



# GTTSi

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## March 2019

### March 2019 Newsletter



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**May your DAY's be filled with BLESSINGS  
like the Sun that lights the sky!  
And may YOU always have the COURAGE  
to spread your wings and FLY ...**

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## Hope Springs Eternal – There is Interest ... to Buy Santee Cooper !



***“S.C. Lawmakers announced the receipt of four offers to buy all of Santee Cooper and pay off the state-owned utility’s \$8 billion in debt. S.C. Governor Henry McMaster has pushed the S.C. General Assembly to sell Santee Cooper since their abandonment of V.C. Summer 2 & 3 Project in July 2017. Companies known to have shown an interest include NextEra Energy, Duke Energy, Pacolet Milliken Enterprises, Southern Company, LS Power, and South Carolina’s 20 electric co-ops. Dominion Energy is interested in managing Santee Cooper – but not buying it.”***

S.C. Governor Henry McMaster has pushed the S.C. General Assembly to sell Santee Cooper since their abandonment of V.C. Summer 2 & 3 in July 2017.

At one point - 17 parties were interested in Santee Cooper, but only 10 submitted bids. Their names are being kept confidential, because S.C. Lawmakers believe keeping them confidential will help them pick the best offer.

Companies known to have shown an interest include Florida-based NextEra Energy, Charlotte-based Duke Energy, Virginia-based Dominion Energy, Greenville-based Pacolet Milliken Enterprises, Atlanta-based Southern Company, New York-based LS Power, and South Carolina’s 20 electric co-ops – who together buy three-fifths of Santee Cooper’s electricity. Dominion, which recently bought SCANA, has said it is interested in managing Santee Cooper – but not buying it.

Lawmakers recently announced the receipt of four offers to buy all of Santee Cooper and pay off the state-owned utility’s \$8 billion in debt.

At least three of them offered to ensure Santee Cooper customers would pay no more for the failed project. Several bids would leave Santee Cooper customers paying less than the SCE&G customers.

With the Dominion takeover of SCE&G – their customers will pay an additional \$2.3 billion for these two unfinished reactors over the next 20 years, but their electric rates were reduced by 15% from previous rates.

Santee Cooper customers are still on the hook to pay roughly \$6,200 more per household in higher rates for the unfinished reactors over the next four decades. And the S.C. co-op customers, who buy their power from Santee Cooper, are obligated to pay about \$4,200 per household for the failed project over the next four decades. However, the S.C. General Assembly said the offers before them could lower Santee Cooper’s electric rates anywhere from 2 -14% over the next 20 years.

All in all – South Carolina received 15 bids from 10 parties. There were seven offers to buy all of Santee Cooper, but only four offers — including two from utilities “with

significant operations in the Southeast” — met the criteria that lawmakers required for consideration; those offers valued Santee Cooper at \$7.9 billion to \$9.2 billion.

Some of the bidders would keep Santee Cooper’s headquarters in Moncks Corner, SC. Others would convert the headquarters building into more of an operations center. Most plan to invest in more natural gas generation – moving away from Santee Cooper’s coal-fired power plants.

Any sale would have to appease the S.C. co-ops, who could opt out of their long-term contract to buy power from Santee Cooper if they don’t like the buyer. That could be a deal breaker, since ~60% of the utility’s business is with these S.C. co-ops. However, the co-ops are in favor of a sale or transformation that would result in lower customer power bills.

S.C. Lawmakers said all of this was an important step but it didn’t represent their final recommendation to the General Assembly. “We expect this work will continue until which time the committee is prepared to provide the members of the General Assembly a well thought out recommendation for Santee Cooper’s future.”

# First Energy Solutions Nuclear Units @ 100% thru the Polar Vortex



**“One specific stand-out throughout the recent polar vortex that affected the entire 13-state PJM system was FirstEnergy Solutions (FES) – whose nuclear power plants ran at full capacity during the event. Davis-Besse and Perry nuclear plants (~2,222 MW’s), located in Ohio, provided power to ~1.7 million homes without disruption as electricity demand soared amid gusty winds and arctic temperatures that dipped well below zero. These two plants provide 14% of Ohio’s overall generation capacity and 90% of Ohio’s zero-emission generation.”**

The recent polar vortex, which consisted of back-to-back cold fronts, affected the entire 13-state PJM system and prompted Wisconsin, Illinois, and Michigan to declare a “state of emergency” prior to its arrival.

Power outages were reported across Illinois and other areas in the Midwest resulting in nearly 20,000 customers in Wisconsin, Pennsylvania, West Virginia, Virginia, and New Jersey with NO POWER.

However, one specific stand-out throughout the deep freeze event was FirstEnergy Solutions (FES) – whose nuclear power plants ran at full capacity during the event.

Davis-Besse and Perry nuclear plants (~2,222 MW’s), located in Ohio, provided power to ~1.7 million homes without disruption as electricity demand soared amid gusty winds and arctic temperatures that dipped well below zero. These two plants provide 14% of Ohio’s electrical generation and 90% of its zero-emission generation.

Another FES nuclear plant, Beaver Valley - located in Pennsylvania - operated at full capacity (~1826 MW’s) throughout the event. Beaver Valley has two of the nine nuclear units in PA. These 9 nuclear units provide 94% of the zero-emission generation for Pennsylvania.

Paul Harden, senior vice president and chief operating officer of FirstEnergy Nuclear Operating Company (FENOC) said, "We continue to operate all of our plants at the highest levels of safety and reliability. Our dedicated employees worked through the bone-chilling cold to ensure that all our nuclear plants remained online and safe."

Although 11,000 MW’s of natural gas capacity was “unavailable” due to operational or supply related outages, all three of FES’ nuclear plants ran at full capacity (~4,050 MW’s) - providing enough power for ~3.4 million homes - which underscores their value and contribution in maintaining the diversity, integrity, and reliability of the electrical grid system.

Although these nuclear plants are designed to withstand extreme temperatures (cold and hot), FES utilizes yearlong planning, preparation, and maintenance to ensure their operation and reliability. For example; a winterization program prepares the plants and ensures critical operating systems are protected from freezing temperatures.

FES announced last year that its nuclear power plants are scheduled to be prematurely deactivated in the next two to three years unless the Company secures legislative support and meaningful market reforms to keep them operational.

"Our nuclear plants contribute to the fuel diversity and fuel security of the regional grid and are able to withstand natural disasters and terrorist attacks. FES plants can also run for up to two years between refueling outages," said Mr. Harden. "We hope that market reforms are implemented that appropriately values our plants and considers the significant contributions they make to the communities they serve."



**GTTSi employees contributing to the performance of FES at Davis-Besse**

## PG&E's Future – Can a Long-Term Solution be Found ?



**“California’s largest utility, PG&E, has filed for Chapter 11 bankruptcy because PG&E’s current liabilities from California’s 2017 and 2018 fires are about 10 times PG&E’s current market value of \$3.5 billion. Since PG&E is a regulated utility there are processes and procedures in place to keep the flow of electricity to their customers, regardless of what happens during the bankruptcy proceeding. However, rate increases are most likely - estimated at 14% - and Californians already pay one of the highest electrical rates in the country.”**

California's largest utility, PG&E, has filed for Chapter 11 bankruptcy because PG&E's current liabilities from California's 2017 and 2018 fires are about 10 times PG&E's current market value of \$3.5 billion. This is a big issue for their customers since PG&E's territory runs from Eureka to Bakersfield, with ~106,000 miles of electric grid.

When PG&E filed for bankruptcy in 2001, it took three years to resolve it, because the California Public Utilities Commission (CPUC) filed their own Re-organization Plan that resulted in a settlement between the CPUC, PG&E, and an Official Committee of Unsecured Creditors. The end result - PG&E remained intact, under CPUC regulation, and PG&E was allowed to pass on the ~\$7 billion of costs to their customers.

This case is much different, even if PG&E could resolve its financial issues ... the possibility of more fires and other unknown impacts makes this an unsolvable through

a business reorganization. Since PG&E is a regulated utility there are processes and procedures in place to keep the flow of electricity to their customers, regardless of what happens during the bankruptcy proceeding. However, rate increases are most likely - estimated at 14% - and Californians already pay one of the highest electrical rates in the country.

A likely target for cost reduction will be PG&E's clean energy programs such as energy efficiency, smart grid, energy storage and microgrids.

PG&E had planned to build a network of electric car charging stations – these investments could be curtailed.

PG&E's employees could also be affected – during bankruptcy proceedings - labor agreements can be altered, which raises the prospect of worker pensions being targeted.

PG&E services maybe affected, since there will most likely be fewer people to process the paperwork.

Another area of concern is the renegotiation of PG&E's power purchase agreements (PPA's). These solar agreements were based on an average price of ~\$140/MW-hr., but today's solar PV PPA average price is at \$32.5/MW-hr. Therefore, if renegotiation is allowed, PG&E could

save up to \$2.2 billion per year. This could dramatically affect solar and wind energy suppliers.

Simultaneous with the bankruptcy case is a federal court case - based on the probation terms imposed on PG&E in 2017, due to six felony violations of federal pipeline laws - associated with the 2010 San Bruno pipeline explosion. The judge ordered a hearing on PG&E's plan to inspect all 106,000 miles of its electric grid, repair, and trim by June 21, 2019. Once a plan is adopted, it will most likely create parallel oversight with the CPUC by the Federal Courts on PG&E's business operations.

In addition to all of this, the CPUC is still investigating whether PG&E falsified gas pipeline safety records.

Should PG&E bury their power lines? If not, can PG&E be trusted to trim and maintain the power lines for the future? Should PG&E be divided into smaller, more localized public entities that would allow each community to take control of the operation – gas and electric distribution lines in their area of jurisdiction?

For now, there are more questions than answers, but the overriding question seems to be - **Can a long-term solution be found?**

**TVA, Nuclear Development, Bellefonte, & MLGW – What Lies Ahead ?**



***“In order for Nuclear Development, LLC to obtain a DOE loan to completed construction of Bellefonte they need a customer. They want Memphis Light, Gas & Water (MLGW) as a customer and have made an offer to sell up to 1,340 MW to MLGW at ~\$39 per megawatt-hour, which they say would save MLGW customers \$487 million a year for the next 30 years. But now things are stalled in federal court and both TVA and ND are making appeals to MLGW.”***



Have you been following the events surrounding TVA’s abandoned nuclear project, Bellefonte?

Below is a summary of the actions that have taken place since January 2018.

In January 2018, Memphis Light, Gas & Water (MLGW) signed a non-binding agreement to purchase power from Nuclear Development LLC (ND) should Bellefonte nuclear plant become operational, supplying electricity to the grid - based on ND’s offer to sell up to 1,340 MW to MLGW at ~ \$39 per megawatt-hour.

ND’s CEO Bill McCollum said that at this cost, ND could save MLGW customers \$487 million a year over the next 30 years. This raised considerable interest and burst into the public view in October 2018 when ND presented their case to the Memphis City Council to obtain an updated **letter of intent** (LOI).

However, ND ran into a couple of obstacles.

Since January 2018, MLGW’s leadership had changed, and the new leadership seemed to be pushing away from such an agreement. They expressed skepticism on whether the plant could ever be completed, and said they were waiting on a study of their options. However, this study has yet to be completed.

Later ND faced a problem with certification from the

Nuclear Regulatory Commission, which resulted in an extension request to TVA.

TVA provided an extension – only two weeks – ND missed the deadline and TVA refused to close on the sale. The result - a lawsuit filed by ND in federal court (Huntsville, AL) – stalling any further activity.

Recently, January 2019, Bill Johnson, TVA president and CEO, addressed the Memphis Rotary Club and made a few remarks related to ND, TVA, and Bellefonte. “We strongly believe that we cannot transfer the site to them until they have permits from the NRC (Nuclear Regulatory Commission). That was the basis of saying we cannot do it. And the next day, we were in federal court in Alabama. So, we’ll just wait and see what happens with the court case.”

Just a few days later, the Memphis City Council were talking about upcoming rates hikes and how to handle them for the MLGW customers. This presented an opportunity for Bill McCollum, former chief operating officer of TVA who is now CEO of Nuclear Development LLC, to present his case. He told them... It’s a big decision, do you take the path of continuing cost increases – electric rate increases from TVA that MLGW will have to pass

on to their customers-- or do you take a different road? He went on to say that ND could save MLGW customers \$487 million a year over the next 30 years.

Johnson is skeptical of this claim and said TVA’s consistent rankings as one of the lowest cost power providers in the country.

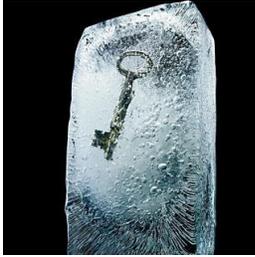
Meanwhile, while the court decides - McCollum and ND have offered an alternative to MLGW. McCollum recommended them to switch to MISO (Midcontinent Independent System Operator) as an electrical power supplier. He said their rates would provide savings, compared to TVA’s rates, which could pay for MLGW’s infrastructure plans.

Johnson said the reason that ND is talking about MISO is that their proposal doesn’t work without them, because ND could not supply all of MLGW’s needs - even with an operational Bellefonte, but MISO could.

McCollum said that Johnson was just trying to distract them from the real issue - ***Is it better for MLGW to get their power from TVA or from MISO?***

For now, things are stalled in federal court and both TVA and Nuclear Development will have to wait.

**Did You Know ?**



**“That Dominion Energy plans to reduce methane emissions by 50% over the next decade. This will prevent more than 430,000 metric tons of methane from entering the atmosphere, the equivalent of taking 2.3 million cars off the road for a year or planting nearly 180 million new trees. The reduction in methane emissions, will be accomplished by reducing or eliminating gas venting during planned maintenance and inspection, replacing older equipment with new low-emission parts, and expanding leak detection and repair programs.”**

<p><b>By 2050 ... a 100% renewable system is not realistic</b></p>	<p>That former <b>Energy Secretary, Ernest Moniz said, "The idea we're going to have by 2050 ... a 100% renewable system is not realistic, straightforwardly, certainly at a reasonable cost. It doesn't violate the laws of physics to do it. But that doesn't mean it is politically or economically implementable, and I think that is the issue.</b> The reality is that natural gas will have "a fairly long run" in the drive to decarbonize the U.S. economy, because as more and more variable resources are brought into the electricity system, the more you are going to need natural gas for the balancing of that system. But that role for natural gas means that in order to reach an 80% reduction in economywide carbon dioxide emissions by the middle of the century, new strategies are essential for underground storage of huge quantities of CO2 from gas combustion.” He continued to say that coupled with CO2 storage is a need for new processes to absorb carbon, i.e., developing crops with greater photosynthetic efficiency, direct capture of CO2 from the atmosphere and other carbon-reduction technologies.</p>
<p><b>Xcel Energy to replace 2 of 3 coal-fired plants with natural gas at Sherburne County Generating Station</b></p>	<p>That in keeping with <b>Xcel Energy plans to eliminate all its carbon emissions from electric power by 2050, they have announced plans to replace two of the three Sherburne County Generating Station generators with a smaller natural gas plant.</b> Becker, MN - home to the largest coal-fired plant in the Upper Midwest - is looking to diversify its economy as Xcel Energy plans to retire most of the plant's generators over the next seven years.</p>
<p><b>Three Gorges Dam is the world's largest power station – 22,500 MW's.</b></p>	<p>That the <b>Three Gorges Dam</b>, built on the Yangtze River, in China <b>is the world's largest power station – 22,500 MW's.</b> It spans across 2,335 meters and <b>it is so big</b> that by trapping an enormous amount of water on one side, <b>it actually slowed down the earth's rotation due to the change in the earth's moment of inertia.</b></p>
<p><b>8,652 power plants in the United States</b></p>	<p>That <b>as of December 31, 2017, there were 8,652 power plants in the United States that have operational generators</b> with a combined nameplate electricity generation capacity of at least 1 megawatt (MW).</p>
<p><b>Electric power sector accounts for 34% of the total U.S CO2 emissions</b></p>	<p>That in 2017, <b>the electric power sector accounted for 34% of the total U.S CO2 emissions.</b> The contribution by Nuclear 0%, Petroleum 1%, Natural Gas 29%, Coal 69%, and 1% from the combustion of waste materials and some types of geothermal power generation.</p>
<p><b>EPA has proposed a temporary reprieve through FY 2020</b></p>	<p>That <b>after 20 years and \$21 billion spent in providing pollution controls, the EPA has proposed a temporary reprieve from the National Compliance Initiative List, for the nation's power plants through FY 2020.</b> It is based on a 90% reduction in sulfur dioxide emissions and an 83% reduction in nitrogen oxide emissions since 1997, while gross generation has increased by 10 percent.</p>

# Electric Cars – The Total Cost of Ownership Might Surprise You !



***“Just as with gasoline cars some electric cars (EC’s) are more efficient than others, but the average EC needs ~30 kW-hours of electricity to operate for 100 miles. Since, you will most likely recharge your EC at home, there are actions you can take to reduce your electric consumption at home. In fact, you could reduce it enough to totally offset the operating cost of your electric vehicle. Based on the cost to operate a gasoline driven car you could save at least \$900 a year in fuel cost and ~\$200 a year in maintenance cost. Therefore, total cost of ownership - over time - might surprise you”***

We all know that the purchase of an electric car (EC) is much more expensive than its conventionally-powered counterpart. However, total cost of ownership-over time - might surprise you as it can certainly be less, and in some cases much less.

Just as with gasoline cars some EC’s are more efficient than others, but the average EC needs ~30 kW-hours of electricity to operate for 100 miles.

EPA ratings for:

- Nissan LEAF is 30 kW-hours per 100 miles
- Tesla Model S 60 is 35 kW-hours per 100 miles (**heavier and more powerful than a LEAF**)
- Chevy Spark is 28 kW-hours per 100 miles.

According to Researchers at the University of Michigan Transportation Research Institute, the sales-weighted average fuel economy of all new vehicles sold in the United States in 2013 was 24.8 mpg. The average cost for a gallon of regular gasoline in the US over past three years was \$3.53/gallon. By using 15,000 miles as the average amount of miles a person will drive in a year, the annual cost of gasoline for the average car will be \$2,135 per year, using the average cost of gasoline from 2011 through 2013.

Since, you will most likely

recharge your EC at home, there are actions you can take to reduce your electric consumption. In fact, you could reduce it enough to totally offset the operating cost of your EC. How can you reduce your electricity usage at home and still drive as much as you always have?

By implementing a few changes – such as - using a programmable thermostat and compact florescent or LED light bulbs.

Did you know five 100-watt light bulbs left on continuously for a year would require nearly the same kW-hours needed to operate the Nissan LEAF for 15,000 miles. Here’s the calculation - five 100-watt light bulbs will use 500 watts per hour. In 24 hours - 12,000 watts or 12 kW-hours. In 365 days - 4,380 kW-hours. The EC that uses 30 kW-hours for every 100 miles will use 4,500 kW-hours to operate for 15,000 miles. Therefore, by simply turning off unnecessary lighting in your home, you can drastically reduce or possibly eliminate your annual transportation cost.

Although, electric rates vary across the country the average cost is ~12 cents/kW-hour. Therefore, operating the average electric car for 15,000 miles a year would cost you ~\$540.00, saving ~\$1,600 per year in fuel costs, based on the average gasoline price of

\$3.53 per gallon. At this cost, electricity rates would have to quadruple (~48 cents/kW-hour) to equal that cost.

However, over the past year we have seen gasoline prices dramatically drop – averaging about \$2.50 per gallon. Therefore, if we make a comparison at that cost with a vehicle that averages 26 mpg you could still save ~\$900 per year.

Even, if you drive a truck that averages 16 mpg at the \$2.50 per gallon cost, you could save ~\$1,800 per year in fuel costs.

Yes, electric rates will eventually increase – but four times current costs?

But there is another piece that needs to be considered, maintenance costs. According to the Institute for Automotive Research (IFA) - maintenance cost for an electric car is about 35% less than a gasoline powered vehicle. Their study - found that over eight years, the average maintenance cost for a gasoline driven car would be ~\$600/year while the average maintenance cost for an electric car would be ~\$385/year. The study included oil changes, brakes, spark plugs, filters, and batteries.





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## Luminant to Boost Battery Storage to 584 MW's in Texas



Luminant, a subsidiary of Vistra Energy, recently announced operation of their Upton 2 180 MW Battery Storage System Project. It is the largest energy storage system in Texas and the seventh largest in the United States - located in Upton County, Texas. It was coupled with their Upton 2 Solar Plant to capture the excess energy produced during the day for use in the late afternoon and/or early evening, when energy demand is greatest.

Vistra Energy, owner of several retail and generation businesses – Luminant, TXU Energy, Homefield Energy, and Dynegy - operates in 12 states and has over 6,000 employees. In addition to the Upton Battery Storage facility, two other battery storage projects are planned:

- 300 MW storage system at its Moss Landing Power Plant in California - scheduled for commercial operation in the fourth quarter of 2020.
- 495 MW storage system that will be located and coupled with a solar farm of the same size in Borden County, Texas – scheduled for commercial operation in 2021. This facility will be the world's largest battery storage operation.

Once the Borden County facility is in operation, Luminant will have 584 MW's of battery storage available to ERCOT (Electric Reliability Council of Texas Inc.). This project just underscores how Big Oil's demand for power in the fossil fuels-rich Permian Basin of Texas and New Mexico is, in a twist, boosting the case for renewable energy. Texas's power grid operator, ERCOT, has stressed the need for more electricity resources in this region in order to meet the demands of oil and gas drilling operations.

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