



Hello  
October

**GTTSi**  
Minority Woman-Owned Business

Serving the Nuclear Energy Industry  
since 1980

**October 2021**

### October 2021 Newsletter



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Come said the  
**LEAVES** to the wind  
one day,

Come o’er the  
**MEADOWS** and we  
will play.

Put on your  
**DRESSES** of Scarlet  
and **GOLD**,

For **SUMMER** is  
gone and the days  
grow **COLD**.

George Eliot

## Criminal Charges Filed Against Former Westinghouse Official



***“Do you remember the July 31, 2017, announcement - that SCE&G and Santee Cooper were going to abandon the V.C. Summer 2&3 Project? Well, Jeffrey Benjamin, a former Westinghouse senior vice-president, faces multiple counts of fraud in connection with the multi-billion-dollar failure of V.C. Summer 2&3. He faces 16 felony counts, including conspiracy, wire fraud, securities fraud, and causing a publicly traded company to keep a false record. If convicted, Benjamin could face a maximum of 20 years in prison and a \$5 million fine, the U.S. Attorney’s office said.”***

Jeffrey Benjamin, a former Westinghouse senior vice-president, faces multiple counts of fraud in connection with the multi-billion-dollar failure of V.C. Summer 2 & 3.

You may recall that on July 31, 2017, SCE&G (part of SCANA Corp.) and Santee Cooper announced their abandonment of construction activities at the V.C. Summer site (pictured above), located near Columbia, S.C. in Fairfield County. The project was way behind schedule and over budget – the most probable date for completion was estimated as 2024 and at a cost that was 75% more than the original estimates.

SCANA and Santee Cooper attributed most of the project delays and cost overruns to Westinghouse, and based on the indictment, the cost overruns at the nuclear projects overseen by Benjamin in South Carolina and Georgia culminated into a \$6 billion loss to Westinghouse

which ultimately resulted in their declaration of bankruptcy - March 2017. Once Westinghouse made this announcement the dominos began to fall.

This is the latest criminal charge over a four-year federal investigation of what went wrong. In all, Benjamin faces 16 felony counts, including conspiracy, wire fraud, securities fraud, and causing a publicly traded company to keep a false record.



The charges against Benjamin (pictured above) are “for his role in failing to truthfully report information regarding construction of the new nuclear units at the V.C. Summer nuclear plant,” said the Acting U.S. Attorney, Rhett DeHart.

According to the indictment, Benjamin’s alleged cover-up of billions of dollars in losses at Westinghouse’s

troubled nuclear plants in South Carolina and Georgia were part of a series of events leading to the company’s bankruptcy in March of 2017. His misrepresentations and omissions, as well as the associated cover-up, resulted in billions of dollars in losses to (SCANA), ratepayers and investors.

Benjamin, who was responsible for Westinghouse’s worldwide construction of nuclear reactors, is the fourth person to face criminal charges in connection with the SCANA scandal.

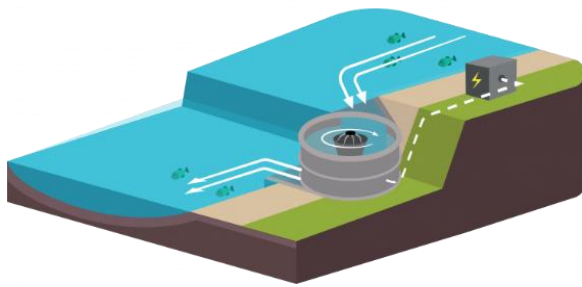
The three others - former SCANA CEO Kevin Marsh and Stephen Byrne (former SCANA senior vice-president) and former Westinghouse employee Carl Churchman (over construction of the project) - have all agreed to plead “guilty” to various counts of fraud but have not yet been sentenced.

The indictment against Benjamin most likely means that he is planning to plead “not guilty” and will stand trial, where numerous government witnesses - including SCANA and Westinghouse officials who have pleaded guilty - could testify against him.

If convicted, Benjamin could face a maximum of 20 years in prison and a \$5 million fine, the U.S. Attorney’s office said.



# Turbulent Whirlpool Turbine - Works with Nature, Not Against It !



***“In many countries around the world there are communities and villages without a connection to the power grid. Most of them are remotely located in the country’s rural areas, such as the jungle or mountains. These communities have little or no stable source of electricity available to them. The Turbulent Whirlpool Turbine is a perfect fit for these communities. This turbine can range from 15 kW to 70 kW – enough to power up to 30 homes. It is installed in a nearby river where the available flow and head are relatively low and a need for clean energy.”***

Have you heard of the Turbulent Whirlpool Turbine?

This micro-hydropower turbine is made for mid-scale projects that range from 15 kW to 70 kW – enough to power up to 30 homes. It is installed in a nearby river where the available flow and head are relatively low and a need for clean energy.

*Turbulent* is a Belgian company and their fish-friendly turbine that can be installed in only one week and provide energy 24 hours a day for dozens of homes. It can be installed in most rivers and canals and delivers low-cost power as the generator just uses the flowing water to produce energy. It is more cost-effective, reliable, and compact than solar. It has a long operating life and requires little maintenance as a self-cleaning screen captures large debris, and it can be remotely monitored.

In Bali, Indonesia *Turbulent* built one of its turbines for their Green School. The Green School wanted to power a world-class education entirely through renewable energy in the middle of the jungle.

The whirlpool turbine was a perfect fit, as it delivers the needed power without the need for high river flow with a big height difference (low head) and it can do this without any negative impact on the local environment. It has also proven to be highly resilient in extreme weather such as tropical storms.

*Turbulent* are building these micro-hydropower turbines around the world in Taiwan, the Philippines, Suriname, Portugal, France, Estonia, and Chile.

There is only one issue with the Turbulent Whirlpool Turbine - it only works where water is free-flowing. Therefore, areas where the flow might be intermittent or where the river could freeze would not be a good fit.

*Turbulent* delivers an innovative approach to hydropower, which tackles all the problems associated with classical electrical power generation: no big infrastructure works, no ecological damage, no huge initial investments, no social disruption, no expensive transmission lines, no generation far

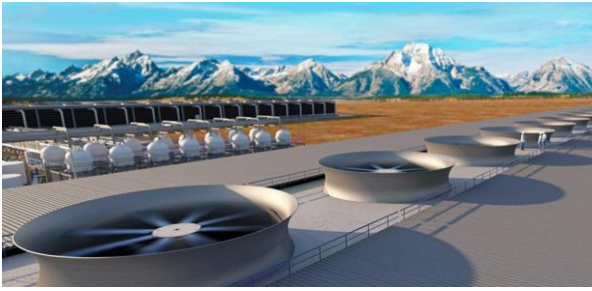
from the consumer, no CO2 emissions.

Turbulent micro-hydropower plants successfully address all the challenges other renewable energies are facing - energy security, low-capacity factors, big land areas, and last but not least the unpredictability caused by weather and day-night cycle. *Turbulent* works with nature, not against it.

The Turbulent design meets the United Nations main Sustainable Development Goal (*SDG*) – Affordable and Clean Energy – because the average LCOE (*levelized cost of electricity*) is 0.03 – 0.08 USD/kWh, which is currently among the lowest cost of energy in the world, and it is 100% green, does not need big infrastructure to be built, and includes no rare earth materials. In addition, all of its components can be recycled, making it truly clean and sustainable. And since it is decentralized, it helps to make it more affordable, by removing the need for high voltage transmission lines over hundreds of miles.



## Carbon Capture Must be Used as a Complement to Decarbonization



**“It seems that the world is set for a breakthrough moment in carbon capture technology. Research scientists just recently released a new study – there findings estimate that up to 97% of greenhouse gas emissions could be captured. One such facility is set to open in Scotland and another is planned for Iceland. In Scotland, we have a Direct Air Capture facility that will extract the equivalent carbon that would be absorbed by 40 million trees, each year. In Iceland, we have a carbon injection system that imitates the natural systems that stores carbon in rocks.”**

It seems that the world is set for a breakthrough moment in carbon capture technology. Research scientists just recently released a new study – there findings estimate that up to 97% of greenhouse gas emissions could be captured.

One such facility is set to open in Scotland (**pictured above**) – it will remove up to one million tons of carbon from the air each year. This direct air capture (**DAC**) facility will be built by a UK (**United Kingdom**) energy transition company, Storegga Geotechnologies, in collaboration with the Canadian carbon capture technology firm, Carbon Engineering.

The facility will be the largest in the world and it will extract the equivalent carbon (**one million tons**) that would be absorbed by 40 million trees over the course of a year. All of the absorbed carbon will then be deposited in storage sites under the sea.

The facility will feature large fans that pull air into a liquid-filled vat that binds the carbon dioxide. Once bound, the captured carbon is refined and transformed into calcium carbonate pellets.

These pellets, in turn, are heated and decompose into a CO<sub>2</sub> stream alongside calcium oxide. This stream is then cleaned of impurities, after which it is pumped into an undersea storage site.

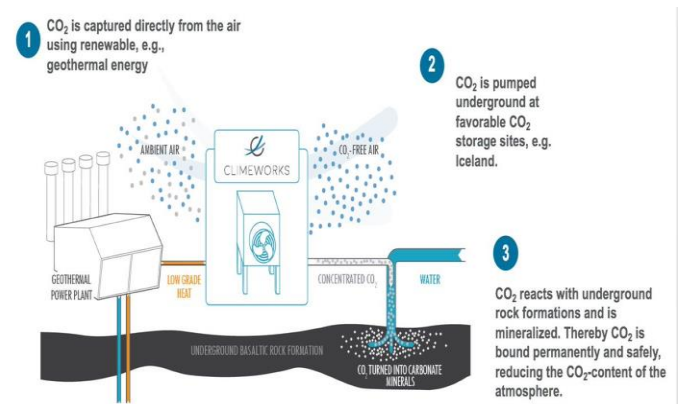
However, it should be noted that this technology cannot be expected to mitigate climate change but must be used to complement this strategy.

"The technologies for CO<sub>2</sub> capture are merely complementary to an overall decarbonization strategy – that is, for the reduction of CO<sub>2</sub> emissions – and cannot replace it," stressed Christian Bauer, a scientist at the Laboratory for Energy Systems Analysis and a co-author of the study, mentioned above.

This facility joins a host of other carbon capture technology innovations. As the Union of Concerned Scientists (**UCS**) points out on its website, "to reach net-zero emissions, we need to do more than just reduce our emissions: we need to actively remove

carbon dioxide from the atmosphere or offset its effects."

Another system for carbon capture is the Bill Gates-backed Carbfix (**process diagram pictured below**). Trees and vegetation are not the only way to capture carbon from the atmosphere. Vast quantities of carbon are naturally stored in rocks. Carbfix imitates and accelerates this natural process, where carbon dioxide is dissolved in water and interacts with reactive rock formations, such as basalts, to form stable minerals providing a permanent and safe storage of carbon. This technology carbon dioxide dissolved in water into the subsurface where it reacts with favorable rock formations to form solid carbonate minerals via the natural process that takes about 2 years. In order for Carbfix to work an area must be meet the following three requirements - favorable rocks, water, and a source of carbon dioxide.



# Nuclear Power – America's Largest Carbon-Free Energy Source !

**Fast Facts on NUCLEAR ENERGY**

Nuclear fuel is extremely energy dense.



U.S. DEPARTMENT OF ENERGY | Office of NUCLEAR ENERGY | LEARN MORE | [energy.gov/ne](http://energy.gov/ne) | Data source: U.S. Energy Information Administration

**“You can depend on nuclear - U.S. nuclear plants have maintained a median capacity factor of 90% for 20 years – achieving a 92.5% capacity factor in 2020. In comparison, geothermal 74.3%, natural gas @ 56.6%, hydro @ 41.5%, coal @ 40.2%, wind @ 35.4%, and solar @ 24.9%. Nuclear is cost competitive as well, the average cost to produce a megawatt-hour of electricity today is at \$30.41 - less.”**

Nuclear power plants operate more reliably than any other power generation facilities. A single pellet of nuclear fuel (**about the same size as a gummy bear**) weighs approximately 0.1 ounce or 6 grams, but it yields an equivalent amount of energy to that generated by a ton of coal, 120 gallons of oil, or 17,000 cubic feet of natural gas, making nuclear fuel much more efficient than any of these fuels.

Did you know that our U.S. nuclear plants have maintained a median capacity factor of 90% for 20 years – achieving a 92.5% capacity factor in 2020. In comparison, here are the capacity factors for the other energy-generating sources: geothermal 74.3%, natural gas @ 56.6%, hydro @ 41.5%, coal @ 40.2%, wind @ 35.4%, and solar @ 24.9%.

In 1990 the U.S. had 112 operating nuclear power plants - today only 93. Twelve of these plants were prematurely retired (**Crystal River 3, San Onofre 2&3, Kewaunee, Vermont Yankee, Fort Calhoun, Oyster Creek 1,**

**Pilgrim 1, Three Mile Island 1, Indian Point 2&3, and Duane Arnold**) - a loss of 9,383 megawatts, 42.7 million metric tons of carbon emissions avoided, more than 7,000 direct jobs, and enough electricity to power 8.5 million homes.

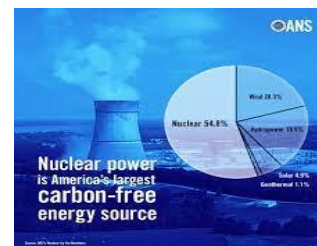
Currently, planned for the future are the following additional premature closures of seven more plants (**Byron 1&2 in 2021, Dresden 2&3 in 2021, Palisades in 2022, and Diablo Canyon 2&3 in 2024 and 2025**).

**Late Breaking News: The Illinois Senate just approved a massive clean energy omnibus package that includes \$694 million in taxpayer funds for Exelon that will keep its carbon-free nuclear power plants - Byron, Dresden, and Braidwood - operating.**

Our 93 nuclear power plants have a total net generation capacity of 97.7 GW (**gigawatts**) and are located in 28 states, across 55 sites. They are responsible for 54.8% of our carbon-free electricity but just think how much carbon-free electricity we would still have it all 112 plants were still operating. In comparison, here is the contribution of the other electric generation sources - wind 20.3%, hydro 18.9%, solar 4.9% and geothermal 1.1% of our carbon-free electricity. To meet the goal of 80% carbon-free electricity by 2030 or zero by 2035 and also have a reliable, dependable

supply of electricity will require more nuclear or a tremendous investment in energy storage. Based on a report from Bloomberg New Energy Finance’s current lithium-ion energy storage battery pricing stands at \$137 per kilowatt-hour (**kWh**) and it is expected to drop as low as \$100 per kWh by 2023. Either way – nuclear or battery energy storage - is going to be costly, so keeping the 93 nuclear plants we have operating is a must.

From a cost comparison, nuclear is very competitive, as well – the average cost to produce a megawatt-hour of electricity today is at \$30.41 – which is less than natural gas and fossil. Recently, the cost of natural gas has increased significantly. The U.S. market is short of natural gas and there is also a shortage globally. Prices in Europe and Asia are \$12 to \$15/therm (**100,000 Btu’s**), and here in the U.S. we are seeing prices above \$4.00/therm - well above prices over the past several years, but before “fracking” took off, from 2000-2008, you might remember that U.S. natural gas prices were averaging over \$6.00/therm.





**Did You Know?**



**“That Anna Biela’s grandfather was involved in the Manhattan Project? She comes from a strong nuclear background – not only her grandfather but also her father, he worked as an engineer, and contributed to the design of a nuclear power plant. Anna’s interest in nuclear science began in grade school and she followed it through to Purdue University - earning a nuclear engineering degree – just like her father and grandfather.”**



**SRP to expand Coolidge Generating Station to 28 gas-fired turbines – total capacity 1,395 MW’s**

That the **Salt River Project (SRP)**, Arizona’s second-largest public utility has approved a plan **to expand their natural gas-fired Coolidge Generating Station** (pictured left)? They will add an **additional 16 natural gas-fired turbines (GE’s LM6000 aero-derivative turbines)** at a cost of ~\$953 million. The station currently has 12 natural gas-fired turbines and with this addition the station will have a capacity of 1,395 megawatts (MW’s). SRP still intends to meet its goal of reducing their carbon intensity by more than 65% by 2025 and by 90% in 2050, from their 2005 levels. They also have plans to add 2 gigawatts (GW’s) of solar power generation by 2025.



**Rolls-Royce all-electric plane - propelled by a 400 kW (500 hp) electric drivetrain and battery pack.**

That **Rolls-Royce may have created the fastest all-electric plane in the world?** That just over one year ago, **Rolls-Royce joined the UN’s “Race to Zero”, and partnered with YASA** (electric motor and controller manufacturer) **and Electroflight (aviation startup)** to set up the ACCEL program (Accelerating the Electrification of Flight). They just completed the maiden flight of their **all-electric plane – propelled by a 400 kW (500 hp) electric drivetrain with the most energy-dense battery pack ever assembled for an aircraft.** The aviation industry accounts for 2.8% of all carbon emissions, with 62% of these emissions coming from high-income countries and this achievement is a major milestone for the Urban Air Mobility market.



**California Energy Commission allows 5 natural gas-fired power units to help CA with its electricity shortages. Yet, regulators are still moving to retire Diablo Canyon.**

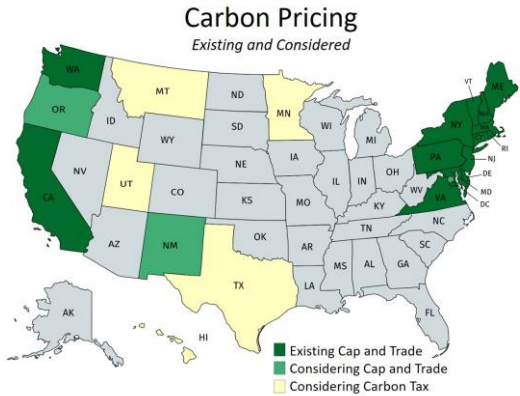
That the **California Energy Commission (CEC) acting in accordance with Governor Gavin Newsome’s “state of emergency declaration”** has approved the licenses for **five natural gas-fired power units to help the state cope with its continued electricity shortages.** The California’s Department of Water Resources is procuring these natural gas-fired turbine generators, each with a generation capacity of 30 MW’s (megawatts), to install at existing power plants. However, state regulators expressed concerns about adding new thermal power generation, saying it was at odds with California’s goals to decarbonize its power supply. The state in recent years has retired natural gas-fired power plants as part of their plan to have a carbon-neutral grid by 2045. **In spite of these developments, regulators are still moving to retire two nuclear plants, with a combined capacity of 2,256 MW’s, at Diablo Canyon Nuclear Station in 2024 and 2025.**



**Mayor and Rise Light & Power CEO review future plans**

That **Rise Light & Power has acquired a retired New Jersey coal-fired power plant - Werner Generating Station - located in South Amboy, NJ, to build their Outerbridge Renewable Connector?** This location was desirable as it will allow the receipt of offshore wind power without the controversy of disturbing beaches and communities. The connector will receive electricity produced from the NJ offshore wind farm via underground cables to the Deans Substation for distribution onto the grid.

# Pennsylvania Regulators Approve 3 to 2 - Carbon Pricing Plan



**Note:** New Mexico is also considering a carbon tax. States which currently have cap and trade and are also considering carbon tax include: Connecticut, Maryland, New Hampshire, Massachusetts, New York, Rhode Island, and Vermont.

**“Good News for nuclear, solar, and wind generators - Pennsylvania will be joining California, Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont, and Virginia as a member of RGGI (Regional Greenhouse Gas Initiative) – they will be adopting a carbon pricing policy that sets a price and declining limits on carbon dioxide emission from power plants. In theory, making nuclear, solar, and wind more cost competitive, within electricity markets.”**

Looks like Pennsylvania will be joining California, Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont, and Virginia in the greenhouse gas consortium – RGGI (Regional Greenhouse Gas Initiative) - to adopt a carbon pricing policy that sets a price and declining limits on carbon dioxide emission from power plants.

The plan won a 3-2 party-line vote from Pennsylvania’s Independent Regulatory Review Commission, a five-member panel of gubernatorial and legislative appointees. The commission voted after almost six hours of testimony and nearly two years of Governor Tom Wolf’s administration working on the regulation and shepherding it through the long regulatory process. This action makes Pennsylvania the first major fossil fuel state to adopt carbon pricing policy.

Governor Wolf’s administration had initially sought support for the plan with the legislature, but when they failed to get traction there, they pursued the matter through regulation.

Since Pennsylvania is the nation’s #2 natural gas state and the #3 coal-mining state - opponents were numerous - including coal and natural gas interest that will have to pay more to operate, industrial and business groups that fear the result will be higher electricity bills, and labor unions - whose workers maintain the power plants, build gas pipelines and mine coal - that fear it will result in a loss of jobs.

One of the chief arguments against the plan was that it would result in fossil fuel generation being more expensive - sending power generation to neighboring states that have no emissions caps and devastate Pennsylvania’s local coal-mining jobs and economies.

Pennsylvania, a heavily populated and fossil fuel-rich state, has long been one of the nation’s biggest polluters and power producers and the jury is still out on whether or not a carbon-pricing program will significantly reduce greenhouse gas emissions. Its effectiveness will depend on how the emissions caps are set and how the money from the emissions

credits are spent - proponents expect the money to be spent on clean energy and energy efficiency programs.

The regulation will most likely take several months to be officially published and become final, but the Governor wants it to take effect in 2022. However, legal challenges to the plan are expected and even the PA legislature may try to muster veto-proof majorities to block its passage.

In theory, its passage will make electrical generation from solar, wind, and nuclear more cost competitive in electricity markets. In fact, in some cases, the plan received support from backers of higher-efficiency natural gas plants and labor unions involved in renewable energy projects. It also motivated the Ohio-based owner of nuclear-powered Beaver Valley Power Station to put off plans to close the plant.

Coal advocates say the plan will prematurely shut down coal mines and coal-fired power plants in Pennsylvania. Opponents of the plan say that people are “terrified” of what carbon-pricing will do their community and have called it an assault on a particular industry just to benefit other industries – government once again deciding on what companies will be allowed to flourish.



# GTTSi - "Best of 2021" & "Hall of Fame" Awards

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Global Technical Training Services, Incorporated (GTTSi) has done it again. They received the "Best of Seneca 2021" Award for five consecutive years and also qualified for the Seneca Business "Hall of Fame" Award for the 2<sup>nd</sup> straight year.

Each year, the Seneca Award Program identifies companies that have achieved exceptional marketing success in their local community and business category. These are local companies that enhance the positive image of small business through service to their customers and our community. These exceptional companies help make the Seneca area a great place to live, work, and play.

Various sources of information were gathered and analyzed to choose the winners in each category. The 2021 Seneca Award Program focuses on quality, not quantity. Winners are determined based on the information gathered both internally by the Seneca Award Program and data provided by third parties.

The Seneca Award Program is an annual awards program honoring the achievements and accomplishments of local businesses throughout the Seneca area. Recognition is given to those companies that have shown the ability to use their best practices and implemented programs to generate competitive advantages and long-term value.

The Seneca Award Program was established to recognize the best of local businesses in our community. Our organization works exclusively with local business owners, trade groups, professional associations and other business advertising and marketing groups. Our mission is to recognize the small business community's contributions to the U.S. economy.

GTTSi

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