance of TDS Telecom was $547 million at both December 31, 2022 and 2021, net of accumulated impairment losses of $29 million recorded in prior periods.

Other intangible assets

Activity related to TDS' Other intangible assets is presented below.

	December 31, 2022			December 31, 2021		
	Gross Amount	**Accumulated Amortization**	**Net Amount**	Gross Amount	Accumulated Amortization	Net Amount
(Dollars in millions)						
Franchise rights	**$ 255**	**$ (85)**	**$ 170**	$ 255	$ (68)	$ 187
Customer lists	**26**	**(25)**	**1**	27	(23)	4
Internet protocol addresses	**34**	**(2)**	**32**	5	—	5
Other	**1**	**—**	**1**	1	—	1
Total	**$ 316**	**$ (112)**	**$ 204**	$ 288	$ (91)	$ 197

Amortization expense for intangible assets was $21 million, $21 million and $26 million for the years ended December 31, 2022, 2021 and 2020, respectively. Based on the current balance of finite-lived intangible assets, the estimated amortization expense is $22 million, $19 million, $19 million, $19 million and $19 million for the years 2023 through 2027, respectively.

Note 8 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 the equity method, measurement alternative method or net asset value practical expedient 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,	**2022**	2021
(Dollars in millions)		
Equity method investments:		
Capital contributions, loans, advances and adjustments	**$ 115**	$ 115
Cumulative share of income	**2,615**	2,460
Cumulative share of distributions	**(2,262)**	(2,118)
Total equity method investments	**468**	457
Measurement alternative method investments	**18**	22
Investments recorded using the net asset value practical expedient	**9**	—
Total investments in unconsolidated entities	**$ 495**	$ 479

The following tables, which are based on unaudited 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,	2022	2021
(Dollars in millions)		
Assets		
Current	**$ 1,106**	$ 1,257
Noncurrent	**6,486**	6,189
Total assets	**$ 7,592**	$ 7,446
Liabilities and Equity		
Current liabilities	**$ 767**	$ 710
Noncurrent liabilities	**1,249**	1,260
Partners' capital and shareholders' equity	**5,576**	5,476
Total liabilities and equity	**$ 7,592**	$ 7,446

Year Ended December 31,	2022	2021	2020
(Dollars in millions)			
Results of Operations			
Revenues	**$ 7,303**	$ 7,127	$ 6,702
Operating expenses	**5,684**	5,152	4,753
Operating income	**1,619**	1,975	1,949
Other income (expense), net	**(19)**	14	13
Net income	**$ 1,600**	$ 1,989	$ 1,962

Note 9 Property, Plant and Equipment

TDS' Property, plant and equipment in service and under construction, and related accumulated depreciation and amortization, as of December 31, 2022 and 2021, were as follows:

December 31,	Useful Lives (Years)	2022	2021
(Dollars in millions)			
Land	N/A	**$ 63**	$ 62
Buildings	5-40	**532**	541
Leasehold and land improvements	1-30	**1,538**	1,476
Cable and wire	15-40	**2,609**	2,403
Network and switching equipment	3-10	**2,706**	2,671
Cell site equipment	7-25	**4,248**	4,150
Office furniture and equipment	3-10	**296**	346
Other operating assets and equipment	1-12	**200**	176
System development	1-7	**2,070**	1,864
Work in process	N/A	**709**	576
Total property, plant and equipment, gross		**14,971**	14,265
Accumulated depreciation and amortization		**(10,211)**	(9,904)
Total property, plant and equipment, net		**$ 4,760**	$ 4,361

Depreciation and amortization expense totaled $882 million, $851 million and $862 million in 2022, 2021 and 2020, respectively. In 2022, 2021 and 2020, (Gain) loss on asset disposals, net included charges of $27 million, $26 million and $27 million, respectively, related to disposals of assets from service in the normal course of business.

Note 10 Leases

Lessee Agreements

TDS' most significant leases are for land and tower spaces, network facilities, retail spaces, and offices. Nearly all of TDS' leases are classified as operating leases, although it does have a small number of finance leases.

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 right-of-use assets or lease liabilities.

The identified lease term determines the periods to which expense is allocated and is also utilized in the right-of-use asset and 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. TDS has applied the portfolio approach in cases where asset classes have similar lease characteristics including 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:

Year Ended December 31,	**2022**	2021	2020
(Dollars in millions)			
Operating lease cost	**$ 206**	$ 198	$ 184
Variable lease cost	**12**	10	11
Total	**$ 218**	$ 208	$ 195

The following table shows supplemental cash flow information related to lease activities:

Year Ended December 31,	**2022**	2021	2020
(Dollars in millions)			
Cash paid for amounts included in the measurement of lease liabilities:			
Operating cash flows from operating leases	**$ 204**	$ 204	$ 188
Right-of-use assets obtained in exchange for lease obligations:			
Operating leases	**$ 125**	$ 188	$ 157

The table below shows a weighted-average analysis for lease terms and discount rates for operating leases:

December 31,	**2022**	2021
Weighted Average Remaining Lease Term	**12 years**	12 years
Weighted Average Discount Rate	**3.9 %**	3.8 %

The maturities of lease liabilities are as follows:

	Operating Leases
(Dollars in millions)	
2023	$ 182
2024	178
2025	150
2026	116
2027	94
Thereafter	681
Total lease payments[1]	$ 1,401
Less: Imputed interest	347
Present value of lease liabilities	$ 1,054

[1] Lease payments exclude $42 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:

Year Ended December 31,	**2022**	2021	2020
(Dollars in millions)			
Operating lease income	**$ 120**	$ 109	$ 105

The maturities of expected lease payments to be received are as follows:

	Operating Leases
(Dollars in millions)	
2023	$ 98
2024	90
2025	72
2026	40
2027	21
Thereafter	39
Total future lease maturities	$ 360

Note 11 Asset Retirement Obligations

UScellular 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. 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 these terms, TDS Telecom is often required to remove these assets and return the property to its original condition at a future date.

Asset retirement obligations are included in Other deferred liabilities and credits in the Consolidated Balance Sheet.

In 2022 and 2021, UScellular and TDS Telecom performed a review of the assumptions and estimated future costs related to asset retirement obligations. The results of the reviews and other changes in asset retirement obligations during 2022 and 2021, were as follows:

	2022	2021
(Dollars in millions)		
Balance at beginning of year	**$ 469**	$ 377
Additional liabilities accrued	**19**	28
Revisions in estimated cash outflows	**11**	42
Disposition of assets	**(1)**	(1)
Accretion expense	**26**	23
Balance at end of year	**$ 524**	$ 469

Note 12 Debt

Revolving Credit Agreements

At December 31, 2022, TDS and UScellular had revolving credit agreements available for general corporate purposes. Amounts under the revolving credit agreements may be borrowed, repaid and reborrowed from time to time until maturity in July 2026.

The following table summarizes the revolving credit agreements as of December 31, 2022:

	TDS	UScellular
(Dollars in millions)		
Maximum borrowing capacity	$ 400	$ 300
Letters of credit outstanding	$ 1	$ —
Amount borrowed	$ —	$ —
Amount available for use	$ 399	$ 300

Borrowings under the TDS revolving credit agreement bear interest at a rate of London Inter-bank Offered Rate (LIBOR) plus 1.50%. Borrowings under the UScellular revolving credit agreement bear interest at a rate of Secured Overnight Financing Rate (SOFR) plus 1.60%. TDS and UScellular 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 UScellular and approved by the lenders). TDS' and UScellular'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.

During 2022, UScellular borrowed and repaid $75 million under its revolving credit agreement.

Term Loan Agreements

At December 31, 2022, TDS and UScellular had senior term loan credit agreements available for general corporate purposes.

The following tables summarizes the term loan credit agreements as of December 31, 2022:

TDS:	Term Loan 1	Term Loan 2	Total
(Dollars in millions)			
Maximum borrowing capacity	$ 200	$ 300	$ 500
Amount borrowed and outstanding	$ 198	$ 299	$ 497
Amount borrowed and repaid	$ 2	$ 1	$ 3
Amount available for use	$ —	$ —	$ —
Interest rate	LIBOR plus 2.00%	LIBOR plus 2.50%	
Maturity date	July 2028	July 2031	
Quarterly installments	$0.5 million from December 2021 to maturity date	$0.75 million from December 2022 to September 2026; $2 million from December 2026 to maturity date	

UScellular:	Term Loan 1	Term Loan 2	Term Loan 3	Total
(Dollars in millions)				
Maximum borrowing capacity	$ 300	$ 300	$ 200	$ 800
Amount borrowed and outstanding	$ 300	$ 296	$ 200	$ 796
Amount borrowed and repaid	$ —	$ 4	$ —	$ 4
Amount available for use	$ —	$ —	$ —	$ —
Interest rate	SOFR plus 1.60%	SOFR plus 2.10%	SOFR plus 2.60%	
Maturity date	July 2026	July 2028	July 2031	
Quarterly installments	$2 million from March 2023 to December 2023; $4 million from March 2024 to December 2025; $8 million from March 2026 to maturity date	$0.75 million from December 2021 to maturity date	$0.5 million from December 2022 to September 2026; $1 million from December 2026 to maturity date	

In 2022, TDS borrowed $300 million and UScellular borrowed $500 million under the term loan agreements.

Export Credit Financing Agreements

In November 2022, TDS entered into a $150 million term loan credit facility with Export Development Canada to finance (or refinance) imported equipment, including equipment purchased prior to entering the term loan credit facility agreement. The agreement may be drawn in one or more advances by the five-month anniversary of the date of the agreement which is April 9, 2023; amounts not drawn by that time will cease to be available. Borrowings bear interest at a rate of SOFR plus 1.60% and are due and payable on the five-year anniversary of the first borrowing, which is in December 2027. During 2022, TDS borrowed $50 million under the agreement. As of December 31, 2022, the outstanding borrowings under the agreement were $50 million and the unused borrowing capacity was $100 million.

TDS borrowed $50 million under its export credit financing agreement in both January and February 2023.

In December 2021, UScellular entered into a $150 million term loan credit facility with Export Development Canada to finance (or refinance) imported equipment, including equipment purchased prior to entering the term loan credit facility agreement. Borrowings bear interest at a rate of SOFR plus 1.60% and are due and payable on the five-year anniversary of the first borrowing, which is in January 2027. During 2022, UScellular borrowed $150 million, which is the full amount available under the agreement.

Receivables Securitization Agreement

At December 31, 2022, UScellular, through its subsidiaries, had a $450 million receivables securitization agreement for securitized borrowings using its equipment installment receivables for general corporate purposes. Amounts under the receivables securitization agreement may be borrowed, repaid and reborrowed from time to time until maturity in March 2024. Unless the agreement is amended to extend the maturity date, repayments based on receivable collections commence in April 2024. The outstanding borrowings bear interest at floating rates. During 2022, UScellular repaid $250 million and borrowed $75 million under the agreement. As of December 31, 2022, the outstanding borrowings under the agreement were $275 million and the unused borrowing capacity under the agreement was $175 million, subject to sufficient collateral to satisfy the asset borrowing base provisions of the agreement. As of December 31, 2022, the USCC Master Note Trust held $447 million of assets pledged as collateral for the receivables securitization agreement.

In connection with entering into the receivables securitization agreement in 2017, UScellular formed a wholly-owned subsidiary, USCC Master Note Trust (Trust), which qualifies as a bankruptcy remote entity. Under the terms of the agreement, UScellular, 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 UScellular 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 15 — Variable Interest Entities for additional information.

In February 2023, UScellular borrowed $25 million under the receivables securitization agreement.

Repurchase Agreement

In January 2022, UScellular, through a subsidiary (the repo subsidiary), entered into a repurchase agreement to borrow up to $200 million, subject to the availability of eligible equipment installment plan receivables and the agreement of the lender. The transaction form involves the sale of receivables by the repo subsidiary and the commitment to repurchase at the end of the applicable repurchase term, which may extend up to one month. The transaction is accounted for as a one-month secured borrowing. The outstanding borrowings bear interest at a rate of SOFR plus 1.25%. Although the lender holds a security interest in the receivables, the repo subsidiary retains effective control and collection risk of the receivables, and therefore, any activity associated with the repurchase agreement will be treated as a secured borrowing. UScellular will continue to report equipment installment plan receivables and any related balances on the Consolidated Balance Sheet. During 2022, the repo subsidiary borrowed $110 million and repaid $50 million under the repurchase agreement. As of December 31, 2022, the outstanding borrowings under the agreement were $60 million and the unused borrowing capacity was $140 million. The outstanding borrowings are included in Other current liabilities in the December 31, 2022 Consolidated Balance Sheet. As of December 31, 2022 UScellular held $524 million of assets available for inclusion in the repurchase facility; these assets are distinct from the assets held by the USCC Master Note Trust for UScellular's receivables securitization agreement.

In January 2023, UScellular amended the repurchase agreement to extend the expiration date to January 2024. The outstanding borrowings will bear interest at a rate of the lender's cost of funds (which has historically tracked closely to SOFR) plus 1.35%. There were no significant changes to other terms of the repurchase agreement.

Financial Covenants and Other

The TDS and UScellular revolving credit agreements, term loan agreements, export credit financing agreements and the UScellular receivables securitization agreement require TDS or UScellular, as applicable, to comply with certain affirmative and negative covenants, which include certain financial covenants. In particular, under these agreements, TDS and UScellular 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 UScellular also are required to maintain the Consolidated Leverage Ratio at a level not to exceed 3.75 to 1.00 as of the end of any fiscal quarter. TDS and UScellular believe they were in compliance as of December 31, 2022 with all such financial covenants.

In connection with UScellular's revolving credit agreements, UScellular term loan agreements and the UScellular export credit financing agreement TDS and UScellular entered into subordination agreements together with the administrative agents for the lenders under each agreement. Pursuant to these subordination agreements, (a) any consolidated funded indebtedness from UScellular to TDS will be unsecured and (b) any (i) consolidated funded indebtedness from UScellular to TDS (other than "refinancing indebtedness" as defined in the subordination agreements) 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 each agreement. As of December 31, 2022, UScellular had no outstanding consolidated funded indebtedness or refinancing indebtedness that was subordinated to each agreement pursuant to the subordination agreements.

Certain TDS and UScellular wholly-owned subsidiaries have jointly and severally unconditionally guaranteed the payment and performance of the obligations of TDS and UScellular under the revolving credit agreements, term loan agreements and export credit agreements. Other subsidiaries that meet certain criteria will be required to provide a similar guaranty in the future. UScellular entered into a performance guaranty whereby UScellular guarantees the performance of certain wholly-owned subsidiaries under the receivables securitization agreement and repurchase agreement.

Other Long-Term Debt

Long-term debt as of December 31, 2022 and 2021, was as follows:

				December 31, 2022			December 31, 2021		
	Issuance date	**Maturity date**	**Call date (any time on or after)**	**Principal Amount**	**Less Unamortized discount and debt issuance costs**	**Total**	Principal Amount	Less Unamortized discount and debt issuance costs	Total
(Dollars in millions)									
UScellular Unsecured Senior Notes									
6.70%	Dec 2003 and June 2004	Dec 2033	Dec 2003 and June 2004	**$ 544**	**$ 11**	**$ 533**	$ 544	$ 12	$ 532
6.25%	Aug 2020	Sep 2069	Sep 2025	**500**	**17**	**483**	500	17	483
5.50%	Dec 2020	Mar 2070	Mar 2026	**500**	**17**	**483**	500	17	483
5.50%	May 2021	Jun 2070	Jun 2026	**500**	**16**	**484**	500	16	484
UScellular Term Loans				**796**	**6**	**790**	299	3	296
TDS Term Loans				**497**	**4**	**493**	200	2	198
EIP Securitization				**275**	**—**	**275**	450	—	450
TDS Export Credit Financing				**50**	**—**	**50**	—	—	—
UScellular Export Credit Financing				**150**	**1**	**149**	—	—	—
Finance lease obligations				**7**	**—**	**7**	7	—	7
Other long-term notes				**3**	**—**	**3**	1	—	1
Total long-term debt				**$ 3,822**	**$ 72**	**$ 3,750**	$ 3,001	$ 67	$ 2,934
Long-term debt, current						**$ 19**			$ 6
Long-term debt, noncurrent						**$ 3,731**			$ 2,928

In 2021, TDS redeemed $836 million of outstanding Senior Notes and UScellular redeemed $917 million of outstanding Senior Notes. At time of redemption, $57 million of interest expense was recorded related to unamortized debt issuance costs for the notes. The notes were redeemed at a price of 100% of the principal amount, including accrued and unpaid interest to the redemption date.

UScellular may redeem its 6.25% Senior Notes, 5.5% March 2070 Senior Notes and 5.5% June 2070 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. UScellular 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, 2022, is payable quarterly, with the exception of UScellular's 6.7% Senior Notes for which interest is payable semi-annually.

The annual requirements for principal payments on long-term debt are approximately $19 million, $26 million, $26 million, $275 million and $218 million for the years 2023 through 2027, respectively. These amounts do not include payments on the $275 million of outstanding borrowings under the receivables securitization agreement. If the maturity date of the facility is not extended, principal repayments begin in April 2024. Principal repayments are not scheduled but are instead based on actual receivable collections.

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.

UScellular'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 UScellular's credit rating.

Note 13 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 UScellular. Under this plan, pension costs are calculated separately for each participant and are funded annually. Total pension costs were $17 million, $16 million and $16 million in 2022, 2021 and 2020, respectively. 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 $28 million, $27 million and $27 million in 2022, 2021 and 2020, respectively.

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, 2022 and 2021. 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, UScellular or any related parties. The fair value of the plan assets of the post-retirement benefit fund was $66 million and $77 million as of December 31, 2022 and 2021, respectively. The total plan benefit obligations were $44 million and $54 million as of December 31, 2022 and 2021, respectively. Therefore, the total funded status was an asset of $22 million and $23 million as of December 31, 2022 and 2021, 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 2023.

Note 14 Commitments and Contingencies

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 had no significant accruals with respect to legal proceedings and unasserted claims as of December 31, 2022 and 2021. 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 UScellular and TDS under the federal False Claims Act relating to UScellular's participation in wireless spectrum license auctions 58, 66, 73 and 97 conducted by the FCC. UScellular 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 UScellular that it would not intervene in the above-referenced actions. Subsequently, the private party plaintiffs filed amended complaints in both actions in the U.S. District Court for the Western District of Oklahoma and are continuing the action on their own. In July 2020, these actions were transferred to the U.S. District Court for the District of Columbia. TDS and UScellular believe that UScellular'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 15 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. TDS reviews the criteria for a controlling financial interest 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, 2022.

UScellular 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, UScellular 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 UScellular, 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 UScellular has the power to direct the activities of these SPEs, and that these SPEs lack sufficient equity to finance their activities, UScellular 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 12 — 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, UScellular 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 also are 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,	**2022**	2021
(Dollars in millions)		
Assets		
Cash and cash equivalents	**$ 29**	$ 22
Accounts receivable	**700**	692
Inventory, net	**4**	2
Other current assets	**36**	44
Licenses	**638**	637
Property, plant and equipment, net	**115**	108
Operating lease right-of-use assets	**41**	42
Other assets and deferred charges	**478**	382
Total assets	**$ 2,041**	$ 1,929
Liabilities		
Current liabilities	**$ 92**	$ 28
Long-term operating lease liabilities	**36**	37
Other deferred liabilities and credits	**28**	23
Total liabilities[1]	**$ 156**	$ 88

[1] Total liabilities does not include amounts borrowed under the receivables securitization agreement. See Note 12 — Debt for additional information.

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 $4 million at both December 31, 2022 and 2021, 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 or advances to its VIEs totaling $282 million, $36 million and $111 million during 2022, 2021 and 2020, respectively; of which $249 million in 2022 and $83 million in 2020 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 or receivables securitization agreements 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 agreement of Advantage Spectrum also provides the general partner with a put option whereby the general partner may require the limited partner, a subsidiary of UScellular, to purchase its interest in the limited partnership. In June 2022, the limited partnership agreement was amended and the general partner's put option related to its interest in Advantage Spectrum will now be exercisable in the third quarter of 2023, and if not exercised at that time, will be exercisable in the third quarter of 2024. 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 option, 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.

Note 16 Noncontrolling Interests

The following schedule discloses the effects of Net income attributable to TDS shareholders and changes in TDS' ownership interest in UScellular on TDS' equity:

Year Ended December 31,	2022	2021	2020
(Dollars in millions)			
Net income attributable to TDS shareholders	**$ 62**	$ 156	$ 226
Transfers (to) from noncontrolling interests			
Change in TDS' Capital in excess of par value from UScellular's issuance of UScellular shares	**(19)**	(49)	(38)
Change in TDS' Capital in excess of par value from UScellular's repurchases of UScellular shares	**35**	17	14
Purchase of ownership in subsidiaries from noncontrolling interests	**—**	—	(9)
Net transfers (to) from noncontrolling interests	**16**	(32)	(33)
Net income attributable to TDS shareholders after transfers (to) from noncontrolling interests	**$ 78**	$ 124	$ 193

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, 2022, 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, 2022, was $6 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 17 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 7,411,000 Common Shares at December 31, 2022, for possible issuance upon conversion of Series A Common Shares.

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, 2022, the maximum dollar value of TDS Common Shares that may yet be purchased under TDS' program was $138 million.

In November 2009, UScellular announced by Form 8-K that the Board of Directors of UScellular 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 UScellular 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, 2022, the total cumulative amount of Common Shares authorized to be purchased is 1,927,000. 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.

Preferred Stock

In March 2021, TDS issued 16,800 shares of TDS' 6.625% Series UU Cumulative Redeemable Perpetual Preferred Stock (Preferred Shares) for $25,000 per Preferred Share, for total gross proceeds of $420 million. The Preferred Shares were issued to a depositary to facilitate the issuance of 16,800,000 depositary shares (Depositary Shares), each representing 1/1,000th of a Preferred Share. TDS received net cash proceeds of $406 million after payment of issuance costs of $14 million. The proceeds were for general corporate purposes, including but not limited to, the funding of capital expenditures associated with TDS Telecom's fiber program and retirement of existing debt.

In August 2021, TDS issued 27,600 shares of TDS' 6.000% Series VV Preferred Shares for $25,000 per Preferred Share, for total gross proceeds of $690 million. The Preferred Shares were issued to a depositary to facilitate the issuance of 27,600,000 Depositary Shares, each representing 1/1,000th of a Preferred Share. TDS received net cash proceeds of $668 million after payment of issuance costs of $22 million. The proceeds were for general corporate purposes, including but not limited to, the funding of capital expenditures associated with TDS Telecom's fiber program and retirement of existing debt.

Each holder of Depositary Shares is entitled to a proportional fractional interest in all rights and preferences of the Preferred Shares, including dividend, voting, redemption and liquidation rights. The Preferred Shares have no maturity or mandatory redemption date and are not redeemable at the option of the holders.

Dividends on the Preferred Shares, when declared, are payable quarterly at a rate equal to 6.625% per year for the Series UU Preferred Shares and 6.000% for the Series VV Preferred Shares. As of December 31, 2022, there were no dividends in arrears. The Preferred Shares rank senior to TDS' Common Shares and junior to all of TDS' existing and future indebtedness outstanding under TDS' credit facilities and unsecured senior notes. The Series VV Preferred Shares rank on parity with the Series UU Preferred Shares. Upon voluntary or involuntary liquidation, holders of Preferred Shares are entitled to a liquidating distribution of $25,000 per Preferred Share after satisfaction of liabilities and obligations to creditors. The Preferred Shares have voting rights only if certain limited conditions are met.

TDS may, at its option, redeem the Series UU Preferred Shares (a) in whole or in part, on or after March 31, 2026 at a redemption price of $25,000 per Preferred Share, or (b) in whole but not in part, any time prior to March 31, 2026, within 120 days after a credit rating downgrade as specified in the offering prospectus, at a redemption price of $25,500 per Preferred Share, or (c) in whole or in part, within 120 days of the occurrence of a change in control as specified in the offering prospectus, at a redemption price of $25,000 per Preferred Share, plus, in each case, all accumulated and unpaid dividends (whether or not declared) up to the redemption date.

TDS may, at its option, redeem the Series VV Preferred Shares (a) in whole or in part, on or after September 30, 2026 at a redemption price of $25,000 per Preferred Share, or (b) in whole but not in part, any time prior to September 30, 2026, within 120 days after a credit rating downgrade as specified in the offering prospectus, at a redemption price of $25,500 per Preferred Share, or (c) in whole or in part, within 120 days of the occurrence of a change in control as specified in the offering prospectus, at a redemption price of $25,000 per Preferred Share, plus, in each case, all accumulated and unpaid dividends (whether or not declared) up to the redemption date.

The Preferred Shares are convertible, at the option of the holder, to shares of TDS Common Shares upon a change of control as specified in the offering prospectus. The conversion right is the lesser of (a) Common Shares equal to $25,000 per Preferred Share plus any accumulated and unpaid dividends, divided by the TDS Common Stock price, or (b) 2,773.200 Common Shares for each Series UU Preferred Share and 2,584.000 Common Shares for each Series VV Preferred Share, which represents one-half the conversion rate at the time of closing. In both cases, certain other adjustments and provisions may impact the conversion.

Tax-Deferred Savings Plan

At December 31, 2022, TDS has reserved 988,000 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 UScellular Common Share fund or certain unaffiliated funds.

Note 18 Stock-Based Compensation

TDS Consolidated

The following table summarizes stock-based compensation expense recognized during 2022, 2021 and 2020:

Year Ended December 31,	2022	2021	2020
(Dollars in millions)			
Stock option awards	**$ 1**	$ 2	$ 3
Restricted stock unit awards	**28**	29	30
Performance share unit awards	**11**	16	17
Deferred compensation bonus and matching stock unit awards	**—**	—	1
Awards under Non-Employee Director compensation plan	**2**	2	2
Total stock-based compensation, before income taxes	**42**	49	53
Income tax benefit	**(11)**	(12)	(13)
Total stock-based compensation expense, net of income taxes	**$ 31**	$ 37	$ 40

At December 31, 2022, unrecognized compensation cost for all stock-based compensation awards was $54 million and is expected to be recognized over a weighted average period of 1.9 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,	2022	2021	2020
(Dollars in millions)			
Selling, general and administrative expense	**$ 36**	$ 44	$ 48
Cost of services expense	**6**	5	5
Total stock-based compensation expense	**$ 42**	$ 49	$ 53

TDS' tax benefits realized from the exercise of stock options and the vesting of other awards totaled $7 million in 2022.

TDS (Excluding UScellular)

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 UScellular are shown in the UScellular 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 20,700,000 Common Shares at December 31, 2022, for equity awards granted and to be granted under the TDS Long-Term Incentive Plans in effect. At December 31, 2022, 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 81,000 TDS Common Shares at December 31, 2022, 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 Plans – Restricted Stock Units

TDS 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 2020, 2021 and 2022 and will vest in 2023, 2024 and 2025, 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 2022 is presented in the table below:

Common Restricted Stock Units	Number	Weighted Average Grant Date Fair Value
Nonvested at December 31, 2021	1,592,000	$ 22.25
Granted	784,000	$ 15.34
Vested	(411,000)	$ 27.91
Forfeited	(141,000)	$ 20.23
Nonvested at December 31, 2022	1,824,000	$ 18.16

The total fair values as of the respective vesting dates of restricted stock units vested during 2022, 2021 and 2020 were $7 million, $11 million and $7 million, respectively. The weighted average grant date fair value per share of the restricted stock units granted in 2022, 2021 and 2020 was $15.34, $23.34 and $17.19, 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. 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 units granted in 2020, 2021 and 2022 will vest in 2023, 2024 and 2025, respectively.

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 2022, 2021 and 2020. 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 2022 is presented in the table below:

Common Performance Share Units	Number	Weighted Average Grant Date Fair Value
Nonvested at December 31, 2021	1,085,000	$ 23.46
Granted	522,000	$ 17.42
Vested	(227,000)	$ 30.72
Change in units based on approved performance factors	63,000	$ 30.72
Forfeited	(156,000)	$ 25.79
Accumulated dividend equivalents	62,000	$ 20.00
Nonvested at December 31, 2022	1,349,000	$ 19.81

The total fair value of performance share units that vested during 2022, 2021 and 2020 was $5 million, $3 million and $2 million, respectively. The weighted average grant date fair value per share of the performance share units granted in 2022, 2021 and 2020 was $17.42, $25.36 and $19.15, respectively.

Long-Term Incentive Plan – Stock Options

TDS' last stock option grant occurred in 2021.

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, 2022, expire between 2023 and 2031. 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 2021 and 2020 using the Black-Scholes valuation model and the assumptions shown in the table below:

	2021	2020
Expected life	6.3 years	6.2 years
Expected annual volatility rate	36.6 %	35.0 %
Dividend yield	2.8 %	3.6 %
Risk-free interest rate	1.1 %	0.5 %

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 2022 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, 2021	4,088,000	$ 25.50		
Exercised	(1,000)	$ 19.15		
Forfeited	(86,000)	$ 22.42		
Expired	(903,000)	$ 22.82		
Outstanding at December 31, 2022	3,098,000	$ 26.37	$ —	4.2
(2,539,000 exercisable)		$ 27.34	$ —	3.3

The weighted average grant date fair value per share of the TDS stock options granted in 2021 and 2020 was $6.86 and $4.24, respectively. TDS did not grant options in 2022. The aggregate intrinsic value of TDS stock options exercised in 2022 and 2021 was less than $1 million. There were no TDS stock options exercised in 2020. The aggregate intrinsic value at December 31, 2022, 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, 2022.

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.

Compensation of Non-Employee Directors

TDS issued 51,000, 50,000 and 43,000 Common Shares under its Non-Employee Director plan in 2022, 2021 and 2020, respectively.

Dividend Reinvestment Plans

TDS had reserved 2,234,000 Common Shares at December 31, 2022, for issuance under Automatic Dividend Reinvestment and Stock Purchase Plans and 198,000 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.

UScellular

The information in this section relates to stock-based compensation plans using the equity instruments of UScellular. Participants in these plans are employees of UScellular and Non-employee Directors of UScellular. Information related to plans using the equity instruments of TDS are shown in the previous section.

UScellular has established the following stock-based compensation plans: Long-Term Incentive Plans and a Non-Employee Director compensation plan.

Under the UScellular Long-Term Incentive Plans, UScellular 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, 2022, 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, UScellular may grant Common Shares to members of the Board of Directors who are not employees of UScellular or TDS.

At December 31, 2022, UScellular had reserved 18,037,000 Common Shares for equity awards granted and to be granted under the Long-Term Incentive Plans and 62,000 Common Shares for issuance under the Non-Employee Director compensation plan.

UScellular uses treasury stock to satisfy requirements for Common Shares issued pursuant to its various stock-based compensation plans.

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 2020, 2021 and 2022 and will vest in 2023, 2024 and 2025, respectively.

UScellular estimates the fair value of restricted stock units based on the closing market price of UScellular 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 UScellular nonvested restricted stock units and changes during 2022 is presented in the table below:

Common Restricted Stock Units	Number	Weighted Average Grant Date Fair Value
Nonvested at December 31, 2021	1,601,000	$ 35.57
Granted	881,000	$ 30.35
Vested	(321,000)	$ 45.70
Forfeited	(161,000)	$ 33.10
Nonvested at December 31, 2022	2,000,000	$ 31.84

The total fair value of restricted stock units that vested during 2022, 2021 and 2020 was $9 million, $22 million and $20 million, respectively. The weighted average grant date fair value per share of the restricted stock units granted in 2022, 2021 and 2020 was $30.35, $36.68 and $29.18, respectively.

Long-Term Incentive Plans – Performance Share Units

Beginning in 2017, UScellular granted performance share units to key employees. The performance share units generally vest after three years. Beginning with the 2021 grants, each recipient may be entitled to shares of UScellular common stock equal to 0% to 200% of a communicated target award depending on the achievement of a predetermined performance based operating target over the performance period, which is generally a three-year period beginning on January 1 in the year of grant to December 31 of the third year. The performance-based operating target for the 2021 and 2022 grants is Return on Capital.

Prior to the 2021 grants, each recipient was entitled to shares of UScellular 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 was generally 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 for grants made in 2020 included Consolidated Total Service Revenues, Consolidated Operating Cash Flow, Consolidated Capital Expenditures and Postpaid Handset Voluntary Defections; and for grants made prior to 2020 included Simple Free Cash Flow, Consolidated Total Operating Revenues and Postpaid Handset Voluntary Defections. Grants made prior to 2021 are subject to vesting during the time-based period and their performance share unit award agreements provide that in no event shall the awards be less than 50% of the target opportunity as of their grant dates. The performance share units currently outstanding were granted in 2020, 2021 and 2022 and will vest in 2023, 2024 and 2025, respectively.

Additionally, UScellular granted performance share units during 2020 to a newly appointed President and Chief Executive Officer. The recipient may be entitled to shares of UScellular common stock equal to 100% of the communicated target award depending on the achievement of predetermined performance-based operating targets over the performance period, which is any two calendar-year period commencing no earlier than January 1, 2021 and ending no later than December 31, 2026. Performance-based operating targets include Average Total Revenue Growth and Average Annual Return on Capital. If one, or both, of the performance targets are not satisfied, the award will be forfeited.

UScellular estimates the fair value of performance share units using UScellular’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 UScellular’s nonvested performance share units and changes during 2022 is presented in the table below:

Common Performance Share Units	Number	Weighted Average Grant Date Fair Value
Nonvested at December 31, 2021	1,049,000	$ 35.17
Granted	487,000	$ 31.35
Vested	(183,000)	$ 44.44
Forfeited	(105,000)	$ 32.99
Nonvested at December 31, 2022	1,248,000	$ 32.51

The total fair value of performance share units that vested during 2022, 2021 and 2020 was $6 million, $22 million and $11 million, respectively. The weighted average grant date fair value per share of the performance share units granted in 2022, 2021 and 2020 was $31.35, $37.67 and $29.71, respectively.

Long-Term Incentive Plans – Stock Options

UScellular's last stock option grant occurred in 2016.

Stock options outstanding, and the related weighted average exercise price, at December 31, 2022 and 2021 were 348,000 units at $42.41 and 378,000 units at $42.18, respectively. All stock options are exercisable and expire between 2023 and 2026.

The aggregate intrinsic value of UScellular stock options exercised in 2021 was less than $1 million. No stock options were exercised in 2022 or 2020.

Long-Term Incentive Plans – Deferred Compensation Stock Units

Certain UScellular 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 UScellular Common Share stock units. Beginning with the 2021 performance year, the amount of UScellular's matching contribution is a 33% match for the amount of their total annual bonus that is deferred into the program. Prior to the 2021 performance year, the amount of UScellular’s matching contribution was a 25% match for amounts deferred up to 50% of their total annual bonus and a 33% match for amounts that exceeded 50% of their total annual bonus. Matching contributions are also deemed to be invested in UScellular Common Share stock units and vest over three years.

Compensation of Non-Employee Directors

UScellular issued 22,000, 20,000 and 19,000 Common Shares in 2022, 2021 and 2020, respectively, under its Non-Employee Director compensation plan.

Note 19 Business Segment Information

UScellular and TDS Telecom are billed for services they receive from TDS, consisting primarily of information processing, accounting, finance, and general management services. Such billings are based on expenses specifically identified to UScellular 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 UScellular and TDS Telecom are reflected in the accompanying business segment information on a basis that is representative of what they would have been if UScellular and TDS Telecom operated on a stand-alone basis.

Financial data for TDS' reportable segments for 2022, 2021 and 2020, is as follows. See Note 1 — Summary of Significant Accounting Policies for additional information.

Year ended or as of December 31, 2022	UScellular	TDS Telecom	Corporate, Eliminations and Other	Total
(Dollars in millions)				
Operating revenues				
Service	$ 3,125	$ 1,019	$ 96	$ 4,240
Equipment and product sales	1,044	1	128	1,173
Total operating revenues	4,169	1,020	224	5,413
Cost of services (excluding Depreciation, amortization and accretion reported below)	755	418	72	1,245
Cost of equipment and products	1,216	1	103	1,320
Selling, general and administrative	1,408	313	47	1,768
Depreciation, amortization and accretion	700	215	14	929
Loss on impairment of licenses	3	—	—	3
(Gain) loss on asset disposals, net	19	7	1	27
(Gain) loss on sale of business and other exit costs, net	(1)	—	—	(1)
Operating income (loss)	69	66	(13)	122
Equity in earnings of unconsolidated entities	158	—	1	159
Interest and dividend income	8	2	7	17
Interest expense	(163)	7	(18)	(174)
Other, net	—	1	—	1
Income (loss) before income taxes	72	76	(23)	125
Income tax expense (benefit)	37	23	(7)	53
Net income (loss)	35	53	(16)	72
Add back:				
Depreciation, amortization and accretion	700	215	14	929
Loss on impairment of licenses	3	—	—	3
(Gain) loss on asset disposals, net	19	7	1	27
(Gain) loss on sale of business and other exit costs, net	(1)	—	—	(1)
Interest expense	163	(7)	18	174
Income tax expense (benefit)	37	23	(7)	53
Adjusted EBITDA[1]	$ 956	$ 291	$ 10	$ 1,257
Investments in unconsolidated entities	$ 452	$ 4	$ 39	$ 495
Total assets	$ 11,119	$ 3,056	$ 375	$ 14,550
Capital expenditures	$ 717	$ 556	$ 12	$ 1,285

Year Ended or as of December 31, 2021	UScellular	TDS Telecom	Corporate, Eliminations and Other	Total
(Dollars in millions)				
Operating revenues				
Service	$ 3,115	$ 1,005	$ 96	$ 4,216
Equipment and product sales	1,007	1	105	1,113
Total operating revenues	4,122	1,006	201	5,329
Cost of services (excluding Depreciation, amortization and accretion reported below)	790	404	73	1,267
Cost of equipment and products	1,118	1	86	1,205
Selling, general and administrative	1,345	291	41	1,677
Depreciation, amortization and accretion	678	198	19	895
(Gain) loss on asset disposals, net	23	2	1	26
(Gain) loss on sale of business and other exit costs, net	(2)	—	—	(2)
Operating income (loss)	170	110	(19)	261
Equity in earnings of unconsolidated entities	179	—	3	182
Interest and dividend income	6	1	4	11
Interest expense	(175)	5	(62)	(232)
Other, net	—	(1)	—	(1)
Income (loss) before income taxes	180	114	(73)	221
Income tax expense (benefit)	20	24	(11)	33
Net income (loss)	160	90	(62)	188
Add back:				
Depreciation, amortization and accretion	678	198	19	895
(Gain) loss on asset disposals, net	23	2	1	26
(Gain) loss on sale of business and other exit costs, net	(2)	—	—	(2)
Interest expense	175	(5)	62	232
Income tax expense (benefit)	20	24	(11)	33
Adjusted EBITDA[1]	$ 1,054	$ 310	$ 8	$ 1,372
Investments in unconsolidated entities	$ 439	$ 4	$ 36	$ 479
Total assets	$ 10,341	$ 2,645	$ 507	$ 13,493
Capital expenditures	$ 780	$ 411	$ 10	$ 1,201

Year Ended or as of December 31, 2020	UScellular	TDS Telecom	Corporate, Eliminations and Other	Total
(Dollars in millions)				
Operating revenues				
Service	$ 3,067	$ 975	$ 94	$ 4,136
Equipment and product sales	970	1	118	1,089
Total operating revenues	4,037	976	212	5,225
Cost of services (excluding Depreciation, amortization and accretion reported below)	782	392	70	1,244
Cost of equipment and products	1,011	1	98	1,110
Selling, general and administrative	1,368	270	43	1,681
Depreciation, amortization and accretion	683	203	23	909
(Gain) loss on asset disposals, net	25	1	1	27
(Gain) loss on license sales and exchanges, net	(5)	—	—	(5)
Operating income (loss)	173	110	(24)	259
Equity in earnings of unconsolidated entities	179	—	2	181
Interest and dividend income	8	5	2	15
Gain (loss) on investments	2	—	—	2
Interest expense	(112)	4	(60)	(168)
Other, net	—	(1)	—	(1)
Income (loss) before income taxes	250	117	(79)	288
Income tax expense (benefit)	17	18	(16)	19
Net income (loss)	233	100	(64)	269
Add back:				
Depreciation, amortization and accretion	683	203	23	909
(Gain) loss on asset disposals, net	25	1	1	27
(Gain) loss on license sales and exchanges, net	(5)	—	—	(5)
Gain (loss) on investments	(2)	—	—	(2)
Interest expense	112	(4)	60	168
Income tax expense (benefit)	17	18	(16)	19
Adjusted EBITDA[1]	$ 1,063	$ 317	$ 5	$ 1,385
Investments in unconsolidated entities	$ 435	$ 4	$ 38	$ 477
Total assets	$ 9,681	$ 2,359	$ 484	$ 12,525
Capital expenditures	$ 940	$ 368	$ 9	$ 1,317

Numbers may not foot due to rounding.

[1] 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 assessing the segments' 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.

Note 20 Supplemental Cash Flow Disclosures

Following are supplemental cash flow disclosures regarding interest paid and income taxes paid.

Year Ended December 31,	2022	2021	2020
(Dollars in millions)			
Interest paid	**$ 164**	$ 177	$ 160
Income taxes paid, net of (refunds received)	**(119)**	6	(23)

Following are supplemental cash flow disclosures regarding transactions related to stock-based compensation awards. In certain situations, TDS and UScellular 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 UScellular then pay the amount of the required tax withholdings to the taxing authorities in cash.

TDS:

Year Ended December 31,	**2022**	2021	2020
(Dollars in millions)			
Common Shares withheld	**225,000**	223,000	153,000
Aggregate value of Common Shares withheld	**$ 4**	$ 5	$ 3
Cash disbursements for payment of taxes	**$ (4)**	$ (5)	$ (3)

UScellular:

Year Ended December 31,	**2022**	2021	2020
(Dollars in millions)			
Common Shares withheld	**154,000**	438,000	376,000
Aggregate value of Common Shares withheld	**$ 5**	$ 16	$ 11
Cash disbursements for payment of taxes	**$ (5)**	$ (16)	$ (11)

Software License Agreements

Certain software licenses are recorded as acquisitions of property, plant and equipment and the incurrence of a liability to the extent that the license fees are not fully paid at acquisition, and are treated as non-cash activity in the Consolidated Statement of Cash Flows. Such acquisitions of software licenses that are not reflected as Cash paid for additions to property, plant and equipment were $130 million, $22 million and $19 million for the years ended 2022, 2021 and 2020, respectively. At December 31, 2022, liabilities of $65 million and $76 million related to software license agreements were recorded to Other current liabilities and Other deferred liabilities and credits, respectively, and at December 31, 2021, liabilities of $18 million and $13 million related to software license agreements were recorded to Other current liabilities and Other deferred liabilities and credits, respectively.

Note 21 Certain Relationships and Related Transactions

Sidley Austin LLP is 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 Chair of the Board and member of the Board of Directors of TDS and a director of UScellular, a subsidiary of TDS is Senior Counsel at Sidley Austin LLP; and John P. Kelsh, the General Counsel and/or an Assistant Secretary of TDS and UScellular and certain other subsidiaries of TDS is a partner at Sidley Austin LLP. Walter C.D. Carlson does not provide legal services to TDS or its subsidiaries. TDS, UScellular and their subsidiaries incurred legal costs from Sidley Austin LLP of $8 million, $10 million and $11 million in 2022, 2021 and 2020, 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.

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 (PCAOB ID 238), 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.

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 sheets of Telephone and Data Systems, Inc. and its subsidiaries ("the Company") as of December 31, 2022 and 2021, and the related consolidated statements of operations, of comprehensive income, of changes in equity, and of cash flows for each of the three years in the period ended December 31, 2022, 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, 2022, 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, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022 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, 2022, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

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 Management's Report on Internal Control Over Financial Reporting appearing under Item 9A. 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 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 matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that (i) relates 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 matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Revenue Recognition - Retail Service and Equipment and Product Sales Revenue for the UScellular segment

As described in Note 2 to the consolidated financial statements, the Company generates revenues from retail services through the sale of wireless services including voice, messaging, and data services, as well as revenues from equipment and product sales through the sale of wireless devices and accessories. The Company recognizes wireless service revenue as the wireless service is provided to the customer. Wireless services are generally billed and paid in advance on a monthly basis. The Company offers a comprehensive range of wireless devices such as handsets, tablets, mobile hotspots, home phones, and routers for use by its customers. The Company also sells wireless devices to agents and other third-party distributors for resale. The Company also offers customers the option to purchase certain devices and accessories under installment contracts over a specified time period. The Company 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. The UScellular segment's retail service and equipment and product sales revenue was $2,793 million and $1,044 million, respectively, for the year ended December 31, 2022.

The principal consideration for our determination that performing procedures relating to revenue recognition - retail service and equipment and product sales revenue for the UScellular segment is a critical audit matter is a high degree of auditor effort in performing procedures related to the Company's revenue recognition.

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 the retail service and equipment and product sales revenue recognition processes. These procedures also included, among others, (i) testing whether the criteria for recognition of retail service and equipment and product sales revenue had been met by obtaining and inspecting invoices, shipping documents, where applicable, and cash receipts from customers for a sample of revenue transactions, (ii) testing discounts and rebates for a sample of transactions, (iii) evaluating the allocation of the transaction price to the performance obligations, where applicable, (iv) recalculating the appropriateness of the retail service and equipment and product sales revenue recognized based on the terms of each arrangement for a sample of transactions, and (v) confirming a sample of outstanding customer invoice balances as of December 31, 2022, and obtaining and inspecting source documents such as invoices, sales contracts, shipping documents, and subsequent cash receipts, for confirmations not returned.

/s/ PricewaterhouseCoopers LLP
Chicago, Illinois
February 16, 2023

We have served as the Company's auditor since 2002.