



Global Technical Training Services, Inc. Newsletter



The State of the Industry

Sid Crouch, GTTSi Chief Technical Consultant

Did you know that a ChatGPT query requires 10 times the electricity of a typical Google search query? That's why analysts see power demand growing 160% by 2030 as AI demand increases. High-tech companies are acting on this by making plans to bring on additional electrical resources and have chosen nuclear. Some will use existing nuclear plants, and some will go with advanced nuclear technology. In March 2024, Amazon Web Services worked out an agreement to purchase the Cumulus Data Center Campus from Talen Energy and use the Susquehanna Nuclear Plant to provide their energy needs – up to 300 MW. In September, Microsoft struck a 20-year power purchase agreement deal with Constellation that could result in the restart of Three Mile Island (TMI) Unit 1. If approved by regulators, Microsoft will buy all power generated by TMI – up to 835 MW. Google and Amazon are pursuing the latest advanced nuclear technology - SMR's (*small modular reactors*). Google is working with Kairos Power for a fleet of FHR (*fluoride salt cooled high-temperature reactor*) SMRs to provide ~500 MW by 2035, while Amazon is working with X-energy to provide 5 GW with their HTGR (*high-temperature gas cooled reactor*) SMR by 2039. In addition, Amazon has signed a memorandum of understanding with Dominion Energy to explore development of a 300 MW facility near their North Anna Nuclear Plant. According to the DOE, nuclear has the highest economic impact of any power generation, creating high-paying, long-term jobs. They estimate reaching 200 GW of advanced nuclear capacity in the US by 2050 will require an additional 375,000 workers.

I welcome your comments or questions - sid.crouch@gttsi.com

HIGHLIGHTS

SOLAR COMPANIES ARE GOING BANKRUPT

GTTSi TEAM MEMBER : LARRY GENTRY

COAL CONTINUES TO DOMINATE IN INDIA

CONSTELLATION ENERGY A MAJOR PLAYER IN THE NUCLEAR RENAISSANCE

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SOLAR COMPANIES ARE GOING BANKRUPT: UNVEILING THE CHALLENGES IN A COMPETITIVE INDUSTRY

Despite the exponential growth of the solar industry in the last decade, the past couple of years have shown the intense challenges facing the industry...so much so that according to SolarInsure.com, these factors contributed to over 100 solar company bankruptcies in the last two years, including three major players: SunPower, ADT Solar, and Titan Solar Power.

One of the reasons for the wave of bankruptcies has been attributed to the increases in interest rates by the Federal Reserve over the past several years to combat inflation. The higher interest rates made borrowing more expensive, diminishing the allure of solar energy being a cost-saving investment and thereby discouraging consumers from investing in solar energy systems. This drop in consumer demand hit solar contractors hard, as their business models relied heavily on a steady flow of new installations.

The business has also been affected by other interrelated factors:

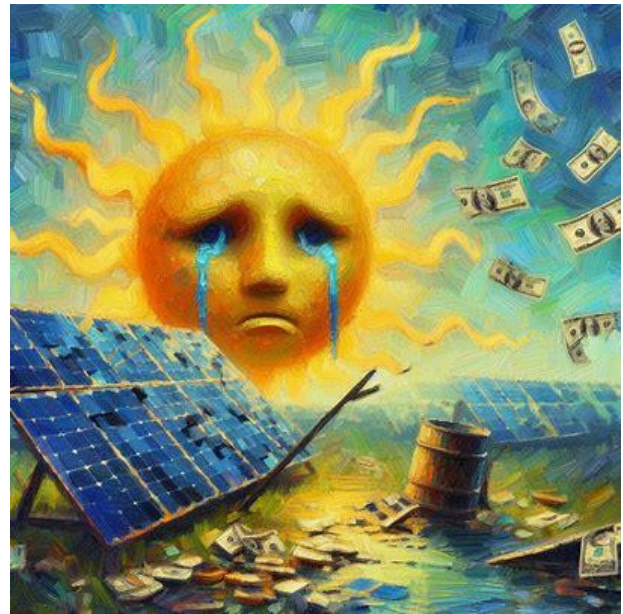
1. Market Oversupply and Falling Prices

Oversupply: Overproduction of solar panels, especially by manufacturers in countries like China, has created a market glut. This led to plummeting prices for solar panels, squeezing profit margins for companies.

Price Pressure: Falling prices made it difficult for smaller or less efficient companies to compete, particularly those that couldn't achieve economies of scale.

2. Intense Competition

The solar industry has seen fierce competition both from established players and new entrants.



This competition has driven down prices further, leaving smaller or less competitive companies unable to sustain operations.

3. Inconsistent Government Policies and Subsidies

Policy Changes: Solar companies often rely heavily on government incentives and subsidies to make projects viable. Sudden changes or reductions in these programs can destabilize companies.

Trade Policies: Tariffs on imported solar panels, particularly in the U.S., disrupted supply chains and increased costs for some firms.

4. Capital-Intensive Industry

Solar projects require significant upfront investment. Companies that fail to secure long-term financing or mismanage capital can quickly run into financial trouble. *(continued)*

Smaller companies often face difficulties attracting investors, particularly in volatile market conditions.

5. Technological Advancements

Rapid innovation in solar technology can render existing products or manufacturing processes obsolete. Companies unable to adapt or invest in new technology may lose market relevance.

6. Economic Downturns

Global economic slowdowns, such as the 2008 financial crisis or disruptions caused by events like the COVID-19 pandemic, have led to reduced investment in renewable energy projects.

Reduced consumer spending power can also affect residential solar adoption rates.

7. High Customer Acquisition Costs

For residential solar companies, acquiring customers can be costly. Companies that spend heavily on sales and marketing without achieving sufficient installation volume may struggle to maintain profitability.


8. Debt Burdens

Many companies have taken on significant debt to fund expansion. If revenue doesn't grow as anticipated or market conditions deteriorate, these debt levels can become unsustainable.

9. Inadequate Business Models

Some companies operated on unsustainable business models, such as offering long-term leases or power purchase agreements without adequately hedging risks.

Others expanded too quickly or into markets where demand did not meet expectations.

Despite the challenges, the solar industry remains a dynamic and growing sector, essential to the energy mix. For now, it is highly competitive and dependent on external factors like government policy, market conditions, and technological advancements, but a key part of the path to lower emissions. As Elon Musk wrote on Twitter last year, "...do the math on solar on Earth and you soon figure out that a relatively small corner of Texas or New Mexico can easily serve all US electricity..." 

Sun Power <i>multiple states</i>	Kuubix Energy <i>California</i>	Vision Solar <i>multiple states</i>
Pink Energy <i>multiple states</i>	Erus Energy <i>Arizona</i>	Sunworks, Inc. <i>California</i>
MC Solar / Modern Concepts <i>Florida</i>	Suntuity Renewables <i>NJ, CA, TX</i>	Kayo Energy <i>AZ, CA, FL, & TX</i>
Harness Power <i>California</i>	Infinity Energy <i>California</i>	iSun <i>Connecticut</i>
American Solar Advantage <i>California</i>	ADT Solar <i>multiple states</i>	Titan Solar Power <i>multiple states</i>
NM Solar Group <i>New Mexico</i>	Solcius <i>CA, NM, AZ, & NV</i>	Lumio Solar <i>Utah</i>

A Sample of the 100 Solar Companies that went Out of Business in 2023 & 2024

GTTSi TEAM MEMBER HIGHLIGHT: LARRY GENTRY

Meet GTTSi team member Larry Gentry. Mr. Larry Gentry recently received his anniversary award for 10-Years of exemplary service at GTTSi. Larry is currently on assignment at Davis-Besse Nuclear Station in Oak Harbor, Ohio. The Davis-Besse Nuclear Power Station is operated by Vistra Corp and has a single PWR reactor. The plant has been in commercial operation since July 31, 1978.

Larry joined GTTSi after 20 years of experience with Duke Energy as a Reactor Operator and as a Certified Senior Reactor Operator in the Initial License Training Program at Oconee Nuclear Station. He graduated Cum Laude from Indiana Wesleyan University.

In his quest for excellence in training, he developed techniques emphasizing team skills, human performance, and technical accuracy. The results are impressive – 100% pass rates for over 10 Initial License Training Classes at Oconee and Davis-Besse. He has also provided training within the Licensed Operator Requalification Training Program at Davis-Besse.



Pictured is Larry and his 13-year-old granddaughter, who presented him with a 10-Year Anniversary clock on behalf of GTTSi. When he received his award, she said, "Thank you for all you do. We appreciate you so much and love you. We cherish you deeply; it's clear your company does as well" ❤️



GTTSi Consultant Larry Gentry (burgundy shirt) providing instruction on the Davis-Besse Simulator with an Initial License Operator Training Class.

Most recently, Larry achieved Certification from INPO (**Institute of Nuclear Plant Operations**) as a Regulatory Exam Author and put this to use by helping with the development of the Licensed Operator Requalification Annual Exam at Davis-Besse.

GTTSi is proud to be a part of the important work done at Davis Besse, and our participation is made possible by working with experts like Larry Gentry. He is just one of the many industry experts at GTTSi - check us out at www.gttsi.com or on LinkedIn at www.linkedin.com/company/gttsi. 🌐

COAL-FIRED POWER CONTINUES TO DOMINATE IN INDIA

Between 2010 and 2019, almost 300 coal power plants in the United States, representing 40% of the U.S. coal generating capacity, closed down. Compare that to India, who along with China, account for nearly all of the world's new coal-fired generation.

While India is actively promoting renewable energy sources and has expressed plans to reach 500 GW (**gigawatts**) of renewable energy capacity (**wind & solar**) by 2030, they are not backing down from their coal-fired generation. Today, India has over 300 coal-fired power plants, producing ~215 GW, and they plan to expand this by 90 GW by 2032. In fact, over the past two years, India has added 4 GW of coal-fired power generation capacity each year.

India's prime concern is economic growth to alleviate poverty. Therefore, CO₂ emission reduction is not a high priority, and the government declined to set targets ahead of the 21st Conference of the Parties on Climate Change held in Paris in 2015. The environment minister in September 2014 said it would be 30 years before India would be likely to see a decrease in CO₂ emissions.


In November 2022, India's Ministry of Environment, Forest, and Climate Change issued a revised long-term low-carbon development strategy, which included plans to triple nuclear power capacity by 2032. The country has 22 operating nuclear power plants with 7 plants under construction – 5 under construction are the Russian VVER design (**pressurized water reactor design**) and the other two are of the PHWR (**pressurized heavy water reactor**) design.

Most recently, the India government issued a mandate for power plants using imported coal



to operate at full capacity for at least the next two months, extending an emergency clause for power output first issued this past summer. The reason for this is based on the cost of imported coal – it is less than their domestic coal cost and they get most of their imported coal from Indonesia.

Although India imports around 20% of its coal - only 8.5% is used for coal-fired generation. India is the second-largest consumer of coal worldwide, trailing only China. Globally the use of coal is at an all-time high and expected to reach a record 8.77 billion tons this year. The IEA (**International Energy Agency**) expects the use of coal will remain at record levels through 2027.

India's government is working to increase their domestic production of coal, as demand is growing parallel with their economy. Coal Additional Secretary Rupinder Brar in a recent interview with news agency Press Trust of India said that *"the demand [for coal] is extremely important. And we do see demand growing in India considering the growing size of the economy ... therefore, coal will also definitely be required, and we are conscious of that and are working towards that."* 

CONSTELLATION ENERGY IS A MAJOR PLAYER IN THE NUCLEAR RENAISSANCE

To use the common idiom, nuclear power has a new lease on life, as evidenced by several high-tech corporations and the federal government including nuclear energy in their future plans.

Constellation Energy seems to be a major player in this turnabout given the company has been contracted to provide electricity for several new data centers and some of federal government buildings. What will be the source of their new power? None other than nuclear power.

Constellation recently made news when they announced plans to restart the dormant Three Mile Island Unit 1 (TMI-1) reactor and rebranding the facility as the Crane Clean Energy Center, correspondingly sparking renewed debate about nuclear energy's role in the clean energy transition. The Pennsylvania-based facility has been inactive since the 1979 partial meltdown, which remains one of the most significant events in U.S. nuclear history. The company's announcement came with the news that they were also entering a 20-year PPA (**power purchase agreement**) with Microsoft to meet energy demand for Microsoft data centers. In combination with the Crane Clean Energy Center restart, Constellation Energy and their partners plan to add ~1,100 MWe (**megawatts electric**) of clean, reliable electricity to their grid by 2028.


The US government has followed suit. The GSA (**General Services Administration**), the agency responsible for keeping the lights on in U.S. federal buildings, has signed contracts, valued at greater than \$1 billion, with



Image Credit: Constellationenergy.com

Constellation to supply their energy needs for 10 years to power 13 federal agencies and implement energy efficiency measures at GSA-owned facilities in the National Capital Region.

Starting in 2025, Constellation will supply over 1 million megawatt-hours of power annually to the GSA via the 10-year, \$840 million contract. This is in parallel to their improving energy efficiency at five National Capital Region facilities - Elijah Barrett Prettyman U.S. Courthouse, William B. Bryant Annex, Orville Wright Federal Building, Wilbur Wright Federal Building, and the Harvey W. Wiley Federal Building, through their Energy Savings Performance Contract valued at \$172 million.

Constellation, the largest nuclear operator in the United States, achieved capacity factors of 94.4% in 2023. Paired with the company's hydro, wind, and solar facilities, Constellation has enough generation capacity to power the equivalent of 16 million homes, providing about 10% of the nation's clean energy. 

DID YOU KNOW?



*Vistra Energy's Moss Landing Battery Energy Storage Facility
Photo Credit: vistracorp.com*

According to recent reports, there have been over 30 recorded serious thermal runaways and fires in Battery Energy Storage Systems (BESS) globally, with some sources indicating a total of 141 BESS incidents worldwide, including both large-scale and residential units. A definitive count of exact fire occurrences is difficult to find due to varying reporting standards across regions. While the Electrical Power Research Institute (EPRI) maintains a database of BESS failures, the exact number of fires may be underreported due to inconsistent reporting practices. The latest incident occurred at Vistra Energy's Moss Landing BESS site January 17 where smoldering persisted at least 5 days after the first reports of fire.

PacifiCorp, the electric power company based in Portland, Oregon, is extending the life for two of their major Utah coal-powered power plants: Hunter (**1577 MWe**) and Huntington (**1037 MWe**). While originally scheduled for closure in 2042 and 2036, respectively, the 2025 Integrated Resource Plan has their closure after 2045. The reason is based on changes that have recently happened at both the state and federal levels such as the Utah legislature approving bills that prevented the premature retirement of coal units and prioritized the production of dispatchable resources, which most often come from fossil fuels.



*Hunter Coal-Fired Power Plant (1577 MWe)
Photo Credit: Spenser Heaps for Utah News Dispatch*



*Bisha Project Battery Energy Storage Containers
Photo Credit: PowerChina*

Saudi Arabia has officially connected the Bisha Battery Energy Storage Facility (**BESS**) to their grid. This 500 MW/2000 MWh (**megawatt hour**) BESS, designed and supplied by China's BYD, features 122 prefabricated storage units. Each unit integrates a 6 MW power conversion system (**PCS**) alongside four lithium iron phosphate (**LFP**) battery modules, each with a capacity of 5.365 MWh. The project was executed by a consortium between State Grid Corporation of China and Riyadh-based developer Alfanar Projects. This was one of four large-scale battery storage initiatives of 500 MW / 2,000 MWh.

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GTTSi has been providing professional services to the energy and nuclear industry since 1980. We are an MWBE (*minority woman-owned business enterprise*) and have served over 80% of the US commercial nuclear facilities, 8 Federal agencies and prime contractors, and one foreign government. If you are qualified and interested in any of the job opportunities listed below, please contact us at ginfo@gttsi.com or call **864.882.3111**.



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