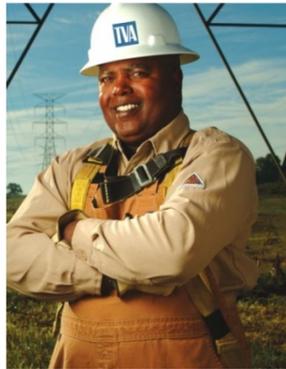
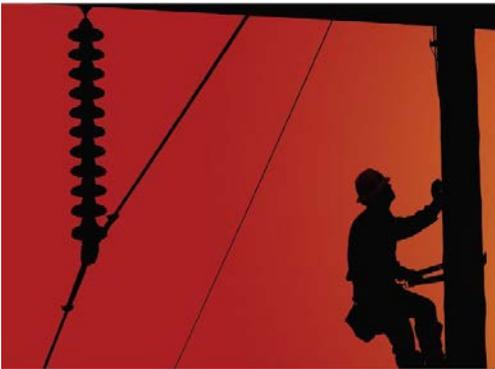


Tennessee Valley Authority

Budget Proposal and Management Agenda (Performance Report)



For the Fiscal Year Ending
September 30, 2018

Submitted to Congress
As of February 06, 2017



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Introduction

TVA's Mission

TVA was built for the people, created by Congress in 1933 and charged with a unique mission – to improve the quality of life in a seven-state region through the integrated management of the region's resources. As it helped lift the Tennessee Valley out of the Great Depression, TVA built dams for flood control, provided low-cost power and navigation for commercial shipping, restored depleted lands, and raised the standard of living across the region. As times have changed, TVA has changed with them by updating and refining its work to accomplish its mission of providing affordable electricity, economic development, environmental stewardship, integrated river system management, and technological innovation. While TVA's mission has remained constant since its inception, the environment in which TVA operates continues to evolve. The business and economic environment has become more challenging, and demand for power has decreased due to reduced customer usage and increased energy efficiency and demand response.

Strategic Imperatives

In order to continue TVA's mission of service to the region, TVA must address four strategic imperatives: (1) rates: maintain rates as low as feasible, (2) debt: live within its means, (3) assets: manage its assets to meet reliability expectations and provide a balanced portfolio, and (4) stewardship: be responsible stewards of the region's natural resources. Through people performance excellence, TVA intends to continuously improve in these areas.



Rates

TVA is committed to providing all of its customers power at the lowest feasible costs, as specified in the TVA Act. This customer focus requires scrutiny of all projects and use of resources so that the organization operates as efficiently and responsibly as possible.

Debt

TVA is committed to long-term debt management through employing a conservative approach as it relates to capital projects. While financing continues to be an important tool for funding TVA's long-term power system investments, the organization is committed to managing its debt under the ceiling established by Congress.

Asset Portfolio

Balancing TVA's assets with a diverse portfolio is vital to serving TVA's customers reliably and at the lowest cost. In 2015, the TVA Board of Directors ("Board" or "TVA Board") approved the Integrated Resource Plan ("IRP"), which provides strategic guidance on the resource mix to respond to changing market conditions while maintaining a

reliable, low-cost power supply of electricity for customers. The diverse portfolio identified in this study includes additional commitments to energy efficiency, renewables, and natural gas-fired generation as part of the least-cost plan.

Stewardship

TVA's responsibility for stewardship of the waters and public lands of the Tennessee Valley was established in the Tennessee Valley Authority Act of 1933, as amended ("TVA Act"). These responsibilities include flood control, improved navigation of the Tennessee River, and land and shoreline management, as well as agricultural and industrial development. TVA is committed to increasing its role in many of these areas as activities are planned for dam safety and reservoir operation enhancements, stabilization of eroding shorelines, and the redevelopment of Muscle Shoals properties.

Power Program

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 more than nine million people. In 1959, Congress passed an amendment to the TVA Act that required TVA's power program to be self-financing from power revenues and proceeds from power program financings. While TVA's power program did not directly receive appropriated funds after it became self-financing, TVA continued to receive appropriations for certain multipurpose and other nonpower mission-related activities as well as for its stewardship activities through 1999. TVA has not received any appropriations from Congress for any activities since that time, and TVA now funds stewardship program activities primarily with power revenues, with the remainder funded with user fees and other forms of revenues derived in connection with those activities.

The 1959 amendment to the TVA Act also required TVA, beginning in 1961, to make annual payments to the U.S. Treasury from net power proceeds as a repayment of and as a return on the Power Program Appropriation Investment. With the 2014 payment, TVA fulfilled its requirement under the 1959 amendment to repay \$1.0 billion of the Power Program Appropriation Investment. TVA received total power system appropriations of approximately \$1.4 billion. Of that, TVA has repaid \$1.2 billion, including repayments made prior to 1959, along with interest of \$2.6 billion, for total payments of \$3.8 billion. The TVA Act requires TVA to continue making payments to the U.S. Treasury as a return on the remaining \$258 million of the Power Program Appropriation Investment. The amount of the return on the Power Program Appropriation Investment is based on the Power Program Appropriation Investment balance at the beginning of each fiscal year and the computed average interest rate payable by the U.S. Treasury on its total marketable public obligations at the same date.

TVA now funds all its operations primarily from the sale of electricity and power system financings. TVA's power system financings consist primarily of the sale of debt securities and secondarily of alternative forms of financing, such as lease arrangements.

TVA is primarily a wholesaler of power. It sells power to local power company customers ("LPCs") which then resell power to their customers at retail rates. TVA's LPCs consist of: (1) municipalities and other local government entities ("municipalities"), and (2) customer-owned entities ("cooperatives"). These municipalities and cooperatives operate public power electric systems whose primary purpose is not to make a profit but to supply electricity to the general public or the cooperative's members. TVA also sells power directly to certain end-use customers, primarily large commercial and industrial loads and federal agencies with loads larger than 5,000 kilowatts ("kW"). In addition, power in excess of the needs of the TVA system may, where consistent with the provisions of the TVA Act, be sold under exchange power arrangements with certain electric systems. In fiscal year ("FY") 2018, TVA expects sales of approximately 156 billion kilowatt-hours ("kWh") of electricity.

Power generating facilities operated by TVA at September 30, 2016, included 29 conventional hydroelectric sites, a pumped-storage hydroelectric site, eight coal-fired sites, three nuclear sites, 15 natural gas and/or oil-fired sites, and a diesel generator site. TVA's renewable energy facilities include 14 solar energy sites, digester gas co-firing capacity at a coal-fired site, biomass co-firing potential (located at coal-fired sites), and a wind energy site, although certain of these facilities were out of service as of September 30, 2016.

As of September 30, 2016, TVA's coal-fired units had 10,285 megawatts ("MW") of net summer capability. The eight coal-fired plants generated about 34 percent of the power from TVA-operated facilities during FY 2016. TVA's system also includes 99 generators powered by natural gas and/or oil with a total net summer capability of 10,310 MW. These generators can be quickly started and are vital for meeting peak electricity demands. These generators provided 18 percent of the power from TVA-operated facilities in FY 2016.

TVA's nuclear units had a combined net summer capability of 6,736 MW at September 30, 2016, and generated 39 percent of the power from TVA-operated facilities in FY 2016. Watts Bar Nuclear Plant Unit 2, with a nameplate capacity of 1,220 MW, began commercial operations on October 19, 2016.

TVA-owned hydroelectric units had a combined net summer capability of 5,387 MW at September 30, 2016, and generated about nine percent of the power from TVA-operated facilities in FY 2016.

Additionally, TVA realized 381 gigawatt hours ("GWh") of savings through energy efficiency programs in FY 2016.

Integrated Resource Plan

TVA's mission sets the stage for its strategic planning process that includes strategic objectives, priorities, initiatives, and scorecards for performance designed to provide clear direction for improving TVA's core business. An important element of the planning process is the IRP study. The power supply plans evaluated in this study identify the most likely new resources needed to satisfy expected energy demand in the region during a 20-year planning horizon under various scenarios.

The IRP guides TVA in meeting its customers' power needs while addressing the substantial challenges facing the electric utility industry. The target power supply mix provides flexibility to make sound choices as economic and regulatory changes occur. Resource recommendations in the IRP seek to balance cost, risk, system reliability, and environmental responsibility in providing power for TVA's customers.

In the fall of 2013, TVA started a refresh of the 2011 IRP. This effort was in response to changes in the industry and in the TVA service area. In addition to realigning certain planning assumptions for this most recent effort, TVA created an innovative method to model energy efficiency and renewable energy in a manner similar to more traditional energy resources based on least-cost planning principles while maintaining the comprehensive treatment of uncertainty used in the prior study. The IRP provides strategic guidance on the resource mix to successfully respond to changing market conditions while maintaining a reliable, low-cost supply for customers. The diverse portfolio identified in this study includes additional energy efficiency, renewables, and natural gas-fired generation as part of the least-cost plan. The IRP was developed with input from the public and contributions from a working group of stakeholders from LPCs, environmental organizations and other public and private entities. Extensive public outreach included a series of open meetings around the Tennessee Valley. The IRP report, along with a supplemental Environmental Impact Statement, was published in July 2015, and the Board approved the IRP in August 2015.

Transmission System

TVA's transmission system is a critical link in moving electricity throughout the eastern United States. TVA continues to invest in transmission assets to strengthen system reliability and incorporate new technology that provides a clearer picture of grid conditions over a wider area at any given time. The TVA transmission system is one of the largest in North America. TVA's transmission system has 71 interconnections with 12 neighboring electric systems and delivered nearly 159 billion kWh of electricity to TVA customers in FY 2016. In carrying out its responsibility for grid reliability in the TVA service area, TVA has operated with 99.999 percent reliability over the past 17 years in delivering electricity to customers.

TVA's transmission system interconnects with systems of surrounding utilities and consisted primarily of the following assets at September 30, 2016:

- Approximately 2,500 circuit miles of 500 kilovolt, 11,500 circuit miles of 161 kilovolt, and 2,200 circuit miles of other voltage transmission lines
- 510 transmission substations, power switchyards, and switching stations
- 1,314 customer connection points (customer, generation, and interconnection)

Natural Resource Stewardship

TVA serves the people of the TVA region through the integrated management of the Tennessee River system and public lands, including approximately 11,000 miles of shoreline, 650,000 surface acres of reservoir water, and 293,000 acres of reservoir lands. In addition, TVA manages over 170 agreements with private entities for commercial recreation (such as commercial campgrounds and marinas), manages 130 agreements with public agencies for public recreation (such as public parks, day use areas, boat launches, and swimming areas), and is responsible for over 80 public recreation areas throughout the Tennessee Valley. TVA accomplishes its mission and supports the objectives of the TVA Environmental Policy through implementation of its natural resource stewardship strategy. Within this strategy, TVA confirms a desire to remain agile, balance competing demands, and be a catalyst for collaboration in order to protect and enhance biological, cultural, and water resources, as well as create and sustain destinations for recreation and opportunities for learning and research. TVA will assist water-based community development with technical support, land agreements, and permitting, using planning, clear regulations, meaningful

guidelines, and consistent enforcement. Additional guidance for carrying out many of TVA's essential stewardship responsibilities is provided in TVA's Natural Resource Plan. TVA's natural resource stewardship work makes life in the Valley better, and it is a key part of TVA's mission of service.

Tennessee River System

Approximately 42,000 miles of rivers, streams, and tributaries, including the 652-mile-long Tennessee River, and 49 dams and 14 navigation locks constitute the Tennessee River System. It is a vital part of the nation's inland waterway system, transporting more than 50 million tons of cargo annually. In addition to supporting commercial navigation, TVA's integrated management of the river system supports recreation, public and industrial water supply needs, aquatic habitat protection, flood risk reduction, hydroelectric power production, and cooling water for TVA's generation units. The watersheds of the Tennessee River and its 16 tributaries encompass more than 41,000 square miles across 125 counties in portions of seven states.

Economic Development

Since its creation in 1933, TVA has promoted the development of the Tennessee Valley region. Economic development is a core component of the mission of TVA, along with energy production and environmental stewardship. TVA works with LPCs, regional, state, and local agencies, and communities to showcase the advantages available to businesses locating or expanding in TVA's service area. TVA's primary economic development goals are to recruit major business operations to the Tennessee Valley, encourage the location and expansion of companies that provide quality jobs, prepare communities in the Tennessee Valley for economic growth, and offer support to help grow and sustain small businesses. TVA seeks to meet these goals through a combination of initiatives and partnerships designed to provide program support, technical services, industry expertise, and site-selection assistance to new and existing businesses. TVA's economic development efforts helped recruit or expand over 244 companies into the TVA service area during FY 2016. These companies announced capital investments of over \$8.3 billion and the expected creation and/or retention of over 72,100 jobs.

Technology Innovation

Consistent with the TVA Act, TVA makes investments in science and technological innovation to assist the agency in meeting future business and operational challenges in key areas and to establish national leadership in research, development, and demonstration. In addition to research that directly supports optimization of its generation and delivery assets, TVA also focuses on emerging technological advances in small modular nuclear reactors ("SMRs"), grid modernization, energy utilization technologies, and distributed energy resources ("DER"). TVA's goal is to demonstrate how technologies can be used to improve/sustain reliability, reduce costs, lower emissions to the environment, and position TVA for a sustainable future.

TVA also seeks to leverage research and development activities and investments through partnerships with LPCs, the Electric Power Research Institute ("EPRI"), the Department of Energy ("DOE"), the Oak Ridge National Laboratory ("ORNL") and other national labs, research consortiums, peer utilities, universities, and vendors and through participation in professional societies.

Commitment to the Future

TVA is a leader in public power, a model built on trust and partnerships with the people TVA serves. This model continues to deliver reliable, affordable electricity for more than nine million people and 700,000 businesses. It enables effective, integrated resource management and environmental stewardship in parts of seven southeastern states. TVA promotes alliances with others that help attract and retain jobs and investments that support economic development in the Tennessee Valley. TVA recognizes that the environment in which TVA does business continues to evolve. TVA is more flexible in its planning and more nimble in its execution and is also working to respond more quickly than ever to continually changing market conditions.

TVA continues to improve its operating and financial performance, including controlling operating and maintenance costs and adjusting capital spending based on market and regulatory conditions. One thing will not change – TVA's commitment to providing safe, clean, reliable electricity at rates as low as feasible.

TVA is proud to honor this commitment.

Budget Overview

Asset Portfolio

TVA, like the rest of the electric utility industry, is challenged to meet customer demand with cleaner, reliable, low-cost energy resources. This can require continuous reviews of capital investments in order to meet necessary operational needs. TVA funds asset investments through power revenues, the issuance of bonds up to a limit set by Congress, and alternative financings including lease financings.

TVA faces significant uncertainty from external factors such as weather, the economy, and decreased demand from energy efficiency and demand response initiatives. TVA's financial information includes estimates, which are affected by these and other changing conditions. TVA projects total revenue to be \$10.5 billion in FY 2018, which includes revenues related to fuel cost recovery and an adjustment to fund investments associated with TVA's clean air program. The fuel cost recovery mechanism adjusts power rates monthly to reflect the changing costs of fuel, purchased power, and emission allowances.

In March 2013, TVA announced it would proceed with an emissions control project at Gallatin Fossil Plant ("Gallatin"). The project includes the installation of selective catalytic reduction systems ("SCRs") and scrubbers at all four units of the 976 MW plant. The scrubbers were completed in the winter of 2016, and the SCRs are expected to be operational in the fall of 2017. On December 30, 2014, the TVA Board also approved adding additional pollution controls on Units 1 and 4 at the Shawnee Fossil Plant ("Shawnee") site. It is anticipated that these systems will be operational in the fall of 2017.

Due to the age, lower capacity, and lower efficiency of TVA's older coal-fired units, it may not be economical to continue to operate some units in the future, particularly if new environmental laws or regulations become effective. However, discontinuing the use of some coal-fired units may be constrained by transmission reinforcement that will be required before the units can be taken out of service.

In November 2013, the TVA Board approved the completion of a natural gas-fired facility at the Paradise Fossil Plant ("Paradise") site and the subsequent retirement of Paradise coal-fired Units 1 and 2. Paradise Unit 3, a coal-fired unit, will continue to be operated. At its August 21, 2014, meeting, the TVA Board approved the completion of a natural gas-fired facility at the Allen Fossil Plant ("Allen") site. TVA plans to retire the Allen coal-fired units no later than December 31, 2018.

TVA is also converting its wet ash and gypsum facilities to dry collection facilities. The estimated cost of its coal combustion residual ("CCR") conversion program is \$2.1 billion, and the current schedule for completion is by 2022, with the exception of the new landfill at Shawnee to accommodate the addition of air pollution controls and the closure of the ponds at Gallatin. This program includes costs associated with pond closures, conversion of wet to dry handling, and landfill activities. TVA will continue to undertake CCR projects past 2022 in order to support long-term plant generation, including projects to build new landfills, expand landfills, and close landfills.

TVA's nuclear fleet is an important element in a diversified portfolio for the future. On October 22, 2015, the Nuclear Regulatory Commission ("NRC") issued a forty-year operating license for Watts Bar Unit 2. Watts Bar Unit 2 officially became commercially operational on October 19, 2016 after completing the final phase of testing with a total completed cost within the \$4.7 billion limit approved by the TVA Board in January 2016.

With the addition of Watts Bar Unit 2, coupled with minimal expected load growth in part due to enhancements in energy efficiency programs, the TVA Board voted, on May 5, 2016, to surplus the property at its Bellefonte Nuclear Plant site so that the property could be offered for sale. On November 14, 2016, following a public auction, TVA entered into a contract to sell substantially all of its Bellefonte site to Nuclear Development, LLC for \$111 million. Nuclear Development, LLC paid TVA \$22 million on November 14, 2016, and the remaining \$89 million is due at closing. Nuclear Development, LLC has up to two years to close on the property, and TVA will maintain the site until then. The sale is designed to promote job creation and investment in northeast Alabama.

In FY 2018, TVA estimates that it will invest about \$1.9 billion in capital projects for the power system. These investments are subject to approval in the FY 2018 budgeting process.

Stewardship

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. Beginning in 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. As such, no federal appropriations have been received by TVA for water and land stewardship since 1999, and none are requested for FY 2018.

TVA Operating Budget
(Millions of dollars)

	2016	2017	2018
	Actual	Estimate	Estimate
Revenue	\$10,616	\$10,370	\$10,480
Operating Expenses			
Fuel & Purchased Power	(3,090)	(3,008)	(2,956)
Operating, Maintenance, & Other	(2,842)	(2,966)	(2,888)
Depreciation & Amortization	(1,836)	(1,874)	(1,829)
Tax Equivalents	<u>(522)</u>	<u>(494)</u>	<u>(507)</u>
Total Operating Expenses	(8,290)	(8,342)	(8,180)
Operating Income	2,326	2,028	2,300
Other Income	43	35	35
Interest Expense, net	<u>(1,136)</u>	<u>(1,426)</u>	<u>(1,443)</u>
Net Income	\$ 1,233	\$ 637	\$ 892

Capital Budget & Cash Flow

(Millions of dollars)

	2016	2017	2018
	Actual	Estimate	Estimate
Cash flows from operating activities			
Net income	\$ 1,233	\$ 637	\$ 892
Items affecting operating activities*	<u>1,809</u>	<u>1,862</u>	<u>1,891</u>
Net cash provided by operating activities	3,042	2,499	2,783
Cash Used in Capital Budget			
Capital Projects			
Nuclear	(316)	(289)	(289)
Power Operations	(220)	(284)	(247)
River Operations	(126)	(136)	(84)
Transmission	(204)	(198)	(173)
Other Base Capital	<u>(164)</u>	<u>(211)</u>	<u>(208)</u>
Total Base Capital	(1,030)	(1,118)	(1,001)
Clean Air	(202)	(200)	(45)
Ash Remediation	(90)	(180)	(164)
Water Remediation	<u>(1)</u>	<u>(9)</u>	<u>(48)</u>
Total Environmental Costs	(293)	(389)	(257)
Watts Bar Unit 2	(433)	-	-
Paradise CC	(248)	(285)	(15)
Allen CC	(353)	(269)	(162)
Other Capacity Expansion	<u>(340)</u>	<u>(505)</u>	<u>(454)</u>
Total Capacity Expansion	(1,374)	(1,059)	(631)
Nuclear Fuel Capital	(321)	(321)	(498)
Other Investing Activities	<u>(95)</u>	<u>(54)</u>	<u>(54)</u>
Net cash used in investing activities	(3,113)	(2,941)	(2,441)
Borrowings (net of redemptions)	293	593	(185)
Other financing activities	<u>(222)</u>	<u>(151)</u>	<u>(157)</u>
Net cash provided by financing activities	71	442	(342)
Net change in cash and cash equivalents	-	-	-
Cash and cash equivalents at beginning of year	300	300	300
Cash and cash equivalents at end of year	300	300	300
Cash Payments to U.S. Treasury**	(5)	(6)	(7)
Increase/(Reduction) in Total Debt and Debt-Like Obligations	\$ 82	\$ 374	\$ (410)

*Kingston Ash Spill, Bellefonte and Ash ARO expenses are included in Operating Activities

** For federal reporting purposes Payments to U.S. Treasury are not considered disbursements.

Note: Included budget estimates are subject to change by TVA management and the TVA Board.

Business Plan

TVA is governed by the nine-member TVA Board of Directors, which is responsible for approving an annual budget. The information in this document is based on the FY 2017 annual budget, which was approved by the TVA Board in August 2016. The following were considered in preparing the budget.

Borrowing Limit

TVA works to fulfill its mission of supplying low cost and reliable power, providing environmental stewardship, and stimulating economic development while effectively managing debt and living within its means. In achieving its mission while following sound financial principles, TVA generally uses financing to fund capital investments for new generation capacity and environmental controls.

TVA has the authority per the TVA Act to issue bonds, notes, and other evidence of indebtedness subject to a \$30 billion limit, sometimes referred to as TVA's statutory debt limit. TVA bonds are not backed by the full faith and credit of the federal government and do not count against the United States federal debt limit. Congress last raised TVA's borrowing authority in 1979. As of September 30, 2016, TVA had \$24.2 billion of bonds and notes outstanding. Bonds and notes are generally the lowest-cost form of financing available to TVA.

While the \$30 billion limit on bonds and notes has not been raised since 1979, TVA's business and operations have continued to grow along with the power needs of the Tennessee Valley. Since 1979, TVA has increased its total assets from \$13.0 billion to \$50.5 billion as of September 30, 2016. TVA's balance of financing obligations is projected to increase in FY 2017, consistent with TVA's FY 2017 business plan, to meet expected capital investment needs primarily driven by capacity expansion and environmental projects. However, TVA will continue to effectively manage its debt and remain below the statutory debt limit.

Nuclear Program

TVA has made a significant investment in safe and reliable nuclear power. The completion of Watts Bar Nuclear Plant Unit 2 ended within the Board-approved amount of \$4.7 billion.

Pension Fund

As of September 30, 2016, TVA's qualified pension plan had assets of \$7.1 billion compared with liabilities of \$13.1 billion. The potential for the qualified pension plan's funded status to improve in the near term is limited because of expected equity performance, the significant amount of benefits paid each year to plan beneficiaries, and historically low discount rates to measure the plan's benefit obligation. The plan has approximately 34,000 participants, of which approximately 24,000 are retirees or beneficiaries currently receiving benefits. Benefits of approximately \$700 million were paid to retirees and beneficiaries in FY 2016.

TVA contributed \$275 million to the Tennessee Valley Authority Retirement System ("TVARS") in FY 2016, compared to a minimum required contribution under the TVARS rules of \$209 million.

Effective October 1, 2016, the Rules and Regulations governing the defined benefit plan and the provisions governing the 401(k) plan were amended. For approximately 7,700 employees, TVA will increase non-elective and matching contributions to the 401(k) plan to offset reduced accruals in the defined benefit plan. As a part of those amendments, TVA will contribute at least \$300 million annually to the defined benefit plan for the next 20 years, or until the plan is fully funded if sooner.

As of September 30, 2016, TVA's 401(k) plan had assets of \$2.1 billion. For fiscal year 2016, employee contributions to the plan totaled \$92 million while TVA employer contributions totaled \$38 million. Approximately 10,500 employees are eligible to participate in the 401(k) plan.

The costs of providing benefits depend upon a number of factors, including, but not limited to, provisions of the plan; changing experience and assumptions related to terminations, retirements, and mortality; rates of increase in compensation levels; rates of return on plan assets; discount rates used in determining future benefit obligations and required funding levels; optional forms of benefit payments selected; future government regulation; and levels of contributions made to the plan. Any of these factors or any number of these factors could keep at high levels, or even increase, the costs of providing benefits and require TVA to make contributions to the plan in amounts that significantly exceed TVA's planned contributions. Unfavorable financial market conditions may result in lower expected rates of return on plan assets, loss in value of the investments, and lower discount rates used in determining future benefit obligations. These changes would negatively impact the funded status of the plan.

Coal-Fired Fleet Evaluation

TVA began constructing its coal-fired plants in the 1940s, and its coal-fired units were placed in service between 1951 and 1973. Coal-fired units are in either active or retired status. TVA considers a unit to be in an active state when the unit is generating, available for service, or temporarily unavailable due to equipment failures, inspections, or repairs. These active units account for the 10,285 MW of summer net capability. All other coal-fired units are considered retired. As of September 30, 2016, TVA had eight coal-fired plants consisting of 35 active units and 24 retired units.

Coal-fired plants have been subject to increasingly stringent regulatory requirements over the past few decades, including those under the Clean Air Act ("CAA"). Increasing regulatory costs have caused TVA to consider whether or not to make the required capital investments to continue operating these coal-fired facilities. In April 2011, TVA entered into two agreements (collectively, the "Environmental Agreements") to address a dispute under the CAA. The first agreement is a Federal Facilities Compliance Agreement with the Environmental Protection Agency ("EPA"). The second agreement is with Alabama, Kentucky, North Carolina, Tennessee, and three environmental advocacy groups: the Sierra Club, National Parks Conservation Association, and Our Children's Earth Foundation. Under the Environmental Agreements, TVA agreed to retire 18 of its 59 coal-fired units by the end of 2017 and was generally absolved from any liability, subject to certain limitations and exceptions, under the New Source Review ("NSR") requirements of the CAA for maintenance, repair, and component replacement projects begun at TVA's coal-fired units prior to the execution of the agreements. TVA also agreed to retire, repower, or install air pollution controls on 16 of the remaining coal-fired units. Failure to comply with the terms of the Environmental Agreements would subject TVA to penalties stipulated in the agreements. TVA is taking the actions necessary to comply with the Environmental Agreements. TVA is confident that it has adequate capacity to meet the needs of its customers after units are retired under the Environmental Agreements.

The following table summarizes the actions TVA is required to take under the Environmental Agreements, and other coal-fired generation actions taken or to be taken by TVA.

Fossil Plant	Total Units	Existing Scrubbers and SCRs	Requirements Under Environmental Agreements	Actions Taken or Planned to be Taken by TVA
Allen	3	SCRs on all three units	- Install scrubbers or retire no later than December 31, 2018	- The Board approved the construction of a gas-fired plant at the current Allen coal-fired site - Retire Units 1-3 after completion of the gas-fired plant, before September 30, 2018
Bull Run	1	Scrubber and SCRs on unit	- Continuously operate current emission control equipment	- Continuously operate existing emission control equipment
Colbert	5	SCR on Unit 5	- Remove from service, control, convert, or retire Units 1-4 no later than June 30, 2016 - Remove from service, control, or retire Unit 5 no later than December 31, 2015 - Control or retire removed from service units within three years	- Retired Units 1-5 effective April 16, 2016
Cumberland	2	Scrubbers and SCRs on both units	- Continuously operate existing emission control equipment	- Continuously operate existing emission control equipment
Gallatin	4	None	- Control, convert, or retire all four units no later than December 31, 2017	- The Board approved adding scrubbers and SCRs on all four units - Add scrubbers and SCRs on all four units by December 31, 2017
John Sevier	4	None	- Retire two units no later than December 31, 2012 - Remove from service two units no later than December 31, 2012, and control, convert, or retire those units no later than December 31, 2015	- Retired Units 1 and 2 effective December 31, 2012 - Retired Units 3 and 4 effective June 25, 2014
Johnsonville	10	None	- Retire six units no later than December 31, 2015 - Retire four units no later than December 31, 2017	- Retired Units 5-10 effective December 31, 2015 - Retire Units 1-4 by December 31, 2017
Kingston	9	Scrubbers and SCRs on all nine units	- Continuously operate existing emission control equipment	- Continuously operate existing emission control equipment

Paradise	3	Scrubbers and SCRs on all three units	<ul style="list-style-type: none"> - Upgrade scrubbers on Units 1 and 2 no later than December 31, 2012 - Continuously operate emission control equipment on Units 1-3 	<ul style="list-style-type: none"> - Upgraded scrubbers on Units 1 & 2 - The Board approved the construction of a gas-fired plant at the location of the Paradise coal-fired plant - Retire units 1 and 2 after completion of the gas-fired plant by September 30, 2017 - Continuously operate emission control equipment on Units 1-3
Shawnee	10	None	<ul style="list-style-type: none"> - Control, retire, or convert Units 1 and 4 no later than December 31, 2017 	<ul style="list-style-type: none"> - Retired Unit 10 effective June 30, 2014 - Add scrubbers and SCRs on Units 1 and 4 by December 31, 2017
Widows Creek	8	Scrubbers and SCRs on Units 7 and 8	<ul style="list-style-type: none"> - Retire two of Units 1-6 no later than July 31, 2013 - Retire two of Units 1-6 no later than July 31, 2014 - Retire two of Units 1-6 no later than July 31, 2015 - Continuously operate existing emissions control equipment on Units 7 and 8 	<ul style="list-style-type: none"> - Retired Units 3 and 5 effective July 31, 2013 - Retired Units 1, 2, 4, and 6 effective July 31, 2014 - Retired Units 7 and 8 effective September 30, 2015

After TVA completes the actions described in the above table, TVA anticipates that it will have 7,891 MW of summer net capability of coal-fired generation, a reduction of 6,682 MW from TVA's coal-fired capacity as of September 30, 2010. TVA is moving toward a more balanced generation plan with greater reliance on lower-cost and cleaner energy generation technologies. TVA's long-range plans will continue to consider the costs and benefits of significant environmental investments at its remaining coal-fired plants.

Coal Combustion Residuals Facilities

On April 17, 2015, the EPA published a final rule related to CCRs that regulates CCRs as nonhazardous waste under Subtitle D of the Resource Conservation and Recovery Act. The rule also regulates landfill and impoundment location, design, and operations; dictates certain pond-closure conditions; and establishes groundwater monitoring and closure and post-closure standards. While not required, states may adopt the rule's requirements into their regulatory programs. The rule became effective October 19, 2015, with certain provisions having later effective dates.

TVA has committed to a programmatic approach to the elimination of wet storage of CCRs within the TVA service area. Under this program (the "CCR Conversion Program"), TVA has committed to (1) convert all operational coal plants to dry CCR storage, (2) close all wet storage facilities, and (3) meet all applicable state and federal regulations. To carry out its CCR Conversion Program, TVA is taking the following actions:

- Dry generation and dewatering projects: Conversion of coal plant CCR wet processes to dry generation or dewatering is complete at Bull Run Fossil Plant ("Bull Run"), and construction is underway at Kingston Fossil Plant ("Kingston") and Shawnee. Planning and engineering phases are currently underway at Gallatin, Cumberland Fossil Plant ("Cumberland"), and Paradise.
- Landfills: Lined and permitted dry storage facilities have been constructed and are operational at Bull Run, Kingston, and Gallatin. Planning and engineering phases are underway at Cumberland, Paradise, and Shawnee.
- Wet CCR impoundment closures: TVA is planning to close wet CCR impoundments in accordance with federal and state requirements when (1) coal plants are converted to dry CCR processes and dry storage landfills become operational or (2) plant operations cease. Closure project schedules and costs are driven by the selected closure technology (e.g., cap and close in place or closure by removal). As a result of the recent Environmental Impact Statement reviewing the different closure methods, TVA has elected to close 10 locations across the service area, although final closure plans are still subject to approval by appropriate state regulators. Additional National Environmental Policy Act analyses will be conducted as other impoundments are designated for closure. As environmental studies are performed and closure methodologies are determined, detailed project schedules and estimates will be finalized.
- Groundwater monitoring: Compliance with the EPA's CCR rule will require additional engineering and analysis, as well as implementation of a comprehensive groundwater monitoring program.

The CCR Conversion Program is scheduled to be completed by 2022 with two exceptions. First, a new landfill at Shawnee will be required to accommodate the addition of air pollution controls and is scheduled to be operational by 2020. Once the new landfill is in service, the existing bottom ash pond and dry stack will be closed in accordance with federal and state requirements. Second, the ponds at Gallatin are pending additional studies to determine the final closure method and schedule. Through September 30, 2016, TVA had spent approximately \$900 million on its CCR

Conversion Program. TVA expects to spend an additional \$1.2 billion on the CCR Conversion Program through 2022. Once the CCR Conversion Program is completed, TVA will continue to undertake certain CCR projects, including building new landfill sections under existing permits and closing existing sections once they reach capacity.

Variable Interest Entities

On August 9, 2013, TVA entered into a 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 of 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 and are subject to mandatory redemption pursuant to scheduled amortizing, semi-annual payments due each August 15 and February 15, with a final payment due on August 15, 2033.

On January 17, 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 notes issuance 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 of Holdco are allocated. The membership interests held by Holdco in JSCCG were purchased with proceeds from the issuance of \$100 million of secured notes and are subject to mandatory redemption pursuant to scheduled amortizing, semi-annual payments due each January 15 and July 15, with a final payment due on January 15, 2042.

Wholesale Rate Structure Changes

Since the fall of 2013, TVA and its customers have worked collaboratively to develop and implement a long-term pricing direction. This strategic direction will guide TVA's long-term development of rates and will provide customers additional clarity to make future business decisions and evaluate technology investment. A comprehensive rate restructuring was approved by the TVA Board on August 21, 2015, and implemented on October 1, 2015. With the exception of the annual rate adjustment, changes to rates were designed to be revenue neutral to TVA with varying off-setting impacts to individual customers.

The rate restructuring resulted in structural changes to base rates to improve cost alignment with capacity-related on-peak demand charges and seasonal time-of-use ("TOU") energy rates that differ by on-peak and off-peak periods to better reflect generation costs. Minor changes in revenue allocation were made to improve alignment with cost-of-service, to keep industrial rates competitive, and to keep residential rates affordable. The 2015 TOU rate was unanimously adopted by TVA's LPCs and by the vast majority of TVA's directly served customers.

In conjunction with the wholesale rate change, the fuel cost recovery mechanism was also revised to move from average fuel cost allocation to an actual fuel cost allocation approach. TVA recovers fuel costs and tax equivalents associated with fuel cost adjustments through a monthly rate adjustment reflective of the costs paid by TVA for fuel. Prior to fiscal year 2016, all customers paid the same monthly base fuel rate. On August 21, 2015, the TVA Board approved a new methodology to more accurately allocate fuel costs to two groups of customers: Standard Service (residential and small commercial customers) and Non-Standard Service (large commercial and industrial customers), each with a different monthly fuel rate more reflective of their group's contribution to total fuel costs. Fuel costs are now allocated to these customer groups in relation to their average hourly loads and TVA's hourly incremental dispatch costs. Total monthly fuel costs include costs for natural gas, fuel oil, coal, purchased power, emission allowances, nuclear fuel, and other fuel-related commodities, as well as realized gains and losses on derivatives purchased to hedge the costs of such commodities.

The wholesale rate change, along with a modification to the fuel cost adjustment methodology, became effective October 1, 2015. TVA is also continuing to work with customers to improve the pricing of electricity at wholesale and retail. These efforts are ongoing, and improvements in these areas are expected over the coming years.

Renewable Energy

As recommended in the 2015 IRP, TVA intends to pursue adding between 150 MW and 800 MW of cost-effective renewable resources (primarily utility-scale solar) to the power supply mix by 2023. Based on future capacity and energy supply needs, and meeting appropriate cost and performance targets, solar and wind resources additions could increase to as much as 2,000 MW.

TVA's renewable energy portfolio consists of TVA-owned and purchased clean and renewable energy, including hydro, wind, solar, and biomass. As of September 30, 2016, TVA maintained 29 conventional hydroelectric dams, accounting for 3,796 MW of summer net capability. TVA also controls 14 solar energy sites and digester gas co-firing at Allen. The digester gas has not been operational since August 2014 but is expected to begin generation again during calendar year ("CY") 2018. When operational, the digester gas co-firing capacity is accounted for as gas-fired generation summer net capability. The solar sites provide less than one MW of summer net capability.

As of September 30, 2016, TVA was a party to contracts with seven Midwest wind farms for the purchase of renewable wind energy. The seven contracts provide TVA with 1,215 MW (nameplate capacity) that include renewable attributes. These wind farms are located in Illinois, Kansas, and Iowa. In addition, TVA has contracted for 27 MW (nameplate capacity) of renewable energy generation from 15 wind turbine generators on Buffalo Mountain near Oak Ridge, Tennessee, 4.5 MW (nameplate capacity) from a solar farm in Haywood County, Tennessee, and 4.8 MW (nameplate capacity) from a landfill biogas facility in Knox and Anderson counties, Tennessee.

In 2002, TVA developed a Generation Partners ("GP") pilot program to test the interest and feasibility of renewable consumer-owned generation as a source of power for TVA. In October 2012, the GP program transitioned to a long-term, sustainable program called Green Power Providers ("GPP"). As of September 30, 2016, TVA had more than 2,900 renewable installations in operation, providing close to 100 MW of solar, wind, low-impact hydro, and biomass generation. Solar installations provide approximately 87 MW of this generation. The GPP program is expected to continue to move forward as a viable option for small-scale renewable generation (less than 50 kW) to serve residential and small commercial market segments.

The Solar Solution Initiative ("SSI") was a pilot program that began in February 2012 and provided incentive payments for mid-sized (greater than 50 kW up to 1 MW) solar projects that use local certified installers in the Tennessee Valley region. SSI helped support the existing local solar industry, while also adding renewable investment and jobs to the region. As of December 31, 2015, TVA had offered 56 MW of renewable solar capacity through SSI, with nearly 42 MW operating or committed. At the beginning of CY 2016, SSI transitioned to the Distributed Solar Solutions (DSS) pilot. DSS is designed to encourage renewable energy projects that are directed by TVA's LPCs. By working at a local level, distributed energy solutions that help move renewables closer to the end-use customer can be implemented. Initial interest was strong, and in CY 2016 TVA awarded 16.7 MW of renewable solar capacity to seven projects in four LPC territories. For CY 2017, TVA is offering 10 MW of renewable solar capacity to qualifying LPCs on first-come basis. The projects can range in size from greater than 50 kW up to 2 MW of solar electric energy.

The Renewable Standard Offer ("RSO") program was a voluntary program that began in October 2010 to increase the amount of renewable energy generated in TVA's service territory. Under this program, TVA purchased renewable energy at market rates from projects that meet the requirement of the RSO program. Solar, wind, and specific biomass projects were included in the program. Projects had to be greater than 50 kW, but no greater than 20 MW in nameplate capacity. As of September 30, 2016, TVA had over 79 MW of operating generation and an additional 120.5 MW under application or contract not yet operating. The RSO offering was sunset in 2015, but the program remains open to projects that have existing capacity allocations and are in the process of being completed. The utility-scale renewable energy sector, however, has matured in recent years and can now compete with traditional energy resources. As a result, starting in CY 2016, utility-scale renewable energy projects are no longer limited by programmatic caps, but are competitively evaluated alongside other generation sources.

TVA's Green Power Switch[®] ("GPS") program is a voluntary purchase program that supports and promotes the production of renewable energy. In 2000, TVA became the first utility in the Southeast to offer consumers the choice to purchase renewable energy. In CY 2015, GPS had approximately 202,158 megawatt-hour ("MWh") sales through three GPS program options: the original GPS program and the testing of two other customer options. In the original GPS program, consumers have the option to purchase 150 kWh renewable energy blocks for \$4 per month. Supply includes certified Green-e Energy generated from TVA-owned and purchased solar, wind, digester gas, and landfill gas generation. One of the pilot programs, based on a 100-percent solar option sourced from TVA's GPP supply, was sunset in July 2015. The other pilot program, Southeastern Renewable Energy Certificates ("SE RECs"), is a lower price bulk option for larger commercial and industrial customers. The SE RECs pilot continued into CY 2016 and provided the option to purchase 1 MWh blocks (i.e., Renewable Energy Certificates ("RECs")) with a minimum annual

purchase of 2,000 MWh. The RECs cost \$1.25 each and were Green-e Energy certified from TVA-contracted wind generation within the Southeastern Electric Reliability Council ("SERC") region.

Payments in Lieu of Taxes

TVA provided nearly \$535 million in tax equivalent payments in FY 2016 to state and local governments where it sells electricity or has power properties. TVA pays tax equivalent payments annually to the eight states where it sells electricity or owns generating plants, transmission lines, substations or other power assets, and directly to 146 county governments where TVA owns power properties that were previously privately owned and operated and subject to ad valorem taxes.

The TVA Act requires TVA to return five percent of its gross proceeds from the sale of power during the previous fiscal year (excluding sales or deliveries to other federal agencies and off-system sales with other utilities, with a provision for minimum payments under certain circumstances) in the form of tax equivalent payments. The payments compensate state and local governments that cannot levy property or sales tax on TVA as a federal entity and make TVA one of the largest "taxpayers" in Tennessee and Alabama.

State and local governments distribute the funds according to their own formulas and discretion to support a variety of initiatives, including schools, fire departments and other emergency response agencies, tourism and recreation, and human service organizations.

Since 1941, TVA has paid more than \$12.5 billion in tax equivalent payments, with payments in the past 10 years totaling more than \$5 billion.

Management Initiatives

Rates/Debt

Similar to balancing the competing demands of its integrated mission, TVA must also manage the financial tension that exists between rates and debt. The TVA Board has adopted an approach designed to provide the lowest feasible rates while ensuring and maintaining TVA's financial health. This approach, adopted in the FY14 planning cycle, serves as the baseline for the current financial plan and is designed to (1) maintain low rates and ensure rate competitiveness by comparison to regional peers and competitors, (2) reduce TVA's debt interest expense to a sustainable level, and (3) manage spending and costs within the predetermined financial parameters in the plan.

In August 2013, the TVA Board adopted a strategic debt goal of \$21.8 billion by FY 2023 that included modest annual base rate actions of 1.5 percent of the retail rate, as long as rates remain competitive. The strategic debt goal was endorsed by TVA's customers and the Office of Management and Budget ("OMB"). Through strong financial and operational performance achieved to date, TVA is well positioned to meet and potentially exceed the debt goal on a rate trajectory consistent with the Board-approved plan.

In support of its strategic debt and rate goals, TVA embarked upon an aggressive initiative in FY 2013 to align O&M spending with revenues by reducing its non-fuel O&M expenses by \$500 million by FY 2015 compared with the FY 2013 budget. TVA exceeded this goal with an actual reduction of nearly \$600 million. TVA remains committed to aligning O&M spending with revenues and targeting incremental O&M efficiencies over the near-term to offset inflation.

TVA annually refreshes its long-range financial plan that aligns short-term tactical plans with long-term strategic direction related to portfolio decision, competitive rates, and financial health. Although planning assumptions may change over time, TVA remains committed to achieving its strategic debt and rate goals. For FY 2018, TVA projects ending Total Financing Obligations ("TFOs") of \$26.2 billion, a decrease of \$1.3 billion from FY 2013 actuals.

For a discussion of factors that could prevent TVA from achieving its debt reduction goals, see Item 1A, Risk Factors in TVA's Annual Report on Form 10-K for the fiscal year ended September 30, 2016.

Asset Portfolio

In addition to focusing on low-cost, reliable, clean energy, TVA is focusing on delivering more energy efficiency as part of its balanced portfolio approach. TVA uses a variety of programs that reduce the use of energy ("energy efficiency") and also support system optimization through programs that shift or reduce peak demand ("demand response"). TVA collaborates with its customers, such as LPCs, directly served industrial customers, and governmental agencies, to establish and implement effective programs across the Tennessee Valley region. TVA also works with industry experts to tailor these programs to produce the best results.

TVA continues to expand the EnergyRight[®] Solutions program to include residential, commercial, industrial, and power systems initiatives.

- **EnergyRight[®] Solutions for the Home** - Allows residential customers to play an active role in saving energy in their homes through improvements to weatherization, heating, ventilation, and air conditioning (HVAC) systems, and water heating.
- **EnergyRight[®] Solutions for Business** - Offers energy information and assistance to help businesses save energy with rebates and other financial incentives available to help offset project expenses.
- **EnergyRight[®] Solutions for Industry** - Provides customized technical evaluations to assess plant-wide energy efficiency opportunities, along with financial incentives for qualified projects and measures.
- **EnergyRight[®] Solutions for Customer Systems** - Works to optimize power delivery systems by shifting or reducing consumer demand at peak times of the day to avoid supplying high-priced peak power and improve system optimization and reliability through physical (e.g., direct cycling of residential and commercial equipment), contractual (e.g., voluntary reductions for payment) and voltage optimization (e.g., regulating voltage to the lower portion of the prescribed range) means.

The 2015 IRP summarizes TVA's latest analysis of diversified energy resources and recommends a strategic direction focusing on a flexible mix of electricity generation and demand-side sources, including nuclear power, energy efficiency, renewable energy, and natural gas power, as well as traditional coal and hydroelectric power.

Cybersecurity

TVA has an established risk-based Cybersecurity Program designed to ensure alignment with applicable regulations, industry requirements, and best practices. The program includes security standards, training, and metrics that assign clear accountability for all cybersecurity activities throughout TVA. Security controls have been integrated into business processes, enabling timely, coordinated, effective, and efficient execution of the program across TVA. Cybersecurity management processes have been implemented agency-wide with the goal of being systematic, repeatable, and effective in achieving the strategic security goals of the program. Governance for the program is provided by TVA's Chief Information Officer.

The budget of the Cybersecurity Program is allocated to responsible organizations to improve accountability and provide transparency. Budgeting and planning for the program's components are integrated into the business planning process and are maintained in a three-year cybersecurity strategic plan. The plan will be modified to upgrade TVA's capabilities as technology, threat vectors, and business requirements change.

Securing timely, accurate, and reliable information is critical to the success of the TVA mission and the role it plays as a National Critical Infrastructure Key Resource and Bulk Electric System provider. The Cybersecurity Program objectives are aligned with TVA's business strategy and support the goals of the enterprise. TVA uses a full spectrum defense security model to prevent, detect, respond to, and recover from threats against its systems. TVA plans to invest approximately \$80 million to \$100 million in its Cybersecurity Program between FY 2016 and FY 2018 to ensure it meets its mission objectives. TVA invested approximately \$12.5 million in its Cybersecurity Program in FY 2016 with an additional \$30 million in cybersecurity and projects related to critical infrastructure protection.

People/Stewardship

Environmental Stewardship and River Management

TVA's mission includes managing the Tennessee River, its tributaries, and federal lands along the shoreline to provide benefits that include year-round navigation, flood damage reduction, affordable and reliable electricity, and, consistent with these primary purposes, recreational opportunities, adequate water supply, improved water quality, and natural resource protection. TVA's integrated reservoir system comprises 49 dams. Each dam may also have ancillary structures to support or assist the main dam's function. The reservoir system provides approximately 800 miles of commercially navigable waterways and also provides significant flood reduction benefits within the Tennessee River system and downstream on the lower Ohio and Mississippi Rivers. The reservoir system also provides water supply for residential and industrial customers, as well as cooling water for TVA's coal-fired and nuclear power plants. TVA's Environmental Policy, adopted by the TVA Board in 2008, provides objectives for an integrated approach to providing reliable, affordable, and cleaner energy, supporting sustainable economic growth, and engaging in proactive environmental stewardship. The Environmental Policy, along with TVA's Natural Resources Strategy and Natural Resources Plan, provides additional direction in several environmental stewardship areas, including water resource protection and improvements, sustainable land use, and natural resource management. TVA also manages approximately 11,000 miles of shoreline, 650,000 surface acres of reservoir water, and 293,000 acres of reservoir lands for cultural and natural resource protection, recreation, and other purposes.

TVA's mission of environmental stewardship includes flood control, and TVA personnel worked to avert millions of dollars of damage in the Tennessee Valley after record-breaking rainfall in 2016. TVA also collaborated with the U.S. Army Corps of Engineers to reduce impacts on the Ohio and Mississippi rivers by the coordinated use of TVA's system of dams to control the water. TVA continues its work around flooding preparedness and dam safety initiatives, including remediation efforts at Boone Dam.

Navigation on the Tennessee River is made possible by a system of dams and locks and contributes to the regional economy. TVA owns 14 lock chambers at 10 dam sites on the Tennessee River and one tributary. The U.S. Army Corps of Engineers operates and maintains these locks and dams for navigation. This provides an alternative mode of transportation for businesses in the region to ship their products. Barges can move bulk cargo on 652 miles of the Tennessee River, which ends where it flows into the Ohio River near Paducah, Kentucky. Secondary channels provide approximately 150 miles of additional commercially navigable waterways.

Strategic guidance for carrying out many of TVA's essential stewardship responsibilities is provided in TVA's Natural Resources Plan ("NRP"). The NRP, issued in August 2011, serves as a 20-year guide for TVA's essential stewardship efforts in managing biological resources (plants, animals, and aquatic species); cultural resources (archaeological sites, historical sites, and artifacts); recreation; water resources; reservoir land planning; and public engagement. The plan will also guide TVA in achieving the objectives of its Environmental Policy for a more systematic and integrated approach to fulfilling its essential stewardship responsibilities. The NRP was developed with public input including participation from federal and state resource management agencies and the Regional

Resource Stewardship Council ("RRSC"). Members of the RRSC, established in March 2000, represent public and private stakeholders affected by TVA's management of the river system. They provide recommendations on stewardship activities, including reservoir operations, public-land planning and management, water supply, recreation, cultural and natural resource management, infrastructure operation and maintenance, and emergency preparedness.

In managing the watershed, TVA balances water quality protection with other demands for water use. TVA has installed and is maintaining equipment at several dams to help provide the flows and oxygen levels needed for a healthy aquatic community in tailwaters (the areas immediately downstream from dams). As part of the NRP, TVA has implemented several programs including Tennessee Valley Clean Marinas, Nutrient Source-Watershed Identification and Improvement, Climate Change Sentinel Monitoring and Aquatic Ecological Management, and a Strategic Partnership Initiative. Under the Stream and Tailwater Monitoring Program in the NRP, TVA performs annual monitoring and analysis of streams and rivers within the Tennessee River Watershed. Upon request, TVA provides the monitoring data to other agencies, educational institutions, non-government organizations, and stakeholders.

TVA and Air Quality in the Tennessee Valley

Emissions from all TVA-owned and operated units have been reduced from historic peaks including emissions from small combustion turbine units of less than 25 MW whose emissions are not required to be reported to the EPA. Emissions of nitrogen oxide ("NO_x") have been reduced by 92 percent below peak 1995 levels and emissions of sulfur dioxide ("SO₂") have been reduced by 94 percent below 1977 levels through CY 2015. For CY 2015, TVA's emission of carbon dioxide ("CO₂") from its sources was 70.1 million tons, a 34 percent reduction from 2005 levels. This includes 5,248 tons from units rated at less than 25 MWs whose emissions are not required to be reported to the EPA.

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 NAAQS are designated as attainment areas. Areas not meeting a NAAQS are designated as non-attainment areas, and more stringent requirements apply. This includes stricter controls on industrial facilities and more complicated permitting processes. TVA fossil-fired plants can be impacted by these requirements. All TVA generating units are either located in areas designated as in attainment with the NAAQS, or are in areas where air quality meets the NAAQS and designation to attainment is expected soon. As of September 2016, Knoxville was the only area in the Tennessee Valley region that was designated as non-attainment for fine PM NAAQS. TVA expects the EPA to designate the Knoxville area as attainment for fine particulate matter NAAQS in the near future. However, as NAAQS become more stringent, utilities are expected to come under increasing pressure to further reduce emissions from their existing fossil fuel generating plants.

Currently, all areas of the Tennessee Valley meet the 2008 ozone NAAQS. On October 1, 2015, the EPA signed a final rule to revise the ozone NAAQS to 70 parts per billion ("ppb") from the current 2008 standard of 75 ppb. The EPA is expected to make final designations in 2017. The Tennessee Valley has been showing improvements in regional air quality; however, the impacts of the 2015 ozone NAAQS to TVA and states in TVA's service territory are not possible to determine until the EPA makes designations in 2017 with respect to the 2015 ozone standard.

Cross State Air Pollution Rule. The EPA issued the Cross-State Air Pollution Rule ("CSAPR") in July 2011, requiring several states in the eastern United States to improve air quality relative to the 1997 ozone NAAQS and the 1997 and 2006 fine particle NAAQS by reducing power plant emissions that contribute to pollution in other states. CSAPR replaced the Clean Air Interstate Rule ("CAIR"), a similar but less stringent rule. The U.S. Court of Appeals for the District of Columbia Circuit ("D.C. Circuit") vacated the rule before implementation began, but the D.C. Circuit's vacatur was reversed by the U.S. Supreme Court in April 2014. Upon further proceedings on remand, the D.C. Circuit granted the EPA's motion to restore CSAPR but delayed the compliance deadlines by three years. Under the revised compliance deadlines, Phase I emission reductions in SO₂ and NO_x became effective on January 1, 2015, and will be followed by Phase II reductions that become effective on May 1, 2017. TVA's significant prior reductions in SO₂ and NO_x emissions and planned future reductions will aid in compliance with CSAPR.

Mercury and Air Toxics Standards for Electric Utility Units. In April 2012, the EPA promulgated a final rule establishing standards for hazardous air pollutants emitted from steam electric utilities. The Mercury and Air Toxics Standards ("MATS") rule requires additional controls for hazardous air pollutants, including mercury, non-mercury metals, and acid gases, for some of TVA's coal-fired units by April 15, 2015, while the compliance date for units

granted a one-year extension under the CAA was April 15, 2016. TVA has chosen to idle or retire some units in lieu of investing in additional controls.

The D.C. Circuit upheld the MATS rule on April 15, 2014. In June 2015, however, the United States Supreme Court remanded the rule, finding that the EPA was required to consider cost before deciding whether the regulation of hazardous air pollutants emitted from steam electric utilities was appropriate and necessary.

In April 2016, in response to the Supreme Court's remand, the EPA published the final Supplemental Finding That It is Appropriate and Necessary to Regulate Hazardous Air Pollutants from Coal- and Oil-Fired Electric Utility Steam Generating Units. Several groups have filed petitions with the D.C. Circuit challenging the EPA's determination. The MATS rule will remain in effect while these challenges are pending, and TVA's MATS compliance strategy will thus not be affected by these challenges.

In April 2016, in response to a request from TVA, the EPA issued an administrative order under the Clean Air Act to allow operation of Paradise Units 1 and 2 for a year beyond the MATS compliance date of April 15, 2016. The additional year will allow these units to continue to operate while the new combined cycle facility being built at the site becomes operational. TVA expects to retire Paradise Units 1 and 2 once this replacement capacity is available.

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 performance, and TVA and other utilities are addressing this issue. The evaluation of utilities' compliance with opacity requirements is coming under increased scrutiny, especially during periods of startup, shutdown, and malfunction. State implementation plans developed under the CAA typically exclude periods of startup, shutdowns, and malfunctions, but on June 12, 2015, the EPA finalized a rule to eliminate such exclusions. The EPA rule required states to modify their implementation plans by November 12, 2016. These new requirements could reduce flexibility and increase operational costs for TVA's coal-fired plants.

Petition to Expand the Ozone Transport Region. On December 9, 2013, eight of the twelve states that make up the Ozone Transport Region ("OTR") submitted a petition to the EPA requesting that nine states, including Kentucky and Tennessee, be added to the OTR. The EPA failed to act on the petition within the 180-day period provided under the CAA. On October 6, 2016, six of the eight states filing the petition sued the EPA in the U.S. District Court for the Southern District of New York, asking the court to require the EPA to act on the petition by a certain date. In response to this lawsuit, the EPA signed, on January 12, 2017, a notice proposing to deny the petition on the basis that the CAA provides other options to address the impact of interstate air pollution. The EPA also states that its September 2016 updated Cross State Air Pollution Rule is a significant step to control states' emission reduction obligations under Section 110 to meet the 2008 ozone NAAQS. The EPA has also proposed to enter into a consent decree with the plaintiffs requiring the agency to finalize its action on the petition no later than October 27, 2017.

Water Quality

Cooling Water Intake Structures. On May 19, 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 cooling water intake structures 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 cooling water intake structures 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 will be 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 & 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 & 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 in the 2020-2022 timeframe.

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. On November 3, 2015, the EPA published a final rule to revise the existing steam electric effluent limitation guidelines ("ELGs") that updates the existing technology-based water discharge limitations for power plants nationwide. The new ELGs establish more stringent performance standards for existing and new sources that will require power plants that generate more than 50 MW to regulate discharges of toxic pollutants from seven primary wastewater streams. The primary impact for TVA is on the operation of existing and any potential new coal-fired generation facilities. The rule has the potential to impact long-term investment decisions being made relative to the long-term compliance and operability of TVA coal-fired units. 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. In addition, new technology-based limits on flue gas desulfurization wastewater require primary physical/chemical treatment and secondary biological treatment to meet extremely low limits for arsenic, mercury, and selenium.

With regard to its Cumberland Fossil Plant, TVA contends the ELG rulemaking did not appropriately consider available data that could affect these national limits as they applied at Cumberland given Cumberland's unique "once-through" scrubber design. TVA is working with the State of Tennessee and the EPA in an effort to address this issue. Compliance with the rule at Cumberland without modification to address the unique design could cause TVA to incur disproportionately high costs at Cumberland or experience other operational outcomes which TVA cannot predict at this time.

Groundwater Contamination. Environmental groups and state regulatory agencies are increasing their attention to groundwater contamination associated with CCR management activities. Seven of TVA's 10 coal-fired plants are in some level of state regulatory groundwater assessment (Colbert Fossil Plant ("Colbert"), Gallatin, Cumberland, Widows Creek Fossil Plant ("Widows Creek"), Paradise, Johnsonville Fossil Plant ("Johnsonville") and Shawnee). Four of those plants (Colbert, Gallatin, Cumberland, and Shawnee) have investigations beyond monitoring and reporting. Five of the seven TVA coal-fired plants (Gallatin, Shawnee, Paradise, Johnsonville, and Widows Creek) have groundwater remediation monitoring with state regulatory involvement. As a result of these assessments and increased attention, TVA may have to change how it manages CCRs at some of its plants, potentially resulting in higher costs.

Clean Power Plan

On August 3, 2015, the EPA issued the Clean Power Plan, a rule under section 111(d) of the CAA, to reduce carbon emissions from existing power plants burning fossil fuels. The Clean Power Plan establishes state-specific emission goals to lower CO₂ emissions from power plants, targeting a 32 percent nationwide reduction in CO₂ emissions from 2005 levels by 2030. The EPA established an "interim goal" that states must meet on average over the eight-year period from 2022-2029 and a "final goal" that states must meet in 2030 and thereafter based on a two-year average. States were required to submit to the EPA final plans, or "initial plans" with a request for an extension, by September 6, 2016. States that received an extension are required to submit final plans by September 6, 2018.

On February 9, 2016, the requirements were suspended when the U.S. Supreme Court granted a stay of the Clean Power Plan. The stay will remain in place while the D.C. Circuit reviews the rule and during any subsequent appeals to the U.S. Supreme Court that may occur after the D.C. Circuit issues its opinion. The stay means that the Clean Power Plan has no legal effect while courts are reviewing the rule to determine whether it is lawful. The D.C. Circuit, sitting en banc, heard oral arguments on the Clean Power Plan on September 27, 2016.

Economic Development

TVA's partnerships with its customers and communities have helped create quality jobs and attract significant capital investments by new and existing companies. TVA conducts these economic development efforts in partnership with private and public organizations, including local, regional, and state agencies. This serves the needs of TVA stakeholders through regional economic development, which contributes to a better quality of life for Tennessee Valley residents. TVA's innovative programs and services combine to create effective tools for sustainable economic development. These programs and services include, but are not limited to, the following:

- **Recruiting Services** - TVA works with LPCs and their customers and local, state, and regional economic development organizations to recruit companies through an integrated package of economic development resources.

- **Regional Development** - TVA assigns a regional development specialist with economic development expertise to serve counties in a specific area to help create and sustain job growth.
- **Community Preparedness** - TVA helps communities increase their competitiveness in attracting investment and creating jobs by delivering resources and training to local community leaders.
- **Rural Initiative Strategy** - TVA helps rural communities develop and better market their sites and buildings to prospective companies. TVA also offers leadership development, planning, and project assistance.
- **Retail Development** - Retail Development is a program that links communities with retail business opportunities, insights, and market intelligence.
- **Research** - TVA provides economic and market research to help build the business case for the location and expansion of companies and prepare communities for future growth opportunities.
- **Business Development Support** - An array of products and services is designed to meet the needs of prospective or existing industries. These include financial support and industry consulting services. This work provides vision to businesses for locating and being successful in the Tennessee Valley.
- **Technical Services** - TVA offers general engineering design services to help industrial prospects make sound location decisions and to help communities market themselves for prospects and growth.

Results

The results of some of TVA's innovative economic development programs and offerings are described below.

- For the eleventh consecutive year, TVA made *Site Selection* magazine's list of the top 10 utilities in North America for economic development activity, one of only three utilities to earn this distinction.
- TVA Economic Development recruits new companies and investments to the region in these targeted industry sectors: Transportation-Related Manufacturing, Food Processing and General Manufacturing, Advanced Manufacturing, Data Centers, and Product Development.
- There are 22 available, ready-for-development data center sites across the TVA region.
- TVA staff provides ongoing economic development assistance through technical services, economic research, proposal writing, training, and other services.
- Financial support, offered by TVA and LPCs, continues to be very successful in helping new and existing companies locate or expand and make a commitment to enhance economic development in the region.
- The Valley Sustainable Communities Program was launched in 2013. This community preparedness program assists communities in cataloging their sustainable assets and improving their competitiveness when companies are considering locating or expanding in the Valley. To date, 29 communities have completed this program to highlight and increase their sustainability efforts and differentiate their communities.
- TVA's Rural Development strategy supports economic development efforts in rural and economically distressed areas.
- TVA's Retail Development program helps foster business growth for commercial businesses.
- TVA's Economic Developments website, TVAsites.com provides demographics, a searchable building and land database, and other key information about the benefits of the Tennessee Valley region.
- FY 2016 announcements of jobs created and/or retained and capital investment include:
 - Alabama: 9,300 jobs and \$832 million
 - Kentucky: 4,400 jobs and \$646 million
 - Middle Tennessee: 21,000 jobs and \$2.8 billion
 - Mississippi: 1,900 jobs and \$229 million
 - Northeast Tennessee and Virginia: 15,700 jobs and \$2.3 billion
 - Southeast Tennessee, Georgia and North Carolina: 11,800 jobs and \$574 million
 - West Tennessee: 8,000 jobs and \$927 million

Technological Innovation

The TVA Act specifies that members of the TVA Board shall affirm support for the objectives and missions of TVA, including being a leader in technological innovation. A key element in achieving this vision is an annual investment in science and technology that enables TVA to be at the forefront of innovation in the utility industry and to help the agency meet future business and operational challenges. TVA's goal is to demonstrate how technologies can be used to improve/sustain reliability, reduce costs, lower emissions to the environment, and position TVA for a sustainable future.

Each year TVA's research portfolio and research strategic plan are updated based on a broad range of operational and industry drivers that help assess key technology gaps, performance issues, or other significant issues that should be addressed through research and development. Core research activities directly support optimization of TVA's generation and transmission assets, air and water quality, and distributed/clean energy integration. Of particular interest is modeling existing and expected solar power deployments in the Tennessee Valley to evaluate the full extent of system impacts of those renewable resources. Initial economic analyses have been conducted to identify the value of distributor energy resources ("DER"), particularly solar photovoltaic ("PV"), to both TVA and the LPC system. TVA's distributed/clean energy research effort seeks to understand the scope and impact of integrating DER on operations and business economics and to develop strategies for adapting to the evolving electricity landscape in the Tennessee Valley.

Additional research focus is placed on emerging generating technologies, grid modernization for transmission and distribution systems, energy utilization technologies, and DER. In the area of energy utilization, TVA evaluates emerging energy efficiency and load management technologies for market and program readiness. TVA's efforts are directed towards demonstrating and validating the performance, reliability, and consumer acceptance of new efficiency technology as well as the value of energy efficiency and load management technologies for the consumer, the LPCs, and TVA.

TVA also coordinates activities with EPRI and industry stakeholders on transportation electrification to support operational fleet requirements and the needs of LPCs to provide guidance on matters of plug-in electric vehicle grid integration and readiness for transportation electrification technologies.

Technology evaluations are most often accomplished through studies and field scale demonstrations to document performance, needs, and requirements. TVA delivers or transfers results to the operating organizations and other stakeholders through reporting, technology transfer events, and educational outreach. TVA also serves as a technology advisor for LPCs and directly served customers.

Investments in TVA's research portfolio are highly leveraged through partnership and collaboration with LPCs, EPRI and other research consortiums, the DOE, ORNL and other national labs, federal agencies, peer utilities, universities, and industry vendors as well as through participation in professional societies.

Sustainability

On May 18, 1933, President Roosevelt signed the TVA Act to create an agency that serves the Valley through its work in energy, environment, and economic development. Since its inception, TVA has maintained a proud history of leadership in sustainability. In fact, sustainability is incorporated into the work performed at TVA to protect the miles of reservoir shoreline, to keep electricity rates as low as feasible, to reinforce TVA's commitment to a safe employee workplace and public safety, to support TVA's economic development efforts throughout the region, and to pursue continuous improvement in environmental performance. TVA also manages many environmental sustainability programs, including technology innovation, environmental stewardship and compliance, a growing renewable energy portfolio, and a comprehensive economic development program.

Because the TVA mission includes serving the Tennessee Valley by providing affordable and reliable energy, environmental stewardship, and economic development, achieving sustainability goals directly supports the broader TVA mission. TVA works to integrate these goals into existing and new innovative programs. These goals are an integral part of TVA's business practices and are tracked along with other business objectives. TVA established specific goals and periodically measures and reports its progress toward meeting each of these goals. The TVA Strategic Sustainability Performance Plan ("SSPP") reports key aspects of TVA's energy, environmental, economic, and social resources and responsibilities in the 21st century. TVA's sustainability program issues and maintains the TVA SSPP, directs the TVA sustainability team, increases awareness and engages employees on sustainability, and initiates actions to reduce TVA's internal environmental footprint through cross-organizational collaboration.

Oversight and Governance

In December 2004, Congress passed legislation to make TVA's governance structure more like that of other large corporations. The TVA Board changed from three full-time members to nine part-time members who are responsible for providing strategic direction, governance, and oversight. In addition, a full-time Chief Executive Officer ("CEO") position was established to supervise day-to-day activities. The CEO is appointed by and reports directly to the TVA Board. The December 2004 legislation also amended the Securities Exchange Act of 1934 by adding Section 37. This section requires TVA, as a non-accelerated filer under Securities and Exchange Commission ("SEC") rules, to file financial reports with the SEC. In December 2006, TVA filed its first Annual Report on Form 10-K with the SEC and now files Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, and Current Reports on Form 8-K with the SEC. As an SEC filer:

- The management reporting requirements of Section 404(a) of the Sarbanes-Oxley Act became effective for TVA for FY 2008.
- As a non-accelerated filer, the external auditor attestation requirements of Section 404(b) of the Sarbanes-Oxley Act are not applicable. However, TVA implemented the auditor attestation requirements of Section 404(b) in FY 2009 and continues to do so on a voluntary basis.
- The Dodd-Frank Act deferred indefinitely the auditor attestation requirements of Section 404(b) for non-accelerated filers; however, management has chosen to continue to have external auditor attestations.

TVA Oversight

TVA is a government-owned corporation, and its mission of service is fundamentally different from that of publicly traded companies. TVA has oversight similar to other utilities, such as a board of directors, SEC requirements, credit rating agencies, and Sarbanes-Oxley requirements. In addition, TVA has oversight from Congress, the Government Accountability Office ("GAO"), OMB, the U.S. Treasury, and an independent inspector general.

TVA is governed by the TVA Board. The TVA Board has nine part-time members, at least seven of whom must be legal residents of the TVA service area. The TVA Board members are appointed by the President of the United States with the advice and consent of the U.S. Senate. The TVA Board's responsibilities include formulating broad goals, objectives, and policies for TVA, approving plans for their implementation, reviewing and approving annual budgets, setting and overseeing rates, and establishing a compensation plan for employees.

Audit Committee

The TVA Board established the Audit, Risk, and Regulation Committee. The committee is responsible for, among other things, recommending an external auditor to the TVA Board, overseeing the auditor's work, and reviewing reports of the auditor and the TVA Inspector General.

Independent Auditor

An independent auditor audits TVA's annual financial statements in accordance with standards of the Public Company Accounting Oversight Board and with Government Auditing Standards issued by the Comptroller General of the U.S. The auditor also provides an opinion as to whether those statements are presented in conformity with Generally Accepted Accounting Principles ("GAAP").

Independent Inspector General

An independent Office of Inspector General ("OIG") conducts ongoing audits of TVA's operational and financial matters in accordance with Government Auditing Standards, which incorporate the American Institute of Certified Public Accountants Generally Accepted Auditing Standards. The OIG has 108 employees, including more than 50 auditors. TVA's Inspector General is appointed by the President of the United States and confirmed by the U.S. Senate. The OIG provides semi-annual reports to Congress on the results of its audit and investigative work.

As required by the Inspector General Reform Act of 2008 (Pub. L. No. 110-409), the TVA OIG made an aggregate budget request of \$25 million for FY 2018, which includes amounts for OIG training and support of the Council of the Inspectors General on Integrity and Efficiency. TVA's FY 2018 budget assumes OIG activities at the level requested. TVA received no additional comments from the OIG with respect to the budget proposal.

\$ million	2012 Actual	2013 Actual	2014 Actual	2015 Actual	2016 Actual	2017 OIG Proposed	2018 OIG Proposed
OIG Spend	\$21	\$21	\$22	\$23	\$24	\$24	\$25

Congressional Oversight

Congress provides formal oversight of TVA through two committees, the U.S. House of Representatives Transportation and Infrastructure Committee and the U.S. Senate Environment and Public Works Committee. The audit arm of Congress, the GAO, also conducts audits of various TVA activities and programs, generally at the request of members of Congress.

Executive Branch

TVA routinely submits budget information to OMB, and TVA's budget is included in the consolidated budget of the U.S. Government. TVA's financial results also are included in the federal government's financial statements, which are coordinated with the U.S. Treasury and are subject to audit by GAO.

The TVA Act

TVA's congressional charter, the TVA Act of 1933, as amended, defines the range of TVA's business activities. TVA is also subject to the Government Performance and Results Act, which requires that a strategic plan and an annual performance report be submitted to Congress.

Other Regulatory Oversight

In aspects of its operations, TVA is subject to regulations issued by other governmental agencies, including the EPA, state environmental agencies, the SEC, and the NRC. While TVA is generally not subject to regulations issued by the Federal Energy Regulatory Commission ("FERC"), this commission has some regulatory authority over TVA activities. Other organizations with major influence on TVA and others in the electric utility industry include the North American Electric Reliability Corporation and the industry-based Institute of Nuclear Power Operations.

Auditor Independence – Providing Assurance to Stakeholders

The TVA OIG conducts an annual audit of the work of TVA's independent auditor to help ensure compliance with generally accepted Government Auditing Standards. Additionally, a peer review audit of the OIG is conducted every three years by another federal Inspector General's office.

Accounting and Financial Reporting

On an annual basis, TVA submits a closing package, which is a set of special purpose financial statements and notes that represent TVA's comparative, consolidated, department-level financial statements, to the U.S. Treasury to comply with the requirements of the U.S. Treasury Financial Manual. This provides financial information to the U.S. Treasury and the GAO to use in preparing the Financial Report of the U.S. Government. TVA's independent auditor also provides an opinion on whether the closing package is prepared in accordance with accounting standards and other pronouncements issued by the Federal Accounting Standards Advisory Board. TVA's financial transactions are subject to audit by the Comptroller General under various statutes.

TVA also submits financial information to the OMB, SEC, NRC, U.S. Treasury, Energy Information Administration, and others, in accordance with applicable regulatory and statutory requirements. As required by the TVA Act, TVA maintains its accounting records in accordance with the FERC's Uniform System of Accounts for Public Utilities. In addition, TVA presents its financial statements and related disclosures in conformity with GAAP promulgated by the Financial Accounting Standards Board. These financial statements are annually audited by an independent financial auditor.

Consistent with the Improper Payments Information Act of 2002, as amended by the Improper Payments Elimination and Recovery Act of 2010 and the Improper Payments Elimination and Recovery Improvement Act of 2012, TVA has determined that none of its programs or activities are susceptible to significant improper payments.

Monthly Reporting Process

Internal financial performance reporting is done on a monthly basis at all levels within the enterprise. The monthly financial performance reports contain analysis for the income statement, cash flow statement, and statement of capital expenditures. The reports also include a balance sheet analysis detailing significant changes during the reporting period. TVA also performs agency-wide financial forecasts on a monthly basis in order to anticipate and respond to events that may have a significant impact on financial performance during the year.

Enterprise Risk Management

Enterprise Risk Management ("ERM") is a strategic business function that provides TVA with a comprehensive risk perspective to more effectively identify and manage risks, capitalize on opportunities, and improve the risk management behaviors at TVA. ERM is specifically responsible for risk governance structure, performing risk

assessments and analysis, and facilitating enterprise risk discussions to evaluate risks as an interrelated portfolio in order to support risk-informed decisions.

Strategic Imperatives, Strategic Objectives, and Performance Goals

Strategic Imperatives

As discussed previously, TVA has established four strategic imperatives: (1) maintain rates as low as feasible, (2) live within its means, (3) manage its assets to meet reliability expectations and provide a balanced portfolio, and (4) be responsible stewards of the region's natural resources. Through people performance excellence, TVA intends to bring these goals to life and become safer, better, faster, and leaner.



Strategic Objectives

In order to help ensure that TVA accomplishes its strategic goals, TVA is focusing on the following strategic objectives:

- Maintain low rates and align O&M spending with revenues
- Effectively manage debt to ensure long-term financial health
- Work safely and effectively
- Embrace continuous improvement
- Focus on values, competencies and behaviors
- Pursue operational excellence
- Balance the portfolio to provide cleaner, efficient, and affordable energy
- Stimulate economic development and investment in the Tennessee Valley
- Strengthen customer loyalty and stakeholder relationships
- Maximize potential of the Tennessee River system
- Protect and improve the natural resources and the use and enjoyment of public lands

Performance Goals

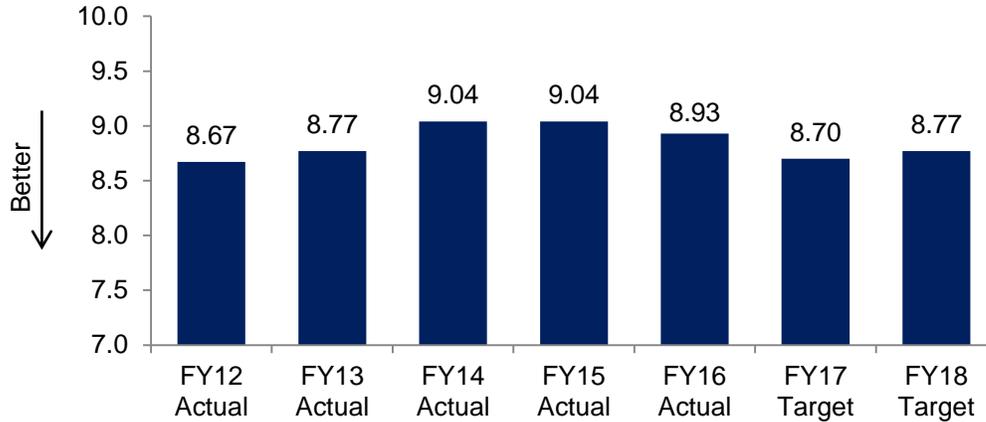
To help measure how effectively TVA is achieving its strategic objectives, TVA has several performance goals. These performance goals include the following:

- Rates/Debt
 - Retail Rates
 - Wholesale Rate, excluding Fuel
 - Operating Cash Flow
 - Net Income
 - Total Financing Obligations
- Asset Portfolio
 - Load Not Served
 - Coal Seasonal Equivalent Forced Outage Rate (“EFOR”)
 - Nuclear Performance Index
 - Combined Cycle Seasonal EFOR
 - Nuclear Unit Capability Factor
 - Energy Savings
- People/Stewardship
 - Recordable Incident Rate
 - CO₂ Emissions Rate
 - Reportable Environmental Events
 - Jobs Created and Retained

Each of these performance goals is described in more detail on the following pages.

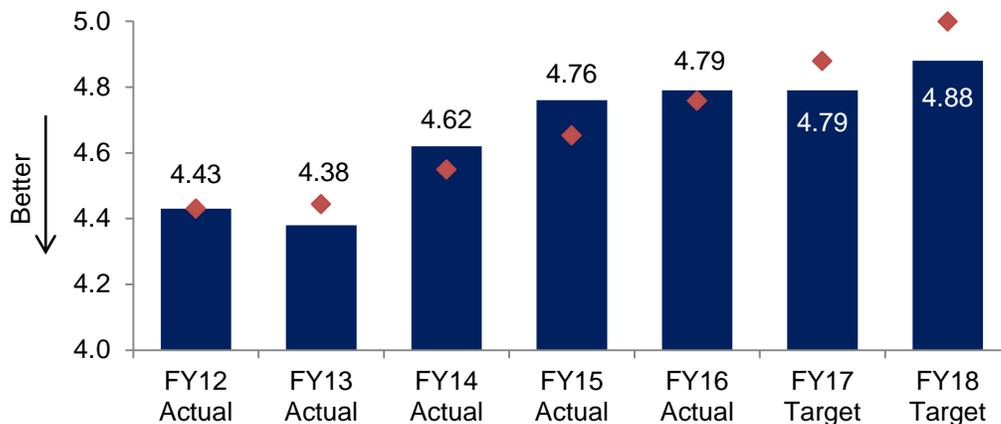
Rates/Debt

Retail Rates (cents/kWh) - 12 Month Rolling Avg



Definition	Average of the previous twelve months' LPC reported retail power revenue and directly served power revenue divided by LPC reported retail power sales and directly served power sales.
Calculation	$(\text{LPC reported retail power revenue} + \text{Directly served power revenue}) / (\text{LPC reported retail power sales} + \text{Directly served power sales})$

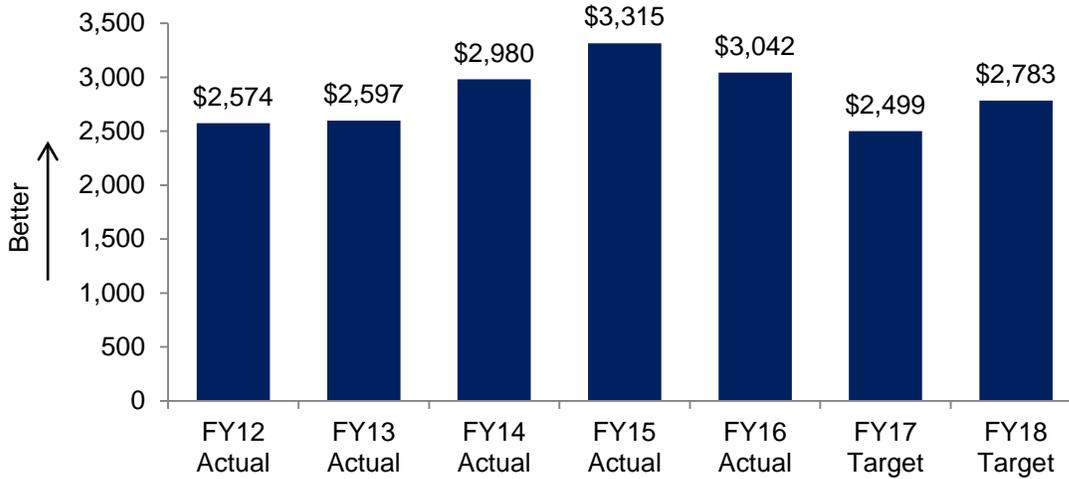
Wholesale Rate excluding Fuel (cents/kWh)



◆ Indicates results projected (cents/kWh) within the FY14 Long-Range Financial Plan.

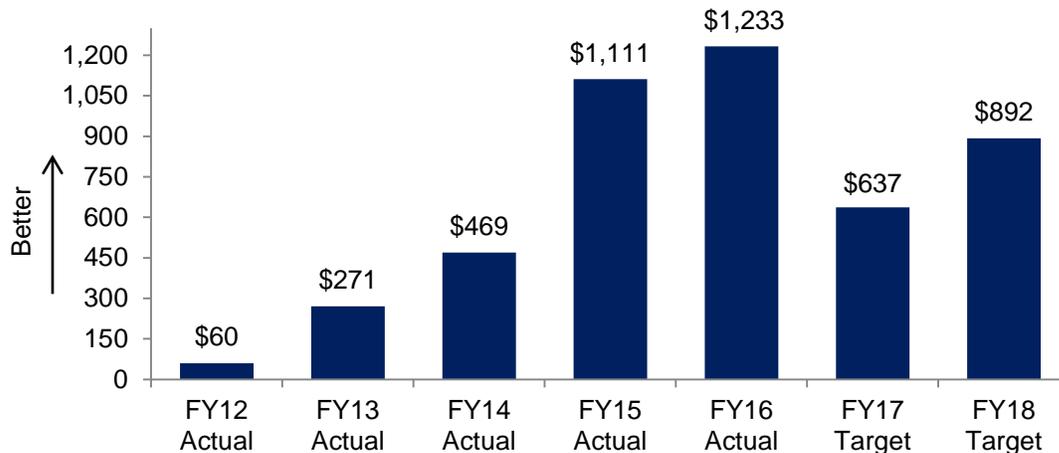
Definition	The Wholesale Rate excluding Fuel measure represents TVA's electric sales revenue excluding fuel divided by electric power sales.
Calculation	$\text{TVA's electric sales revenue excluding fuel} / \text{TVA's electric power sales}$

Operating Cash Flow (\$M)



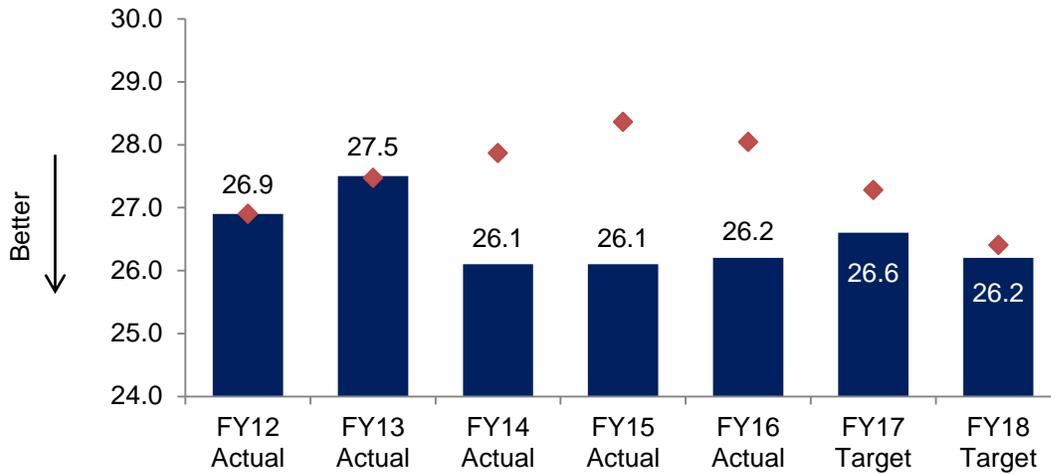
Definition	Operating Cash Flow refers to the amount of cash generated from power production and other mission-related activities and is generally defined as Operating Revenues received less cash payments made for Operating Expenses. This amount can be found on the Consolidated Statement of Cash Flows under Cash Flows from Operating Activities.
Calculation	Net income + Non-cash expenses + Impact of changes in working capital and other deferred operating items

Net Income (\$M)



Definition	Net Income is an entity's net earnings derived by adjusting revenues for the cost of doing business, including cost of sales, depreciation, interest, taxes, and other expenses. This amount is shown on the bottom line of the Consolidated Statement of Operations.
Calculation	Operating Revenues - Operating Expenses + Other Income/(Expense) - Net Interest Expense

Total Financing Obligations (\$B)



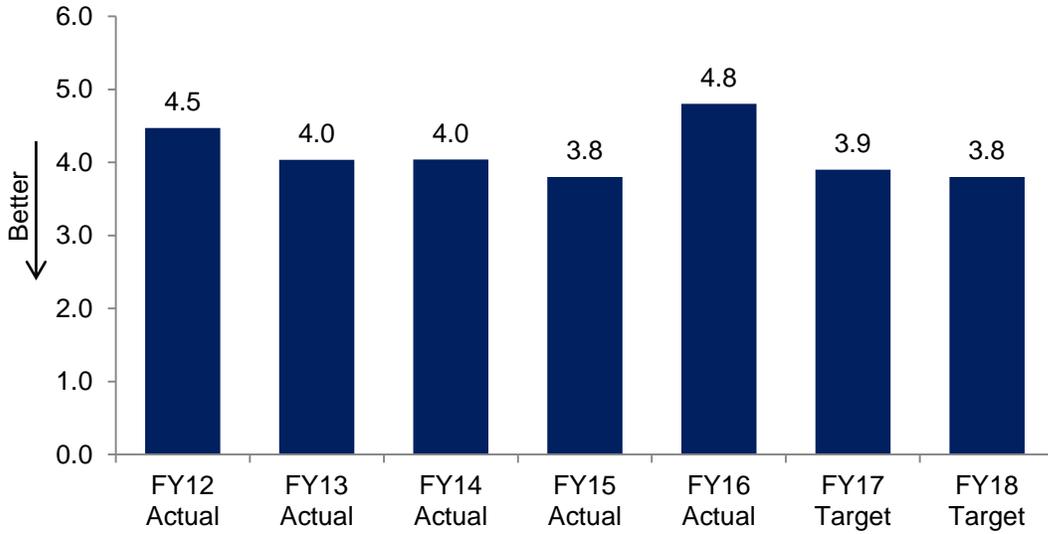
◆ Indicates results projected (\$B) within the FY14 Long-Range Financial Plan.

Definition	Total Financing Obligations (“TFOs”) include all statutory debt and other financing obligations, as shown on TVA’s balance sheet.
Calculation	Long-term Power Bonds + Short-Term Debt + Leaseback Obligations + Energy Prepayment Obligations + Debt of Variable Interest Entities (“VIE”) + Membership Interests of VIE Subject to Mandatory Redemption + Effectively Settled Leaseback Obligations from Business Combinations

* See Appendix A for a calculation of TFOs utilizing financial statement line items reported in accordance with Generally Accepted Accounting Principles.

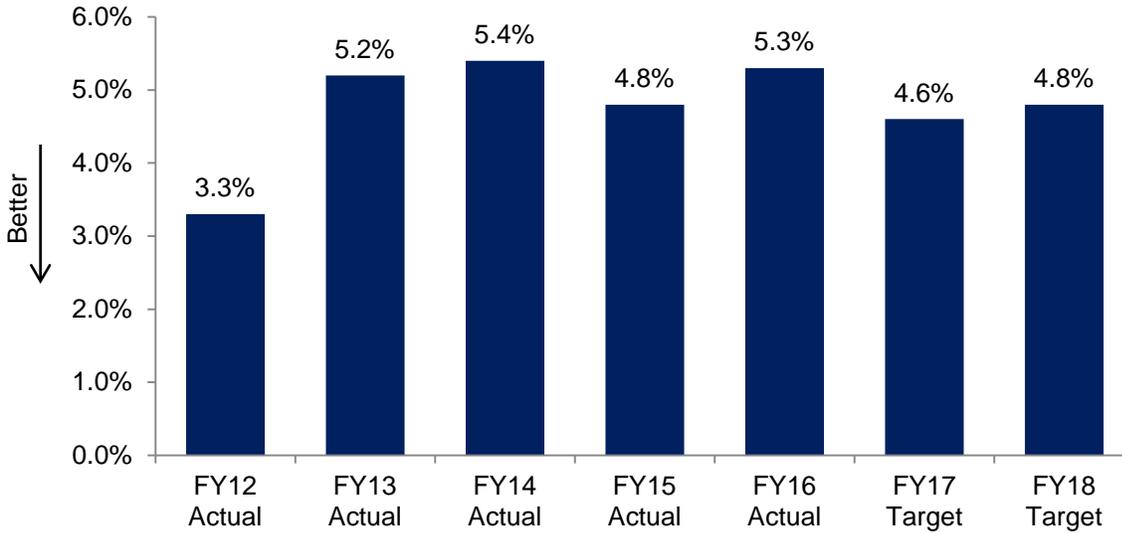
Asset Portfolio

Load Not Served (System Minutes)



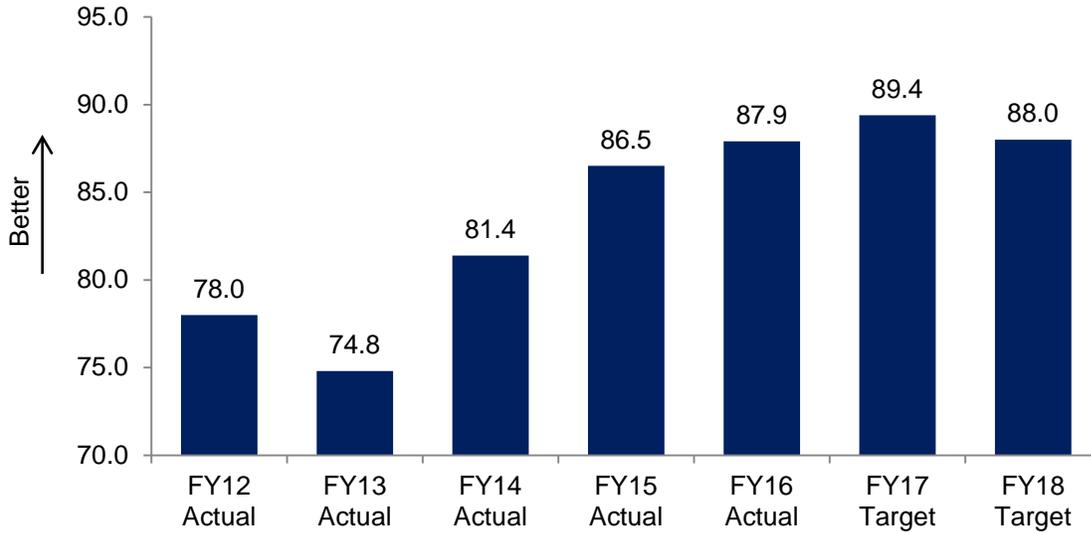
Definition	Load Not Served measures the magnitude and duration of transmission system outages that affect TVA customers. This measure is expressed in system minutes and excludes events during declared major storms.
Calculation	Percent of total load not served x Number of minutes in period

Coal Seasonal EFOR



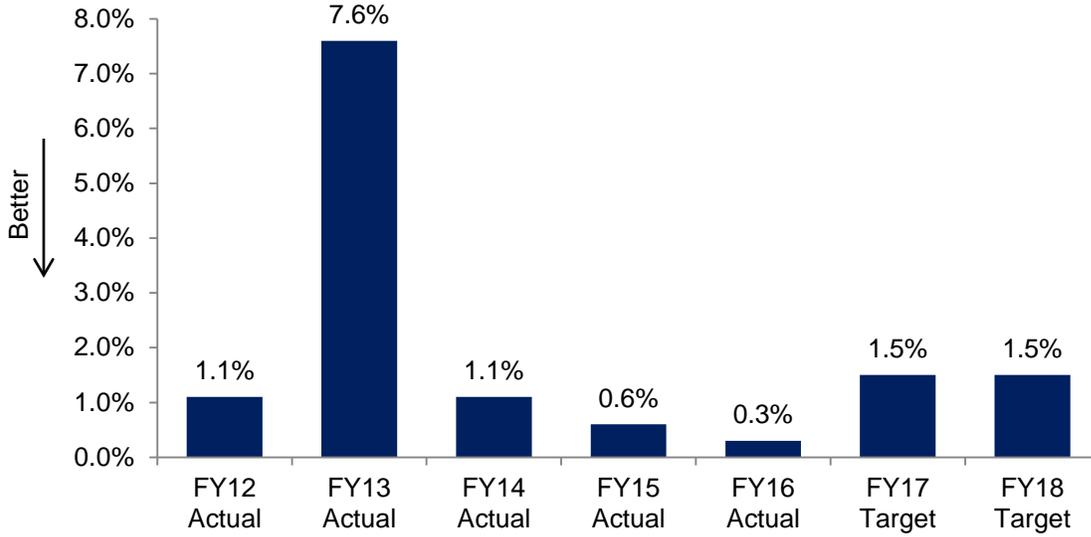
Definition	Coal Seasonal EFOR measures the generation lost due to forced events as a percentage of time the unit would have been scheduled to run. This measure runs from December through March and June through September and includes the Allen, Cumberland, Gallatin, Kingston, Paradise, and Shawnee coal plants. This measure excludes events that are classified as "Outside Management Control."
Calculation	$\frac{((FOH \times WNDC) + \text{Forced MWhL})}{((FOH + SH) \times WNDC)} \times 100$ <p>FOH = Forced Outage Hours SH = Service Hours WNDC = Winter Net Dependable Capacity Forced MWhL = MWh Losses Due to Forced Derating</p>

Nuclear Performance Index



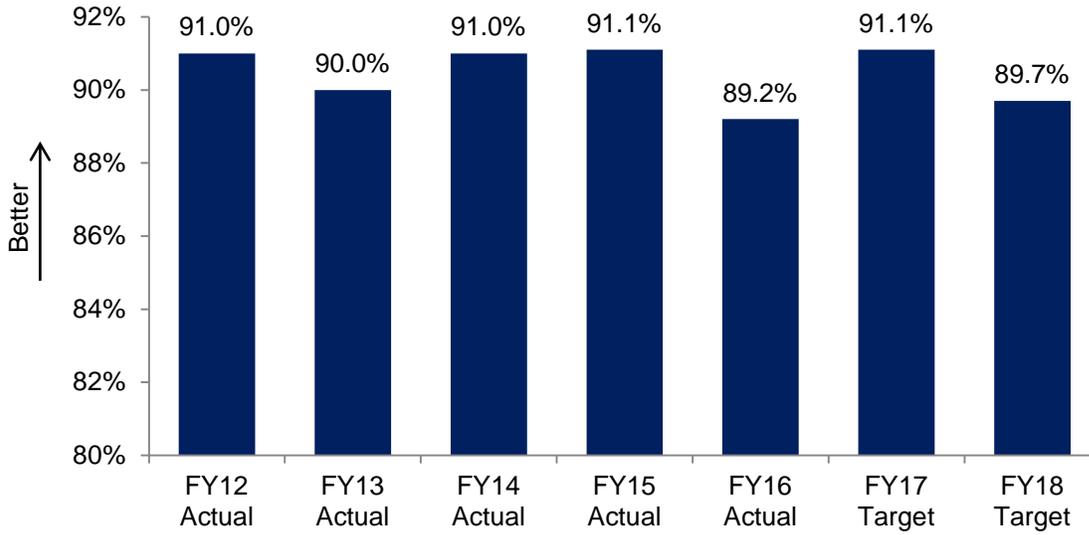
Definition	The Nuclear Performance Index is a weighted combination of the key performance indicators based on standard nuclear industry definitions for station performance.
Calculation	The Nuclear Performance Index for each unit is calculated using a weighted combination of key performance indicators based on standard nuclear industry definitions, with the maximum obtainable being 100 points. TVA's fleet-level Nuclear Performance Index is a simple average of the performance of each unit.

Combined Cycle Seasonal EFOR



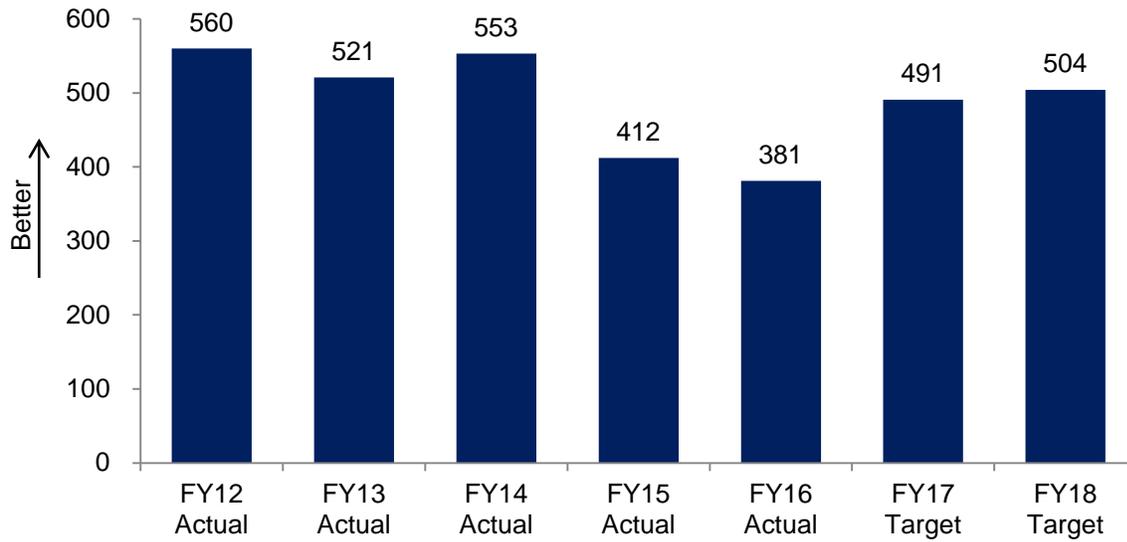
Definition	Combined Cycle Seasonal EFOR measures the generation lost due to forced events as a percentage of time the unit would have been scheduled to run. This measure runs from December to March and June to September and includes Caledonia, John Sevier, Lagoon Creek, Magnolia, and Southaven combined cycle plants. This measure excludes events that are classified as “Outside Management Control.”
Calculation	$\frac{((\text{FOH} \times \text{NDC}) + \text{Forced MWhL})}{((\text{FOH} + \text{SH}) \times \text{NDC})} \times 100$ <p>FOH = Forced Outage Hours SH = Service Hours NDC = Net Dependable Capacity Forced MWhL = MWh Losses Due to Forced Derating</p>

Nuclear Unit Capability Factor



Definition	Nuclear Unit Capability Factor is the ratio of available energy generation over a given period of time to the reference energy generation over the same time period, expressed as a percentage.
Calculation	$[(REG - PEL - UEL - OEL) / REG] \times 100$ <p>REG = Reference Energy Generation PEL = Planned Losses UEL = Unplanned Losses OEL = Outage Extension Losses</p>

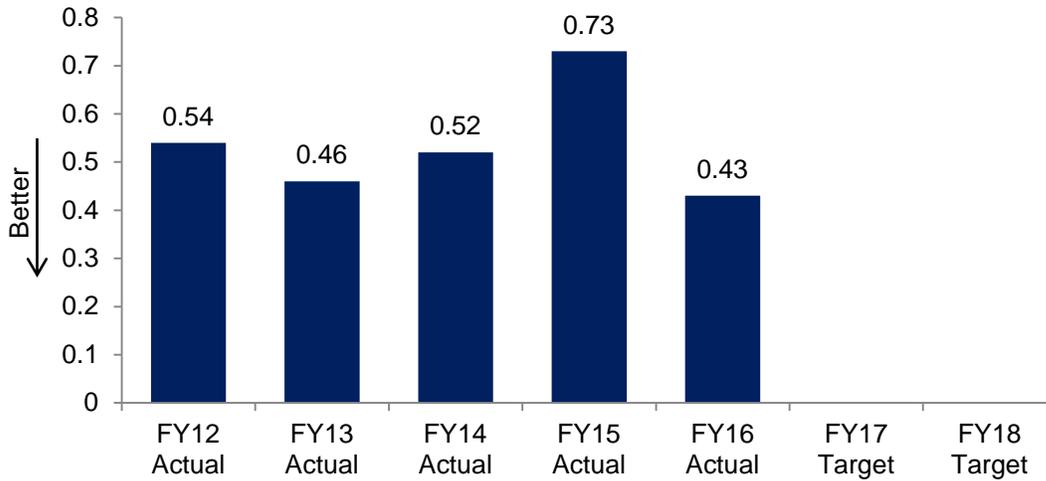
Energy Savings (GWh)



Definition	Energy efficiency (EE) savings measured in GWh from internally and externally focused programs, demonstrations, pricing products and structures supported or funded by TVA which promote the efficient use of electricity.
Calculation	$\frac{[(\text{Individual EnergyRight Solutions product kWh impacts}) * (\text{Individual EnergyRight Solutions installations})/1,000,000] + [\text{kWh energy efficiency achieved by industrial and commercial projects} + \text{kWh energy efficiency impacts from demand response programs} + \text{kWh energy efficiency impacts achieved through information/outreach programs} + \text{kWh energy efficiency impacts achieved by wholesale and retail pricing products} + \text{kWh energy efficiency impacts from TVA facilities improvements} + \text{kWh energy efficiency impacts from TVA-supported loan funds administered by others} + \text{kWh energy efficiency impacts from state programs receiving TVA support} + \text{kWh energy efficiency impacts from other TVA initiatives}]}{1,000,000}$

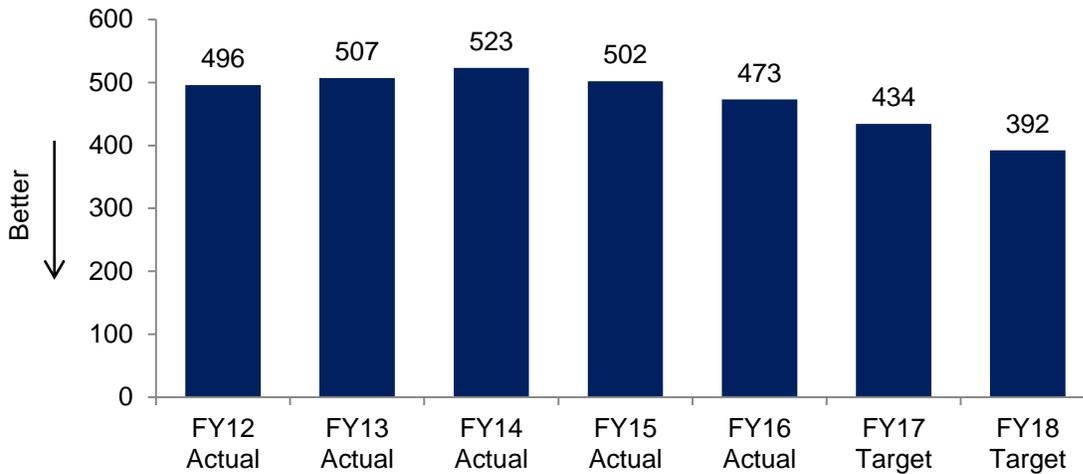
People/Stewardship

Recordable Incident Rate (RIR)



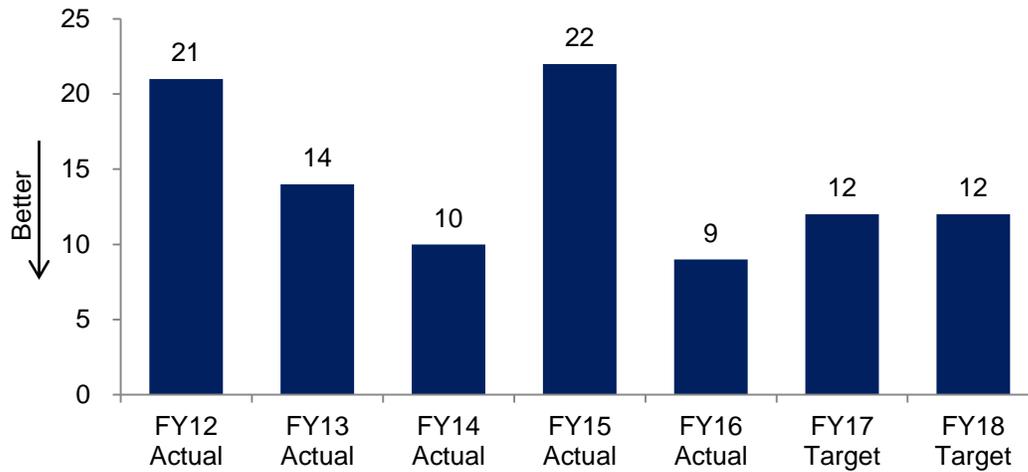
Definition	The number of recordable injuries (as defined by TVA's safety program) per 200,000 employee-hours worked by TVA employees and staff augmentation contractors
Calculation	$(\text{Number of recordable injuries} \times 200,000) / (\text{Number of employee-hours worked})$

CO₂ Emissions Rate (tons/GWh)



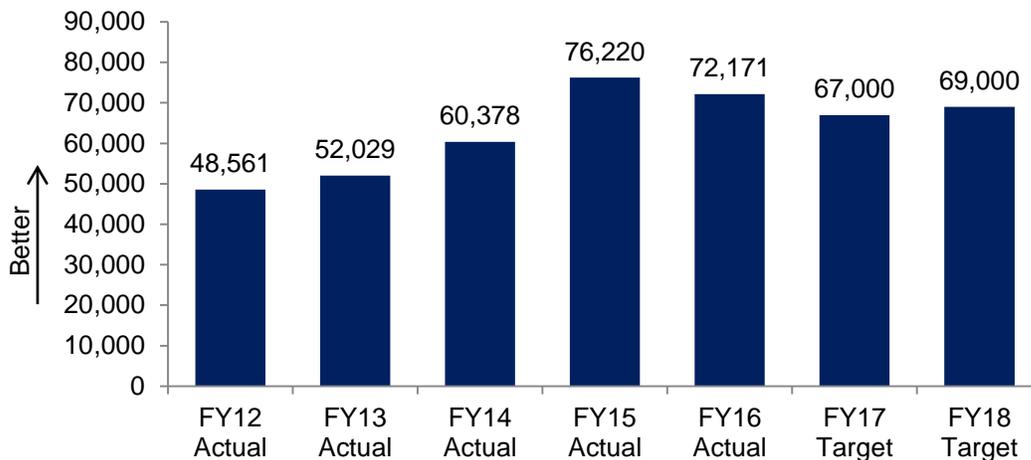
Definition	This measure reflects TVA's commitment to manage greenhouse gas emissions through efficient operation of its diverse generation mix.
Calculation	$\text{Tons of CO}_2 \text{ emissions} / \text{GWh of generation}$

Reportable Environmental Events



Definition	An environmental event at a TVA facility or elsewhere caused by TVA or TVA contractors that violates permit conditions or other regulatory requirements and triggers regulatory required oral or written notification to or enforcement action by a regulatory agency. Multiple parameters or multiple media/regulatory violations that result from the same root cause/event are counted as one reportable environmental event (“REE”). However, repeat occurrences count as separate REEs if they occur in a different reporting period. In cases where there is lag time between the event and receipt of a Notice of Violation (“NOV”), the receipt date for the NOV will be used as the date of the REE if the NOV has not previously been counted as a REE, and if the fiscal year reporting deadline for TVA-level environmental metrics has passed.
Calculation	Number of Reportable Environmental Events

Jobs Created & Retained



Definition	Jobs Created and Retained measures the number of new or retained jobs in the Tennessee Valley for which TVA has played a role in the recruitment or retention of the economic development project.
Calculation	Number of Jobs Created and Retained as reported through TVA channels

Other Information

Data Validation and Verification

Much of the data contained in this Performance Plan was derived from TVA's Annual Report on SEC Form 10-K for the year ended September 30, 2016 (the "Annual Report"). TVA filed the Annual Report with the SEC, and TVA's Chief Executive Officer and Chief Financial Officer certified the Annual Report in accordance with the requirements of the Sarbanes-Oxley Act. In addition, TVA's independent auditor, Ernst & Young LLP, audited the financial statements contained in the Annual Report.

TVA's management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rule 13a-15(f) under the Securities Exchange Act of 1934 and required by Section 404 of the Sarbanes-Oxley Act. TVA's internal control over financial reporting is designed to provide reasonable, but not absolute, assurance regarding the reliability of financial reporting and the preparation of financial statements in accordance with GAAP. Because of the inherent limitations in all control systems, internal controls over financial reporting and systems may not prevent or detect misstatements.

TVA's management, including the Chief Executive Officer, the Chief Financial Officer, and the Controller, evaluated the design and effectiveness of TVA's internal control over financial reporting as of September 30, 2016, based on the framework in *Internal Control — Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this evaluation, TVA's management concluded that TVA's internal control over financial reporting was effective as of September 30, 2016.

Although management's report on the effectiveness of internal control over financial reporting was not required to be subject to attestation by TVA's registered public accounting firm, TVA has chosen to obtain such a report. Ernst & Young LLP issued an attestation report on TVA's internal control over financial reporting as of September 30, 2016.

Lower-Priority Program Activities

TVA has determined that it does not have any lower-priority program activities for purposes of 31 U.S.C. § 1115(b)(10).

Hyperlinks

Hyperlinks to documents discussed in this Performance Report are set forth below:

Document	Hyperlink
Integrated Resource Plan	https://www.tva.gov/Environment/Environmental-Stewardship/Integrated-Resource-Plan
Natural Resource Plan	https://www.tva.gov/Environment/Environmental-Stewardship/Environmental-Reviews/Natural-Resource-Plan
Annual/Quarterly Report	http://www.snl.com/IRWebLinkX/docs.aspx?iid=4063363

Appendix A

Total Financing Obligations (“TFO”) is a financial measure that, although commonly used, is not calculated and presented in accordance with Generally Accepted Accounting Principles (“GAAP”). TFO is measured by summing bonds and notes, gross, debt related to variable interest entities (“VIE”), leaseback obligations, energy prepayment obligations, the membership interests of VIE subject to mandatory redemption, and effectively settled leaseback obligations from business combinations. A calculation of TFO utilizing financial statement line items reported in accordance with GAAP follows:

TENNESSEE VALLEY AUTHORITY							
Unaudited Reconciliation of Total Financing Obligations							
(in millions)							
	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017 Projected	FY 2018 Projected
Total Financing Obligations	\$ 26,912	\$ 27,473	\$ 26,071	\$ 26,120	\$ 26,202	\$ 26,576	\$ 26,166
Energy prepayment obligations	(611)	(510)	(410)	(310)	(210)	(110)	(10)
Effectively settled leaseback obligation from business combinations	-	-	-	-	(70)	-	-
Leaseback obligations	(1,204)	(761)	(691)	(616)	(467)	(500)	(388)
Membership interests of VIE subject to mandatory redemption	-	(40)	(39)	(37)	(35)	(33)	(30)
Debt of VIE	(994)	(1,341)	(1,311)	(1,279)	(1,245)	(1,211)	(1,175)
Bonds and Notes, gross	24,103	24,821	23,620	23,878	24,175	24,722	24,563
Exchange loss (gain)	41	43	44	(21)	(150)	-	-
Unamortized discounts, premiums, issue costs and other	(60)	(85)	(88)	(107)	(173)	(250)	(253)
Notes payable	-	-	-	-	75	48	20
Debt of variable interest entities	994	1,341	1,311	1,279	1,245	1,211	1,175
Total outstanding debt	<u>\$ 25,078</u>	<u>\$ 26,120</u>	<u>\$ 24,887</u>	<u>\$ 25,029</u>	<u>\$ 25,172</u>	<u>\$ 25,731</u>	<u>\$ 25,505</u>

