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Ulster County Climate Smart Committee Drawdown – Some Issues

Some of the solutions in *Drawdown* related to energy are strongly opposed by New York's major environmental organizations. It's worthwhile to understand the limitations of Drawdown before embracing the program. Paul Hawken spoke in the movie shown at the Drawdown event sponsored by Woodstock Land Conservancy and Woodstock Transition on April 26 as if Drawdown was a complete plan that needed to be implemented, not a buffet of options to pick and choose the most appealing. Although it's recognized not all the Drawdown solutions are appropriate in the Hudson Valley, Paul Hawken did not suggest deleting items just because of aversion.

Electricity Requirements

As a community, no consensus has been reached about the need for electricity in 2030 or 2050. Considering current levels of generation, the question is: do we need much more, much less, or about the same amount of electricity in the future?

1) **Much More:** Mark Z. Jacobson in his plan for 100% renewable generation states that four to five times current generation is needed to decarbonize the economy. The emphasis on heat pumps for heating & cooling and electric vehicles suggests a need for more electricity.
2) **Much Less:** Riverkeeper, NRDC, and their consultant claim future requirements are much less than current supply and can be achieved with aggressive efficiency.
3) **About the Same:** NYISO forecasts only a minor drop (0.14%) in generation. Compared to the 'much more' and 'much less' views, NYISO's forecast is essentially constant over the forecast period.

Any discussion about energy, carbon dioxide emissions, and sequestration would benefit from a consensus about energy and emissions. At this time, there appears to be no such consensus.

Controversial Solutions

Below are listed three of the Drawdown energy solutions that are, at best, controversial.

Nuclear Energy	Ranking and Results by 2050	#20

Drawdown: too expensive, too dangerous, but "no credible path to climate stabilization that does not include a substantial role for nuclear power."

New York currently gets over 30% of its electrical energy from nuclear power. Indian Point nuclear point, which is scheduled to close in 2020, will be replaced by natural gas fired power plants emitting an estimated 6 million metric tons of CO2.

Indian Point accounts for 34% and natural for 38% of Central Hudson's electric supply. After the closure of Indian Point, it's expected that natural gas generation will account for over 70% of Central Hudson's supply.

Closure of the upstate nuclear reactors will add an estimated 15 million metric tons CO2 per year from additional natural gas generation.

Cogeneration	Ranking and Results by 2050	#50

Drawdown: on-site CHP (combined heat & power) from natural gas in commercial, industrial, and transportation sectors that replaces grid-based electricity and on-site heat generation with more efficient and less costly technology.

CHP systems recover the heat created during power generation and use it as an energy source. That energy can then fuel industrial processes, heat domestic hot water, and provide space heating and cooling. CHP systems are generally designed to run on a daily basis to save energy and money and to run during grid outages to power a site's priority loads.

The New York Power Authority and the Office of General Services want to create a microgrid to power and heat the Empire State Plaza complex, where about 11,000 state government employees work. Two new 7.9 megawatt natural gas turbines would generate electricity to supply about 91 percent of the power needs of the complex and 70 percent of the steam needed for heating and cooling needs. The new turbines would supplement existing steam boilers.

Environmental advocates have criticized the project's reliance on natural gas, questioning why the state would invest in fossil fuels when Cuomo is pushing to reduce emissions and boost renewable energy. They want to see the state invest in a renewable energy microgrid powered with wind, solar or geothermal.

Grid Flexibility	Ranking and Results by 2050	#77

Drawdown: an enabling technology for exploiting renewables that is required to grow renewable energy resources beyond a 25 percent share of generation. The emission reductions from this solution are counted in the variable renewable solutions.

Transmission Lines: wind and solar power are intermittent sources of energy, and a combination of wind and solar is needed to smooth supply. If the wind isn't blowing strong enough or there are too many clouds, the supply of electricity might not meet the demand. Or if there are strong winds or persistent sunlight, the supply could exceed the capacity to capture and use it.

"We can make do with the transmission infrastructure we have for now, but the existing infrastructure was not built considering the changing energy landscape," says 2017 study on wind curtailment from the National Renewable Energy Laboratory. "But without expanded transmission capacity, we observed high amounts of wind curtailment." That means that the wind energy produced isn't really going anywhere it can be used. It's essentially "wasted renewable energy," since that energy has to come from fossil fuels instead.

Transmission lines to deliver surplus electric power from western New York to the Hudson Valley have been vigorously opposed.

Auxiliary Services: support the integration of interment wind and solar by helping to smooth the variable output of renewables and by providing voltage and frequency regulation.

Microgrids: localized electricity sources and loads that normally operate connected to electrical grid, but can also disconnect to "island mode" and function autonomously as conditions dictate.

The Lincoln Park Grid Support Center, a hybrid generator and battery combination proposed for the Town of Ulster, would provide these services, but is strongly opposed.

Smart Meters: would allow utilities to adjust customer demand under the changing conditions of interment renewables. The most obvious candidates for customer demand management are air conditioning and swimming pool recirculating pumps. Because of EMF radiation, some strongly oppose these meters.

Batteries: a missing piece of grid infrastructure is cheap storage. "The real thing that would allow a whole lot more renewable generation on the same amount of transmission would be cheap battery storage." "Then you can send power along the lines whenever the wind and solar are making it, and when they're not, you can discharge the batteries."

Serious objections are raised when batteries are recharged from the grid or local fossil fuel generators.

Project Drawdown

Project Drawdown is the most comprehensive plan ever proposed to reverse global warming. Drawdown did not make or devise the plan, but found the plan because it already exists.

A qualified and diverse group of researchers from around the world gathered to identify, research, and model the 100 most substantive, existing solutions to address climate change.

What was uncovered is a path forward that can roll back global warming within thirty years. It shows that humanity has the means at hand. Nothing new needs to be invented. The solutions are in place and in action.