The wind farm, dubbed *Maple Harvest*, will generate about 150 megawatts when operational, enough to power "*about* 58,000 homes" according to the developer. The New York State Energy Research and Development Authority (NYSERDA) published a resource document for developers of wind projects titled, *New York Wind Energy Guide for Local Decision Makers: Wind Energy Basics.* In this publication, NYSERDA notes the following fact: "Because wind is a variable resource with changing speeds, power production levels can vary… Capacity factors of wind plants may vary from 20% to 50% depending on the turbine type, location, and wind regime."

Wind turbines have a nameplate, or rated capacity, the amount of electricity the turbine could produce if it ran 100% of the time at optimal wind speeds. If the 25 turbines at the *Maple Harvest* wind farm operate at the best possible capacity factor of 50%, they will provide only 75 MW of electricity generation, enough to power about 29,000 homes. Not quite what the developer is promoting. In addition to over inflated power generation, this wind farm installation has other factors to consider.

Another factor is the size and weight of the wind turbine base. The GE Vernova 6 MW wind turbine has three 264 foot long carbon fiber reinforced blades, with a rotor diameter of 538 feet and a "hub height" of 545 feet from the ground to the middle of the rotor. A wind turbine of this height and blade size would require large concrete foundations up to 60 feet thick, 250 feet or more in diameter, containing as much as 900 cubic yards of concrete.

Landowners complain that the 600-foot high wind turbines will be located literally in their back yards, towering over their homes. The reasons being cited for the protest are mudslides and water. Tully Valley was the site of a large mudslide in 1993, which destroyed several homes and covered a 1,500 foot section of Tully Farms Road with mud up to 15 feet deep. Three homes were destroyed and three people had to be rescued by helicopter, but fortunately there were no serious injuries or fatalities. It took several months to clear and repair the road.

That year's record snowfall, subsequent snow melt and rainy spring weather plus the unique geological conditions led to the event, according to William Kappel, a hydrologist with the U.S. Geological Survey, who examined the scene. A layer of clay sits below soil and gravel on the mountain's slope, and when the soil became saturated with water, the extra weight caused the clay to squirt out and flow down the mountain in a matter of seconds. A forty-foot deep crater was left in the side of the mountain at the top of the mudslide. Homeowners are concerned that four giant wind turbines which will be built on top of the same mountain, a known landslide zone, and other mountains in the surrounding areas. "… add rain and snow-packed runoff and vibration and that aggravates and increases the probability of landslides," one neighbor said.
A 900 cubic yard reinforced concrete base would weigh more than 40 tons, constructed on top of a known landslide zone.

The last factor to consider ironically, is the canceling effect of zero emission "green energy" produced by the Maple Harvest wind farm against the concrete used in the bases of the 25 wind turbines. Cement in concrete continues to "cure" over its lifetime, generating a lot of CO_2 , exactly what renewable energy sources are promoted as preventing! In fact, cement is the source of about 8% of the world's CO_2 emissions according to a 2018 study.

Even as the developer is signing leases with landowners for use of their properties for the turbines and transmission lines, other residents and town leaders are mobilizing to fight the project. But they are fighting a battle they can never win thanks to Governor Hochul's RAPID Act. As Marguerite Wells, the executive director of the Alliance for Clean Energy noted, "There has to be a reason other than 'we don't like it' and 'can't you put it somewhere else.'" Governor Hochul's executive actions have severely impacted the rights of landowners and communities in favor of pursuing unachievable climate goals. Twenty-three contracts were awarded in December 2024 alone, for large-scale renewable energy projects across New York state, including four in Central New York (Cayuga and Oswego counties) and five in the Finger Lakes region.

The final question asked is: What will happen at the end of the project's lifespan? This is addressed on the Maple Harvest Wind Farm fact page of the developers website.

What will happen at the end of the project's lifespan?

Typically, wind turbines have a lifespan of 25-30 years before they must be repowered or decommissioned; both of which are processes that the project owner is responsible for completing.

Repowering the turbines means replacing major turbine equipment to prolong the facility's operations. The scope of these replacements could be as minor as individual blades or gearboxes, or as extensive as replacing the entire turbine and foundation. Decommissioning the project includes dismantling and removal of facility components to 3-4' below grade and restoring the surrounding land. A decommissioning plan will be included in the project's permit application. For more information on this process, the Office of Energy Efficiency & Renewable Energy has a helpful Wind Energy End of Service Guide.

The project will provide financial assurance to cover the cost, plus contingency, of decommissioning the project. The value of the assurance will be reviewed regularly throughout the project's operations to ensure it's sufficient as market conditions change.

It is not clear at this time which approach the developer will take 25 or 30 years from now; repowering or decommissioning. If the former, that 75 MW generation capacity will be reduced as turbines are refurbished. If the latter, New York states electrical grid will lose a source of renewable energy just as electrification of New York has theoretically been completed, adding to the potential instability of the electric grid.

Addenda #45 – May 2024, Update May 2025
Re: Ch. 9, Progressive States Climate Policies
SDG 7 - Ensure access to affordable, reliable, sustainable and modern energy for all

National Grid seeks whopping double-digit rate hikes for electricity and gas
Syracuse.com; 5/28/2024

National Grid today asked state regulators for king-size rate increases that would boost Upstate energy bills for households by 15% for electricity and 20% for natural gas. The proposal would add $440 a year to the bill for a typical household using both electricity and gas.

The requested increases, which would take effect next year if the Public Service Commission approves them, far exceed anything the utility has asked for in recent decades.

But National Grid's proposal today follows a similar pattern of unprecedented, double-digit rate hikes sought by other New York utilities in recent months, including big rate hikes sought by National Grid's downstate natural gas businesses.

National Grid provides electricity to 1.7 million customers and natural gas to 640,000 customers in upstate New York. In order to meet the requirements for CO_2 emissions reductions, 70% renewable energy by the year 2030 (70x30 Plan) and the overall zero carbon emissions by 2040 plan mandated by New York state, National Grid (and all other NY utility companies) began a systematic upgrade of its distribution and transmission system in 2021. Phase One of the LT&D (Local Transmission and Distribution) Plan would create a system to carry the increased electrical loads to points of distribution to local substations. National Grid identified 18 projects that had to be completed by 2030, to carry the increased loads required withing its service areas. The combined costs of these projects were estimated at $1.422 billion in 2020, but the actual cost for completion has risen substantially following the pandemic supply chain disruption and ensuing increases in materials and labor.
Source: Initial Report on the New York Power Grid Study, January 19, 2021

In May 2024, National Grid requested a 15% rate increase for residential electricity billing and a 20% rate increase for residential natural gas billing. The proposal was estimated to add $440 per year to the bill of a typical household using both electricity and gas. There was immediate push back from the public, especially since 16% of Upstate residential customers and 7% of commercial customers were more than 60 days behind in paying their utility bills. And there was the usual election year noise from politicians, "vilifying" the utility, claiming corporate greed and calling the rate increase "outrageous and unfair" to their constituents.

Regulators approved the 3-year phased in 20% rate increase in April 2025, starting in September. By the third year of the deal, an average residential customer would pay $50 a month more than today for electricity and gas, or an additional $600 a year. The deal still has to be approved by the Public Service Commission later this summer.
National Grid deal would hike NY electric and gas rates by 20% over 3 years
syracuse.com, April 29, 2025

Addenda #80 – May 2025
Re: Ch. 8, 050 Net-Zero Emissions; Impossible!
SDG 7 - Ensure access to affordable, reliable, sustainable and modern energy for all

Net zero blamed for Europe's biggest power cut
Experts say a reliance on solar and wind power left Spain and Portugal vulnerable
The Telegraph; April 28, 2025

A reliance on net zero energy left Spain and Portugal vulnerable to the mass blackouts engulfing the region, experts said on Monday night.

In what is believed to be Europe's largest power cut, tens of millions of people were left without electricity, while flights were grounded, trains halted and whole cities left without power, internet access or other vital services.

The cause of the initial fault in the region's electricity grid is still being investigated, and the EU has insisted that there were no indications that it was a cyber attack.

However, energy experts have blamed a heavy reliance on solar and wind farms in Spain for leaving the region's power grid vulnerable to such a crisis.

Spain declares state of emergency after nationwide power blackout
Reuters; April 28, 2025

Spain's Interior Ministry on Monday declared a state of emergency after a nationwide power blackout hit most of the Iberian Peninsula.

The ministry added the emergency status will be applied in the regions that request it. So far, Madrid, Andalusia and Extremadura have asked for the central government to take over public order and other functions.

At 12:55 PM, Monday April 28, a massive power blackout hit Spain, Portugal and part of southern France, leaving millions of people and businesses without electric power. People lined up at shops, seeking to make cash purchases of emergency supplies like flashlights, generators and batteries. The power loss stopped subways (metros) and trains from operating. Airports closed, mobile phone networks were affected, and card payment machines were down. Elevators in buildings and apartments stopped working, traffic lights did not work, causing massive traffic jams and collisions. Authorities urged residents to limit activities and stay off the roads. Businesses had no electricity and were forced to close. Utilities were forced to activate emergency measures to restore electricity to some parts of Spain, including switching hydroelectric plants across the country back on and importing (reliable) power from neighboring countries unaffected by the blackout.

It wasn't until 11:15 PM on Tuesday, almost 23 hours after the grid went down, that officials declared it was back to normal. There have been various theories on what caused the outage, including a rare phenomenon called "induced atmosphere vibration," which caused "anomalous oscillations" in the high-voltage lines of Spain's energy grid. This claim was later refuted by utility officials.

What is known, is that before the sudden outage, the grid was being powered by 61% solar, 12% wind and 12% nuclear generation. At 12:33 PM, 15 gigawatts of electricity, equal to 60% of Spain's power generation, suddenly disappeared from the grid. In the Telegraph article, several industry experts talked about the fragility of the electrical grid in general and noted that if the grid is "less stable", electrical frequency can change quickly, leading to "cascading failures." It seems pretty logical to me that this is exactly what happened in Spain on that Monday morning.

Ironically, the system failure and blackout came just six days after Red Eléctrica boasted of finally hitting its "first weekday of 100% renewable power" on its national grid. The fact that renewable energy completely powered the grid for only *several minutes* didn't matter. Note: Red Eléctrica is the system operator for Spain's electrical grid. According to Red Eléctrica's website, "true renewable" sources (wind and solar) produced 43% of all electricity generated in Spain in 2024. Hydro produced another 10%, so 53% of all electricity produced was from unreliable and/or intermittent "low-carbon sources." Nuclear, biofuels and other renewable sources accounted for an additional 24% of all electricity generated, so Red Eléctrica proudly proclaimed *"77% of Spain's electricity was generated from low-carbon sources in 2024, well above the global average of 41%."*

Spain's goal is to achieve 81% renewable energy by 2030 and 100% by 2050. In order to do this, they must add an additional 157.286 TWh or 157,286 GWh (Gigawatt hours) of renewable generation sources over the next six years. Red Eléctrica proudly proclaimed on their website that *"The growth in installed capacity from renewable energy generation, along with favourable weather conditions in 2024, led to a 35.5% increase in hydroelectric electricity generation compared to 2023. Additionally, solar photovoltaic energy saw an 18.9% increase, setting a new record for the sixth consecutive year."*

My observations from this statement are as follows.
First, they used the term "favourable weather conditions" meaning the weather is not always favorable for maximum generation from solar and wind. Any increase (or decrease) in renewable generation then, is not guaranteed, *reliable* generation promoted by U.N. SDG 7.

Second, was the boast that hydroelectric generation increased by 35.5% year-over-year. There are more than 800 hydroelectric plants of different sizes in Spain, providing 34,912 GWh (13.3%) of electricity generation in 2024. But this was the most hydroelectric power produced in the last six years, due to record rainfall that year. Red Eléctrica's electricity system report for 2024 states, *"Hydro generation in Spain is highly variable, reaching over 40,000 GWh in wet years, while this volume is reduced by more than half in dry years."* In 2022, generation from Spain's hydroelectric sources was 17,911 GWh, just 51% of what was generated in 2024. And there is little ability to add additional hydroelectric generation in the country. Hydroelectric generation then, is not *guaranteed*, *reliable* generation promoted by U.N. SDG 7.

Third, wind power provided 23.2% of all electricity generation in 2024 from 1,345 wind farms around the country. But wind generation is also subject to *favourable weather conditions.* A 2020 study published by Science Direct titled, *The annual cycle and intra-annual variability of the global wind power distribution estimated by the system of wind speed distributions* stated, "The intermittent nature of wind energy is a major challenge transforming the energy sector from fossil fuels to renewables. Depending on the location, results from previous studies show that the availability of wind energy can strongly vary over a year." Wind generation then, is not *guaranteed*, *reliable* generation promoted by U.N. SDG 7.

Spain is facing a public backlash over the proliferation of wind farms, their size and indirect impacts on issues like recycling and reclamation. Local residents and environmental groups have filed hundreds of lawsuits, and a number of provinces have imposed moratoria on new wind projects. One third of Spain's wind turbines will have to be decommissioned and replaced within the next five years as they reach the end of their useful lifespan of 20-25 years. That results in around 7,500 wind turbines that will need to be removed from service, recycled or scrapped and then replaced at a cost of several billion euros. The remaining 15,000 wind turbines will have to be replaced at some later date, in a never ending cycle of build, use and replace.

Fourth, solar generation increased to 25% of total electricity generation in 2024. But in order to reach those renewable generation target goals, solar generation will have to increase dramatically over the next six years. In doing so, thousands of acres of forests, farms and woodlands will have to be converted to large-scale solar. While developers argue that their projects will reduce CO_2 emissions, they're cutting down trees which are an effective carbon removal tool in order to install solar farms. As with wind turbines, the "useful lifespan" of solar panels is between 25 and 30 years. Solar panels slowly degrade and produce less and less electricity over time and then have to be replaced, a never-ending cycle like turbines.

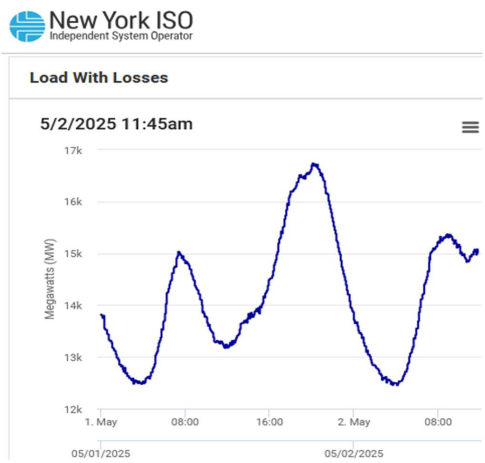
To summarize, unreliable and intermittent renewable electricity generation increased 11% in 2024, compared with 2023, generating 56% of all electricity produced. Reliable fossil fuel electricity generation decreased 24% in 2024, compared with 2023.

While the total *installed capacity* of renewables represents 64% of Spain's total generating capacity, renewable sources only generated 56% of all electricity produced in 2024. This proves that total installed capacity does not equal total actual generation.

The anticipated increase in renewable power generation and the decline in output from fossil fuels is expected to result in nearly 77% of Spain's electricity production being emissions-free in 2024. Although Spain already has the second largest *projected* capacity for stand-alone back up batteries at an advanced stage of development in the world, it will need much, much more to avoid a repeat of this incident in the future.

In Addenda #44 – April 2024, I detailed how electrical grids must always be in balance, and the amount of electricity consumed must be equal to the amount being produced. If too little electricity is fed into the grid to meet the demand, the frequency of the power supply will fall. A sudden change of as little as 1% above or below the standard 50 hertz of Spain's grid frequency, risks damaging equipment and infrastructure if it persists. The balancing authority, in this case Red Eléctrica, must continually call on power plants to come online to produce additional electricity as the demand increases and ask them to stop producing electricity as the demand decreases.
This process is easily achieved as natural gas, fuel oil and hydro plant turbines can ramp up and down quickly. Nuclear plant steam turbines can also ramp up power but must change power levels more slowly. Only fossil fuel powered plants can act quickly enough to bring the electrical grid into balance.

Solar and wind generation is dependent on the availability of sunlight and wind, which fluctuate during the day. (Ref: Addenda #74 – February 2025 [Part 1]) The Balancing Authority has no control over when and how much power is available from solar or wind farms. Any fluctuation must be corrected almost immediately, or generation sources automatically shut down, causing a blackout. This, is exactly what occurred in Spain on April 28. The sudden loss of power generation from one power plant led to "cascading failures", taking down one plant after another, and leaving Spain, Portugal and part of France in the dark.



This is the picture of electricity consumption in New York state on May 1st and 2nd, 2025.

Our temperatures are similar to those in Madrid, Spain, with temperature fluctuations from mid-40's morning lows to low 70's late afternoon highs.

The NY ISO dashboard shows that electricity consumption increased 26% over a 3-hour period on Thursday the 1st as people were waking and getting ready for the new workday. Consumption increased 27% over a 8-hour period in the afternoon and early evening before decreasing again as people ended their day and went to bed.