



GTTSi

Serving the Nuclear and Energy Industry
Since 1980; now serving
Georgia-Carolinas PCI Group

July 2019

July 2019 Newsletter



Global Technical Training Services, Inc. 807 Bypass 123 – Suite 31 Seneca, South Carolina 29678

Telephone: 864-882-3111

Email: ginfo@gttsi.com



- 📍 **Sid Crouch, Chief Technical Consultant**
- 📍 **Kaye Browder, Technical Staffing Manager**
- 📍 **Chrissy Mulay, Technical Staffing Specialist**
- 📍 **Pat McHale, Consultant**
- 📍 **Ken Schaaf, NRC Consultant**
- 📍 **Jim Browder, Construction Consultant**
- 📍 **Jackie Pate, Administration**

Individual Highlights:

- Decision Time –Solar & Wind, Nuclear, Natural Gas, Coal, or Hydro pg#2
- Court Rules on “Breach of Contract” Claim at Bellefonte pg#3
- Gate Precast Reorganizes pg#4
- J.P. Morgan Acquires El Paso Electric for \$4 Billion pg#5
- CA Sets Two Records – Most Solar Supply & Most Solar Taken Offline pg#5
- Did You Know? pg#6
- NuScale’s SMR Design - DCA Approval on Schedule for 2020 pg#7
- U.S. LNG – Soon to Become World’s Largest Contributor pg#8



The Liberty Bell is tapped 13 times, every 4th of July, to signify the original 13 colonies and to signal - for bells across the U.S. - to begin ringing!

Disclaimer: The views expressed in any article or advertisement appearing on this website or newsletter do not necessarily represent those of GTTSi and GTTSi accepts no responsibility for them.

Decision Time – Solar & Wind, Nuclear, Natural Gas, Coal, or Hydro



***“The earth’s need for electricity continues to increase! The IEA (International Energy Agency) reported that the energy demand in 2018, increased by 2.3%, the highest rise in over a decade. The average U.S. consumer uses 10,400 kW-hrs per month. To provide this amount of electricity requires slightly less than one ton of crude oil, or thousands of tons of coal, or just a fraction of a kilogram of enriched uranium. In fact, one kilogram of enriched uranium can generate enough energy to supply 104 homes, for a year. If you really want zero carbon emissions - choose low cost nuclear or high cost renewables – its DECISION time!*”**

Did you know scientists consider 50 ppm (*parts per million*) of carbon dioxide in the atmosphere as a safe level, but we are way over that - at 410 ppm based on the latest study by the National Oceanic & Atmospheric Administration (NOAA).

The earth’s need for more electricity continues to increase - IEA (International Energy Agency) recently reported that electricity demand increased by 2.3% in 2018, the highest rise in over a decade. To meet these needs more fossil fuels were used (coal & natural gas) – increasing carbon emissions.

However, there is one fuel - considered cheap in the long term, plentiful, and provides electricity with zero-carbon emissions; found at commercial nuclear power plants. But U.S. nuclear power plants are being benched – 12 nuclear units are planned for shutdown, over the next five years - Pilgrim, TMI-1, Duane Arnold, Davis-Besse, Indian Point 2&3, Beaver Valley 1&2, Perry, Palisades, and Diablo Canyon 1&2.

Nuclear power plants provide 11% of the world’s energy needs - 450 reactor units currently in operation - across 30 countries. In the U.S. we currently have 98 units operating but in five years that will be reduced to 86; once we had 106 – 2 new units are being built in Georgia – Vogtle 3&4.

A recent New York

Times editorial entitled "Nuclear Power Can Save The World" presented their position – that renewables cannot deliver the energy needed and will become very costly. They recommended converting everything we use to electricity and then build a fleet of nuclear power plants.

Their explanation on why renewables can’t provide energy - 24/7 is true, but grid operators have been able to work around this problem due to the mixture of energy sources available to them, giving them the flexibility to select some other energy source to take up the slack.

Recent developments with battery storage are starting to have a positive impact – providing cheaper, denser, and more environmentally friendly batteries. But these batteries are expensive, and they make renewable energy much more costly. Another issue for battery storage is its inefficiency. Storing energy in batteries is not very efficient, and getting this energy out of the batteries adds even more inefficiency, and when you add the conversion of direct current (DC) to alternating current (AC), the total inefficiency increases even further – getting out much less than what you wanted to store.

This makes, nuclear, natural gas, and coal much cheaper, and with nuclear – its proven

reliability with a capacity factor greater >95% for over a decade.

Yes, there are downsides to nuclear – radioactivity and spent fuel concerns - even though you may have heard differently – historic and empirical data have proven our nuclear plants operate safely with reliability and resilience.

Fossil fuels release toxic materials – including carbon emissions – even natural gas (although it is about half of coal).

Renewables have their own issues, as well – solar panels and batteries degrade over time, wind turbines wreak havoc with birds and bats, and what about their disposal or storage after use?

Hydro has issues, too – resulting in significant adverse environmental effects. Environmentalists say it destroys the habitat for many species, some already vulnerable to extinction and creating their reservoir produces carbon emissions – 80% of which is methane, 34 times more potent than carbon dioxide.

Do you want ZERO carbon emissions? If so, then it is either reliable low-cost electricity from nuclear or high-cost electricity from renewables - because solar and/or wind require battery storage to be reliable – all other sources have carbon emissions.

Like it or not every energy source has its problems – **NOW** it is **DECISION** time!

Court Rules on “Breach of Contract” Claim at Bellefonte



“In arguments before the court, attorneys said Nuclear Development, LLC was the top bidder, \$111 Million, for Bellefonte and its assets. They have already spent more than \$30 million - \$22.2 million as a down payment and other costs associated with regulatory and legal requirements. U.S. District Court Judge Liles C. Burke ruled that Nuclear Development, LLC has sufficiently stated its claim for a “breach of contract” against TVA.”

A federal judge has ruled that Nuclear Development, LLC (ND) has sufficiently stated its claim on “breach of contract”, and the court does not have enough information before it to determine whether the remedy of specific performance would violate federal law – therefore the court has refused to cancel an agreement by Tennessee Valley Authority (TVA) to sell its unfinished Bellefonte Nuclear Power Plant to developer - Nuclear Development, LLC (Franklin L. Haney).

In arguments before the court - Haney's attorneys said the developer, ND, was the top bidder for Bellefonte and its assets at a November 2016 public auction and that Haney (ND) has spent more than \$30 million, which includes the \$22.2 million provided as a down payment, the remaining \$7.8 million was attributed to legal and regulatory costs.

TVA had originally given Nuclear Development two

years from the date of the auction to consummate the sale and Haney's attorneys said that TVA did not indicate any previous problems with the sale nor a need for prior NRC approval. TVA disclosed the necessary NRC approval to Nuclear Development just weeks before the deadline and Haney's lawyers said he met with regulators and submitted a request for their approval and a license transfer, just last fall.

The court indicated that TVA has until May 29, 2019 to respond to their ruling. In the meantime, TVA must maintain Bellefonte's deferred construction permit for possible transfer to Haney (ND) once the case is decided.

Haney contends that his company, Nuclear Development, LLC can complete construction, operate, and sell the power generated from the Bellefonte Nuclear Plant at a very competitive price. Previously, ND had offered to sell Memphis Light, Gas, & Water (MLGW) up to 1,340 MW @ \$39/MW-hr for 30 years, which they said would save their customers \$487 million a year.

In a Nuclear Regulatory Commission (NRC) letter to ND - they said, "the NRC staff has reviewed your application and has concluded that supplemental information

is necessary to enable our staff to make an independent assessment regarding the acceptability of the proposed license transfer".

In 2016, TVA's projected that they would not need the baseload generation that could be produced from Bellefonte for at least the next couple of decades, and therefore, finishing Bellefonte would be too expensive - although they already spent over \$6 billion on its construction and interest expenses, since they began construction, nearly 45 years ago.

If the sale to Haney (ND) is dismissed as TVA is urging, Bellefonte would again be put up for sale, said TVA spokesman Jim Hopson. "Our goal remains to return the Bellefonte property to productive use as soon as possible,"

Hopson went on to say, "The case is in its early stages and we believe the facts will support our decision to adhere to the requirements of the Atomic Energy Act, which prevents transfer of licensed nuclear facilities to organizations that do not have the necessary permissions – in this case - from the Nuclear Regulatory Commission."



Gate Precast Reorganizes – Streamlines Operations



PRECAST COMPANY

“Gate Precast reorganized their regional divisions into two divisions – Northern and Southern - to streamline operations, improve efficiency, and enable improved collaboration between the operations and sales units. During the transition, oversight and leadership from Senior Vice-President of Operations, Earl Shimp, was provided and highly valued. His leadership and expertise will be missed, greatly, as he retires this July.”

Gate Precast has reorganized their regional divisions into two divisions – Northern and Southern.

The Northern Division includes the following plants:

- Ashland City, TN
- Oxford, NC
- Winchester, KY.

The Southern Division includes the following plants:

- Hillsboro, TX
- Kissimmee, FL
- Monroeville, AL.

The reorganization will streamline operations, improve efficiency, and enable improved collaboration between the operations and sales units.



Bryant Luke is now Vice-President of Special Operations for both divisions – Northern & Southern. Bryant previously served as Operations Manager at the Kissimmee, FL plant. But now, as Vice-

President of Special Operations, he plans to concentrate on research and development, special projects, and safety.



Travis Fox is Vice-President of Operations – Northern Division. Travis has served as the Operations Manager at the Oxford, NC plant since 2013, and prior to that he was a Corporate Business Manager - overseeing all plant operational and administrative issues.



Chris Galde is Vice-President of Estimating, Marketing, and Sales – Northern Division. Chris has over 30 years of experience in the precast concrete industry and most recently he served as the Northeast Regional Director of Sales and Marketing for architectural precast and hollow-core systems.



Mark Ledkins is Vice-President of Operations – Southern Division. Mark has over 37 years of experience in the precast concrete industry and has been the Operations Manager at the Monroeville, AL plant for 17 years.



Brian Griffis is Vice-President of Estimating, Marketing, and Sales – Southern Division. Brian has over 17 years of experience in the construction industry and previously served as the Southeast Regional Sales and Marketing Manager.



J.P. Morgan Acquires El Paso Electric Company for \$4 Billion



***“This partnership / acquisition will bring value to everyone; employees, customers, shareholders, and the community – preparing El Paso Electric for a sustainable clean energy future.*”**

Infrastructure Investments Fund (IIF), a part of J.P. Morgan Investment Management Inc., is acquiring El Paso Electric Company for \$68.25 per share in a cash transaction totaling more than \$4 billion.

Infrastructure Investments is an \$11.3 billion private investment fund that includes ownership interests in 11 energy, utility and electric generation companies.

El Paso Electric CEO Mary Kipp said that Infrastructure Investments Fund, with its long-term experience in power generation and utility investment, is the “ideal partner” for the region and the company. “This agreement demonstrates that IIF values local job

retention and growth; creating a sustainable path to enhance our renewable energy resources and protecting the environment; and treating our 1,100 employees, their families and our customers with transparency and respect,”

CEO Kipp went on to say that this partnership / acquisition will bring value to everyone; employees, customers, shareholders, and the community – preparing El Paso Electric for a clean energy future that is local and sustainable.

The offer by IIF includes commitments to keep both union, non-union, and management employees in place. El Paso Electric will continue as an

independently operated, regulated utility, according to the plan.

Customers will receive a total of \$21 million in bill credits over next three years, and together the two parties will create a community economic sustainability fund to invest \$100 million over the next two decades to fund growth and economic development in the utility’s service area.

El Paso Electric provides generation, transmission, and distribution to about 430,000 retail and wholesale customers within the Rio Grande Valley of west Texas and southern New Mexico. Its generation mix include natural gas, solar, and energy storage.

CA Set Two Records – Most Solar Supply & Most Solar Taken Offline



***“There’s no contradiction - California recently set two renewable energy records - the most solar power ever 11,363 MW’s, and the most solar power ever taken offline 4,700 MW’s.”*”**

California recently set two renewable energy records - the most solar power ever flowing on the state’s main electric grid, and the most solar power ever taken offline because it wasn’t needed.

There’s no contradiction: As California utilities buy more and more solar power as part of the state’s quest to confront climate change - supply and demand are increasingly out of sync.

On May 27, 2019 around 1 p.m., grid operators shut off a record total of about 4,700 MW’s of solar capacity at the same time — nearly 40% of the entire solar capacity

installed on the California grid. Then, around noon on June 1, 2019 they set an all-time instantaneous solar generation peak of 11,363 MW’s.

The California Energy Commission estimates - that in 2018 - 34% of the state’s electricity came from renewable sources, not counting production from rooftop solar panels, which would most likely add several percentage points. Solar power has grown especially fast in recent years, spurred by falling costs, federal tax credits and California’s renewable energy mandate.

The growing amounts of

of solar power have also been accompanied by an increasing amount of curtailment, according to the California Independent System Operator, which runs the state’s main power grid. In 2018, less than 2% of the state’s potential solar generation was curtailed, but in 2019 it may reach 3-4%.

The California legislature set a target of 60% renewable energy on the power grid by 2030, as well as a longer-term goal of 100% climate-friendly energy – this definition could include hydro and/or nuclear.

Did You Know?



“That Duke Energy has announced three battery storage projects in Florida – planned for completion by the end of 2020? One is in the Gainesville, area, one in the Panama City area, and one along the Georgia-Florida border in Hamilton County. These energy storage projects will total 22 MW’s and are being installed to improve overall reliability and support critical services during power outages.”



12 units to shutdown

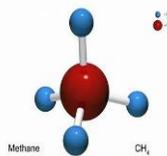


That **over the next 6 years - 12 nuclear power units are scheduled to be shutdown?** This will result in a loss of over 11 gigawatts of electricity, and 1 gigawatt = 1 billion (10⁹) watts. In 2019 – Pilgrim and Three Mile Island are scheduled for shutdown; in 2020 – Duane Arnold, Davis-Besse, and Indian Point 2; in 2021 – Beaver Valley 1&2, Indian Point 3, and Perry; in 2022 – Palisades; in 2024 – Diablo Canyon 1; and in 2025 – Diablo Canyon 2.

Millions in South America wake up in the dark on Father’s Day!



That on Father’s Day **millions of residents in Argentina, Uruguay, and some parts of Paraguay woke up in the dark?** This **blackout originated** at an electricity transmission point between two Argentine power stations - Yacretá Dam and Salto Grande in the northeast corner of Argentina. **“because the system (electric grid) was getting too much power”**. This resulted in a chain of events that yielded a total disruption of power. Although power was restored, later that night, the event ignited questions about Argentina’s power system vulnerabilities – at a time - when the country is going through a deep economic crisis, soaring inflation, a tumbling currency, and a spike in utility bills. The spike in utility bills was fueled by a cut in federal subsidies - initiated as part of an austerity program implemented by the Argentine President Mauricio Macri.



That **Dominion Energy** announced plans to **reduce methane emissions by 50% over the next decade?** Methane is a greenhouse gas that is 34 times more potent than carbon dioxide! This reduction will eliminate 430,000 metric tons of methane from entering the atmosphere – equivalent to taking 2.3 million cars off the road for a year or planting ~180 million trees.

Con Ed expands



That **Con-Edison of New York has cut a deal to expand natural gas capacity to its Westchester County facilities, without new pipeline construction** – meeting the utility’s moratorium on gas hookups in Westchester County? The Tennessee Gas Pipeline will provide this increased capacity by upgrading its compression facilities outside of New York. If approved, the expanded services could be provided by November 2023.

TX, OK, IA, KS wind power



That **four states - Texas, Oklahoma, Iowa and Kansas - provided more than half of the 275 million MW-hours of wind power electricity in 2018?** Texas accounted for more than 25%, while Oklahoma generated 10%. Iowa’s wind generation has more than doubled since 2011. and is now providing 34% of the state’s electricity. Kansas has been in the top four wind generation producers for three years, and now they produce 36% of their state’s electricity.

U.S. Solar Soars



That In just the **first three months of 2019, 2.7 Gigawatts of solar photovoltaics (PV) have been installed in the U.S.?** We now have over 2 million solar installations throughout the country. A growth of 25% over 2018 is now being forecast for solar – this year.

NuScale's SMR Design - DCA Approval on Schedule for 2020



“NuScale’s SMR (small modular reactor) is somewhat opposite of existing nuclear plants – their design is smaller, simpler, and cheaper. These smaller reactors can work well with renewables (wind and solar) - providing a backup electrical source when the wind isn’t blowing, and the sun isn’t shining.”

While many of the nation’s nuclear power plants are shutting down, an Oregon company, NuScale Power, wants to change that trend. How, you might ask?

NuScale’s SMR (small modular reactor) is somewhat opposite of existing nuclear plants – their design is smaller, simpler, and cheaper - called SMR. These smaller reactors can work well with renewables (*wind and solar*) - providing a backup electricity source when the wind isn’t blowing, and the sun isn’t shining – and these SMR’s can compete financially with natural gas, as well.

NuScale engineers looked at the way previous designs had failed and used the laws of physics to prevent them. NuScale’s design doesn’t depend on pumps or generators – it uses natural circulation for cooling and in addition, the reactor is placed within a containment vessel,

located underground - in a huge pool of water that can absorb the heat.

This design doesn’t require any additional water, AC or DC power, or even operator action to stay in a safe configuration.

NuScale plans to build its first nuclear power plant at the Idaho National Laboratory (INL) and ultimately provide up to 720 MW’s, with 12 or more SMR’s, to Utah Associated Municipal Power Systems (UAMPS) by 2026 -2027. As part of the Utah Associated Municipal Power System (UAMPS), this plant will provide power for the INL, and also serve UAMPS 46 member utilities - in six Western states.

UAMPS was looking for a carbon-free source of electricity to generate power when their intermittent sources, such as solar panels and wind turbines were offline. UAMPS CEO Doug Hunter

says NuScale’s modular design is good for that, and although batteries could be used to backup these intermittent sources, the NuScale reactors can do that cheaper and they can be ramped up and down quickly – which is another important factor - also considered.

NuScale signed an agreement in 2015 with France’s Framatome for the supply of conventional ceramic uranium dioxide fuel, as well as testing and analyses towards NuScale’s U.S. design certification application (DCA). They are also the first SMR developer to file a DCA with the U.S. Nuclear Regulatory Commission (NRC) and they are on schedule to receive approval of their design by September 2020.

In May 2019, NuScale announced a joint venture with Enfission, (*50-50 joint venture of Lightbridge Corporation & Framatome*) to co-develop fuel rod technology for use in their SMR design.

In April 2019, NuScale’s Chief Commercial Officer, Tom Mundy, announced that they were also developing two separate micro reactor designs, targeting industry and remote customers with faster deployment and longer fuel cycles - 10 to 50 MW micro NuScale power module and 1 to 10 MW NuScale heat pipe reactor.



U.S. LNG - Soon to Become World's Largest Contributor



The world's appetite for natural gas continues to grow - global demand for natural gas increased 4.6% in 2018. The International Energy Agency (IEA) said that global energy consumption rose at its fastest pace this decade, with natural gas accounting for 45% of the increase.

Adoption of natural gas to replace coal-fired power plants in the U.S. and China, had the most significant impact.

However, the IEA predicts that natural gas demand will decrease back to levels experienced before 2017 – on average at about 1.6% per year - through 2024. This forecast is attributed to weaker economic growth, a return to average weather conditions, and diminishing opportunities to switch from coal to gas in electric power plants. But it is expected that China will account for 40% of the global gas demand during these five years.

Most of the new supply needed to meet this growing demand will come from the U.S., where surging production from the nation's shale fields has left drillers in search of new markets. American gas output surged by 11.5% in 2018, marking it the fastest growth since 1951, according to IEA.

Those supplies will increasingly reach foreign markets in the form of liquefied natural gas, a form of the fuel chilled to its liquid form, mostly for transport by sea. IEA says the U.S. could top Qatar and Australia as the world's top LNG exporter by 2024 – with the U.S., Australia and Russia making up 90% of the export growth.

GTTSi
P.O. Box 307
Hartsville, South Carolina 29550

COMPANY OR PERSON'S NAME
STREET ADDRESS
CITY, STATE, ZIP

GTTSi

807 Bypass 123 – Suite 31
Seneca, SC 29678

Phone: 864-882-3111
Email: ginfo@gttsi.com

Jackie Pate

Administration
Phone: 864.882.3111
Fax: 864.882.1026
jackie.pate@gttsi.com

Sid Crouch

Chief Technical Consultant
Phone: 843.339.9874
Fax: 843.339.9528
sid.crouch@gttsi.com

Kaye Browder

Technical Staffing Manager
Phone: 864.631.9325
Fax: 864.862.8730
kaye.browder@gttsi.com

Chrissy Mulay

Technical Staffing Specialist
Phone: 864.506.4647
Fax: 716.604.1948
chrissy.mulay@gttsi.com

Pat McHale

Consultant
Phone: 864.882.3111
pat.mchale@gttsi.com

Ken Schaaf

NRC Consultant
Phone: 864.882.3111
kenneth.schaaf@gttsi.com

Jim Browder

Construction Consultant
Phone: 864.918.2289
jim.browder@gttsi.com

We're on the Web!

See us at:
www.gttsi.com

