

Report of the Tennessee Advisory Commission on Intergovernmental Relations

Tennessee Valley Authority's Payments in Lieu of Taxes
Annual Report to the Tennessee General Assembly

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TENNESSEE VALLEY AUTHORITY'S PAYMENTS IN LIEU OF TAXES

The Tennessee Advisory Commission on Intergovernmental Relations (TACIR) was tasked by the Electric Generation and Transmission Cooperative Act of 2009 (Section 4 of Public Chapter 475, Acts of 2009) with monitoring changes in the wholesale distribution of electric power by the Tennessee Valley Authority (TVA) and its distributors for possible effects on the Authority's payments in lieu of taxes (PILOTs) to the states in the Valley region. The Commission's report was to "include recommendations, if any, on adjustments to the state tax system that would keep the state and local governments whole from such future changes." The Act authorized the creation of nonprofit membership cooperatives to generate and transmit electricity in Tennessee. At the time, one such co-op already owned a power-generating facility in Mississippi, and the legislature was concerned that, having authorized them, they had opened the door to a potential decline in TVA's payments to the states if the co-ops began selling electricity directly to distributors.

After considering a number of options, including those developed by the Commission,¹ the Tennessee General Assembly passed Public Chapter 1035, Acts of 2010, requiring payments equivalent to TVA's Tennessee PILOT from any other entity providing wholesale electric current for resale within the state, such as the electric generation and transmission cooperatives authorized in 2009. Public Chapter 1035 was designed to ensure that revenue from power sales in the TVA region would not depend on who produced that power or who sold it. The act also renewed the requirement that the Commission monitor the effects of the 2009 act and report to the General Assembly annually. This is the Commission's report for the 2015 legislative session.

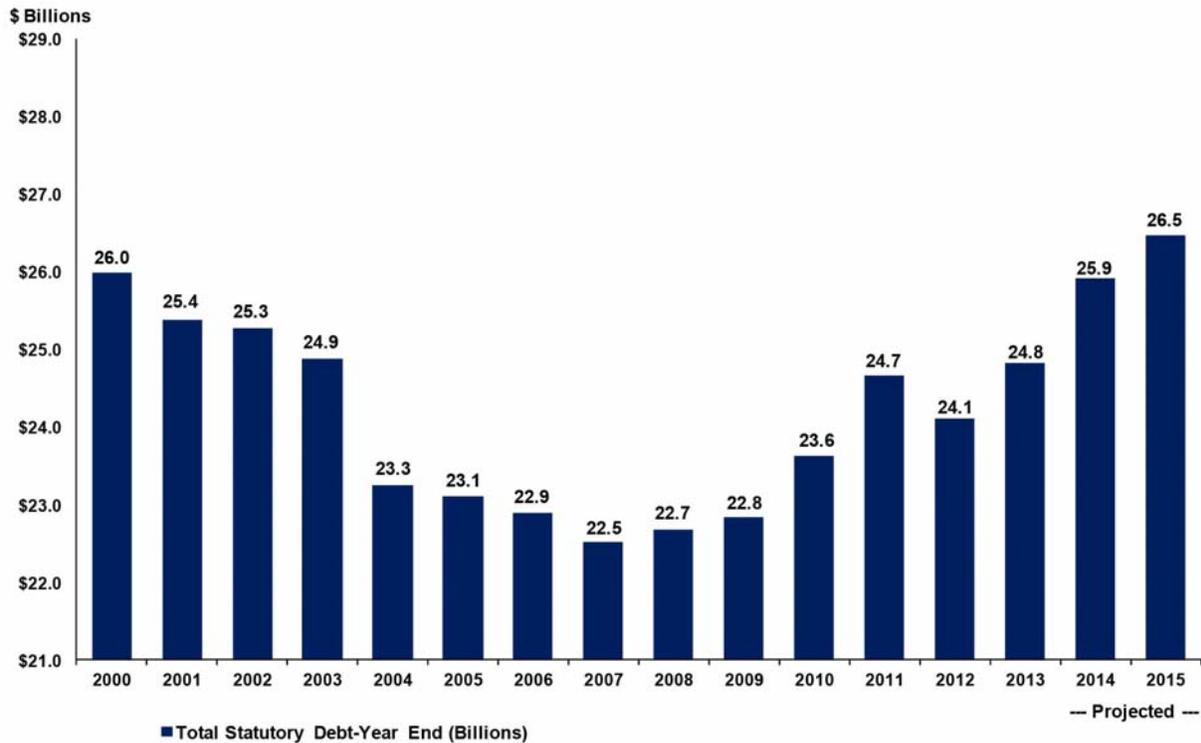
As noted in last year's report, while the 2010 law put to rest the immediate concern about the potential loss of TVA revenue created by the 2009 law, concerns about the problems created by TVA's debt ceiling, which has not been raised since 1979,² and the threat of privatization remain. Both of these issues were among the reasons given by power distributors in the region for seeking authorization to form the generation and transmission co-operatives authorized by

¹ TACIR's June 2010 report, *The Electric Generation and Transmission Cooperative Act of 2009 and Its Possible Impact on the Tennessee Valley Authority's Payments in Lieu of Taxes*, is available online at http://www.tn.gov/tacir/PDF_FILES/Taxes/electric_generation_cooperative_act.pdf.

² 16 United States Code Section 831 n-4(a).

the 2009 Act. TVA's debt ceiling remains \$30 billion, which because of inflation has the buying power of about \$9 billion in today's dollars. Figure 1 shows the level of TVA's debt since 2000.³

Figure 1. Total Statutory Debt at Year End, Capped at \$30 Billion (in billions)



Source: Tennessee Valley Authority, "Budget Proposal and Management Agenda, For the Fiscal Year Ending September 30, 2015," Submitted to Congress March 2014, p. 33.

To manage within the \$30 billion debt limit, TVA has adopted a number of innovative but, by its own account, costly financing techniques, some of which can alter the amount of PILOT revenue paid directly to states. The lease-and-lease-back technique used so far to finance expansion of power production in Tennessee does not affect the amount of the PILOT paid directly to Tennessee, but the sale-and-lease-back technique used at one of its plants in Mississippi reduced the amount paid directly to that state, and the potential for the same exists throughout the region. The difference is in who owns the property and whether it is subject to state and local taxes.

The management strategy laid out in TVA's Integrated Resource Plan⁴ could also affect the balance of PILOTs across the region. Changes in the supply system called for by the plan,

³ Tennessee Valley Authority, 2014 Budget Proposal and Management Agenda, Submitted to Congress March 2014, p. 33. http://www.tva.com/abouttva/pdf/budget_proposal_2015.pdf.

brought about in part as a response to economic factors and environmental mandates, include closing a number of old coal-fired generating plants, building new plants powered by natural gas, and expanding the Authority's nuclear generating facilities. It is possible that some of the announced changes in TVA's power system could reduce the amount of money that Tennessee receives from the PILOT. For example, the retirement of ten of ten coal-fired units at TVA's Johnsonville plant in Humphreys County will reduce the value of power producing property in Tennessee, one of two factors determining its share of the PILOT, unless it is offset by an increase in the value of TVA property elsewhere in Tennessee or net reductions in other states. Moreover, the demand management strategies in the Authority's plan, if successful, could actually reduce TVA revenues and ultimately the PILOT for all recipients. Other factors, such as the economy and the weather, could as well. There are no recommended actions to be taken by the General Assembly in this year's report. Staff will continue to monitor and report developments in the region that may affect TVA's payments in lieu of taxes.

Decline in TVA's Payments in Lieu of Taxes Reverses

According to a press release issued in November 2014,⁵ TVA's actual payments in lieu of taxes for federal fiscal year 2013-14 amounted to \$533 million, of which \$335 million was paid to Tennessee. This was a decline of \$14 million from payments made to all states in the previous fiscal year. Payments are estimated to increase by \$9 million for the current fiscal year, federal fiscal year 2014-15, because of increased power sales resulting primarily from extreme weather conditions and economic growth in the region.⁶

Tennessee governments will receive an estimated \$346.9 million. Tennessee's share of the payments increased more than the total PILOT increased largely because Kentucky and Alabama's shares of the PILOT fell. Kentucky's share fell because the US Enrichment Corporation of Paducah, Kentucky—TVA's largest direct-service customer—ceased operation in 2014.⁷ Alabama's share declined primarily because TVA retired four of the six units at its Widows Creek Fossil Plant in 2014. Total payments are based on five percent of prior-year gross proceeds from power sales, and funds are divided among eight states that receive them based both on revenues from power sold by TVA and on the value of TVA power property located there. Tennessee receives more than 60% of the total distributed through this formula,

⁴ Tennessee Valley Authority Integrated Resource Plan. <http://www.tva.com/environment/reports/irp/>.

⁵ Tennessee Valley Authority, "TVA Tax Equivalent Payments Expected to Reach \$542 Million in 2015," news release, November 6, 2014, http://www.tva.com/news/releases/octdec14/tax_equivalent_payments.html

⁶ TVA, "TVA Tax Equivalent Payments Expected to Reach \$542 Million in 2015," press release November 6, 2014, http://www.tva.com/news/releases/octdec14/tax_equivalent_payments.html; and Stephen Schoolfield, Program Manager-Taxes, Tennessee Valley Authority, e-mail to author, January 9, 2015.

⁷ The US Enrichment Corporation of Paducah, Kentucky was TVA's largest single industrial customer. Tennessee Valley Authority, 2012 Form 10-K, p. 11 and 2014 Form 10-K, p. 48. The facility ceased operation in October 2014 <http://wkms.org/term/paducah-gaseous-diffusion-plant>

a percentage that has been increasing since 2008-09. Those increases helped offset what would have otherwise been larger decreases in TVA’s payments to Tennessee the previous two years. See table 1.

Table 1. Tennessee Valley Authority Revenue Sharing
Distribution Estimates by Federal Fiscal Year (in millions)*

	2014-15	2013-14	2012-13	2011-12	2010-11	2009-10
TVA Payment to States	\$531.2	\$522.4	\$536.5	\$567.4	\$520.0	\$538.4
Tennessee's Percent	X 65.3%	62.84%	61.69%	61.21%	60.64%	59.47%
Tennessee's Amount	\$346.9	\$328.3	\$330.9	\$347.3	\$315.3	\$320.1
Direct Payment to Counties	— 3.4	3.4	3.4	3.4	2.2	2.2
Tennessee's Share	\$343.5	\$324.9	\$327.6	\$343.9	\$313.1	\$318.0

*TVA estimates payments in lieu of taxes each year based on unaudited prior-year gross receipts, distributes these estimated payments monthly from October through August, then makes a final payment for the year in September based on audited revenue figures for the previous fiscal year. It is not unusual for the final payment to be adjusted upward from the original estimated amount. Tennessee’s share minus payments to counties may not sum to the net to state because of rounding.

Source: Tennessee Valley Authority.

Tennessee shares close to half of the amount it receives from TVA with its local governments, and they are directly affected by the increasing total payments to Tennessee. On a state-fiscal-year basis, the 2014-15 increase in Tennessee’s PILOT will provide a \$4.7 million increase in the distribution to counties, a \$2 million increase for cities, and a \$6.6 million increase in the amount reserved by the state for its own agencies. These amounts total less than the estimated increase for federal fiscal year 2014-15 because the state and federal fiscal years overlap and the lag that results includes three months of the decline that occurred in federal fiscal year 2013-14. See appendix A for an explanation of Tennessee’s allocation formula and appendixes B and C for the distribution to local governments within the state by county and city since state fiscal year 2007-08.

TVA’s Efforts to Meet Power Needs and Remain Within its Debt Limit

To meet the region’s power demand, TVA must plan for both short-term and long-term fluctuations in the use of electricity while staying within its statutory debt limit of \$30 billion. The Authority has developed a number of strategies for managing its system to meet demand within these constraints. These strategies have and will continue to affect TVA’s payments to Tennessee.

Short-Term System Management Strategies

TVA meets short-term-demand increases that result from extreme weather by operating additional facilities that are used only in times of high demand, purchasing power from other

utilities, and cutting off power to customers with interruptible contracts. This strategy enabled TVA to meet record power demands on January 7, 2014, during a period of extreme cold when TVA customers used a record 703 gigawatt-hours of electricity in a single 24-hour period⁸ and demand peaked at 32,490 megawatts, the second highest ever for the Authority.⁹ TVA used natural gas plants to supplement the power provided by its coal-fired, nuclear, and hydroelectric facilities¹⁰ and purchased additional power from the open market.¹¹ But managing peak demand also required temporarily cutting off power to some customers—for example, Murray State University¹²—that have contracts allowing TVA and its distributors to interrupt service during emergencies in exchange for a lower base rate.¹³ Although extreme weather could affect the amount and distribution of TVA's payments to the states, this event was too short-lived to have a noticeable effect.

Long-Term System Management Strategies

TVA's long-term management strategies are laid out in its Integrated Resource Plan, a document which is due for revision this year. These strategies have already affected the amount and distribution of the Authority's payments to the states and will continue to do so in the future. TVA has been continually updating its generating system to meet the needs of the region's growing economy and tighter air-quality standards. As early as the 1960s and 1970s, TVA was investing heavily in nuclear power for both of these reasons. More recently, the Authority has invested in natural gas-powered facilities to meet periodic surges in demand caused by the weather.

As the Authority's aging coal-fired power plants near the end of their projected engineering lifespan, TVA must either upgrade its existing facilities or replace them with new generating units. These improvements as well as the economics of power production and the

⁸ TVA, "TVA System Meets Single-Day Electricity Record," January 8, 2014, <http://www.tva.com/news/releases/janmar14/singleday.html>.

⁹ TVA, "TVA System Passes Peak Electricity Demand Period," January 7, 2014, <http://www.tva.com/news/releases/janmar14/passesspeak.html>.

¹⁰ TVA, "TVA System Meets Single-Day Electricity Record," January 8, 2014, <http://www.tva.com/news/releases/janmar14/singleday.html>.

¹¹ TVA, "TVA System Meets Single-Day Electricity Record," January 8, 2014, <http://www.tva.com/news/releases/janmar14/singleday.html>.

¹² Rob Canning, Chad Lampe, and John Null, "Damage to at Least 40% of MSU's Main Buildings Due to Power Outage and Freezing Temps," *WKMS*, January 7, 2014, <http://wkms.org/post/damage-least-40-msus-main-buildings-due-power-outage-and-freezing-temps>.

¹³ Dave Flessner, "'Arctic Blast' Pushes TVA Power Use to All-Time High," *Chattanooga Times Free Press*, January 8, 2014, <http://www.timesfreepress.com/news/business/aroundregion/story/2014/jan/08/arctic-blast-pushes-tva-power-use-all-time-high/128523/>.

requirements of the Clean Air Act and other environmental regulations affect the distribution of TVA's PILOTs across the region as does the Authority's debt limit.

TVA's Debt Limit and Financing Arrangements

One concern for the future of TVA's PILOTs in the region and among Tennessee's counties is the effect of financing arrangements for new generating capacity. In order to stay within the \$30 billion debt ceiling imposed on it by the Congress in 1979,¹⁴ TVA began using new financing methods that affected the distribution of PILOT funds for some states, including the amount they had available to allocate to their counties and cities. One technique is the leasing of some generating facilities, an approach TVA has no current plans to expand.¹⁵

Shortly before the Electric Generation and Transmission Cooperative Act was passed in 2009, TVA entered into an agreement with a group of its distributors organized as the Seven States Power Corporation, a non-profit company.¹⁶ Seven States purchased an interest in TVA's Southaven, Mississippi, power plant with the agreement that TVA would continue to operate it.¹⁷ TVA later bought back all of Seven State's interest in the plant. Under the sale-and-lease-back arrangement while it was active, all sales of electricity produced at Southaven were through TVA and, therefore, were accounted for as TVA revenues and subject to the PILOT allocation to states.

Leasing arrangements such as the one used in Southaven during this agreement, do not change the total amount of the PILOT under the TVA formula, nor do they change the allocation across states. Section 15d(g) of the Tennessee Valley Authority Act of 1933 says that

...power generating and related facilities operated by the Corporation under lease and lease-purchase agreements shall constitute power property held by the Corporation within the meaning of section 13 of this Act...

This provision causes facilities operated by TVA under leases to be included in the calculation of the value of power-producing property under Section 13, which means that the value of TVA property in the lease-holding state does not change.

Although the change in ownership of the Southaven plant did not affect the PILOT allocation across states, it did affect the PILOT distribution to the state of Mississippi. The amount of the TVA PILOT that goes through any particular state's own allocation formula is decreased to the

¹⁴ 16 United States Code Section 831 n-4(a).

¹⁵ For details on these arrangements see Tennessee Valley Authority, 2013 Form 10-K, p. 103 and 108.

¹⁶ Tennessee Valley Authority, 2009 Form 10-Q, p.35.

¹⁷ More information about the plant can be found on TVA's website at <http://www.tva.com/sites/southaven.htm>.

extent that the new plant owners must pay taxes to the state or local governments. Section 15d(g) of the 1933 act goes on to say

...that portion of the payment due for any fiscal year under said section 13 to a state where such facilities are located which is determined or estimated by the Board to result from holding such facilities or selling electric energy generated thereby shall be reduced by the amount of any taxes or tax equivalents applicable to such fiscal year paid by the owners or others on account of said facilities to said state and to local taxing jurisdictions therein.

The initial sale-and-lease-back arrangement at the Southaven plant and the Authority's current lease arrangement at the privately owned Caledonia plant, also in Mississippi, illustrate the effect of this second provision.¹⁸ In 2013-14, the portion TVA PILOT paid directly to Mississippi was reduced by approximately \$5.4 million, which TVA paid to the entities that owned Southaven and Caledonia to reimburse them for state and local taxes as provided in the TVA Act.¹⁹ In 2014-15, TVA estimates that its payment under section 15d(g) to the owners of the Caledonia plant will be approximately \$2 million. This works much like the \$3+ million in direct payments TVA makes to counties in Tennessee. Direct payments are taken off the top of TVA's PILOT to each state, reducing the amount allocated through the state's statutory formula. The amount allocated through Tennessee's formula, including the amount retained by the state in its general fund, would be reduced by any taxes paid on account of any plant operated through a sale-and-lease-back arrangement, if that were to occur. Tennessee might want to mitigate that reduction by modifying its allocation formula to offset the direct payments of taxes by, for example, reducing the allocation to any particular jurisdiction by the amount of the reimbursement TVA made to the plant owners. It is possible, of course, that the reimbursement amount to those jurisdictions could be greater than the allocation through the state formula, so considerable thought would need to go into making such a change.

The following statement was included in TVA's 2013, *10-K Report*, filed with the United States Securities and Exchange Commission:

TVA may seek to enter into similar arrangements for other assets in the future, potentially including assets under construction. While such leasing transactions allow TVA to diversify its asset financing program, financing an asset by using the proceeds of leasing transactions is typically more costly to TVA than financing an asset with the proceeds of Bonds.²⁰

¹⁸ Telephone interview with Stephen Schoolfield, Program Manager-Taxes, Tennessee Valley Authority, January 16, 2015.

¹⁹ Telephone interview with Stephen Schoolfield, Program Manager-Taxes, Tennessee Valley Authority, January 16, 2015.

²⁰ Tennessee Valley Authority 2013, *10-K Report*, p. 57.

TVA chose a somewhat different strategy to raise funds for generating expansions in Tennessee without approaching its debt ceiling. Thus far, arrangements in Tennessee have been lease-and-lease-back agreements, which fortunately do not jeopardize the amount of the PILOT controlled by Tennessee's allocation formula. An example is the natural gas combined cycle plant built between 2010 and 2012 in Hawkins County next to the John Sevier fossil plant and leased to a private company in January 2012. The company paid TVA \$1 billion for the lease and then leased the plant back to TVA for 30 years.²¹ This lease arrangement changes neither the ownership of the property nor TVA revenues and thus has no effect on the PILOT across states or within Tennessee. Similarly, in August 2013, TVA repurchased the 90% share of the Southaven plant that Seven States had purchased. TVA then entered into a leasing arrangement with Southaven Combined Cycle Generation LLC in which the facility is leased to the company and, in turn, the facility is leased back to TVA.²²

Currently, TVA has no plans for any sale-lease back arrangements in Tennessee that would affect the state's share of the Authority's PILOT in the short-term. However, the possibility exists that TVA could utilize this strategy in the future to finance new construction if its debt limit remains capped at \$30 billion. TVA's most recent *Form 10-K* acknowledges its use of these innovative financing techniques but says it has no immediate plans to enter into similar arrangements:

TVA has entered into certain leasing transactions with special purpose entities to obtain third-party financing for its facilities. These special purpose entities are sometimes identified as variable interest entities (VIEs) of which TVA is determined to be the primary beneficiary. TVA is required to account for these VIEs on a consolidated basis. TVA may seek to enter into similar arrangements in the future, but has no immediate plans to do so.²³

Rebalancing Power Sources and Increasing Efficiency Could Affect PILOTs

TVA's 2011 Integrated Resource Plan (IRP) calls for rebalancing its generation fleet to produce 40% of its power from nuclear plants, 20% from coal, and 20% from natural gas with the remaining 20% provided by hydro generation, renewable sources, and energy efficiency. These changes are continuing to cause shifts in the value of power-producing property from state to state and in each state's share of TVA's PILOTs. Changes so far, including the change from coal to natural gas in Hawkins County, which was part of a set of agreements to settle a

²¹ More information about the plant can be found on TVA's website at http://www.tva.com/sites/johnsevier_cc.htm and in the Tennessee Valley Authority, 2013 *Form 10-K*, p. 100. <http://investor.shareholder.com/tva/secfiling.cfm?filingID=1376986-13-56>.

²² Tennessee Valley Authority, "TVA Secures Lease-Purchase Financing for Mississippi Gas Plant," news release, August 9, 2013, http://www.tva.com/news/releases/julsep13/miss_gas_plant.htm.

²³ Tennessee Valley Authority, 2014 *Form 10-K*, p. 59.

series of legal challenges, have occurred mostly at existing sites and so have not affected the value of TVA property or the PILOTs. Similar changes are planned for plants in Memphis and in Muhlenberg County, Kentucky. The expansion of the Watts Bar nuclear operation now under construction in Rhea County could actually increase Tennessee’s share of the PILOTs except to the extent that the increased value of the Watts Bar property is offset by the decrease resulting from the upcoming elimination of all of the coal-fired units at the Johnsonville plant in Humphreys County. The retirement of coal-fired units in Alabama and Kentucky announced last year could also affect the distribution of payments across states.²⁴ Because retired units are no longer used to produce power, TVA accelerates their depreciation so that only their residual value is included in the PILOT distribution formula. Table 2 shows TVA’s energy sources for the last three years.

Table 2. Power Supply from TVA-Operated Generation Facilities
For federal fiscal years 2011-12 through 2013-14
(millions of KWh)

	2013-14		2012-13		2011-12	
Coal fired	62,525	44%	62,519	43%	58,584	41%
Nuclear	53,778	38%	52,100	36%	55,244	38%
Hydroelectric	13,228	9%	18,178	12%	12,817	9%
Natural gas and/or oil fired	12,615	9%	13,102	9%	16,650	12%
Renewable resources (non hydro)	5	<1%	+9	<1%	25	<1%
Total	142,151	100%	145,908	100%	143,320	100%

Source: Tennessee Valley Authority, *10-K Report*, 2014, p. 12.

TVA’s Integrated Resource Plan also calls for a 3.5% improvement in efficiency by 2015 in order to reduce the need to increase capacity in the future.²⁵ Some of that improved efficiency will occur through upgrading power transmission and distribution systems; some will occur in private homes and businesses. As customers update their homes, commercial and industrial facilities, and electrical appliances and equipment, those changes reduce existing power demand, which could reduce TVA revenues and ultimately the PILOT for all recipients if demand does not continue to grow with the population and the economy.

The Shift Away from Coal: Environmental and Business Reasons

Since the 1950s, coal-fired plants have been and remain TVA’s largest single source of power, but because of their age and changing air quality requirements, the Authority is shifting emphasis from coal to other power sources. As the Authority’s coal-fired power plants age,

²⁴Tennessee Valley Authority, “TVA Board Takes Action to Improve TVA’s Operations and Financial Health,” news release, November 14, 2013, http://www.tva.com/news/releases/octdec13/board_111413.html.

²⁵ Tennessee Valley Authority. 2011. *Integrated Resource Plan*. p. C189. http://tva.com/environment/reports/irp/archive/pdf/Final_IRP_complete.pdf.

TVA must either retire them or install costly upgrades to meet new air-quality standards that tighten restrictions on the emission of particulates, sulfur dioxide, nitrogen oxides, mercury, lead, and carbon—the major byproducts of burning coal. To resolve a series of legal challenges brought under the Clean Air Act by several states, including Tennessee, and environmental groups, TVA entered into two settlement agreements in April 2011:

The first agreement is a Federal Facilities Compliance Agreement with the Environmental Protection Agency. 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 2017.²⁶

Because the cost of upgrading existing coal-fired facilities, the relative cleanliness of other fuels, and the decreasing cost of natural gas have resulted in a competitive advantage for other methods of generating electricity, the Authority has decided to retire an additional 13 coal-fired units in the coming years.²⁷

Table 3 summarizes the retirement actions TVA is required to take under the Environmental Agreements and the status of those actions.

Table 3. TVA Coal-Fired Units to be Retired Under Environmental Agreements

Fossil Plant	Total Units	Existing Scrubbers and SCRs ⁽ⁿ⁾	Requirements Under Environmental Agreements	Retirements Implemented or Planned to be Implemented by TVA as a Result of Environmental Agreements
John Sevier	2	None	· Retire two units no later than December 31, 2012	· Retired Units 1 and 2 on December 31, 2012
Johnsonville	10	None	· Retire six units no later than December 31, 2015 · Retire four units no later than December 31, 2017	· Retire six units by December 31, 2015 · Retire four units by December 31, 2017 · Idled Units 7 and 8 effective March 1, 2012 · Idled Units 5 and 6 and Units 9 and 10 on October 1, 2013
Widows Creek	6	Scrubbers and SCRs on Units 7 and 8	· 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	· Idled Units 1-6 in October 2011 · Retired Units 3 and 5 on July 31, 2013 · Retired Units 1, 2, 4, and 6 on July 31, 2014

Note: Selective catalytic reduction systems ("SCR")

Source: Tennessee Valley Authority, *10-K Report*, 2014, p. 15.

²⁶ Tennessee Valley Authority, *10-K Report*, 2014.

²⁷ Tennessee Valley Authority, *10-K Report*, 2014, p. 14, 15, 16, 28, 29, and 141.

Table 4 summarizes the retirement actions TVA is taking for business reasons and the status of those actions.

Table 4. TVA Coal-Fired Units to be Retired for Business Reasons

Fossil Plant	Units Impacted	Existing Scrubbers and SCRs	Requirements Under Environmental Agreements	Other 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 location of the Allen coal-fired site · Retire Units 1-3 after completion of the gas-fired plant
Bull Run	1	Scrubber and SCRs on unit	· Continuously operate current and any new emission control equipment	· Continuously operate existing emission control equipment
Colbert	5	SCR on Unit 5	· Remove from service, control ⁽¹⁾ , convert ⁽²⁾ , or retire Units 1-4 no later than June 30, 2016 · Remove from service, control ⁽¹⁾ , or retire Unit 5 no later than December 31, 2015 · Control or retire removed from service units within three years	· Idled Unit 5 in October 2013 · Retire Units 1-4 no later than June 30, 2016 · Retire Unit 5 no later than December 31, 2015
Cumberland	2	Scrubbers and SCRs on both units	· Continuously operate existing emission control equipment	· Continuously operate existing emission control equipment
Gallatin	4	None	· Control ⁽¹⁾ , convert ⁽²⁾ , or retire all four units no later than December 31, 2017	· Add scrubbers and SCRs on all four units by December 31, 2017
John Sevier	2	None	· Remove from service two units no later than December 31, 2012 and control ⁽¹⁾ , convert ⁽²⁾ , or retire those units no later than December 31, 2015	· Idled Units 3 and 4 in December 2012 · Retired Units 3 and 4 on June 25, 2014
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	· Upgrade scrubbers on Units 1 and 2 no later than December 31, 2013 · Continuously operate emission control equipment on Units 1-3	· Upgraded scrubbers on Units 1 and 2 in 2012 · Continuously operate emission control equipment on Units 1-3 · The Board approved the construction of a gas-fired plant at the current location of the Paradise coal-fired plant · Retire Units 1 and 2 after completion of the gas-fired plant
Shawnee	2	None	· Control ⁽¹⁾ , convert, or retire ⁽²⁾ Units 1 and 4 no later than December 31, 2017	· Still evaluating what actions to take with respect to Units 1 and 4 · Idled Unit 10 in October 2010 · Retired Unit 10 on June 30, 2014
Widows Creek	2	Scrubbers and SCRs on Units 7 and 8	· Continuously operate existing emissions control equipment on Units 7 and 8	· Continuously operate existing emissions control equipment on Units 7 and 8 · Idled Unit 8 on October 1, 2014 · Retire Unit 8 in the future

Notes:

- (1) If TVA decides to add emission controls to these units, TVA must continuously operate the emission controls once they are installed.
- (2) Convert to renewable biomass.

Source: Tennessee Valley Authority, *10-K Report*, 2014, p. 16.

Fossil Plant Retirements Required by Environmental Agreements

As a result of the settlement agreements, TVA has already retired eight of its coal-fired and, before 2018, will retire all ten coal-fired units at the Johnsonville Fossil Plant.²⁸ Those already retired include two of four coal-fired units at its John Sevier plant in Hawkins County,²⁹ which were replaced by one gas-fired unit on an adjacent site,³⁰ and six of eight units at the Widows Creek Fossil Plant in Alabama.³¹ See table 3.

Fossil Plant Retirements for Business Reasons

Because of the competitive advantage over coal of other methods of generating electricity, TVA has already retired the other two coal-fired units at the John Sevier Fossil Plant³² and one of the ten units at the Shawnee Fossil Plant in Kentucky.³³ The Authority will retire all three units at Allen Fossil Plant in Memphis and replace them with gas-fired units on the same site.³⁴ Similarly, TVA plans to close two of three coal-fired units at Paradise Fossil Plant in Kentucky and replace them with gas-fired units on site.³⁵ The Authority also plans to retire all five coal-fired units at its Colbert plant in Alabama before 2016.³⁶ See table 4.

New Energy Sources to Meet the Region's Needs

As TVA retires existing coal-fired units, new energy sources are being developed to meet the region's electricity needs, including the natural gas at the facilities discussed above, as well as solar, wind, and nuclear. The Authority continued construction of a second nuclear reactor scheduled to begin producing power in 2015 at Watts Bar Nuclear Plant in Rhea County.³⁷ TVA may restart construction on Bellefonte Nuclear Plant in Alabama in the future but has no immediate plans to do so.³⁸

²⁸ Tennessee Valley Authority, *10-K Report*, 2014, p. 15.

²⁹ Tennessee Valley Authority, *10-K Report*, 2014, p. 15.

³⁰ Tennessee Valley Authority, *10-K Report*, 2014, p. 13.

³¹ Tennessee Valley Authority, *10-K Report*, 2014, p. 15 and 16.

³² Tennessee Valley Authority, *10-K Report*, 2014, p. 16.

³³ Tennessee Valley Authority, *10-K Report*, 2014, p. 16.

³⁴ Tennessee Valley Authority, *10-K Report*, 2014, p. 14 and 16.

³⁵ Tennessee Valley Authority, *10-K Report*, 2014, p. 14 and 16.

³⁶ Tennessee Valley Authority, *10-K Report*, 2014, p. 16.

³⁷ Tennessee Valley Authority, *10-K Report*, 2014, p. 20.

³⁸ Tennessee Valley Authority, *10-K Report*, 2014, p. 7 and 20.

TVA is encouraging the development of solar power through its Green Power Providers program, which allows residents and businesses to install solar panels on their property and sell the power they produce to TVA's system at a premium above the retail rate.³⁹ However, the Authority limits the amount of capacity that can be installed through its Green Power program each year—the limit in 2014 was ten megawatts⁴⁰—and it has reduced the premium paid above the retail rate from \$0.12 per kilowatt-hour of solar power in 2012⁴¹ to only \$0.04 per kilowatt-hour in 2014.⁴²

New wind-power projects that will transmit electricity to the southeast, including Tennessee, continue to be developed outside the region. Clean Line Energy Partners, which includes one of the largest investor-owned energy companies in the world—National Grid⁴³—received approval for the Plains & Eastern Clean Line project in 2015.⁴⁴ The project will transmit electricity 700 miles from a wind farm in the Oklahoma panhandle to Tennessee.⁴⁵

³⁹ TVA, "Green Power Providers Program Participation Guidelines," 2014, https://www.tva.com/greenpowerswitch/providers/pdf/gpp_guidelines.pdf.

⁴⁰ TVA, "Green Power Providers Program Participation Guidelines," 2014, https://www.tva.com/greenpowerswitch/providers/pdf/gpp_guidelines.pdf.

⁴¹ Johnson City Power Board, "Green Power Providers," <https://www.jcpb.com/yourHome/programs/greenPowerProviders.asp>.

⁴² TVA, "Green Power Providers Program Participation Guidelines," 2014, https://www.tva.com/greenpowerswitch/providers/pdf/gpp_guidelines.pdf.

⁴³ Clean Line Energy Partners, "Our Investors," <http://www.cleanlineenergy.com/about/investors>.

⁴⁴ Michael Sheffield, "\$2B Wind Power Project Gets State Approval," *Memphis Business Journal*, January 13, 2015, <http://www.bizjournals.com/memphis/news/2015/01/13/2b-wind-power-project-gets-state-approval.html?page=all>.

⁴⁵ Michael Sheffield, "\$2B Wind Power Project Gets State Approval," *Memphis Business Journal*, January 13, 2015, <http://www.bizjournals.com/memphis/news/2015/01/13/2b-wind-power-project-gets-state-approval.html?page=all>.