

Section 1: 10-Q (10-Q)

[Table of Contents](#)

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-Q

(MARK ONE)

QUARTERLY REPORT PURSUANT TO SECTION 13, 15(d), OR 37 OF THE
SECURITIES EXCHANGE ACT OF 1934

For the quarterly period ended December 31, 2019

OR

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF
THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____

Commission file number 000-52313



TENNESSEE VALLEY AUTHORITY
(Exact name of registrant as specified in its charter)

A corporate agency of the United States created by an act of Congress
(State or other jurisdiction of incorporation or organization)

62-0474417
(I.R.S. Employer Identification No.)

400 W. Summit Hill Drive
Knoxville, Tennessee
(Address of principal executive offices)

37902
(Zip Code)

(865) 632-2101
(Registrant's telephone number, including area code)

None
(Former name, former address and former fiscal year, if changed since last report)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
N/A	N/A	N/A

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13, 15(d), or 37 of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

Yes No

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

Large accelerated filer

Accelerated filer

Non-accelerated filer Smaller reporting company

Emerging growth company

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Yes No

Table of Contents

	<u>Page</u>
GLOSSARY OF COMMON ACRONYMS.....	3
FORWARD-LOOKING INFORMATION.....	5
GENERAL INFORMATION.....	6
PART I - FINANCIAL INFORMATION	
ITEM 1. FINANCIAL STATEMENTS.....	7
Consolidated Statements of Operations (Unaudited).....	7
Consolidated Statements of Comprehensive Income (Loss) (Unaudited).....	7
Consolidated Balance Sheets (Unaudited).....	8
Consolidated Statements of Cash Flows (Unaudited).....	10
Consolidated Statements of Changes in Proprietary Capital (Unaudited).....	11
Notes to Consolidated Financial Statements (Unaudited).....	12
ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS...	46
Executive Overview.....	46
Results of Operations.....	47
Liquidity and Capital Resources.....	52
Key Initiatives and Challenges.....	54
Environmental Matters.....	61
Legal Proceedings.....	66
Off-Balance Sheet Arrangements.....	67
Critical Accounting Policies and Estimates.....	67
New Accounting Standards and Interpretations.....	67
Legislative and Regulatory Matters.....	67
ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK.....	67
ITEM 4. CONTROLS AND PROCEDURES.....	67
Disclosure Controls and Procedures.....	67
Changes in Internal Control over Financial Reporting.....	68
PART II - OTHER INFORMATION	
ITEM 1. LEGAL PROCEEDINGS.....	68
ITEM 1A. RISK FACTORS.....	68
ITEM 6. EXHIBITS.....	69
SIGNATURES.....	70

GLOSSARY OF COMMON ACRONYMS

Following are definitions of some of the terms or acronyms that may be used in this Quarterly Report on Form 10-Q for the quarter ended December 31, 2019 (the "Quarterly Report"):

Term or Acronym	Definition
AOCI	Accumulated other comprehensive income (loss)
ARO	Asset retirement obligation
ART	Asset Retirement Trust
ASLB	Atomic Safety and Licensing Board
Bonds	Bonds, notes, or other evidences of indebtedness
CAA	Clean Air Act
CCR	Coal combustion residuals
CME	Chicago Mercantile Exchange
CO ₂	Carbon dioxide
COLA	Cost-of-living adjustment
CSAPR	Cross-State Air Pollution Rule
CTs	Combustion turbine unit(s)
CVA	Credit valuation adjustment
CY	Calendar year
DCP	Deferred Compensation Plan
DER	Distributed energy resources
DOE	Department of Energy
EA	Environmental Assessments
EIS	Environmental Impact Statement
ELGs	Effluent Limitation Guidelines
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute
EPU	Extended Power Uprate
ESPA	Early Site Permit Application
FASB	Financial Accounting Standards Board
FCM	Futures Commission Merchant
FERC	Federal Energy Regulatory Commission
FTP	Financial Trading Program
GAAP	Accounting principles generally accepted in the United States of America
GHG	Greenhouse gas
GWh	Gigawatt hour(s)
HAP	Hazardous Air Pollutants
IRP	Integrated Resource Plan
JSCCG	John Sevier Combined Cycle Generation LLC
KOC	Knoxville Office Complex
kW	Kilowatts
kWh	Kilowatt hours
LPC	Local power company customers
MATS	Mercury and Air Toxics Standards
MD&A	Management's Discussion and Analysis of Financial Condition and Results of Operations
mmBtu	Million British thermal unit(s)
MtM	Mark-to-market
MW	Megawatts
NAAQS	National Ambient Air Quality Standards
NAV	Net asset value

Table of Contents

NDT	Nuclear Decommissioning Trust
NEIL	Nuclear Electric Insurance Limited
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NO _x	Nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NRC	Nuclear Regulatory Commission
NSR	New Source Review
OCI	Other comprehensive income (loss)
OCIP	Owner Controlled Insurance Program
PARRS	Putable Automatic Rate Reset Securities
PM	Particulate matter
QER	Quadrennial Energy Review
QTE	Qualified technological equipment and software
RECs	Renewable Energy Certificates
REIT	Real Estate Investment Trust
SCCG	Southaven Combined Cycle Generation LLC
SCRs	Selective catalytic reduction systems
SEC	Securities and Exchange Commission
SERP	Supplemental Executive Retirement Plan
SHLLC	Southaven Holdco LLC
SIPs	State implementation plans
SMR	Small modular reactor(s)
SO ₂	Sulfur dioxide
SPC	Summer Place Complex
TCWN	Tennessee Clean Water Network
TDEC	Tennessee Department of Environment and Conservation
TVA Act	The Tennessee Valley Authority Act of 1933, as amended, 16 U.S.C. §§ 831-831ee
TVARS	Tennessee Valley Authority Retirement System
U.S. Treasury	United States Department of the Treasury
VIE	Variable interest entity
XBRL	eXtensible Business Reporting Language

FORWARD-LOOKING INFORMATION

This Quarterly Report contains forward-looking statements relating to future events and future performance. All statements other than those that are purely historical may be forward-looking statements. In certain cases, forward-looking statements can be identified by the use of words such as "may," "will," "should," "expect," "anticipate," "believe," "intend," "project," "plan," "predict," "assume," "forecast," "estimate," "objective," "possible," "probably," "likely," "potential," "speculate," the negative of such words, or other similar expressions.

Although the Tennessee Valley Authority ("TVA") believes that the assumptions underlying any forward-looking statements are reasonable, TVA does not guarantee the accuracy of these statements. Numerous factors could cause actual results to differ materially from those in any forward-looking statements. These factors include, among other things:

- New, amended, or existing laws, regulations, or administrative orders or interpretations, including those related to environmental matters, and the costs of complying with these laws, regulations, or administrative orders or interpretations;
- The cost of complying with known, anticipated, or new emissions reduction requirements, some of which could render continued operation of many of TVA's aging coal-fired generation units not cost-effective or result in their removal from service, perhaps permanently;
- Significant reductions in demand for electricity produced through non-renewable or centrally located generation sources that may result from, among other things, economic downturns, increased energy efficiency and conservation, increased utilization of distributed generation and microgrids, and improvements in alternative generation and energy storage technologies;
- Changes in customer preferences for energy produced from cleaner generation sources;
- Changes in technology;
- Actions taken, or inaction, by the U.S. government relating to the national or TVA debt ceiling or automatic spending cuts in government programs;
- Costs or liabilities that are not anticipated in TVA's financial statements for third-party claims, natural resource damages, environmental cleanup activities, or fines or penalties associated with unexpected events such as failures of a facility or infrastructure;
- Addition or loss of customers by TVA or the local power company customers ("LPCs");
- Significant delays, cost increases, or cost overruns associated with the construction and maintenance of generation, transmission, navigation, flood control, or related assets;
- Requirements or decisions changing the amount or timing of funding obligations associated with TVA's pension plans, other post-retirement benefit plans, or health care plans;
- Increases in TVA's financial liabilities for decommissioning its nuclear facilities or retiring other assets;
- Risks associated with the operation of nuclear facilities or other generation and related facilities, including coal combustion residuals ("CCR") facilities;
- Physical attacks on TVA's assets;
- Cyber attacks on TVA's assets or the assets of third parties upon which TVA relies;
- The outcome of legal or administrative proceedings;
- The failure of TVA's generation, transmission, navigation, flood control, and related assets and infrastructure, including CCR facilities, to operate as anticipated, resulting in lost revenues, damages, or other costs that are not reflected in TVA's financial statements or projections;
- Differences between estimates of revenues and expenses and actual revenues earned and expenses incurred;
- Weather conditions;
- Catastrophic events such as fires, earthquakes, explosions, solar events, electromagnetic pulses ("EMP"), geomagnetic disturbances ("GMDs"), droughts, floods, hurricanes, tornadoes, or other casualty events or pandemics, wars, national emergencies, terrorist activities, or other similar events, especially if these events occur in or near TVA's service area;
- Events at a TVA facility, which, among other things, could result in loss of life, damage to the environment, damage to or loss of the facility, and damage to the property of others;
- Events or changes involving transmission lines, dams, and other facilities not operated by TVA, including those that affect the reliability of the interstate transmission grid of which TVA's transmission system is a part and those that increase flows across TVA's transmission grid;
- Disruption of fuel supplies, which may result from, among other things, economic conditions, weather conditions, production or transportation difficulties, labor challenges, or environmental laws or regulations affecting TVA's fuel suppliers or transporters;
- Purchased power price volatility and disruption of purchased power supplies;
- Events which affect the supply of water for TVA's generation facilities;
- Changes in TVA's determinations of the appropriate mix of generation assets;
- Ineffectiveness of TVA's efforts at adapting its organization to an evolving marketplace and remaining cost competitive;
- Inability to use regulatory accounting or loss of regulatory accounting approval for certain costs;
- Inability to obtain, or loss of, regulatory approval for the construction or operation of assets;
- The requirement or decision to make additional contributions to TVA's Nuclear Decommissioning Trust ("NDT") or Asset Retirement Trust ("ART");

Table of Contents

- Limitations on TVA's ability to borrow money which may result from, among other things, TVA's approaching or substantially reaching the limit on bonds, notes, and other evidences of indebtedness specified in the Tennessee Valley Authority Act of 1933 (the "TVA Act");
- An increase in TVA's cost of capital that may result from, among other things, changes in the market for TVA's debt securities, changes in the credit rating of TVA or the U.S. government, or, potentially, an increased reliance by TVA on alternative financing should TVA approach its debt limit;
- Changes in the economy and volatility in financial markets;
- Reliability or creditworthiness of counterparties;
- Changes in the market price of commodities such as coal, uranium, natural gas, fuel oil, crude oil, construction materials, reagents, electricity, or emission allowances;
- Changes in the market price of equity securities, debt securities, or other investments;
- Changes in interest rates, currency exchange rates, or inflation rates;
- Ineffectiveness of TVA's disclosure controls and procedures or its internal control over financial reporting;
- Inability to eliminate identified deficiencies in TVA's systems, standards, controls, or corporate culture;
- Inability to attract or retain a skilled workforce;
- Inability to respond quickly enough to current or potential customer demands or needs;
- Events at a nuclear facility, whether or not operated by or licensed to TVA, which, among other things, could lead to increased regulation or restriction on the construction, ownership, operation, or decommissioning of nuclear facilities or on the storage of spent fuel, obligate TVA to pay retrospective insurance premiums, reduce the availability and affordability of insurance, increase the costs of operating TVA's existing nuclear units, or cause TVA to forego future construction at these or other facilities;
- Loss of quorum of the TVA Board of Directors (the "TVA Board");
- Changes in the priorities of the TVA Board or TVA senior management; or
- Other unforeseeable events.

See also Item 1A, Risk Factors, and Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations in TVA's Annual Report on Form 10-K/A for the year ended September 30, 2019 (the "Annual Report"), and Part I, Item 2, Management's Discussion and Analysis of Financial Condition and Results of Operations in this Quarterly Report for a discussion of factors that could cause actual results to differ materially from those in any forward-looking statement. New factors emerge from time to time, and it is not possible for TVA to predict all such factors or to assess the extent to which any factor or combination of factors may impact TVA's business or cause results to differ materially from those contained in any forward-looking statement. TVA undertakes no obligation to update any forward-looking statement to reflect developments that occur after the statement is made.

GENERAL INFORMATION

Fiscal Year

References to years (2020, 2019, etc.) in this Quarterly Report are to TVA's fiscal years ending September 30. Years that are preceded by "CY" are references to calendar years.

Notes

References to "Notes" are to the Notes to Consolidated Financial Statements contained in Part I, Item 1, Financial Statements in this Quarterly Report.

Available Information

TVA's Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and all amendments to those reports, are available on TVA's website, free of charge, as soon as reasonably practicable after such reports are electronically filed with or furnished to the Securities and Exchange Commission ("SEC"). TVA's website is www.tva.gov. Information contained on TVA's website shall not be deemed to be incorporated into, or to be a part of, this Quarterly Report. All TVA SEC reports are available to the public without charge from the website maintained by the SEC at www.sec.gov.

PART I - FINANCIAL INFORMATION

ITEM 1. FINANCIAL STATEMENTS

TENNESSEE VALLEY AUTHORITY
CONSOLIDATED STATEMENTS OF OPERATIONS (Unaudited)
Three Months Ended December 31
(in millions)

	2019	2018
Operating revenues		
Revenue from sales of electricity	\$ 2,532	\$ 2,681
Other revenue	46	44
Total operating revenues	2,578	2,725
Operating expenses		
Fuel	423	441
Purchased power	219	297
Operating and maintenance	689	745
Depreciation and amortization	584	345
Tax equivalents	131	132
Total operating expenses	2,046	1,960
Operating income	532	765
Other income (expense), net	12	24
Other net periodic benefit cost	65	64
Interest expense	287	302
Net income (loss)	<u>\$ 192</u>	<u>\$ 423</u>

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

TENNESSEE VALLEY AUTHORITY
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS) (Unaudited)
Three Months Ended December 31
(in millions)

	2019	2018
Net income (loss)	\$ 192	\$ 423
Other comprehensive income (loss)		
Net unrealized gain (loss) on cash flow hedges	76	(52)
Reclassification to earnings from cash flow hedges	(59)	18
Total other comprehensive income (loss)	17	(34)
Total comprehensive income (loss)	<u>\$ 209</u>	<u>\$ 389</u>

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

TENNESSEE VALLEY AUTHORITY
CONSOLIDATED BALANCE SHEETS (Unaudited)
(in millions)

ASSETS

	<u>December 31, 2019</u>	<u>September 30, 2019</u>
Current assets		
Cash and cash equivalents	\$ 304	\$ 299
Accounts receivable, net	1,427	1,739
Inventories, net	1,052	999
Regulatory assets	159	156
Other current assets	109	85
Total current assets	<u>3,051</u>	<u>3,278</u>
Property, plant, and equipment		
Completed plant	63,247	62,944
Less accumulated depreciation	<u>(31,895)</u>	<u>(31,384)</u>
Net completed plant	31,352	31,560
Construction in progress	1,972	1,893
Nuclear fuel	1,582	1,534
Finance leases	<u>143</u>	<u>146</u>
Total property, plant, and equipment, net	<u>35,049</u>	<u>35,133</u>
Investment funds	3,163	2,968
Regulatory and other long-term assets		
Regulatory assets	8,410	8,763
Operating lease assets, net of amortization	192	—
Other long-term assets	<u>334</u>	<u>325</u>
Total regulatory and other long-term assets	<u>8,936</u>	<u>9,088</u>
Total assets	<u>\$ 50,199</u>	<u>\$ 50,467</u>

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

TENNESSEE VALLEY AUTHORITY
CONSOLIDATED BALANCE SHEETS (Unaudited)
(in millions)

LIABILITIES AND PROPRIETARY CAPITAL

	December 31, 2019	September 30, 2019
Current liabilities		
Accounts payable and accrued liabilities	\$ 1,668	\$ 1,812
Accrued interest	303	296
Current portion of leaseback obligations	40	40
Regulatory liabilities	137	150
Short-term debt, net	895	922
Current maturities of power bonds	1,029	1,030
Current maturities of long-term debt of variable interest entities	39	39
Current maturities of notes payable	22	23
Total current liabilities	4,133	4,312
Other liabilities		
Post-retirement and post-employment benefit obligations	6,062	6,181
Asset retirement obligations	5,588	5,453
Operating lease liabilities	130	—
Other long-term liabilities	2,201	2,490
Leaseback obligations	223	223
Total other liabilities	14,204	14,347
Long-term debt, net		
Long-term power bonds, net	18,941	19,094
Long-term debt of variable interest entities, net	1,089	1,089
Total long-term debt, net	20,030	20,183
Total liabilities	38,367	38,842
Contingencies and legal proceedings (Note 19)		
Proprietary capital		
Power program appropriation investment	258	258
Power program retained earnings	11,015	10,823
Total power program proprietary capital	11,273	11,081
Nonpower programs appropriation investment, net	554	556
Accumulated other comprehensive income (loss)	5	(12)
Total proprietary capital	11,832	11,625
Total liabilities and proprietary capital	\$ 50,199	\$ 50,467

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

TENNESSEE VALLEY AUTHORITY
CONSOLIDATED STATEMENTS OF CASH FLOWS (Unaudited)
For the Three Months Ended December 31
(in millions)

	<u>2019</u>	<u>2018</u>
Cash flows from operating activities		
Net income (loss)	\$ 192	\$ 423
Adjustments to reconcile net income (loss) to net cash provided by operating activities		
Depreciation and amortization ⁽¹⁾	590	350
Amortization of nuclear fuel cost	93	81
Non-cash retirement benefit expense	81	79
Other regulatory amortization and deferrals	(3)	22
Changes in current assets and liabilities		
Accounts receivable, net	316	117
Inventories and other current assets, net	(88)	(67)
Accounts payable and accrued liabilities	(213)	(343)
Accrued interest	6	—
Pension contributions	(75)	(75)
Other, net	(61)	(85)
Net cash provided by operating activities	<u>838</u>	<u>502</u>
Cash flows from investing activities		
Construction expenditures	(465)	(500)
Nuclear fuel expenditures	(117)	(97)
Loans and other receivables		
Advances	(2)	—
Repayments	1	2
Other, net	(7)	(6)
Net cash used in investing activities	<u>(590)</u>	<u>(601)</u>
Cash flows from financing activities		
Long-term debt		
Redemptions and repurchases of power bonds	(218)	(1,002)
Redemptions of notes payable	—	(1)
Short-term debt issues (redemptions), net	(27)	1,105
Payments on leases and leasebacks	(1)	(1)
Other, net	3	—
Net cash provided by (used in) financing activities	<u>(243)</u>	<u>101</u>
Net change in cash, cash equivalents, and restricted cash	5	2
Cash, cash equivalents, and restricted cash at beginning of period	322	322
Cash, cash equivalents, and restricted cash at end of period	<u>\$ 327</u>	<u>\$ 324</u>
Supplemental disclosures		
Significant non-cash transactions		
Accrued capital and nuclear fuel expenditures	\$ 254	\$ 372

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

Note

(1) Includes amortization of debt issuance costs and premiums/discounts.

TENNESSEE VALLEY AUTHORITY
CONSOLIDATED STATEMENTS OF CHANGES IN PROPRIETARY CAPITAL (Unaudited)
For the Three Months Ended December 31, 2019 and 2018
(in millions)

	Power Program Appropriation Investment	Power Program Retained Earnings	Nonpower Programs Appropriation Investment, Net	Accumulated Other Comprehensive Income (Loss)	Total
Balance at September 30, 2018	\$ 258	\$ 9,404	\$ 564	\$ 57	\$ 10,283
Net income (loss)	—	425	(2)	—	423
Total other comprehensive income (loss)	—	—	—	(34)	(34)
Return on power program appropriation investment	—	(2)	—	—	(2)
Balance at December 31, 2018	<u>\$ 258</u>	<u>\$ 9,827</u>	<u>\$ 562</u>	<u>\$ 23</u>	<u>\$ 10,670</u>
Balance at September 30, 2019	\$ 258	\$ 10,823	\$ 556	\$ (12)	\$ 11,625
Net income (loss)	—	194	(2)	—	192
Total other comprehensive income (loss)	—	—	—	17	17
Return on power program appropriation investment	—	(2)	—	—	(2)
Balance at December 31, 2019	<u>\$ 258</u>	<u>\$ 11,015</u>	<u>\$ 554</u>	<u>\$ 5</u>	<u>\$ 11,832</u>

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

[Table of Contents](#)

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Unaudited)

(Dollars in millions except where noted)

<u>Note</u>		<u>Page</u>
1	Summary of Significant Accounting Policies	12
2	Impact of New Accounting Standards and Interpretations	16
3	Accounts Receivable, Net	18
4	Inventories, Net	18
5	Plant Closures	18
6	Leases	18
7	Other Long-Term Assets	22
8	Regulatory Assets and Liabilities	23
9	Variable Interest Entities	23
10	Other Long-Term Liabilities	25
11	Asset Retirement Obligations	26
12	Debt and Other Obligations	27
13	Accumulated Other Comprehensive Income (Loss)	28
14	Risk Management Activities and Derivative Transactions	28
15	Fair Value Measurements	33
16	Revenue	38
17	Other Income (Expense), Net	41
18	Benefit Plans	42
19	Contingencies and Legal Proceedings	42

1. Summary of Significant Accounting Policies

General

The Tennessee Valley Authority ("TVA") is a corporate agency and instrumentality of the United States ("U.S.") that was created in 1933 by federal legislation in response to a proposal by President Franklin D. Roosevelt. TVA was created to, among other things, improve navigation on the Tennessee River, reduce the damage from destructive flood waters within the Tennessee River system and downstream on the lower Ohio and Mississippi Rivers, further the economic development of TVA's service area in the southeastern U.S., and sell the electricity generated at the facilities TVA operates.

Today, TVA operates the nation's largest public power system and supplies power in most of Tennessee, northern Alabama, northeastern Mississippi, and southwestern Kentucky and in portions of northern Georgia, western North Carolina, and southwestern Virginia to a population of nearly 10 million people.

TVA also manages the Tennessee River, its tributaries, and certain shorelines to provide, among other things, year-round navigation, flood damage reduction, and affordable and reliable electricity. Consistent with these primary purposes, TVA also manages the river system and public lands to provide recreational opportunities, adequate water supply, improved water quality, cultural and natural resource protection, and economic development.

The power program has historically been separate and distinct from the stewardship programs. It is required to be self-supporting from power revenues and proceeds from power financings, such as proceeds from the issuance of bonds, notes, or other evidences of indebtedness (collectively, "Bonds"). Although TVA does not currently receive congressional appropriations, it is required to make annual payments to the U.S. Department of the Treasury ("U.S. Treasury") as a return on the government's appropriation investment in TVA's power facilities (the "Power Program Appropriation Investment"). In the 1998 Energy and Water Development Appropriations Act, Congress directed TVA to fund essential stewardship activities related to its management of the Tennessee River system and nonpower or stewardship properties with power revenues in the event that there were insufficient appropriations or other available funds to pay for such activities in any fiscal year. Congress has not provided any appropriations to TVA to fund such activities since 1999. Consequently, during 2000, TVA began paying for essential stewardship activities primarily with power revenues, with the remainder funded with user fees and other forms of revenues derived in connection with those activities. The activities related to stewardship properties do not meet the criteria of an operating segment under accounting principles generally accepted in the United States of America ("GAAP"). Accordingly, these assets and properties are included as part of the power program, TVA's only operating segment.

Table of Contents

Power rates are established by the TVA Board of Directors (the "TVA Board") as authorized by the Tennessee Valley Authority Act of 1933, as amended (the "TVA Act"). The TVA Act requires TVA to charge rates for power that will produce gross revenues sufficient to provide funds for operation, maintenance, and administration of its power system; payments to states and counties in lieu of taxes ("tax equivalents"); debt service on outstanding indebtedness; payments to the U.S. Treasury in repayment of and as a return on the Power Program Appropriation Investment; and such additional margin as the TVA Board may consider desirable for investment in system assets, retirement of outstanding Bonds in advance of maturity, additional reduction of the Power Program Appropriation Investment, and other purposes connected with TVA's business. TVA fulfilled its requirement to repay \$1.0 billion of the Power Program Appropriation Investment with the 2014 payment; therefore, this item is no longer a component of rate setting. In setting TVA's rates, the TVA Board is charged by the TVA Act to have due regard for the primary objectives of the TVA Act, including the objective that power shall be sold at rates as low as are feasible. Rates set by the TVA Board are not subject to review or approval by any state or federal regulatory body.

Fiscal Year

TVA's fiscal year ends September 30. Years (2020, 2019, etc.) refer to TVA's fiscal years unless they are preceded by "CY," in which case the references are to calendar years.

Cost-Based Regulation

Since the TVA Board is authorized by the TVA Act to set rates for power sold to its customers, TVA is self-regulated. Additionally, TVA's regulated rates are designed to recover its costs. Based on current projections, TVA believes that rates, set at levels that will recover TVA's costs, can be charged and collected. As a result of these factors, TVA records certain assets and liabilities that result from the regulated ratemaking process that would not be recorded under GAAP for non-regulated entities. Regulatory assets generally represent incurred costs that have been deferred because such costs are probable of future recovery in customer rates. Regulatory liabilities generally represent obligations to make refunds to customers for previous collections for costs that are not likely to be incurred or deferral of gains that will be credited to customers in future periods. TVA assesses whether the regulatory assets are probable of future recovery by considering factors such as applicable regulatory changes, potential legislation, and changes in technology. Based on these assessments, TVA believes the existing regulatory assets are probable of recovery. This determination reflects the current regulatory and political environment and is subject to change in the future. If future recovery of regulatory assets ceases to be probable, or any of the other factors described above cease to be applicable, TVA would no longer be considered to be a regulated entity and would be required to write off these costs. All regulatory asset write-offs would be required to be recognized in earnings in the period in which future recovery ceases to be probable.

Basis of Presentation

TVA prepares its consolidated interim financial statements in conformity with GAAP for consolidated interim financial information. Accordingly, TVA's consolidated interim financial statements do not include all of the information and notes required by GAAP for annual financial statements. As such, they should be read in conjunction with the audited financial statements for the year ended September 30, 2019, and the notes thereto, which are contained in TVA's Annual Report on Form 10-K/A for the year ended September 30, 2019 (the "Annual Report"). In the opinion of management, all adjustments (consisting of items of a normal recurring nature) considered necessary for fair presentation are included on the consolidated interim financial statements.

The accompanying consolidated interim financial statements, which have been prepared in accordance with GAAP, include the accounts of TVA, wholly-owned direct subsidiaries, and variable interest entities ("VIE") of which TVA is the primary beneficiary. See Note 9 — *Variable Interest Entities*. Intercompany balances and transactions have been eliminated in consolidation.

Use of Estimates

The preparation of financial statements requires TVA to estimate the effects of various matters that are inherently uncertain as of the date of the consolidated financial statements. Although the consolidated financial statements are prepared in conformity with GAAP, TVA is required to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities, and the amounts of revenues and expenses reported during the reporting period. Each of these estimates varies in regard to the level of judgment involved and its potential impact on TVA's financial results. Estimates are considered critical either when a different estimate could have reasonably been used, or where changes in the estimate are reasonably likely to occur from period to period, and such use or change would materially impact TVA's financial condition, results of operations, or cash flows.

Reclassifications

Certain historical amounts have been reclassified in the accompanying consolidated financial statements to the current presentation. In the December 31, 2018, Consolidated Statements of Cash Flows, amounts previously reported as \$(10) million of Accounts payable and accrued liabilities were reclassified to Other, net in cash flows from operating activities. Additionally,

Table of Contents

amounts previously reported as \$(10) million of Prepayment credits applied to revenue were reclassified to Other, net in cash flows from operating activities.

Cash, Cash Equivalents, and Restricted Cash

Cash includes cash on hand, non-interest bearing cash, and deposit accounts. All highly liquid investments with original maturities of three months or less are considered cash equivalents. Cash and cash equivalents that are restricted, as to withdrawal or use under the terms of certain contractual agreements, are recorded in Other long-term assets on the Consolidated Balance Sheets. Restricted cash and cash equivalents includes cash held in trusts that are currently restricted for TVA economic development loans and for certain TVA environmental programs in accordance with agreements related to compliance with certain environmental regulations. See Note 19 — *Contingencies and Legal Proceedings — Legal Proceedings — Environmental Agreements*.

The following table provides a reconciliation of cash, cash equivalents, and restricted cash reported on the Consolidated Balance Sheets and Consolidated Statements of Cash Flows:

Cash, Cash Equivalents, and Restricted Cash

	At December 31, 2019	At September 30, 2019
Cash and cash equivalents	\$ 304	\$ 299
Restricted cash and cash equivalents included in Other long-term assets	23	23
Total cash, cash equivalents, and restricted cash	\$ 327	\$ 322

Allowance for Uncollectible Accounts

The allowance for uncollectible accounts reflects TVA's estimate of probable losses inherent in its accounts and loans receivable balances, excluding the EnergyRight® loans receivable. TVA determines the allowance based on known accounts, historical experience, and other currently available information including events such as customer bankruptcy and/or a customer failing to fulfill payment arrangements after 90 days. It also reflects TVA's corporate credit department's assessment of the financial condition of customers and the credit quality of the receivables.

The allowance for uncollectible accounts was less than \$1 million at both December 31, 2019, and September 30, 2019, for accounts receivable. Additionally, loans receivable of \$135 million and \$131 million at December 31, 2019, and September 30, 2019, respectively, are included in Accounts receivable, net and Other long-term assets, for the current and long-term portions, respectively, and are reported net of allowances for uncollectible accounts of less than \$1 million at both December 31, 2019, and September 30, 2019.

Revenues

TVA recognizes revenue from contracts with customers to depict the transfer of goods or services to customers in an amount to which the entity expects to be entitled in exchange for those goods or services. For the generation and transmission of electricity, this is generally at the time the power is delivered to a metered customer delivery point for the customer's consumption or distribution. As a result, revenues from power sales are recorded as electricity is delivered to customers. In addition to power sales invoiced and recorded during the month, TVA accrues estimated unbilled revenues for power sales provided to five customers whose billing date occurs prior to the end of the month. Exchange power sales are presented in the accompanying Consolidated Statements of Operations as a component of sales of electricity. Exchange power sales are sales of excess power after meeting TVA native load and directly served requirements. Native load refers to the customers on whose behalf a company, by statute, franchise, regulatory requirement, or contract, has undertaken an obligation to serve. TVA engages in other arrangements in addition to power sales. Certain other revenue from activities related to TVA's overall mission are recorded in Other revenue. Revenues that are not related to the overall mission are recorded in Other income (expense), net.

Leases

TVA recognizes a lease asset and lease liability for leases with terms of greater than 12 months. Lease assets represent TVA's right to use an underlying asset for the lease term, and lease liabilities represent TVA's obligation to make lease payments arising from the lease, both of which are recognized based on the present value of the future minimum lease payments over the lease term at the commencement date. TVA has certain lease agreements that include variable lease payments that are based on energy production levels. These variable lease payments are not included in the measurement of the lease assets or lease liabilities but are recognized in the period in which the expenses are incurred.

Table of Contents

While not specifically structured as leases, certain power purchase agreements are deemed to contain a lease of the underlying generating units when the terms convey the right to control the use of the assets. Amounts recorded for these leases are generally based on the amount of the scheduled capacity payments due over the remaining terms of the purchased power agreements, the terms of which are approximately four years. The total lease obligation included in Operating lease liabilities related to these agreements is \$130 million at December 31, 2019.

TVA has agreements with lease and non-lease components and has elected to account for the components separately. Consideration is allocated to lease and non-lease components generally based on relative standalone selling prices.

TVA has lease agreements which include options for renewal and early termination. The intent to renew a lease varies depending on the lease type and asset. Renewal options that are reasonably certain to be exercised are included in the lease measurements. The decision to terminate a lease early is dependent on various economic factors. No termination options have been included in TVA's lease measurements.

Leases with an initial term of 12 months or less, which do not include an option to extend the initial term of the lease to greater than 12 months that TVA is reasonably certain to exercise, are not recorded on the Consolidated Balance Sheets at December 31, 2019.

Operating leases are recognized on a straight line basis over the term of the lease agreement. Rent expense associated with short-term leases and variable leases is recorded in Operating and maintenance expense, Fuel expense, or Purchased power expense on the Consolidated Statements of Operations. Expenses associated with finance leases result in the separate presentation of interest expense on the lease liability and amortization expense of the related lease asset on the Consolidated Statements of Operations.

Depreciation

TVA accounts for depreciation of its properties using the composite depreciation convention of accounting. Under the composite method, assets with similar economic characteristics are grouped and depreciated as one asset. Depreciation is generally computed on a straight-line basis over the estimated service lives of the various classes of assets. The estimation of asset useful lives requires management judgment, supported by external depreciation studies of historical asset retirement experience. Depreciation rates are determined based on the external depreciation studies. These studies are updated at least every five years. Depreciation expense was \$539 million and \$308 million for the three months ended December 31, 2019 and 2018, respectively. See Note 5 — *Plant Closures* for a discussion of the impact of plant closures.

2. Impact of New Accounting Standards and Interpretations

The following are accounting standard updates issued by the Financial Accounting Standards Board ("FASB") that TVA adopted during 2020:

Lease Accounting											
Description	<p>This guidance changes the provisions of recognition in both the lessee and lessor accounting models. The standard requires entities that lease assets ("lessees") to recognize on the balance sheet the assets and liabilities for the rights and obligations created by leases with terms of more than 12 months, while also refining the definition of a lease. In addition, lessees are required to disclose key information about the amount, timing, and uncertainty of cash flows arising from leasing arrangements. The recognition, measurement, and presentation of expenses and cash flows arising from a lease by a lessee primarily depend on its classification as a finance lease (formerly referred to as capital lease) or operating lease. The standard requires both types of leases to be recognized on the balance sheet. Operating leases will result in straight-line expense, while finance leases will result in recognition of interest on the lease liability separate from amortization expense. The accounting rules for the owner of assets leased by the lessee ("lessor accounting") remain relatively unchanged.</p> <p>The standard allows for certain practical expedients to be elected related to lease term determination, separation of lease and non-lease elements, reassessment of existing leases, and short-term leases. The standard is to be applied using a modified retrospective transition.</p>										
Effective Date for TVA	October 1, 2019										
Effect on the Financial Statements or Other Significant Matters	<p>TVA has elected the modified retrospective method of adoption effective October 1, 2019. Under the modified retrospective method of adoption, prior year reported results are not restated.</p> <p>TVA recorded \$205 million and \$210 million of lease assets and lease liabilities, respectively, for operating leases in effect at the adoption date. The accounting for finance leases remained substantially unchanged. Adoption of the standard did not materially impact results of operations or cash flows.</p> <p>TVA has elected to apply the following practical expedients:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Practical Expedient</th> <th style="text-align: center;">Description</th> </tr> </thead> <tbody> <tr> <td>Package of transition practical expedients (for leases commenced prior to adoption date; expedients must be adopted as a package)</td> <td>Do not need to (1) reassess whether any expired or existing contracts are leases or contain leases, (2) reassess the lease classification for any expired or existing leases, or (3) reassess initial direct costs for any existing leases.</td> </tr> <tr> <td>Short-term lease expedient (elect by class of underlying asset)</td> <td>Elect as an accounting policy to not apply the recognition requirements to short-term leases by asset class.</td> </tr> <tr> <td>Existing and expired land easements not previously accounted for as leases</td> <td>Elect to not evaluate existing or expired easements under the new guidance and carry forward current accounting treatment.</td> </tr> <tr> <td>Comparative reporting requirements for initial adoption</td> <td>Elect to apply transition requirements at adoption date, recognize cumulative effect adjustment to retained earnings in period of adoption, and not apply the new requirements to comparative periods, including disclosures.</td> </tr> </tbody> </table>	Practical Expedient	Description	Package of transition practical expedients (for leases commenced prior to adoption date; expedients must be adopted as a package)	Do not need to (1) reassess whether any expired or existing contracts are leases or contain leases, (2) reassess the lease classification for any expired or existing leases, or (3) reassess initial direct costs for any existing leases.	Short-term lease expedient (elect by class of underlying asset)	Elect as an accounting policy to not apply the recognition requirements to short-term leases by asset class.	Existing and expired land easements not previously accounted for as leases	Elect to not evaluate existing or expired easements under the new guidance and carry forward current accounting treatment.	Comparative reporting requirements for initial adoption	Elect to apply transition requirements at adoption date, recognize cumulative effect adjustment to retained earnings in period of adoption, and not apply the new requirements to comparative periods, including disclosures.
Practical Expedient	Description										
Package of transition practical expedients (for leases commenced prior to adoption date; expedients must be adopted as a package)	Do not need to (1) reassess whether any expired or existing contracts are leases or contain leases, (2) reassess the lease classification for any expired or existing leases, or (3) reassess initial direct costs for any existing leases.										
Short-term lease expedient (elect by class of underlying asset)	Elect as an accounting policy to not apply the recognition requirements to short-term leases by asset class.										
Existing and expired land easements not previously accounted for as leases	Elect to not evaluate existing or expired easements under the new guidance and carry forward current accounting treatment.										
Comparative reporting requirements for initial adoption	Elect to apply transition requirements at adoption date, recognize cumulative effect adjustment to retained earnings in period of adoption, and not apply the new requirements to comparative periods, including disclosures.										

Derivatives and Hedging - Improvements to Accounting for Hedging Activities	
Description	This guidance better aligns an entity's risk management activities and financial reporting for hedging relationships through changes to both the designation and measurement guidance for qualifying hedging relationships and the presentation of hedge results. To meet that objective, the amendments expand and refine hedge accounting for both nonfinancial and financial risk components and align the recognition and presentation of the effects of the hedging instrument and the hedged item in the financial statements.
Effective Date for TVA	October 1, 2019
Effect on the Financial Statements or Other Significant Matters	TVA has adopted the standard on a prospective basis. The adoption of this standard did not have a material impact on TVA's financial condition, results of operations, or cash flows. TVA only uses hedge accounting under its foreign currency swap arrangements, and the adoption of this standard has no impact on those arrangements.
Customer's Accounting for Implementation Costs in a Cloud Arrangement That Is a Service Contract	
Description	This guidance relates to the accounting for a customer's implementation costs in a hosting arrangement that is a service contract. The amendments align the requirements for capitalizing those implementation costs with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software and hosting arrangements that include an internal-use software license. The amendments also provide requirements for the classification of the capitalized costs and related expense and cash flows in the financial statements, the application of impairment guidance to the capitalized costs, and the application of abandonment guidance to the capitalized costs. Entities are required to apply the amendments either retrospectively or prospectively to all implementation costs incurred after the adoption date.
Effective Date for TVA	October 1, 2019
Effect on the Financial Statements or Other Significant Matters	Adoption of this standard did not have a material impact on TVA's financial condition, results of operation, or cash flows. TVA records qualified implementation costs in a cloud arrangement that is a service contract as a prepaid asset and amortizes the prepaid asset to Operating and maintenance expense based on the term of the contract.

The following accounting standards have been issued but at December 31, 2019, were not effective and had not been adopted by TVA:

Financial Instruments - Credit Losses	
Description	This guidance eliminates the probable initial recognition threshold in current GAAP and, instead, requires an allowance to be recorded for all expected credit losses for certain financial assets that are not measured at fair value. The allowance for credit losses is based on historical information, current conditions, and reasonable and supportable forecasts. The new standard also makes revisions to the other than temporary impairment model for available-for-sale debt securities. Disclosures of credit quality indicators in relation to the amortized cost of financing receivables are further disaggregated by year of origination.
Effective Date for TVA	The new standard is effective for TVA's interim and annual reporting periods beginning October 1, 2020. While early adoption is permitted, TVA does not plan to adopt the standard early.
Effect on the Financial Statements or Other Significant Matters	TVA is working to develop a model to calculate the allowance for credit losses based on management's estimate of the losses expected to be incurred over the life of the asset. TVA is evaluating the potential impact of the changes on its consolidated financial statements and related disclosures.
Fair Value Measurement Disclosure	
Description	The guidance changes certain disclosure requirements for fair value measurements. It removes certain disclosure requirements, such as the amount of and reasons for transfers between Level 1 and Level 2 of the fair value hierarchy; the policy for timing of the transfers between levels; and the valuation processes for Level 3 fair value measurements. Some disclosure requirements are added, such as the change in unrealized gains and losses included in other comprehensive income for recurring Level 3 fair value measurements and the range and weighted average of significant unobservable inputs used to develop Level 3 fair value measurements.
Effective Date for TVA	The new standard is effective for TVA's interim and annual reporting periods beginning October 1, 2020. While early adoption is permitted, TVA does not plan to adopt the standard early.
Effect on the Financial Statements or Other Significant Matters	TVA does not expect the adoption of this standard to have a material impact on TVA's financial condition, results of operations, or cash flows. TVA is evaluating the potential impact on related disclosures.

[Table of Contents](#)

3. Accounts Receivable, Net

Accounts receivable primarily consist of amounts due from customers for power sales. The table below summarizes the types and amounts of TVA's accounts receivable:

	Accounts Receivable, Net	
	At December 31, 2019	At September 30, 2019
Power receivables	\$ 1,326	\$ 1,624
Other receivables	101	115
Accounts receivable, net ⁽¹⁾	\$ 1,427	\$ 1,739

Note

(1) Allowance for uncollectible accounts was less than \$1 million at December 31, 2019 and September 30, 2019, and therefore is not represented in the table above.

4. Inventories, Net

The table below summarizes the types and amounts of TVA's inventories:

	Inventories, Net	
	At December 31, 2019	At September 30, 2019
Materials and supplies inventory	\$ 752	\$ 742
Fuel inventory	337	294
Renewable energy certificates/emission allowance inventory, net	17	16
Allowance for inventory obsolescence	(54)	(53)
Inventories, net	\$ 1,052	\$ 999

5. Plant Closures

Background

TVA must continuously evaluate all generating assets to ensure an optimal energy portfolio that provides safe, clean, and reliable power while maintaining flexibility and fiscal responsibility to the people of the Tennessee Valley. During its August 2018 meeting, the TVA Board approved a plan to perform assessments of Bull Run Fossil Plant ("Bull Run") and Paradise Fossil Plant ("Paradise"). These assessments included resiliency studies for fuel and transmission and financial considerations. TVA also prepared Environmental Assessments ("EAs") pursuant to the National Environmental Policy Act ("NEPA"). Results of these assessments were presented to the TVA Board at its February 2019 meeting, and the Board approved the retirement of Paradise Unit 3 by December 2020 and Bull Run by December 2023. Subsequent to the Board approval, TVA determined that Paradise would not be restarted after January 2020 due to the plant's material condition. Paradise Fossil Plant Unit 3 was taken offline on February 1, 2020, effectively retiring the plant.

Financial Impact

As a result of TVA's decision to accelerate the retirements of Paradise and Bull Run, certain construction projects at these locations were identified as probable of abandonment or were no longer expected to be in service for greater than one year prior to the plants' retirement dates. The write-off of these projects has resulted in \$155 million of Operating and maintenance expense related to project write-offs from February 2019, the date the plant was identified to be closed, through December 31, 2019. Of this amount, \$4 million was recognized during the three months ended December 31, 2019. TVA has also recognized a cumulative \$19 million of Operating and maintenance expense related to materials and supplies inventory reserves and write-offs identified at Paradise. No such amounts were recognized during the three months ended December 31, 2019. Additional amounts may be written off during closure activities.

TVA's policy is to adjust depreciation rates to reflect the most current assumptions, ensuring units will be fully depreciated by the applicable retirement dates. As a result of TVA's decision to accelerate the retirement of Paradise and Bull Run, TVA has recognized a cumulative \$791 million of accelerated depreciation, with \$225 million being recognized during the three months ended December 31, 2019.

6. Leases

As described in Note 2 — *Impact of New Accounting Standards and Interpretations*, TVA has elected the modified retrospective method of adoption effective October 1, 2019. Under the modified retrospective method of adoption, prior year reported results are not restated.

Table of Contents

TVA recorded \$205 million and \$210 million of lease assets and lease liabilities, respectively, for operating leases in effect at the adoption date. The accounting for finance leases remained substantially unchanged. Adoption of the standard did not materially impact results of operations or cash flows.

The following table provides additional information regarding the presentation of leases on the Consolidated Balance Sheets at December 31, 2019:

Amounts Recognized on TVA's Consolidated Balance Sheets At December 31, 2019

Assets			
Operating	Operating lease assets, net of amortization	\$	192
Finance	Finance leases		143
Total lease assets		\$	335
Liabilities			
Current			
Operating	Accounts payable and accrued liabilities	\$	72
Finance	Accounts payable and accrued liabilities		6
Noncurrent			
Operating	Operating lease liabilities		130
Finance	Other long-term liabilities		180
Total lease liabilities		\$	388

TVA's leases consist primarily of railcars, equipment, real estate/land, power generating facilities, and gas pipelines. TVA's leases have various terms and expiration dates remaining from one to 27 years. The components of lease costs for the three months ended December 31, 2019 were as follows:

Lease Costs⁽¹⁾ For the three months ended December 31, 2019

Operating lease costs ⁽²⁾	\$	18
Variable lease costs ⁽²⁾		6
Finance lease costs		
Amortization of leased assets ⁽³⁾		2
Interest on lease liabilities ⁽⁴⁾⁽⁵⁾		6
Total finance lease costs		8
Total lease costs		\$ 32

Notes

- (1) Short-term lease costs were less than \$1 million for the three months ended December 31, 2019, and are therefore not represented in the table above.
- (2) Costs are included in Operating and maintenance expense, Fuel expense, and Purchased power expense on the Consolidated Statements of Operations. TVA's rental expense for operating leases was approximately \$18 million for the three months ended December 31, 2018.
- (3) Expense is included in Depreciation and amortization expense on the Consolidated Statements of Operations.
- (4) Expense is included in Interest expense on the Consolidated Statements of Operations.
- (5) Certain finance leases receive regulatory accounting treatment and are reclassified to Fuel expense and Purchased power expense.

Table of Contents

TVA's variable lease costs are related to renewable energy purchase agreements that require TVA to purchase all output from the underlying facility. Payments under those agreements are solely based on the actual output over the lease term. Certain TVA lease agreements contain renewal options. Those renewal options that are reasonably certain to be exercised are included in the lease measurements.

The following table contains additional information with respect to cash and non-cash activities related to leases:

Amounts Recognized on TVA's Consolidated Statements of Cash Flows For the three months ended December 31, 2019

Operating cash flows for operating leases	\$	14
Operating cash flows for finance leases		6
Financing cash flows for finance leases		1
Lease assets obtained in exchange for lease obligations (non-cash)		
Operating leases ⁽¹⁾		4
Finance leases		—

Note

(1) Does not include operating lease assets recorded as a result of the adoption of the new lease standard

TVA has certain finance leases under power purchase agreements under which the present value of the minimum lease payments exceeds the fair value of the related lease asset at the date of measurement. This resulted in an interest rate that was higher than TVA's incremental borrowing rate. At December 31, 2019, the weighted average remaining lease term in years and the weighted average discount rate for TVA's operating and financing leases were as follows:

Weighted Averages At December 31, 2019

Weighted average remaining lease terms		
Operating leases		3 years
Finance leases		13 years
Weighted average discount rate⁽¹⁾		
Operating leases		1.6%
Finance leases		35.2%

Note

(1) The discount rate is calculated using the rate implicit in a lease if it is readily determinable. The rate used by the lessor is not readily determinable, and therefore TVA uses its incremental borrowing rate as permitted by accounting guidance. The incremental borrowing rate is influenced by TVA's credit rating and lease term and as such may differ for individual leases, embedded leases, or portfolios of leased assets.

[Table of Contents](#)

The following table presents maturities of lease liabilities and a reconciliation of the undiscounted cash flows to lease liabilities at December 31, 2019:

Future Minimum Lease Payments
Minimum payments due at December 31, 2019

Operating leases		
2020 (remaining)	\$	61
2021		74
2022		59
2023		11
2024		2
Minimum annual payments		207
Less: present value discount		(5)
Operating present value of net minimum lease payments	\$	202

Finance leases		
2020 (remaining)	\$	40
2021		53
2022		53
2023		55
2024		51
Thereafter		418
Minimum annual payments		670
Less: amount representing interest		(484)
Finance present value of net minimum lease payments	\$	186

The following table presents the future minimum lease payments under operating leases and the finance lease maturities as reported under the previous lease standard at September 30, 2019:

Future Minimum Lease Payments
Minimum payments due at September 30, 2019

Operating leases		
2020	\$	76
2021		75
2022		60
2023		12
2024		3
Thereafter		2
Minimum annual payments		228
Less: present value discount		—
Operating present value of net minimum lease payments	\$	228

Finance leases		
2020	\$	53
2021		53
2022		53
2023		55
2024		51
Thereafter		418
Minimum annual payments		683
Less: amount representing interest		(495)
Finance present value of net minimum lease payments	\$	188

7. Other Long-Term Assets

The table below summarizes the types and amounts of TVA's other long-term assets:

	Other Long-Term Assets	
	At December 31, 2019	At September 30, 2019
Loans and other long-term receivables, net	\$ 129	\$ 125
EnergyRight [®] receivables	78	81
Prepaid long-term service agreements ⁽¹⁾	29	22
Restricted cash and cash equivalents	23	23
Prepaid capacity payments	17	19
Other	58	55
Total other long-term assets	\$ 334	\$ 325

Note

(1) Certain amounts have been reclassified to conform with current year presentation.

In association with the EnergyRight[®] Solutions program, TVA's local power company customers ("LPCs") offer financing to end-use customers for the purchase of energy-efficient equipment. Depending on the nature of the energy-efficiency project, loans may have a maximum term of five years or 10 years. TVA purchases the resulting loans receivable from its LPCs. The loans receivable are then transferred to a third-party bank with which TVA has agreed to repay in full any loans receivable that have been in default for 180 days or more or that TVA has determined are uncollectible. Given this continuing involvement, TVA accounts for the transfer of the loans receivable as secured borrowings. The current and long-term portions of the loans receivable are reported in Accounts receivable, net and Other long-term assets, respectively, on TVA's Consolidated Balance Sheets. At December 31, 2019, and September 30, 2019, the carrying amount of the loans receivable, net of discount, reported in Accounts receivable, net was \$20 million. See Note 10 — *Other Long-Term Liabilities* for information regarding the associated financing obligation.

Prepaid Long-Term Service Agreements. TVA has entered into various long-term service agreements for major maintenance activities at certain of its combined cycle plants. TVA uses the direct expense method of accounting for these arrangements. TVA accrues for parts when it takes ownership and for contractor services when they are rendered. Under certain of these agreements, payments made exceed the value of parts received and services rendered. The current and long-term portions of the resulting prepayments are reported in Other current assets and Other long-term assets, respectively, on TVA's Consolidated Balance Sheets. At December 31, 2019, and September 30, 2019, prepayments of \$7 million and \$5 million, respectively, were recorded in Other current assets.

8. Regulatory Assets and Liabilities

Regulatory assets generally represent incurred costs that have been deferred because such costs are probable of future recovery in customer rates. Regulatory liabilities generally represent obligations to make refunds to customers for previous collections for costs that are not likely to be incurred or deferral of gains that will be credited to customers in future periods. Components of regulatory assets and regulatory liabilities are summarized in the table below:

Regulatory Assets and Liabilities⁽¹⁾		
	At December 31, 2019	At September 30, 2019
Current regulatory assets		
Unrealized losses on interest rate derivatives	\$ 89	\$ 89
Unrealized losses on commodity derivatives	49	39
Fuel cost adjustment receivable	21	28
Total current regulatory assets	159	156
Non-current regulatory assets		
Deferred pension costs and other post-retirement benefits costs	4,678	4,756
Non-nuclear decommissioning costs	1,725	1,741
Nuclear decommissioning costs	765	868
Unrealized losses on interest rate derivatives	1,074	1,241
Unrealized losses on commodity contracts	17	15
Other non-current regulatory assets	151	142
Total non-current regulatory assets	8,410	8,763
Total regulatory assets	\$ 8,569	\$ 8,919
Current regulatory liabilities		
Fuel cost adjustment tax equivalents	\$ 134	\$ 138
Unrealized gains on commodity derivatives	3	12
Total current regulatory liabilities	\$ 137	\$ 150

Note

(1) Amounts for Non-current regulatory liabilities were less than \$1 million at December 31, 2019 and September 30, 2019, and are therefore not represented in the table above.

9. Variable Interest Entities

A VIE is an entity that either (i) has insufficient equity to permit the entity to finance its activities without additional subordinated financial support or (ii) has equity investors who lack the characteristics of owning a controlling financial interest. When TVA determines that it has a variable interest in a VIE, a qualitative evaluation is performed to assess which interest holders have the power to direct the activities that most significantly impact the economic performance of the entity and have the obligation to absorb losses or receive benefits that could be significant to the entity. The evaluation considers the purpose and design of the business, the risks that the business was designed to create and pass along to other entities, the activities of the business that can be directed and which party can direct them, and the expected relative impact of those activities on the economic performance of the business through its life. TVA has the power to direct the activities of an entity when it has the ability to make key operating and financing decisions, including, but not limited to, capital investment and the issuance of debt. Based on the evaluation of these criteria, TVA has determined it is the primary beneficiary of certain entities and as such is required to account for the VIEs on a consolidated basis.

John Sevier VIEs

In 2012, TVA entered into a \$1.0 billion construction management agreement and lease financing arrangement with John Sevier Combined Cycle Generation LLC ("JSCCG") for the completion and lease by TVA of the John Sevier Combined Cycle Facility ("John Sevier CCF"). JSCCG is a special single-purpose limited liability company formed in January 2012 to finance the John Sevier CCF through a \$900 million secured note issuance (the "JSCCG notes") and the issuance of \$100 million of membership interests subject to mandatory redemption. The membership interests were purchased by John Sevier Holdco LLC ("Holdco"). Holdco is a special single-purpose entity, also formed in January 2012, established to acquire and hold the membership interests in JSCCG. A non-controlling interest in Holdco is held by a third party through nominal membership interests, to which none of the income, expenses, and cash flows are allocated.

Table of Contents

The membership interests held by Holdco in JSCCG were purchased with proceeds from the issuance of \$100 million of secured notes (the "Holdco notes") and are subject to mandatory redemption pursuant to a schedule of amortizing, semi-annual payments due each January 15 and July 15, with a final payment due in January 2042. The payment dates for the mandatorily redeemable membership interests are the same as those of the Holdco notes. The sale of the JSCCG notes, the membership interests in JSCCG, and the Holdco notes closed in January 2012. The JSCCG notes are secured by TVA's lease payments, and the Holdco notes are secured by Holdco's investment in, and amounts receivable from, JSCCG. TVA's lease payments to JSCCG are equal to and payable on the same dates as JSCCG's and Holdco's semi-annual debt service payments. In addition to the lease payments, TVA pays administrative and miscellaneous expenses incurred by JSCCG and Holdco. Certain agreements related to this transaction contain default and acceleration provisions.

Due to its participation in the design, business conduct, and credit and financial support of JSCCG and Holdco, TVA has determined that it has a variable interest in each of these entities. Based on its analysis, TVA has concluded that it is the primary beneficiary of JSCCG and Holdco and, as such, is required to account for the VIEs on a consolidated basis. Holdco's membership interests in JSCCG are eliminated in consolidation.

Southaven VIE

In 2013, TVA entered into a \$400 million lease financing arrangement with Southaven Combined Cycle Generation LLC ("SCCG") for the lease by TVA of the Southaven Combined Cycle Facility ("Southaven CCF"). SCCG is a special single-purpose limited liability company formed in June 2013 to finance the Southaven CCF through a \$360 million secured notes issuance (the "SCCG notes") and the issuance of \$40 million of membership interests subject to mandatory redemption. The membership interests were purchased by Southaven Holdco LLC ("SHLLC"). SHLLC is a special single-purpose entity, also formed in June 2013, established to acquire and hold the membership interests in SCCG. A non-controlling interest in SHLLC is held by a third party through nominal membership interests, to which none of the income, expenses, and cash flows of SHLLC are allocated.

The membership interests held by SHLLC were purchased with proceeds from the issuance of \$40 million of secured notes (the "SHLLC notes") and are subject to mandatory redemption pursuant to a schedule of amortizing, semi-annual payments due each February 15 and August 15, with a final payment due on August 15, 2033. The payment dates for the mandatorily redeemable membership interests are the same as those of the SHLLC notes, and the payment amounts are sufficient to provide returns on, as well as returns of, capital until the investment has been repaid to SHLLC in full. The rate of return on investment to SHLLC is 7.0 percent, which is reflected as interest expense on the Consolidated Statements of Operations. SHLLC is required to pay a pre-determined portion of the return on investment to Seven States Southaven, LLC ("SSSL") on each lease payment date as agreed in SHLLC's formation documents (the "Seven States Return"). The current and long-term portions of the Membership interests of VIE subject to mandatory redemption are included in Accounts payable and accrued liabilities and Other long-term liabilities, respectively.

The payment dates for the mandatorily redeemable membership interests are the same as those of the SHLLC notes. The SCCG notes are secured by TVA's lease payments, and the SHLLC notes are secured by SHLLC's investment in, and amounts receivable from, SCCG. TVA's lease payments to SCCG are payable on the same dates as SCCG's and SHLLC's semi-annual debt service payments and are equal to the sum of (i) the amount of SCCG's semi-annual debt service payments, (ii) the amount of SHLLC's semi-annual debt service payments, and (iii) the amount of the Seven States Return. In addition to the lease payments, TVA pays administrative and miscellaneous expenses incurred by SCCG and SHLLC. Certain agreements related to this transaction contain default and acceleration provisions.

In the event that TVA were to choose to exercise an early buy out feature of the Southaven facility lease, in part or in whole, TVA must pay to SCCG amounts sufficient for SCCG to repay or partially repay on a pro rata basis the membership interests held by SHLLC, including any outstanding investment amount plus accrued but unpaid return. TVA also has the right, at any time and without any early redemption of the other portions of the Southaven facility lease payments due to SCCG, to fully repay SHLLC's investment, upon which repayment SHLLC will transfer the membership interests to a designee of TVA.

TVA participated in the design, business conduct, and financial support of SCCG and has determined that it has a direct variable interest in SCCG resulting from risk associated with the value of the Southaven CCF at the end of the lease term. Based on its analysis, TVA has determined that it is the primary beneficiary of SCCG and, as such, is required to account for the VIE on a consolidated basis.

Table of Contents

Impact on Consolidated Financial Statements

The financial statement items attributable to carrying amounts and classifications of JSCCG, Holdco, and SCCG at December 31, 2019, and September 30, 2019, as reflected on the Consolidated Balance Sheets, are as follows:

Summary of Impact of VIEs on Consolidated Balance Sheets

	At December 31, 2019	At September 30, 2019
Current liabilities		
Accrued interest	\$ 24	\$ 11
Accounts payable and accrued liabilities	3	3
Current maturities of long-term debt of variable interest entities	39	39
Total current liabilities	66	53
Other liabilities		
Other long-term liabilities	25	25
Long-term debt, net		
Long-term debt of variable interest entities, net	1,089	1,089
Total liabilities	\$ 1,180	\$ 1,167

Interest expense of \$14 million related to debt of VIEs and membership interests of VIEs subject to mandatory redemption is included on the Consolidated Statements of Operations for both the three months ended December 31, 2019 and 2018.

Creditors of the VIEs have no recourse to the general credit of TVA. TVA does not have any obligations to provide financial support to the VIEs other than as prescribed in the terms of the agreements related to these transactions.

10. Other Long-Term Liabilities

Other long-term liabilities consist primarily of liabilities related to certain derivative agreements, liabilities for environmental remediation, and liabilities under agreements related to compliance with certain environmental regulations. The table below summarizes the types and amounts of Other long-term liabilities:

Other Long-Term Liabilities

	At December 31, 2019	At September 30, 2019
Interest rate swap liabilities	\$ 1,477	\$ 1,676
Finance lease liabilities	180	182
Currency swap liabilities	120	193
EnergyRight [®] financing obligation	88	90
Paradise pipeline financing obligation	79	80
Accrued long-term service agreement	61	66
Other	196	203
Total other long-term liabilities	\$ 2,201	\$ 2,490

Interest Rate Swap Liabilities. TVA uses interest rate swaps to fix variable short-term debt to a fixed rate. The values of these derivatives are included in Accounts payable and accrued liabilities and Other long-term liabilities on the Consolidated Balance Sheets. At December 31, 2019, and September 30, 2019, the carrying amount of the interest rate swap liabilities reported in Accounts payable and accrued liabilities was \$89 million and \$88 million, respectively. See Note 14 — *Risk Management Activities and Derivative Transactions — Derivatives Not Receiving Hedge Accounting Treatment — Interest Rate Derivatives* for information regarding the interest rate swap liabilities. As of December 31, 2019, interest rate swap liabilities decreased \$199 million as compared to September 30, 2019, primarily due to favorable changes in interest rates resulting in lower mark-to-market values on future expected net cash flows.

EnergyRight[®] Financing Obligation. TVA purchases certain loans receivable from its LPCs in association with the EnergyRight[®] Solutions program. The current and long-term portions of the resulting financing obligation are reported in Accounts payable and accrued liabilities and Other long-term liabilities, respectively, on TVA's Consolidated Balance Sheets. At December 31, 2019, and September 30, 2019, the carrying amount of the financing obligation reported in Accounts payable and accrued liabilities was \$22 million and \$23 million, respectively. See Note 7 — *Other Long-Term Assets* for information regarding the associated loans receivable.

Table of Contents

Paradise Pipeline Financing Obligation. TVA reserves firm pipeline capacity on an approximately 19 mile pipeline owned by Texas Gas, which serves TVA's Paradise Combined Cycle Plant. The capacity contract contains a lease component due to TVA's exclusive right to use the pipeline. TVA accounts for this lease component as a financing transaction. The current and long-term portions of the resulting financing obligation are reported in Accounts payable and accrued liabilities and Other long-term liabilities, respectively, on TVA's Consolidated Balance Sheets. At both December 31, 2019, and September 30, 2019, related liabilities of less than \$1 million were recorded in Accounts payable and accrued liabilities.

Accrued Long-Term Service Agreement. TVA has entered into various long-term service agreements for major maintenance activities at certain of its combined cycle plants. TVA uses the direct expense method of accounting for these arrangements. TVA accrues for parts when it takes ownership and for contractor services when they are rendered. Under certain of these agreements, parts received and services rendered exceed payments made. The current and long-term portions of the resulting obligation are reported in Accounts payable and accrued liabilities and Other long-term liabilities, respectively, on TVA's Consolidated Balance Sheets. At December 31, 2019, and September 30, 2019, related liabilities of \$14 million and \$12 million, respectively, were recorded in Accounts payable and accrued liabilities.

11. Asset Retirement Obligations

During the three months ended December 31, 2019, TVA's total asset retirement obligations ("ARO") liability increased \$135 million as a result of periodic accretion and revisions in estimate, partially offset by settlement projects that were conducted during the period. The nuclear and non-nuclear accretion amounts were deferred as regulatory assets. During the three months ended December 31, 2019, \$42 million of the related regulatory assets were amortized into expense as these amounts were collected in rates. See Note 8 — *Regulatory Assets and Liabilities*. TVA maintains investment trusts to help fund its decommissioning obligations. See Note 15 — *Fair Value Measurements — Investment Funds* and Note 19 — *Contingencies and Legal Proceedings — Decommissioning Costs* for a discussion of the trusts' objectives and the current balances of the trusts.

Asset Retirement Obligation Activity⁽¹⁾

	Nuclear	Non-Nuclear	Total
Balance at September 30, 2019	\$ 3,136	\$ 2,480	\$ 5,616
Settlements	—	(32)	(32)
Revisions in estimate	—	117	117
Accretion (recorded as regulatory asset)	35	15	50
Balance at December 31, 2019	\$ 3,171	\$ 2,580	\$ 5,751

Note

(1) The current portion of ARO in the amount of \$163 million at both December 31, 2019, and September 30, 2019, is included in Accounts payable and accrued liabilities.

The revisions in non-nuclear estimates increased \$117 million for the three months ended December 31, 2019. In November 2019, the Tennessee Department of Environment and Conservation ("TDEC") released amendments to its regulations which govern solid waste disposal facilities, including TVA's active Coal Combustion Residuals ("CCR") facilities covered by a solid waste disposal permit and those which closed pursuant to a TDEC approved closure plan. Such facilities are generally subject to a 30-year post-closure care period during which the owner or operator must undertake certain activities, including monitoring and maintaining the facility. The amendments will, among other things, add an additional 50-year period after the end of the post-closure care period, require TVA to submit recommendations as to what activities must be performed during this 50-year period to protect human health and the environment, and require TVA to submit revised closure plans every 10 years. This regulatory revision resulted in an increase of \$129 million, of which \$38 million was related to operating CCR facilities and \$91 million was related to inactive or closed CCR facilities.

12. Debt and Other Obligations

Debt Outstanding

Total debt outstanding at December 31, 2019, and September 30, 2019, consisted of the following:

	Debt Outstanding	
	At December 31, 2019	At September 30, 2019
Short-term debt		
Short-term debt, net	\$ 895	\$ 922
Current maturities of power bonds issued at par	1,029	1,030
Current maturities of long-term debt of VIEs issued at par	39	39
Current maturities of notes payable	22	23
Total current debt outstanding, net	1,985	2,014
Long-term debt		
Long-term power bonds ⁽¹⁾	19,065	19,225
Long-term debt of variable interest entities, net	1,089	1,089
Unamortized discounts, premiums, issue costs, and other	(124)	(131)
Total long-term debt, net	20,030	20,183
Total outstanding debt	\$ 22,015	\$ 22,197

Note

(1) Includes net exchange gain from currency transactions of \$133 million and \$191 million at December 31, 2019, and September 30, 2019, respectively.

Debt Securities Activity

The table below summarizes the long-term debt securities activity for the period from October 1, 2019, to December 31, 2019:

	Debt Securities Activity⁽¹⁾		
	Date	Amount⁽²⁾	Interest Rate
Redemptions/Maturities			
electronotes®	First Quarter 2020	\$ 217	3.33%
2009 Series B	December 2019	1	3.77%
Total redemptions/maturities of debt		\$ 218	

Note

(1) Amounts for notes payable were less than \$1 million at December 31, 2019, and are therefore not represented in the table above.

(2) All redemptions were at 100 percent of par.

Credit Facility Agreements

TVA and the U.S. Treasury, pursuant to the TVA Act, have entered into a memorandum of understanding under which the U.S. Treasury provides TVA with a \$150 million credit facility. This credit facility was renewed in 2019 with a maturity date of September 30, 2020. Access to this credit facility or other similar financing arrangements with the U.S. Treasury has been available to TVA since the 1960s. TVA can borrow under the U.S. Treasury credit facility only if it cannot issue Bonds in the market on reasonable terms, and TVA considers the U.S. Treasury credit facility a secondary source of liquidity. The interest rate on any borrowing under this facility is based on the average rate on outstanding marketable obligations of the U.S. with maturities from date of issue of one year or less. There were no outstanding borrowings under the facility at December 31, 2019. The availability of this credit facility may be impacted by how the U.S. government addresses the possibility of approaching its debt limit.

TVA also has funding available under four long-term revolving credit facilities totaling \$2.7 billion: a \$150 million credit facility that matures on December 11, 2021, a \$500 million credit facility that matures on February 1, 2022, a \$1.0 billion credit facility that matures on June 13, 2023, and a \$1.0 billion credit facility that matures on September 28, 2023. The interest rate on any borrowing under these facilities varies based on market factors and the rating of TVA's senior unsecured, long-term, non-credit-enhanced debt. TVA is required to pay an unused facility fee on the portion of the total \$2.7 billion that TVA has not borrowed or committed under letters of credit. This fee, along with letter of credit fees, may fluctuate depending on the rating of TVA's senior unsecured, long-term, non-credit-enhanced debt. At December 31, 2019, and September 30, 2019, there were

Table of Contents

approximately \$1.2 billion and \$1.3 billion, respectively, of letters of credit outstanding under these facilities, and there were no borrowings outstanding. See Note 14 — *Risk Management Activities and Derivative Transactions — Other Derivative Instruments — Collateral*.

The following table provides additional information regarding TVA's funding available under the four long-term revolving credit facilities:

Summary of Long-Term Credit Facilities At December 31, 2019

Maturity Date	Facility Limit	Letters of Credit Outstanding	Cash Borrowings	Availability
December 2021	\$ 150	\$ 38	\$ —	\$ 112
February 2022	500	500	—	—
June 2023	1,000	342	—	658
September 2023	1,000	310	—	690
Total	\$ 2,650	\$ 1,190	\$ —	\$ 1,460

Lease/Leasebacks

TVA previously entered into leasing transactions to obtain third-party financing for 24 peaking combustion turbine units ("CTs") as well as certain qualified technological equipment and software ("QTE"). Due to TVA's continuing involvement with the combustion turbine facilities and the QTE during the leaseback term, TVA accounted for the lease proceeds as financing obligations. At both December 31, 2019, and September 30, 2019, the outstanding leaseback obligations related to the remaining CTs and QTE were \$263 million. In March 2019, TVA made final rent payments under lease/leaseback transactions involving eight CTs, and TVA had previously acquired the equity interests related to these transactions. These transactions were terminated in July 2019. Final rent payments are scheduled to be made under the remaining CT lease/leaseback transactions on various dates from May 2020 to January 2022. TVA has already acquired the equity interests related to transactions involving eight of these CTs and will have the option to acquire the equity interests related to transactions involving the remaining eight CTs for additional amounts. In addition, on October 30, 2019, TVA provided notice of its intent to purchase the ownership interest in certain QTE. Repurchase payments are expected to be paid through a series of installments in 2021 and 2022, after which the associated leases will be terminated.

13. Accumulated Other Comprehensive Income (Loss)

Accumulated other comprehensive income (loss) ("AOCI") represents market valuation adjustments related to TVA's currency swaps. The currency swaps are cash flow hedges and are the only derivatives in TVA's portfolio that have been designated and qualify for hedge accounting treatment. TVA records exchange rate gains and losses on its foreign currency-denominated debt and any related accrued interest in net income and marks its currency swap assets and liabilities to market through other comprehensive income (loss) ("OCI"). TVA then reclassifies an amount out of AOCI into net income, offsetting the exchange gain/loss recorded on the debt. During the three months ended December 31, 2019 and 2018, TVA reclassified \$59 million of gains and \$18 million of losses, respectively, related to its cash flow hedges from AOCI to Interest expense. See Note 14 — *Risk Management Activities and Derivative Transactions*.

TVA records certain assets and liabilities that result from the regulated ratemaking process that would not be recorded under GAAP for non-regulated entities. As such, certain items that would generally be reported in AOCI or that would impact the statements of operations are recorded as regulatory assets or regulatory liabilities. See Note 8 — *Regulatory Assets and Liabilities* for a schedule of regulatory assets and liabilities. See Note 14 — *Risk Management Activities and Derivative Transactions* for a discussion of the recognition in AOCI of gains and losses associated with certain derivative contracts. See Note 15 — *Fair Value Measurements* for a discussion of the recognition of certain investment fund gains and losses as regulatory assets and liabilities. See Note 18 — *Benefit Plans* for a discussion of the regulatory accounting related to components of TVA's benefit plans.

14. Risk Management Activities and Derivative Transactions

TVA is exposed to various risks. These include risks related to commodity prices, investment prices, interest rates, currency exchange rates, and inflation as well as counterparty credit and performance risks. To help manage certain of these risks, TVA has historically entered into various derivative transactions, principally commodity option contracts, forward contracts, swaps, swaptions, futures, and options on futures. Other than certain derivative instruments in its trust investment funds, it is TVA's policy to enter into these derivative transactions solely for hedging purposes and not for speculative purposes. TVA has suspended its Financial Trading Program ("FTP") and no longer uses financial instruments to hedge risks related to commodity prices; however, TVA plans to continue to manage fuel price volatility through other methods and to periodically reevaluate its suspended FTP program for future use of financial instruments.

[Table of Contents](#)

Overview of Accounting Treatment

TVA recognizes certain of its derivative instruments as either assets or liabilities on its Consolidated Balance Sheets at fair value. The accounting for changes in the fair value of these instruments depends on (1) whether TVA uses regulatory accounting to defer the derivative gains and losses, (2) whether the derivative instrument has been designated and qualifies for hedge accounting treatment, and (3) if so, the type of hedge relationship (for example, cash flow hedge).

The following tables summarize the accounting treatment that certain of TVA's financial derivative transactions receive:

Summary of Derivative Instruments That Receive Hedge Accounting Treatment (part 1)
Amount of Mark-to-Market Gain (Loss) Recognized in Accumulated Other Comprehensive Income (Loss)
Three Months Ended December 31

Derivatives in Cash Flow Hedging Relationship	Objective of Hedge Transaction	Accounting for Derivative Hedging Instrument	Three Months Ended December 31	
			2019	2018
Currency swaps	To protect against changes in cash flows caused by changes in foreign currency exchange rates (exchange rate risk)	Unrealized gains and losses are recorded in AOCI and reclassified to interest expense to the extent they are offset by gains and losses on the hedged transaction	\$ 76	\$ (52)

Summary of Derivative Instruments That Receive Hedge Accounting Treatment (part 2)⁽¹⁾
Amount of Gain (Loss) Reclassified from Accumulated Other Comprehensive Income to Interest Expense
Three Months Ended December 31

Derivatives in Cash Flow Hedging Relationship	2019	2018
Currency swaps	\$ 59	\$ (18)

Note

(1) There were no amounts excluded from effectiveness testing for any of the periods presented. Based on forecasted foreign currency exchange rates, TVA expects to reclassify approximately \$15 million of gains from AOCI to interest expense within the next 12 months to offset amounts anticipated to be recorded in interest expense related to exchange gain on the debt.

Summary of Derivative Instruments That Do Not Receive Hedge Accounting Treatment
Amount of Gain (Loss) Recognized in Income on Derivatives⁽¹⁾

Derivative Type	Objective of Derivative	Accounting for Derivative Instrument	Three Months Ended December 31	
			2019	2018
Interest rate swaps	To fix short-term debt variable rate to a fixed rate (interest rate risk)	Mark-to-Market gains and losses are recorded as regulatory assets or liabilities		
		Realized gains and losses are recognized in interest expense when incurred during the settlement period and are presented in operating cash flow	\$ (21)	\$ (20)
Commodity contract derivatives	To protect against fluctuations in market prices of purchased coal or natural gas (price risk)	Mark-to-market gains and losses are recorded as regulatory assets or liabilities		
		Realized gains and losses due to contract settlements are recognized in fuel expense as incurred	1	—

Note

(1) All of TVA's derivative instruments that do not receive hedge accounting treatment have unrealized gains (losses) that would otherwise be recognized in income but instead are deferred as regulatory assets and liabilities. As such, there were no related gains (losses) recognized in income for these unrealized gains (losses) for the three months ended December 31, 2019 and 2018.

		Fair Values of TVA Derivatives			
		At December 31, 2019		At September 30, 2019	
Derivatives That Receive Hedge Accounting Treatment:					
	Balance	Balance Sheet Presentation		Balance	Balance Sheet Presentation
Currency swaps					
£200 million Sterling	\$ (69)	Accounts payable and accrued liabilities \$(5); Other long-term liabilities \$(64)		\$ (90)	Accounts payable and accrued liabilities \$(6); Other long-term liabilities \$(84)
£250 million Sterling	(27)	Accounts payable and accrued liabilities \$(4); Other long-term liabilities \$(23)		(61)	Accounts payable and accrued liabilities \$(5); Other long-term liabilities \$(56)
£150 million Sterling	(36)	Accounts payable and accrued liabilities \$(3); Other long-term liabilities \$(33)		(57)	Accounts payable and accrued liabilities \$(4); Other long-term liabilities \$(53)
Derivatives That Do Not Receive Hedge Accounting Treatment:					
	Balance	Balance Sheet Presentation		Balance	Balance Sheet Presentation
Interest rate swaps					
\$1.0 billion notional	\$ (1,124)	Accounts payable and accrued liabilities \$(63); Other long-term liabilities \$(1,061)		\$ (1,261)	Accounts payable and accrued liabilities \$(62); Other long-term liabilities \$(1,199)
\$476 million notional	(436)	Accounts payable and accrued liabilities \$(23); Other long-term liabilities \$(413)		(498)	Accounts payable and accrued liabilities \$(24); Other long-term liabilities \$(474)
\$42 million notional	(5)	Accounts payable and accrued liabilities \$(2); Other long-term liabilities \$(3)		(5)	Accounts payable and accrued liabilities \$(2); Other long-term liabilities \$(3)
Commodity contract derivatives	(62)	Other current assets \$4; Accounts payable and accrued liabilities \$(49); Other long-term liabilities \$(17)		(41)	Other current assets \$12; Accounts payable and accrued liabilities \$(37); Other long-term liabilities \$(16)

Cash Flow Hedging Strategy for Currency Swaps

To protect against exchange rate risk related to three British pound sterling denominated Bond transactions, TVA entered into foreign currency hedges at the time the Bond transactions occurred. TVA had three currency swaps outstanding at December 31, 2019, with total currency exposure of £600 million and expiration dates ranging from 2021 to 2043.

When the dollar strengthens against the British pound sterling, the exchange gain on the Bond liability and related accrued interest is offset by an equal amount of loss on the swap contract that is reclassified out of AOCI. Conversely, the exchange loss on the Bond liability and related accrued interest is offset by an equal amount of gain on the swap contract that is reclassified out of AOCI. All such exchange gains or losses on the Bond liability and related accrued interest are included in Long-term debt, net and Accounts payable and accrued liabilities, respectively. The offsetting exchange losses or gains on the swap contracts are recognized in AOCI. If any gain (loss) were to be incurred as a result of the early termination of the foreign currency swap contract, the resulting income (expense) would be amortized over the remaining life of the associated Bond as a component of Interest expense. The values of the currency swap liabilities are included in Accounts payable and accrued liabilities and Other long-term liabilities on the Consolidated Balance Sheets.

Derivatives Not Receiving Hedge Accounting Treatment

Interest Rate Derivatives. Generally TVA uses interest rate swaps to fix variable short-term debt to a fixed rate, and TVA uses regulatory accounting treatment to defer the mark-to-market ("MtM") gains and losses on its interest rate swaps. The net deferred unrealized gains and losses are classified as regulatory assets or liabilities on TVA's Consolidated Balance Sheets and are included in the ratemaking formula when gains or losses are realized. The values of these derivatives are included in Accounts payable and accrued liabilities and Other long-term liabilities on the Consolidated Balance Sheets, and realized gains and losses, if any, are included on TVA's Consolidated Statements of Operations. For the three months ended December 31, 2019 and 2018, the changes in fair market value of the interest rate swaps resulted in

the deferral of unrealized gains of \$171 million and unrealized losses of \$110 million, respectively.

Commodity Derivatives. TVA enters into certain derivative contracts for coal and natural gas that require physical delivery of the contracted quantity of the commodity. TVA marks to market all such contracts and defers the fair market values

Table of Contents

as regulatory assets or liabilities on a gross basis. At December 31, 2019, TVA's coal and natural gas contract derivatives had terms of up to two and five years, respectively.

	Commodity Contract Derivatives					
	At December 31, 2019			At September 30, 2019		
	Number of Contracts	Notional Amount	Fair Value (MtM)	Number of Contracts	Notional Amount	Fair Value (MtM)
Coal contract derivatives	9	10 million tons	\$ (16)	8	9 million tons	\$ (4)
Natural gas contract derivatives	53	365 million mmBtu	\$ (46)	65	330 million mmBtu	\$ (37)

Offsetting of Derivative Assets and Liabilities

The amounts of TVA's derivative instruments as reported on the Consolidated Balance Sheets at December 31, 2019, and September 30, 2019, are shown in the table below:

	Derivative Assets and Liabilities ⁽¹⁾	
	At December 31, 2019	At September 30, 2019
Assets		
Commodity derivatives not subject to master netting or similar arrangement	\$ 4	\$ 12
Liabilities		
Currency swaps ⁽²⁾	\$ 132	\$ 208
Interest rate swaps ⁽²⁾	1,565	1,764
Total derivatives subject to master netting or similar arrangement	1,697	1,972
Commodity derivatives not subject to master netting or similar arrangement	66	53
Total liabilities	\$ 1,763	\$ 2,025

Notes

(1) Offsetting amounts primarily include counterparty netting of derivative contracts, margin account deposits for futures commission merchants transactions, and cash collateral received or paid in accordance with the accounting guidance for derivatives and hedging transactions. There were no offsetting amounts on TVA's Consolidated Balance Sheets at either December 31, 2019 or September 30, 2019.

(2) Letters of credit of approximately \$1.2 billion and \$1.3 billion were posted as collateral at December 31, 2019, and September 30, 2019, respectively, to partially secure the liability positions of one of the currency swaps and one of the interest rate swaps in accordance with the collateral requirements for these derivatives.

Other Derivative Instruments

Investment Fund Derivatives. Investment funds consist primarily of funds held in the Nuclear Decommissioning Trust ("NDT"), the Asset Retirement Trust ("ART"), the Supplemental Executive Retirement Plan ("SERP"), and the TVA Deferred Compensation Plan ("DCP"). See Note 15 — *Fair Value Measurements — Investment Funds* for a discussion of the trusts, plans, and types of investments. The NDT and ART may invest in derivative instruments which may include swaps, futures, options, forwards, and other instruments. At December 31, 2019, and September 30, 2019, the NDT held investments in forward contracts to purchase debt securities. The fair values of these derivatives were in net asset positions totaling \$2 million and \$22 million at December 31, 2019, and September 30, 2019, respectively.

Collateral. TVA's interest rate swaps and currency swaps contain contract provisions that require a party to post collateral (in a form such as cash or a letter of credit) when the party's liability balance under the agreement exceeds a certain threshold. At December 31, 2019, the aggregate fair value of all derivative instruments with credit-risk related contingent features that were in a liability position was \$1.7 billion. TVA's collateral obligations at December 31, 2019, under these arrangements were approximately \$1.2 billion, for which TVA had posted approximately \$1.2 billion in letters of credit. These letters of credit reduce the available balance under the related credit facilities. TVA's assessment of the risk of its nonperformance includes a reduction in its exposure under the contract as a result of this posted collateral.

For all of its derivative instruments with credit-risk related contingent features:

- If TVA remains a majority-owned U.S. government entity but Standard & Poor's Financial Services, LLC ("S&P") or Moody's Investors Service, Inc. ("Moody's") downgrades TVA's credit rating to AA or Aa2, respectively, TVA's collateral obligations would likely increase by \$22 million, and
- If TVA ceases to be majority-owned by the U.S. government, TVA's credit rating would likely be downgraded and TVA would be required to post additional collateral.

Counterparty Risk

TVA may be exposed to certain risks when a counterparty has the potential to fail to meet its obligations in accordance with agreed terms. These risks may be related to credit, operational, or nonperformance matters. To mitigate certain counterparty risk, TVA analyzes the counterparty's financial condition prior to entering into an agreement, establishes credit limits, monitors the appropriateness of those limits, as well as any changes in the creditworthiness of the counterparty, on an ongoing basis, and when required, employs credit mitigation measures, such as collateral or prepayment arrangements and master purchase and sale agreements, to mitigate credit risk.

Customers. TVA is exposed to counterparty credit risk associated with trade accounts receivable from delivered power sales to LPCs, and from industries and federal agencies directly served, all located in the Tennessee Valley region. Of the \$1.3 billion and \$1.6 billion of receivables from power sales outstanding at December 31, 2019, and September 30, 2019, respectively, nearly all counterparties were rated investment grade. TVA is also exposed to risk from exchange power arrangements with a small number of investor-owned regional utilities related to either delivered power or the replacement of open positions of longer-term purchased power or fuel agreements. TVA believes its policies and procedures for counterparty performance risk reviews have generally protected TVA against significant exposure related to market and economic conditions. See Note 1 — *Summary of Significant Accounting Policies — Allowance for Uncollectible Accounts* and Note 3 — *Accounts Receivable, Net*.

TVA had revenue from two LPCs that accounted for 16 percent of total operating revenue for the three months ended December 31, 2019 and 2018.

Suppliers. If one of TVA's fuel or purchased power suppliers fails to perform under the terms of its contract with TVA, TVA might lose the money that it paid to the supplier under the contract and have to purchase replacement fuel or power on the spot market, perhaps at a significantly higher price than TVA was entitled to pay under the contract. In addition, TVA might not be able to acquire replacement fuel or power in a timely manner and thus might be unable to satisfy its own obligations to deliver power. Nuclear fuel requirements, including uranium mining and milling, conversion services, enrichment services, and fabrication services, are met from various suppliers, depending on the type of service. TVA purchases the majority of its natural gas requirements from a variety of suppliers under short-term contracts.

To help ensure a reliable supply of coal, TVA had coal contracts with multiple suppliers at December 31, 2019. The contracted supply of coal is sourced from multiple geographic regions of the U.S. and is to be delivered via various transportation methods (e.g., barge, rail, and truck). Emerging technologies, environmental regulations, and low natural gas prices have contributed to weak demand for coal. As a result, coal suppliers are facing increased financial pressure, which has led to relatively poor credit ratings and bankruptcies. Continued difficulties by coal suppliers could result in consolidations, additional bankruptcies, restructuring, contract renegotiations, or other scenarios. Under these scenarios and TVA's potential available responses, TVA does not anticipate a significant financial impact in obtaining continued fuel supply for its coal-fired generation.

Nuclear fuel is obtained predominantly through long-term uranium concentrate supply contracts, contracted conversion services, contracted enrichment services, or a combination thereof, and contracted fuel fabrication services. The supply markets for uranium concentrates and certain nuclear fuel services are subject to price fluctuations and availability restrictions. Supply market conditions may make procurement contracts subject to credit risk related to the potential nonperformance of counterparties. In the event of nonperformance by these or other suppliers, TVA believes that replacement uranium concentrate can be obtained, although at prices that may be unfavorable when compared to the prices under the current supply agreements.

TVA has a power purchase agreement that expires on March 31, 2032, with a supplier of electricity for 440 megawatts ("MW") of summer net capability from a lignite-fired generating plant. TVA has determined that the supplier has the equivalent of a non-investment grade credit rating; therefore, the supplier has provided credit assurance to TVA under the terms of the agreement.

Derivative Counterparties. TVA has entered into physical and financial contracts that qualify as derivatives for hedging purposes, and TVA's NDT, ART, and qualified defined benefit pension plan have entered into derivative contracts for investment purposes. If a counterparty to one of the physical or financial derivative transactions defaults, TVA might incur substantial costs in connection with entering into a replacement transaction. If a counterparty to the derivative contracts into which the NDT, the ART, and the qualified pension plan have entered for investment purposes defaults, the value of the investment could decline significantly or perhaps become worthless. TVA has concentrations of credit risk from the banking, coal, and gas industries because multiple companies in these industries serve as counterparties to TVA in various derivative transactions. At December 31, 2019, all of TVA's currency swaps and interest rate swaps as well as all of the derivatives in the NDT and ART were with banking counterparties whose Moody's credit ratings were A3 or higher.

TVA classifies qualified forward coal and natural gas contracts as derivatives. See *Derivatives Not Receiving Hedge Accounting Treatment* above. At December 31, 2019, the coal contracts were with counterparties whose Moody's credit rating, or TVA's internal analysis when such information was unavailable, ranged from D to Ba1. At December 31, 2019, the natural gas contracts were with counterparties whose ratings ranged from B3 to A2. See *Suppliers* above for discussion of challenges facing the coal industry.

15. Fair Value Measurements

Fair value is determined based on the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the asset or liability's principal market, or in the absence of a principal market, the most advantageous market for the asset or liability in an orderly transaction between market participants. TVA uses market or observable inputs as the preferred source of values, followed by assumptions based on hypothetical transactions in the absence of market inputs.

Valuation Techniques

The measurement of fair value results in classification into a hierarchy by the inputs used to determine the fair value as follows:

- Level 1 — Unadjusted quoted prices in active markets accessible by the reporting entity for identical assets or liabilities. Active markets are those in which transactions for the asset or liability occur with sufficient frequency and volume to provide pricing.
- Level 2 — Pricing inputs other than quoted market prices included in Level 1 that are based on observable market data and that are directly or indirectly observable for substantially the full term of the asset or liability. These include quoted market prices for similar assets or liabilities, quoted market prices for identical or similar assets in markets that are not active, adjusted quoted market prices, inputs from observable data such as interest rate and yield curves, volatilities and default rates observable at commonly quoted intervals, and inputs derived from observable market data by correlation or other means.
- Level 3 — Pricing inputs that are unobservable, or less observable, from objective sources. Unobservable inputs are only to be used to the extent observable inputs are not available. These inputs maintain the concept of an exit price from the perspective of a market participant and should reflect assumptions of other market participants. An entity should consider all market participant assumptions that are available without unreasonable cost and effort. These are given the lowest priority and are generally used in internally developed methodologies to generate management's best estimate of the fair value when no observable market data is available.

A financial instrument's level within the fair value hierarchy (where Level 1 is the highest and Level 3 is the lowest) is based on the lowest level of input significant to the fair value measurement.

The following sections describe the valuation methodologies TVA uses to measure different financial instruments at fair value. Except for gains and losses on SERP and DCP assets, all changes in fair value of these assets and liabilities have been recorded as changes in regulatory assets, regulatory liabilities, or AOCI on TVA's Consolidated Balance Sheets and Consolidated Statements of Comprehensive Income (Loss). Except for gains and losses on SERP and DCP assets, there has been no impact to the Consolidated Statements of Operations or the Consolidated Statements of Cash Flows related to these fair value measurements.

Investment Funds

At December 31, 2019, Investment funds were composed of \$3.2 billion of equity securities and debt securities classified as trading measured at fair value. Equity and trading debt securities are held in the NDT, ART, SERP, and DCP. The NDT holds funds for the ultimate decommissioning of TVA's nuclear power plants. The ART holds funds primarily for the costs related to the future closure and retirement of TVA's other long-lived assets. The balances in the NDT and ART were \$2.3 billion and \$815 million, respectively, at December 31, 2019.

TVA established a SERP to provide benefits to selected employees of TVA which are comparable to those provided by competing organizations. The DCP is designed to provide participants with the ability to defer compensation until employment with TVA ends. The NDT, ART, SERP, and DCP funds are invested in portfolios of securities generally designed to achieve a return in line with overall equity and debt market performance.

The NDT, ART, SERP, and DCP are composed of multiple types of investments and are managed by external institutional investment managers. Most U.S. and international equities, U.S. Treasury inflation-protected securities, real estate investment trust securities, and cash securities and certain derivative instruments are measured based on quoted exchange prices in active markets and are classified as Level 1 valuations. Fixed-income investments, high-yield fixed-income investments, currencies, and most derivative instruments are non-exchange traded and are classified as Level 2 valuations. These measurements are based on market and income approaches with observable market inputs.

Private equity limited partnerships, private real asset investments, and private credit investments may include holdings of investments in private real estate, venture capital, buyout, mezzanine or subordinated debt, restructuring or distressed debt, and special situations through funds managed by third-party investment managers. These investments generally involve a three-to-four-year period where the investor contributes capital, followed by a period of distribution, typically over several years.

Table of Contents

The investment period is generally, at a minimum, 10 years or longer. The NDT had unfunded commitments related to private equity limited partnerships of \$208 million, unfunded commitments related to private real assets of \$57 million, and unfunded commitments related to private credit of \$10 million at December 31, 2019. The ART had unfunded commitments related to private equity limited partnerships of \$103 million, unfunded commitments related to private real assets of \$41 million, and unfunded commitments related to private credit of \$5 million at December 31, 2019. These investments have no redemption or limited redemption options and may also impose restrictions on the NDT's and ART's ability to liquidate their investments. There are no readily available quoted exchange prices for these investments. The fair value of these investments is based on information provided by the investment managers. These investments are valued on a quarterly basis. TVA's private equity limited partnerships, private real asset investments, and private credit investments are valued at net asset values ("NAV") as a practical expedient for fair value. TVA classifies its interest in these types of investments as investments measured at net asset value in the fair value hierarchy.

Commingled funds represent investment funds comprising multiple individual financial instruments. The commingled funds held by the NDT, ART, SERP, and DCP consist of either a single class of securities, such as equity, debt, or foreign currency securities, or multiple classes of securities. All underlying positions in these commingled funds are either exchange traded or measured using observable inputs for similar instruments. The fair value of commingled funds is based on NAV per fund share (the unit of account), derived from the prices of the underlying securities in the funds. These commingled funds can be redeemed at the measurement date NAV and are classified as Commingled funds measured at net asset value in the fair value hierarchy.

Realized and unrealized gains and losses on equity and trading debt securities are recognized in current earnings and are based on average cost. The gains and losses of the NDT and ART are subsequently reclassified to a regulatory asset or liability account in accordance with TVA's regulatory accounting policy. See Note 1 — *Summary of Significant Accounting Policies — Cost-Based Regulation*. TVA recorded unrealized gains and losses related to its equity and trading debt securities held during each period as follows:

Fund	Financial Statement Presentation	Three Months Ended December 31	
		2019	2018
NDT	Regulatory asset	\$ 111	\$ (201)
ART	Regulatory asset	37	(104)
SERP	Other income (expense)	1	(6)
DCP	Other income (expense)	1	(3)

Currency and Interest Rate Derivatives

See Note 14 — *Risk Management Activities and Derivative Transactions — Cash Flow Hedging Strategy for Currency Swaps and Derivatives Not Receiving Hedge Accounting Treatment* for a discussion of the nature, purpose, and contingent features of TVA's currency swaps and interest rate swaps. These swaps are classified as Level 2 valuations and are valued based on income approaches using observable market inputs for similar instruments.

Commodity Contract Derivatives

Most of these contracts are valued based on market approaches which utilize short- and mid-term market-quoted prices from an external industry brokerage service. A small number of these contracts are valued based on a pricing model using long-term price estimates from TVA's coal price forecast. To value the volume option component of applicable coal contracts, TVA uses a Black-Scholes pricing model which includes inputs from the forecast, contract-specific terms, and other market inputs. These contracts are classified as Level 3 valuations.

Nonperformance Risk

The assessment of nonperformance risk, which includes credit risk, considers changes in current market conditions, readily available information on nonperformance risk, letters of credit, collateral, other arrangements available, and the nature of master netting arrangements. TVA is a counterparty to currency swaps, interest rate swaps, commodity contracts, and other derivatives which subject TVA to nonperformance risk. Nonperformance risk on the majority of investments and certain exchange-traded instruments held by TVA is incorporated into the exit price that is derived from quoted market data that is used to mark the investment to market.

Nonperformance risk for most of TVA's derivative instruments is an adjustment to the initial asset/liability fair value. TVA adjusts for nonperformance risk, both of TVA (for liabilities) and the counterparty (for assets), by applying credit valuation adjustments ("CVAs"). TVA determines an appropriate CVA for each applicable financial instrument based on the term of the

[Table of Contents](#)

instrument and TVA's or the counterparty's credit rating as obtained from Moody's. For companies that do not have an observable credit rating, TVA uses internal analysis to assign a comparable rating to the counterparty. TVA discounts each financial instrument using the historical default rate (as reported by Moody's for CY 1983 to CY 2018) for companies with a similar credit rating over a time period consistent with the remaining term of the contract. The application of CVAs resulted in a less than \$1 million decrease in the fair value of both assets and liabilities at December 31, 2019.

Fair Value Measurements

The following tables set forth by level, within the fair value hierarchy, TVA's financial assets and liabilities that were measured at fair value on a recurring basis at December 31, 2019, and September 30, 2019. Financial assets and liabilities have been classified in their entirety based on the lowest level of input that is significant to the fair value measurement. TVA's assessment of the significance of a particular input to the fair value measurement requires judgment and may affect the determination of the fair value of the assets and liabilities and their classification in the fair value hierarchy levels.

**Fair Value Measurements
At December 31, 2019**

	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Assets				
Investments				
Equity securities	\$ 509	\$ —	\$ —	\$ 509
Government debt securities	278	78	—	356
Corporate debt securities	—	423	—	423
Mortgage and asset-backed securities	—	30	—	30
Institutional mutual funds	266	—	—	266
Forward debt securities contracts	—	2	—	2
Private credit funds measured at net asset value ⁽¹⁾	—	—	—	52
Private equity funds measured at net asset value ⁽¹⁾	—	—	—	158
Private real asset funds measured at net asset value ⁽¹⁾	—	—	—	142
Commingled funds measured at net asset value ⁽¹⁾	—	—	—	1,225
Total investments	1,053	533	—	3,163
Commodity contract derivatives	—	3	1	4
Total	\$ 1,053	\$ 536	\$ 1	\$ 3,167

	Quoted Prices in Active Markets for Identical Liabilities (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Liabilities				
Currency swaps ⁽²⁾	\$ —	\$ 132	\$ —	\$ 132
Interest rate swaps	—	1,565	—	1,565
Commodity contract derivatives	—	48	18	66
Total	\$ —	\$ 1,745	\$ 18	\$ 1,763

Notes

(1) Certain investments that are measured at fair value using the net asset value per share (or its equivalent) practical expedient have not been categorized in the fair value hierarchy. The fair value amounts presented in this table are intended to permit reconciliation of the fair value hierarchy to the amounts presented on the Consolidated Balance Sheets.

(2) TVA records currency swaps net of cash collateral received from or paid to the counterparty, to the extent such amount is not recorded in Accounts payable and accrued liabilities. See Note 14 — *Risk Management Activities and Derivative Transactions — Offsetting of Derivative Assets and Liabilities*.

**Fair Value Measurements
At September 30, 2019**

	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Assets				
Investments				
Equity securities	\$ 464	\$ —	\$ —	\$ 464
Government debt securities	279	65	—	344
Corporate debt securities	—	417	—	417
Mortgage and asset-backed securities	—	32	—	32
Institutional mutual funds	250	—	—	250
Forward debt securities contracts	—	22	—	22
Private equity funds measured at net asset value ⁽¹⁾	—	—	—	140
Private real estate funds measured at net asset value ⁽¹⁾	—	—	—	135
Private credit measured at net asset value ⁽¹⁾	—	—	—	33
Commingled funds measured at net asset value ⁽¹⁾	—	—	—	1,131
Total investments	993	536	—	2,968
Commodity contract derivatives	—	7	5	12
Total	\$ 993	\$ 543	\$ 5	\$ 2,980

	Quoted Prices in Active Markets for Identical Liabilities (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Liabilities				
Currency swaps ⁽²⁾	\$ —	\$ 208	\$ —	\$ 208
Interest rate swaps	—	1,764	—	1,764
Commodity contract derivatives	—	44	9	53
Total	\$ —	\$ 2,016	\$ 9	\$ 2,025

Notes

(1) Certain investments that are measured at fair value using the net asset value per share (or its equivalent) practical expedient have not been categorized in the fair value hierarchy. The fair value amounts presented in this table are intended to permit reconciliation of the fair value hierarchy to the amounts presented on the Consolidated Balance Sheets.

(2) TVA records currency swaps net of cash collateral received from or paid to the counterparty, to the extent such amount is not recorded in Accounts payable and accrued liabilities. See Note 14 — *Risk Management Activities and Derivative Transactions — Offsetting of Derivative Assets and Liabilities*.

TVA uses internal valuation specialists for the calculation of its commodity contract derivatives fair value measurements classified as Level 3. Analytical testing is performed on the change in fair value measurements each period to ensure the valuation is reasonable based on changes in general market assumptions. Significant changes to the estimated data used for unobservable inputs, in isolation or combination, may result in significant variations to the fair value measurement reported.

[Table of Contents](#)

The following table presents a reconciliation of all commodity contract derivatives measured at fair value on a recurring basis using significant unobservable inputs (Level 3):

Fair Value Measurements Using Significant Unobservable Inputs

	Commodity Contract Derivatives	
	Three Months Ended December 31	
Balance at October 1, 2018	\$	58
Change in net unrealized gains (losses) deferred as regulatory assets and liabilities		5
Balance at December 31, 2018	\$	63
Balance at October 1, 2019	\$	(4)
Change in net unrealized gains (losses) deferred as regulatory assets and liabilities		(13)
Balance at December 31, 2019	\$	(17)

The following table presents quantitative information related to the significant unobservable inputs used in the measurement of fair value of TVA's assets and liabilities classified as Level 3 in the fair value hierarchy:

Quantitative Information about Level 3 Fair Value Measurements

	Fair Value at December 31, 2019	Valuation Technique(s)	Unobservable Inputs	Range
Assets				
Commodity contract derivatives	\$ 1	Pricing model	Coal supply and demand	0.4 - 0.8 billion tons/year
			Long-term market prices	\$12.10 - \$95.63/ton
Liabilities				
Commodity contract derivatives	18	Pricing model	Coal supply and demand	0.4 - 0.8 billion tons/year
			Long-term market prices	\$12.10 - \$95.63/ton

Quantitative Information about Level 3 Fair Value Measurements

	Fair Value at September 30, 2019	Valuation Technique(s)	Unobservable Inputs	Range
Assets				
Commodity contract derivatives	\$ 5	Pricing model	Coal supply and demand	0.4 - 0.8 billion tons/year
			Long-term market prices	\$12.10 - \$94.51/ton
Liabilities				
Commodity contract derivatives	9	Pricing model	Coal supply and demand	0.4 - 0.8 billion tons/year
			Long-term market prices	\$12.10 - \$94.51/ton

Table of Contents

Other Financial Instruments Not Recorded at Fair Value

TVA uses the methods and assumptions described below to estimate the fair value of each significant class of financial instrument. The fair value of the financial instruments held at December 31, 2019, and September 30, 2019, may not be representative of the actual gains or losses that will be recorded when these instruments mature or are called or presented for early redemption. The estimated values of TVA's financial instruments not recorded at fair value at December 31, 2019, and September 30, 2019, were as follows:

Estimated Values of Financial Instruments Not Recorded at Fair Value

	Valuation Classification	At December 31, 2019		At September 30, 2019	
		Carrying Amount	Fair Value	Carrying Amount	Fair Value
EnergyRight® receivables (including current portion)	Level 2	\$ 98	\$ 97	\$ 101	\$ 100
Loans and other long-term receivables, net (including current portion)	Level 2	135	124	131	120
EnergyRight® financing obligation (including current portion)	Level 2	110	122	113	126
Unfunded loan commitments	Level 2	—	8	—	10
Membership interests of VIEs subject to mandatory redemption (including current portion)	Level 2	28	36	28	37
Long-term outstanding power bonds (including current maturities), net	Level 2	19,970	25,152	20,124	26,059
Long-term debt of VIEs (including current maturities), net	Level 2	1,128	1,360	1,128	1,371
Long-term notes payable (including current maturities)	Level 2	22	22	23	23

The carrying value of Cash and cash equivalents, Restricted cash and cash equivalents, and Short-term debt, net approximate their fair values.

The fair value for loans and other long-term receivables is estimated by determining the present value of future cash flows using a discount rate equal to lending rates for similar loans made to borrowers with similar credit ratings and for similar remaining maturities, where applicable. The fair value of long-term debt and membership interests of VIEs subject to mandatory redemption is estimated by determining the present value of future cash flows using current market rates for similar obligations, giving effect to credit ratings and remaining maturities.

16. Revenue

Revenue from Sales of Electricity

TVA's revenue from contracts with customers is primarily derived from the generation and sale of electricity to its customers and is included in Revenue from sales of electricity on the Consolidated Statements of Operations. Electricity is sold primarily to LPCs for distribution to their end-use customers. In addition, TVA sells electricity to directly served industrial companies, federal agencies, and others.

[Table of Contents](#)

LPC sales	<p>Approximately 93 percent of TVA's revenue from sales of electricity is to LPCs, which then distribute the power to their customers using their own distribution systems. Power is delivered to each LPC at delivery points within the LPC's service territory. TVA recognizes revenue when the customer takes possession of the power at the delivery point. For power sales, the performance obligation to deliver power is satisfied in a series over time because the sales of electricity over the term of the customer contract are a series of distinct goods that are substantially the same and have the same pattern of transfer to the customer. TVA has no continuing performance obligations subsequent to delivery. Using the output method for revenue recognition provides a faithful depiction of the transfer of electricity as customers obtain control of the power and benefit from its use at delivery. Additionally, TVA has an enforceable right to consideration for energy delivered at any discrete point in time and will recognize revenue at an amount that reflects the consideration to which TVA is entitled for the energy delivered.</p> <p>The amount of revenue is based on contractual prices approved by the TVA Board. Customers are invoiced monthly for power delivered as measured by meters located at the delivery points. The net transaction price is offset by certain credits available to customers that are known at the time of billing. Credits are designed to achieve objectives of the TVA Act and include items such as hydro preference credits for residential customers of LPCs, economic development credits to promote growth in the Tennessee Valley, wholesale bill credits to LPCs participating in the long-term Partnership Agreement, and interruptible credits allowing TVA to reduce industrial customer usage in periods of peak demand to balance system demand. Payments are typically due within approximately one month of invoice issuance.</p>
Directly served customers	<p>Directly served customers, including industrial customers, federal agencies, and other customers, take power for their own consumption. Similar to LPCs, power is delivered to a delivery point, at which time the customer takes possession and TVA recognizes revenue. For all power sales, the performance obligation to deliver power is satisfied in a series over time since the sales of electricity over the term of the customer contract are a series of distinct goods that are substantially the same and have the same pattern of transfer to the customer. TVA has no continuing performance obligations subsequent to delivery. Using the output method for revenue recognition provides a faithful depiction of the transfer of electricity as customers obtain control of the power and benefit from its use at delivery. Additionally, TVA has an enforceable right to consideration for energy delivered at any discrete point in time and will recognize revenue at an amount that reflects the consideration to which TVA is entitled for the energy delivered.</p> <p>The amount of revenue is based on contractual prices approved by the TVA Board. Customers are invoiced monthly for power delivered as measured by meters located at the delivery points. The net transaction price is offset by certain credits available to customers that are known at the time of billing. Examples of credits include items such as economic development credits to promote growth in the Tennessee Valley and interruptible credits allowing TVA to reduce industrial customer usage in periods of peak demand to balance system demand. Payments are typically due within approximately one month of invoice issuance.</p>

Other Revenue

Other revenue consists primarily of wheeling and network transmission charges, sales of excess steam that is a by-product of power production, delivery point charges for interconnection points between TVA and the customer, and certain other ancillary goods or services.

[Table of Contents](#)

Disaggregated Revenue

During the three months ended December 31, 2019, revenues generated from TVA's electricity sales were \$2.5 billion and accounted for virtually all of TVA's revenues. TVA's revenues by state for the three months ended December 31, 2019 and 2018 are detailed in the table below:

**Operating Revenues By State
Three Months Ended December 31**
(in millions)

	2019	2018
Alabama	\$ 369	\$ 392
Georgia	63	67
Kentucky	157	168
Mississippi	237	251
North Carolina	18	20
Tennessee	1,676	1,771
Virginia	11	12
Subtotal	2,531	2,681
Off-system sales	1	—
Revenue from sales of electricity	2,532	2,681
Other revenue	46	44
Total operating revenues	\$ 2,578	\$ 2,725

TVA's revenues by customer type for the three months ended December 31, 2019 and 2018 are detailed in the table below:

**Operating Revenues by Customer Type
Three Months Ended December 31**
(in millions)

	2019	2018
Revenue from sales of electricity		
Local power companies ⁽¹⁾	\$ 2,357	\$ 2,468
Industries directly served	150	184
Federal agencies and other	25	29
Revenue from sales of electricity	2,532	2,681
Other revenues	46	44
Total operating revenues	\$ 2,578	\$ 2,725

Note

(1) The amount for the three months ended December 31, 2019, is net of \$34 million of wholesale bill credits to LPCs participating in the long-term Partnership Agreement.

TVA and LPCs continue to work together to meet the changing needs of consumers around the Tennessee Valley. At its August 2019 meeting, the TVA Board approved a 20-year Partnership Agreement option that better aligns the length of LPC contracts with TVA's long-term commitments. These agreements are automatically extended each year after their initial effective date, contingent upon certain circumstances, including agreement on flexibility options and limited rate increases going forward. Participating LPCs will receive benefits including a 3.1 percent wholesale bill credit in exchange for their long-term commitment, which enables TVA to recover its long-term financial commitments over a commensurate period. In addition, participating LPCs will have the option for flexible generation capacity up to approximately five percent of average total hourly energy sales over the prior five years. As of December 31, 2019, 134 LPCs had signed the 20-year Partnership Agreement with TVA.

The number of LPCs with the contract arrangements described below, the revenues derived from such arrangements for the three months ended December 31, 2019, and the percentage of TVA's total operating revenues for the three months ended December 31, 2019 represented by these revenues are summarized in the tables below:

**TVA Local Power Company Contracts
At and for the Three Months Ended December 31, 2019**

Contract Arrangements ⁽¹⁾	Number of LPCs	Revenue from Sales of Electricity to LPCs (in millions)	Percentage of Total Operating Revenues
20-year termination notice	134	\$ 1,471	57.1%
10-year termination notice	4	214	8.3
5-year termination notice	16	672	26.1
Total	154	\$ 2,357	91.5%

Note

(1) Ordinarily, the LPCs and TVA have the same termination notice period; however, in contracts with three of the LPCs with five-year termination notices, TVA has a 10-year termination notice (which becomes a five-year termination notice if TVA loses its discretionary wholesale rate-setting authority). Certain LPCs have five-year termination notices or a shorter period if any act of Congress, court decision, or regulatory change requires or permits that election.

TVA's two largest LPCs — Memphis Light, Gas and Water Division ("MLGW") and Nashville Electric Service ("NES") — have contracts with a five-year and a 20-year termination notice period, respectively. Sales to MLGW and NES each accounted for eight percent of TVA's total operating revenues during the three months ended December 31, 2019 and 2018.

Contract Balances

Contract assets represent an entity's right to consideration in exchange for goods and services that the entity has transferred to customers. TVA does not have any material contract assets at December 31, 2019.

Contract liabilities represent an entity's obligations to transfer goods or services to customers for which the entity has received consideration (or an amount of consideration is due) from the customers. These contract liabilities are primarily related to upfront consideration received prior to the satisfaction of the performance obligation.

Economic Development Incentives. Under certain economic development programs, TVA offers incentives to existing and potential power customers in certain business sectors that make multi-year commitments to invest in the Tennessee Valley. TVA records those incentives as reductions of revenue. Incentives recorded as a reduction to revenue were \$76 million and \$67 million during the three months ended December 31, 2019, and 2018, respectively. Incentives that have been approved but have not been paid are recorded in Accounts payable and accrued liabilities and Other long-term liabilities on the Consolidated Balance Sheets. At December 31, 2019 and September 30, 2019, the outstanding unpaid incentives were \$158 million and \$157 million, respectively. These incentives may be subject to clawback provisions if the customers fail to meet certain program requirements.

17. Other Income (Expense), Net

Income and expenses not related to TVA's operating activities are summarized in the following table:

	Other Income (Expense), Net	
	Three Months Ended December 31	
	2019	2018
Bellefonte deposit	\$ —	\$ 21
Interest income	5	6
External services	2	3
Gains (losses) on investments	5	(7)
Miscellaneous	—	1
Total Other income (expense), net	\$ 12	\$ 24

During the three months ended December 31, 2019, Other income (expense), net decreased \$12 million as compared to the same period of the prior year primarily driven by \$21 million of other income in 2018 related to a deposit liability received by TVA as a down payment on the sale of Bellefonte Nuclear Plant ("Bellefonte"). The purchaser, Nuclear Development, LLC, failed to fulfill the requirements of the sales contract with respect to obtaining Nuclear Regulatory Commission ("NRC") approval of the transfer of required nuclear licenses and payment of the remainder of the selling price before the November 30, 2018, closing date. Partially offsetting the income related to the Bellefonte sale was \$7 million of unrealized losses in 2018 on the SERP and DCP investments. See Note 19 — *Contingencies and Legal Proceedings — Legal Proceedings* for a discussion of the lawsuit filed by Nuclear Development, LLC.

18. Benefit Plans

TVA sponsors a qualified defined benefit plan ("pension plan") that covers most of its full-time employees hired before July 1, 2014, a qualified defined contribution plan ("401(k) plan") that covers most of its full-time employees, two unfunded post-retirement health care plans that provide for non-vested contributions toward the cost of eligible retirees' medical coverage, other post-employment benefits, such as workers' compensation, and the SERP. The pension plan and the 401(k) plan are administered by a separate legal entity, the TVA Retirement System ("TVARS"), which is governed by its own board of directors.

The components of net periodic benefit cost and other amounts recognized as changes in regulatory assets for the three months ended December 31, 2019 and 2018, were as follows:

Components of TVA's Benefit Plans⁽¹⁾

	For the Three Months Ended December 31			
	Pension Benefits		Other Post-Retirement Benefits	
	2019	2018	2019	2018
Service cost	\$ 12	\$ 12	\$ 4	\$ 3
Interest cost	104	123	4	4
Expected return on plan assets	(122)	(119)	—	—
Amortization of prior service credit	(24)	(25)	(6)	(6)
Recognized net actuarial loss	109	82	2	1
Total net periodic benefit cost as actuarially determined	79	73	4	2
Amount expensed (capitalized) due to actions of regulator	(2)	3	—	—
Total net periodic benefit cost	\$ 77	\$ 76	\$ 4	\$ 2

Note

(1) The components of net benefit cost other than the service cost component are included in Other net periodic benefit cost on the Consolidated Statements of Operations.

TVA's minimum required pension plan contribution for 2020 is \$300 million. TVA contributes \$25 million per month to TVARS and as of December 31, 2019, had contributed \$75 million. The remaining \$225 million will be contributed by September 30, 2020. For the three months ended December 31, 2019, TVA also contributed \$24 million to the 401(k) plan and \$10 million (net of \$1 million in rebates) to the other post-retirement plans. TVA expects to contribute \$5 million to the SERP in the second quarter of 2020.

19. Contingencies and Legal Proceedings

Contingencies

Nuclear Insurance. Section 170 of the Atomic Energy Act, commonly known as the Price-Anderson Act, provides a layered framework of financial protection to compensate for liability claims of members of the public for personal injury and property damages arising from a nuclear incident in the U.S. This financial protection consists of two layers of coverage:

- The primary level is private insurance underwritten by American Nuclear Insurers ("ANI") and provides public liability insurance coverage of \$450 million for each nuclear power plant licensed to operate. If this amount is not sufficient to cover claims arising from a nuclear incident, the second level, Secondary Financial Protection, applies.
- Within the Secondary Financial Protection level, the licensee of each nuclear reactor has a contingent obligation to pay a retrospective premium, equal to its proportionate share of the loss in excess of the primary level, regardless of proximity to the incident of fault, up to a maximum of approximately \$138 million per reactor per incident. With TVA's seven reactors, the maximum total contingent obligation per incident is \$963 million. This retrospective premium is payable at a maximum rate currently set at approximately \$20 million per year per incident per reactor. Currently, 98 reactors are participating in the Secondary Financial Protection program.

In the event that a nuclear incident results in public liability claims, the primary level provided by ANI combined with the Secondary Financial Protection should provide up to approximately \$14.0 billion in coverage.

Federal law requires that each NRC power reactor licensee obtain property insurance from private sources to cover the cost of stabilizing and decontaminating a reactor and its station site after an accident. TVA carries property, decommissioning liability, and decontamination liability insurance from Nuclear Electric Insurance Limited ("NEIL") with limits up to \$2.1 billion available for a loss at TVA's three sites. Some of this insurance may require the payment of retrospective premiums up to a maximum of approximately \$139 million.

Table of Contents

TVA purchases accidental outage (business interruption) insurance for TVA's nuclear sites from NEIL. In the event that an accident covered by this policy takes a nuclear unit offline or keeps a nuclear unit offline, NEIL will pay TVA, after a waiting period, an indemnity (a set dollar amount per week) with a maximum indemnity of \$490 million per unit. This insurance policy may require the payment of retrospective premiums up to a maximum of approximately \$46 million, but only to the extent the retrospective premium is deemed necessary by the NEIL Board of Directors to pay losses unable to be covered by NEIL's surplus.

Decommissioning Costs. TVA recognizes legal obligations associated with the future retirement of certain tangible long-lived assets related primarily to nuclear generating plants, coal-fired generating plants, hydroelectric generating plants/dams, transmission structures, and other property-related assets. See Note 11 — *Asset Retirement Obligations*.

Nuclear Decommissioning. Provision for decommissioning costs of nuclear generating units is based on options prescribed by the NRC procedures to dismantle and decontaminate the facilities to meet the NRC criteria for license termination. At December 31, 2019, \$3.2 billion, representing the discounted value of future estimated decommissioning costs, was included in AROs. The actual decommissioning costs may vary from the derived estimates because of, among other things, changes in current assumptions, such as the assumed dates of decommissioning, changes in regulatory requirements, changes in technology, and changes in the cost of labor, materials, and equipment. Utilities that own and operate nuclear plants are required to use different procedures in calculating nuclear decommissioning costs under GAAP than those that are used in calculating nuclear decommissioning costs when reporting to the NRC. The two sets of procedures produce different estimates for the costs of decommissioning primarily because of differences in the underlying assumptions.

TVA maintains a NDT to provide funding for the ultimate decommissioning of its nuclear power plants. See Note 15 — *Fair Value Measurements — Investment Funds*. TVA monitors the value of its NDT and believes that, over the long term and before cessation of nuclear plant operations and commencement of decommissioning activities, adequate funds from investments and additional contributions, if necessary, will be available to support decommissioning. TVA's operating nuclear power units are licensed through various dates between 2033-2055, depending on the unit. It may be possible to extend the operating life of some of the units with approval from the NRC. See Note 8 — *Regulatory Assets and Liabilities* and Note 11 — *Asset Retirement Obligations*.

Non-Nuclear Decommissioning. The estimated future non-nuclear decommissioning ARO was \$2.6 billion at December 31, 2019. This decommissioning cost estimate involves estimating the amount and timing of future expenditures and making judgments concerning whether or not such costs are considered a legal obligation. Estimating the amount and timing of future expenditures includes, among other things, making projections of the timing and duration of the asset retirement process and how costs will escalate with inflation. The actual decommissioning costs may vary from the derived estimates because of changes in current assumptions, such as the assumed dates of decommissioning, changes in regulatory requirements, changes in technology, and changes in the cost of labor, materials, and equipment.

TVA maintains an ART to help fund the ultimate decommissioning of its non-nuclear power assets. See Note 15 — *Fair Value Measurements — Investment Funds*. Estimates involved in determining if additional funding will be made to the ART include inflation rate, rate of return projections on the fund investments, and the planned use of other sources to fund decommissioning costs. See Note 8 — *Regulatory Assets and Liabilities* and Note 11 — *Asset Retirement Obligations*.

Environmental Matters. TVA's power generation activities, like those across the utility industry and in other industrial sectors, are subject to federal, state, and local environmental laws and regulations. Major areas of regulation affecting TVA's activities include air quality control, water quality control, and management and disposal of solid and hazardous wastes. In the future, regulations in all of these areas are expected to become more stringent. Regulations are also expected to have a particular emphasis on climate change, renewable generation, and energy efficiency.

TVA has incurred, and expects to continue to incur, substantial capital and operating and maintenance costs to comply with evolving environmental requirements primarily associated with, but not limited to, the operation of TVA's coal-fired generating units. Environmental requirements placed on the operation of TVA's coal-fired and other generating units will likely continue to become more restrictive over time. Litigation over emissions or discharges from coal-fired generating units is also occurring. Failure to comply with environmental and safety laws can result in TVA being subject to enforcement actions, which can lead to the imposition of significant civil liability, including fines and penalties, criminal sanctions, and/or the shutting down of non-compliant facilities.

TVA estimates that compliance with existing and future Clean Air Act ("CAA") requirements (excluding greenhouse gas ("GHG") requirements) could lead to costs of \$132 million from 2020 to 2024, which include existing controls capital projects and air operations and maintenance projects. TVA also estimates additional expenditures of approximately \$1.1 billion from 2020 to 2024 relating to TVA's CCR conversion program, as well as expenditures of approximately \$261 million from 2020 to 2024 relating to compliance with Clean Water Act requirements. Future costs could differ from these estimates if new environmental laws or regulations become applicable to TVA or the facilities it operates, or if existing environmental laws or regulations are revised or reinterpreted. There could also be costs that cannot reasonably be predicted at this time, due to uncertainty of actions, that could increase these estimates.

Table of Contents

Liability for releases and cleanup of hazardous substances is primarily regulated by the federal Comprehensive Environmental Response, Compensation, and Liability Act, and other federal and parallel state statutes. In a manner similar to many other industries and power systems, TVA has generated or used hazardous substances over the years. TVA operations at some facilities have resulted in contamination that TVA is addressing. At December 31, 2019, and September 30, 2019, TVA's estimated liability for cleanup and similar environmental work for those sites for which sufficient information is available to develop a cost estimate was approximately \$13 million and \$15 million, respectively, on a non-discounted basis, and was included in Accounts payable and accrued liabilities and Other long-term liabilities on the Consolidated Balance Sheets.

Potential Liability Associated with Workers' Exposure to CCR Materials. In response to the 2008 ash spill at Kingston, TVA hired Jacobs Engineering Group, Inc. ("Jacobs") to oversee certain aspects of the cleanup. After the cleanup was completed, Jacobs was sued in the United States District Court for the Eastern District of Tennessee ("Eastern District") by employees of a contractor involved in the cleanup and family members of some of the employees. The plaintiffs alleged that Jacobs had failed to take or provide proper health precautions and misled workers about the health risks associated with exposure to coal fly ash, which is a CCR material. The plaintiffs alleged that exposure to the fly ash caused a variety of significant health issues and illnesses, including in some cases death. The case was split into two phases, with the first phase considering, among other issues, general causation and the second determining specific causation and damages. On November 7, 2018, a jury hearing the first phase returned a verdict in favor of the plaintiffs, including determinations that Jacobs failed to adhere to its contract with TVA or the Site Wide Safety and Health Plan in place; Jacobs failed to provide reasonable care to the plaintiffs; and Jacobs's failures were capable of causing a list of medical conditions, ranging from hypertension to cancer. On January 11, 2019, the district court referred the parties to mediation. Depending on the outcome of mediation, the litigation will proceed to the second phase on the question of whether Jacobs's failures did in fact cause the plaintiffs' alleged injuries and damages. Mediation is currently ongoing.

On May 13, 2019, an additional group of contractor employees and family members filed suit against Jacobs in the Circuit Court for Roane County, Tennessee. These plaintiffs have raised similar claims to those being litigated in the case referenced above.

While TVA is not a party to either of these lawsuits, TVA could be contractually obligated to reimburse Jacobs for some amounts that Jacobs is required to pay. TVA will continue monitoring the litigation to determine whether these or similar cases could have broader implications for the utility industry.

Legal Proceedings

From time to time, TVA is party to or otherwise involved in lawsuits, claims, proceedings, investigations, and other legal matters ("Legal Proceedings") that have arisen in the ordinary course of conducting TVA's activities, as a result of a catastrophic event or otherwise.

General. At December 31, 2019, TVA had accrued \$13 million of probable losses with respect to Legal Proceedings, which is included in Other long-term liabilities. No assurance can be given that TVA will not be subject to significant additional claims and liabilities. If actual liabilities significantly exceed the estimates made, TVA's results of operations, liquidity, and financial condition could be materially adversely affected.

Environmental Agreements. In April 2011, TVA entered into two substantively similar agreements, one with the Environmental Protection Agency ("EPA") and the other with Alabama, Kentucky, North Carolina, Tennessee, and three environmental advocacy groups: the Sierra Club, the National Parks Conservation Association, and Our Children's Earth Foundation (collectively, the "Environmental Agreements"). They became effective in June 2011. Under the Environmental Agreements, TVA committed to (1) retire on a phased schedule 18 coal-fired units with a combined summer net dependable capability of 2,200 MW, (2) control, convert, or retire additional coal-fired units with a combined summer net dependable capability of 3,500 MW, (3) comply with annual, declining emission caps for sulfur dioxide ("SO₂") and nitrogen oxide, (4) invest \$290 million in certain TVA environmental projects (of which TVA had spent approximately \$279 million as of December 31, 2019), (5) provide \$60 million to Alabama, Kentucky, North Carolina, and Tennessee to fund environmental projects, and (6) pay civil penalties of \$10 million. In exchange for these commitments, most past claims against TVA based on alleged New Source Review and associated violations were waived and cannot be brought against TVA. Future claims, including those for sulfuric acid mist and GHG emissions, can still be brought against TVA, and claims for increases in particulates can also be pursued at many of TVA's coal-fired units. Additionally, the Environmental Agreements do not address compliance with new laws and regulations or the cost associated with such compliance.

The liabilities related to the Environmental Agreements are included in Accounts payable and accrued liabilities and Other long-term liabilities on the December 31, 2019 Consolidated Balance Sheets. In conjunction with the approval of the Environmental Agreements, the TVA Board determined that it was appropriate to record TVA's obligations under the Environmental Agreements as regulatory assets, and they are included as such on the December 31, 2019, Consolidated Balance Sheets and will be recovered in rates in future periods. TVA has substantially completed the requirements in the Environmental Agreements related to retiring coal-fired units or installing controls on such units.

Table of Contents

Case Involving Kingston Fossil Plant. On May 7, 2019, Roane County and the Cities of Kingston and Harriman ("local governments") filed a lawsuit in the Circuit Court for Roane County, Tennessee, against TVA and Jacobs for monetary damages and unspecified injunctive relief relating to TVA's cleanup response to the 2008 ash spill at Kingston. The local governments allege that TVA and Jacobs failed to take proper measures to mitigate environmental and health risks during the cleanup response and misled the local governments and their citizens about health and environmental risks associated with exposure to coal fly ash. The local governments seek to recover monetary damages on behalf of their citizens for personal injury and property loss claims, damages for lost tax revenue, damages for increased emergency and medical response costs claims, punitive damages, and unspecified injunctive relief. On June 6, 2019, TVA removed the lawsuit to the Eastern District, and TVA and Jacobs filed separate motions to dismiss. Plaintiffs, in response, filed a response opposing both motions and a separate motion seeking leave to file a proposed amended class action complaint in which Roane County would serve as class representative for the municipalities and their citizens.

In December 2019, the federal court ruled that the local governments did not have standing to assert representative claims on behalf of their citizens and rejected their motion to proceed as a class action on behalf of their citizens because of the dissimilarity of the injuries allegedly suffered by the local governments (lost tax revenue) and the personal injuries and personal medical expenses allegedly suffered by the individuals. The court indicated, however, that the local governments may have legal standing to assert claims for their direct injuries (claims relating to municipally owned property) and directed the local governments to file an amended pleading in conformance with the court's order by January 16, 2020. The plaintiffs filed their amended complaint on January 15, 2020. Trial is set for April 2021.

Class Action Lawsuit Involving Kingston Fossil Plant. On November 7, 2019, a resident of Roane County, Tennessee, filed a proposed class action lawsuit against Jacobs and TVA in the Eastern District. The complaint alleges that the class representative and all other members of the proposed class were damaged as a result of the 2008 ash spill at Kingston and the resulting cleanup activities. The complaint alleges, among other things, that (1) TVA was negligent in its construction and operation of the Kingston CCR facility, (2) TVA and Jacobs failed to take proper measures to mitigate environmental and health risks during the cleanup response, and (3) TVA and Jacobs misled the community about health and environmental risks associated with exposure to coal fly ash. The complaint seeks monetary damages and injunctive relief in the form of an order requiring the defendants to establish a blood testing program and medical monitoring protocol and to remediate damage to the properties of the proposed class.

The plaintiff did not attempt to serve TVA with the complaint until January 2020, and TVA will have 60 days from the date service is perfected to respond to the lawsuit.

Consent Decree Involving Colbert Fossil Plant. In May 2013, the Alabama Department of Environmental Management ("ADEM") and TVA entered into a consent decree concerning alleged violations of the Alabama Water Pollution Control Act. The consent decree required, among other things, that TVA continue remediation efforts TVA had begun prior to the suit being filed and stop using an unlined landfill after a lined landfill is approved and constructed. In August 2018, the parties agreed to amend the consent decree to deal with groundwater issues identified after TVA published groundwater monitoring reports in accordance with the EPA's CCR rule (the "CCR Rule"). The amended consent decree requires TVA to investigate the nature and extent of any groundwater contamination, develop and implement a remedy, provide semiannual status reports to ADEM, and remedy any seeps identified during inspections. TVA also paid \$100,000 to Alabama under the amended consent decree. In accordance with the amended consent decree, TVA submitted to ADEM a Comprehensive Groundwater Investigation Report on May 17, 2019, and an Assessment of Corrective Measures on July 17, 2019. TVA is continuing to develop the groundwater remedy and submit reports to ADEM.

Case Involving Tennessee River Boat Accident. On July 23, 2015, plaintiffs filed suit in the United States District Court for the Northern District of Alabama ("Northern District"), seeking recovery for personal injuries sustained when the plaintiffs' boat struck a TVA transmission line which was being raised from the Tennessee River during a repair operation. The district court dismissed the case, finding that TVA's exercise of its discretion as a governmental entity in deciding how to carry out the operation barred any liability for negligence. In August 2017, the U.S. Court of Appeals for the Eleventh Circuit ("Eleventh Circuit") affirmed the decision. The plaintiffs petitioned the U.S. Supreme Court ("Supreme Court") for review of the decision, arguing that the provision of the TVA Act which allows suit to be brought against TVA does not allow TVA to claim immunity for discretionary actions. On April 29, 2019, the Supreme Court issued its opinion reversing the judgment of the Eleventh Circuit and remanding the case to the Eleventh Circuit. On July 17, 2019, the Eleventh Circuit remanded the case to the district court for further proceedings consistent with the Supreme Court's opinion. Trial is currently scheduled for February 16, 2021.

Case Involving Bellefonte Nuclear Plant. On November 30, 2018, Nuclear Development, LLC, filed suit against TVA in the Northern District. The plaintiff alleges that TVA breached its agreement to sell Bellefonte to the plaintiff. The plaintiff seeks, among other things, (1) an injunction requiring TVA to maintain Bellefonte and the associated NRC permits until the case is concluded, (2) an order compelling TVA to complete the sale of Bellefonte to the plaintiff, and (3) if the court does not order TVA to complete the sale, monetary damages in excess of \$30 million. On December 26, 2018, Nuclear Development, LLC, and TVA filed a joint stipulation with the court. Under the stipulation, Nuclear Development, LLC, withdrew its request for an expedited hearing on its injunction in exchange for TVA's agreement to continue to maintain Bellefonte in accordance with the NRC permits and to give Nuclear Development, LLC, and the court five days prior notice of any filing by TVA to terminate the permits or sell

Table of Contents

the site. TVA filed a motion to dismiss the case on February 4, 2019. On May 15, 2019, the court denied TVA's motion. The case is scheduled to be ready for trial by July 2020.

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

(Dollars in millions except where noted)

Management's Discussion and Analysis of Financial Condition and Results of Operations ("MD&A") explains the results of operations and general financial condition of the Tennessee Valley Authority ("TVA"). The MD&A should be read in conjunction with the accompanying unaudited consolidated financial statements and TVA's Annual Report on Form 10-K/A for the year ended September 30, 2019 (the "Annual Report").

Executive Overview

TVA's net income for the three months ended December 31, 2019, was \$192 million, as compared with net income of \$423 million for the same period of the prior year. As is often the case for electric utilities, weather is a primary driver of TVA's sales and revenue. Despite record-setting heat experienced during October 2019 and record-setting cold during November 2019, TVA's service territory experienced overall milder weather during the three months ended December 31, 2019. This resulted in lower energy sales compared to the three months ended December 31, 2018, which experienced colder than normal weather. Similarly, revenue from sales of electricity decreased \$149 million for the three months ended December 31, 2019, as compared to the same period of the prior year.

Depreciation and amortization expense increased \$239 million for the three months ended December 31, 2019, as compared to the same period of the prior year. This increase was primarily due to accelerated depreciation from the retirement decisions at Bull Run Fossil Plant ("Bull Run") and Paradise Fossil Plant ("Paradise"). Fuel and purchased power expense decreased \$96 million for the three months ended December 31, 2019, as compared to the same period of the prior year. This decrease was primarily due to lower energy sales, as well as lower effective fuel and purchased power rates, with more TVA-owned generation available to meet periods of higher demand during the record-setting peaks of October and November 2019. Operating and maintenance expense decreased \$56 million for the three months ended December 31, 2019, as compared to the same period of the prior year. This was primarily driven by prior year accelerated recovery of the regulatory asset for environmental cleanup costs related to the Kingston ash spill and decreased outage expense driven by fewer planned nuclear outage days for the three months ended December 31, 2019.

TVA adopted a new lease accounting standard effective October 1, 2019. As a result, TVA recorded \$205 million and \$210 million of lease assets and lease liabilities, respectively, for operating leases in effect at the adoption date. Adoption of the standard did not materially impact results of operations or cash flows.

During the first quarter of 2020, TVA became the first utility in the U.S. to receive authorization by the Nuclear Regulatory Commission ("NRC") for the issuance of an Early Site Permit for potential development of a small modular reactor ("SMR") at TVA's Clinch River site near Oak Ridge, Tennessee. The permit is valid for up to 20 years from the date of issuance with the possibility of an extension and provides TVA additional flexibility to prepare for future energy needs.

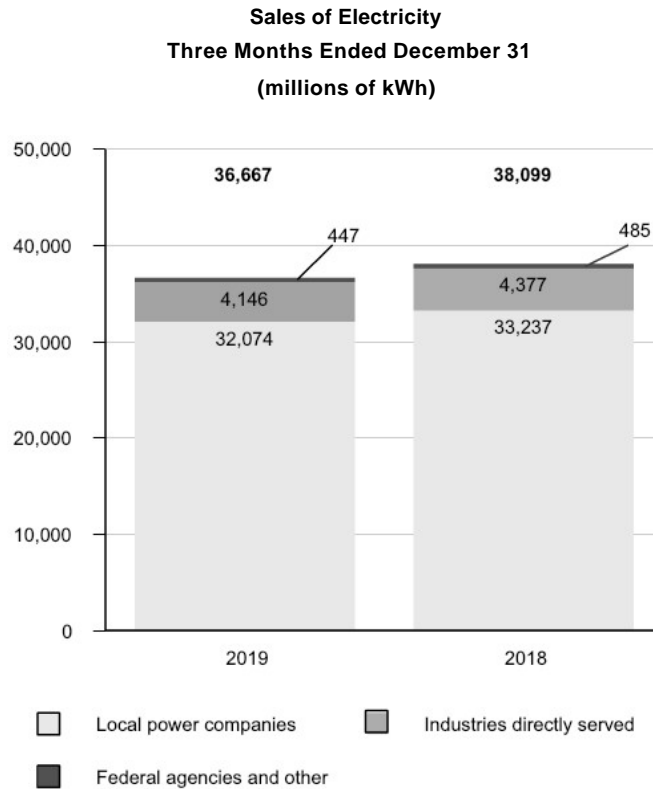
Additionally, TVA began implementing the Strategic Financial Plan which was approved by the TVA Board in 2019. The key focus areas of the plan include maintaining rates as low as feasible, establishing better alignment between the length of local power company customer ("LPC") contracts and TVA's long-term commitments, stabilizing debt, and pursuing operational efficiencies. To engage LPCs in this effort, TVA began offering a 20-year Partnership Agreement option in 2019. As of December 31, 2019, 134 LPCs had signed the 20-year Partnership Agreement with TVA, which represents 57 percent of total operating revenues for the three months then ended.

TVA continues to maintain 99.999 percent reliability in delivering energy to its customers despite experiencing record-setting weather. TVA's reliability and economic development efforts continue to attract and encourage the expansion of business and industries in the Tennessee Valley, with over \$2.4 billion in investments and more than 27,500 jobs created or retained through the first quarter of 2020.

Results of Operations

Sales of Electricity

The following chart compares TVA's sales of electricity for the three months ended December 31, 2019 and 2018:



Weather affects both the demand for TVA power and the price for that power. TVA uses degree days to measure the impact of weather on its power operations. Degree days measure the extent to which the TVA system 23-station average temperatures vary from 65 degrees Fahrenheit. During 2019, TVA transitioned degree day calculation methodologies, moving from the average temperatures of the five largest cities in TVA's service area to the average temperatures of 23 stations throughout TVA's service area. This transition provides TVA with increased geographic granularity throughout its service territory and improves modeling accuracy.

	Degree Days						Variation from Prior Period
	Variation from Normal						Percent Change
	2019	Normal	Percent Variation	2018 ⁽¹⁾	Normal	Percent Variation	
Heating Degree Days							
Three Months Ended December 31	1,278	1,289	(0.9)%	1,385	1,289	7.4%	(7.7)%
Cooling Degree Days							
Three Months Ended December 31	90	43	109.3 %	115	43	167.4%	(21.7)%
Total Degree Days							
Three Months Ended December 31	1,368	1,332	2.7 %	1,500	1,332	12.6%	(8.8)%

Note

(1) The prior period degree day information has been adjusted to incorporate the change in methodology to the average temperatures of 23 stations.

Sales of electricity decreased approximately four percent for the three months ended December 31, 2019, as compared to the same period of the prior year, primarily due to decreased sales volume for LPCs driven predominantly by a nine percent decrease in total degree days. During October 2019, TVA recorded its third largest peak power demand for the month of October at 28,353 megawatts with a system average temperature of 97 degrees Fahrenheit. During November 2019, TVA recorded its highest peak power demand for the month of November at 27,722 megawatts with a system average temperature of

[Table of Contents](#)

20 degrees Fahrenheit. Despite record-setting heat experienced during October 2019 and record-setting cold during November 2019, TVA's service territory experienced overall milder weather during the three months ended December 31, 2019. This resulted in lower energy sales as compared to the three months ended December 31, 2018. In addition, sales to industries directly served decreased, particularly in the polysilicon sector.

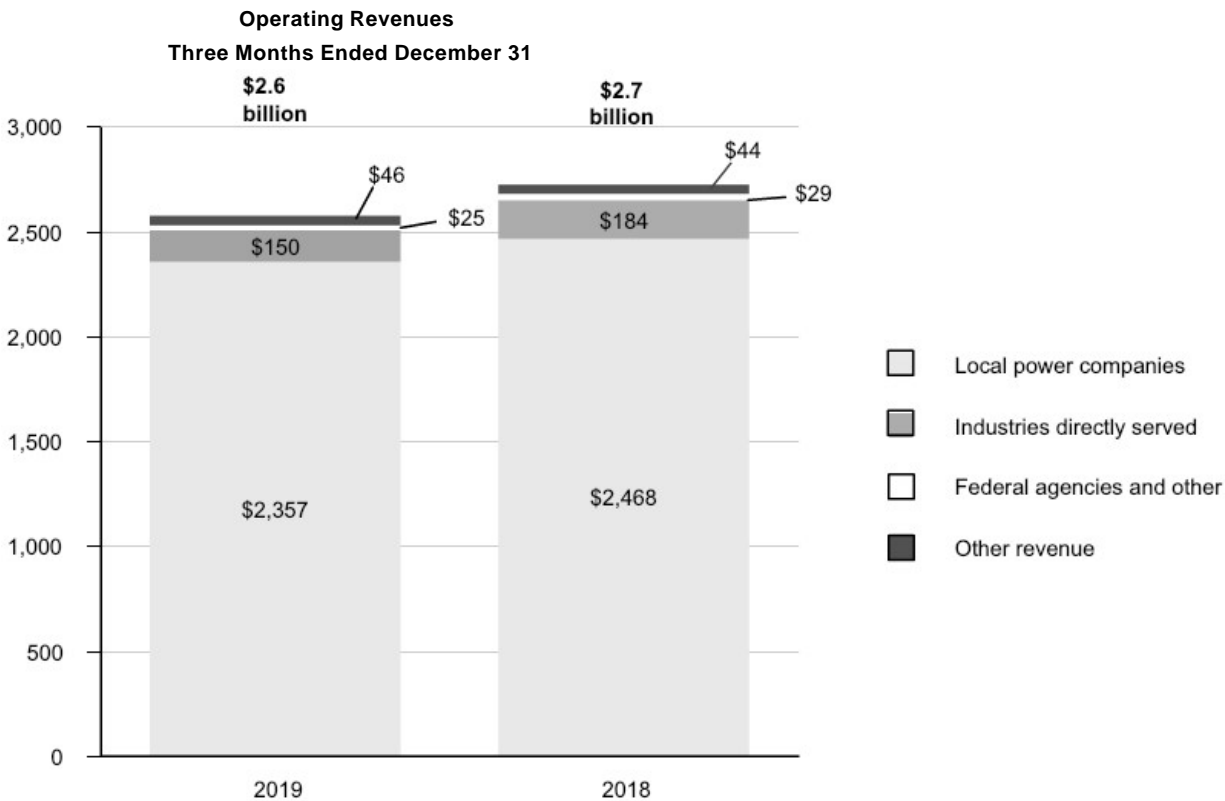
Financial Results

The following table compares operating results for the three months ended December 31, 2019 and 2018:

Summary Consolidated Statements of Operations

	Three Months Ended December 31		
	2019	2018	Percent Change
Operating revenues	\$ 2,578	\$ 2,725	(5.4)%
Operating expenses	2,046	1,960	4.4 %
Operating income	532	765	(30.5)%
Other income (expense), net	12	24	(50.0)%
Other net periodic benefit cost	65	64	1.6 %
Interest expense	287	302	(5.0)%
Net income (loss)	\$ 192	\$ 423	(54.6)%

Operating Revenues. Operating revenues for the three months ended December 31, 2019 and 2018, consisted of the following:



TVA's current rate structure provides pricing signals intended to signal higher cost periods to serve its customers and capture a portion of TVA's fixed costs in fixed charges. The structure includes three base revenue components: time of use demand charges, time of use energy charges, and a grid access charge ("GAC"). The demand charges are based upon the customer's peak monthly usage and increase as the peak increases. The energy charges are based on time differentiated kWh used by the customer. Both of these components can be significantly impacted by weather. The GAC captures a portion of fixed costs and will be offset by a corresponding reduction to the energy rates. The GAC will also reduce the impact of weather variability to the overall rate structure. Recognizing the need for flexibility, all LPCs were presented with the option to implement

[Table of Contents](#)

the GAC in October 2018 or defer the implementation until October 2019. Seventy-nine LPCs elected to implement in October 2018, while the remaining 75 elected to implement wholesale changes in October 2019.

Additionally, at its August 2019 meeting, the TVA Board approved a 20-year Partnership Agreement option that better aligns the length of LPC contracts with TVA's long-term commitments. Participating LPCs will receive benefits including a 3.1 percent wholesale bill credit in exchange for their long-term commitment, which enables TVA to recover its long-term financial commitments over a commensurate period. As of December 31, 2019, 134 LPCs had signed the 20-year Partnership Agreement with TVA, which represents 57 percent of total operating revenues for the three months then ended.

In addition to base revenues, the rate structure also includes a separate fuel rate that includes the costs of natural gas, fuel oil, purchased power, coal, emission allowances, nuclear fuel, and other fuel-related commodities; realized gains and losses on derivatives purchased to hedge the costs of such commodities; and payments to states and counties in lieu of taxes ("tax equivalents") associated with the fuel cost adjustments.

The changes in revenue components for the three months ended December 31, 2019, compared to the three months ended December 31, 2018, are summarized below:

	Changes in Revenue Components		
	Three Months Ended December 31		
	2019	2018	Change
Base revenue			
Energy revenue	\$ 1,067	\$ 1,190	\$ (123)
Demand revenue	883	858	25
Grid access charge	149	64	85
Long-term partnership agreement credits for LPCs	(34)	—	(34)
Other charges and credits ⁽¹⁾	(144)	(138)	(6)
Total base revenue	1,921	1,974	(53)
Fuel cost recovery	610	707	(97)
Off-system sales	1	—	1
Revenue from sales of electricity	2,532	2,681	(149)
Other revenue	46	44	2
Total operating revenues	\$ 2,578	\$ 2,725	\$ (147)

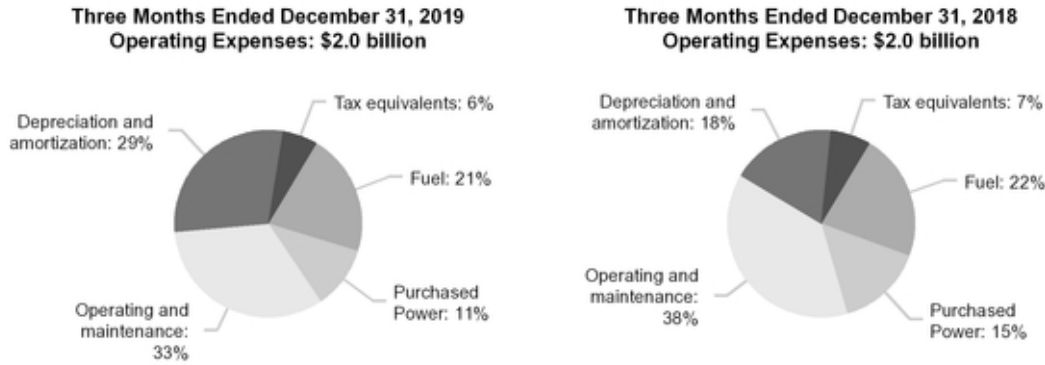
Note

(1) Includes economic development credits to promote growth in the Tennessee Valley, hydro preference credits for residential customers of LPCs, and interruptible credits allowing TVA to reduce industrial customer usage in periods of peak demand to balance system demand. See Note 16 — *Revenue*.

Operating revenues decreased \$147 million for the three months ended December 31, 2019, as compared to the same period of the prior year, primarily due to a \$97 million decrease in fuel cost recovery revenues and a \$53 million decrease in base revenues. The \$97 million decrease in fuel cost recovery revenues was driven by a \$69 million decrease attributable to lower fuel rates and a \$27 million decrease attributable to lower energy sales. Lower energy sales primarily resulted from overall milder weather for the Tennessee Valley service area during the three months ended December 31, 2019, despite record-setting heat in October 2019 and record-setting cold in November 2019. This overall milder weather was also the primary driver in reducing energy revenues by \$123 million for the three months ended December 31, 2019. However, the record-setting peak periods in October 2019 and November 2019 increased demand revenue by \$25 million. Full implementation of the grid access charge increased revenue by \$85 million. In addition, the new wholesale bill credits provided to LPCs participating in the 20-year Partnership Agreement reduced revenue by \$34 million for the three months ended December 31, 2019.

[Table of Contents](#)

Operating Expenses. Operating expense components as a percentage of total operating expenses for the three months ended December 31, 2019 and 2018, consisted of the following:



The following table shows TVA's generation and purchased power by generating source as a percentage of all electrical power generated and purchased (based on kWh) for the periods indicated:

Power Supply from TVA-Operated Generation Facilities and Purchased Power
Three Months Ended December 31

	2019		2018		Change	Percentage Change
	kWh (millions)	Percent of Power Supply	kWh (millions)	Percent of Power Supply		
Coal-fired	5,170	14%	6,480	17%	(1,310)	(20)%
Nuclear	15,716	42%	13,810	36%	1,906	14 %
Hydroelectric	3,655	10%	4,809	12%	(1,154)	(24)%
Natural gas and/or oil-fired	7,855	21%	6,611	17%	1,244	19 %
Total TVA-operated generation facilities⁽¹⁾	32,396	87%	31,710	82%	686	2 %
Purchased power (non-renewable) ⁽²⁾	2,954	8%	5,018	13%	(2,064)	(41)%
Purchased power (renewable) ⁽³⁾	1,950	5%	1,909	5%	41	2 %
Total purchased power	4,904	13%	6,927	18%	(2,023)	(29)%
Total power supply	37,300	100%	38,637	100%	(1,337)	(3)%

Notes

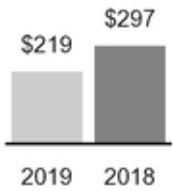
- (1) Generation from TVA-owned renewable resources (non-hydroelectric) is less than one percent for all periods shown and therefore is not represented in the table above.
- (2) Includes generation from Caledonia Combined Cycle Plant, which is currently a leased facility operated by TVA. Generation from Caledonia Combined Cycle Plant was 805 million kWh and 1,028 million kWh for the three months ended December 31, 2019 and 2018, respectively.
- (3) Includes power purchased from the following renewable sources: hydroelectric, solar, wind, and cogeneration.



Fuel

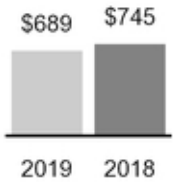
Fuel expense decreased \$18 million for the three months ended December 31, 2019, as compared to the same period of the prior year. Lower effective fuel rates contributed \$58 million to the decrease resulting from lower commodity prices, particularly the prices of gas. Partially offsetting this decrease was an increase to fuel volume of \$10 million due to an increase of TVA owned generation and an increase of \$30 million driven by variances in fuel rate recovery resulting from the increase in lower cost TVA-owned generation.

Table of Contents



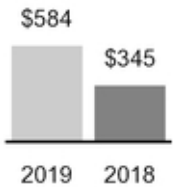
Purchased Power

Purchased power expense decreased \$78 million for the three months ended December 31, 2019, as compared to the same period of the prior year. This was primarily driven by a \$93 million reduction in volume due to less TVA-owned facilities in outages during the three months ended December 31, 2019, as well as a decrease in total degree days. Partially offsetting these decreases was an increase of \$21 million in fuel rate recovery driven by an increase in lower cost TVA-owned generation.



Operating and Maintenance

Operating and maintenance expense decreased \$56 million for the three months ended December 31, 2019, as compared to the same period of the prior year. This was primarily driven by \$65 million of prior year accelerated recovery of the regulatory asset for Environmental cleanup costs related to the Kingston ash spill, which was fully amortized at September 30, 2019. Additionally, there were less planned nuclear outage days which decreased outage expense by \$24 million. Partially offsetting these decreases was an increase of \$15 million related to TVA's capital spare program, \$4 million of project write-offs associated with the retirement of Paradise Unit 3, and \$16 million of increased payroll and benefit costs due to labor escalation for cost of living increases and timing of accruals.



Depreciation and Amortization

Depreciation and amortization expense increased \$239 million for the three months ended December 31, 2019, as compared to the same period of the prior year. This was primarily driven by an increase in depreciation expense of \$225 million related to the decision in the second quarter of 2019 to accelerate the retirements of Bull Run and Paradise. The remaining variance is primarily due to new additions to Completed plant.



Tax Equivalents

Tax equivalents expense decreased \$1 million for the three months ended December 31, 2019, as compared to the same period of the prior year. The expense is comparable to the prior period as expected due to TVA's total operating revenues being consistent from 2018 to 2019.

Interest Expense. Interest expense and interest rates for the three months ended December 31, 2019 and 2018, were as follows:

Interest Expense and Rates⁽⁴⁾

	Three Months Ended December 31		
	2019	2018	Percent Change
Interest expense ⁽¹⁾	\$ 287	\$ 302	(5.0)%
Average blended debt balance ⁽²⁾	22,230	23,670	(6.1)%
Average blended interest rate ⁽³⁾	5.06%	4.88%	3.7 %

Notes

(1) Total interest expense includes amortization of debt discounts, issuance, and reacquisition costs, net.

(2) Includes average balances of long-term power bonds, debt of VIE, and discount notes.

(3) Includes interest on long-term power bonds, debt of VIE, and discount notes.

(4) There were no Allowance for Funds Used During Construction ("AFUDC") amounts for the periods shown above.

Table of Contents

Total interest expense decreased \$15 million for the three months ended December 31, 2019, as compared to the same period of the prior year. This was primarily driven by a decrease of \$8 million due to lower average balances and rates on short-term debt, a decrease of \$2 million due to lower average balances on long-term debt, and a decrease in other interest expense of \$7 million. Partially offsetting these decreases was an increase of \$3 million in long-term interest due to higher average rates on long-term debt.

Other Income (Expense), Net. During the three months ended December 31, 2019, Other income (expense), net decreased \$12 million primarily driven by \$21 million of other income in 2019 related to a deposit liability received by TVA as a down payment on the sale of Bellefonte which was partially offset by \$7 million of unrealized losses on Supplemental Executive Retirement Plan and Deferred Compensation Plan investments.

Liquidity and Capital Resources

Sources of Liquidity

TVA depends on various sources of liquidity to meet cash needs and contingencies. TVA's primary sources of liquidity are cash from operations and proceeds from the issuance of short-term debt in the form of discount notes, along with periodic issuances of long-term debt. TVA's balance of short-term debt typically changes frequently as TVA issues discount notes to meet short-term cash needs and pay scheduled maturities of discount notes and long-term debt. The periodic amounts of short-term debt issued are determined by near-term expectations for cash receipts, cash expenditures, and funding needs, while seeking to maintain a target range of cash and cash equivalents on hand.

In addition to cash from operations and proceeds from the issuance of short-term and long-term debt, TVA's sources of liquidity include a \$150 million credit facility with the United States Department of the Treasury ("U.S. Treasury"), four long-term revolving credit facilities totaling \$2.7 billion, and proceeds from other financings. See Note 12 — *Debt and Other Obligations* — *Credit Facility Agreements*. Other financing arrangements may include sales of receivables, loans, and other assets.

The TVA Act authorizes TVA to issue bonds, notes, or other evidences of indebtedness (collectively, "Bonds") in an amount not to exceed \$30.0 billion outstanding at any time. Power bonds outstanding, excluding unamortized discounts and premiums and net exchange gains from foreign currency transactions, at December 31, 2019, were \$21.0 billion (including current maturities). The balance of Bonds outstanding directly affects TVA's capacity to meet operational liquidity needs and to strategically use Bonds to fund certain capital investments as management and the TVA Board may deem desirable. Other options for financing not subject to the limit on Bonds, including lease financings (see *Lease Financings* below, Note 6 — *Leases*, and Note 9 — *Variable Interest Entities*), could provide supplementary funding if needed. Currently, TVA believes that it has adequate capability to fund its ongoing operational liquidity needs and make planned capital investments over the next decade through a combination of Bonds, additional power revenues through power rate increases, cost reductions, or other ways. See *Lease Financings* below, Note 9 — *Variable Interest Entities*, and Note 12 — *Debt and Other Obligations* for additional information.

TVA may from time to time seek to retire or purchase its outstanding debt through cash purchases and/or exchanges for securities, in open market purchases, privately negotiated transactions, or otherwise. Such repurchases or exchanges, if any, will depend on prevailing market conditions, TVA's liquidity requirements, contractual restrictions, and other factors. The amounts involved may be material.

Debt Securities. TVA's Bonds are not obligations of the U.S., and the U.S. does not guarantee the payments of principal or interest on Bonds. TVA's Bonds consist of power bonds and discount notes. Power bonds have maturities of between one and 50 years. At December 31, 2019, the average maturity of long-term power bonds was 15.85 years, and the average interest rate was 4.67 percent. Discount notes have maturities of less than one year. Power bonds and discount notes have a first priority and equal claim of payment out of net power proceeds. Net power proceeds are defined as the remainder of TVA's gross power revenues after deducting the costs of operating, maintaining, and administering its power properties and payments to states and counties in lieu of taxes, but before deducting depreciation accruals or other charges representing the amortization of capital expenditures, plus the net proceeds from the sale or other disposition of any power facility or interest therein. In addition to power bonds and discount notes, TVA had long-term debt associated with certain VIEs outstanding at December 31, 2019. TVA also had secured notes outstanding at December 31, 2019 that were assumed in a prior year asset acquisition. See *Lease Financings* below, Note 9 — *Variable Interest Entities*, and Note 12 — *Debt and Other Obligations* for additional information.

[Table of Contents](#)

The following table provides additional information regarding TVA's short-term borrowings:

Short-Term Borrowing Table				
	At December 31, 2019	Three Months Ended December 31, 2019	At December 31, 2018	Three Months Ended December 31, 2018
Gross Amount Outstanding (at End of Period) or Average Gross Amount Outstanding (During Period)				
Discount Notes	\$ 895	\$ 767	\$ 2,335	\$ 1,999
Maximum Month-End Gross Amount Outstanding (During Period)				
Discount Notes	N/A	895	N/A	2,390
Weighted Average Interest Rate				
Discount Notes	1.560%	1.710%	2.338%	2.270%

Lease Financings. TVA has entered into certain leasing transactions with special purpose entities ("SPEs") to obtain third-party financing for its facilities. These SPEs are sometimes identified as VIEs of which TVA is determined to be the primary beneficiary. TVA is required to account for these VIEs on a consolidated basis. See Note 9 — *Variable Interest Entities* and Note 12 — *Debt and Other Obligations* for information about TVA's lease financing activities. During 2017 and 2016, TVA acquired 100 percent of the equity interests in certain SPEs created for the purpose of facilitating lease financing. TVA may seek to enter into similar arrangements in the future. In March 2019, TVA made final rent payments under lease/leaseback transactions involving eight CTs, and in July 2019, these transactions were terminated.

Summary Cash Flows

A major source of TVA's liquidity is operating cash flows resulting from the generation and sale of electricity. Cash, cash equivalents, and restricted cash were \$327 million at December 31, 2019, compared to \$324 million at December 31, 2018. A summary of cash flow components for the three months ended December 31, 2019 and 2018, follows:

OPERATING CASH FLOWS



INVESTING CASH FLOWS



Cash provided by (used in):

FINANCING CASH FLOWS



Operating Activities. TVA's cash flows from operations are primarily driven by sales of electricity, fuel expense, and operating and maintenance expense. The timing and level of cash flows from operations can be affected by the weather, changes in working capital, commodity price fluctuations, outages, and other project expenses.

Net cash flows provided by operating activities increased \$336 million for the three months ended December 31, 2019, as compared to the same period of the prior year, primarily driven by increases in revenue collections due to higher summer revenues and decreases in outage expenses.

Investing Activities. The majority of TVA's investing cash flows are due to investments to acquire, upgrade, or maintain generating and transmission assets, including environmental projects and the purchase of nuclear fuel.

Net cash flows used in investing activities decreased \$11 million for the three months ended December 31, 2019, as compared to the same period of the prior year driven by the completion of the Browns Ferry extended power uprate in the prior year. This decrease was partially offset by an increase in expenditures for the Boone Dam and Pickwick South Embankment Remediation projects and increases in nuclear fuel expenditures. Nuclear fuel expenditures vary depending on the number of outages and the prices and timing of purchases of uranium and enrichment services.

Table of Contents

Financing Activities. TVA's cash flows provided by or used in financing activities are primarily driven by the timing and level of cash flows provided by operating activities, cash flows used in investing activities, and net issuance and redemption of debt instruments to maintain a strategic balance of cash on hand.

Net cash used in financing activities was \$243 million for the three months ended December 31, 2019, as compared to \$101 million of net cash provided by financing activities in the same period of the prior year. TVA had \$218 million of power bond redemptions during the first quarter of 2020, primarily due to callable debt, compared to \$1.0 billion of power bond redemptions during the first quarter of 2019. Additionally, higher net cash flows provided by operating activities and lower net cash flows used in investing activities resulted in debt reduction in the first quarter of 2020.

Contractual Obligations

TVA has obligations and commitments to make future payments under certain contracts. During the three months ended December 31, 2019, there were no material changes in TVA's contractual obligations outside of the ordinary course of business. TVA's contractual obligations are discussed in Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations — *Liquidity and Capital Resources* and Note 21 — *Benefit Plans* of the Notes to Consolidated Financial Statements in the Annual Report.

Key Initiatives and Challenges

Distributed Energy Resources

Consumer desire for energy choice, among other things, is driving the expectation for flexible options in the electric industry. TVA and LPCs are working together to leverage the strengths of the Tennessee Valley public power model to provide distributed energy solutions that are economical, sustainable, and flexible. TVA will focus on the safety and reliability impacts of these resources as they are interconnected to the grid and will ensure that the pricing of electricity remains as low as feasible. Additional regulatory considerations and analysis may be required as the DER market, technologies, and programs evolve. TVA is working to develop pricing and regulatory structures with a deliberate and thoughtful analysis of each current and future program offering. This requires strong partnerships with LPCs to give customers choices and provide end-use consumers the flexibility they desire.

In May 2017, the TVA Board authorized up to \$300 million to be spent over the next 10 years, subject to annual budget availability and necessary environmental reviews, to build an enhanced fiber optic network that will better connect TVA's operational assets. Fiber is a vital part of TVA's modern communication infrastructure. The new fiber optic lines will improve the reliability and resiliency of the generation and transmission system while enabling the system to better accommodate DER as they enter the market. As of December 31, 2019, TVA had spent \$91 million on installation of the fiber optic lines and expects to spend an additional \$209 million to complete the project.

Changing Customer Preferences

As more consumers and businesses are demanding cleaner energy, the utility industry is evolving to meet those needs. As TVA also evolves, it will see impacts to the way it does business through the pricing of products, transmission of energy, and development of new products and services for its customers in support of changing customer preferences and its economic development efforts. End-use customers are becoming more technologically sophisticated and want greater control over their energy usage. Many companies are focusing more on sustainability and requiring more energy efficiency as well as cleaner, more renewable energy options. The continuing challenge for TVA and others is finding ways to meet the needs and preferences of customers while successfully developing flexible pricing models to accommodate the evolving markets.

Low-Income Energy Efficiency Program. Through the Home Uplift Program, TVA is partnering with LPCs, state and local governments, non-profit agencies, energy efficiency advocates, and the Tennessee Valley Public Power Association to complete home evaluations and make high-impact home energy upgrades for qualifying homeowners. In addition, TVA and LPCs conduct workshops to educate homeowners about low and no-cost energy efficiency upgrades that improve their quality of life.

Renewable Power Purchase Agreements. In order to meet customer preferences and requirements for cleaner energy, TVA entered into certain power purchase agreements ("PPAs") with renewable resource providers during 2019. These agreements are the latest to stem from TVA's 2017 request for proposals for renewable energy. In 2019, TVA signed four solar PPAs for 674 megawatts ("MW") of solar generation at sites in Tennessee and Alabama. These four solar projects are expected to come online in 2021. In early 2020, TVA signed five additional PPAs for 484 MW of solar generation with 50 MW of battery storage expected to come online in 2022. TVA will procure the renewable energy and sell the resulting Renewable Energy Certificates to specific customers, allowing TVA to increase its renewable energy portfolio without additional costs to other Valley customers. These agreements help to align the core values of TVA and the public power model with the desire of TVA's customers for renewable energy.

Table of Contents

Renewable Power Solutions. During its February 2019 meeting, the TVA Board approved new renewable power solutions, including a utility-scale option and a mid-scale option, that better equip TVA and LPCs with the flexibility to meet changing end-use customer needs. The utility-scale option, referenced at the February 2019 TVA Board meeting as the Flexibility Renewable Option, is implemented by a Renewable Investment Agreement, which aggregates demand through a competitive procurement process. TVA may also construct its own renewable facilities to meet these needs. The mid-scale option, also known as the Flexibility Research Project, is a joint project with LPCs to enable solutions for situations where the end-use consumer needs onsite renewable or distributed generation and for TVA to gain market knowledge and operational insights from these research projects.

In addition, TVA issued a request for proposal in April 2019 for up to 200 MW of new renewable energy. The ultimate volume contracted will align to TVA customers' demand for renewable energy, allowing TVA to increase its renewable energy portfolio without additional costs to other Valley customers. TVA anticipates making selections during the second quarter of 2020.

Natural Resource Plan

TVA is updating its Natural Resource Plan ("NRP"), which was completed in 2011 to guide TVA's management of the public lands and waters within its seven-state service area. TVA remains committed to a balanced management approach and is considering changes to the NRP that include objectives and programs for each focus area and a flexible approach for long-term planning. These changes align with TVA's mission and will help TVA be better equipped to prioritize funding plans and create efficiencies in business planning and stewardship project implementation. During 2019, TVA hosted public meetings around the Valley and released the draft NRP and the associated Supplemental Environmental Impact Statement ("SEIS") for public review and comment. TVA is currently drafting the final SEIS and 2020 NRP, which are expected to be published in the third quarter of 2020.

Strategic Financial Plan

In August 2019, the TVA Board approved an annual budget that reflects the first year of a new Strategic Financial Plan. The Strategic Financial Plan, which extends from 2020 through 2030, is flexible in aligning customer preferences and TVA's mission while at the same time establishing a long-term forecast of financial results. Key focus areas of the Strategic Financial Plan include maintaining rates as low as feasible, establishing better alignment between the length of LPC contracts and TVA's long-term commitments, stabilizing debt in an \$18.0 billion to \$20.0 billion range, assuming 100 percent long-term partner participation, maintaining a cash balance of \$300 million, and pursuing operational efficiencies. Lower partner participation may lead to stabilized debt levels below this range. As TVA executes the plan, key assumptions and performance may change estimated debt levels.

Generation Resources

Extreme Flooding Preparedness. Updates to the TVA analytical hydrology model completed in 2009 indicated that under "probable maximum flood" conditions, some of TVA's dams might not have been capable of regulating the higher flood waters. A "probable maximum flood" is an extremely unlikely event; however, TVA is obligated to provide protection for its nuclear plants against such events. As a result, TVA installed a series of modifications at four dams.

Since 2009, TVA has performed further hydrology modeling of portions of the TVA watershed using updated modeling tools. The revised hydrology models were reviewed and approved by the NRC for Watts Bar Units 1 and 2. However, TVA identified an error in the modeling that will require the models for Watts Bar Units 1 and 2 to be resubmitted. TVA plans to resubmit models for Watts Bar Units 1 and 2 during the second quarter of 2020. In addition, TVA submitted models for Sequoyah Nuclear Plant ("Sequoyah") Units 1 and 2 on January 14, 2020. TVA will subsequently address conditions at Browns Ferry as needed. TVA is deferring the decision on the need for additional modifications until after the modeling work is complete.

As of December 31, 2019, TVA had spent \$153 million on the modifications and improvements related to extreme flooding preparedness and expects to spend up to an additional \$27 million to complete the modifications.

NRC Seismic Assessments. On May 9, 2014, the NRC notified licensees of nuclear power reactors in the central and eastern U.S. of the results of seismic hazard screening and prioritization evaluations performed by unit owners and reviewed by the NRC staff. Because the seismic hazards for Browns Ferry, Sequoyah, and Watts Bar had increases in seismic parameters beyond the technical information available when the plants were designed and licensed, TVA must conduct seismic risk evaluations for these plants. TVA completed the risk evaluation for Watts Bar and submitted it to the NRC on June 30, 2017; the evaluation concluded that no additional actions were required. The NRC completed its review of the Watts Bar evaluation in July 2018 and concluded that no further response or regulatory actions were required. The evaluation for Browns Ferry was submitted on December 17, 2019, and the evaluation for Sequoyah was submitted on October 18, 2019. TVA anticipates the NRC will complete its review this year.

Mitigation of Beyond-Design-Basis Events. NRC rulemaking has been developed to codify the requirements promulgated by orders related to beyond-design-basis flooding and seismic events discussed above. The NRC Commissioners

Table of Contents

approved the final rule in 2019. TVA plans to implement requirements for Sequoyah and Watts Bar by 2022 and for Browns Ferry by 2023. A gap review of the revised rule has been performed and no new gaps to compliance were identified. Actions to complete flood and seismic assessments are still ongoing. See *Extreme Flooding Preparedness* and *NRC Seismic Assessments* above.

Work Environment at Nuclear Plants. In March 2016, the NRC issued a Chilling Effect Letter ("CEL") to TVA regarding work environment concerns identified at Watts Bar. In June 2018, the NRC conducted a follow-up inspection at Watts Bar and noted some improvement. In the mid-cycle assessment letter issued in June 2018, the NRC issued a Cross Cutting Issue ("CCI") in safety conscious work environment and outlined the closure criteria for both the CEL and the CCI. In August 2018, the NRC documented a chilled work environment in an additional department. The NRC completed follow-up inspections in October 2019, which resulted in no findings. The NRC is currently assessing results of these inspections.

Tritium-Producing Burnable Absorber Rods. TVA was a cooperating agency in the 2016 Department of Energy ("DOE") Final SEIS for the Production of Tritium in a Commercial Light Water Reactor. In 2017, due to an anticipated need for more tritium-producing burnable absorber rods ("TPBARs"), the DOE announced its preferred alternative for irradiation services, which included use of an additional reactor. As a result of TVA's assessment and concurrence with the DOE's alternative, TVA submitted a license amendment request to the NRC to authorize the irradiation of TPBARs in Watts Bar Unit 2. The NRC approved the request in 2019. TVA is projecting to begin tritium production in Watts Bar Unit 2 in the fall of 2021. The DOE's decision also allows for irradiation of TPBARs at Sequoyah in the future; however, TVA does not have plans to employ Sequoyah units for tritium production in the near term.

Extended Power Uprate. TVA has undertaken an EPU project at Browns Ferry to increase the amount of electrical generation capacity of its reactors. The license for each reactor was amended to allow reactor operation at the higher power level. The Browns Ferry EPU license amendments were approved by the NRC in 2017, following a nearly two-year review.

The project involved extensive engineering analyses and modification and replacement of certain existing plant components to enable the units to produce the additional power requested by the license amendments. The project is estimated to cost approximately \$475 million. Physical work on all units was completed in 2019, and the generating capacity is expected to increase by an estimated 465 MW after sufficient run time to validate the new capacity.

Plant Closures. During its August 2018 meeting, the TVA Board approved a plan to perform assessments of Bull Run and Paradise. These assessments included resiliency studies for fuel and transmission, financial considerations, and Environmental Assessments pursuant to the National Environmental Policy Act ("NEPA"). Results of these assessments were presented to the TVA Board at its February 2019 meeting, and the Board approved the retirement of Paradise Unit 3 by December 2020 and Bull Run by December 2023. Subsequent to the Board approval, TVA determined that Paradise would not be restarted after January 2020 due to the plant's material condition. Paradise Fossil Plant Unit 3 was taken offline on February 1, 2020, effectively retiring the plant. See Note 5 — *Plant Closures*.

Coal Combustion Residuals Facilities. TVA has committed to a programmatic approach for the elimination of wet storage of CCRs within the TVA service area. Under this program (the "CCR Conversion Program"), TVA is converting all operational coal-fired plants to dry CCR storage and closing all wet storage facilities.

Dry generation and dewatering projects. Conversion of coal plant CCR wet processes to dry generation or dewatering is complete at Bull Run, Shawnee, and Kingston Fossil Plant ("Kingston"). Construction at Gallatin Fossil Plant ("Gallatin") was completed during the first quarter of 2020. Construction is underway at Cumberland Fossil Plant ("Cumberland") and is scheduled for completion in late 2020. Fly ash and gypsum conversion projects at Paradise were complete during the third quarter of 2019.

Landfills. TVA has made strategic decisions to build and maintain lined and permitted dry storage facilities on TVA-owned property at several TVA locations, allowing these facilities to operate beyond existing dry storage capacity. Currently, lined and permitted dry storage facilities are completed and operational at Bull Run, Kingston, and Gallatin, and a lined dry storage facility at Paradise has been constructed but is not yet operational. A lined dry storage facility at Shawnee is currently under construction with completion scheduled for September 2020. Construction of a lined dry storage facility at Cumberland is expected to start in 2021. Kingston's permitted lined dry storage expansion is scheduled for completion in 2021. TVA is designing and permitting a lateral expansion of the existing landfill at Gallatin. Additionally, TVA is initiating the design and permitting process for a new lined landfill at Bull Run, but no decision to construct the facility has been made at this time. Construction of additional lined facilities may occur to support future business requirements.

Wet CCR impoundment closures. TVA is working to close wet CCR impoundments in accordance with federal and state requirements. Closure project schedules and costs are driven by the selected closure methodology (such as closure-in-place or closure-by-removal). Closure initiation dates are driven by environmental regulations. TVA's predominant closure methodology is closure-in-place, with exceptions at certain facilities. TVA issued an environmental impact statement ("EIS") in June 2016 that addresses the closure of CCR impoundments at TVA's coal-fired plants. TVA issued its associated Record of Decision in July 2016. Although the EIS was designed to be programmatic in order to address the mode of impoundment closures, it specifically addressed closure methods at 10 impoundments. TVA subsequently decided to close those

Table of Contents

impoundments. The method of final closure for each of these facilities will depend on various factors, including the results of studies conducted pursuant to NEPA and approval by appropriate state regulators. Additional NEPA studies will be conducted as other facilities are designated for closure. See Note 11 — *Asset Retirement Obligations*.

Groundwater monitoring. Compliance with the Environmental Protection Agency's ("EPA's") CCR rule (the "CCR Rule") as well as other requirements will require additional engineering and analysis as well as implementation of a comprehensive groundwater monitoring program. As further analyses are performed, including evaluation of monitoring results, there is the potential for additional costs for investigation and/or remediation. TVA expects to continue to evaluate and update these cost estimates.

In compliance with the CCR Rule, TVA published the results of additional groundwater testing at TVA's CCR facilities on March 1, 2019. The results included values above groundwater protection standards for some constituents at several CCR units. Accordingly, TVA will have to cease sending CCR and non-CCR wastestreams to any impacted unlined CCR surface impoundments no later than October 31, 2020 (and potentially earlier due to location demonstration results) and initiate additional corrective actions for groundwater. The EPA has proposed a rule revision that would change the deadline to cease sending CCR and non-CCR wastestreams to unlined CCR impoundments and to initiate closure by August 31, 2020. The proposed rule also allows for extensions based on meeting certain criteria. TVA evaluated and published Assessment of Corrective Measures reports to its CCR website in August 2019.

TVA was involved in two lawsuits concerning the CCR facilities at Gallatin. One of these cases was resolved by the entry of a consent order that became effective July 31, 2019. TVA agreed to close the existing wet ash impoundments by removal, either to an onsite landfill or to an offsite facility. TVA may also submit a plan that allows for beneficial reuse. TVA is currently conducting additional studies and environmental reviews to support its determination of the specific removal plans. See Note 11 — *Asset Retirement Obligations*.

In October 2019, the Tennessee Department of Environment and Conservation ("TDEC") released amendments to its regulations which govern solid waste disposal facilities, including TVA's active CCR facilities covered by a solid waste disposal permit and those which closed pursuant to a TDEC approved closure plan. Such facilities are generally subject to a 30-year post-closure care period during which the owner or operator must undertake certain activities, including monitoring and maintaining the facility. The amendments will, among other things, add an additional 50-year period after the end of the post-closure care period, require TVA to submit recommendations as to what activities must be performed during this 50-year period to protect human health and the environment, and require TVA to submit revised closure plans every 10 years.

As of December 31, 2019, TVA had spent approximately \$1.9 billion on its CCR Conversion Program. TVA expects to spend an additional \$1.1 billion on the CCR Conversion Program through 2024. These estimates may change depending on the final closure method selected for each facility. Once the CCR Conversion Program is completed, TVA will continue to undertake certain CCR projects, including building new landfill cells under existing permits and closing existing cells once they reach capacity.

Potential Liability Associated with Workers' Exposure to CCR Materials. In response to the 2008 ash spill at Kingston, TVA hired Jacobs Engineering Group, Inc. ("Jacobs") to oversee certain aspects of the cleanup. After the cleanup was completed, Jacobs was sued in the United States District Court for the Eastern District of Tennessee ("Eastern District") by employees of a contractor involved in the cleanup and family members of some of the employees. The plaintiffs alleged that Jacobs had failed to take or provide proper health precautions and misled workers about the health risks associated with exposure to coal fly ash, which is a CCR material. The plaintiffs alleged that exposure to the fly ash caused a variety of significant health issues and illnesses, including in some cases death. The case was split into two phases, with the first phase considering, among other issues, general causation and the second determining specific causation and damages. In 2018, a jury hearing the first phase returned a verdict in favor of the plaintiffs, including determinations that Jacobs failed to adhere to its contract with TVA or the Site Wide Safety and Health Plan in place; Jacobs failed to provide reasonable care to the plaintiffs; and Jacobs's failures were capable of causing a list of medical conditions, ranging from hypertension to cancer. In 2019, the district court referred the parties to mediation. Depending on the outcome of mediation, the litigation will proceed to the second phase on the question of whether Jacobs's failures did in fact cause the plaintiffs' alleged injuries and damages.

Further in 2019, an additional group of contractor employees and family members filed suit against Jacobs in the Circuit Court for Roane County, Tennessee. These plaintiffs have raised similar claims to those being litigated in the case referenced above.

While TVA is not a party to either of these lawsuits, TVA could be contractually obligated to reimburse Jacobs for some amounts that Jacobs is required to pay. TVA will continue monitoring the litigation to determine whether these or similar cases could have broader implications for the utility industry. See Note 19 — *Contingencies and Legal Proceedings — Legal Proceedings*.

River Management. The Tennessee Valley experienced above normal rainfall and runoff for the first quarter of 2020, helping TVA meet its river system commitments, including managing minimum river flows for navigation, generating low-cost hydroelectric power, maintaining water quality and water supply, and providing recreational opportunities for the Tennessee

Table of Contents

Valley. In addition, having cool water available helps TVA to meet thermal compliance and support normal operation of TVA's nuclear and fossil-fueled plants, while oxygenating water helps fish species remain healthy. Rainfall and runoff in the Tennessee Valley during the first quarter in 2020 were 152 percent and 154 percent of normal, respectively.

Small Modular Reactors. In June 2015, DOE entered into an Interagency Agreement with TVA to fund 50 percent of site characterization activities and the development of an Early Site Permit Application ("ESPA") for a generic SMR. The ESPA is based on the potential construction and operation of two or more small modular reactors ("SMRs") units at TVA's Clinch River Site in Oak Ridge, Tennessee. TVA submitted the ESPA for review by the NRC in May 2016. NRC staff concluded their environmental review and issued a final environmental impact statement in April 2019, followed by the conclusion of the safety review and issuance of a final safety evaluation report in June 2019. The Commission held the statutorily required mandatory hearing for the ESPA in August 2019, and the permit was issued by the NRC in December 2019.

TVA is developing a new nuclear asset strategy at a pace consistent with design and licensing progress being made by SMR design developers. The permit is valid through 2039 and therefore provides TVA a great deal of flexibility to make new nuclear decisions based on energy needs and economic factors. Any decision to construct an SMR would require approval by the TVA Board.

As of December 31, 2019, TVA had spent \$76 million on this project. Additional spend will be determined based on future project development.

Dam Safety and Remediation Initiatives

Assurance Initiatives. TVA has an established dam safety program, which includes procedures based on the Federal Guidelines for Dam Safety, with the objective of reducing the risk of a dam safety event. The program is comprised of various engineering activities for all of TVA's dams including safety reassessments using modern industry criteria and the new probable maximum flood and site-specific seismic load cases. One aspect of the guidelines is that dam structures will be periodically assessed to assure that TVA's dams meet current design criteria. These assessments include material sampling of the dam and foundational structures and detailed engineering analysis. TVA will continue preventative and ongoing maintenance as a part of this safety program.

Boone Dam Remediation. In October 2014, a sinkhole was discovered near the base of the earthen embankment at Boone Dam, and a small amount of water and sediment was found seeping from the river bank below the dam. TVA identified underground pathways contributing to the seepage and prepared a plan to repair the dam, which consists of the construction of a composite seepage barrier wall in the dam's earthen embankment. TVA has completed grouting and construction of an upstream and downstream buttress. Installation of the concrete cut-off wall elements is in process.

As design and construction plans are finalized, the estimated cost and duration continue to be refined. As of December 31, 2019, TVA had spent \$187 million related to this project and expects to spend an additional \$269 million through 2023. TVA expects the reservoir to return to normal operations in 2022 and is continuing to work with the community to help mitigate local impacts of the extended drawdown.

Pickwick South Embankment Remediation. Reassessments of Pickwick Landing Dam ("Pickwick") found low safety factors for post-earthquake stability indicating that the dam is at significant risk for slope stability failure following a seismic event in portions of the south embankment. Slope stability failure could lead to a breach of the south embankment and loss of the reservoir, resulting in loss of life and damage to property downstream, disruption to navigation, and loss of generation and recreation.

TVA is upgrading the south embankment by constructing berms on the upstream and downstream slopes. The design phase of the project began during the first quarter of 2017 and is now completed. Construction began in the spring of 2019, and the project is currently estimated to be completed in two years, but could take longer depending on successful construction sequencing. As of December 31, 2019, TVA had spent \$91 million related to this project and expects to spend an additional \$57 million.

Surplus Property

TVA continues to study its real estate portfolio for the purpose of aligning its real estate holdings with TVA's strategic direction. A comprehensive assessment of its real estate holdings has been completed, and TVA is implementing a strategy aimed at reducing cost and right-sizing its portfolio as part of the effort.

Bellefonte Nuclear Plant. In 2016, following a public auction, TVA entered into a contract to sell substantially all of the Bellefonte site to Nuclear Development, LLC, for \$111 million. Nuclear Development, LLC, paid TVA \$22 million during 2016, with the remaining \$89 million due at closing. Nuclear Development, LLC, had up to two years to close on the property, and TVA agreed to maintain the site until closing. Nuclear Development, LLC, requested and was granted an extension of the initial closing date to November 30, 2018. Nuclear Development, LLC, failed to obtain NRC approval of the transfer of the Bellefonte nuclear licenses. TVA determined that the Atomic Energy Act required that this approval be obtained before closing. TVA

Table of Contents

declined to provide a second extension of the purchase agreement. On November 30, 2018, Nuclear Development, LLC, filed suit against TVA in the U.S. District Court for the Northern District of Alabama. See Note 19 — *Contingencies and Legal Proceedings* — *Legal Proceedings* for a discussion of the lawsuit filed by Nuclear Development, LLC.

Knoxville Property. In 2016, TVA completed a comprehensive assessment of its real estate holdings in the Knoxville, Tennessee region including the Knoxville Office Complex ("KOC") and adjacent Summer Place Complex ("SPC"). As a result of this study and a subsequent environmental assessment in 2017, TVA is in the process of consolidating its Knoxville area employees into the West Tower of the KOC or a centralized field office in Norris, Tennessee. As part of this consolidation effort, TVA may convey the SPC and the majority of the East Tower of the KOC.

Regulatory Compliance

Steam-Electric Effluent Guidelines. In 2015, the EPA published a final rule revising the existing steam-electric effluent limitation guidelines ("ELGs"). The ELGs update the existing technology-based water discharge limitations for power plants. Compliance with new requirements is required in the 2018-2023 timeframe and will necessitate major upgrades to wastewater treatment systems at all coal-fired plants. Dry fly ash handling is mandated by the rule. The rule also requires either dry bottom ash handling systems or "no discharge" recycle of bottom ash transport waters, and new technology-based limits on flue gas desulfurization ("FGD") (scrubber) wastewater require primary physical/chemical treatment and secondary biological treatment to meet extremely low limits for arsenic, mercury, and selenium.

The EPA published a rule in 2017, postponing certain compliance/applicability dates to provide the EPA time to review and revise, as necessary, the 2015 ELGs for FGD wastewater and bottom ash transport water. The EPA delayed the compliance dates for these two waste streams from the 2018-2023 timeframe to 2020-2023. However, the 2018-2023 applicability dates and the accompanying requirements for fly ash transport water, flue gas mercury control wastewater, and gasification wastewater remain unchanged. While the EPA reconsiders the limits for FGD wastewater and bottom ash transport water, states have issued National Pollutant Discharge Elimination System ("NPDES") permits for all of TVA's active coal facilities based on the 2015 ELGs, recognizing that the permits may need to be reopened to incorporate modifications to those ELGs. The EPA proposed revised ELGs for bottom ash transport water and FGD wastewater on November 4, 2019.

The primary impact of these proposed regulations for TVA is on the operation of existing coal-fired generation facilities. The proposed revised ELGs could impact long-term investment decisions being made relative to the long-term compliance and operability of these plants. The proposed revisions may require TVA to install additional wastewater treatment systems for FGD wastewater and bottom ash transport water and TVA could incur substantial costs to comply with the new rule. TVA currently has four plants with wet scrubbers that may be subject to new scrubber-related limits, the largest being Cumberland. With the recent Board approval of accelerated retirement for Bull Run and Paradise, these plants will be exempted from the imposition of new scrubber-related limits, as a result of the retirement of the units prior to the regulatory deadline. The proposed revision also includes a subcategory for which Cumberland would qualify that provides TVA greater flexibility in meeting the ELGs. However, given that these are proposed rules, it is unclear what the final impact to TVA will be.

Allen Groundwater Investigation. The CCR Rule required TVA to implement a comprehensive groundwater monitoring program at units subject to the rule. As a result of this groundwater monitoring program, TVA reported to TDEC in May 2017 elevated levels of arsenic, lead, and fluoride in groundwater samples collected from two shallow-aquifer groundwater monitoring wells around the Allen East Ash Disposal Area. TVA, under the oversight of TDEC, conducted a remedial investigation into the nature and extent of the contamination. In March 2018, TVA submitted a draft Remedial Investigation Report to TDEC which was revised after discussions with TDEC and additional investigation. TVA submitted the Final Updated Remedial Investigation Report to TDEC on May 31, 2019.

The remedial investigation confirmed that the high arsenic, fluoride, and lead concentrations are limited to the shallow alluvial aquifer in the north and south areas of the Allen East Ash Disposal Area. These areas are not adversely impacting the Memphis aquifer, which is the source of the public drinking water supply. All samples taken from the Memphis aquifer through TVA production wells were below the EPA drinking water standards. As the result of a pumping test conducted on TVA production wells at the nearby Allen Combined Cycle Plant ("Allen CC") by the United States Geological Survey and the University of Memphis, TVA is committed to not operating these production wells until additional data supports safe use. TVA constructed water tanks on site and is purchasing cooling water from Memphis Light, Gas and Water. The use of water tanks rather than the wells may impose some operational restrictions on the Allen CC due to the lower availability of cooling water.

TDEC approved TVA's interim groundwater monitoring plan in 2019. The plan will be reviewed and modified annually as required to support project needs. TVA sampled the monitoring wells around the Allen East Ash Disposal Area quarterly throughout CY 2019. TVA prepared a memorandum following each sampling event, and will issue an annual report. TVA is currently in the process of finalizing the interim response action for a groundwater extraction system to control and begin treating the shallow groundwater that contains elevated concentrations of arsenic. TVA began dewatering the Allen East Impoundment in September 2019.

TVA is evaluating closure options for the Allen East Ash Disposal Area, as well as the nearby West Ash Impoundment, through an EIS pursuant to NEPA. In March 2019, TVA released its public scoping report, which eliminated closure-in-place as

Table of Contents

an alternative. On October 4, 2019, the draft EIS was published for a 45-day public comment period, which concluded on November 25, 2019. TVA is working on responding to the comments received during the comment period and finalizing the EIS.

Ratemaking

TVA, LPCs, and directly served industries have worked collaboratively in recent years to develop changes to rates that focus on TVA's long-term pricing efforts and the changing needs of customers in the Tennessee Valley. These changes have improved pricing by better aligning rates with underlying cost drivers and by sending improved pricing signals, while maintaining competitive industrial rates and keeping residential rates affordable.

At its August 22, 2019 meeting, the TVA Board approved a 20-year Partnership Agreement option that better aligns the length of LPC contracts with TVA's long-term commitments. These agreements are automatically extended each year after their initial effective date, contingent upon certain circumstances, including agreement on flexibility options and limited rate increases going forward. Participating LPCs will receive benefits including a 3.1 percent wholesale bill credit in exchange for their long-term commitment to the Valley, which enables TVA to recover its long-term financial commitments over a commensurate period. In addition, participating LPCs will have the option for flexible generation capacity up to approximately five percent of average total hourly energy sales over the prior five years. As of December 31, 2019, 134 LPCs had signed the 20-year Partnership Agreement with TVA, which represents 57 percent of total operating revenues during the first quarter of 2020.

Safeguarding Assets

Physical Security — Non-Nuclear Asset Protection. TVA utilizes a variety of security technologies, security awareness activities, and security personnel to prevent sabotage, vandalism, and thefts. Any of these activities could negatively impact the ability of TVA to generate, transmit, and deliver power to its customers. TVA's Police and Emergency Management personnel are active participants with numerous professional and peer physical security organizations in both the electric industry and law enforcement communities.

Physical attacks on transmission facilities across the country have heightened awareness of the need to physically protect facilities. TVA continues to work with the North American Electric Reliability Corporation ("NERC"), the SERC Reliability Corporation, the North American Transmission Forum, and other utilities to implement industry approved recommendations and standards.

Nuclear Security. Nuclear security is carried out in accordance with federal regulations as set forth by the NRC. These regulations are designed for the protection of TVA's nuclear power plants, the public, and employees from the threat of radiological sabotage and other nuclear-related terrorist threats. TVA has security forces to guard against such threats.

Cybersecurity. TVA operates in a highly regulated environment with respect to cybersecurity. TVA's cybersecurity program aligns or complies with the Federal Information Security Management Act, the NERC Critical Infrastructure Protection requirements, and the NRC requirements for cybersecurity, as well as industry best practices. As part of the U.S. government, TVA coordinates with and works closely with the U.S. Department of Homeland Security and the U.S. Computer Emergency Readiness Team ("US-CERT"). US-CERT functions as a liaison between the U.S. Department of Homeland Security and the public and private sectors to coordinate responses to security threats from the internet.

The risk of cybersecurity events such as malicious code attacks, unauthorized access attempts, and social engineering attempts continues to intensify. While TVA and its third-party vendors and service providers have been, and will likely continue to be, subjected to such attacks and attempts to disrupt operations, to date the attacks have not impacted TVA's ability to operate as planned. See Item 1A, Risk Factors — *Operational Risks — TVA's facilities and information infrastructure may not operate as planned due to cyber threats to TVA's assets and operations* in the Annual Report.

Over the last few years, there has been an increase of malicious cyber activity across all industries, including the energy sector. This activity has caused the need for heightened awareness and preparedness. TVA is leveraging federal and other partners to better identify, detect, protect, and respond to these potential attacks. While there have been incidents of phishing and attempted fraud against TVA and its vendors and service providers, these events have not had a significant or material impact on business or operations.

Transmission Assets. In addition to physical and cybersecurity attacks, TVA's transmission assets are vulnerable to various types of electrically charged energy disruptions such as those from geomagnetic disturbances ("GMDs") and electromagnetic pulses ("EMP"). Because the effects of GMD and EMP are similar, they are often considered together. In September 2016, the Federal Energy Regulatory Commission ("FERC") approved a new standard to address GMD events, and in November 2018, FERC approved a revision to the standard. TVA has met the requirements of the original standard and most of the requirements of the revised standard, and has evaluated the effects of solar storms ranging from NERC's reference case to possible extreme levels. TVA continues as an active participant with NERC in this field. The most serious threats from EMP are those caused by high-altitude nuclear explosions. Like others in the industry, TVA is coordinating with federal and state authorities, NERC, Electric Power Research Institute, and other grid owners and operators to address this concern.

Environmental Matters

TVA's activities, particularly its power generation activities, are subject to comprehensive regulation under environmental laws and regulations relating to air pollution, water pollution, and management and disposal of solid and hazardous wastes, among other issues. Emissions from all TVA-owned and operated units (including small combustion turbine units of less than 25 MW) have been reduced from historic peaks. Emissions of nitrogen oxide ("NO_x") have been reduced by 96 percent below peak 1995 levels and emissions of sulfur dioxide ("SO₂") have been reduced by 99 percent below 1977 levels through CY 2018. For CY 2018, TVA's emission of carbon dioxide ("CO₂") from its sources was 52 million tons, a 51 percent reduction from 2005 levels. This amount includes 5,037 tons from units rated at less than 25 MW. To remain consistent and to align with the EPA's reporting requirements, TVA intends to continue reporting CO₂ emissions on a calendar year basis.

Clean Air Act

The CAA establishes a comprehensive program to protect and improve the nation's air quality and control sources of air pollution. The major CAA programs that affect TVA's power generation activities are described below.

National Ambient Air Quality Standards. The CAA requires the EPA to set National Ambient Air Quality Standards ("NAAQS") for certain air pollutants. The EPA has done this for ozone, particulate matter ("PM"), SO₂, nitrogen dioxide ("NO₂"), carbon monoxide, and lead. Over the years, the EPA has made the NAAQS more stringent. Each state must develop a plan to be approved by the EPA for achieving and maintaining NAAQS within its borders. These plans impose limits on emissions from pollution sources, including TVA fossil fuel-fired plants. Areas meeting a NAAQS are designated as attainment areas. Areas not meeting a NAAQS are designated as non-attainment areas, and more stringent requirements apply in those areas, including stricter controls on industrial facilities and more complicated permitting processes. TVA fossil fuel-fired plants can be impacted by these requirements. All TVA generating units are located in areas designated as in attainment with NAAQS.

Cross-State Air Pollution Rule. The EPA issued the Cross-State Air Pollution Rule ("CSAPR") in July 2011 requiring several states in the eastern U.S. to improve air quality by reducing power plant emissions that contribute to pollution in other states. In 2016, the EPA issued an update to CSAPR to address cross-state air pollution (the "CSAPR Update Rule"). The EPA subsequently issued an additional rule to resolve any remaining cross-state air pollutant issues ("CSAPR Close-Out Rule"). The U.S. Court of Appeals for the District of Columbia Circuit ("D.C. Circuit") has remanded a portion of the CSAPR Update Rule back to the EPA to address its failure to require upwind states to eliminate substantial contributions to downwind nonattainment by the statutory deadline. The D.C. Circuit also vacated the CSAPR Close-Out Rule. TVA has not had and does not currently anticipate significant changes to its operations based on the CSAPR Update Rule and CSAPR Close-Out Rule in its current form.

Mercury and Air Toxics Standards for Electric Utility Units. Following litigation over the Mercury and Air Toxics Standards ("MATS") and the question of whether the EPA was required to consider cost before deciding whether the regulation of hazardous air pollutants ("HAP") emitted from steam electric utilities was appropriate and necessary, the EPA released a proposed finding that it is not appropriate and necessary to regulate HAP emissions from steam electric utilities. However, the EPA also proposed that notwithstanding this new finding, it would not remove electric generating units from the source categories listed under Section 112 of the CAA and it would not rescind the MATS requirements. Additionally, the EPA proposed to find that further restrictions on HAP emissions are not warranted upon conducting a residual risk and technology review for this source category. Until a final rule is issued, specific impacts to TVA cannot be determined; however, as proposed, the rule is not expected to change TVA's MATS compliance requirements or strategy.

Environmental Agreements. See Note 19 — *Contingencies and Legal Proceedings — Legal Proceedings — Environmental Agreements* for a discussion of the Environmental Agreements, which discussion is incorporated herein by reference.

Acid Rain Program. The Acid Rain Program is intended to help reduce emissions of SO₂ and NO_x, which are the primary pollutants implicated in the formation of acid rain. The program includes a cap-and-trade emission reduction program for SO₂ emissions from power plants. TVA continues to reduce SO₂ and NO_x emissions from its coal-fired plants, and the SO₂ allowances allocated to TVA under the Acid Rain Program are sufficient to cover the operation of its coal-fired plants. In the TVA service area, the limitations imposed on SO₂ and NO_x emissions by the CSAPR program are more stringent than the Acid Rain Program. Therefore, TVA forecasts that the Acid Rain Program will not impose any additional material requirements on TVA.

Regional Haze Program. The EPA issued the Clean Air Visibility Rule, which required certain older sources to install best available retrofit technology. No additional controls or lower operating limits are required for any TVA units to meet best available retrofit technology requirements. In January 2017, the EPA published the final rule that changed some of the requirements for Regional Haze State Implementation Plans ("SIPs"). TVA does not expect significant impacts to its operations from these changes, but specific impacts cannot be determined until future Regional Haze SIPs are developed.

Opacity. Opacity, or visible emissions, measures the denseness (or color) of power plant plumes and has traditionally been used by states as a means of monitoring good maintenance and operation of particulate control equipment. Under some conditions, retrofitting a unit with additional equipment to better control SO₂ and NO_x emissions can adversely affect opacity

Table of Contents

performance, and TVA and other utilities have addressed this issue. The evaluation of utilities' compliance with opacity requirements is coming under increased scrutiny, especially during periods of startup, shutdown, and malfunction. Historically, SIPs developed under the CAA typically excluded periods of startup, shutdowns, and malfunctions, but in June 2015, the EPA finalized a rule to eliminate such exclusions. The EPA rule required states to modify their implementation plans by November 2016. Kentucky, Tennessee, and Mississippi submitted implementation plans, but Alabama has not. Environmental petitioners and several states filed petitions for judicial review of the EPA final rule before the D.C. Circuit. In April 2017, the D.C. Circuit, at the request of the new EPA Administrator, ordered this litigation to be suspended pending the EPA's review to determine whether to reconsider all or part of the rule. TVA does not expect significant impacts from these rule changes.

Petition to Expand the Ozone Transport Region. In December 2013, eight of the twelve states that make up the Ozone Transport Region ("OTR") submitted a petition requesting the EPA to add nine states, including Kentucky and Tennessee, to the OTR. If states within TVA's service territory were included in the OTR, TVA would be required to further reduce NO_x emissions. Six of the states filed suit when the EPA failed to act on the petition. In January 2017, the EPA subsequently published a notice in the Federal Register proposing to deny the petition on the basis that the CAA provides other options. The EPA then denied the petition in October 2017. In December 2017, the eight petitioning states filed in the D.C. Circuit a petition for judicial review of the EPA's denial of the petition to add states to the OTR. On April 23, 2019, the D.C. Circuit denied the petition for judicial review of the EPA's refusal to expand the OTR to include nine additional states.

Kentucky Startup/Shutdown Regulations. In April 2018, the Kentucky Division for Air Quality published final revised startup/shutdown regulations for new and existing indirect heat exchangers. Shawnee Fossil Plant ("Shawnee") and Paradise have boilers which will be subject to these rules when incorporated into their air permits. The revised rules do not significantly impact operations at Shawnee or Paradise.

Kentucky State Implementation Plan to Address Downwind Ozone Impacts. Emissions from utility units in Kentucky that contribute to ozone are already limited by the CSAPR Update Rule and are declining. In February 2018, Kentucky submitted a proposed revision to its SIP to address downwind state ozone impacts. The proposed SIP did not require emission reductions beyond current requirements, and in July 2018, the EPA issued a final rule approving Kentucky's revised SIP. No additional emission reductions are required by the SIP for TVA's Kentucky generating units.

New York Petition to Address Impacts from Upwind High Emitting Sources. In March 2018, the State of New York filed a petition with the EPA under Section 126(b) of the CAA to address ozone impacts on New York from the NO_x emissions from sources emitting at least 400 tons of NO_x in CY 2017 from nine states including Kentucky. The New York petition requests that the EPA require daily NO_x limits for utility units with SCRs such as Paradise Unit 3 and emission reductions from utility units without SCRs such as Shawnee Units 2, 3 and 5-9. Kentucky utility unit NO_x emissions are already limited by the CSAPR Update Rule and are declining, and current EPA modeling projects no additional requirements to reduce Kentucky NO_x emissions are necessary. During its February 2019 meeting, the TVA Board approved the retirement of Paradise Unit 3 by December 2020. On September 20, 2019, the EPA finalized its denial of New York's petition because the state did not demonstrate, and the EPA could not independently establish, that sources in the states listed in the petition contribute to exceedances of the 2008 and 2015 ozone NAAQS in New York. On October 29, 2019, the State of New York filed a petition in the D.C. Circuit for judicial review of the EPA's denial of the petition. Specific impacts to TVA as a result of the filing of the petition for judicial review cannot be determined at this time.

Affordable Clean Energy Rule. On June 19, 2019, the EPA finalized the final Affordable Clean Energy ("ACE") rule and repealed the EPA's previous regulation addressing greenhouse gas ("GHG") emissions from existing fossil fuel-fired units. The ACE rule establishes guidelines for GHG emissions from existing coal-fired units based on efficiency improvements that can be achieved at those units at reasonable cost. States are required to apply the emission guidelines to coal-fired units within their respective jurisdictions and take into account the remaining useful lives of those units. The impact of the ACE rule on TVA's coal-fired units cannot be determined until Tennessee and Kentucky submit to the EPA their SIPs implementing guidelines in the ACE rule and the EPA approves these SIPs. The ACE rule allows states three years to submit their SIPs and allows the EPA 18 months for approval.

New Source Performance Standards. On December 6, 2018, the EPA proposed revisions to the GHG emission standards for new, modified, and reconstructed electric utility generating units that were finalized by the EPA in October 2015. For coal-fired units, the EPA proposes to revise the current new source standards such that carbon capture and sequestration technology is no longer necessary to meet the standards of performance that reflect the best system of emission reduction. The resulting limits are less stringent than limits under the current rule and can be met by modern coal-fired units (e.g., supercritical steam generators) in combination with best operating practices, but without carbon capture and sequestration. The EPA is not proposing to revise the new source performance standard for GHG emission from gas-fired units. If finalized as proposed, the revisions are not expected to significantly impact TVA since TVA does not currently plan to construct, modify, or reconstruct any coal-fired units.

Maryland Petition to Address Impacts from Upwind Electric Generating Units. In September 2017, the State of Maryland filed a lawsuit against the EPA for failing to act within 60 days on Maryland's petition under Section 126 of the CAA to address ozone impacts on Maryland from the NO_x emissions of 36 electric generating units, including TVA's Paradise coal-fired Unit 3. Paradise coal-fired Unit 3 is equipped with a SCR that TVA continuously operates to the greatest extent technically

Table of Contents

practicable in order to minimize NO_x emissions. The EPA has denied the petition because existing regulations already address emissions from the generating units at issue. On October 15, 2018, the State of Maryland filed a petition for judicial review with the D.C. Circuit asking the court to review the EPA's decision. With the retirement of Paradise Unit 3, the outcome of this litigation is unlikely to affect TVA.

Climate Change

Executive Actions. In March 2017, President Trump issued Executive Order ("EO") 13783, "Promoting Energy Independence and Economic Growth." The EO reversed or altered many actions taken by the federal government in the last four years of the Obama Administration to address climate change and mandates that federal agencies review existing regulations and actions that potentially burden energy development and use. Several EOs, policy statements, and reports that established climate change objectives were rescinded or revoked. EO 13783 did not mandate that the EPA reconsider its finding under the CAA that GHG emissions cause climate change and therefore endanger public health and the environment.

While EO 13783 requires review of all agency actions that potentially burden the safe, efficient development of domestic energy resources, the final specific requirements and impacts from implementation of this EO are not possible to predict at this time. It is likely that there will be some delay in the development of future GHG reduction requirements.

In May 2018, EO 13834, "Efficient Federal Operations," was signed. EO 13834 emphasizes meeting statutory requirements and gives agencies greater flexibility and discretion to decide how best to improve operations in order to "optimize energy and environmental performance, reduce waste, and cut costs." It also calls on the White House Council of Environmental Quality to streamline pre-existing environmental orders by "refocusing agencies on cost-effectively meeting mandates and goals" established by law. The order seeks to consolidate requirements related to energy and water efficiency, high performance buildings, renewable energy consumption, and federal vehicle fleet management. TVA consistently seeks to improve its operations in order to optimize energy and environmental performance and does not anticipate significant changes in its planning or operations as a result of the new EO.

International Accords. In September 2016, the U.S. formally accepted the Paris Agreement. The agreement met the threshold of at least 55 countries that account for at least 55 percent of global GHG emissions and formally entered into force in November 2016. The durability of the Paris Agreement commitments is uncertain after President Trump's announcement in June 2017 that the U.S. would withdraw from the agreement. On November 4, 2019, the United States formally notified the United Nations that it would withdraw from the agreement. Under the terms of the agreement, the effective date for the withdrawal will be November 4, 2020. Specific impacts to TVA cannot be determined at this time.

In response to President Trump's Paris withdrawal announcement, 25 states have formed the U.S. Climate Alliance, a bipartisan coalition of governors committed to reducing GHG emissions consistent with the goals of the Paris Agreement. North Carolina and Virginia are the only states in the TVA region that are U.S. Climate Alliance members. Among other commitments, each state commits to implement policies that advance the goals of the Paris Agreement, aiming to reduce GHG emissions by at least 26-28 percent below CY 2005 levels by CY 2025 and to accelerate new and existing policies to reduce carbon pollution and promote clean energy deployment at the state and federal level. In June 2017, America's Pledge was announced as a collaborative opportunity for these states to work with U.S. cities and businesses representing more than half of the U.S. economy. In September 2018, America's Pledge released its economy-wide policy analysis with recommendations of how states, cities, businesses, and other stakeholders can influence U.S. decarbonization. It is premature to determine potential impacts to TVA.

Litigation. In addition to legislative activity, climate change issues have been the subject of a number of lawsuits, including lawsuits against TVA. See Note 19 — *Contingencies and Legal Proceedings* for additional information.

Indirect Consequences of Regulation or Business Trends. Legal, technological, political, and scientific developments regarding climate change may create new opportunities and risks. The potential indirect consequences could include an increase or decrease in electricity demand, increased demand for generation from alternative energy sources, and subsequent impacts to business reputation and public opinion.

Physical Impacts of Climate Change. TVA's Climate Change Adaptation Plan was last updated in June 2018. The goal of the adaptation planning process is to ensure TVA continues to achieve its mission and program goals and to operate in a secure, effective, and efficient manner in a changing climate by integrating climate change adaptation efforts in coordination with state and local partners, tribal governments, and private stakeholders. TVA manages the potential effects of climate change on its mission, programs, and operations within its environmental management processes.

Actions Taken by TVA to Reduce GHG Emissions. TVA has reduced GHG emissions from both its generation stations and its operations. Recent TVA Board actions have focused on TVA's plan to balance its coal-fired generation by increasing its nuclear capacity, modernizing its hydroelectric generation system, increasing natural gas-fired generation, installing emission control equipment on certain of its coal-fired units, increasing its purchases of renewable energy, building solar facilities, and investing in energy efficiency initiatives to reduce energy use in the Tennessee Valley. Additionally, TVA has invested to reduce energy use in its operations. The combination of more stringent environmental regulations, lower natural gas prices, and lower

Table of Contents

demand for energy across the Tennessee Valley has reduced the utilization of coal-fired generation. These factors have resulted in lower CO₂ emissions from the TVA system.

Renewable/Clean Energy Standards

Twenty-nine states and the District of Columbia have established enforceable or mandatory requirements for electric utilities to generate a certain amount of electricity from renewable sources. One state within the TVA service area, North Carolina, has a mandatory renewable standard that, while not applying directly to TVA, does apply to TVA's LPCs serving retail customers in that state. TVA's policy is to provide compliance assistance to any distributor of TVA power, and TVA is providing assistance to the covered LPCs that sell TVA power in North Carolina. Likewise, the Mississippi Public Service Commission adopted an energy efficiency rule applying to electric and natural gas providers in the state, and TVA is supplying information on participation in TVA's energy efficiency programs to support the covered Mississippi LPCs.

Water Quality Control Developments

Cooling Water Intake Structures. In May 2014, the EPA released a final rule under Section 316(b) of the Clean Water Act relating to cooling water intake structures ("CWIS") for existing power generating facilities. The rule requires changes in CWIS used to cool the vast majority of coal, gas, and nuclear steam-electric generating plants and a wide range of manufacturing and industrial facilities in the U.S. The final rule requires CWIS to reflect the best technology available for minimizing adverse environmental impacts, primarily by reducing the amount of fish and shellfish that are impinged or entrained at a cooling water intake structure. These new requirements will potentially affect a number of TVA's fossil- and nuclear-fueled facilities and will likely require capital upgrades to ensure compliance. Most TVA facilities are projected to require retrofit of CWIS with "fish-friendly" screens and fish return systems to achieve compliance with the new rule. The rule is being implemented through permits issued under the National Pollutant Discharge Elimination System ("NPDES") in Section 402 of the Clean Water Act. State agencies administer the NPDES permit program in most states including those in which TVA's facilities are located. In addition, the responsible state agencies must provide all permit applications to the U.S. Fish and Wildlife Service for a 60-day review prior to public notice and an opportunity to comment during the public notice. As a result, the permit may include requirements for additional studies of threatened and endangered species arising from U.S. Fish and Wildlife Service comments and may require additional measures be taken to protect threatened and endangered species and critical habitats directly or indirectly related to the plant cooling water intake. TVA's review of the final rule indicates that the rule offers adequate flexibility for cost-effective compliance. The required compliance timeframe is linked to plant specific NPDES permit renewal cycles (i.e., technology retrofits), and compliance is expected to be required in the CYs 2022-2024 timeframe.

The EPA has never applied the requirements under Section 316(b) to hydroelectric facilities. However, two EPA regions that do not cover TVA's activities are proposing to include Section 316(b) requirements in NPDES permits for hydroelectric facilities in those regions. It is not clear whether the requirements will be adopted nationwide or, given the unique features of hydroelectric facilities and the manner in which they withdraw cooling water, how the best technology available standard would be applied.

Hydrothermal Discharges. The EPA and many states continue to focus regulatory attention on potential effects of hydrothermal discharges. Many TVA plants have variances from thermal standards under Section 316(a) of the Clean Water Act that are subject to review as NPDES permits are renewed. Specific data requirements in the future will be determined based on negotiations between TVA and regulators. If plant thermal limits are made more stringent, TVA may have to install cooling towers at some of its plants and operate installed cooling towers more often. This could result in a substantial cost to TVA.

Steam-Electric Effluent Guidelines. In 2015, the EPA revised existing steam-electric effluent limitation guidelines ("ELGs"), which regulate water discharge pollutants and require the application of certain pollutant control technologies. The 2015 ELGs establish more stringent performance standards for existing and new sources and will require major upgrades to wastewater treatment options at all coal-fired plants. Compliance with new requirements was originally required in the CYs 2018-2023 timeframe, but the EPA delayed the compliance for flue gas desulfurization ("FGD") wastewater and bottom ash transport water until CYs 2020-2023 to allow the EPA time to review and potentially revise the ELGs with regard to these waste streams.

In August 2017, the EPA Administrator announced his decision to conduct a rulemaking to potentially revise the new, more stringent effluent limitations that apply to bottom ash transport water and FGD wastewater in the CY 2015 ELG rule. In April 2019, the United States Court of Appeals for the Fifth Circuit ("Fifth Circuit") remanded portions of the 2015 ELG because it determined that some of the standards did not comply with statutory requirements. The EPA proposed revised ELGs for bottom ash transport water and FGD wastewater on November 4, 2019, but did not address the portions of the ELG that were remanded by the Fifth Circuit.

The primary impact for TVA is on the operation of existing coal-fired generation facilities. The proposed revised ELGs could impact long-term investment decisions being made relative to the long-term compliance and operability of these plants. The proposed revisions may require TVA to install additional wastewater treatment systems for FGD wastewater and bottom ash transport water, and TVA could incur substantial costs to comply with the new rule. The proposed revision also includes a

Table of Contents

subcategory for which the Cumberland Fossil Plant ("Cumberland") would qualify that provides TVA greater flexibility in meeting the ELGs. However, given that these are proposed rules, it is unclear what the final impact to TVA will be. The proposed revisions may require TVA to install additional wastewater treatment systems for FGD wastewater and bottom ash transport water, and TVA could incur substantial costs to comply with the new rule.

Other Clean Water Act Requirements. As is the case in other industrial sectors, TVA and other utilities are also facing more stringent requirements related to the protection of wetlands, reductions in storm water impacts from construction activities, new water quality criteria for nutrients and other pollutants, new wastewater analytical methods, and regulation of pesticide discharges.

Cleanup of Solid and Hazardous Wastes

Liability for releases and cleanup of hazardous substances is imposed under the federal Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), and other federal and parallel state statutes. In a manner similar to many other industries and power systems, TVA has generated or used hazardous substances over the years.

TVA Sites. TVA operations at some of its facilities have resulted in contamination that TVA is addressing including at TVA's Environmental Research Center at Muscle Shoals, Alabama. At December 31, 2019, TVA's estimated liability for cleanup and similar environmental work for those sites for which sufficient information was available to develop a cost estimate is approximately \$13 million and was included in Accounts payable and accrued liabilities and Other long-term liabilities on the Consolidated Balance Sheets. In addition, the ERC has an active groundwater monitoring program as part of a Resource Conservation and Recovery Act ("RCRA") Corrective Action Permit.

Non-TVA Sites. TVA is aware of alleged hazardous-substance releases at certain non-TVA areas for which it may have some liability. See Note 19 — *Contingencies and Legal Proceedings — Environmental Matters.*

Coal Combustion Residuals. The EPA published its final rule governing CCR in April 2015. The rule regulates CCR as nonhazardous waste under Subtitle D of the RCRA. While states may adopt the rule's requirements into their regulatory programs, the rule does not require states to adopt the requirements. The initial version of the rule provided for self-implementation by utilities and allows enforcement through citizen suits in federal court. The Water Infrastructure Improvements for the Nation Act ("WIIN Act") subsequently allowed state or federal-based permitting to implement the CCR rule as an alternative to self-implementation and citizen suits. The rule, which became effective in October 2015, has later effective dates for certain provisions. See Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations — *Key Initiatives and Challenges — Generation Resources — Coal Combustion Residual Facilities* in the Annual Report for a discussion of the impact on TVA's operations, including the cost and timing estimates of related projects.

In July 2018, the EPA issued a final rule which provided additional flexibility and an extension of certain deadlines. On March 13, 2019, the D.C. Circuit granted the EPA's request to remand this final rule to allow the EPA to reconsider the amendments to the CCR Rule. The remand also allows the EPA additional time to complete a new rulemaking to establish revised timelines for unlined impoundments to initiate closure and to reexamine the October 2020 deadline for closing some unlined impoundments. On August 14, 2019, the EPA issued a proposed rule to amend portions of the CCR Rule regarding beneficial use, temporary piles, and public access to information. As a result of these developments, it is not possible to predict potential impacts on TVA.

On November 4, 2019, the EPA announced a proposed rule that will revise portions of the CCR Rule requiring closure of unlined surface impoundments. This proposal, if finalized, will require all unlined CCR surface impoundments to stop receiving CCR and non-CCR wastestreams and to initiate closure by no later than August 31, 2020. The proposed rule would allow a utility to demonstrate the need for a short-term extension to continue to use the unlined CCR surface impoundment until November 30, 2020, if the alternative disposal capacity (i.e., new landfills or non-CCR water management systems) is not complete. Additionally, the proposed rule provides a process for a utility to seek site-specific approval from the EPA to continue to use the unlined CCR surface impoundment until no later than October 15, 2023. TVA does not currently anticipate the proposed rule will have a significant impact because TVA is already planning to close its unlined CCR surface impoundments.

In August 2015, the Tennessee Department of Environment and Conservation ("TDEC") issued an order that (1) allowed TDEC to oversee TVA's implementation of the EPA's CCR rule and (2) required TVA to assess CCR contamination risks at seven of TVA's eight coal-fired plants in Tennessee and to remediate any unacceptable risks. The TDEC order does not allege that TVA is violating any CCR regulatory requirements nor does it assess TVA penalties. The TDEC order sets out an iterative process through which TVA and TDEC will identify and evaluate any CCR contamination risks and, if necessary, respond to such risks.

Groundwater Contamination. Environmental groups and state regulatory agencies are increasing their attention on alleged groundwater contamination associated with CCR management activities. As a result, TVA may have to change how it manages CCR at some of its plants, potentially resulting in higher costs. See Part I, Item 2, Management's Discussion and

Table of Contents

Analysis of Financial Condition and Results of Operations — *Key Initiatives and Challenges* — *Generation Resources* — *Coal Combustion Residuals Facilities* and Note 11 — *Asset Retirement Obligations*.

Environmental Investments

From 1970 to 2019, TVA spent approximately \$6.8 billion on controls to reduce emissions from its coal-fired power plants. In addition, TVA has reduced emissions by idling or retiring coal-fired units and relying more on cleaner energy resources including natural gas and nuclear generation.

TVA currently anticipates spending significant amounts on environmental projects through 2024, including investments in new clean energy generation including renewables to reduce TVA's overall environmental footprint. TVA environmental project expenditures also result from coal-fired plant decommissioning and from effective ash management modernization. Based on TVA's decisions regarding certain coal-fired units, the amount and timing of expenditures could change.

SO₂ Emissions and NO_x Emissions. To reduce SO₂ emissions, TVA operates scrubbers on 19 of its coal-fired units and switched to lower-sulfur coal at 13 coal-fired units. To reduce NO_x emissions, TVA operates SCRs on 19 coal-fired units, operates low-NO_x burners or low-NO_x combustion systems on 19 units, operates over-fire air on one cyclone unit, optimized combustion on six units, and operates NO_x control equipment year round when units are operating (except during start-up, shutdown, and maintenance periods). TVA has also retired 33 of 59 coal-fired units. Except for seven units at Shawnee, the remaining coal-fired units have scrubbers and SCRs.

Particulate Emissions. To reduce particulate emissions of air pollutants, TVA has equipped all of its coal-fired units with scrubbers, mechanical collectors, electrostatic precipitators, and/or bag houses.

Greenhouse Gas Emissions. There could be additional material costs if further reductions of GHGs, including CO₂, are mandated by legislative, regulatory, or judicial actions and if more stringent emission reduction requirements for conventional pollutants are established. These costs cannot reasonably be predicted at this time because of the uncertainty of these actions. The EPA may issue regulations establishing more stringent air, water, and waste requirements, and these requirements could result in significant changes in the structure of the U.S. power industry, especially in the eastern half of the country.

Estimated Required Environmental Expenditures

The following table contains information about TVA's current estimates on projects related to environmental laws and regulations:

Estimated Potential Environmental Expenditures⁽¹⁾⁽²⁾
At December 31, 2019
(in millions)

	Remaining 2020	2021	Thereafter⁽³⁾⁽⁴⁾	Total
Coal combustion residuals conversion program ⁽⁵⁾	\$ 225	\$ 290	\$ 602	\$ 1,117
Clean air control projects ⁽⁶⁾	14	37	81	132
Clean Water Act requirements ⁽⁷⁾	67	74	120	261

Notes

(1) These estimates are subject to change as additional information becomes available and as regulations change.

(2) These estimates include \$194 million, \$206 million, and \$256 million for the remainder of 2020, 2021, and thereafter, respectively, in capital expenditures.

(3) See Note 19 — *Contingencies and Legal Proceedings* — *Contingencies*.

(4) These estimates include expenditures expected to be incurred during 2022, 2023, and 2024.

(5) Includes costs associated with pond closures, conversion of wet to dry handling, and landfill activities. TVA is continuing to evaluate the rules and their impact on its operations, including the cost and timing estimates of related projects. See Part I, Item 2, Management's Discussion and Analysis of Financial Condition and Results of Operations — *Key Initiatives and Challenges* — *Generation Resources* — *Coal Combustion Residuals Facilities* and Note 11 — *Asset Retirement Obligations*.

(6) Includes air quality projects that TVA is currently performing to comply with existing air quality regulations, but does not include any projects that may be required to comply with potential GHG regulations or transmission upgrades.

(7) Includes projects that TVA is currently planning to comply with revised rules under the Clean Water Act (regarding CWIS and ELGs for steam electric power plants).

Legal Proceedings

From time to time, TVA is party to or otherwise involved in lawsuits, claims, proceedings, investigations, and other legal matters ("Legal Proceedings") that have arisen in the ordinary course of conducting its activities, as a result of catastrophic events or otherwise. At December 31, 2019, TVA had accrued \$13 million with respect to Legal Proceedings. No assurance can be given that TVA will not be subject to significant additional claims and liabilities. If actual liabilities significantly exceed the estimates made, TVA's results of operations, liquidity, and financial condition could be materially adversely affected.

[Table of Contents](#)

For a discussion of certain current material Legal Proceedings, see Note 19 — *Contingencies and Legal Proceedings — Legal Proceedings*, which discussions are incorporated into this Part I, Item 2, Management's Discussion and Analysis of Financial Condition and Results of Operations.

Off-Balance Sheet Arrangements

At December 31, 2019, TVA had no off-balance sheet arrangements.

Critical Accounting Policies and Estimates

The preparation of financial statements requires TVA to estimate the effects of various matters that are inherently uncertain as of the date of the financial statements. Although the financial statements are prepared in conformity with accounting principles generally accepted in the U.S., TVA is required to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities, and the amounts of revenues and expenses reported during the reporting period. Each of these estimates varies in regard to the level of judgment involved and its potential impact on TVA's financial results. Estimates are deemed critical either when a different estimate could have reasonably been used, or where changes in the estimate are reasonably likely to occur from period to period, and such use or change would materially impact TVA's financial condition, results of operations, or cash flows. TVA's critical accounting policies are discussed in Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations — *Critical Accounting Policies and Estimates* and Note 1 — *Summary of Significant Accounting Policies* of the Notes to Consolidated Financial Statements in the Annual Report.

New Accounting Standards and Interpretations

For a discussion of new accounting standards and interpretations, see Note 2 — *Impact of New Accounting Standards and Interpretations*, which discussion is incorporated into this Part I, Item 2, Management's Discussion and Analysis of Financial Condition and Results of Operations.

Legislative and Regulatory Matters

TVA continues to monitor how regulatory agencies are interpreting and implementing the provisions of the Dodd-Frank Wall Street Reform and Consumer Protection Act, which was enacted in July 2010. As a result, TVA has become subject to recordkeeping, reporting, and reconciliation requirements related to its derivative transactions. In addition, depending on how regulatory agencies interpret and implement the provisions, TVA's hedging costs may increase, and TVA may have to post additional collateral and margin in connection with its derivative transactions.

TVA does not engage, and does not control any entity that is engaged, in any activity listed under Section 13(r) of the Securities Exchange Act of 1934 (the "Exchange Act"), which requires certain issuers to disclose certain activities relating to Iran involving the issuer and its affiliates. Based on information supplied by each such person, none of TVA's directors and executive officers are involved in any such activities. While TVA is an agency and instrumentality of the U.S., TVA does not believe its disclosure obligations, if any, under Section 13(r) extend to the activities of any other departments, divisions, or agencies of the U.S.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

There are no material changes related to market risks disclosed under Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations — *Risk Management Activities* in the Annual Report. See Note 14 — *Risk Management Activities and Derivative Transactions* for additional information regarding TVA's derivative transactions and risk management activities.

ITEM 4. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

TVA's management, including the President and Chief Executive Officer, the Executive Vice President and Chief Financial Officer, and members of the Disclosure Control Committee, including the Vice President and Controller (Principal Accounting Officer), evaluated the effectiveness of TVA's disclosure controls and procedures (as defined in Rule 13a-15(e) under the Exchange Act) as of December 31, 2019. Based on this evaluation, TVA's management, including the President and Chief Executive Officer, the Executive Vice President and Chief Financial Officer, and members of the Disclosure Control Committee, including the Vice President and Controller (Principal Accounting Officer), concluded that TVA's disclosure controls and procedures were effective as of December 31, 2019, to ensure that information required to be disclosed by TVA in reports that it files or submits under the Exchange Act, is recorded, processed, summarized, and reported, within the time periods specified in the Securities and Exchange Commission's rules and forms, and include controls and procedures designed to ensure that information required to be disclosed by TVA in such reports is accumulated and communicated to TVA's management, including the President and Chief Executive Officer, the Executive Vice President and Chief Financial Officer, and members of the

[Table of Contents](#)

Disclosure Control Committee, including the Vice President and Controller (Principal Accounting Officer), as appropriate, to allow timely decisions regarding required disclosure.

Changes in Internal Control over Financial Reporting

TVA adopted ASC 842, Lease Accounting, effective October 1, 2019. As a result, TVA performed implementation controls, including contract and lease reviews, and implemented certain changes to its existing control activities. Other than the items described above, there were no changes in TVA's internal control over financial reporting during the quarter ended December 31, 2019, that materially affected, or are reasonably likely to materially affect, TVA's internal control over financial reporting.

PART II - OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS

From time to time, TVA is party to or otherwise involved in lawsuits, claims, proceedings, investigations, and other legal matters ("Legal Proceedings") that have arisen in the ordinary course of conducting its activities, as a result of catastrophic events or otherwise. While the outcome of the Legal Proceedings to which TVA is a party cannot be predicted with certainty, any adverse outcome to a Legal Proceeding involving TVA may have a material adverse effect on TVA's financial condition, results of operations, and cash flows.

For a discussion of certain current material Legal Proceedings, see Note 19 — *Contingencies and Legal Proceedings — Legal Proceedings*, which discussions are incorporated by reference into this Part II, Item 1, Legal Proceedings.

ITEM 1A. RISK FACTORS

There are no material changes related to risk factors from the risk factors disclosed in Item 1A, Risk Factors in the Annual Report.

[Table of Contents](#)

ITEM 6. EXHIBITS

Exhibit No.	Description
31.1	Rule 13a-14(a)/15d-14(a) Certification Executed by the Chief Executive Officer
31.2	Rule 13a-14(a)/15d-14(a) Certification Executed by the Chief Financial Officer
32.1	Section 1350 Certification Executed by the Chief Executive Officer
32.2	Section 1350 Certification Executed by the Chief Financial Officer
101.INS	TVA XBRL Instance Document
101.SCH	TVA XBRL Taxonomy Extension Schema
101.CAL	TVA XBRL Taxonomy Extension Calculation Linkbase
101.DEF	TVA XBRL Taxonomy Extension Definition Linkbase
101.LAB	TVA XBRL Taxonomy Extension Label Linkbase
101.PRE	TVA XBRL Taxonomy Extension Presentation Linkbase

SIGNATURES

Pursuant to the requirements of Section 13, 15(d), or 37 of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

Date: February 4, 2020

TENNESSEE VALLEY AUTHORITY

(Registrant)

By: /s/ Jeffrey J. Lyash

Jeffrey J. Lyash

President and Chief Executive Officer
(Principal Executive Officer)

By: /s/ John M. Thomas, III

John M. Thomas, III

Executive Vice President and Chief Financial Officer
(Principal Financial Officer)

70

[\(Back To Top\)](#)

Section 2: EX-31.1 (EXHIBIT 31.1)

EXHIBIT 31.1

RULE 13a-14(a)/15d-14(a) CERTIFICATION

I, Jeffrey J. Lyash, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of the Tennessee Valley Authority;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and we have:
 - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 4, 2020

/s/ Jeffrey J. Lyash

Jeffrey J. Lyash
President and Chief Executive Officer

[\(Back To Top\)](#)

Section 3: EX-31.2 (EXHIBIT 31.2)

EXHIBIT 31.2

RULE 13a-14(a)/15d-14(a) CERTIFICATION

I, John M. Thomas, III, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of the Tennessee Valley Authority;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and we have:
 - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial

information; and

- b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 4, 2020

/s/ John M. Thomas, III

John M. Thomas, III

Executive Vice President and Chief Financial Officer
(Principal Financial Officer)

[\(Back To Top\)](#)

Section 4: EX-32.1 (EXHIBIT 32.1)

EXHIBIT 32.1

**CERTIFICATION FURNISHED PURSUANT TO
SECURITIES EXCHANGE ACT RULE 13a-14(b)
OR RULE 15d-14(b) AND 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Quarterly Report on Form 10-Q of the Tennessee Valley Authority (the "Company") for the quarter ended December 31, 2019, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Jeffrey J. Lyash, President and Chief Executive Officer of the Company, certify, for the purposes of complying with Rule 13a-14(b) or Rule 15d-14(b) of the Securities Exchange Act of 1934, as amended, and Section 1350 of Chapter 63 of Title 18 of the United States Code, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

- (1) the Report fully complies with the requirements of section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and
- (2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Jeffrey J. Lyash

Jeffrey J. Lyash
President and Chief Executive Officer
February 4, 2020

[\(Back To Top\)](#)

Section 5: EX-32.2 (EXHIBIT 32.2)

**CERTIFICATION FURNISHED PURSUANT TO
SECURITIES EXCHANGE ACT RULE 13a-14(b)
OR RULE 15d-14(b) AND 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Quarterly Report on Form 10-Q of the Tennessee Valley Authority (the "Company") for the quarter ended December 31, 2019, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, John M. Thomas, III, Executive Vice President and Chief Financial Officer of the Company, certify, for the purposes of complying with Rule 13a-14(b) or Rule 15d-14(b) of the Securities Exchange Act of 1934, as amended, and Section 1350 of Chapter 63 of Title 18 of the United States Code, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

(1) the Report fully complies with the requirements of section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and

(2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ John M. Thomas, III

John M. Thomas, III
Executive Vice President and Chief Financial Officer
(Principal Financial Officer)
February 4, 2020

[\(Back To Top\)](#)