



WOODSTOCK, N.Y.
COLONY OF THE ARTS

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Ulster County Climate Smart Committee Town of Woodstock Report for January 28, 2019

Summary of Current Activities

Town of Woodstock Acquires Renewable Energy

The Woodstock Town Board approved a contract with the Natural Power Group for renewable electric power sourced from its Wappingers Falls hydroelectric generating facility for the town’s seven demand accounts. With this contract, Woodstock will receive 90% of its electric power from renewable sources. It’s expected carbon dioxide emissions from town governmental operations will drop to a level 30% below 2011 in 2019.

In May, the Town Board contracted with the Natural Power Group for three residential and small commercial accounts. The result of that contract, in the table below, shows the town paying, in total, less for renewable energy than it would pay Central Hudson.

Renewable Energy Electric Bills for November 2018
Town of Woodstock Residential and Small Commercial Accounts

	Rock City Rd Restrooms	Supervisor's Cottage	Youth Center	Panza Residence
Monthly kWh Used	1562	1754	711	952
Central Hudson Bill	\$200.69	\$267.69	\$124.11	\$166.19
Central Hudson CDG Credit	(\$70.12)	(\$183.52)	(\$126.17)	(\$114.26)
Revised CH Bill	\$130.57	\$84.17	(\$2.06)	\$51.93
Natural Power Group Bill (est)	\$63.11	\$165.17	\$113.55	\$102.83
Total Electricity Cost	\$193.68	\$249.34	\$111.49	\$154.76
Premium/(Benefit)	(\$7.01)	(\$18.35)	(\$12.62)	(\$11.43)

Under terms of Community Distributed Generation, Central Hudson calculates a credit using VDER, i.e. the value stack, based on actual generation at Natural Power Group’s

hydroelectric facility, which is then applied to the town's utility bills. The town is billed by Natural Power Group for 90% of this credit, thus reducing the town's overall cost of electricity.

No Billing Problems

In spite of the doom and gloom concerning community generation billing problems, the process seems to be working well. The missing piece in our understanding of the billing cycle is that Central Hudson has 60 days beginning when it receives instructions from the Natural Power Group until its starts tracking generation

Contracts with the Natural Power Group were approved in May for three town accounts that are classified as residential and small commercial, and the first credits from Central Hudson were received in November. Natural Power Group submitted the town's allocation along with the other subscribers to Central Hudson in June. After 60 days, Central Hudson began tracking generation in August. In September, credits were calculated and applied to customer accounts in October. The credit then appeared on the November billings.

So far, so good.

Library Carbon Neutral Presentation Canceled

Presented "Woodstock's Road to Carbon Neutrality" on Saturday, January 19, at the Woodstock Library. Canceled due to weather, and is rescheduled for March 30th.

In March of 2007, the Woodstock Town Board adopted a resolution committing Woodstock's governmental operations to be carbon neutral by the end of 2017. Not only did Woodstock meet its commitment to the 2007 resolution, but it accomplished it in 2015, nearly two years before the deadline. Ken Panza's presentation will explain how zero net carbons were achieved and will cover plans for additional reductions.

Hydroelectric Open House Cancelled

Open Houses scheduled for Saturday and Sunday, January 19 & 20 at Wappingers Falls Hydroelectric, were canceled. There were over 2000 responses for the open house, and they were not prepared for a quarter of that number. They are reorganizing and hoping to have a couple events in the spring.



Wappingers Falls Hydroelectric
Where Woodstock gets its electricity

LED Municipal Streetlights

Last August, the Woodstock Town Board accepted a proposal by Greg Mumby from the Mid-Hudson Streetlight Consortium for Woodstock to purchase its street lights and replace them with LEDs. Consistent with its Master Cost Recovery Agreement, NYPA provides a turn-key solution to upgrade the Town of Woodstock's existing streetlights to energy efficient LED technology. The Board signed a contract with NYPA to perform an evaluation.

But while NYPA is doing its evaluation of Woodstock's street lights, Central Hudson is continuing the routine replacement existing street lights with LEDs. Since 2013, 29 mercury

and sodium vapor lights have been converted to LEDs, representing 22% of Woodstock’s street lights and reducing electricity usage by 9,000 kWh,

A combination of reduced electric use from LEDs and lower carbon emissions due to the closure of upstate coal fired power plants has resulted in carbon emissions attributed to street lighting to be cut in half. The lighting districts account for about 8 metric tons of CO2 emissions, and a complete conversion to LEDs would further reduce total street lighting emissions to 4 metric tons.

Town of Woodstock
LED Streetlights
Year End 2018

		2013		2017		2018	
		Quantity	kWh	Quantity	kWh	Quantity	kWh
Mercury & Sodium Vapor	7000 Mercury Vapor	13	10,816	7	6,622	6	5,079
	5800 Sodium Vapor	64	22,016	56	20,128	50	17,699
	16000 Sodium Vapor	48	34,560	43	32,101	42	30,852
	27000 Sodium Vapor	2	2,528	2	2,528	2	2,528
	Sum of Mercury & Sodium Vapor Fixtures	127	69,920	108	61,379	100	56,158
LED Fixtures	2900 LED			4	218	11	961
	3600 LED			10	1,390	10	1,550
	6800 LED					1	55
	7200 LED			7	1,360	7	2,296
	Sum of LED Fixtures	0	0	21	2,968	29	4,862
Utility Owned Fixtures		127	69,920	129	64,347	129	61,020
Percent LED				16%		22%	
lbs CO2/MWh		498		366		285	
CO2 Emmisions (Metric Tons)		16		11		8	
Possible Reduction in Emissions						4	

REV - Reforming the Energy Vision

Phase 2 VDER for Mass Market, On-Site Solar

PSC Staff stated that they anticipated filing a Staff Report that included a proposal for a successor tariff by December 31, 2018. That filing would then be subject to stakeholder comment, followed by Commission consideration. Due to the complexity of the issue and the need to consider and integrate extensive technical analyses, Staff now anticipates that the Staff Report will not be complete and ready for filing until **January 31, 2019**. Staff believes this will still provide sufficient time for an extended stakeholder input process, including the opportunity for initial comments and reply comments, as well as one or more working group meetings or technical conferences to discuss the proposal.

Background

In its March 9, 2017 Order on Net Energy Metering Transition, Phase One Value of Distributed Energy Resources, and Related Matters (VDER Transition Order), the

Commission directed the immediate transition of certain distributed generation projects to Value Stack compensation, but stated that mass market, on-site projects interconnected before January 1, 2020 would continue to receive net metering compensation under the Phase One NEM policy. The Commission explained that a proposed successor tariff to take effect for projects interconnected after January 1, 2020 should be developed through the Phase Two process convened by Staff.

Clean Energy Standard (CES)

Final Phase 3 Implementation Plan, which addresses many technical details and changes related to Tier 1 RECs and the Renewable Energy Standard (RES), was approved by the PSC.

Included in the Final Phase 3 Implementation Plan is a schedule for the Triennial Review. The CES Framework Order stated that starting in 2020, and every three years after, the Commission will review the CES initiative and any necessary program changes needed to reach the state's renewable energy goals at an appropriate cost to consumers. The triennial review will focus on the RES program, but will not include a review of the ZEC program.

Background

On August 1, 2016, the Public Service Commission (PSC) issued its Order Adopting a Clean Energy Standard consistent with the State Energy Plan goal that 50% of the electricity consumed by New Yorkers is to be generated by renewable energy sources by 2030 as part of a strategy to reduce statewide greenhouse gas emissions by 40% by 2030. The CES includes a Renewable Energy Standard (RES), a Zero-Emissions Credit (ZEC) requirement, and, as of July 12, 2018, an Offshore Wind Standard.'

The ZEC requirement consists of an obligation that LSE5 purchase ZEC5 from the New York State Energy Research and Development Authority (NYSERDA) in amounts proportionate to their load served. The RES consists of an obligation on every load serving entity (LSE) to serve their retail customers by procuring new renewable resources, evidenced by the procurement of qualifying Tier 1 Renewable Energy Credits (REC5) or by making Alternative Compliance Payments (ACP).

Gas Pains

Danskammer Energy Center Open House

Danskammer Energy, LLC ("Danskammer Energy") is proposing to repower its existing 532 megawatt (MW) Danskammer Generating Station (the "Station") located in the Town of Newburgh, Orange County, New York with a state-of-the-art natural gas fired combined cycle power generation facility with a net capacity of approximately 536 MW.

Pursuant to the Siting Board's rules, 16 NYCRR §1000.5, the Applicant will be filing a Preliminary Scoping Statement (PSS). The intent of this document is to provide a description of the proposed Project as well as the studies or program of studies that will be completed in order to evaluate potentially significant impacts.

Pursuant to the Applicant's Public Information Plan, Open Houses were held to present the Project to the public and identify community concerns. Open Houses were held on:

- December 17th at the Middle Hope Elementary School gym at 62 Overlook Drive in the Town of Newburgh
- December 18th at 8 School Street, in Wappingers Falls.
- Two sessions were held on each day: 11am to 1pm and 5:30 pm to 7:30 pm, for a total of four sessions.

A list of questions about Danskammer's plans was prepared for submission to the PSC.

Cricket Valley Transformer Deliveries

A portion of Route 7 was closed to allow delivery large transformers to the Cricket Valley Energy Center in Dover, N.Y.

Four men were arrested Tuesday night after Connecticut State Police said they chained themselves to a tractor trailer in protest of the Cricket Valley Energy Center project.

The men were asked to unchain themselves and move the tractor out of the roadway, police said. They refused and told police they were protesting the power plant project.

The first transformer weighed 476,700 pounds and was carried on a specialized 12-axle trailer. The oversize/overweight vehicle is permitted, according to DOT. The transformer is coming from Montgomery, Ala. by rail and entering Connecticut at the Massachusetts border. It will then be driven to Cricket Valley Energy Center.

A second, larger, 700,000 pound transformer was delivered a week later.

Construction began at Cricket Valley in 2018 and the plant is expected to go online in 2020, in time to replace some of the generation lost by the closure of Indian Point nuclear plant.



Cricket Valley Energy Center in Dover, N.Y.
Photo Wednesday, Sept. 26, 2018.

New Jersey Campaign calls for no new power plants, pipelines

A plan for the North Bergen Liberty Generating power plant was first announced in April 2018. At 1,200 megawatts, the plant will be one of the largest electricity generators in state, but none of that energy would go to New Jersey. Instead, the electricity will be exported via a 6.5-mile underground cable to Con Edison's plant on Manhattan's West Side.

At least eight Bergen County towns passed nearly identical resolutions crafted by a coalition of environmental groups against the North Bergen Liberty Generating plant, calling it "one of the largest sources of air pollution and greenhouse gas emissions in New Jersey." In 2017, Hudson was one of 11 New Jersey counties to receive an F grade from the American Lung Association.

Sloop Clearwater Files Article 78 Memorandum of Law

Hudson River Sloop Clearwater, Goshen Green Farms and other environmental advocates outlined their challenge to New York's Tier 3, Zero Emission Credit (ZEC) subsidies in a memorandum of law filed December 17, 2018. The target of the lawsuit is the PSC and the companies that own and operate nuclear reactors at the Fitzpatrick, Ginna and Nine Mile Point power plants in central and western New York.

It charges that the PSC failed to follow the law in authorizing up to \$7.6 billion in ratepayer money over 12 years (2017 to 2029) for aging New York nuclear plants, including James A. Fitzpatrick, R.E. Ginna, and Nine Mile Point Units 1 and 2. Westchester County's Indian Point nuclear plant, which is to shut down in 2020-2021, is not a subject of the lawsuit.

In October 2018, a suit filed by New York's natural gas generators opposing ZECs was dismissed by the federal appeals court. A few months before, another federal appeals court upheld Illinois' ZEC subsidies against opposition by the natural gas generators.

Fossil Generators Ask Supreme Court to Review State Nuclear Subsidies

Independent power generators asked the U.S. Supreme Court to review lower court decisions upholding nuclear power subsidies in New York and Illinois, arguing they violate the Federal Power Act. The Electric Power Supply Association, a trade group, joined generators NRG and Calpine to ask justices to review decisions from federal district court judges upholding the programs. New Jersey and Connecticut now have similar nuclear support programs, and the subsidies are at the center of ongoing market reform debates at FERC.

Quebec Hydropower, Northern Pass, Champlain-Hudson Power Express

The Province of Quebec launched a massive dam building program hoping to turn itself into the Saudi Arabia of hydropower, but it also reflects the changing economics of the electricity system.

New England once received most of its electricity from a relatively small number of large power plants burning oil, coal or uranium. Now, there is virtually no oil-fired electricity in New England - almost all the coal-fired plants have shut. Nuclear power is struggling with the shutdown of Vermont Yankee and the planned shutdown of Pilgrim Nuclear.

These plants have largely been replaced by natural gas generators, but even the natural gas plants are struggling financially because of changes in electricity pricing caused by wind power, increases in solar power and energy storage, and efficiency. Extreme opposition to new natural gas lines hasn't helped.

In 2018 Northern Pass failed, except that it didn't quite die. Northern Pass is the billion-dollar proposal by Eversource to build a 1,090-megawatt power line from Quebec's massive hydropower into the New England market by cutting through New Hampshire. Meanwhile, an alternative line to connect Hydro-Quebec with New England proposed through Maine by Central Maine Power is facing many of the same objections that Northern Pass faced, including concern about the effect of transmission line towers through backcountry regions.

In New York, a similar line connecting Quebec to New York running down the Hudson River Valley, has received conditional approval. The Champlain Hudson Power Express (CHPE) is a 300-mile underwater high-voltage line carrying hydroelectricity from Quebec’s dams down to New York City. Construction is likely to begin in 2020.

Meetings

New York New Jersey Harbor and Tributaries Feasibility Study

Hudson River Watershed Alliance (HRWA)

Mid-Hudson Watershed Breakfast Series,
2018 – 2019

Featured Speaker: Matt Chlebus, NYSDEC
Division of Water

Matt Chlebus, point person on the study for
New York State, will provide an overview of the study.

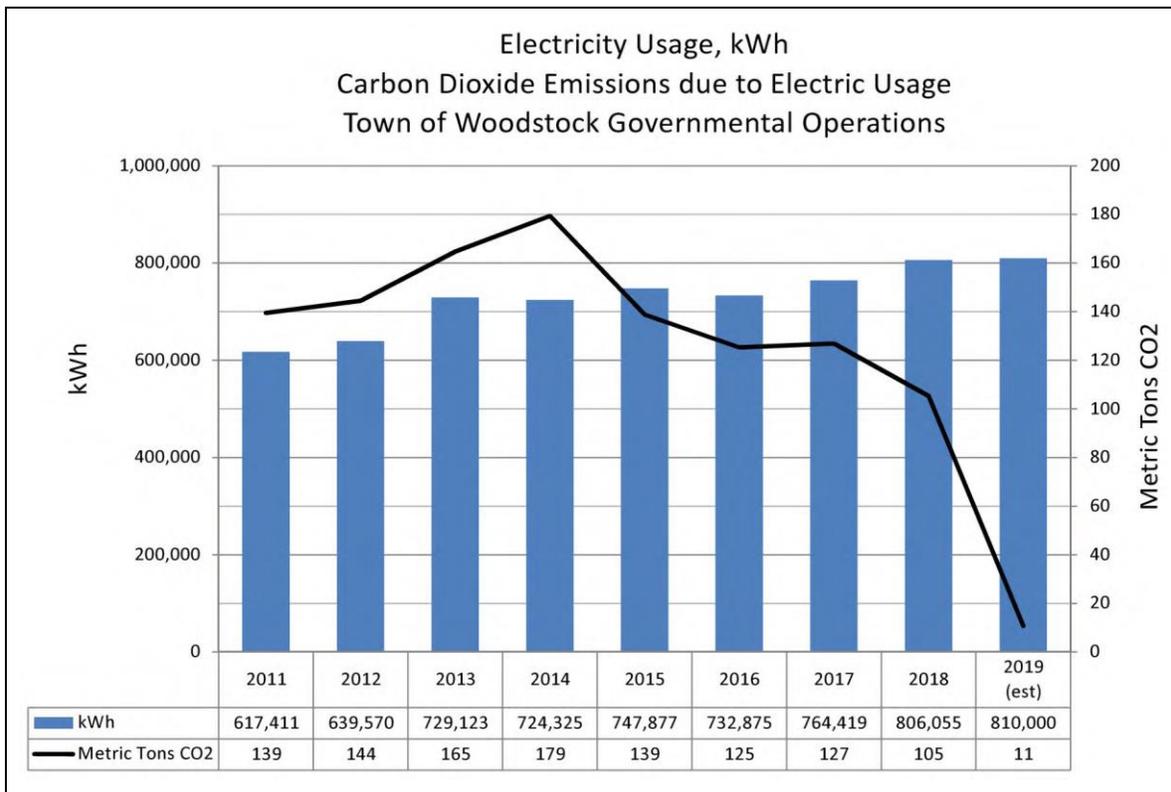
In 2016, the US Army Corps of Engineers, in partnership with New York State, New York City, and the State of New Jersey, initiated the New York New Jersey Harbor and Tributaries Feasibility Study. The study is being undertaken based on the recommendations of the North Atlantic Coast Comprehensive Study, which evaluated coastal risk across the Northeast following the extensive damage caused by Hurricane Sandy. The objective of the Feasibility Study is to evaluate alternatives, including storm surge barriers, to manage the risk of coastal storm damage within the NY/NJ Harbor and along the Hudson River.



Route of the Champlain-Hudson Power Express high-voltage underwater transmission line



Ulster County Climate Smart Committee Town of Woodstock Report for February 25, 2019



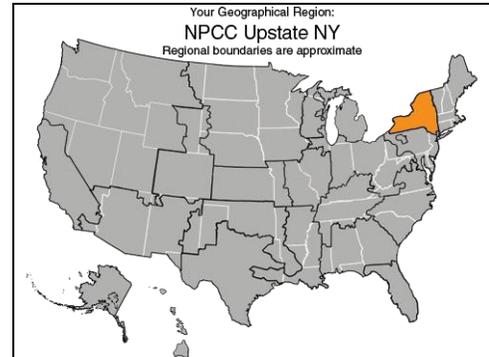
Woodstock’s Emissions from Electricity

Woodstock’s electricity usage has increased by about 30% since 2011 driven by geothermal and air-sourced heat pumps used for heating and cooling the town’s buildings. Because of reductions in upstate, coal-fired generation, the town’s carbon dioxide emissions attributed to electricity have declined by about 25%. With the town’s recent subscription for renewable electricity from small scale, hydroelectric generators, it’s expected that carbon dioxide emissions due to electricity will be substantially eliminated in 2019.

	2011	2018	% Change
Electricity kWh	617,411	806,055	30%
CO2 Metric Tons	139	105	(25%)

CO2 Emissions in Upstate NY

The EPA’s Emissions & Generation Resource Integrated Database (eGRID) documents carbon dioxide, methane, nitrogen oxides, sulfur dioxide, and nitrous oxide emissions from electric generation by geographic region. Upstate New York is one of the regions tracked in eGRID. By Googling ‘EPA Power Profiler’ and entering a ZIP code, the carbon dioxide emissions and fuel composition of power in a geographic region can be found.



Carbon Dioxide emissions in upstate NY have been declining because of the retirement of coal-fired power plants. Because of substantial hydroelectric and nuclear resources, EPA’s Upstate NY sub-region has the lowest level of emissions in the country from electric generation.

eGRID Database – Upstate New York

A new version, eGRID2016, initially released in February 2018 and updated July 2018, shows carbon dioxide emissions in the upstate NY region at 294.7 lbs./MWh.

Woodstock Carbon Report Fiscal Year	2011, 2012, 2013	2014	2015	2016	2017	2018
eGRID Version	eGRID2009	eGRID2010	eGRID2012	eGRID2014	eGRID2014 version 2	eGRID2016
eGRID Release	10-May-12	24-Feb-14	8-Oct-15	13-Jan-17	27-Feb-17	31-July-18
Upstate NY CO₂ lbs/MWh	498	546	409	377	366	295

Upstate NY Generation by Source

eGRID is used to estimate emissions from electricity for GHG inventories, carbon footprinting, and for estimating avoided emissions from projects that reduce consumption of grid supplied electricity.¹ eGRID2016 includes Excel workbooks with detailed data on generators at a unit level as well as aggregated data for plants, state, balancing authority, eGRID subregion, NERC region, and the United States.²

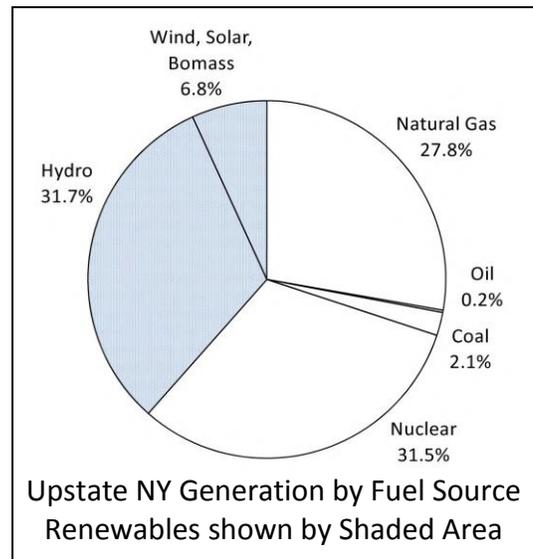
Upstate New York Generation by Fuel Source - Percent					
Woodstock Fiscal Year	2011, 2012,2013	2014	2015	2016, 2017	2018
Coal	14.5	15.3	5.5	5.5	2.1
Natural Gas	18.9	22.2	30.4	25.9	27.8
Oil	0.9	0.8	0.7	0.6	0.2
Nuclear	30.6	28.9	28.9	30.6	31.5
Hydroelectric	30.8	28.2	29.2	30.4	31.7
Wind, Solar, Biomass, etc.	3.9	4.3	5.4	6.8	6.8

Beyond Carbon Neutrality

In March 2007, the Woodstock Town Board adopted a resolution committing that town governmental operations would be carbon neutral by year-end 2017. The town achieved carbon neutrality in 2015 and was formally recognized for its accomplishment at the 2017 annual meeting of the New York State Association of Conservation Commissions.

Renewables

Since the 2016 introduction of New York’s Clean Energy Standard (CES), other measures of compliance have been introduced. The CES set an objective of generating 50% of the state’s electricity using renewable energy sources, such as hydroelectric, wind, and PV solar, by 2030 (50 by 30 goal). By this measure, in 2018, 40% of Woodstock’s electricity came from renewable sources.



¹ Art Diem & Cristina Quiroz, *How to use eGRID for Carbon Footprinting Electricity Purchases in Greenhouse Gas Emission Inventories*, U.S. EPA, July 2012, Available at <https://www.epa.gov/sites/production/files/2015-01/documents/adiem.pdf>

² U.S. EPA, “eGRID2016 Summary Tables,” February 2018, Available at https://www.epa.gov/sites/production/files/2018-02/documents/egrid2016_summarytables.pdf

Beneficial Electrification

The term *Beneficial Electrification* refers to electricity used in applications that directly supplant fossil fuels, such as ground-sourced heat pumps, air-sourced heat pumps, and EV charging stations. Woodstock’s highway garage, town hall, and community center are examples of heat pump installations that replaced fossil fuel heating, and the electricity used by these buildings is identified as beneficial electrification. About 39% of Woodstock’s electricity consumption is considered beneficial electrification.

Carbon-Free Electricity

Governor Cuomo introduced another measure of electrification with the launch of New York’s “Green New Deal” initiative.³ The plan as outlined in New York’s *2019 Justice Agenda*, calls for an unprecedented ramp-up in renewable energy deployments as New York seeks to achieve 100 percent carbon-free electricity by 2040, and ultimately to eliminate its entire carbon footprint. Woodstock’s electricity supply in 2018 was about 70% carbon-free based on the combination of renewable and upstate nuclear sources.

Town of Woodstock	2018	Percent
Renewable kWh	320,921	40%
Beneficial Electrification kWh	314,680	39%
Carbon-Free kWh	568,213	70%

Solar

Community Solar Ribbon Cutting at Pointe of Praise Church

Monday, March 4, 2019 at 11 AM – 12 PM

243 Hurley Ave, Kingston, NY

The Kingston Planning Board approved a site plan for construction of a 1,555-kilowatt solar array on about 6 acres behind Point of Praise Church at 243 Hurley Ave.

The array will operate under New York’s Community Distributed Generation program’s purchase model, where people are able to purchase solar modules in the system.

This approach is appropriate for those who would like to have solar on their rooftops, but are surrounded by trees or have small roofs.



Point of Praise Solar Array

³ NYSERDA, “Governor Cuomo Announces Green New Deal Included in 2019 Executive Budget,” January 17, 2019, Available at <https://www.nyserd.org/About/Newsroom/2019-Announcements/2019-01-17-Governor-Cuomo-Announces-Green-New-Deal-Included-in-2019-Executive-Budget>

Kingston Bridge Authority Activates Solar Array

The state Bridge Authority activated a new 1,332-panel, 486-kilowatt solar array at the west end of the Kingston-Rhinecliff Bridge that is expected to generate about 26 percent of the electricity used by the agency and reduce carbon dioxide emissions by 356 metric tons per year. The total cost of the project was \$117,000, and the investment is expected to pay for itself in 13 years in the form of energy savings, the authority said.

East Light Partners, Saugerties

East Light Partners (ELP), which is planning a 2 MW community solar array at the Saugerties landfill, has applied for a PILOT agreement.

Layoffs at Cypress Creek Renewables

Cypress Creek, a major New York solar developer, announced layoffs affecting about twenty percent of its workforce. Cypress Creek and Solar City were early factors in Hudson Valley solar development, but Solar City withdrew. It's unclear if Cypress Creek will continue its Hudson Valley projects.

Cypress has two local projects: a 2 MW array in the Town of Kingston and a 6 MW array in the Town of Ulster. The Town of Kingston array is complete, but has unresolved drainage issues and waiting for town approval. Construction has not begun on the Town of Ulster project.

Countdown to 2020

Net Metering ends January 1, 2020

In its March 9, 2017 “Order on Net Energy Metering Transition” (VDER Transition Order), the PSC ordered that mass market, on-site projects interconnected before January 1, 2020 would continue to receive net metering (NEM) compensation under Phase One NEM policy, but projects interconnected after January 1, 2020 will be enrolled under a successor tariff. The first version of the successor tariff to net metering was released for comment in February, 2019.

Indian Point Unit #2 to cease operation, April 2020

Governor Cuomo in his 2017 State of the State address announced that the Indian Point nuclear power plant will be shut down by April 2021. Indian Point Unit #2, representing about 1,000 MW of generation, will cease operation no later than April 30, 2020, and Unit #3 will close a year later.

NYISO's Indian Point deactivation assessment identified three generators available to replace 79% of Indian Point's 2,000 MW nameplate capacity: the 120-MW Bayonne, NJ, single stage gas plant, the 678-MW CPV Valley combined-cycle gas plant, and the 1,020-MW Cricket Valley combined-cycle gas plant. Bayonne and CPV Valley are complete and have begun operation. Construction began at Cricket Valley in 2018 and it's expected to go online in 2020 in time to replace generation lost by the closure of Indian Point Unit #2.

Events

Woodstock Land Conservancy Vernal Fling

2019 Vernal Fling

May 18th, 2019, 5 - 7:30 pm

Byrdcliffe Barn, Woodstock

Save the date for Woodstock's favorite spring fundraiser – Vernal Fling. This year we honor **Mike Hein**, former Ulster County Executive, with our William R. Ginsberg Stewardship Award for his demonstrated passion for conservation.

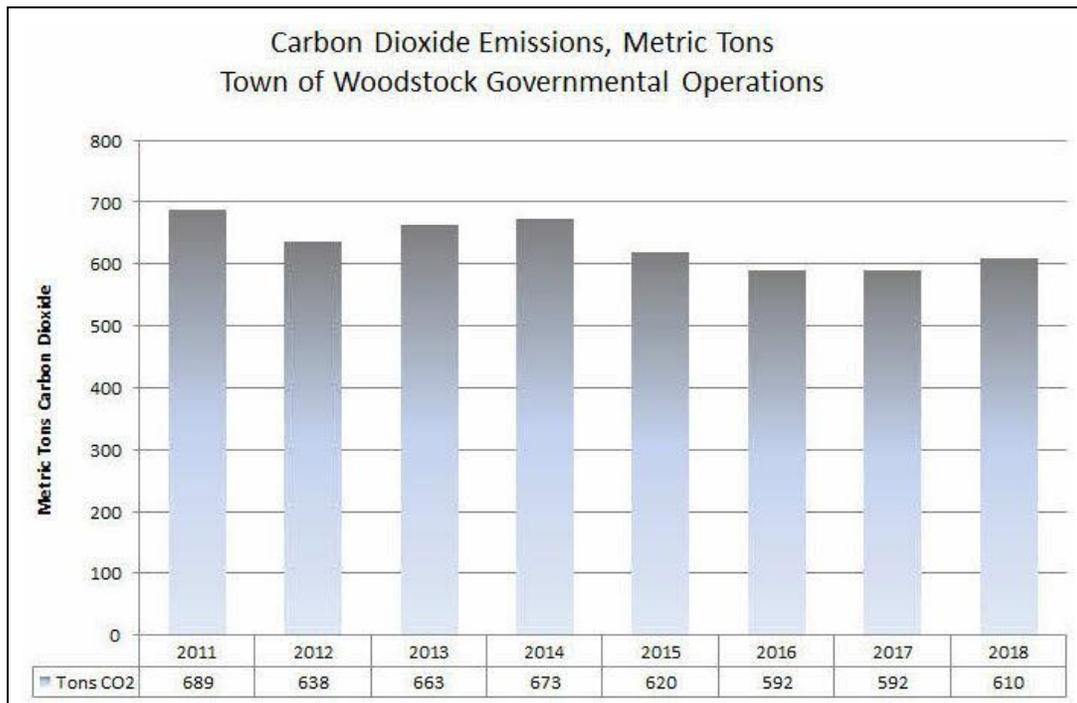




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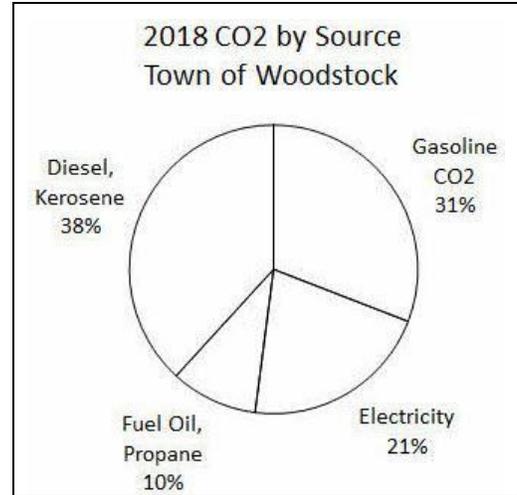
2018 Emissions, Woodstock Governmental Operations

Carbon dioxide emissions from Woodstock’s governmental operations increased by 18 metric tons in 2018 compared with 2017. Although emissions associated with electricity declined, the use of diesel fuel and gasoline increased overall emissions. Compared with 2017, diesel fuel usage in 2018 increased by 2,325 gallons and gasoline use by over 800 gallons. These increases are not inconsistent with prior use, but because of the potency of fossil fuels, any increase has a large effect on emissions.

Overwhelmingly, Woodstock’s carbon emissions are from diesel and gasoline, accounting for about 70% of the town’s emissions.

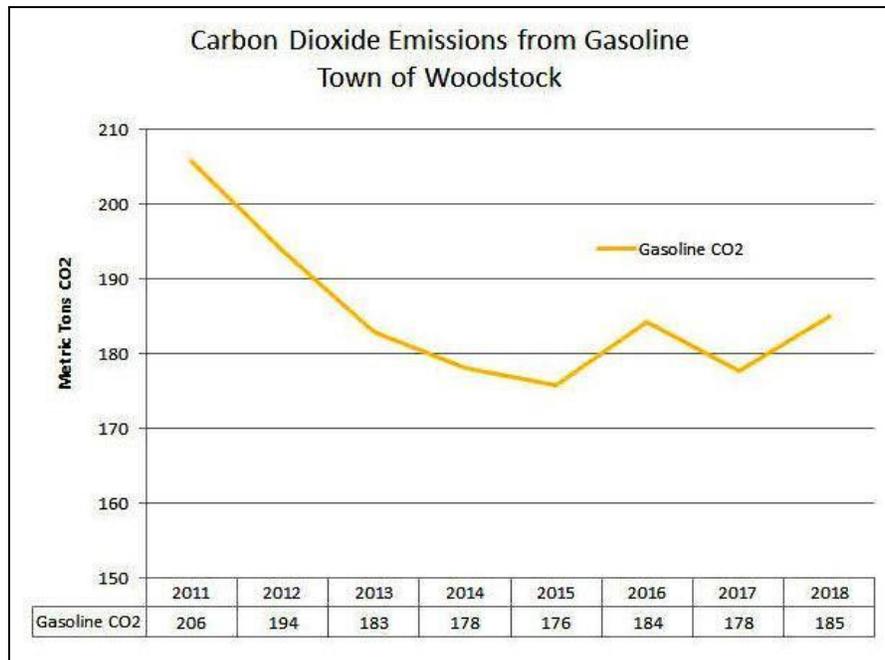
The recent subscription for hydroelectric power from the Natural Power Group will eliminate most of the carbon emissions attributed to electricity, and the renovation of the town offices on Comeau will further reduce the use of fuel oil and propane for heating.

There is no obvious replacement for diesel fuel, but the acquisition of pursuit rated, hybrid police vehicles could reduce gasoline consumption. The replacement of 8-cylinder police vehicles with 6-cylinder units reduced carbon emissions by about 25 metric tons, but since then, gasoline emissions have held steady at about 180 metric tons.



Hybrid Vehicles

During the last ten years, hybrid vehicle technology has improved significantly, and hybrids should be considered for all new vehicle purchases. The introduction of pursuit rated hybrid police cruisers offers an opportunity to further reduce the town’s gasoline consumption.



Woodstock Comprehensive Plan

Woodstock’s Supervisor and the Town Board’s liaison to the Comprehensive Plan Committee presented the environmental and climate components of the comprehensive plan to the Woodstock Environmental Committee.

REV Consumer Protections for DER

PSC Strengthen Consumer Protections for Distributed Energy Resources:¹

1. Early termination fees for community distributed generation project members are capped.
2. Production guarantees will be required for on-site mass market solar projects.
3. Escalation clauses in contracts between customers and developers must be clearly disclosed.

According to Commission Chair John B. Rhodes, "Consumers are being presented with new ways to save money and conserve energy through Distributed Energy Resource providers. . . . We must ensure that consumers are protected from potential fraud and unscrupulous contract provisions, aiding consumers while ensuring the integrity of this burgeoning market."

The Commission's experience in regulating energy services companies (ESCOs) in the gas and electric supply market has demonstrated that oversight is needed to prevent false promises, exploitative and predatory pricing, and other deceptive or intentionally confusing behavior in marketing to residential customers and small businesses.

Indian Point Unit 3 Last Refueling

Indian Point nuclear power plant Unit 3 began its 20th and final refueling and maintenance outage. Unit 2 had its last maintenance and refueling outage last year.

In January 2017, Entergy announced its plan for the shutdown of Indian Point Energy Center as part of a settlement of lawsuits with New York State and Riverkeeper. In exchange, New York State agreed to drop its legal challenges and support renewal of the operating licenses for the facility. Entergy agreed to permanently cease operations at Indian Point 2 by April 30, 2020 and Indian Point 3 by April 30, 2021.

NYSDEC’s Hudson Valley Natural Resource Mapper

Ingrid Haeckel, Conservation and Land Use Specialist, and Emily Vail, Watershed Specialist, of the Hudson River Estuary Program presented an overview of the Hudson Valley Natural Resource Mapper at the February meeting of the Hudson River Watershed Alliance’s, Mid-Hudson Watershed Breakfast Series.

¹ NY Public Service Commission, “PSC Strengthens Consumer Protections for Distributed Energy Resources,” Press Release, March 13, 2019, Available at [http://www3.dps.ny.gov/pscweb/WebFileRoom.nsf/ArticlesByCategory/0561B4AA4BF4E08B852583BD005C135A/\\$File/pr19020.pdf?OpenElement](http://www3.dps.ny.gov/pscweb/WebFileRoom.nsf/ArticlesByCategory/0561B4AA4BF4E08B852583BD005C135A/$File/pr19020.pdf?OpenElement)

The Hudson Valley Natural Resource Mapper is an online, interactive tool designed to identify and understand important Hudson Valley habitat and water resources. By bringing together information about streams, wetlands, and large forests, recreation amenities, and existing protected lands, communities can identify conservation priorities and strategies to be incorporated into local land-use planning.

The maps are a source for landowners, municipal officials, project sponsors, watershed groups, and other organizations engaged in land-use decision-making, environmental assessment, conservation, and watershed planning. They can help to visualize an area's resources-where they occur and how they relate to each other, their context, and existing development and provide a foundation for informed land-use planning and decision-making. The mapper can serve as a starting point for natural resources inventories, open space plans, and watershed plans.

Information about the mapper is available at: <https://www.dec.ny.gov/lands/112137.html>

Events

Woodstock Carbon Neutral Presentation

Woodstock's Road to Carbon Neutrality
Woodstock Library
Saturday, March 30, 2019, at 5:00 pm.

In March of 2007, the Woodstock Town Board adopted a resolution committing Woodstock's governmental operations to be carbon neutral by the end of 2017. Not only did Woodstock meet its commitment to the 2007 resolution, but it accomplished it in 2015, nearly two years before the deadline. Also, as a result, the town has achieved Drawdown for governmental operations.

New York Library Association (NYLA) Reads Drawdown



The NYLA Sustainability Initiative created the New York Reads Drawdown Toolkit to help libraries host conversations during March around the essays in Drawdown in preparation for the Drawdown EcoChallenge (April 3-24, 2019).

A team representing the Woodstock community has enrolled in the EcoChallenge.

Drawdown is that point in time when the concentration of greenhouse gases in the atmosphere begins to decline on a year-to-year basis.

The Woodstock Public Library District hosted Project Drawdown: 100 Solutions to Reverse Global Warming on Thursday, March 14, 2019 at 7 PM – 8:30 PM at the Woodstock Community Center.

Woodstock Climate Action Plan

Drawdown solutions have been incorporated into Woodstock’s Climate Action Plan for governmental operations. Five hundred acres of town owned forest have been identified as a carbon sink that sequesters the carbon generated from town governmental operations. The Town of Woodstock has already reached Drawdown.

Town of Woodstock Drawdown Solutions

Drawdown Solution	Rank	Description/Use
Temperate Forests	#12	500 acres of town owned forest to sequester carbon
Rooftop Solar	#10	Solar panels installed at the Highway Garage and Town Hall
In Stream Hydro	#27	Hydroelectric power from Natural Power Group
Retrofitting	#80	Town Hall and Community Center renovations
Heat Pumps	#42	Ground-sourced and air-sourced heat pumps
LED Lighting	#44	New construction, Lime Energy, and street lighting
Insulation	#31	Winterized Rock City Rd convenience restrooms
Cars (Hybrid)	#49	(Proposed for Police Department)

Woodstock Land Conservancy 2019 Vernal Fling

2019 Vernal Fling

May 18th, 2019, 5 - 7:30 pm

Byrdcliffe Barn, Woodstock

Save the date for Woodstock’s favorite spring fundraiser – Vernal Fling. This year, the Land Conservancy will honor **Mike Hein**, former Ulster County Executive, with its William R. Ginsberg Stewardship Award for demonstrated passion for conservation.





WOODSTOCK, N.Y.
COLONY OF THE ARTS

Kenneth S. Panza, Liaison
Town of Woodstock
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Woodstock, NY 12498
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Ulster County Climate Smart Committee Town of Woodstock Report for April 22, 2019

Woodstock *Drawdown* Presentation

In March of 2007, the Woodstock Town Board adopted a resolution committing Woodstock's governmental operations to be carbon neutral by the end of 2017. Not only did Woodstock meet its commitment to the 2007 resolution, but it accomplished the task in 2015, two years before the deadline. Woodstock was formally recognized for its accomplishment at the 2017 annual meeting of the New York State Association of Conservation Commissions.

Drawdown, the compendium of the 100 most substantive, existing solutions to address climate change, was published two years ago. *Drawdown* is defined as that point in time when the concentration of greenhouse gases in the atmosphere begins to decline on a year-to-year basis. Woodstock has achieved *Drawdown* for governmental operations.

During 2018, *Drawdown* was integrated into the town's Climate Action Plan. There are eight *Drawdown* solutions that characterize Woodstock's carbon neutrality efforts and define the steps for further reductions in the town's carbon footprint. On Saturday, March 30, at a Woodstock Library Forum, a presentation explained how Woodstock achieved carbon neutrality and how *Drawdown* informs our next actions.

Energy Report to the Office of the State Comptroller

Town governments are required to file annual financial reports with the Office of the New York State Comptroller. A requirement of the annual financial report is a submission documenting the town's total "Energy Costs and Consumption" for the fiscal year. Below is Woodstock's submission to the state comptroller.

Total carbon emissions for Woodstock governmental operations are calculated based on these number submitted to the comptroller.

TOWN OF Woodstock Energy Costs and Consumption For the Fiscal Year Ending 2018				
Energy Type	Total Expenditures	Total Volume	Units Of Measure	Alternative Units Of Measure
Gasoline	\$44,011	20,800	gallons	
Diesel Fuel	\$56,938	24,845	gallons	
Fuel Oil	\$6,187	2,762	gallons	
Natural Gas			cubic feet	
Electricity	\$123,529	823,883	kilowatt-hours	
Coal			tons	
Propane	\$8,696	5,825	gallons	

Sustainable Westchester’s Green Energy Option

Energy services companies (ESCOs) selling electricity in New York are required to periodically provide customers with environmental disclosure statements or environmental disclosure labels. The labels provide information on the types of fuels used to generate electricity, air emissions resulting from generating electricity, and a comparison of those emissions to a statewide average. This information enables consumers to select an electricity supplier based on environmental quality and resource diversity, a key desired outcome of the Environmental Disclosure Program.¹

Sustainable Westchester Pilot CCA

Sustainable Westchester, Inc. was granted permission by the New York State Public Service Commission to create and administer New York's first Community Choice Aggregation ("CCA") program.² The pilot program, entitled Westchester Power, was launched in April 2016 and now has approximately 100,000 accounts. Westchester Power was created to aid the fulfillment of the goals set in New York State's Reforming Energy Vision (REV), including:

- 1) The reduction of greenhouse gas emissions,
- 2) A decline in energy usage in buildings,
- 3) An increase in electricity sourcing from renewable resources.
- 4) Energy sourcing transitions to be easy, affordable, and accessible for its participants.

¹ NY Department of Public Service, "Environmental Disclosure (Label) Program," updated: 06/02/2018 12:32:27 PM, Available at

<http://www3.dps.ny.gov/W/PSCWeb.nsf/All/502EF210A0D15B2885257687006F39D8?OpenDocument>

² CASE 14-M-0564, "Petition of Sustainable Westchester for Expedited Approval for the Implementation of a Pilot Community Choice Aggregation Program within the County of Westchester," NY Public Service Commission, Issued and Effective February 26, 2015, Available at

<http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={4B14404C-8108-4141-9D61-BA83D021AD3B}>

Westchester Power has two options for a municipality's default electricity supply.

- 1) A standard grid supply with mixed energy sourcing that is largely non-renewable ("Basic Supply").
- 2) A green option of supply matched 100% with Green-e National Wind Renewable Energy Certificates (Green Supply").

Either supply option offers a fixed rate for the length of the contract. The 2019 contracts have both standard and renewable offerings, but will migrate to NYS-qualified Renewable Energy Certificates ("RECs") for the renewable option.

Environmental Disclosure Label

During the first week of March 2019, Constellation NewEnergy, Inc., the ESCO providing power for Westchester Power's CCA program, distributed Environmental Disclosure Labels (EDL) to all subscribers that showed little or no renewable content in Westchester Power's renewable energy supply.³ According to Westchester Power, there are two reasons for this apparent discrepancy:⁴

- 1) The report represents the profile for Constellation for their entire New York portfolio, not just Westchester Power's renewable product, and
- 2) The Green-e renewable energy certificates (RECs) are not registered through the NY Generating Asset Tracking System (NYGATS). Only NYGATS registered products are reflected on the NY Emissions report.

The 100% renewable product for the 2019 contracts in both the Con Ed (began January 1) and NYSEG (to begin May 1) regions are based on NY hydro power RECs registered through NYGATS. Westchester Power will no longer rely on Green-e RECs to document purchases of renewable energy and associated environmental benefits.

Community Distributed Generation

An alternative source for renewable energy is from a Community Distributed Generator (CDG). A large scale community solar array offers subscribers a share of the solar production with a credit from the utility on their electric bill. The subscriber must be a customer of a utility located in the same load zone as the community solar array. Users can either purchase a specific number of solar panels or subscribe for a share of the kWh generated. With a subscription, users make monthly payments to the CDG based on a percentage (often 90%) of the billing credit received from the utility.



³ Environmental Disclosure Label, "Fuel Sources and Air Emission to Generate Your Electricity for Constellation NewEnergy, Inc.—NEVI - 2017 January 1, 2017—December 31, 2017," Available at https://www.westchesterpower.org/wp-content/uploads/2019/03/CNE_2017-label_NEVI.pdf

⁴ Westchester Power, Mailing: NY Environmental Disclosure, Green-e, March 9, 2019, Available at <https://www.westchesterpower.org/mailling-ny-environmental-disclosure-green-e/>

Obtaining renewable energy through the CCA green option is simpler, but more expensive than the basic offering. Renewable energy obtained from a community distributed generator can cost less, but there's the complexity of negotiating a separate agreement.

An advantage of community generation is that the source of renewable energy is known and identifiable, while the CCA green option depends on Renewable Energy Credits (RECs), a cause of confusion, controversy, and uncertainty.

Options for Renewable Energy

CCA Green Option	Easy enrolment, but costs more than basic option. Certified by Renewable Energy Credits (RECs).
Central Hudson and CDG	CDG Renewable energy costs less than Central Hudson rates. Requires a separate contract with the CDG operator.
CCA Basic and CDG	CDG Renewable energy could cost less than CCA Basic rates. Requires a separate contract with the CDG operator.
CCA CDG Option	CCAs are authorized to offer a CDG option, but haven't done so yet.

Indian Point Shutdown

When Indian Point experienced an unplanned total shutdown in March, natural gas took up the slack. For more than two weeks, the Indian Point nuclear power plant was completely off-line – a rare occurrence prompted by a generator malfunction in one reactor and scheduled spring maintenance in the other. The state's energy resources shifted in a way that could offer a preview of what's to come in the years ahead when Indian Point is scheduled to shut down for good.

Indian Point Unit #2 Malfunction

The Journal News/lohud analyzed the state's fuel mix for the week after March 15, when Indian Point's Unit #2 reactor automatically shut down because a generator malfunctioned. Natural gas filled the energy gap left by the elimination of Indian Point's contribution to the state's electrical grid.⁵

The downstate region, which includes the Lower Hudson Valley, gets 70 percent of its power from fossil fuels, like natural gas, according to NYISO. In 2017 report on the impact of Indian Point's looming shutdown, the NYISO said three natural gas plants either online or

⁵ Thomas C. Zambito, "Natural gas filled the gap when Indian Point shut down for nearly two weeks, data show," Rockland/Westchester Journal News, Published 6:00 a.m. ET April 3, 2019 , Updated 8:11 a.m. ET April 3, 2019, Available at <https://www.lohud.com/story/news/local/indian-point/2019/04/03/indian-point-shutdown-natural-gas/3340678002/>

soon to be available would add more than 1,800 megawatts of the energy to the grid and help close the 2,000-megawatt gap left when Indian Point shuts down in 2021.⁶

After Indian Point Shutdown

The question has been asked again about what happens after the Indian Point nuclear plant shutdown. Will there be enough power to replace it? What are the implications regarding emissions? The short answer is that there is plenty of power planned to replace Indian Point, but adding 7.3 million metric tons of carbon dioxide emissions in the lower Hudson Valley.

Governor Cuomo in his 2017 State of the State address announced that the Indian Point nuclear power plant will shut down by April 2021. Indian Point Unit #2, representing about 1,000 MW of generation, will cease operation no later than April 30, 2020, and Unit #3 will close a year later.

There are five new natural gas plants either just completed and on-line, currently under construction, or have entered into the permit and application process that are identified as replacements for Indian Point. The five plants are:

- 1) CPV Valley Energy Center, 678 MW, which went on-line late last summer.
- 2) Bayonne Energy Center, 120 MW, which went on-line in February, 2018.
- 3) Cricket Valley Energy Center, 1,020 MW, which is under construction and is scheduled to be online before the closure of Indian Point Unit #2.

The above three units were identified in NYISO's Indian Point Deactivation Assessment, Dec. 2017. Since then, two more plants have been announced as replacements for Indian Point.

- 4) The Danskammer Energy Center Upgrade, 575 MW, which is entering the Article 10 application process.
- 5) Liberty Generating, in the Meadowlands, 1,171 MW, which is in the permitting phase. It's getting some push-back from NY PSC because the power may not be needed.

Natural Gas Capacity Compared to Indian Point

In general, nuclear power plants run flat-out while combined cycle gas generators have an average utilization factor of about 50%. This means, as a quick estimate, it would take 4000 MW of gas generators to replace the 2000 MW Indian Point.

The identified gas plants have a total capacity of about 3,564 MW. Indian Point generates 16.667 TWh, at 92.4% of capacity. The five gas plants running at 53.4% of capacity will generate 16.667 TWh. The good news is that there is no lack of capacity to replace Indian Point. The bad news is that the new gas plants will add about 7.3 million metric tons of CO₂ emissions in the lower Hudson Valley.

⁶ NYISO, *Generator Deactivation Assessment, Indian Point Energy Center*, December 13, 2017, Available at https://www.nyiso.com/documents/20142/1396324/Indian_Point_Generator_Deactivation_Assessment_2017-12-13.pdf/f673a0f8-5620-1d7b-4be2-99aaf781ac5c

Indian Point Replacement Capacity

Gas Generator	Nameplate Capacity MW	Capacity Factor	MWh	TWh	MMt CO2	Load Zone
CPV Valley Energy Center	678	53.4%	3,171,576	3.172	1.4	G
Cricket Valley Energy Center	1,020	53.4%	4,771,397	4.771	2.1	G
Bayonne Energy Center	120	53.4%	561,341	0.561	0.2	J
Danskammer Energy Center	575	53.4%	2,689,758	2.690	1.2	G
Liberty Generating	1,171	53.4%	5,477,751	5.478	2.4	J
Totals	3,564	53.4%	16,671,822	16.672	7.3	

Combined cycle natural gas plants emit 436 grams (15 ounces) CO2 per kWh hour.

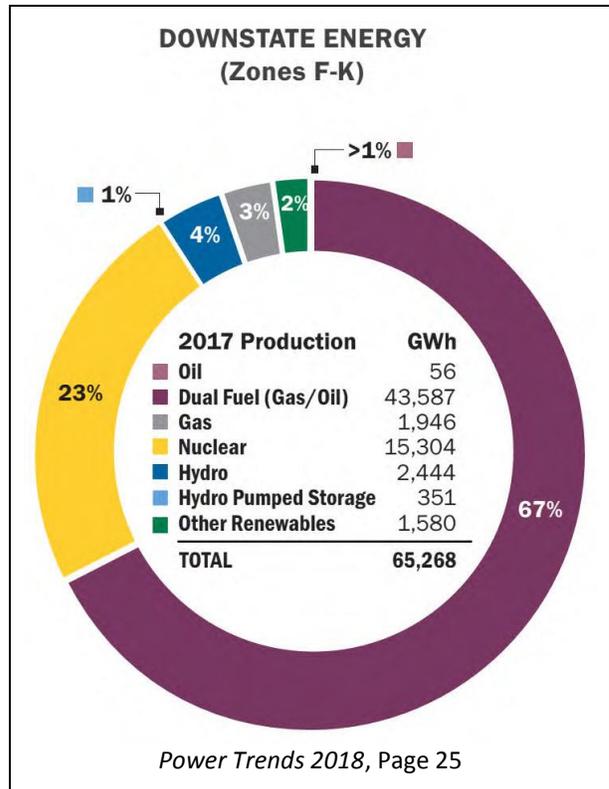
Downstate New York Generation

Existing downstate New York generation consists of 67% natural gas, with fuel oil backup, and 23% from the Indian Point nuclear power plant. After Indian Point’s shutdown, downstate New York and the Hudson Valley will consist of 90% natural gas generation.

“In *Power Trends 2017*, the NYISO introduced the concept of New York's Tale of Two Grids a reference to the fact that the characteristics of upstate's energy sector differ dramatically from those of the downstate sector.”⁷

“Upstate, defined as NYISO load zones A-E, is largely supplied by clean energy resources, yet carries relatively little demand for energy in comparison to downstate load zones F-K. In fact, zero-emitting resources accounted for approximately 88% of the energy produced in load zones A-E in 2017.”

“Downstate, which consumes approximately 66% of the energy in New York, received 70% of its energy from fossil fuel-fired generation in 2017. While some energy flows from upstate to downstate, transmission constraints on the grid limit the ability to supply more clean energy to downstate consumers.”



⁷ NYISO, *Power Trends 2018*, May 2018, Page 10, Available at <https://www.nyiso.com/documents/20142/2223020/2018-Power-Trends.pdf/4cd3a2a6-838a-bb54-f631-8982a7bdfa7a>

Supreme Court Declines to Review Nuclear Subsidies

Independent power generators asked the U.S. Supreme Court to review lower court decisions upholding nuclear power subsidies in New York and Illinois, arguing they violate the Federal Power Act. The Electric Power Supply Association, a trade group, joined generators NRG and Calpine to ask justices to review decisions from federal district court judges upholding the programs.

(Washington, D.C. – April 15, 2019) The U.S. Supreme Court will not reconsider two lower court decisions upholding state climate and clean energy policies, declining industry-led petitions designed to overturn important state protections. The Court today denied *certiorari* – or, refused to hear – challenges to circuit court decisions in Illinois and New York that affirmed the states’ right to create robust climate policies to address climate change and protect people from dangerous pollution.

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May 18th, 2019, 5 - 7:30 pm

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Ulster County Climate Smart Committee Town of Woodstock Report for May 28, 2019

Renewable Energy, Woodstock

The recent announcement by Woodstock acquiring 100% renewable, 100% carbon free, 100% hydroelectric power from the Natural Power Group was greeted, by some, with disapproval. The objection was that Woodstock didn't have a claim on the Renewable Energy Certificates (RECs) required to make these assertions.

A Renewable Energy Certificate (REC) represents proof that one megawatt-hour (MWh) of electricity was generated from an eligible renewable energy resource, and allows the owner of the RECs to claim to have purchased renewable energy. According to the U.S. Department of Energy's Green Power Network, RECs represent only the environmental attributes of the power produced from renewable energy projects and are sold separately from the commodity electricity.

These conditions result in some curious incongruities. For instance, Westchester Power, a Community Choice Aggregator (CCA), bought Green-e wind RECs from wind farms in Kansas, Oklahoma, and Texas, merged them with New York's standard grid electricity supply, and affirmed the power as renewable. Adversely, a solar farm developer that retains ownership of the RECs and transfers them to the utility can't claim to be offering renewable power because the renewable attributes are owned by the utility. It appears that most local solar projects can't claim to be offering renewable energy because the RECs aren't included in the purchase agreement.

Adding to the complexity are the variety of RECs available, including: Tier 1 RECs, non-transferable RECs, bundled and unbundled RECs, solar RECs, wind RECs, hydro RECs, Green-e RECs, etc. The past two months were spent sorting through the claims and opinions about RECs and small scale hydroelectric power. This report is a summary of that effort.

National Power Group RECs

Sarah Terbush, VP National Power Group, stated that Wallkill and Wappingers Falls hydro generators create (mint) non-transferable RECs that are tracked by the New York Generation Attribute Tracking System (NYGATS). These certificates are ineligible for Tier 1 compliance under the Renewable Energy Standard; they have no monetary value and are

non-tradable, unsellable, non-monetizable, and non-transferrable, except under the provisions of a Community Distributed Generator (CDG) contract. Woodstock has two CDG contracts with the Natural Power Group, and therefore has a claim on the RECs associated with these contracts. The first contract with the Walkill plant was signed in May 2018 for 37,000 kWh, and then upgraded in 2019 to 44,000 kWh. A second contract with the Wappingers Falls plant was signed in December 2018 for 681,000 kWh. Combined, these two contracts account for over 90% of Woodstock’s electricity usage.

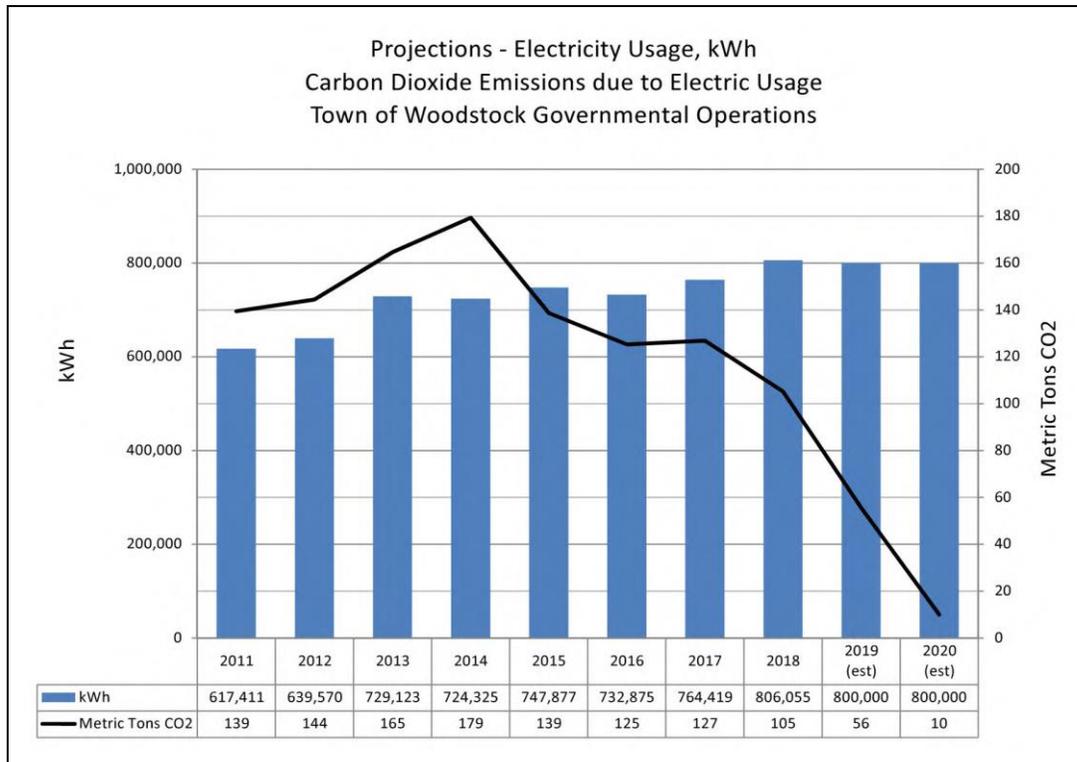
Woodstock’s Carbon Dioxide Emissions due to Electricity

The table summarizes the carbon dioxide calculations for Woodstock’s electric supply.

kWh		2018	2019 (est)	2020 (est)
Woodstock Usage (kWh)		806,055	800,000	800,000
Walkill Hydro	(Note 1)	18,500	44,000	44,000
Wappinger Falls Hydro	(Note 2)		340,500	681,000
Total Hydro		18,500	384,500	725,000
Central Hudson (Grid)	(Note 3)	787,555	415,500	75,000
Metric Tons CO₂	(Note 4)	105	56	10

Note 1: Only six months of the contracted 37,000 kWh was credited in 2018. Credit for the full 44,000 kWh amount is expected in 2019 and 2020.
Note 2: Only six months of the contracted 681,000 kWh is expected in 2019.
Note 3: Amount of electricity sourced from the grid after deducting hydroelectric power.

Note 4: Power sourced from Walkill hydro and Wappingers Falls hydro has zero carbon dioxide content. Power sourced from the grid has a carbon dioxide content of 295 lbs./MWh, based on EPA’s upstate New York region and eGRID2016.



Woodstock’s Renewable Energy Certificates (RECs)

The table summarizes the allocation of National Power Group RECs.

RECs		2018	2019 (est)	2020 (est)
Woodstock Usage (MWh)		806	800	800
Wallkill Hydro	(Note 5)	18.5	44.0	44.0
Wappingers Falls Hydro			681.0	681.0
Total Hydro RECs	(Note 6)	18.5	725.0	725.0
Central Hudson (MWh)		787.6	75.0	75.0
UPNY Renewable	(Note 7)	249.7	23.8	23.8
Total Renewable	(Note 8)	268.2	748.8	748.8
Renewable Percent		33%	94%	94%

Note 5: RECs minted by the Natural Power Group consistent with Woodstock’s CDG contracts.

Note 6: Sum of National Power Group hydropower RECs claimed by Woodstock.

Note 7: Renewable, large scale hydroelectric content in upstate New York (UPNY) EPA subregion grid supply.

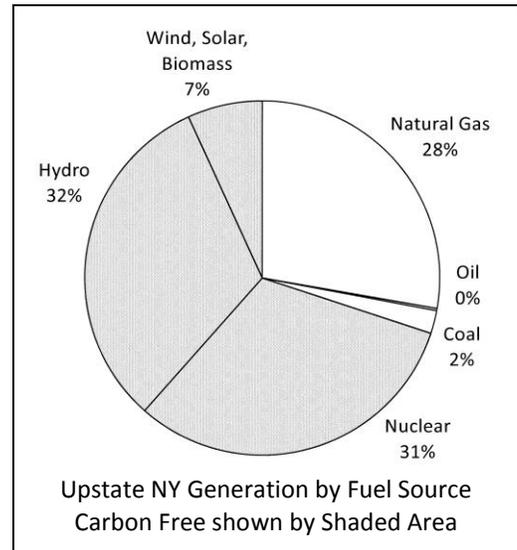
Note 8: Sum of Natural Power Group RECs and large scale hydroelectric grid supply.

Upstate New York Energy Supply

Upstate New York’s energy supply has relatively low carbon content, but only upstate hydroelectric generation is considered renewable. Although wind, solar, and biomass are renewable, the RECs associated with this generation have been claimed and are not available. Large scale hydro does not mint RECs, so it’s appropriate to include its renewable attributes.

Nuclear is not renewable, but it’s essentially carbon free. Combined with hydro, wind, solar, and biomass, upstate New York’s generation is about 70% carbon free.

Below is a table of attributes for Woodstock’s electric supply.



Summary, Woodstock Electric Power Projections

Town of Woodstock	2018	2019 (est)	2020 (est)
Metric Tons, CO ₂	105	56	10
Renewable	33%	94%	94%
Carbon Free	71%	84%	97%

Some Conclusions and Observations

The time and effort investigating RECs wasn’t worth it. Although we certainly learned more than we ever wanted to know about RECs, it’s not clear for a municipality there’s any value in understanding RECs. It’s just another layer of complexity on top of what is already a complex and confusing subject. But there were some interesting and unexpected discoveries.

The original complaint that Woodstock’s announcement of renewable hydroelectric power was unsupported by available RECs was resolved. Woodstock has access to the RECs needed to support its claim, but this conclusion was fortuitous. The National Power Group established a REC tracking protocol with the expectation the RECs would be Tier 1 and transferred to Central Hudson. They were subsequently informed that their hydro facilities were preexisting and not eligible for Tier 1 RECs. These resulting RECs were then made available to Woodstock.

Because these RECs are sourced from a preexisting facility, they can’t be used to qualify for the EPA’s Green Power Partnership and NYSERDA’s Clean Energy Communities program doesn’t recognize hydroelectric.

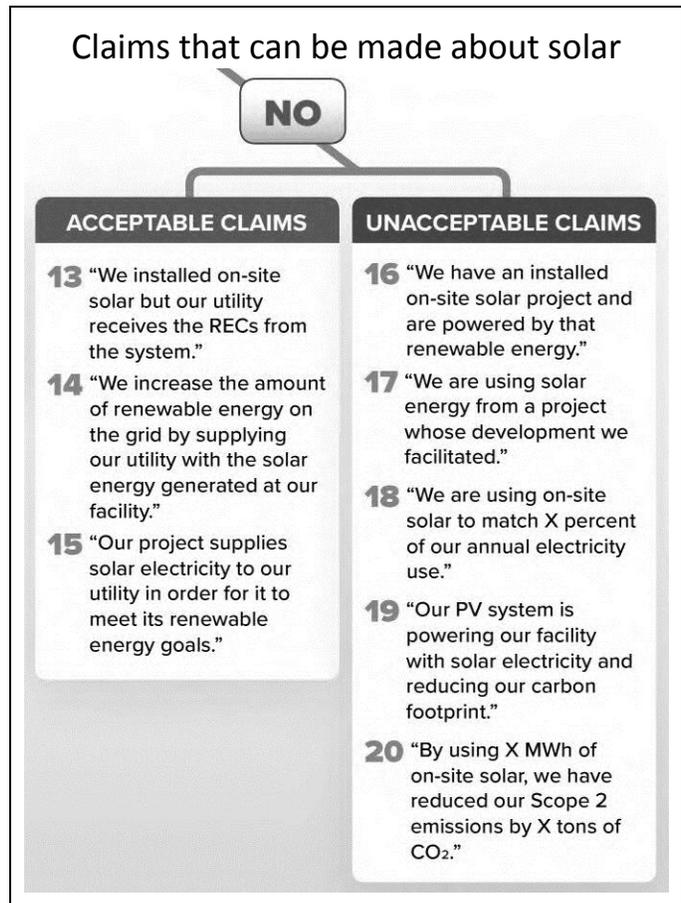
The reverse is true for solar developers. Because solar RECs are qualified as Tier 1, the ownership is transferred to the utility and the developer loses the right to offer renewable energy.

Available on the web are documents prepared by committees of lawyers describing what legally can be claimed for solar.¹ I’ve never known a solar developer to follow these suggestions.

For RECs that are unbundled and sold separately, the purchaser of the RECs bought the legal right to the renewable attributes they represent. This means the energy originally associated with the RECs can no longer be considered renewable or to originate from a renewable source.

A developer that sells RECs associated with the energy sourced from solar PV installations cannot legitimately claim to be offering renewable power. Only the purchaser of the RECs can make that claim. Locally, that would be Central Hudson for Tier 1 solar RECs.

The suggested solution for solar customers wishing to make renewable energy claims is to purchase replacement RECs from a different source. The renewable electricity claims would then be based on the attributes (i.e., resource type, location, vintage) conveyed by the replacement RECs - not from the original solar RECs.



¹ “Solar Power Use Claims Flowchart,” EPA Green Power Partnership, Available at <https://www.epa.gov/sites/production/files/2017-09/documents/gpp-solar-claims-flow-diagram.pdf>

Gas Pains

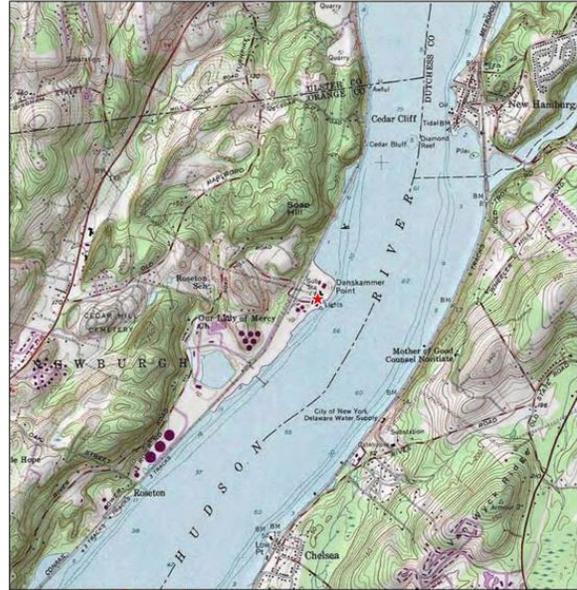
There are five new natural gas plants either completed and on-line, currently under construction, or have entered into the permit and application process that are identified as replacements for Indian Point.

Danskammer Power Plant

Danskammer Energy, LLC filed a proposal with the PSC to repower its existing Danskammer generating station in the Town of Newburgh, a 532 MW natural gas peaking plant. The repowered facility will be a natural gas combined cycle generator of up to 600 MW, which will interconnect with an existing 115 kV electric transmission infrastructure and utilize the existing natural gas pipeline.

The comments below were submitted in response to the Article 10 draft stipulations. Several of EMC's comments previously submitted were incorporated into the draft stipulations.

- Requested delineation of the existing coal ash landfill and its leachate collection system, processing facility, and landfill monitoring wells.
- Requested descriptions of the impact of discharges of aqueous ammonia and #6 bunker fuel oil to be added to stipulation 15, Exhibit 15(l).
- Include a site plan showing the location of the proposed Project Facility in relation to the projected high, sea-level rise for 2100 in the lower Hudson River as defined by 6 NYCRR Part 490, Projected Sea Level Rise. Anticipated sea level rise, flooding, and storm surges could possibly leave the Danskammer site flooded long before the useful end-of-life of the new generators.



The Hudson River showing Danskammer Point

Students Rally against Meadowlands Power Plant

A marching protest to “Save Our Lungs” by blocking a controversial power plant proposal in the Meadowlands drew hundreds of protesters to Ridgely High School on Saturday, who sought to press Gov. Phil Murphy’s administration into rescinding permits granted to the project. The march featured a strong contingent of local high school students from across the county, who partnered with environmental organizations such as the Sierra club and Food and Water Watch to rally against the gas-fired power plant in an area already graded an ‘F’ for clean air by the America Lung Association.

Woodstock Day School Wins Drawdown Eco-Challenge

Out of 1,054 teams, 79 countries and 14,144 participants, the Woodstock Day School amassed the most points worldwide in the Drawdown Eco-Challenge, netting the school not just one, but two prizes: Top School and Top Team. The awards include a video chat with eminent climate scientists and activists, a \$1500 gift certificate, and an invitation to present at the 2019 Drawdown Learn Conference at Omega Institute in Rhinebeck.

WOODSTOCK DAY SCHOOL WINS PROJECT DRAWDOWN ECOCHALLENGE

Out of 1,054 teams, 79 countries and 14,144 participants, the Woodstock Day School amassed the most points worldwide in the Drawdown EcoChallenge, netting the school not just one, but two prizes: Top School and Top Team. The awards include a video chat with eminent climate scientists and activists, a \$1500 gift certificate, and an invitation to present at the 2019 Drawdown Learn Conference at Omega Institute in Rhinebeck.

The Project Drawdown EcoChallenge is an annual, free, 21-day engagement program focused on carbon reduction, and follows actions highlighted in environmentalist Paul Hawken's bestselling *Drawdown: the Most Comprehensive Plan Ever Proposed to Reverse Global Warming*, a book based on research that maps, measures, models, and describes solutions to global warming. In the EcoChallenge, participants engaged in various sustainability-oriented, point-earning actions, tracking and sharing progress online in a robust platform. Over 80 actions within seven challenge categories provided participants with diverse options to reduce carbon usage, like helping efforts to educate girls in developing countries, eating more plants, upcycling, composting, planting trees, eliminating plastic bag usage, and properly disposing refrigerants. One of the goals is to create new habits.

"I was amazed at what our community is able to do when we come together," STEM teacher Amy Shapiro said. "In addition to students, a lot of parents got really involved, doing energy audits of their homes, and writing online about their research. Here at WDS, we stepped up recycling protocols, kids ate more plant-based diets, and we organized visits from Woodstock's Overlook Bicycles, and Native American Evan Pritchard, who talked about indigenous land usage."

ECO-CHALLENGE LIT A SPARK AT WOODSTOCK DAY SCHOOL

I was inspired by my experience as a participant in the Woodstock Day School's Drawdown Eco-challenge team this April. If you don't know about it yet, "Drawdown EcoChallenge is a 21-day engagement program focused on carbon reduction that follows actions highlighted in Drawdown, a book based on meticulous research that maps, measures, models, and describes solutions to global warming that already exists. Participants track and share their progress online in a robust platform and earn points for taking action. The combination of collective action, camaraderie, and friendly competition makes change a little easier — and a lot more fun."

By challenging ourselves to do more, guess what? We did more! Everything from eating plant-based meals to relying on pedal and foot power to get places to recycling everything that could be recycled to being mindful of food waste to learning about alternative energy, electric bikes, electric cars, silvopasture, the remarkable effectiveness of educating women and girls around the world as a way to reduce global warming emissions, and more.

I am so grateful to Omega Institute's Center for Sustainable Living for inviting teachers from WDS and other area schools to participate in the Drawdown Learn Conference this past fall and for inviting us to participate in the Eco-Challenge this spring.

And I am very proud of the Woodstock Day School community for rising to the challenge. Led by our wonderful STEM coordinator, Amy Shapiro, our scrappy little team won first place!

The Eco-Challenge has sparked a tremendous amount of enthusiasm, interest and activity that we mean to build on both within our school as well as in the wider community. And our teachers are already looking forward to expanding on this important work with colleagues from all over the country at the Drawdown Learn Conference in October at Omega.

Eve Fox
Woodstock

WLC Honors Mike Hein with William R. Ginsberg Award

Woodstock Land Conservancy honored Mike Hein, the former Ulster County Executive, with its William R. Ginsberg Stewardship Award for demonstrated passion for conservation and the environment. (Woodstock Times, Vol. 46, No. 19, May 10, 2019)

IN TOWN

WLC's Vernal Fling Honors Hein

Woodstock Land Conservancy's (WLC) ninth annual Vernal Fling, 5 p.m.-7:30 p.m. Saturday, May 18 at the Byrdcliffe Barn, 485 Upper Byrdcliffe Road, Woodstock, honors Mike Hein, former Ulster County Executive, with the William R. Ginsberg Stewardship Award, in recognition of his significant achievements toward the protection and improvement of Ulster County's environment. Hein was recently appointed Commissioner of the state Office of Temporary and Disability Assistance.



Mike Hein

The Conservancy, which seeks to preserve and provide public access to some of our most cherished local landscapes and natural resources, cites Hein's three terms as Ulster County's first County Executive as having "demonstrated unrivaled leadership in environmental protection among counties statewide." It points to achievements under Hein's leadership such as becoming the first NYS county government with 100% of its electricity generated from renewable resources; construction of utility-scale solar generation; and creating a county-wide EV charging network for both County fleet vehicles and the public; and mentions the 2016 recognition in *National Geographic Magazine* for Ulster's extraordinary natural landscape and the county's environmental achievements.

William R. Ginsberg

William R. Ginsberg was a leading advocate for the preservation of open space, a professor of environmental law, and a New York City commissioner of parks and recreation in the Lindsay administration. Mr. Ginsberg was an influential voice and legal tactician in the state's environmental movement.

What motivated Mr. Ginsberg was saving open space. In an interview with the Hofstra Law Report, the law school's alumni magazine, at the time of his retirement, Mr. Ginsberg said: "I take credit for having been involved in the preservation of 30,000 acres in New York State. I know that's minuscule, but I'm going to keep at it."

In 2002, the Woodstock Town Board appointed a volunteer committee, the first Comeau Committee, to consider the issue of how best to protect the Comeau property. They recommended an easement in perpetuity and enlisted the help of William Ginsberg, who believed in and wrote the easement.

Woodstock residents, in a second referendum, voted overwhelmingly to adopt the easement and for Woodstock Land Conservancy to ensure the terms of the easement were respected.

Green New Deal

New York to phase out coal fired Power Plants by 2020

NYSDEC adopted regulations that require all power plants to meet strict emissions limits, a move expected to phase out the state's remaining coal-fired power plants by 2020.

New York has two remaining coal plants: the Somerset Generating Station, a 655-megawatt (MW) coal-fired power station near Barker, New York, and the Cayuga Power Station, a 323 MW coal-fired power station near Lansing, New York.

Somerset Generating Station	655 MW	5.1 metric tons CO2
Cayuga Power Station	323 MW	2.4 metric tons CO2

Gov. Andrew Cuomo, in December pledged to bring the state to 100% clean energy, including nuclear, by 2040. Cuomo said the emission control rules will help move the state closer to meeting the Green New Deal he announced in 2019, which requires the state’s power to be 100 percent carbon-free. The state has also mandated that 70 percent of its electricity come from renewable sources by 2030. New York currently gets about 30 percent of its electricity from renewable sources, according to federal energy data.

New York becomes the first state in the country to advance regulatory phase-out of coal-fired power plants by regulating carbon emissions. In 2016, Gov. Andrew Cuomo had called for New York going coal-free and for DEC to develop stricter limits. The new limits go into effect on June 8.

Champlain Hudson Power Express

The Mayor of NYC wants city to run the city on 'zero-emission Canadian hydropower'

April 23, 2019. New York City Mayor Bill de Blasio announced the city’s ‘Green New Deal,’ an effort to “attack global warming on all fronts,” and he wants his city powered by “Canadian hydropower.” In a statement, de Blasio said he wants a deal signed with Hydro-Québec by 2020. The proposed deal would include \$14 billion in new and committed investments that would ensure New York City a 30% reduction in emissions by 2030.

Mayor de Blasio said, the city will need to import "zero-emission Canadian hydroelectricity." He called for negotiations to begin on building a supply line to connect a Hydro station south of Montreal with the Big Apple. The project called the Champlain Hudson Power Express would be a 536-kilometre underground [underwater] high-voltage line with 1,000 megawatts of transmission capacity; enough energy to power one million homes. The nearly \$3-billion project has been in the works since 2008. It was delayed initially by local concerns about its route and, more recently, by slow sales to potential clients.



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Ulster County Climate Smart Committee Town of Woodstock Report for June 24, 2019

Woodstock’s Comprehensive Plan

The Woodstock Comprehensive Plan, as adopted by the Town Board, assigned coordination of the town’s climate change activities to the Environmental Commission. The town is involved with several climate programs, including DEC’s Climate Smart Communities Program and NYSERDA’s Clean Energy Communities Program. The Comprehensive Plan also includes a major focus on water resource management, an item missing from previous plans.

Climate Smart Communities (CSC)

The DEC Climate Smart Communities Program is used by New York communities to reduce greenhouse gas (GHG) emissions and improve climate resilience. Climate Smart Communities can take action in two ways to minimize the risks and reduce the long-term costs of climate change: by reducing GHG emissions and by adapting to the unavoidable effects of a changing climate.

Reducing GHG Emissions: Reduce GHG emissions and create permanent carbon sinks that remove GHG emissions from the atmosphere; actions that will help stabilize atmospheric levels of carbon dioxide at manageable levels.

Adapting to a Changing Climate: Making changes to infrastructure and the environment that will alleviate the risks associated with changes in climate.



NEW YORK
STATE OF OPPORTUNITY

Department of Environmental Conservation

A Guide to Local Action

Climate Smart Communities Certification

Members of the Climate Smart Communities Program are a network of New York communities engaged in reducing greenhouse gas (GHG) emissions and improving climate resilience. Climate Smart Communities can take action in two main ways to minimize the risks of climate change and reduce its long-term costs:

Reducing GHG Emissions: Starting now to reduce GHG emissions and create permanent carbon sinks that remove GHG emissions from the atmosphere - these actions will help stabilize atmospheric levels of carbon dioxide at manageable levels and avoid severe climatic changes.

Adapting to a Changing Climate: Altering the built and natural environment in anticipation of predicted climatic changes, or in response to actual changes, will alleviate the risks associated with unavoidable changes in climate.

Reducing GHG Emissions

In March 2007, the town board adopted a resolution committing that town governmental operations would be carbon neutral by year-end 2017. The town achieved carbon neutrality in 2015 and was formally recognized for its accomplishment at the 2017 annual meeting of the New York State Association of Conservation Commissions. Since 2011, carbon dioxide emissions from town governmental operations have dropped by 15%, and a 30% reduction is expected by 2020.

500-acres of town owned forest are identified as a carbon sink available to sequester carbon emitted by town governmental operations. By year-end 2018, not only has the town reached carbon neutrality, the town has achieved Drawdown, defined as sequestering more carbon dioxide than it emits.

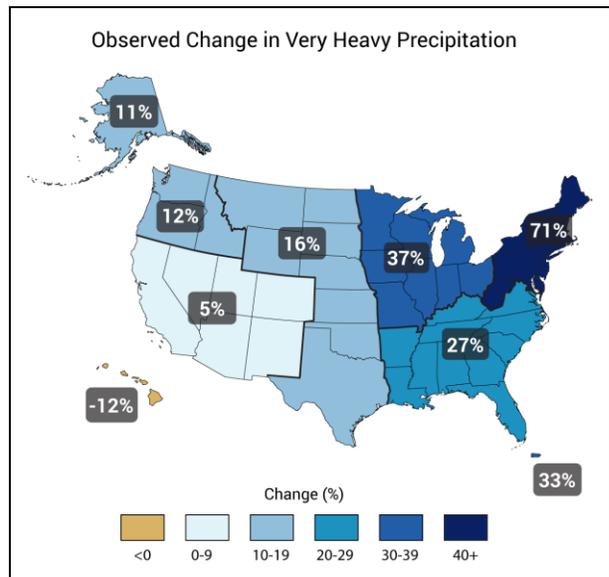
Woodstock’s Comprehensive Plan Committee considered incorporating reducing GHG emissions for the entire town as an objective in the comprehensive plan, but chose not to.

Climate Induced Flooding

Recent storms showed that much flooding occurs outside the government-drawn flood zones. In Houston, two-thirds of flooding was outside the 100-year flood zone, as defined by the Federal Emergency Management Agency (FEMA). And more than half the flooding was outside all flood zones — 100-year, 500-year or minimal hazard. The failure of Houston’s FEMA flood maps to predict the areas of flooding and damage should be of concern to Woodstock.

Storms like these are supposed to be rare, the kind that happen only once each century, or even once every 500 years. Maps developed by the Federal Emergency Management Agency and states are supposed to help predict where floods are likely to occur. But, in Texas, areas way outside of those mapped flood-plains have flooded multiple times in recent years.

The United States National Climate Assessment measured trends in extreme rainfall for different regions of the country, quantifying the amount of rainfall occurring in the heaviest 1% of all rain events. The Assessment found a 71% increase in the amount of rain in those events in the Northeast United States, including New York. FEMA maps show where the flood plains are, but the maps in use don't take into account rainfall changes that have started to take place because of climate change.



Source Drinking Water Protection

Earlier this year, the state solicited communities to work with a state-hired consultant to develop and implement a source drinking water protection plan. The application period closed on February 15, 2019, but for communities that were not selected, DOH is hiring staff that will be placed throughout the state to assist with developing and implementing a protection plan.¹

Woodstock did not apply for the state sponsored program, but the town will apply to participate in the follow-on program.

Protecting drinking water is a high priority, and in response, New York State is launching an initiative to provide municipalities with resources and tools to proactively protect their drinking water sources. The New York State Department of Environmental Conservation (DEC) and Department of Health (DOH), in consultation with the Department of State (DOS) and Department of Agriculture and Markets (DAM), are building a comprehensive, statewide, sustainable Drinking Water Source Protection Program (DWSP2). The State will assist municipalities with understanding the risks to their drinking water sources and what protection actions might be appropriate.

Current Activities

Sawkill Creek added as Inland Waterway

Senate Bill 2157 designating the Sawkill as an inland waterway was adopted and is awaiting the governor's signature. The bill was introduced by Kevin Cahill in the Assembly and Sen. Amedore in the senate.

Introduced by Sen. Amedore -- read twice and ordered printed, and when printed to be committed to the Committee on Finance

AN ACT to amend the executive law, in relation to including the Sawkill Creek in Ulster county within the definition of "inland waterways" for the purposes of waterfront revitalization.

Wappinger Falls Hydroelectric

The penstock directing water to the Wappinger Falls hydroelectric generator failed, causing an interruption in the delivery of hydroelectric power.

I was interviewed by Mike Hill of the Associated Press about Woodstock's use of hydroelectric power.

Hudson Valley Community Power

As of July 1, 2019, six communities will obtain electricity through Hudson Valley Community Power (HVCP), a Community Choice Aggregator (CCA), which was formed in partnership with Joule Community Power. The participating communities include Beacon, Cold Spring, Fishkill, Marbletown, Philipstown,



¹ New York State, "Drinking Water Source Protection Program," May 2019, Available at https://www.dec.ny.gov/docs/water_pdf/dwsp2factsmay2019.pdf

and Poughkeepsie. The program enables the communities to pool local electricity demand to leverage the collective buying power of residents and small businesses to secure more favorable energy supply rates and designate renewable generation sources.

Completed an initial assessment of the program to understand its sources of renewable generation and its applicability to Woodstock. Further analysis will wait until results can be obtained from the participating towns.

Danskammer

Danskammer Energy, LLC, filed a proposal to repower its existing Danskammer generating station, a 532 MW natural gas peaking plant. The repowered facility will be a natural gas, combined cycle, generator of about 600 MW and will interconnect with an existing 115 kV electric transmission substation and natural gas pipeline.

The first meeting to review proposed Article 10 Stipulations was held on June 11 in Albany. The purpose of the Stipulation Process is to reach agreements as to the scope and methodology of the studies and analyses, as well as required information for, the Article 10 Application.

Bill Reid, CEO Danskammer Energy, LLC, and Michelle Hook, Danskammer VP of Public and Government relations, are scheduled to present to the Ulster County Environmental Management Council at its June 26, 2019 meeting.

Woodstock Ecology / Voices of Ecology Festival

"Voices of Ecology" Festival
Seed Song Farm in Kingston NY
September 1, 2019.

The mission of Woodstock Ecology, www.woodstockecology.org, is to establish an artistic "Voice and Vision" to inspire and motivate constructive environmental action. This much-needed platform will foster unity by creating songs that will serve as anthems and be recognized worldwide, much like the music of the civil rights and peace movements.

The Woodstock area will serve as a creative hub, carrying our voices beyond the borders of this intensely arts-rich community. To fulfill our mission we are having our first "Voices of Ecology" Festival at the Seed Song Farm in Kingston NY on September 1, 2019. The Festival will feature music, dance, and spoken word in an atmosphere of celebration and community.

Marty Korn ~ Founder & Director
Elly Wininger ~ Artistic Director
2014 Inductee NY Blues Hall of Fame

Indian Point Closure

After Indian Point closes, downstate energy generation will consist of over 90% natural gas. This high commitment to natural gas will impact the rationale for geothermal heating and combined heat & power (CHP).

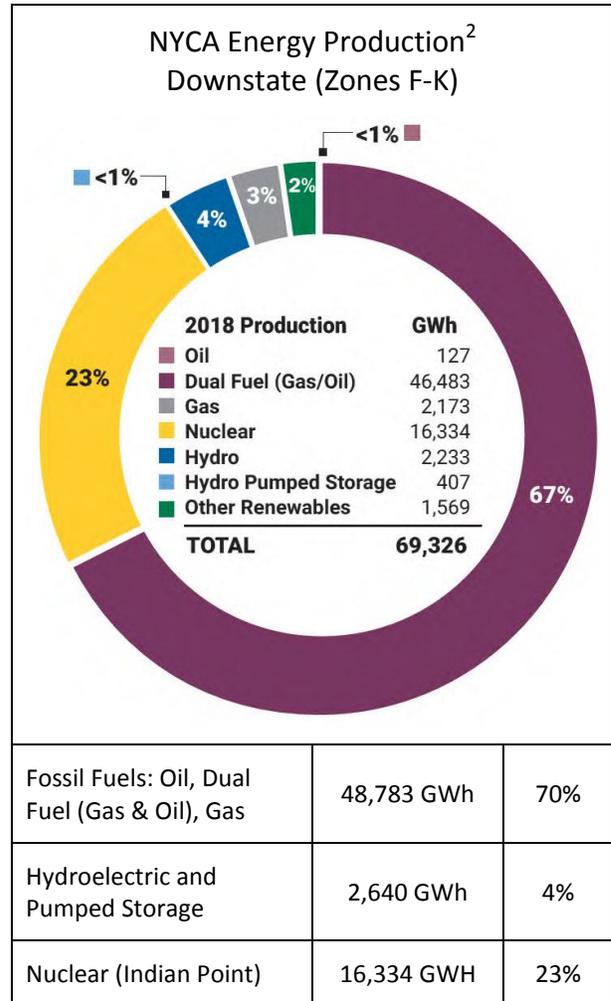
Indian Point accounts for over 23% of electrical generation in downstate energy zones, F-K, and this generation will be replaced by five new natural gas plants. These plants are either already operating, are under construction, or are in the permitting process.

NYISO in its *Indian Point Deactivation Assessment*, identified CPV Valley, Cricket Valley, and Bayonne, NJ, Energy Center as new sources of natural gas generation to replace Indian Point.³ Since NYISO's assessment, two additional natural gas generators have been announced: North Bergen Liberty has proposed a 1,171 MW generator for the Meadowlands with a direct transmission line to New York City and the owners of Danskammer have announced they will replace the existing peaker plant with a new, 575 MW natural gas generator.

Combined, these new facilities will bring the natural gas capacity available to replace Indian Point up to about 3,564 MW.

Load Zone G

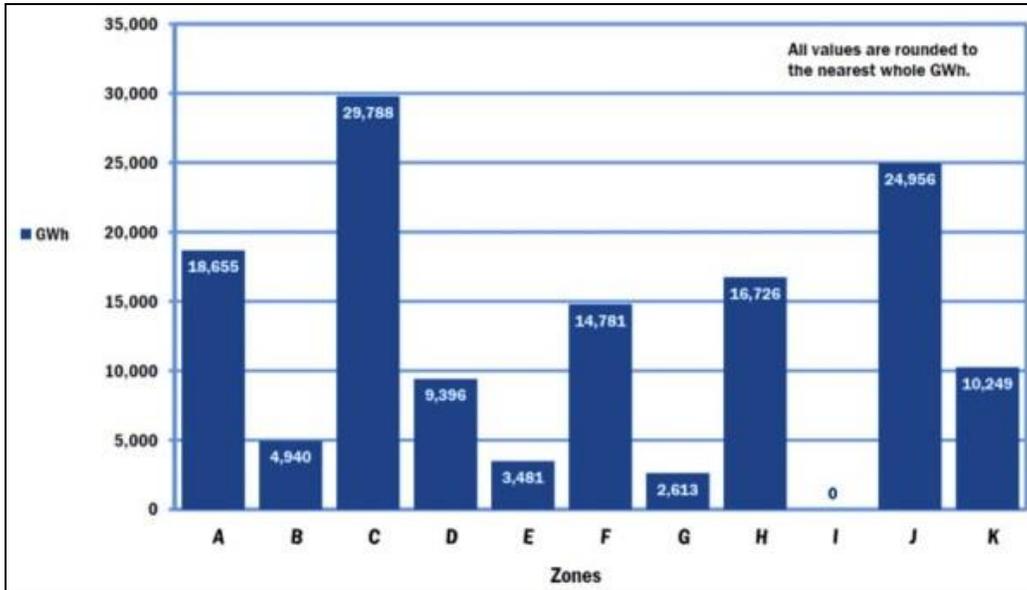
In 2014, NYISO created the New Capacity Zone (NCZ) that combined Hudson Valley Load Zone G, with the Load Zones encompassing New York City, Zones H, I, and J. The imminent retirement of Indian Point has renewed the focus on replacement generating capacity within NCZ to insure reliability.



² NYISO, *Power Trends*, New York Independent System Operator's (NYISO) annual state of the grid and markets report, 2019 Edition, Page 27

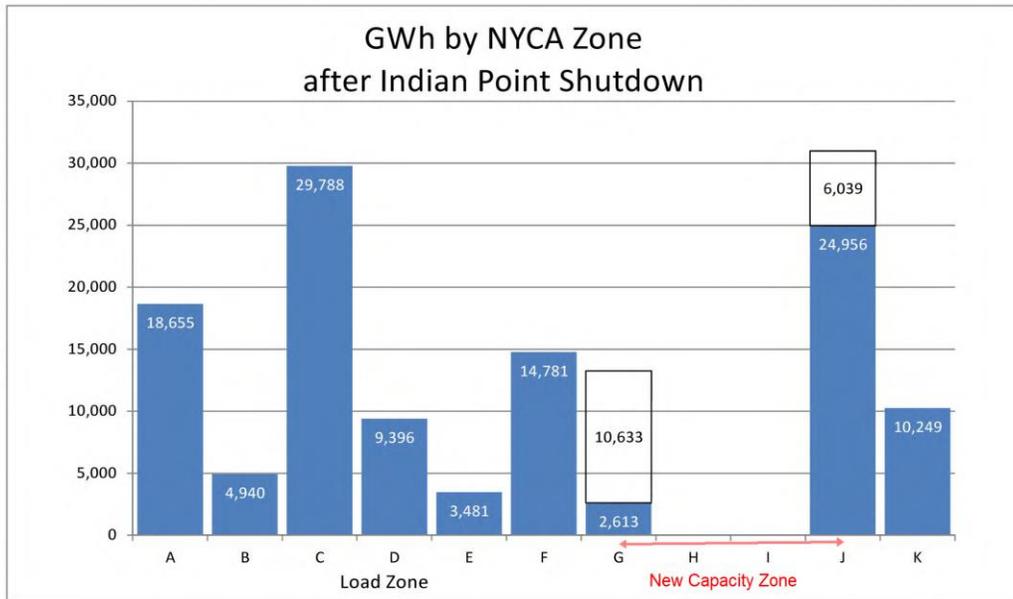
³ NYISO, *Generator Deactivation Assessment, Indian Point Energy Center*, December 13, 2017, Available at https://www.nyiso.com/documents/20142/1396324/Indian_Point_Generator_Deactivation_Assessment_2017-12-13.pdf/f673a0f8-5620-1d7b-4be2-99aaf781ac5c

Below is a bar graph showing New York’s 2018 electric generation in GWh by Load Zone.⁴ The Hudson Valley is Zone G. Zone H is Indian Point. Zones I & J are New York City and vicinity. Combined, Zones G, H, I & J comprise the New Capacity Zone (NCZ).



NYCA Generation by Zone

The following bar chart shows how generation could shift after the closure of Indian Point. There's a huge, about fivefold increase in Zone G generation attributed to Cricket Valley, CPV Valley, and Danskammer. New York City Zone J's increase is attributed to Liberty (Meadowlands, NJ) and Bayonne, NJ, generators.



⁴ NYISO, 2019 Load & Capacity Data Report, Figure III-I: 2018 NYCA Energy Production by Zone, Page 76



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Ulster County Climate Smart Committee Town of Woodstock Report for July 22, 2019

Current Activities

Drinking Water Source Protection

New York State launched an initiative to provide municipalities with the resources and tools to protect their drinking water sources. The New York State Department of Environmental Conservation (DEC) and Department of Health (DOH), in consultation with the Department of State (DOS) and Department of Agriculture and Markets (DAM), are building a comprehensive, statewide, sustainable Drinking Water Source Protection Program (DWSP2). The goal is to help municipalities develop and implement a drinking water source protection plan. The State will assist municipalities to understand the risks to their drinking water sources and what protective actions might be appropriate.

The Town of Woodstock applied and was accepted in the Drinking Water Source Protection Program. Although Woodstock did not respond to the initial solicitation, which closed on February 15, 2019, the town applied to take advantage of the support that would be available for non-participants. Woodstock has collected much of the data identified as key components of a protection plan in the May, 2019, announcement.

The State will soon provide a document that municipalities can use to develop their drinking water source protection plan. In addition to the document, the State will have staff available to assist municipalities with the development and implementation of their community-specific drinking water source protection plan.

GIS Mapping of Woodstock's Aquifer

Last year, Woodstock initiated a project to reactivate the town's GIS system and prepare maps showing potential flooding. The first task is to prepare a GIS map showing the town's drinking water wells, nearby septic systems, and FEMA's 100-year and 500-year flood zones.

Zoning for Utility Scale Battery Installations

NYSERDA held a briefing for municipal officials to inform and warn them of the growth in large, utility scale battery installations. Since most town zoning laws have no provisions regulating batteries, NYSERDA is urging towns to upgrade their zoning laws to cover utility scale battery installations.

NYSERDA warned that batteries present new hazards and dangers for first responders and fire departments. Fires at large scale battery installations will create toxic fumes and an explosive environment. These must be considered during any site plan review and the plans for fire company training.

NYSERDA has released a full set of sample laws for town consideration.

Climate Leadership and Community Protection Act (CLCPA)

The CLCPA will add Climate Change Article 75 to the Environmental Conservation Law, establishing a statewide greenhouse gas emission limit of 60% of 1990 levels by 2030 and 15% of 1990 levels by 2050. It calls for the state to reach net-zero emissions by 2050, and 70% of the electricity consumed in New York State come from renewable sources by 2030 and 100% come from zero emission sources by 2040.

Summary Table: GHG Emission Objectives

Program Source	Date	GHG Goal	By Year	Compared to
Executive Order 24	Dec. 2009	80% Reduction	2050	Compared to 1990
2015 New York State Energy Plan	June 2015	40% Reduction	2030	Compared to 1990
		80% Reduction	2050	
Governor Cuomo Letter	Dec. 2015	40% Reduction	2030	
Clean Energy Standard, Phase1	Aug. 2016	40% Reduction	2030	Compared to 1990
		80% Reduction	2050	
Cuomo's Green New Deal	Jan. 2019	40% Reduction	2030	Compared to 1990
		85% Reduction	2050	
CLCPA	June 2019	40% Reduction	2030	Compared to 1990
		85% Reduction	2050	

Although these mandates are now codified into law, it's not clear how much has changed. Governor Patterson, in Executive Order 24 of 2009, mandated an 80% reduction by 2050 in GHG emissions compared to 1990. CLCPA mandates an 85% reduction by 2050. Below is a table showing the GHG objectives from the various clean energy programs.

CLCPA mandates that 70% of the electricity consumed in New York State come from renewable sources by 2030 and 100% come from zero emission sources by 2040. (Zero emission sources would encompass technology beyond solar and wind.) This is an increase from the previous objective of 50% renewables by 2030 – the 50 by 30 goal.

Power Trends 2019 Released



The New York Independent System Operator (NYISO) released *Power Trends 2019*. Each year, this report provides information and analysis on how technology, economic forces, and public policy are shaping the power grid and the implications for the state's wholesale electricity markets.

According to NYISO, New York is evolving into two, essentially independent energy markets with different characteristics and limited opportunity to share. Absent an investment in transmission lines, investments in upstate renewables will have little or no value because nearly 90% of the energy produced upstate is derived from carbon-free resources.

Furthermore, after the closure of Indian Point, downstate will become completely dependent on natural gas generation. NYISO calls this the “Tale of Two Grids.”

NYISO – The Tale of Two Grids¹

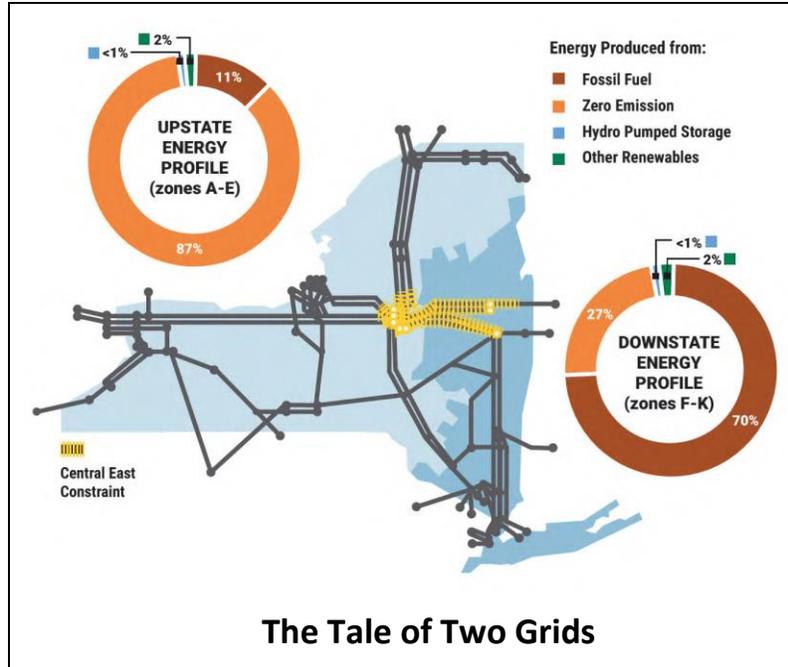
- **Lack of Transmission Prevents Interconnection**
- **Upstate – No Need for Renewables, already 90% Zero-Emissions**
- **Downstate – 97% Fossil Fuel generation after Indian Point Closure**

New York's electrical grid is highly asymmetric: New York City and downstate areas consume about two-thirds of the electricity in the state, while upstate produces the most energy. More importantly, upstate is relatively clean energy because of the amount of hydro, nuclear, and wind generation. Unfortunately, this surplus energy can't reach downstate because of transmission constraints. The result is a lot of new downstate fossil fuel generation, which will increase after Indian Point nuclear plant closes.

The “Tale of Two Grids,” introduced in NYISO's *Power Trends 2017*, identified two energy sectors with differing characteristics; the upstate sector, NYISO load zones A-E, differ from the downstate sector, load zones F-K.

In the upstate sector, zero-emitting resources accounted for about 90% of the energy produced in load zones A-E, while downstate, which consumes about 66% of the energy in the state, received 70% of its energy from fossil fuel-fired generation.

¹ NYISO, *Power Trends 2019*, New York Independent System Operator's (NYISO) annual state of the grid and markets report, 2019 Edition, Page 10



Indian Point accounts for 23% of electrical generation downstate, and this generation will be replaced by up to five, new natural gas plants, which are either already operating, are under construction, or are in the permitting process.

If wind and solar farms are built upstate, the grid, without upgrades to its transmission lines, will not be able to deliver the additional renewable power downstate. If the transmission constraints are not alleviated, the “Tale of Two Grids” will unfold into a “Tale of Two Markets,” with disparities in bulk power costs and system investment needed in different regions of the state.

	Upstate Grid	Downstate Grid
Fossil Fuels	11%	70%
Zero Emission	87%	27%
Pumped Storage	<1%	<1%
Other Renewables	2%	2%

Beyond Coal to Data

The state’s two remaining coal-burning power plants, the 655-megawatt Somerset Generation Plant in western New York and the 155-megawatt Cayuga plant near Ithaca, must be coal-free by the end of 2020 or close down under new regulations setting stricter limits on carbon dioxide emissions designed to fight climate change. New York becomes the first state in the country to advance regulatory phase-out of coal-fired power plants by regulating carbon emissions. In 2016, Gov. Andrew Cuomo called for New York to go coal-free and for DEC to develop stricter limits. The new limits went into effect on June 8, 2019.

Earlier this year, the owners of the Cayuga and Somerset plants informed local officials that they were exploring converting the plants into data centers for a large internet company, thus making the facilities consumers of power instead of producers.

Power plants offer unique infrastructure advantages for large banks of data servers. Computing power demands large amounts of electricity that exceed the electrical interconnection capacities of most commercial or industrial sites. Old power plants offer the combination of robust electric transmission capacity and cooling appropriate for a large scale data center.

Cayuga Power Plant

The Cayuga Power Plant is located on the shore of Cayuga Lake in Lansing, just north of Ithaca. Earlier plans to convert the power plant to natural gas faced strong opposition from residents, activists, as well as town and county government officials. In February of 2016, New York's Public Service Commission denied a request to convert the coal-fired plant to natural gas at the expense of ratepayers.



At a June 2019 town hall meeting, the company gave a comprehensive presentation of the plans to convert the plant to data center operations, which was immediately followed by a meeting of the Lansing Town Board that unanimously approved a resolution in support of the project.

The company plans to invest \$100 million to repurpose the 434-acre Cayuga plant to create the 'Empire State Data Hub.' Company officials estimate the project will create 600 Union construction jobs, and would employ 200 full time workers with salaries in the \$40,000 to \$60,000 range.

The project needs state support. The Empire State Data Hub application is seeking a 125 MW allocation of renewable energy from the New York Power Authority, and another application is requesting \$65 million in economic assistance from Empire State Development to support the transition.

Somerset Power Plant



The Somerset project, priced at \$550 million, depends on state assistance: \$65 million in cash incentives from Empire State Development and other Albany agencies and 125 megawatts of low-cost electricity from the New York Power Authority. Turning the Somerset power plant into a data center would create an estimated 160 full-time jobs, while the massive retrofit would employ about 500 union construction workers.

Somerset Supervisor Daniel M. Engert said the state should support the retrofit of the plant, since Cuomo, in his view, bears responsibility for the plant's lack of economic viability. "He announced his intention to have (the Department of Environmental Conservation) write regulations to make it impossible for

a coal plant to operate in New York State, to basically kill coal," Engert said. "We're hoping the governor would step up and support this."

"The state stands ready to help workers and communities transition to a clean energy future through the Governor's Clean Climate Careers initiative created to address the needs of the local communities affected by any closures, as well as a host of clean energy programs to support transitioning these plants away from coal and its negative impacts on public health," Cuomo spokesman Jordan Levine said. "To that end, we look forward to working with Supervisor Engert and the Town of Somerset now that these regulations have been adopted."

Engert also said a large project at the 1,800-acre site on Lake Road would be "an anti-Apex project," bringing more benefits to the town than the Lighthouse Wind project from Apex Clean Energy. Somerset has been fighting the wind power project since 2015. Earlier this year, Apex closed its Barker office and announced it would not apply for state approval for its project this year. Engert pronounced the wind project dead, but the company denied that.

The Somerset power plant was built more than 30 years ago by New York State Electric & Gas Corp. Beowulf acquired the Somerset plant and the Cayuga plant in Tompkins County in 2015 in the wake of the 2012 bankruptcy by its later owners, AES Eastern Energy, which left the plants in the hands of their creditors.



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In March 2007, the Woodstock town board committed that town governmental operations would be carbon neutral by year-end 2017. The town achieved carbon neutrality in 2015 and was formally recognized for its accomplishment at the 2017 annual meeting of the New York State Association of Conservation Commissions.

Woodstock is now considering actions necessary to accomplish the second major theme of the Climate Smart Communities program: Adapting to Climate Change.

Current Activities

Sawkill Watershed Technical Working Group

There was a meeting of interested parties hosted by the Woodstock Land Conservancy to review existing documentation on the Sawkill watershed and explore additional work and data requirements.

GIS Mapping of Woodstock's Aquifer and Wellfield

Last year, Woodstock initiated a project to reactivate the town's GIS system and prepare maps showing potential flooding. In December 2017, the supervisor authorized restoring the town's GIS system and allowing its use by a student member of the environmental commission. The purpose of the project was to evaluate the town's capability for using FEMA's digital maps to identify the exposure of the town's critical infrastructure to severe flooding.

The first task was to prepare a GIS map of the town's drinking water wells in Bearsville, with nearby septic systems, showing FEMA's 100-year and 500-year flood zones. Because of the inevitable delays associated with IT projects and dependence on volunteers, the project was completed just in time for the Land Conservancy's Sawkill watershed meeting on July 30, 2019.

From a GIS perspective, there are two conclusions. Locally, Woodstock is able to use GIS to identify and locate critical infrastructure on a parcel map layer, but it also showed our limitations for using the FEMA digital files. The FEMA digital datasets consist of 32 layers,

and it's beyond local knowledge to understand and use these datasets without a lot more work and effort – work and effort that is unreasonable for volunteers to undertake.

Volunteers are able to collect on-the-ground locational data and add it to a parcel map, but it will be necessary to depend on trained professionals to apply FEMA's flood layers over maps of Woodstock's critical infrastructure to understand the exposure to flooding.

EV Charger Activity – Quarterly report for 2Q of 2019

- You dispensed more energy than 71.14 % of other Assure customers.
- You collected more fees than 0.00 % of other Assure customers.
- You fueled more unique drivers than 81.56 % of other Assure customers.
- Your 24 hour charging utilization was higher than 66.19 % of other Assure customers.

Total Energy Dispensed	3,385 kWh
Unique Drivers	70
Session Count	304
Charger Utilization	6.47%

Average Session Duration (Hours)	2.72
Average Session Charge Time (Hours)	1.86
Average Session Energy (kWh)	11.14
Average Session Revenue (\$)	0.00
Occupied Hours	827.4
Charging Hours	565.2
Service Tickets	2.0

EV Charging Stations
kWh Used
'2019'

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Total
Rock City Rd	Total kWh Used	1,503	5,333	393		2,011	3,529	2,785						15,554
	Charging Stations	513	752	1,002	552	986	1,062							4,868
	Building Usage	990	4,581	(609)	(552)	1,025	2,467	2,785	0	0	0	0	0	10,686
	Volumetric Cost	0.08673	0.10448			0.07463	0.06003	0.05941	0.00000	0.00000	0.00000	0.00000	0.00000	
	Session kWh	9.44	12.36	14.20	10.89	12.35	11.14							
Community Ctr	Session Cost	\$0.82	\$1.29	\$0.00	\$0.00	\$0.92	\$0.67	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Total kWh Used	5,040	6,000	4,560	3,360	2,520	3,720	6,360	6,960					38,520
	Charging Stations	91	133	177	167	297	320							1,184
	Building Usage	4,949	5,867	4,383	3,193	2,223	3,400	6,360	6,960	0	0	0	0	37,336
	Volumetric Cost	0.06205	0.06733	0.07828	0.07214	0.07463	0.05983	0.05961	0.06646	0.00000	0.00000	0.00000	0.00000	0.06668
	Session kWh	9.44	12.36	14.20	10.89	12.35	11.14							
	Session Cost	\$0.59	\$0.83	\$1.11	\$0.79	\$0.92	\$0.67	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

One problem with the EV charging station usage reports is that the activity is consolidated. This means the use of individual charging stations are not tracked, but instead must be estimated based on kWh by station provided in the quarterly reports.

Local Solar Projects

East Light Partners and CS Energy are expected to begin work installing a 2 MW solar array at the former Saugerties landfill off of state Route 212.¹

Below is a list of known major solar projects in the vicinity of Woodstock.

Town	Solar Type	Size	Location	Status
Saugerties	Community Generation	2 MW	Closed Landfill	Construction Announced
Saugerties	Utility Scale	20 MW	Churchland Lane	Lease Agreement
Town of Kingston	Community Generation	2 MW	Hallihan's Hill	Construction Completed
City of Kingston	Community Generation	485 KW	Point of Praise Hurley Ave	Operational
Town of Ulster	Roof Top Commercial	200 KW	Bread Alone Lake Katrine	Operational
Town of Ulster	Canopies Commercial	150 KW	Bread Alone Lake Katrine	Proposed
Town of Ulster	Rooftop Community	166 KW	Ryan Insurance Ulster Avenue	Operational
Town of Ulster	Community Generation	4 MW 2 MW	Eddyville, Rt 32	Application before Ulster Town Board
Town of Esopus	Governmental	600 KW	Closed Landfill	Operational
Town of Esopus	Community Generation	2 MW	Closed Landfill	Expansion on existing site
Ulster County	Governmental	2 MW	Closed Landfill Town of Ulster	Operational
Ulster County	Governmental	2 MW	Brownfield Site Saugerties	Proposed

¹ William J. Kemble, "Developers ready to begin installation of solar array in Saugerties," Daily Freeman, August 15, 2019, (Available at https://www.dailyfreeman.com/news/local-news/developers-ready-to-begin-installation-of-solar-array-in-saugerties/article_47d684e0-bf81-11e9-985a-e3f47a780d17.html)

NY Bridge Authority	Governmental	486 KW	Kingston-Rhinecliff Bridge	Operational
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Reforming the Energy Vision (REV)

New York’s Reforming the Energy Vision (REV) is a set of multi-year regulatory proceedings and policy initiatives launched in 2014. REV is intended to transform the way electricity is produced, bought and sold in New York, and enable the integration of renewable energy generation and smart grid technologies. REV is ongoing with no predefined end date.

Central Hudson Reaches 85% of Phase-One NEM Allocation

As required in the March 9, 2017 Order (the VDER order), Central Hudson Gas & Electric Corporation submitted its notification that 85% of the 30 megawatt ("MW") capacity allocated to Phase One NEM Mass Market has been reached.

Standby and Buyback Rates

On May 16, 2019, the PSC revamped utility standby and buyback rates to address an issue of ratepayer equity in the age of distributed energy.^{2,3} At issue is who pays for the grid as more customers generate power on site. When customers use more on-site energy and less grid power, their utility bills decrease but other ratepayers are left with the burden of supporting the grid. The problem grows more complex as customers sell excess on-site power to the grid.

Standby rates recover system delivery costs from customers that use on-site generation. Buyback rates represent what utilities pay on-site generators for excess power. The new rates are meant to align with system costs to avoid overcharging or undercharging customers for their use of the grid. Customers can voluntarily opt-in to the new standby rates regardless of whether they use on-site generation.

Capacity Market Proceeding

NYISO requires utilities and other electricity suppliers to buy enough capacity each summer and winter to exceed projected electricity demand and provide a buffer in case of peak demand. The amount, called the “installed reserve margin,” is designed to ensure that grid failures won’t occur more than once every ten years on average. An installed reserve margin of 17 percent requires that New York’s utilities buy enough capacity to exceed their projected peak demand by 17 percent.

² NY Public Service Commission, “PSC Promotes Clean Energy Deployment With Significant Improvements to Standby and Buyback Service Rates,” Press Release, May 16, 2019, Available at <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={421DB1A8-8B35-4432-AB95-A7AE8BDAF71F}>

³ CASE 15-E-0751, “Order on Standby and Buyback Service Rate Design and Establishing Optional Demand-Based Rates,” NY Public Service Commission, (Issued and Effective May 16, 2019), Available at <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={6D5D4D48-AC64-4CF9-9C0C-54C67295B62A}>

But some claim that NYISO’s capacity market rules pose a direct barrier to achieving the state’s clean energy policies. The Public Service Commission (PSC) has issued an order commencing a proceeding that poses a series of questions to stakeholders focusing on whether the currently constructed capacity market is compatible with the state’s clean energy policies.

This action only affects batteries proposed in the New Capacity Zone and New York City. The rest of the state is not subject to contested market rules.

Climate Leadership and Community Protection Act

New York enacted the Climate Leadership and Community Protection Act (CLCPA), which created a new, comprehensive regulatory framework to curtail emissions. Its goals include a requirement to procure 70% of the state’s electricity from renewable sources by 2030; 9,000 MW of offshore wind by 2040; 3,000 MW of energy storage by 2030; an overall 85% reduction in statewide greenhouse gas emissions by 2050; and 100% carbon free electricity generation by 2040.

Carbon Pricing

NYISO is preparing a plan to put a price on carbon dioxide emissions in the power sector. Under the plan, the ISO would incorporate the social cost of carbon emissions into its wholesale energy markets using a carbon price in dollars per ton of carbon dioxide. The cost would be paid by the generators, which in turn would factor it into the cost of electricity.

Imposing a financial cost on CO₂ emissions would prompt reductions in emissions of carbon and other related pollutants from coal, gas, and oil generators and encourage investment in clean sources.

Meetings

NYC Watershed Science and Technical Conference

September 12, 2019

Diamond Mills Hotel, Saugerties, NY

The Watershed Science and Technical Conference was created as an annual opportunity to bring scientists, professionals, and other experts together with watershed stakeholders and the public, to technically inform, exchange ideas, and unveil new information regarding the protection of the New York City reservoirs, the nation's largest unfiltered surface water supply.

2019 Program:

http://www.nywea.org/Training%20%20Conferences%20Documents/Meetings/Trainings_Conferences/WatershedProgram19.pdf

Water Quality Responses to Future Climate in a Water Supply Watershed

Future climate scenarios from a suite of 20 GCM5 were used to simulate the impact of climate change on nutrient loading in the Cannonsville watershed. Preliminary results from SWAT-HS simulations indicate that loading of dissolved forms of nutrients (N and P) will decrease or will have no change under future climate whereas particulate forms of nutrients and sediment loading will increase due to an increase in the frequency of large storm events.

Predicting Source Water Quality in New York City Reservoirs Using Satellite Observations of Watershed Characteristics

This presentation will describe the results of statistical modeling that uses NASA satellite remote sensing observations of watershed conditions to predict source water quality conditions up to one year in advance. Results for NYC DEP reservoirs and NYS DEC-monitored lakes will be shown for various water quality parameters, including nitrogen, phosphorus, organic carbon, chlorophyll-a, and turbidity.

Assessment of Climate Change Impacts on New York City Water Supply System Using Operations Support Tool: CCIMP Phase II

We present results of the second phase of the Climate Change Integrated Modeling Project of New York City Department of Environmental Protection. We use state-of-the-art modeling software system, DEP's Operations Support Tool, to evaluate climate change impacts on the water supply system. Under the projected future climate and current operating rules and assumptions, model simulations demonstrate high resiliency, high reliability, and low vulnerability of the water supply system while the drought conditions remain unchanged.



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Ulster County Climate Smart Committee Town of Woodstock Report for September 23, 2019

In 2007, the Woodstock town board committed that town governmental operations would be carbon neutral by year-end 2017. The town achieved carbon neutrality in 2015 and was recognized for its accomplishment at the 2017 annual meeting of the New York State Association of Conservation Commissions.

Woodstock is now considering the second major theme of the Climate Smart Communities program: Adapting to Climate Change.

Current Activities

Municipal Road-Stream Crossings Grant

Ulster County received a \$106,509 DEC grant to develop a municipal road-stream crossings plan for the Lower Esopus Creek Watershed.¹

Ulster County Department of the Environment, in partnership with Cornell Cooperative Extension of Ulster County, will inventory and assess culverts within the Lower Esopus Watershed to develop town-wide, municipal road-stream crossing management plans for the towns of Woodstock, Kingston, and Saugerties.

The management plans will allow municipalities to identify priority culvert replacement projects that improve flood resiliency and road infrastructure condition and are barriers to fish and wildlife passage. The project also will produce conceptual designs for three county crossings and shovel-ready designs for up to two additional crossings. In recent years, repetitive flood losses in certain areas have plagued the towns of Saugerties and Woodstock.

¹ NY Department of Environmental Conservation, "DEC Awards \$216,000 in Grants to Reduce Flooding and Restore Aquatic Habitats in Hudson River Estuary," Press Release, August 27, 2019, Available at <https://www.dec.ny.gov/press/118052.html>

Zena Road Bridge Replacement

Andrew Emrich, Ulster County Department of Public Works, and Aecom project engineers explained two options for replacing the existing bridge over the Sawkill at a public meeting in Woodstock. The existing bridge was built in 1931 and refurbished in 1995, and it is in need of replacement. The neighbors reported this is an area of substantial flooding caused by Fontyne Kill, a tributary that enters the Sawkill just below the Zena Rd. bridge. As expected, the new bridge will be longer, wider and higher than the existing bridge to accommodate greater flood volumes.

Connect Our Streams Workshop, August 22, 2019

There are more than 10,000 culverts and over 1,000 dams on tributaries to the Hudson River estuary, which can block fish, wildlife, and flood flows in streams. An all-day workshop at the Norrie Point Environmental Center explained how culverts and dams act as barriers in Hudson River tributaries.

Tracy Brown is Trout Unlimited’s northeastern restoration coordinator. Her work is focused on streams in New York and Connecticut.

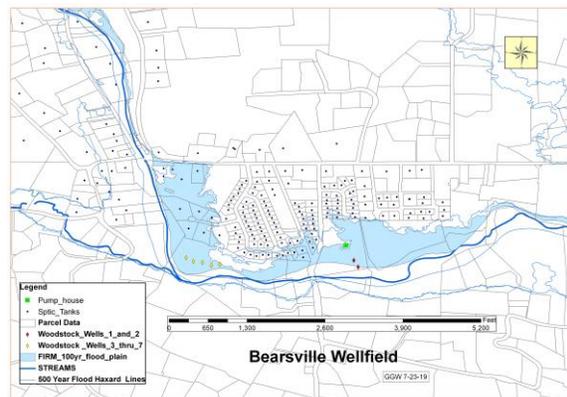
Trout Unlimited in partnership with Cornell Cooperative Extension of Greene and Columbia County and Housatonic Valley Association received a \$109,807 grant to identify and prioritize road-stream crossing replacement projects that will reduce stream habitat fragmentation and improve flood resiliency. The headwaters of the Hudson River support spawning of native species such as Eastern brook trout, American eel, and river herring.

GIS Mapping of Woodstock’s Aquifer and Wellfield

Last year, Woodstock initiated a project to reactivate the town’s GIS system and prepare maps showing potential flooding. The purpose of the project was to evaluate the use of FEMA’s digital maps to identify the exposure of the town’s critical infrastructure to severe flooding.

Met with Aaron Bennett, Deputy Coordinator at Ulster County Department of the Environment and GIS specialist. Aaron explained the FEMA GIS based flood maps and provided copies of the FEMA digital datasets.

The first task was to prepare a GIS map of the town’s drinking water wells in Bearsville and nearby septic systems to show FEMA’s 100-year and 500-year flood zones. From a GIS perspective, Woodstock appears able to use GIS to identify and locate critical infrastructure on a parcel map layer, but also showed limitations in using FEMA’s digital flood map datasets.



Bearsville Wellfield showing 100-year Flood Hazard

Drinking Water Source Protection Project Delayed

At the beginning of the year, New York State launched the sustainable Drinking Water Source Protection Program (DWSP2), an initiative to provide municipalities with the resources and tools to protect their drinking water sources. The goal is to help municipalities develop and implement a drinking water source protection plan.

The Town of Woodstock applied and was accepted in the Drinking Water Source Protection Program. Although Woodstock did not respond to the initial solicitation, which closed on February 15, 2019, the town applied to take advantage of the support that would be available for non-participants. The State will have staff available to assist municipalities with the development and implementation of their community-specific drinking water source protection plan.

The State will provide a document that municipalities can use to develop their drinking water source protection plan, but the availability of this document has been delayed by several months.

Central Hudson Solar Exceeds 100 MW

Central Hudson announced that installed solar capacity in its service area exceeds 100 MW.² There are over 8,900 customer and developer owned solar systems. Additionally, there are 326 proposed solar systems representing an additional 287 MW of capacity.

There is growing interest in community projects known as Community Distributed Generation, or CDG. This year, four solar CDG facilities were brought online, and currently a total of five solar and three hydro CDG facilities are interconnected to Central Hudson's system.

Reforming the Energy Vision (REV)

New York's Reforming the Energy Vision (REV) is a multi-year regulatory proceedings and policy initiative intended to transform the way electricity is produced, bought and sold in New York.

NYSERDA's Future Grid Challenge

The Future Grid Challenge is a \$15 million program for grid technology companies and research institutions to address grid challenges such as incorporating real-time system data, smart technologies, and energy storage into power grid planning and operations. Launched in July, the initial solicitations for the Future Grid Challenge are in partnership with Con Edison and Orange & Rockland.

² Central Hudson, "Central Hudson Reports Solar Milestone," Press Release, August 28, 2019, Available at <https://www.cenhud.com/news/news/central-hudson-reports-solar-milestone>

Climate Leadership and Community Protection Act

New York enacted the Climate Leadership and Community Protection Act (CLCPA) that includes requirements to procure 70% of the state's electricity from renewable sources by 2030; 9,000 MW of offshore wind by 2040; 3,000 MW of energy storage by 2030; an overall 85% reduction in statewide greenhouse gas emissions by 2050; and 100% carbon free electricity generation by 2040.

Solutions to Climate Change Presentations; Woodstock Jewish Congregation

Ross Gould, Air and Energy Program Director, Environmental Advocates of NY, a WJC Sustainability Committee member and lawyer focused on environmental law and energy law and policy, explained the Climate Leadership and Community Protection Act and why it's one of the most comprehensive climate change bills in the nation and what still needs to be done to have it implemented.

Rachelle Gura, WJC Sustainability Committee member, presented the carbon tax climate bill that has been introduced in Congress.

Danskammer

On February 8, 2019, Danskammer Energy, LLC, (Danskammer Energy) filed a Preliminary Scoping Statement (PSS) to repower the Danskammer Generating Station with a new combined cycle, natural gas generator.

Article 10 Stipulations Available for Public Comment

On September 6, 2019, Danskammer Energy released the proposed stipulations that begin a 30-day comment period for interested persons to submit comments. During the 30-day public comment period, any person, agency or municipality may submit comments on the stipulations.

The stipulations define the studies, documents, plans, etc. that will be submitted with the Article 10 application. The purpose of the stipulation process is to reach agreement among the stakeholders as to the scope and methodology of the studies and analyses required. The first meeting to review the proposed Article 10 Stipulations was held on June 11, 2019 in Albany. Subsequent meetings were held June 22, July 15, 17, 22, 23 and 30.

Meetings

NYC Watershed Science and Technical Conference

September 12, 2019, Diamond Mills Hotel, Saugerties, NY

The Watershed Science and Technical Conference is an annual meeting for scientists, professionals, and other experts with watershed stakeholders and the public for an exchange of ideas and new information regarding the protection of the New York City reservoirs.



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Assessment of Climate Change Impacts on New York City Water Supply System Using Operations Support Tool: CCIMP Phase II

The second phase of the Climate Change Integrated Modeling Project of New York City Department of Environmental Protection uses state-of-the-art modeling software system and the DEP's Operations Support Tool to evaluate climate change impacts on the water supply system. Under the projected future climate and current operating rules and assumptions, model simulations demonstrate high resiliency, high reliability, and low vulnerability of the water supply system while the drought conditions remain unchanged.

Hydrological and Temperature Variations between 1900 and 2016 in the Catskill Mountains

Allan Frei, Hunter College, Department of Geography, Institute for Sustainable Cities

Examine variations in precipitation, streamflow and temperature between 1900 and 2016. The most significant hydroclimatic events on record include the cold drought of the 1960s and the wet period between the late 1990s and 2012. We also find increasing temperatures and decreasing diurnal temperature range since the mid-20th century.



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Ulster County Climate Smart Committee Town of Woodstock Report for October 28, 2019

Drinking Water Source Protection Program (DWSP2)

Grant Jiang, Environmental Analyst, Source Water Assessment & Protection, with the New England Interstate Pollution Control Commission and working with the NYS Department of Health was in Woodstock to meet with Woodstock's Aquifer Protection Working Group.



Grant Jiang

Based in Monticello, serving the New York metropolitan district, Grant conducts investigations on source water assessment and protection, water storage, treatment and distribution, wastewater treatment and discharge, point source and non-point source pollution, permitting, and other compliance and regulatory issues.

He develops source water protection plans, updates SWAPs, collects environmental samples for analysis, and summarizes, evaluates, and presents environmental information and data. Grant joined NEIWPC in July 2019. He holds an MS in Water Science and Policy from the University of Delaware.¹

At the beginning of the year, New York State launched the Drinking Water Source Protection Program (DWSP2), an initiative to provide municipalities with the resources and tools to protect their drinking water sources. The Town of Woodstock applied and was accepted in the Drinking Water Source Protection Program. Although Woodstock did not respond to the initial solicitation, which closed on February 15, 2019, the town applied to take advantage of the support that would be available for non-participants.

¹ New England Interstate Water Pollution Control Commission, "Water Resource Protection Staff," Available at <https://neiwpc.org/about-us/who-we-are/staff/wrp/>

Cooper Lake Dam Rehabilitation

The City of Kingston Water Department is planning a \$12 million renovation of the Cooper Lake dam, which is located in Woodstock hamlet of Lake Hill. The project could begin late 2020 finish Cooper by the beginning of 2022,

Cooper Lake is the main water supply for the city of Kingston and filed from Mink Hollow Creek. Water is taken by pipe to the city's water treatment plant in Zena, a d from there, is fed into the Binnewater Reservoir. From Binnewater, water is fed by three water mains into the city.



Proposed Cooper Lake Dam

Woodstock Climate Smart Task Force Created

Woodstock established a Climate Smart Community Task Force and appointed David Gross, Jim Hanson, Mary Phillips-Burke, Julia Blelock, Erin Moran, and Arlene Weissman as members. The Task Force will work to develop a comprehensive approach to reducing greenhouse gas emissions and increase energy efficiencies, as well as, related topics.

Congratulations Saugerties

Saugerties was recognized for achieving Bronze Level certification in New York’s Climate Smart Communities Program.²



Saugerties Climate Smart Task Force with Mark Lowery, Assistant Director, DEC Office of Climate Change

² Christina Coulter, “Saugerties Recognized for Climate Smart Actions,” Hudson Valley 1, October 14, 2019, Available at <https://hudsonvalleyone.com/2019/10/14/saugerties-recognized-for-climate-smart-actions/>

Danskammer

On September 6, 2019, Danskammer Energy released proposed stipulations that began a period for interested persons to submit comments. During the comment period, any person, agency or municipality could submit comments on the stipulations. The public comment period ended, October 23, 2019.

Stipulations define the studies, documents, plans, etc. that will be submitted with the Article 10 application. The purpose of the process was to reach agreement among stakeholders as to the scope and methodology of the studies and analyses required

Reforming the Energy Vision (REV)

Reforming the Energy Vision (REV) is a multi-year regulatory initiative intended to transform the way electricity is produced, bought and sold in New York.

Triennial Review will Include CLCPA Goals

The Clean Energy Standard (CES), approved August 1, 2016 by the PSC, requires triennial reviews to ensure that the economic and clean energy goals set by CES are being achieved. The first triennial review is scheduled to begin in June 2020. It will consider:

- Expanding the CES to incorporate the 70 percent renewable energy goal by 2030 established by the New York State Climate Leadership and Community Protection Act (CLCPA);
- Considering if the single procurement approach currently in place will be enough to meet expanded state goals (should utilities be allowed to own solar?);
- The current shortage of RECs needed to meet increasing compliance obligations that are resulting in large alternative compliance payments (ACPs) to NYSERDA;
- Siting challenges hindering renewable resources; and
- Revenue for pre-existing renewable resources (i.e., Tier 2 REC legislation).

Carbon Pricing

NYISO released its plan to put a price on carbon dioxide emissions in the power sector.³ Under the plan, the ISO would incorporate the social cost of carbon emissions into its wholesale energy markets using a carbon price in dollars per ton of carbon dioxide.

The cost would be paid by the generators, which in turn would factor it into the cost of electricity. Imposing a financial cost on CO₂ emissions would prompt reductions in emissions of carbon and other related pollutants from coal, gas, and oil generators and encourage investment in clean sources.

³ NYISO, “New Study Proves Carbon Pricing Helps New York Meet Clean Energy Goals Faster, More Reliably, at Lower Cost,” Press Release, October 3, 2019, Available at <https://www.nyiso.com/-/press-release-new-study-proves-carbon-pricing-helps-new-york-meet-clean-energy-goals-faster-more-reliably-at-lower-cost>

Meadowlands – Liberty Generating Station

Gov. Phil Murphy of New Jersey declared his opposition to building a power plant in an industrialized portion of the Meadowlands that would have sent electricity under the Hudson River directly to New York City. The project was announced last year to replace generation lost from the closure of Indian Point.

State environmental regulators suspended their review of the proposed power plant because the developer has temporarily pulled its application for the project. Representatives for the North Bergen Liberty Generating station told the state that the company plans to resubmit its permit application after changing key pieces of technology.

NY Court Rejects Challenge to ZEC Program

A New York court rejected a challenge to the state's zero-emission credit program, dismissing a suit by Hudson River Sloop Clearwater and others.

Events

NYS DEC Environmental Informational Conference

Friday, October 25, 2019 from 9:30 AM to 4:00 PM (EDT)

The meeting's purpose was to brief environmental council members and municipalities on DEC programs and available assistance. The agenda included:

- Stormwater Management, Flood Control and Overflow Notification System
- Recycling/Composting, Solid Waste Management, New Single-Use Plastic Bag Law
- Climate Leadership and Community Protection Act
- Wetlands/Floodplain Mapping and Protection
- SEQR and Site Plan Review
- DEC Grants Gateway
- Environmental Justice
- DECInfo Locator

Solar Power International Meeting Highlights

September 23-26, 2019, Salt Palace Convention Center, Salt Lake City, UT

The Solar Energy Industries Association industry group published a roadmap⁴ to increase solar power to 20 percent of U.S. power generation by 2030, branded as the "**Solar+ Decade.**" Solar leaders used the opening keynote and a series of potent adjectives to rally the industry to pursue that 20 percent vision.



Solar contributed about 2 percent of U.S. generation in 2018, compared to wind and hydropower at around 7 percent each, nuclear at 19 percent, coal at 27 percent, and natural gas at 35 percent. The roadmap is a 10-year strategic vision for the solar industry that highlights both opportunities and systemic challenges the industry will need to overcome to reach its goals.

Defend the Investment Tax Credit (ITC)

The first priority in SEIA's new "Solar+ Decade" mobilization is an extension of the ITC. Defend it, that is, from the scheduled annual decline slated to start next year. "The ITC is one of the most important tools in our toolbox to help us meet that 20 percent goal," Ross Hopper.

Diversity "top of mind"

SEIA wants to build a more diverse workforce, ensure that clean energy factors prominently in future climate policy and make solar-plus-storage the go-to resource for marginal power. "If we hit our 2030 goal, it will not just be about reaching 20 percent of generation for solar," said Ross Hopper onstage. "It will be about achieving a complete and total shift in how we generate, how we distribute, and how we consume energy in this country."

Aggressive Collaboration

Getting there will require "aggressive collaboration" within the solar industry and adjacent industries like energy storage, microgrids, wind, electric vehicles and hydrogen fuel cells. That coalition is reflected in the rebranding of SPI this year as North America Smart Energy Week.

⁴ Solar Energy Industries Association, "Roadmap for Building the Solar+ Economy," September 24, 2019, Available at <https://www.seia.org/research-resources/solar-decade-roadmap-building-solar-economy>



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In 2007, the Woodstock Town Board committed that governmental operations would be carbon neutral by year-end 2017. The town achieved carbon neutrality in 2015 and was recognized for its accomplishment at the 2017 annual meeting of the New York State Association of Conservation Commissions. Woodstock is now considering the second major theme of the Climate Smart Communities program: Adapting to Climate Change.

Current Activities

Woodstock Climate Smart Task Force Created

Woodstock established a Climate Smart Community Task Force with the Environmental Commission as its core group. Other members will be recruited. The Task Force, which will work to develop a comprehensive approach to reducing greenhouse gas emissions, increase energy efficiencies, and related topics, held its first meeting this month.

Aquifer Protection Law

At the beginning of the year, New York State launched the Drinking Water Source Protection Program (DWSP2), an initiative to provide municipalities with the resources and tools to protect their drinking water sources. The Town of Woodstock applied and was accepted in program. Although Woodstock did not respond to the initial solicitation, which closed on February 15, 2019, the town applied to take advantage of support available for non-participants.

The Town Board established the Water Study Group, a task force to consider an amended aquifer protection law and recommend a course of action. The group engaged Mr. Steven Winkley of the New York Rural Water Association to assist in reviewing and updating the proposed aquifer protection law, and with Mr. Winkley's assistance, two additional versions of the overlay protection law were drafted.

In late September 2019, Grant Jiang, the metropolitan area regional Source Water Protection Coordinator for the NYS Department of Health based out of Monticello was assigned to provide Woodstock with technical assistance on its source water protection activities.

The first action of the reconstituted aquifer protection working group was to collect and review documentation and proposals from previous efforts. Multiple versions of water protection laws were considered by the working group and evaluated by the Planning Board, and it's now time to return to the Town Board for direction. The working group presented its first report to the Town Board this month.

Bard LLI Alternative Energy Class

Bard LLI is a membership organization that offers non-credit and non-competitive courses and other events to its membership under the sponsorship of Bard College.

I proposed that LLI host a class on alternative energy. We have reached a point in the Hudson Valley that it's possible to construct a seven session, LLI class around climate change and alternative energy. This suggestion was accepted, and the class has been added as an offering in the fall 2020 semester.

Danskammer Stipulations

On February 8, 2019, Danskammer Energy, LLC, (Danskammer Energy) filed a Preliminary Scoping Statement to repower the Danskammer Generating Station with a new combined cycle power generation facility.

Following June and July negotiations, Danskammer Energy submitted Proposed Stipulations to the DPS, which issued a Notice of Proposed Stipulations and Request for Public Comments on extending to October 23, 2019.

Comments were submitted by Scenic Hudson, representing Sloop Clearwater, National Resources Defense Council, Riverkeeper, and the City of Beacon. Comments also were submitted by Earthjustice, representing Sierra Club and Orange RAPP.

DEC agreed to all of the Proposed Stipulations with the exception of Proposed Stipulation No. 10 –1001.10 Exhibit 10: Consistency with Energy Planning Objectives.

Reforming the Energy Vision (REV)

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Climate Leadership and Community Protection Act

The Climate Leadership and Community Protection Act (CLCPA) requires:

- Procure 70% of the state's electricity from renewable sources by 2030;
- 9,000 MW of offshore wind by 2040;
- 3,000 MW of energy storage by 2030;
- Overall 85% reduction in statewide greenhouse gas emissions by 2050;
- 100% carbon free electricity generation by 2040.

Resonance Adequacy

Achieving CLCPA goals will require dramatic changes in both uses and sources of electricity – including the electrification of transportation and heating, as well as the addition of thousands of megawatts ("MWs") of intermittent renewable energy resources. Wholesale energy, capacity, and ancillary services, as well as state-administered Renewable Energy Credit ("REC"), Offshore Wind Renewable Energy Credit ("OREC"), and Zero-Emissions Credit ("ZEC") markets, and markets for distributed energy resources must advance the development in a cost-efficient manner.

The New York Public Service Commission initiated a review of resource adequacy programs to ensure capacity aligns with the state's renewable energy and emission reduction goals. To meet the State's policy initiatives efficiently, wholesale energy, ancillary services and capacity markets must accommodate the investments needed.

Without reforms to the NYISO's market rules, new resources needed to meet the State's policy goals and mandates ("State Policy Resources") will increasingly rely on out-of-market payments for renewable attributes. This is because current market structures fail to adequately recognize the value of renewable energy, which will likely prevent State Policy Resources from receiving any capacity payments in the NYISO's auctions.

NY Court Rejects Challenge to ZEC Program

A New York court rejected a challenge to the state's zero-emission credit program, dismissing a suit by Hudson River Sloop Clearwater and others, and Hudson River Sloop Clearwater and other plaintiffs are appealing a court decision against them.

Clearwater and its co-petitioners — the Nuclear Information and Resource Service, the Indian Point Safe Energy Coalition and Goshen Green Farms — contend that nuclear subsidies divert ratepayer funds from renewables that could help meet New York's climate goals, build a clean energy future and create permanent jobs. Clearwater initially sued at the end of 2016. It filed an appeal of the state Supreme Court's October 2019 decision. Seth Davis is a Clearwater board member.

Events

Montgomery Place Fall Salon Series

Session 1: Solar Energy, November 12, 3–5 p.m.

Emily Majer '95, Town of Red Hook historian and deputy mayor, Village of Tivoli

Audrey Friedrichsen, land use and environmental advocacy attorney, Scenic Hudson

Jeff Irish, vice president, SunCommon (Kai Nybro)

Moderated by Ben Hoen CEP '06, research scientist, Lawrence Berkeley National Laboratory

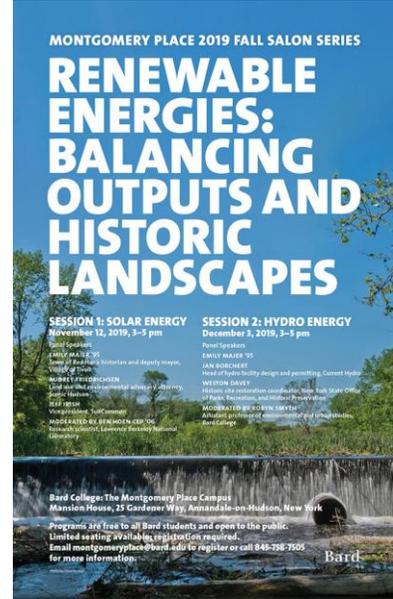
Session 2: Hydro Energy, December 3, 3–5 p.m.

Emily Majer '95

Jan Borchert, head of hydro facility design and permitting, Current Hydro

Weston Davey, historic site restoration coordinator, New York State Office of Parks, Recreation, and Historic Preservation

Moderated by Robyn Smyth, assistant professor of environmental and urban studies, Bard College.



2020 Local Solutions: Eastern Climate Preparedness Conference

Antioch University New England, in partnership with NOAA and the Island Institute, is convening the 2020 Local Solutions Conference:

Eastern Climate Preparedness Conference

May 11-12, 2020

Portland, Maine



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In March 2007, the Woodstock town board committed that town governmental operations would be carbon neutral by year-end 2017. The town achieved carbon neutrality in 2015 and was recognized for its accomplishment at the 2017 annual meeting of the New York State Association of Conservation Commissions.

Compared to 2011, carbon emissions from town governmental operations have dropped by 15%, and it's expected that by 2020, the town will have reduced its emissions by 30%. There's a fundamental limit to what can be accomplished with existing technology. There's no good alternative for the diesel fuel used by the highway department and there are limitations on how much gasoline consumption can be reduced by the police department.

Woodstock is now working on the second major theme of the Climate Smart Communities program: Adapting to Climate Change.

Woodstock Climate Smart Objectives for 2020

Achieve Bronze Level CSC Certification

Document and submit completed Climate Smart Action Elements. Many of actions taken by the town to achieve carbon neutrality qualify for points under the CSC certification process. The yearly carbon emission report for 2019 will be formatted for submission to the CSC Certification Portal. A quick review of the CSC action elements suggests Woodstock has completed work required for about 180 CSC points.

Aquifer Protection Law

In January 2019, the town board began the roll-out of the recently adopted Comprehensive Plan; making assignments and assigning responsibility for many of the action items in the plan. It was at this time that DOH and DEC announced the Drinking Water Source Protection Program (DWSP2), which was an available to support work on the water supply protection law. In June 2019, the Supervisor approved reforming the aquifer protection working group and participating in DWSP2 with the objective of proposing a revised aquifer protection law.

In late September 2019, Grant Jiang, the metropolitan area regional Source Water Protection Coordinator for the NYS Department of Health based out of Monticello, was assigned to provide Woodstock with technical assistance for source water protection activities.

Add Resilience to Climate Smart Actions

CSC Pledge Element 7 requires communities to develop strategies that enhance local resiliency using a collaborative, transparent, and inclusive decision-making process to build capacity to evolve with changing conditions adapt to climate change.

Add Waste Management and Recycling to Climate Smart Actions

CSC Pledge Element 5 requires communities to develop strategies for reducing waste, reusing materials, repairing items, composting food scraps, and recycling. These actions can reduce greenhouse gas (GHG) emissions by preventing waste from ending in landfills, and reduce emissions associated with the extraction, processing, and transportation of materials.

Evaluate Hybrid Police Cars

The replacement of 8-cylinder police vehicles by 6-cylinder models reduced the town's gasoline consumption by about 20 percent. Ford announced a pursuit hybrid police in 2017 car that has the possibility of reducing gasoline usage by another 20%.

Consolidated Billing for Community Distributed Generation (CDR)

The Public Service Commission ordered the consolidation of utility bills for Community Distributed Generation (CDG) customers. CDG customers will no longer have to receive two separate monthly bills: one from their utility company and a separate one from the solar developer. Consolidated billing simplifies the CDG subscription process by making it more convenient for CDG customers.

Currently credits for renewable energy appear directly on the CDG subscribers' utility bills and the CDG sponsor then sends the customer a separate bill for the subscription charge. Under consolidated billing, the subscription charges will be automatically deducted from the renewable energy credits by the utility and sent to the CDG sponsor.

Climate Leadership and Community Protection Act

New York enacted the Climate Leadership and Community Protection Act (CLCPA) that includes requirements to:

- Procure 70% of the state's electricity from renewable sources by 2030;
- 9,000 MW of offshore wind by 2040;
- 6,000 MW of photovoltaic solar by 2025;
- 3,000 MW of energy storage by 2030;
- Overall 85% reduction in statewide greenhouse gas emissions by 2050;
- 100% carbon free electricity generation by 2040.

Town of Ulster, GlidePath Battery Facility

The Lincoln Park/GlidePath battery facility will be made up of 40 buildings measuring 8 by 40 feet each instead of a single 30,000-square-foot structure. The change was made to meet recent changes to the state's Uniform Fire Prevention and Building Code. The facility will contain about 11,500 batteries, which will provide about 80 megawatt hours of electricity, and use about 3 acres of a the 122-acre site off Frank Sottile Boulevard.

“On Friday December 13, NYSERDA announced an incentive award for GlidePath Power Solutions’ Lincoln Park Grid Support Center. The 20 MW standalone battery storage facility will receive an \$8.8 million incentive. This is one of the first contracts awarded by NYSERDA’s Market Acceleration Bridge Incentive Program and the program’s largest award to date. GlidePath’s Lincoln Park project was recognized by the New York League of Conservation Voters for its work to expand clean energy and New York reach its climate and energy goals. Lincoln Park is one of several New York storage projects that GlidePath expects construct by the end of 2021 and part of the company’s 1+ GW battery storage development pipeline.” *Source: Glidepath*

Similar projects are under consideration by GlidePath in the towns of Catskill and Lloyd.

NYSERA Petitions to Extend NY-SUN Program

NYSERDA has filed for Public Service Commission approval for an additional \$573 million to expand its NY-SUN program to support CLCPA new mandated goal of 6,000 megawatts of small-scale solar by 2025. Additional funding is being requested to support incentives for projects on landfills and brownfield sites and to serve low to moderate-income individuals.

Base Program Incentives

\$290 million added to the MW Block incentive program to support 1,800 MW dc of new solar capacity.

- \$199 million will be added to the Upstate Commercial/Industrial MW dc Block incentives.
- \$48 million will be added to the Upstate Residential MW Block, which supports residential projects up to 25 kW dc.
- \$44 million available as unallocated incentive funds to supplement MW Block incentives as may be required by changing policy, economic, and technological conditions.

Community Adder

\$111 million of the \$573 million requested funding to provide incentives for community solar projects in utility territories that have exhausted their VDER Community Credit tranches.

Other Adders

\$19 million of the \$573 million requested funding for incentives for projects that achieve other State policies and objectives; such as projects sited on a brownfield or landfill and projects utilizing a parking or rooftop canopy design.

Framework for Solar Energy Equity, Additional Funding, and Potential Benefits

\$135 million be dedicated for low-to-moderate income (LMI) customers, affordable housing, environmental justice communities, and disadvantaged communities. CLCPA prioritizes and stipulates that, “40% of the benefits of New York State's energy investments be targeted to disadvantaged communities, with no less than 35% of the benefits to be received by disadvantaged communities.”

Mid-Hudson Regional Renewable Energy Forum

As part of the Regional Climate Action Plan (RCAP), the Regional Renewable Energy Implementation Plan (RREIP) is an initiative whose intention is to create a roadmap to help achieve the goals of the Climate Leadership and Community Protection Act (CLCPA) here in the Mid-Hudson Region. This forum will showcase what NY State agencies, and area utilities, municipalities, businesses and institutions are doing already or planning to accelerate the transition to a Renewable Energy Economy with Storage and Efficiency.

WHEN: Friday, December 13, 2019, 9 a.m. – 1:15 p.m.

WHERE: Great Room of Kaplan Hall, One Washington Place, SUNY/Orange, Newburgh Campus

CLCPA Requirements Compared to CES

	CES (Aug. 1, 2016)	CLCPA (July 18, 2019)	Change
Renewable Sources	50% by 2030	70% by 2030	20% Increase
Carbon Free Electricity		100% by 2040	
PV Solar	3,000 MW by 2023	6,000 MW by 2025	3,000 MW, 2 years
	934 MW PV Solar Installed as of September 30, 2019		
Reduction in Greenhouse Gas Emissions	40% by 2030	40% by 2030	
	80% by 2050	85% by 2050	5% Difference
Energy Storage		1.5 GW by 2023	
		3.0 GW by 2030	
Upstate Nuclear Power	Maintain Zero-Emission Nuclear Power		

CES – Clean Energy Standard, adopted, August 1, 2016

Countdown to 2020

Net Metering Extended January 1, 2021

In its March 9, 2017 “Order on Net Energy Metering Transition” (VDER Transition Order), the PSC ordered that mass market, on-site projects interconnected before January 1, 2020 would continue to receive net metering (NEM) compensation under Phase One NEM policy, but projects interconnected after January 1, 2020 will be enrolled under a successor tariff. An initial version of the successor tariff to net metering was released for comment in February, 2019. “However, due to the extensive stakeholder process Staff determined was needed to develop a recommendation for this market segment, no recommendations were presented in 2018 and therefore no Commission decision has yet been made on this issue.”

On December 9, 2019 PSC Staff filed a Whitepaper on Rate Design for Mass Market Net Metering Successor Tariff (Mass Market Rate Design Whitepaper), which makes recommendations related to a successor tariff for mass-market on-site projects and for a transition to the successor tariff. Due to the delay in filing the Mass Market Rate Design Whitepaper, and the resulting delay in Commission action, Staff requests that the deadline for Phase One NEM qualification for new mass-market on-site projects and for new eligible on-site projects with a rated capacity of 750 kW or lower be extended to January 1, 2021.¹

Indian Point Unit #2 to cease operation, April 2020

Governor Cuomo in his 2017 State of the State address announced that the Indian Point nuclear power plant will be shut down by April 2021. Indian Point Unit #2, representing about 1,000 MW of generation, will cease operation no later than April 30, 2020, and Unit #3 will close a year later.

NYISO’s Indian Point deactivation assessment identified three generators available to replace 79% of Indian Point’s 2,000 MW nameplate capacity: the 120-MW Bayonne, NJ, single stage gas plant, the 678-MW CPV Valley combined-cycle gas plant, and the 1,020-MW Cricket Valley combined-cycle gas plant. Bayonne and CPV Valley are complete and have begun operation. Construction began at Cricket Valley in 2018 and it’s expected to go online in 2020 in time to replace generation lost by the closure of Indian Point Unit #2.

Events

2020 Local Solutions: Eastern Climate Preparedness Conference

Antioch University New England, in partnership with NOAA and the Island Institute, is convening the 2020 Local Solutions Conference:

Eastern Climate Preparedness Conference

May 11-12, 2020, Portland, Maine

¹ Ted Kelly, Letter to Michelle L. Phillips, Secretary to the Commission, December 9, 2019, Available at <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={FC143B39-9FC8-4A65-99AB-13522182689F}>



WOODSTOCK, N.Y.
COLONY OF THE ARTS

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December 10, 2018

Woodstock Town Board
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Woodstock Climate Action Plan

In March 2007, the town board adopted a resolution committing that town governmental operations would be carbon neutral by year-end 2017. The town achieved carbon neutrality in 2015 and was formally recognized for its accomplishment at the 2017 annual meeting of the New York State Association of Conservation Commissions.

A three-pronged approach was used to achieve carbon neutrality. First, fossil fuel heating systems were replaced at the highway garage and town hall with ground-sourced heat pumps and at the community center with an air-sourced heat pump. The heat pumps reduced the building carbon footprints and energy costs.

NOW, THEREFORE, BE IT RESOLVED that the Woodstock Town Board commits to a Zero-Carbon Initiative, leading the Woodstock community by example and by implementing policies resulting in no net emission of carbon dioxide and other greenhouse gases by the end of 2017, and;

BE IT FURTHER RESOLVED, that as a public-private partnership, the Woodstock Zero-Carbon Initiative shall feature Town Government as a key stakeholder in a comprehensive community carbon-neutrality effort, which includes institutions, businesses, civic organization, and individual families and residents, and;

Carbon Neutral Resolution, March 2007

Second, energy efficiencies were achieved with police vehicles, the Rock City Rd restrooms, and at the water wells. By replacing 8-cylinder police vehicles with 6-cylinder models, gasoline consumption was reduced. The recent availability of hybrid police vehicles presents an opportunity for additional reductions in gasoline usage. Winterizing the Rock City Rd convenience restrooms reduced electricity usage by about two-thirds, and maintenance and repair actions at the town's water wells reduced electricity consumption by about 30 percent.

Third, 500-acres of town owned forest were identified as a carbon sink available to sequester carbon dioxide emitted by town governmental operations. By year-end 2018, not only has the town reached carbon neutrality, the town has achieved Drawdown, defined as sequestering more carbon dioxide than the town emits.

Since 2011, carbon emissions from town governmental operations have dropped by 15%, and it's expected that by 2020, the town will have reduced its emissions by 30%. Because of carbon sequestration by the 500 acres of town owned forest, the town is removing more carbon from the atmosphere than it emits.

What's Next?

The town board has discussed projects that will further lower the town's carbon footprint. The identified projects include:

Renewable Electricity – Reduce Carbon Footprint by 100 Metric Tons

The town board has seriously considered installing solar panels to provide renewable electricity for town governmental operations. For a variety of reasons, none of these efforts succeeded. Last year, the town received a proposal for renewable hydroelectric power from the Natural Power Group, which operates generating facilities on the Walkill and Wappingers Rivers. Acquiring renewable electricity is the most significant action that can be taken to reduce the town's carbon footprint.

Hybrid Police Cars – Reduce Gasoline Consumption by 20%

The replacement of 8-cylinder police vehicles by 6-cylinder models reduced the town's gasoline consumption by about 20 percent. Last fall, Ford announced a proper hybrid police car that has the possibility of reducing gasoline usage by another 20%.

LED Street Lights – Reduce Electric Usage by 30,000 kWh

Conversion of the town's Sodium vapor and Mercury vapor street lighting to LED technology has the potential to cut our electrical consumption for streetlighting by 40 percent.

Town Offices Renovation – Eliminate Fossil Fuel Heating Systems

The proposed renovation of the town office (Comeau) buildings should include elimination the fossil fuel heating systems by conversion to heat pumps. The uses of heat pumps in other town buildings reduced the carbon footprint and the cost of energy of these buildings.

Full implementation of these programs could result in Woodstock reducing its carbon footprint by 40 percent compared to 2011 over the next several years.

Additional Items for Consideration

There are a couple of possibilities for additional improvements in energy efficiency that have not been previously discussed, but might be worthy of serious consideration.

Youth Center – Full Energy Audit, Heat Pumps

As a residential structure, the Youth Center is eligible for grants to perform an energy audit. The town board should consider applying for these grants and services. A full energy audit can identify air leakages, requirements for insulation and caulking, etc. The replacement of the fossil fuel heating system with a heat pump should be considered.

Micro-Grid for the Pump Houses – Provide Emergency Power to Pump House #2

Only pump house #1 is equipped with an emergency generator, leaving pump house #2 venerable to power outages. Establishing a local micro-grid between the two pump houses would allow both pump houses to be serviced by one emergency generator.

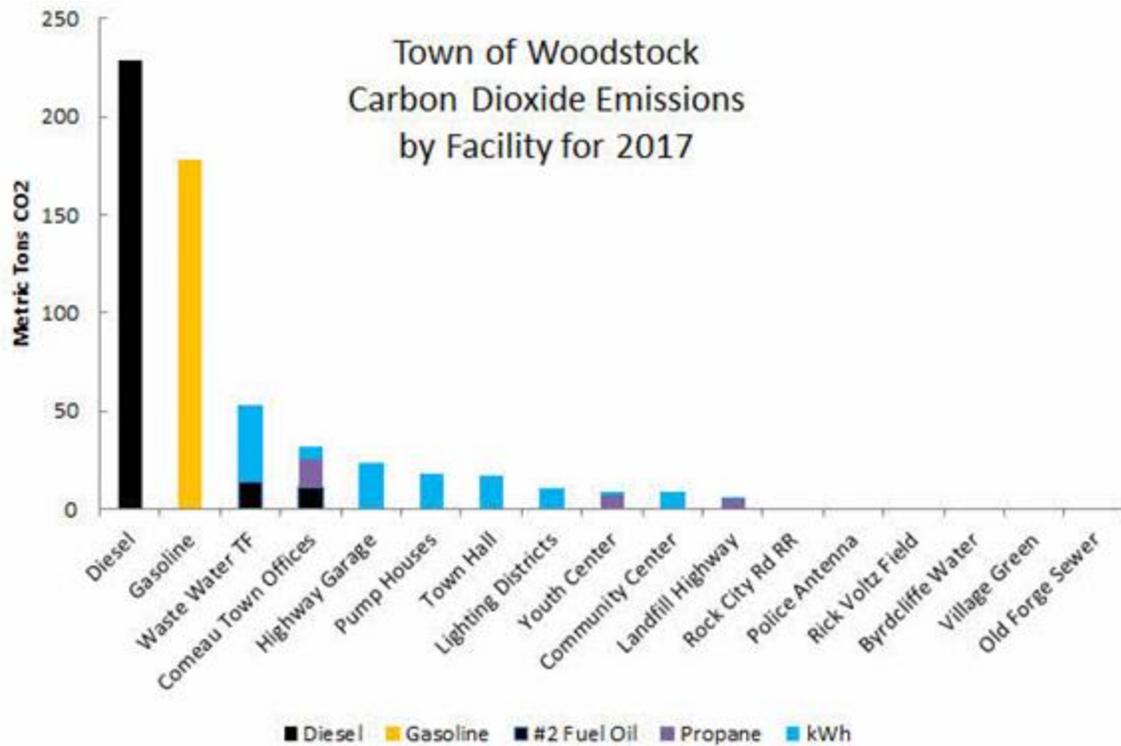
Waste Water Treatment Facility – Investigate Alternatives to Fuel Oil Use

The waste water treatment facility seems to use a lot of fuel oil. The use should be understood and consideration given to alternatives that might reduce the use of fuel oil.

End of the Technology Road

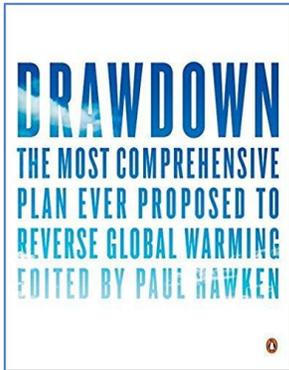
There's a fundamental limit of what can be accomplished with existing technology. There is no good alternative for diesel fuel used by the highway department and there are limitations on how much gasoline consumption can be reduced. Although there's a clear, identified role for hybrid police and town vehicles, it's unclear at this time about the use of all electric vehicles.

The bulk of Woodstock's carbon emissions are sourced from diesel fuel and gasoline, and new technology will be needed to significantly reduce emissions from these sources. But major reductions can be achieved by implementing the projects identified in this climate action plan. Adopting renewable electricity will essentially zero out the carbon emission attributed to town's buildings.



Project Drawdown

Drawdown is that point in time when the concentration of greenhouse gases in the atmosphere begins to decline on a year-to-year basis.



Drawdown, a recently published survey of the 100 best climate-stabilization solutions edited by Paul Hawken comes with an ambitious subtitle: “The Most Comprehensive Plan Ever Proposed to Reverse Global Warming.”

An event sponsored by Woodstock Land Conservancy and Woodstock Transition discussed Drawdown and viewed videos of Paul Hawken explaining the project. The Omega Center for Sustainable Living hosted a 3-day collaborative event in October, which began with an in-depth overview of Project Drawdown by Paul Hawken and his team.

Project Drawdown, a global coalition of researchers, scientists, economists and others, has built a model to evaluate and rank the top active solutions to global warming, based on their actual impact on greenhouse gas emissions. Ulster County and many local environmental groups have embraced **Drawdown** and the solutions it describes.

Because Woodstock has identified 500 acres of town owned forest as a carbon sink, Woodstock can assert it has achieved drawdown for governmental operations. Woodstock used the following Drawdown solutions to achieve carbon neutrality:

Drawdown Solution	Rank	Description/Use
Temperate Forests	#12	500 acres of town owned forest to sequester carbon
Rooftop Solar	#10	Solar panels installed at the Highway Garage and Town Hall
In Stream Hydro	#27	Hydroelectric power from Natural Power Group
Retrofitting	#80	Town Hall and Community Center renovations
Heat Pumps	#42	Ground-sourced and air-sourced heat pumps
LED Lighting	#44	New construction, Lime Energy, and street lighting
Insulation	#31	Winterized Rock City Rd convenience restrooms
Cars (Hybrid)	#49	(Proposed for Police Department)