Plainsandeastern

From: Luis Contreras <doccontreras@gmail.com>
Sent: Wednesday, May 27, 2015 4:17 PM
To: Plainsandeastern
Subject: Non-NEPA Review (1222 Review) Plains & Eastern comment - Luis Contreras
Attachments: Clean Line Plains and Eastern is not financially feasible - May 27 2015.pdf

Non-NEPA Comment on P&E

Dear Secretary Moniz,

The question of financial feasibility alone shows DOE should not participate in the P&E project.

P&E

is

a low-value, high cost energy alternative; it is not financially feasible.

Respectfully,

Dr. Luis Contreras

Eureka Springs, AR

Clean Line Plains & Eastern is not financially feasible

May 27, 2015

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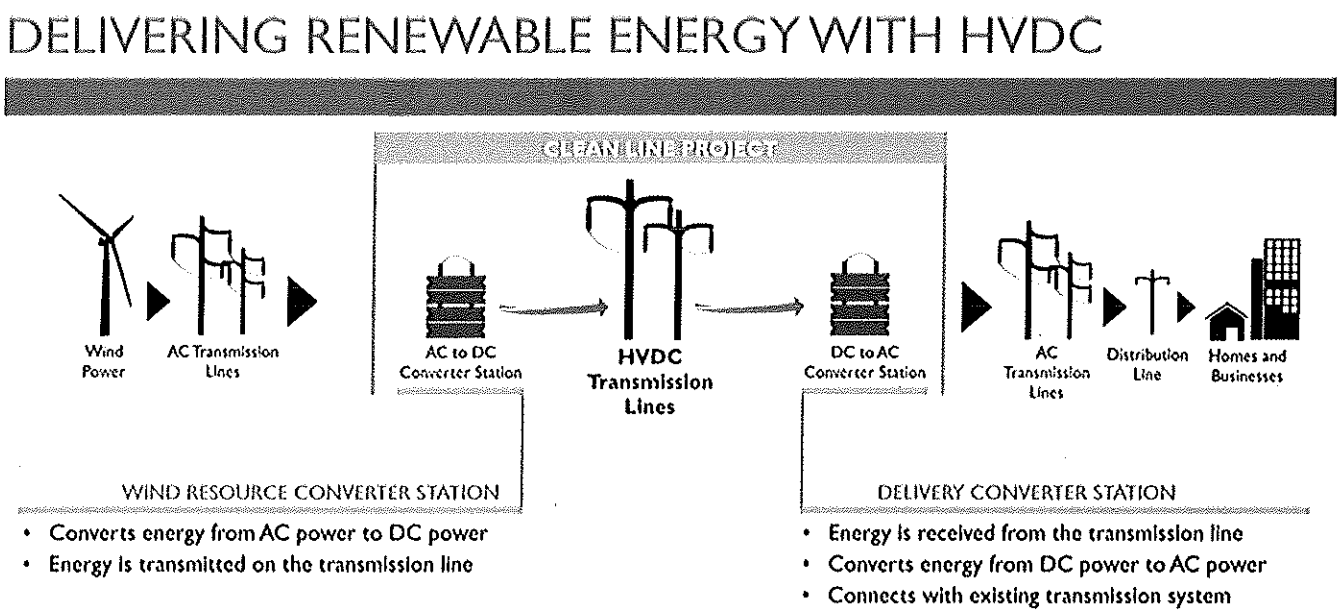
Financial feasibility is all about cash flow

The total cost of the project and the timing of the expected revenues determine profitability. Clean Line has provided a rough estimate for the cost, $2 Billion. Of course this is just a wild guess not knowing when, where and if the line would be built. The location of the Delivery Converter remains undefined.



The issues with "Arkansas" P&E Line

No one knows the cost and technical viability of the "Arkansas Converter," a last minute add-on feature increasing cost and complexity, and voiding the HVDC long-haul advantages. The mythical "converter" would have to deliver low voltage AC power to Arkansas and continue with high voltage DC power eastward:

- Convert HVDC to HVAC
- Transform HVAC to LVAC
- Deliver AC power to Arkansas
- Collect AC power from Arkansas
- Transform LVAC to HVAC
- Convert HVAC to HVDC

Would investors wait three or more years?

As a merchant line, the **revenue stream** would come only after the line is operational, from utilities paying a toll to move electrons. The line would not by paid by electric consumers.

Winners and losers

Clean Line is only attractive to greedy wind farm developers and owners. Most of the capital and operating costs of electricity from wind are hidden because massive federal, state and local tax breaks and subsidies shift much of its true cost from wind farm developers and owners, to taxpayers and electric customers. Yep, wealthy greedy investors win, everyone else pays. *Warren Buffet is perfectly fine receiving tax breaks for investments in Big Wind. "I will do anything lawful to reduce Berkshire's tax rate," Buffet told an audience in Omaha, Nebraska recently.* ***"For example, we get a tax credit if we build a lot of wind farms. That's the only reason to build them. They don't make sense without the tax credit."*** *Big Wind's Bogus Subsidies: Giving tax credits to the wind energy industry* are a waste of time and money. US News, May 12, 2014

Massive wealth has its privileges

Here are some of the ways Buffet and others benefit from Big Wind:

- The federal Renewable Electricity **Production Tax Credit (PTC)**, allows owners of wind power projects to receive 2.3 cents per kWh for the production of electricity from utility-scale wind turbines (indexed for inflation) over a 10-year period.
- The federal **Business Energy Investment Tax Credit (ITC)**, a corporate tax incentive, allows for owners of new wind energy systems of any size to receive tax credits worth 30% of the value of the facility. In addition, projects have different reporting requirements to qualify depending on when they are placed into service: Projects placed into service by December 31, 2015 are not required to demonstrate continuous work!

- Special IRS rules allow **Accelerated Depreciation (MACRS)**. Nearly all the capital cost of a wind farm – whether financed with equity or debt – can be recovered through deductions from otherwise taxable income using *5-year, double declining balance, accelerated depreciation.* These deductions from taxable income reduce tax liability at the owner's marginal tax rate. *All the eligible capital cost can be written off over 6 tax years.*
- In addition to the reduction in tax liability, the accelerated depreciation deduction has two other huge benefits:
  - **Prompt recovery of all the owner's equity investment.** Quite likely, the equity investment by wind farm owners and their "tax partners would be no more than 30% with the remaining borrowed to reduce its cost. All of the equity investment would be recovered thru depreciation deductions early in the second tax year. With no remaining equity investment, the owners' return on equity would be infinite.
  - **A large interest free loan.** The depreciation deduction continues even though all equity has been recovered. Thus, in effect, the owners receive an interest free loan, courtesy of US taxpayers for an amount equal to the debt financing.

The massive tax breaks and subsidies now available and the wind industry's well-financed lobbying efforts to preserve, expand, and extend them makes clear that there is no longer any serious expectation that electricity from wind will become competitive or that significant advances in wind technology are likely to ever permit wind to become a competitive source of electricity.

P&E is looking at the wrong end of the line

Wind farms and the production tax credit drive the demand for P&E. However, a "push system" is not financially feasible. End-user demand is what drives profitable transmission, a "pull system".

While there is big money for wind generation, there are no funds to finance the line:

- The Illinois Commerce Commission's approval for the Clean Line Rock Island project will be void unless Clean Line gets 100 percent of the $2 Billion for the line from private investors.
- With five projects and no funds, how is Clean Line going to find $10 Billion from investors?

What the investor community knows:

- Clean Line P&E is an old project that has never gotten off the ground
- Clean Line has no experience building HVDC or any other lines. Yes, some of the VP's have worked with other firms, but as an organization Clean Line is not credible. Trying to build five interstate projects at the same time shows greed and arrogance, not competence and experience.
- Without a TVA power purchase agreement there is no reason to believe there will be a revenue stream to pay investors.
- With overwhelming landowner opposition, potential investors are looking at long delays before the first pole goes on the ground.

Plains & Eastern Financial Feasibility is based on false assumptions.

One of the basic assumptions for the Plains & Eastern Line (P&E) is an agreement to sell power to TVA. Without a firm agreement with TVA, there is no one at the end of the line willing to buy power and nowhere to interconnect with the grid.

Fiction:

The issue of whether or not, P&E has an agreement to sell power to TVA, has been *finessed* by Clean Line multiple times, in the sense of using deception, claiming something that is not real.

- The November 2014 letter from TVA's President and CEO Bill Johnson to Skelly, used as Clean Line Part 2, Appendix 2-C to pretend TVA will buy power from P&E, makes it clear, on the last paragraph: **The TVA Board alone will decide based on least-cost, and so far they have not**

approved buying from P&E. Is Skelly hoping no one reads the entire letter? Why use it when it clearly says TVA will NOT buy power?

- The sworn testimony by David Berry, Clean Line Finance VP before the Tennessee Regulatory Authority (TRA), April 4, 2014, says: "The Plains & Eastern Project **will** deliver up to 3,500 megawatts ("MW") of **low-cost** wind power from Oklahoma to the TVA system at the Shelby Substation, where it **will** be available for purchase by TVA or other utilities in the South."
    - There is a huge difference between would and will.
    - No proof is given to show the cost of wind power is low-cost. In fact, TVA has no plans to buy wind power from P&E. This is due to the true cost of wind power, an overvalued resource of little use to TVA.

Facts:

There is clear evidence TVA will NOT buy power from P&E.

1. TVA President and CEO Bill Johnson told POWER Magazine in an May 18, 2015 interview on TVA Integrated Resource Plan (IRP): "TVA does **not** have an agreement with P&E as suggested by the Chattanooga Times Free Press article." Bill Johnson in November 2014 told Skelly the same thing, but this May 2015 interview makes it crystal clear.

- The IRP states, "Generally the **HVDC wind option is not selected until the early 2030s**. Resources are selected on a **least-cost** basis."
- Joe Hoagland, the TVA vice president who presided over the IRP, said: "the agency wasn't all that bullish on wind, *the wind blows when the wind blows.*"

TVA has 1,500 MW of wind power none with P&E. Joe Hoagland knows **bulk remote wind power is overvalued**. TVA is concerned with meeting customer demand. *Bulk remote wind power is intermittent, not dispatchable, and not useful to meet peak power demand. In the event of a power blackout, wind farms would go out, as they need electricity to function. Bulk wind power is random; it creates serious dispatching grid problems when the*

power exceeds the load. Wind farms located at Oklahoma's Tornado Alley could be gone with the wind.

Unlike distributed rooftop and community solar power generation with no transmission lines, bulk remote wind generation intermittency with thousands of megawatts coming on and off the grid in random intervals at off-peak demand hours, makes far away wind farms a very poor energy solution. The benefits of renewable wind farms for TVA are an illusion.

The cost of wind power, at whatever amount of dollars per megawatt hour ($MWh) P&E wants to claim, is meaningless given the low value for TVA.

2. Actions speak louder than words. In August 2014 TVA decided to replace the coal-fired Allen power plant with a new 1,000 MW natural gas plant. General Electric got the contract for the gas turbines. The decision was based on **least-cost**, the criteria used by TVA in their IRP. The cost of the new plant is $975 Million.

Why is TVA not willing to buy power from P&E?

TVA knows wind power. TVA knows the **hidden** costs of wind power due to high-variability, low-reliability, cost of backup, cost of grid balance, and cost of blackouts.

The fact TVA is not willing to buy power from P&E demonstrates no one else will. Think about it, TVA is under DOE guidance but it has an independent Board of Directors. Given the close relationship between Clean Line and DOE (some would say way too close) one would guess TVA would give P&E a break if what they offer was comparable in cost to what TVA already has. TVA's IRP is based on least-cost: P&E is not cost competitive.

What is the hidden cost of wind power variability?

The wind blows when the wind blows. Wind turbine power production of responds to the wind, which varies dramatically from hour to hour and

minute to minute. The grid, however, must respond to user demand. Since grid dispatchers can't control wind power production, wind turbines on the grid do not contribute to meeting demand. By pushing power into the grid, wind turbines add another source of variability the grid must balance with expensive resources.

How does wind variability affect wind power reliability?

A wind turbine's production is usually expressed as an annual average, which masks its highly variable output. But because production falls off dramatically as the wind speed drops (by a factor of eight for every halving of the wind speed), most of the time the wind turbine is producing well below its average rate. The average rate of output is seen only about 40% of the time.

How much backup power is needed for wind power?

According to grid managers in Germany, the amount of backup required was over 80%, the maximum output observed from all of their wind power facilities together. That is, for every 10 MW of wind power added to the grid, at least 8 MW of backup power must also be dedicated. In other words, wind needs 80% backup of its maximum output.

What is the cost of ***balancing*** *supply and demand?*

Doesn't a unit of electricity produced by wind turbines reduce a unit from another source? Yes, but there is a significant cost to maintain the balance. The grid must continuously balance supply and demand. Thus, it must reduce the supply from somewhere else when the wind blows hard enough to start generating power, but not so hard to damage the turbine. If there is hydropower on the grid, it is the most likely source to be reduced, because it can be switched on and off. Some natural gas plants can also switch on and off quickly (though at a cost of efficiency, i.e., burning more fuel). Otherwise, the output from fossil-fuel plants is ramped down or is switched from generation to standby; in either case, these plants it still burns fuel.

Do wind turbines help avoid blackouts?

No. Wind turbines themselves need power from the grid to work. A blackout knocks them out, too. If they were providing power at the time, that loss aggravates the effect of the blackout.

The **true value** of a kWh of electricity depends on when it is produced. A kWh of electricity produced during periods of peak demand has much higher value than a kWh produced when demand is low!

A simple test of Feasibility

Here is an easy test the viability of financial feasibility. Schedule construction of the P&E line, starting at the Shelby County, TN, with transmission interconnecting with TVA:

1. Build the interconnection with TVA
2. Build the DC/AC Converter Station
3. Continue with the line to Arkansas
4. Build the Arkansas Converter Station
5. Continue …

Conclusion: P&E Wind Power is High-Cost and Low-Value

Why would DOE spend one more day pretending they may participate in the P&E project?

The May 2015 Future of Solar, MIT study shows there are superior renewable solutions to wind farms that work just fine when the wind does not blow. With today's solar technology and fast innovation distributed solar generation is the best solution. U.S. government policies need to be more supportive of solar industry. The MIT report shows areas for investment and practical government incentives.

MIT says solar power, trillions of watts of capacity, is on the way

A massive study on solar power by researchers at the Massachusetts Institute of Technology came to two main conclusions: Solar energy holds the best potential for meeting the planet's long-term energy needs while reducing greenhouse gases and federal and state governments must do more to promote its development.

The main goal of U.S. solar policy should be to build the foundation for a massive scale-up of solar generation over the next few decades, the study said. "What the study shows is that our focus needs to shift toward new technologies and policies that have the potential to make solar a compelling economic option."

Federal and state subsidy programs designed to encourage investment in solar systems should be reviewed with an eye on increasing their cost-effectiveness and with a greater emphasis on rewarding production of solar energy, the study said.

References

0. Big Wind's Bogus Subsidies: Giving tax credits to the wind energy industry, is a waste of time and money.

US News, May 12, 2014

http://www.usnews.com/opinion/blogs/nancy-pfotenhauer/2014/05/12/even-warren-buffet-admits-wind-energy-is-a-bad-investment

1. Public Power "Big Dog" TVA Takes Fresh Approach to Resource Planning

Power Magazine, May 18, 2015

http://www.powermag.com/public-power-big-dog-tva-takes-fresh-approach-to-resource-planning/

At Tennessee Valley Authority (TVA), repeated generation transitions have marked the giant public power utility's long history, from hydro, to coal, to nuclear. The latest resource plan points to natural gas, along with renewables and energy efficiency, as the basis for the agency's generating future.

At the Tennessee Valley Authority (TVA), generation transitions are nothing new. The nation's largest public power system—with 34 GW of generating capacity, supplying retail distributors with nine million customers in seven states (Alabama, Georgia, Kentucky, Mississippi, North Carolina, Tennessee, and Virginia) and about $11 billion in annual sales—TVA has gone through repeated changes in its generation profile over its 82-year history.

"For the first 20 years," TVA President and CEO Bill Johnson told POWER in an interview in May, "it was hydro. Then coal. Then nuclear. Now, it is all-of-the-above plus energy efficiency, renewables, and demand response." And, in a big way, adds Johnson, natural gas (see sidebar).

TVA's Generating Resources

Tennessee Valley Authority (TVA) has its roots in water—hydropower was its calling card in the beginning. Over time, it has almost every resource available. Here's how it's portfolio breaks out today, according to the draft Integrated Resource Plan.

Nuclear. TVA operates six reactors: three at Browns Ferry, two at Sequoyah, and one at Watts Bar, with a second Watts Bar unit likely to come online this year after 36 years of construction. The current nuclear units have a capacity of 6,700 MW; Watts Bar 2 would add another 1,150 MW.

Coal. The TVA coal system consists of 10 coal-fired stations with 41 active generating units, totaling about 11,900 MW. In recent years, TVA has retired 11 coal-fired units and idled another seven. According to the utility's draft Integrated Resource Plan, by 2016 the coal fleet will decrease to about 32 units with a total capacity of 10,300 MW "as a total of 16 units are expected to be idled to comply with environmental requirements."

Natural Gas. TVA runs 87 combustion turbines at nine power stations with a combined capacity of about 5,400 MW and 11 combined cycle units at five plants with some 3,900 MW of generating capacity (Figure 1). That combined cycle figure will increase immediately by 700 MW with the recent purchase of an existing plant in Ackerman, Miss.

Hydro. The TVA hydro system is made up of 109 conventional units at 29 dams, with generating capacity of about 5,400 MW. TVA also has a long-term power purchase agreement with the U.S. Army Corps of Engineers at eight dams on the Cumberland River system for another 400 MW.

Storage. Raccoon Mountain is a pumped storage project — TVA's largest hydro facility at 1,616 MW — which stores water off peak for release when demand is high.

Wind. TVA buys all the power produced by the Buffalo Mountain wind farm in Anderson County, Tenn., with 27 MW of nameplate capacity from 18 turbines. The agency also has a long-term power purchase agreement with eight wind farms in Illinois, Kansas, and Iowa, with 1,500 MW of nameplate capacity, and TVA estimates that about 14% of that will be available for summer peaks.

Solar. The agency owns 16 photovoltaic arrays with a combined nameplate capacity of about 300 kW. TVA also buys solar output through several long-term contracts with 72 MW of nameplate capacity; TVA expects about half of that to be available at summer peaks.

Biomass. At the Allen Fossil Plant, TVA co-fires methane from a nearby sewage treatment plant and also co-fires wood waste at the Colbert Fossil Plant. TVA says, "The co-firing is more like a fuel switch for coal and does not provide addition capacity at either of these plants." The agency buys about 49 MW of biomass generation from non-utility providers.

Oil. TVA owns five diesel generators, and several others are under contract, providing a total of about 120 MW of capacity.

Energy Efficiency. TVA's efficiency and demand response programs focus on peak demand reduction. The power agency says that from fiscal 2012 to fiscal 2104, it has seen peak reductions of 451 MW, or 1,843 GWh in energy demand.

A New Sort of Integrated Resource Plan

TVA released a draft Integrated Resource Plan (IRP) in the spring that charts the giant power-generating utility's likely roadmap for the next 20 years. Johnson is particularly proud of the draft IRP, which is getting good reviews from the system's many stakeholders, ranging from the Sierra Club and its "Beyond Coal" campaign to the Tennessee Valley Public Power Association, which represents the 155 municipal utilities and rural electric cooperatives that buy TVA's power to sell to retail customers.

"I've been reading IRPs since the mid-1990s," Johnson said. "This is a unique IRP because it treats efficiency and renewables as resources," not as afterthoughts. The TVA process creates models to evaluate five scenarios of demand growth for the future and, based on least-cost analysis, lets the judgments flow from that analysis. The IRP draft states, "We paved new ground by developing a unique way to measure and model the financial costs of energy efficiency and renewable resources as if they were traditional power plants. This method is a more disciplined approach than ever before that we believe creates a much better picture on how all resources can be best utilized to support load growth in the Valley."

According to Johnson, TVA is building its plan on projections of economic growth of 0.9% annually for the region. "We haven't seen quite that much this year," he said. The Tennessee Valley, Johnson noted, didn't get hit as hard as much of the rest of the country by the 2008 Great Recession but it has been slower in recovering. Johnson attributes that to organic efficiency. While more things are being plugged into the electric system, they are increasingly using less power than predecessor appliances. He cites LED lighting as an example.

The draft IRP also points to the role of natural gas in displacing electricity. Because of the low cost of TVA power, the region has substantial loads for space and water heating. The IRP notes, "If consumers can heat their homes and water cheaper using natural gas or other energy sources, they may move away from electricity in the long term."

According to the draft plan, each of the scenarios points to the need for new generation. But baseload generation is not on the utility's planning radar.

Once the Watts Bar 2 nuclear plant comes online and the Nuclear Regulatory Commission (NRC) approves a 450-MW upgrade at the Browns Ferry nuclear station, TVA needs no additional baseload generation. Both events are likely this year. Johnson told POWER, "We have seen a change in the load shape. The minimum loads have gotten lower and there is more volatility in the intermediate range."

That suggests, Johnson acknowledged, a move toward gas-fired combined cycle plants, which TVA has been installing for the past five years or so. In the years before that, the power agency was installing combustion turbines at its coal-fired plants for peaking needs. TVA expects natural gas prices to remain low, and the power agency benefits from easy access to gas from the Marcellus shale north and east of the Valley and Gulf resources to the south, as well as good pipeline capacity in between.

In April, TVA closed on the purchase of a 700-MW combined cycle plant in Ackerman, Miss., for $340 million, owned by Quantum Utility Generation. TVA had been buying power from the plant since 2008. According to TVA, the purchase "is the sixth combined cycle gas facility TVA has built or purchased since 2007, with two more under construction." In a press release, Johnson said, "This was an opportunity to acquire a power plant that already provides electricity to TVA at a price that is significantly less than it would cost to build a comparable plant."

As the IRP modeling scenarios play out, most of the variations in plant expansions relate to tradeoffs between energy efficiency and natural gas. Across the scenarios, says the IRP, "The addition of natural gas units vary more significantly than other resources." The analysis suggests an addition of 4.8 GW of combustion turbines at the highest demand scenario to 800 MW at the lowest; the need for additions of combined cycle generation are consistent over the five models.

The Coal Plan

Gas prices and environmental regulations will determine how TVA will deal with its coal-fired plants "in the mid-2020s." Johnson said, "By the end of this decade, we will have retired 40% of our coal fleet," in part because of a settlement with the Environmental Protection Agency on coal ash storage, following a massive 2008 coal ash pond spill at the agency's Kingston coal-fired plant in Tennessee.

Johnson noted that "the average age of TVA's coal units is 55 years, and some are in good shape; some are not." What remains on the TVA system, he said, "will be fully scrubbed, fully controlled, and producing only dry ash."

The Obama administration's Clean Power Plan to reduce carbon dioxide from existing coal plants is likely to be less of a headache for TVA than for some other coal-heavy utilities, Johnson said. He said TVA already has reduced CO2 emissions by 30% from 2005 levels. The utility is on track for a 40% reduction by 2020. He added that the least-cost planning approach in the resource plan helps guide where TVA can find carbon reductions, including opportunities to use its extensive hydro system more efficiently.

Selective Renewables

When it comes to renewables, the IRP says, "Solar resources begin appearing in the resource plans in the mid 2020s; wind resources appear in the late 2020s." A recent article in the Chattanooga Times Free Press raised the possibility that TVA might become a customer of the 700-mile high-voltage, direct-current Clean Energy Line bringing Western wind power to the TVA region. It's a $2 billion project.

TVA quickly reacted. The IRP states that "generally the HVDC wind option is not selected until the early 2030s," and Joe Hoagland, the TVA vice president who presided over the IRP, told the newspaper the agency wasn't all that bullish on wind. "The wind blows when the wind blows. What we're trying to maintain is a balanced portfolio of power." TVA currently has 1,500 MW of (nameplate) wind capacity, most of it under contract from non-utility suppliers. "We don't get a lot of energy" from that, Johnson said.

Last February, when the nine-member TVA board authorized the purchase of the Mississippi combined cycle gas plant, it also approved a power purchase agreement with NextEra Energy for electricity from a planned 80-MW utility-scale solar farm in Lauderdale County, Tenn. TVA has an interest in utility-scale solar going back to the 1980s.

But rooftop solar, one of the hottest topics in electricity today, is unlikely to be a major resource in the region, in part because of the governmental structure of the power agency. The Brits have a word that describes TVA: "Quango." That's short for "quasi-autonomous non-governmental organization," or "an organization to which a government has devolved power." TVA is owned by the U.S. government, which appoints its board of directors and somewhat limits its operations. But TVA is largely self-regulated. It gets no direct funding from Washington and finances its operations with income from sales of power to its distributors and debt that it issues in the conventional debt market.

The power agency has no direct retail customers. Those belong to its munis and co-ops that sell TVA's wholesale electricity. The agency can regulate its distributors, and not the other way around. According to CEO Johnson, TVA's board decided some time ago that it would not adopt a net metering regime.

TVA pays the wholesale market rate for the solar power, not the retail rate common in net metering programs.

Controversies

TVA has been controversial since President Franklin Delano Roosevelt created the agency in 1933 for flood control and economic development in the depressed region along the banks of the Tennessee River and its tributaries. When TVA, which had great powers and direct federal financing, began building hydropower, local investor-owned utilities (IOUs) launched a campaign to gut the agency. TVA's first hydropower project, the Norris Dam on the Clinch River, began operating in 1936. By the end of World War II, TVA had become the nation's largest electricity supplier.

TVA and its private-sector critics warred for decades, culminating in a giant battle over supplying power to Atomic Energy Commission (AEC) facilities in Tennessee, known as the Dixon-Yates controversy. TVA wanted to build capacity to supply the AEC. A consortium of IOUs, with the support of the Eisenhower administration, also wanted to supply the plant. In a dispute that eventually reached the U.S. Supreme Court, TVA won.

TVA opponents, led by Republicans in Washington, consistently blocked TVA from getting appropriated federal funds to build coal-fired capacity, so the agency looked for authority to issue debt financing. ***Ironically, TVA last year announced that the coal-fired Allen plant, built 56 years ago near Memphis after the aforementioned court ruling, would be converted to combined cycle gas.*** In1959, Congress approved legislation allowing TVA to issue bonds, which became the agency's primary financing mechanism.

In the 1960s, forecasting enormous economic growth in the region (which didn't materialize at the scale TVA hoped), TVA went gaga over nuclear. TVA Chairman Aubrey "Red" Wagner eventually ordered a total of 17 nuclear reactors from every vendor in the U.S. (General Electric, Westinghouse, Babcock & Wilcox, Combustion Engineering, and General Atomics). Only a third got built, as the 1970s saw a combination of low economic growth (and electric demand), high inflation, and high interest rates. By the 1980s, TVA's much-diminished fleet of nuclear units was experiencing widespread operating troubles. The NRC shut down TVA's five operating reactors for almost five years. It was a low point for TVA and for the nation's nuclear power program.

As the 1990s progressed, TVA's nuclear fleet began to improve its performance (as did units at many other U.S. nuclear utilities). At the same time, Congress began moving TVA toward a more private-sector profile, until today, when the agency looks, feels, and behaves much like a large, investor-owned utility—although some advantages of TVA's relationship with government remain.

The sniping and skirmishing between TVA and its private-sector counterparts has largely subsided. But there are still calls from economic conservatives to end TVA's status as a government-owned entity.

In May 2014, Ken Glozer, a retired veteran of the White House Office of Management and Budget, wrote a Heritage Foundation critique of TVA. He said:

The Tennessee Valley Authority (TVA) has had 80 years of independence from the oversight, review, and budgetary control of a more traditional federal agency, as well as from the rigors of operating as a private shareholder-owned utility.

This lack of effective oversight from either the government or the private sector has resulted in costly decisions, excessive expenses, high electricity rates, and growing liabilities for all U. S. taxpayers.

Glozer argued, "The most effective way to restore efficiency to the TVA system is to sell its assets via a competitive auction and bring it under the rigors of market forces and public utility regulation." Regardless of the merits of his argument, that's impossible, given the lobbying clout of TVA, its distributors, and the public power sector of the electricity industry.

2. Testimony Of David Berry

Executive Vice President - Strategy and Finance, Clean Line Energy Partners LLP

Docket No. 14-00036

04/04/14

Before The Tennessee Regulatory Authority Nashville, Tennessee

3. TVA's power shift spurs debate over Wind & Natural Gas

August 12th, 2014

http://www.timesfreepress.com/news/business/aroundregion/story/2014/aug/12/tvas-power-shift-spurs-debate-over-wind/264144/

In a teleconference Monday ahead of next week's decision by TVA to shut down its Allen coal plant in Memphis, a coalition of the state's biggest environmental groups urged TVA not to simply replace the Allen coal plant with a similar or bigger natural gas power plant.

TVA already replaced its coal plant at its John Sevier plant in Tennessee with a combined cycle natural gas plant three years ago and TVA is now building a similar $1 billion natural gas plant to replace its oldest units at the Paradise Fossil Plant in Kentucky. TVA's staff

has suggested TVA again turn to natural gas to replace the Allen Steam Plant because gas-fired generation would be cleaner than coal and cheaper than renewable sources like wind or solar generation.

"TVA has a lot cleaner and better options in Memphis than simply building another major natural gas plant to replace Allen," said Stephen Smith, executive director for the Southern Alliance for Clean Energy.

A Houston company, Clean Line Energy Partners, is working with the Southwest Power Administration to build a direct-current transmission line to carry 3,500 megawatts of wind power from Oklahoma and Texas to Memphis within the next three to four years.

The Sierra Club in Tennessee also wants TVA to do more to buy locally produced solar and wind power, as well as to encourage more energy conservation and efficiency. "We shouldn't just substitute one form of fossil fuel generation for another when there are other options," said Scott Banbury, conservation coordinator for the Tennessee Chapter of the **Sierra Club**. "Gas may be cheap right now, but it is going to get more expensive." Building a major natural gas plant in Memphis would lock TVA into gas-fired generation for decades, Banbury said.

Ignoring Sierra Club's "turn not burn" campaign and the Southern Alliance for Clean Energy, the TVA Board of Directors decided against P&E, a significant loss for Clean Line.

4. GE to Replace TVA's Coal with Cleaner High-Efficiency Gas Turbines
January 15, 2015
http://www.genewsroom.com/press-releases/ge-replace-tva's-coal-units-cleaner-high-efficiency-h-class-gas-turbines-279403
SCHENECTADY, N.Y.—January 15, 2015—In the 55 years since the Thomas H. Allen Fossil Plant was commissioned in Memphis, Tennessee, energy technology has evolved tremendously and environmental laws have tightened. To take advantage of enhanced technology and help meet

environmental requirements, the **Tennessee Valley Authority (TVA) is moving ahead with plans to replace the fossil plant.** GE announced today that it has received an order from the TVA to supply two high-efficiency 7HA.02 gas turbine generators for the new combined-cycle Allen plant.

5. Federal Incentives for Wind Power

The U.S. Department of Energy's (DOE's) Wind Program works to accelerate the deployment of wind power.

http://www1.eere.energy.gov/wind/pdfs/57933_eere_wwpp_federal_incentives.pdf

6. MIT says solar power; trillions of watts of capacity are on the way

May 6, 2015 Computer World

http://www.computerworld.com/article/2919134/sustainable-it/mit-says-solar-power-fields-with-trillions-of-watts-of-capacity-are-on-the-way.html

A massive study on solar power by researchers at the Massachusetts Institute of Technology came to two main conclusions: Solar energy holds the best potential for meeting the planet's long-term energy needs while reducing greenhouse gases and federal and state governments must do more to promote its development. The main goal of U.S. solar policy should be to build the foundation for a massive scale-up of solar generation over the next few decades, the study said.

Federal and state subsidy programs designed to encourage investment in solar systems should be reviewed with an eye on increasing their cost-effectiveness and with a greater emphasis on rewarding production of solar energy, the study said.

7. The Future of Solar Technology: An Interdisciplinary MIT Study

May 6, 2015 MIT Energy Initiative

https://mitei.mit.edu/futureofsolar