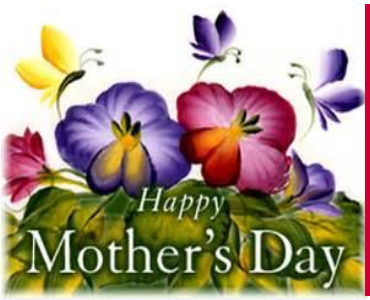

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May 2018

May 2018 Newsletter

Individual Highlights:

Global Technical Training Services, Inc.

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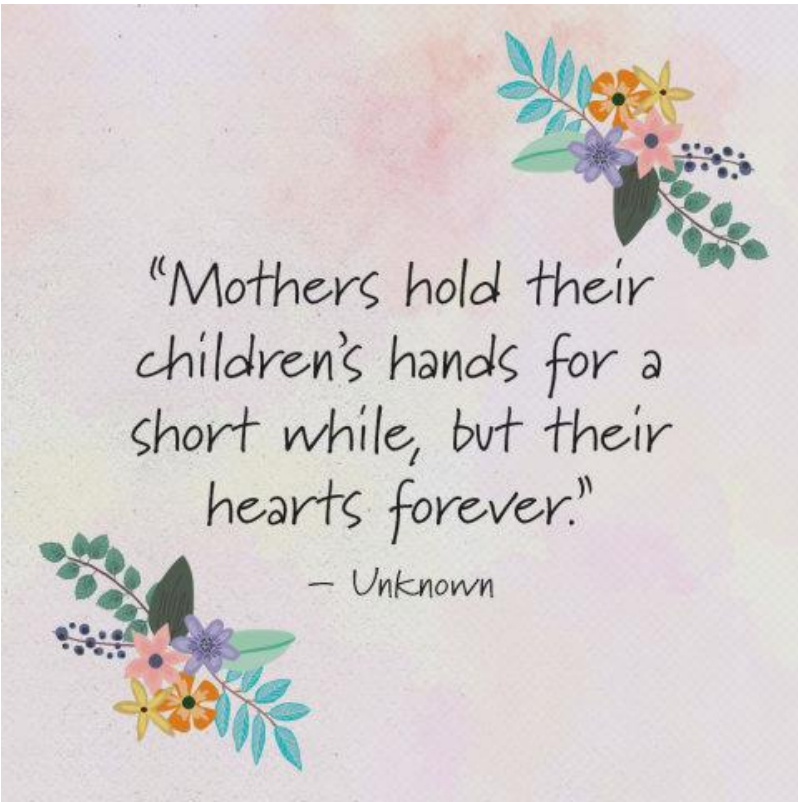
Telephone: 864-882-3111

Email: ginfo@gttsi.com

WOSB Woman Owned Small Business

- ***Sid Crouch, Vice President, Technical Operations***
- ***Kaye Browder, Technical Staffing Manager***
- ***Chrissy Mulay, Technical Staffing Specialist***
- ***Pat McHale, Consultant***
- ***Ken Schaaf, NRC Consultant***
- ***Jackie Pate, Administration***



First Energy NEEDS Help or Three Nuclear Plants Will Be Shutdown

"With no solution in sight, First Energy's subsidiaries; First Energy Solutions and First Energy Nuclear Operating Company filed for Chapter 11 Bankruptcy and told the NRC (Nuclear Regulatory Commission) and the regional grid manager, PJM Interconnection that they plan to close Davis-Besse by 2020, Perry and Beaver Valley in 2021. Closure of these plants will be economically devastating to the communities surrounding them. Davis-Besse, for example has 624 employees, generates enough power to supply 1 million homes, and provides millions of tax revenue. In addition, Ohio cannot achieve its greenhouse gas emissions goals without these nuclear power plants operating."

First Energy's subsidiaries First Energy Solutions (FES) and First Energy Nuclear Operating Company (FENOC) have been working for years to keep their three nuclear power plants operating; Davis-Besse and Perry in Ohio, and Beaver Valley in Pennsylvania.

With no solution in sight, they filed for Chapter 11 Bankruptcy and informed the NRC (Nuclear Regulatory Commission) and the regional grid manager, PJM Interconnection that they plan to close Davis-Besse by 2020, Perry and Beaver Valley in 2021.

First Energy Solutions had a $100 million debt payment due in April, which many investors felt they could not pay, and would lead them into filing for Chapter 11 Bankruptcy.

FES and FENOC are not giving in; they continue to explore strategic alternatives for their competitive generation businesses. These efforts include restructuring, asset sales, and supporting legislative and/or regulatory relief at the federal and state level.

On that front, FES filed an application with the U.S. Secretary of Energy on March 29, 2018, for an emergency order that would provide needed relief for nuclear and coal-fired plants in the region in recognition of the critical role they play in the reliability of the energy grid.

Back in January, the Federal Energy Regulatory Commission (FERC) voted against an NOPR (Notice of Proposed Rule) that U.S. Energy Secretary Rick Perry had proposed. This rule would have provided assistance to coal and nuclear energy generators. In its decision, the FERC pushed the issue down to the regional energy markets, which in Ohio's case is the PJM Interconnection, and directed them to "provide information as to whether FERC and the markets needed to take additional action on the resilience of the bulk power system."

The PJM Interconnection is responsible for the stability of high-voltage power flows in Ohio, 12 other states, and the District of Columbia. And, now that FERC has pushed the decision of grid reliability and resiliency onto the operators; PJM's decision will be instrumental in determining when these plants can close.

Closure of these plants will be devastating to the communities surrounding them; Davis-Besse has 624 employees and a generating capacity of 900 MW's; enough power to supply 1 million homes. In addition, these 624 jobs are high paying jobs; averaging ~$85K per year before benefits and Davis-Besse generates a tax income of $10,212,988 (**based on fiscal year 2015 results**).

In 2017, when New York and Illinois passed legislation to keep their nuclear plants operating there was "hope" that Ohio and Pennsylvania lawmakers might follow suit, but that has not happened.

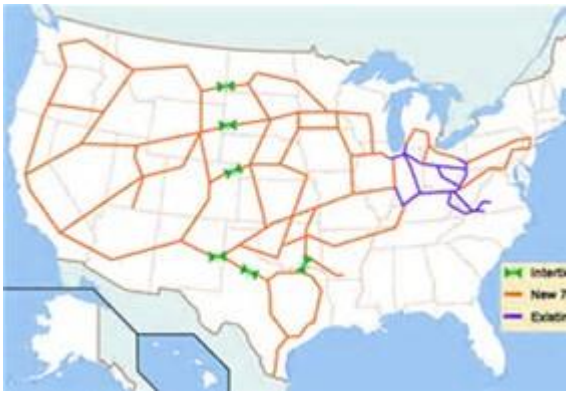
Dan Moul, president of FES Generation Company and chief nuclear officer said, "We call on elected officials in Ohio and Pennsylvania to consider policy solutions that would recognize the importance of these facilities to the employees and local economies in which they operate, and the unique role they play in providing reliable, zero-emission electric power for consumers in both states".

Ohio Senate Bill 155, proposed in 2017, if implemented it could prop up FirstEnergy's Perry and Davis-Besse nuclear plants with a "zero emissions credit", similar to New York and Illinois. But lawmakers have ignored FirstEnergy's pleas for special nuclear subsidies.

"Plant closures are subject to review and we have a process for analyzing reliability," said Susan Buehler, PJM spokeswoman.

Without these plants, Ohio cannot achieve its greenhouse gas emissions goals for the future.

Are You Ready? Replacing our U.S. Electric Grid Will Cost $5 Trillion



"The National Academy of Engineering has called the U.S. electric grid one of the greatest engineering achievements of the 20th century. But, it needs significant investment, just to keep things status quo. The current administration has vowed to invest in infrastructure, which raises a number of questions with regards to our electric system: What should the energy grid of the future look like?
How can we achieve a low-carbon energy supply? What will it cost?"

The National Academy of Engineering has called the U.S. electric grid one of the greatest engineering achievements of the 20th century; an amazing machine consisting of different integrated systems. But, it needs significant investment, just to keep things status quo', for example; a power plant built during the expansion of the power sector in the decades after World War II is now 40 years old or older, long paid off, but most likely needing to be replaced.

The nation's grid is currently valued at $1.5 to $2 trillion, but to replace it would cost ~$5 trillion.

In 2005, the Bush Administration said we needed 1000 new power plants built over the next two decades and most recently, the American Society of Civil Engineers gave the energy infrastructure a grade of D+.

The current administration has vowed to invest heavily in infrastructure, which raises a number of questions with regards to our electric system: What should the energy grid of the future look like? How can we achieve a low-carbon energy supply? What will it cost?

Infrastructure is an issue that both democrats and republicans seem to support but the "devil is in the details".

In the past we relied on large power plants, but today - most recent additions have been smaller in size and more spread out - think rooftop solar panels or wind farms. Some experts believe this model of more distributed generation closer to where the power is consumed – along the edge of the network, rather than from the central power plants – is the new norm.

Total capacity of our power plants is 1.15 terawatts; requiring ~1,000 nuclear power reactors to match. Therefore, to replace these older power plants will be costly, nearly $2.7 trillion. Overall, the value breakdown of our electric grid is about 56% power plants, 9% transmission system, and 35% distribution system.

Cyber security has now become a major concern for our electrical grid. Joshua Pearce, professor of electrical and computer engineering at Michigan Technological University, says what makes our grid so resilient is also what makes it so susceptible to cyber-attack.

We now know that the 2015 cyber-attack by the Russian hackers called "Dragonfly" crossed over into the operational network, where they could have started to flip switches. They were actually taking screenshots and according to the Department of Homeland Security showing "control panels" that could have been used to cause a power outage. If they can gain control to the scantest systems, we could have massive blackouts and continue over a prolonged period of time.

The best solution may be the creation of many micro-grids. US military installations seem to be implementing this approach; grid independence if needed. They are installing solar energy systems with battery networks to support themselves, if needed — unlike the short-term solution of a fuel or gas-powered backup generator. Another alternative being considered are SMR's (Small Modular Reactors). This could mean complete independence from the electrical grid all the time!

According to Professor Pearce, If we want to have a secure grid we need to break it up into a bunch of micro-grids that can still act together as a full grid; providing all the benefits we have today with our giant centralized grid. That way, if a hacker gets in and destroys one of the microgrids, we only lose power for that particular facility or that town. We don't lose it for the entire Eastern seaboard."

Holtec Plan Considered for Interim Spent Fuel Storage Facility

"Over 84,250 tons of spent nuclear fuel assemblies are being stored at nuclear plant facilities."

Federal regulators are considering a plan to temporarily store spent nuclear fuel from U.S. commercial nuclear reactors at a proposed WIPP (Waste Isolation Pilot Plant) site in southeastern New Mexico.

You may recall that various mishaps occurred at the WIPP in 2014, which brought focus to the problem of what to do with this growing backlog of waste and whether or not WIPP would be a safe repository. The 2014 incidents involved a waste explosion and an airborne release of radiological material that exposed 21 plant workers to internal doses of plutonium, which can lead to cancer of the lungs, liver, and bone.

The Nuclear Regulatory Commission has opened a public comment period that will last through May on an application filed by Holtec International.

Holtec and a coalition of local leaders from southeastern New Mexico first announced plans, three years ago, to construct a below-ground space for temporarily housing the tons of spent fuel. Currently we have over 84,250 tons of spent fuel assemblies being stored at nuclear facilities across the country. Holtec International is seeking an initial 40-year license.

Public meetings are scheduled for Roswell, Hobbs, and Carlsbad, New Mexico.

Watchdog groups are concerned about environmental and health effects as well as the safety of transporting the fuel.

The International Search to Use Trapped Carbon Dioxide Continues

"10 teams from Canada, China, India, Scotland, and the U.S. has demonstrated that they can use carbon dioxide from power plants to potentially turn a profit; from concrete to methanol."

The international competition sponsored by NRG Energy and Canada's Oil Sands Innovation Alliance, and organized by the XPRIZE Foundation has been reduced to 10 teams from Canada, China, India, Scotland, and the U.S. Each team has demonstrated, in a laboratory, that they can use carbon dioxide from power plants to potentially turn a profit; making everything from concrete to methanol, an alcohol used in a range of products.

Now the teams will put their ideas to work using much larger volumes of CO2; 10 times larger - 1 metric ton.

In addition, the CO2 will be coming from an operating power plant (***one metric ton is ~1% of a plant's daily output of CO2***).

Five of the finalists will compete using the flue gases from a Wyoming coal-fired power plant. The other five will be competing at a gas-fired power plant in Alberta, Canada.

Starting this summer, they will have a year to practice before the actual competition begins. The winners, from each site, will each collect a $7.5 million grand prize. Already, these teams have received $500,000 for becoming one of the ten finalists.

These finalists scored highest among the 20 semifinalists; both volume of CO2 used, as well as product value were the determining factors. For example: making concrete scores high on volume but low on value, while making small amounts of carbon fiber scored low on volume, it scored high on value.

Georgia Power and FPL Receive the Highest Customer Rating - 2018

"Georgia Power and Florida Power & Light tied for the top spot in the utilities industry with a score of 75%. Southern California Gas Company was a close second with a score of 74%. It is the second year in a row, and the third out of the last four years that Georgia Power has received the highest rating in the industry; achieving the highest score in 2017 and 2015. Florida Power & Light took the top spot in 2016."

Based on the 2018 Temkin Experience Ratings, an annual customer experience survey of some 10,000 U.S. consumers, Georgia Power and Florida Power & Light tied for the top spot in the utilities industry with a score of 75%. Southern California Gas Company was a close second with a score of 74%.

This is the second year in a row, and the third out of the last four years that Georgia Power has received the highest rating in the industry; achieving the highest score in 2017 and 2015. Florida Power & Light took the top spot in 2016.

Alabama Power Company finished third at 70%, followed by Commonwealth Edison at 69% and San Diego Gas & Electric at 66%, TXU Energy, Ameren Illinois Company, and Duke Energy Progress tied at 65%. PSE&G, CenterPoint Energy, Southern California Edison, Ameren Missouri Company, and Baltimore Gas and Electric tied at 64%, with Atmos Energy Services and Consumers Energy Company tying at 62%. The survey ranking list was rounded out by Pacific Gas & Electric Company at 61%, Arizona Public Service Company at 60%, Consolidated Edison Company of New York at 58%, and Appalachian Power Company at 55%.

Consumers Energy Company improved the most, jumping four percentage-points, while TXU Energy's score dropped the most, falling by 10 points.

The Temkin Experience rates customer's experience across 20 industries: airlines, auto dealers, banks, computer & tablet makers, credit card issuers, fast food chains, health plans, hotels & rooms, insurance carriers, investment firms, parcel delivery services, rental cars & transport, retailers, software firms, streaming media, supermarket chains, TV & appliance makers, TV/Internet service providers, utilities, and wireless carriers.

The evaluations are based on the success a customer had in its interaction with the company, the effort the company showed in helping them, and how the customer felt about the interaction.

A score of 70% or more is considered good, while a score of 80% or more is considered excellent. A score below 60% is poor, and 60 – 70% is average.

Overall, the utilities industry averaged a 65% rating, placing it in a tie for 15th place out of 20 industries.

Georgia Power and Florida Power & Light placed 65th out of 318 companies across 20 industries. Southern California Gas ranked 85th overall.

Did You Know?

"That the natural gas boom that hammered coal mines has also hammered our nuclear power plants? Although two states, Illinois and New York, have seen the value of keeping these plants operating lawmakers in Connecticut, New Jersey, Ohio, and Pennsylvania are being pressed to take similar action designed to keep these carbon-free electricity producers online. Asking for no more than the treatment given to renewable energies, such as wind and solar."

FERC alleges that PSEG made false statements when bidding into the energy market between 2005 and 2014	That the ***Federal Energy Regulatory Commission (FERC) alleges in a preliminary notice that the trading arm of Public Service Enterprise Group (PSEG) made false statements when bidding into the energy market between 2005 and 2014?*** The notice comes as the New Jersey Legislature considers a bill that would give PSEG $300 million a year to keep its nuclear power plants (Salem 1&2 and Hope Creek) operating.
Small Leak of boric acid detected at Indian Point 2 during inspection of the reactor head	That ***during the biennial shutdown and maintenance outage at Indian Point 2 nuclear plant, a small leak of boric acid was detected during their inspection of the reactor vessel head?*** It was so small - roughly a quarter teaspoon – that it was only detected by a remote camera. The Nuclear Regulatory Commission (NRC) was immediately informed and had inspectors at the plant monitoring the repairs.
Devon Energy Corporation, announced a 9% cut of its employees (300 employees)	That ***Devon Energy Corporation, an Oklahoma City based oil and natural gas company, announced a 9% cut of its employees (~ 300 employees)?*** The oil and gas industry is in a lower-for-longer commodity price environment, and for Devon Energy they are transforming the way they operate by simplifying their asset portfolio and improve financial strength. These staff reductions, together with numerous other cost-reduction measures, will remove $150 million to $200 million in general and administrative costs by 2020.
U.S. has more than 200,000 miles of high-voltage transmission lines	That ***in the U.S., there are more than 5.5 million miles of local distributions lines and more than 200,000 miles of high-voltage transmission lines?*** Do you know how often the power lines in your area are being inspected? Currently, most power lines are inspected by foot and require observation from the ground level. Therefore, many distribution lines are only being checked or inspected every five years or when a problem occurs on that line.
NRC held its last public meeting for Exelon's Oyster Creek nuclear power plant	That the **Nuclear Regulatory Commission (NRC) held what may be the *last public meeting on the annual safety assessment of Exelon's Oyster Creek nuclear power plant in New Jersey as the plant is scheduled to close in October***? The plant, which opened in 1969, was set to retire in 2019, but Exelon now plans to close it earlier.
NRC held an "open house" meeting on the MOX Fabrication Facility at the SRS	That the **Nuclear Regulatory Commission (NRC) held an "open house" meeting in April, concerning the future of the MOX Fabrication Facility at the DOE Savannah River Site (SRS)?** The MOX project is billions over budget and the U.S. Department of Energy (DOE) disfavors MOX for an alternative method of disposal for surplus weapons-grade plutonium called ***dilute and dispose***. Both, the current administration and the past administration favor termination of the project. However, NRC staffers were available to answer any oversight- or inspection-related questions pertaining to MOX, and they are commissioned to continue inspections of the facility through 2018.

U.S. Nuclear Renaissance Watch Update

Under Construction:

Vogtle 3 & 4 – 1,100 MWe Westinghouse AP1000, Southern Nuclear Operating Company; Waynesboro, GA; **COL issued February 10, 2012;** ~60% complete in EPC terms. Proposed START date undetermined due to Westinghouse bankruptcy filing. ITAAC status: 71 closed / 68 confirmed by NRC – Unit 3; 59 closed / 55 confirmed by NRC – Unit 4.

Licenses Received:

Fermi 3 – ESBWR, DTE Energy; Monroe, MI; **COL issued May 1, 2015**; licensee has not signed an EPC contract, or announced any commitment to build and operate.

South Texas 3&4 – Toshiba ABWR, Nuclear Innovation North America; Palacios, TX; **COL issued February 12, 2016**; EPC contract signed February 2009. *Design certification application for the Toshiba ABWR was closed by the NRC in January 2017.*

Levy 1&2 – AP1000, Duke Energy; Levy County, FL; **COL issued October 26, 2016**; original EPC contract signed in January 2009 was cancelled on August 1, 2013, and has not been reinstated. *Duke Energy announced on August 29, 2017 they will not be moving forward with this project, pending approval by the Florida PSC.*

Lee 1&2 – AP1000, Duke Energy; Gaffney, SC; **COL issued December 19, 2016;** licensee has not signed an EPC contract. *Duke Energy announced on August 25, 2017 they will not be moving forward with this project, pending approval by the North Carolina Utilities Commission.*

North Anna 3 – ESBWR, Dominion Generation; Mineral, VA; **COL issued May 31, 2017;** *Dominion and GE Hitachi Nuclear Energy have stated that they have reached agreement on all contract terms but licensee has not signed an EPC contract.*

ABANDONED:

V.C. Summer 2&3 - ***Project was ABANDONED on July 31. 2017.*** Two - Westinghouse AP1000 (1,100 MWe each), SCANA / Santee Cooper; Parr, SC; **COL issued March 30, 2012;** ~64% complete in EPC terms.

License Applications:

Duke Energy's Harris 2&3*, and* ***Luminant's Comanche Peak 3&4*** *License Applications have been slowed or suspended at the request of the applicant.*

Talen Energy's Bell Bend *License Application was withdrawn on August 31, 2016.*

"Active" License Applications:

Turkey Point 6&7 – 1,100 MWe Westinghouse AP1000, Florida Power & Light; Florida City, FL; **FSER** November 10, 2016; **FEIS** October 2016; **MH** October 5, 2015; EP2 completed February 27, 2015. *A request for hearing and petition to intervene was submitted on April 18, 2017 by the City of Miami, the Village of Pinecrest, and the City of South Miami.*

Eastern Idaho – two or more NuScale Power Modules (SMR), Utah Associated Municipal Power Systems with Energy Northwest; on or near the property of Idaho National Laboratory. **Application submittal planned for 2018.**

Early Site Permits:

PSEG Site – reactor TBD, PSEG; Salem, NJ; **FSER** issued September 29, 2015; **FEIS** issued November 13, 2015; **MH** March 24, 2014. **ESP** issued May 5, 2016.

Clinch River Site – reactor TBD, TVA; Clinch River, TN; **Application** submitted May 12, 2016; **NRC** accepted application for docketing and detailed technical review on December 30, 2016. **Three groups filed petitions** in June 2017 against TVA's application; **ASLB** established in July 2017.

Blue Castle Project – two AP1000, Blue Castle Holdings; Green River, UT. **Application submittal planned for 2019.**

N. J. Legislature - Passes Nuclear Rescue Bill

New Jersey's Legislature, Assembly and Senate, passed a $300-million-a-year financial bailout for the state's nuclear electric plants. If approved by Governor Phil Murphy, the state's utility companies would be required to purchase credits to support nuclear energy. Those costs are expected to be passed directly to the ratepayers or customers, with estimates ranging from about $30 to $41 a year or about $3.50 per month.

Many in the state believe this is a small price to pay for 100% carbon-free electricity, a stable and resilient electric grid, hundreds of high paying jobs, and the much needed tax revenue. However, others such as consumer advocates and environmentalists warn it will penalize state residents.

PSEG told lawmakers last year that its nuclear plants were in danger of financial insolvency and would close within two years without funds from the state. That led then-Governor, Chris Christie and lawmakers to assemble legislation to support these plants in a way similar to New York and Illinois. However, this legislation stalled and failed to pass before Governor Christie left office. Once Murphy became governor, the measure ballooned to include clean energy requirements and an expansion of solar energy; this bill received less support than the initial bill, and lawmakers decoupled the nuclear rescue from the clean energy provisions.

Controversy over the rescue package continued but New Jersey gets ~40% of its electricity from these three PSEG nuclear plants (Salem 1&2 and Hope Creek) and ~2,000 direct jobs could be lost if these plants were shuttered. In addition, these plants constitute a key part of a clean-energy future for New Jersey with zero carbon emissions. Governor Murphy seems to be favorable, as he sees the nuclear plants as a "bridge" to achieving his promise of a 100% renewable energy portfolio by 2050.

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