



TVA: LEAD THE WAY ON SOLAR POWER IN 2015

TVA should increase its investment in clean solar energy to 300 megawatts (MW) in 2015, in order to leverage financial resources, remain competitive with peer utilities, and maximize the economic and environmental benefits of solar energy. We commend TVA for its leadership in conducting a value of solar analysis and for maintaining productive stakeholder engagement in developing the next integrated resource plan (IRP). However, these processes are unlikely to influence TVA's program and budget planning for solar development in 2015, which happens to be a critical year for the nascent solar industry, customers, and the utility.

TVA's 2014 allocation for solar capacity was 126 megawatts (MW), consisting of: 10 MW for smaller-scale installations under Green Power Providers; 16 MW for mid-size projects under the Solar Solutions Initiative; and 100 MW typically comprised of much larger utility-scale projects under the Renewable Standard Offer. Our recommendation to increase the capacity allocation to 300 MW in 2015 across these programs would help address the following concerns:

- **Leverage the 30% Federal Investment Tax Credit.** The 30% federal Investment Tax Credit (ITC) for solar technologies is set to be rolled back at the end of 2016. This approaching deadline is already impacting larger-scale solar developer and investor decisions due to the longer lead times associated with these projects.
- **TVA Falling Behind Peer Utilities on Solar.** Neighboring utilities are taking advantage of this critical window by surging ahead with clean energy investments in 2015. Georgia Power, a utility less than one-third TVA's size in terms of customers served, is planning to purchase over 260 MW of solar in 2015. Similarly, Duke Energy in North Carolina is seeking 300 MW of new solar by the end of 2015.
- **The High Cost of Dirty Power.** When TVA invests in solar, it protects its customers from costs associated with current and future environmental regulations, devastating coal ash spills and other public health risks.
- **TVA Can Ramp up its Investment in Solar Energy while Cutting the Budget.** Utilities across the country are finding it economic to convert dirty, expensive coal plants to efficient natural gas plants, and couple that investment in gas with additional solar power.
- **Solar Power Benefits All Customers.** Although TVA has not yet completed its value of solar analysis, similar analyses that have been conducted across the country are demonstrating that the benefits of rooftop solar investments to all customers exceed costs.

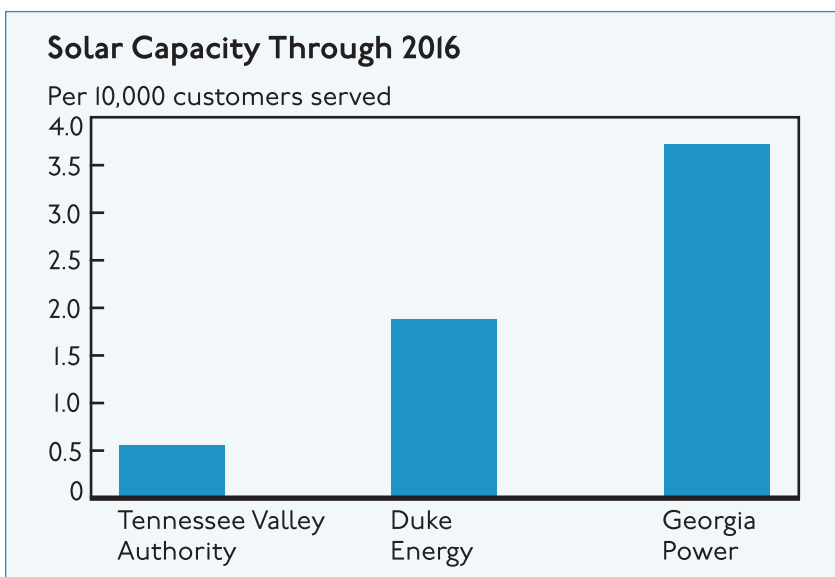
The remainder of this document provides greater detail into each of the bullet points listed above. However, this is not necessarily a comprehensive list of reasons TVA should increase its solar investment. Solar energy also creates good-paying jobs, generates homegrown energy and gives people and businesses more energy options. In addition, the constrained capacity allocations by TVA have created a cycle of boom-bust periods that have hampered growth in the Valley's local solar market.

The Expiring 30% Tax Credit and TVA's Standing with Peer Utilities on Solar

The window for making significant solar investments prior to the expiration of tax credits in 2016 is closing quickly. TVA should act now by increasing its 2015 solar investment to 300 MW, to catch up with peer utilities, re-establish its leadership on solar energy and capitalize on the Valley's solar power potential. The 30% federal Solar Investment Tax

Credit has played a central role in making solar energy cost effective for homeowners and businesses, but this credit is set to expire in 2016.¹ Many utilities are taking advantage of this critical window by surging ahead with clean energy investments in 2015 and 2016. For example, Georgia is now the fastest growing solar market in the nation.² By the end of 2016, there will be nearly 900 MW of solar installed in Georgia Power's service territory, mostly through its Advanced Solar Initiative. Similarly, North Carolina ranks fourth in the country in installed solar capacity, and last year \$787 million was invested there to install solar energy.³

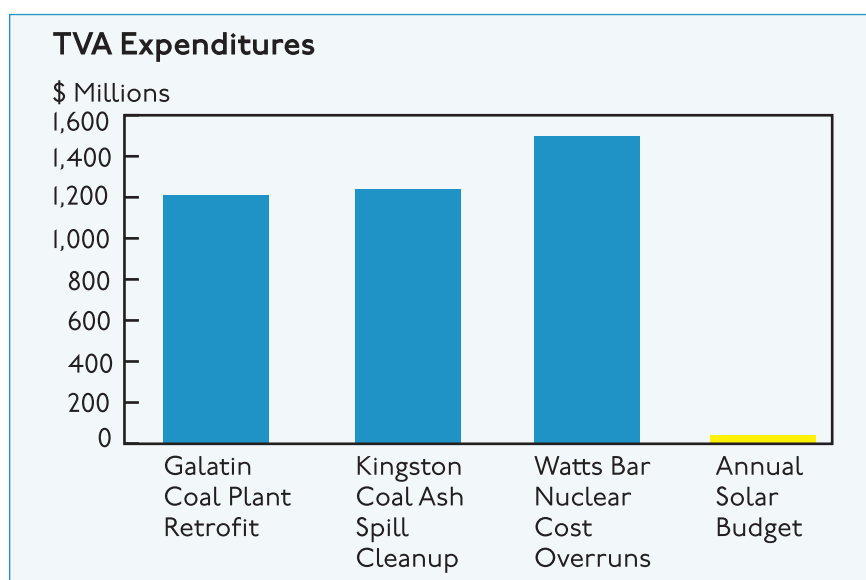
- TVA will have 254 MW of solar installed or under contract by the end of 2014,⁴ and assuming that solar programs remain at 2014 levels, TVA will have 506 MW through 2016.
- Duke Energy (comprised of Duke Energy Progress and Duke Energy Carolinas) will have 414 MW through 2014, and at least another 300 MW by 2016.⁵
- Georgia Power will have at least 887 MW of solar by 2016.⁶ Georgia Power will enter into contracts for over 260 MW of solar power in 2015 alone, through its Advanced Solar Initiative. The utility has stated that this solar energy will be procured without putting any upward pressure on rates.



These numbers do not tell the complete story, due to the fact that TVA is a much larger utility than Duke or Georgia Power. To illustrate this, this graph above shows each utility's projected 2016 solar capacity per 10,000 customers served.

After considering projected additions, Duke Energy will have over 1.9 MW of solar capacity per 10,000 customers,⁷ and Georgia Power's solar capacity will be over 3.7 MW per 10,000 customers.⁸ **Currently, TVA has less than 0.3 MW of solar capacity per 10,000 customers, and it will have just over 0.5 MW of solar capacity per 10,000 customers by 2016.**⁹

The High Cost of Dirty Power



When TVA invests in solar, it protects its customers from costs associated with future environmental regulations, devastating coal ash spills and other public health risks because solar power systems use a pollution-free resource—the sun. Solar power also protects customers from cost overruns that add up when utilities build large fossil-fueled or nuclear power plants. This is because solar power is bought from independent solar producers, so customers only pay for the energy that is delivered. Solar also acts as an important hedge against rising fuel prices, because when utilities overinvest on fossil fuels like coal and gas and fuel prices go up, customers pay the bill.¹⁰

TVA's customers are currently paying \$1.2 billion to control pollution at the Gallatin coal plant,¹¹ over \$1.2 billion to clean up the Kingston coal ash spill,¹² and at least \$1.5 billion in cost overruns at the Watts Bar nuclear plant.¹³ In comparison, at most, only \$40 million was budgeted towards new solar investments in 2014.¹⁴ These three expenditures alone amount to \$439.06 per customer, compared to only \$4.44 per customer invested to purchase new solar energy last year.¹⁵

TVA Can Ramp up its Investment in Solar Energy while Cutting the Budget

Utilities across the country are finding it economic to convert dirty, expensive coal plants to efficient natural gas plants, and couple that investment in gas with additional solar power. Natural gas and solar energy pair well together for a multitude of reasons: first, natural gas plants have a relatively low upfront installation cost, but a fairly high recurring cost (to buy gas). In contrast, solar power has a higher upfront cost but provides free energy once installed. Investing in both gas and solar at the same time allows for a “cycling” of energy types—much of the needed power comes from solar energy during the middle of the day, and the gas plant ramps up production as needed to meet remaining demand. As a result, utilities can avoid buying significant amounts of natural gas, providing a buffer against rising gas prices and thus saving customers money in the long run.

This reasoning has led several utilities (including Xcel Energy and Florida Power & Light) to initiate construction of combined solar and natural gas facilities. According to Xcel Energy, new, flexible natural gas plants “allow[] the company to start, bring up and turn down generation on-line in relatively short periods of time as wind and solar generation vary throughout the day.”¹⁶ Where these plants have been completed and studied, they have found the gas and solar combination to be the least-cost reasonable alternative for meeting customer needs. For example, Florida Power & Light’s Martin Hybrid Solar Energy Center will save customers \$178 million in fuel costs over its lifetime.¹⁷ Thus, these combined plants not only reduce pollution and bolster the use of clean energy, but also cut costs, both for customers and their utility.

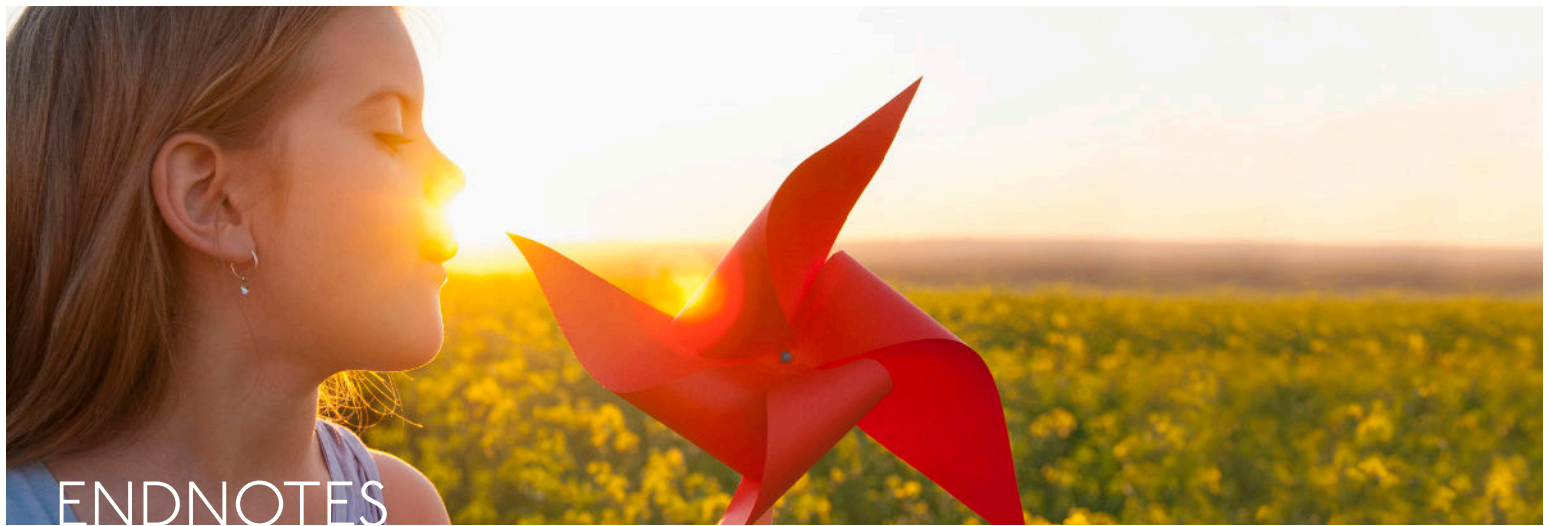
Similarly, TVA’s Allen Fossil Plant represents an opportunity for TVA to cut its budget while simultaneously increasing its use of clean energy.¹⁸ TVA is currently deciding whether to retrofit Allen with expensive pollution controls; \$650 million dollars has already been approved for this purpose.¹⁹ This expense can be considerably reduced, especially in the long run, by converting Allen to a natural gas plant and combining that plant with additional investments in solar energy. This would be a win-win-win for TVA and its customers: protecting customers from the rising costs associated with coal; ushering in additional clean energy; and lowering rates.

Solar Power Benefits All Customers

TVA is currently undergoing an evaluation of the benefits and costs of solar power.²⁰ Unfortunately, this analysis will not be completed in time to inform the 2015 budget. However, other similar analyses that have been conducted across the country are finding that the benefits of rooftop solar investments exceed any costs. For example, Austin Energy has determined that its net value of rooftop solar is 10.7 cents/kWh, which exceeds its retail rate.²¹ A similar analysis of North Carolina utilities found that the benefits of rooftop solar, when credited at the retail rate, exceed costs by about 30 percent.²² This comports with common sense, since the sun shines brightest during the heat of the day, when power is most expensive to buy. Investing in solar saves fuel costs, since sunshine is free, and helps avoid the need for expensive new power plants and transmission.

TVA can and should act now to expand its investment in solar power, being confident that based on a growing body of analysis, solar energy is a prudent and cost-effective investment.





¹ SEIA, Solar Investment Tax Credit, *available at* <http://www.seia.org/policy/finance-tax/solar-investment-tax-credit> (noting that the 30% tax credit is slated to remain in effect through December 31, 2016).

² SEIA, 2013 Top 10 Solar States, *available at* <http://www.seia.org/research-resources/2013-top-10-solar-states>.

³ SEIA, State Solar Policy: North Carolina Solar, *available at* <http://www.seia.org/state-solar-policy/north-carolina>.

⁴ According to information provided by TVA to TV-RIX, TVA had 128 MW of solar either operating or committed in its service territory as of Dec. 2013; in 2014, TVA's solar programs totaled 126 MW. Should TVA continue its solar programs at 2014 levels through 2016, it will reach 506 MW.

⁵ See Table 9-A, Duke Energy Carolinas 2013 IRP (Sept. 1, 2013) (noting that DEC and DEP will have a total of 414 MW solar online through 2014); Duke Energy press release, *available at* <http://www.duke-energy.com/news/releases/2014021401.asp> (Duke Energy issued a request for proposals for 300 MW solar to be placed in service in NC by end of 2015).

⁶ See Georgia PSC Docket No. 37854, Attachment STF-2-1 (Georgia Power states that it will have 797 MW of solar capacity once its Advanced Solar Initiative Prime program is completed in late 2016); *see also* Bloomberg, Georgia Power to Build 90 Megawatts of Army Solar Plants (May 15, 2014), *available at* <http://www.bloomberg.com/news/2014-05-15/georgia-power-to-build-90-megawatts-of-army-solar-plants.html> (Georgia Power announced plans to build an additional 90 MW of solar at 3 army bases in Georgia, to be placed in service by the end of 2016).

⁷ Duke Energy Carolinas has approximately 2.4 million customers, and Duke Energy Progress has approximately 1.5 million customers, for a total of 3.9 million customers. *See* Duke Energy Corporation, Fast Facts (Dec. 31, 2013), *available at* <http://www.duke-energy.com/pdfs/de-factsheet.pdf>.

⁸ Georgia Power serves approximately 2,375,000 customers. *See* Georgia Power Company, *Facts & Figures*, *available at* <http://www.georgiapower.com/about-us/facts-and-financials/facts-and-figures.cshmtl>.

⁹ TVA (indirectly) provides electricity to approximately 9 million people. *See* TVA, *A Guide to Information about the Tennessee Valley Authority* (May 2013), *available at* http://www.tva.com/foia/foia_guide.htm (hereinafter "Information about TVA").

¹⁰ *See, e.g.,* NREL, The Use of Solar and Wind as a Physical Hedge against Price Variability within a Generation Portfolio (Aug. 2013), *available at* <http://www.nrel.gov/docs/fy13osti/59065.pdf> (finding that solar generation "significantly reduce[s] the exposure of electricity costs to natural gas price uncertainty in fossil-based generation portfolios").

¹¹ Beginning in 2013, TVA will spend \$1.2 billion retrofitting Gallatin coal fired power plant. *See* Sierra Club, "Beyond Coal Tennessee," *available at* <http://content.sierraclub.org/coal/tennessee>.

¹² Since 2008, TVA has spent \$1 billion cleaning up the Kingston coal ash spill, the largest spill of its kind in history, and plans to spend \$200 million more. TVA also paid an \$11.5 million fine, and spent \$40 million studying the effects of ash in the river. *See* USA Today, 5 years after coal-ash spill, little has changed (Dec. 23, 2013), *available at* <http://www.usatoday.com/story/news/nation/2013/12/22/coal-ash-spill/4143995/>.

¹³ Construction on the Watts Bar Nuclear Plant began in 1970, and was originally expected to be in operation by 1976 but is still not fully operational. The original budget was \$2.5 billion, but TVA estimates that an additional \$1.5 billion to \$2 billion will be spent, bringing the total cost up to as much as \$4.5 billion to complete the project. *See* World Nuclear Report, *The World Nuclear Industry Status Report 2012* (Jul. 5, 2012), *available at* <http://www.worldnuclearreport.org/The-World-Nuclear-Industry-Status.html#wb243yc>. As of early 2014, TVA projected the total cost to be about \$4 billion dollars. *See* Times Free Press, Watts Bar Moves toward 2015 Completion (Jan. 17, 2014), *available at* <http://timesfreepress.com/news/2014/jan/17/watts-bar-moves-toward-2015-completion/>.

¹⁴ *See* TVA, TVA Solar Growth, *available at* <http://www.tva.com/news/releases/julsep13/Fact%20Sheet%20-%20TVA%20Solar%20Programs.pdf> (stating that TVA will invest \$25 million in new solar energy purchases in 2013); according to various TVA staff, the 2014 budget for new solar energy was between \$25 million and \$40 million.

¹⁵ TVA (indirectly) provides electricity to approximately 9 million people (*see* "Information about TVA," *supra* note ix). These per-customer costs are a result of dividing the total cost by 9 million.

¹⁶ *See* Xcel Energy, News Release, Xcel Energy proposes adding economic solar, wind to meet future customer energy demands (Sept. 10, 2013), *available at* http://www.xcelenergy.com/About_Us/Energy_News/News_Archive/Xcel_Energy_proposes_adding_economic_solar_wind_to_meet_future_customer_energy_demands.

¹⁷ Florida Power & Light, "FPL's Martin Next Generation Solar Energy Center," *available at* <http://www.fpl.com/environment/solar/pdf/Martin.pdf>.

¹⁸ Memphis Business Journal, Will the TVA close Memphis' Allen Fossil Plant? (Jan. 7, 2014), *available at* <http://www.bizjournals.com/memphis/news/2014/01/07/TVA-close-memphis-Allen-Fossil-plant.html>.

¹⁹ The Tennessee, TVA's Gallatin Plant Getting Pollution Controls (Aug. 23, 2011), *available at* <http://www.wbir.com/news/article/181150/2/TVAs-Gallatin-plant-getting-pollution-controls> (noting that TVA Board approved \$650 million for pollution controls at the Allen Fossil Plant).

²⁰ TVA, News Release, TVA Studies Value of Distributed Generation from Small Providers (June 10, 2014), *available at* http://www.tva.com/news/releases/aprjun14/distributed_generation.html.

²¹ Austin Energy, News Release, New Value of Solar Rate Takes Effect January (Dec. 6, 2013); *see also* E&E News, Minn. Regulators set to decide on solar tariff formula (Mar. 11, 2014), *available at* <http://www.eenews.net/energywire/stories/1059995897>.

²² *See* Crossborder Energy, *The Benefits and Costs of Solar Generation for Electric Ratepayers in North Carolina* (Oct. 2013). For a comprehensive review of solar cost-benefit analyses, *see* RMI, *A Review of Solar PV Benefit & Cost Studies* (Apr. 2013).