

Clean Kid - Dirty Grid

The Case of the Dangling Kilowatt-Hours

Gerri Wiley,
Energy Navigator
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Dilemma:

Early solar adopters were the clean green folks in the neighborhood one or two decades ago.

Dangling kWhs



As they convert their space and water heating, appliances, and cars to electric, they find that their solar energy covers just a portion of their energy use.

It's hard to sleep at night, paying for this fossil-nuclear electricity!

**NYSEG
Source-Mix
(16 years)**

Fuel Sources for Electricity Supplied to you by NYSEG*										
	N Gas	Nuclear	Hydro	Coal	Oil	Wind	Solar	Other	Renewables	Emission-free
2022	55%	24%	10%	3%	1%	1%	3%	4%	14%	38%
2021	51%	28%	11%	2%	<1%	2%	2%	<4%	15%	43%
2020	45%	34%	12%	2%	<1%	3%	2%	<2%	17%	51%
2019	41%	37%	13%	3%	<1%	2%	<1%	4%	<16%	<53%
2018	41%	35%	15%	4%	<1%	3%	<1%	2%	<19%	<54%
2017	40%	36%	14%	3%	<1%	3%	<1%	4%	<18%	<54%
2016	43%	33%	15%	3%	<1%	3%	<1%	3%	<19%	<52%
2015	36%	31%	20%	3%	1%	6%	<1%	3%	<27%	<58%
2014	36%	29%	20%	6%	1%	6%	<1%	2%	<27%	<56%
2013	45%	32%	8%	4%	<1%	6%	<1%	5%	<15%	<47%
2012	47%	28%	13%	4%	<1%	5%	<1%	3%	<19%	<47%
2011	31%	38%	18%	6%	<1%	5%	<1%	2%	<24%	<62%
2010	29%	33%	24%	9%	<1%	4%	0%	1%	28%	61%
2009	28%	37%	25%	5%	<1%	3%	<1%	2%	<29%	<66%
2008	44%	25%	16%	11%	2%	1%	0%	1%	17%	42%
2006	35%	24%	25%	12%	2%	<1%	<1%	2%	<27%	<51%
*Disclosures to the Public Service Commission										

If you don't live in a municipality with a CCA or in a community supplied by NYMPA or purchase a pricey renewable ESCO plan from a hard to find reputable company, your electricity supply is disturbingly and increasingly fossil-nuclear.

Data Source: NYGATS - NYS Dept of Public Service

Electricity Fuel Sources (by percentage) purchased by NYS utility companies 2016-2022

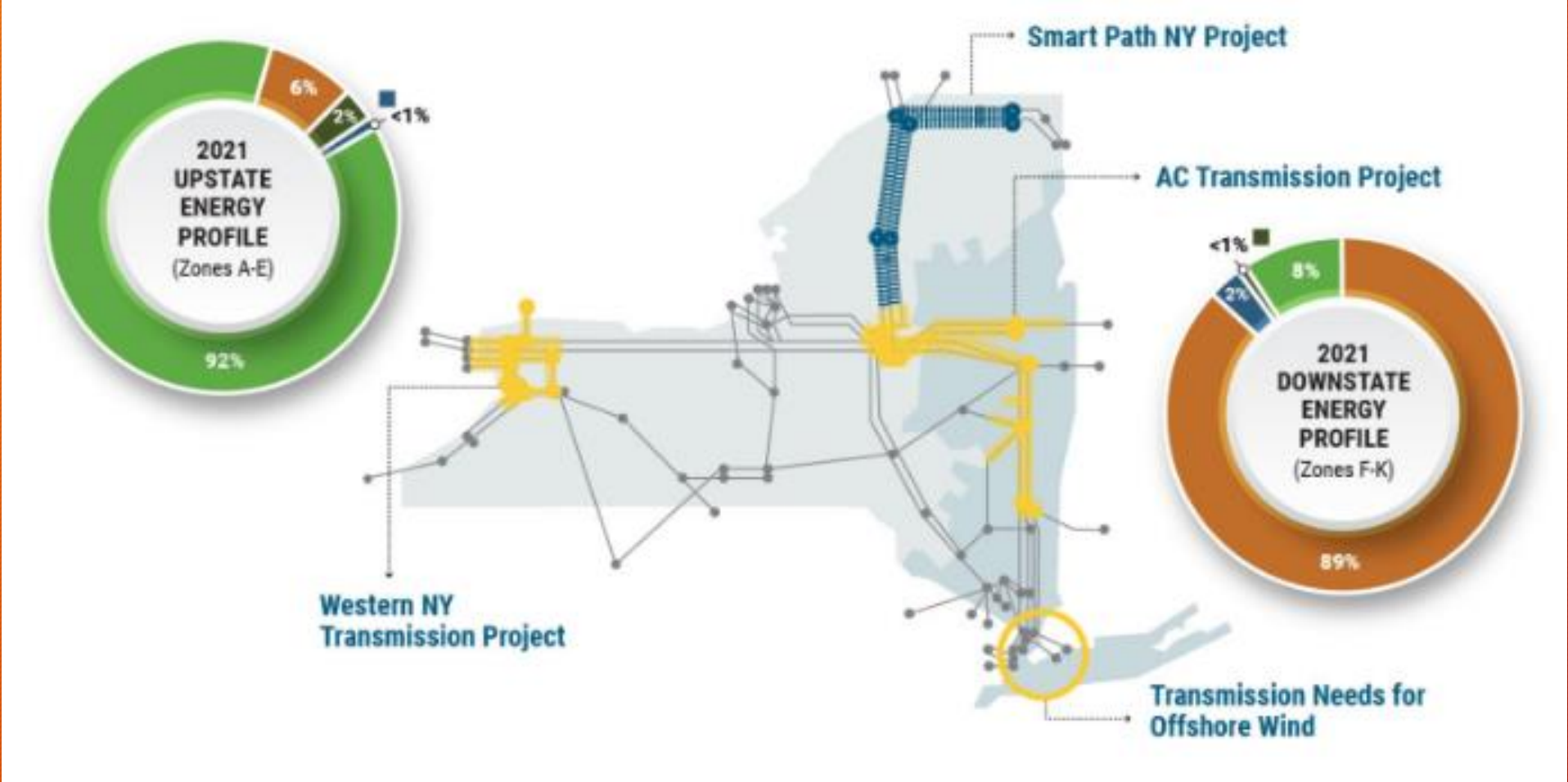
UTILITY	Fuel Source	2016	2017	2018	2019	2020	2021	2022	UTILITY	Fuel Source	2016	2017	2018	2019	2020	2021	2022
Central Hudson	Natural Gas	43%	40%	41%	43%	44%	51%	56%	NYSEG	Natural Gas	43%	40%	41%	41%	45%	51%	55%
	Nuclear	34%	38%	36%	39%	33%	28%	24%		Nuclear	33%	36%	35%	37%	34%	28%	24%
	Hydro	12%	11%	14%	9%	11%	11%	8%		Hydro	15%	14%	15%	13%	12%	11%	10%
	Solid Waste	3%	3%	2%	2%	4%	4%	3%		Solid Waste	2%	2%	2%	2%	0%	3%	3%
	Wind	3%	3%	2%	2%	3%	1%	1%		Wind	3%	3%	3%	2%	3%	2%	1%
	Coal	4%	3%	4%	3%	2%	2%	3%		Coal	3%	3%	4%	3%	2%	2%	3%
	Solar	<1%	<1%	<1%	<1%	2%	2%	3%		Solar	<1%	<1%	<1%	<1%	2%	2%	3%
	Other	1%	2%	1%	2%	1%	1%	2%		Other	1%	2%	0%	2%	2%	1%	1%
Con Ed	Natural Gas	45%	42%	43%	43%	47%	53%	59%	Orange & Rockland Utilities	Natural Gas	45%	42%	43%	43%	47%	53%	57%
	Nuclear	35%	39%	37%	39%	36%	29%	26%		Nuclear	35%	39%	37%	39%	35%	29%	25%
	Hydro	10%	10%	11%	9%	9%	8%	6%		Hydro	10%	10%	11%	9%	9%	8%	6%
	Solid Waste	2%	2%	2%	2%	3%	3%	3%		Wind	3%	3%	2%	2%	2%	2%	1%
	Wind	3%	3%	2%	2%	3%	3%	2%		Solid Waste	2%	2%	2%	2%	2%	3%	3%
	Coal	4%	3%	4%	3%	2%	3%	3%		Coal	4%	3%	4%	3%	2%	3%	3%
	Other incl solar	1%	1%	1%	2%	0%	1%	1%		Solar	<1%	<1%	<1%	<1%	1%	2%	3%
										Other	1%	1%	1%	2%	2%	0%	2%
LIPA	Natural Gas	45%	42%	44%	43%	48%	54%	59%	Rochester Gas & Electric	Natural Gas	42%	38%	42%	42%	46%	52%	56%
	Nuclear	36%	40%	34%	39%	36%	30%	26%		Nuclear	33%	36%	36%	38%	35%	29%	25%
	Hydro	12%	10%	11%	10%	9%	8%	6%		Hydro	15%	16%	13%	11%	10%	9%	8%
	Solid Waste	2%	3%	6%	3%	3%	3%	3%		Wind	3%	3%	3%	2%	3%	2%	1%
	Coal	4%	3%	3%	3%	2%	3%	3%		Coal	4%	3%	4%	3%	2%	2%	3%
	Solar	<1%	<1%	<1%	<1%	2%	1%	2%		Solid Waste	2%	2%	2%	2%	2%	3%	3%
	Wind	<1%	<1%	<1%	<1%	<1%	<1%	<1%		Solar	0%	0%	0%	0%	0%	1%	3%
	Other	<1%	<2%	<2%	<2%	0%	<1%	<1%		Other	1%	2%	0%	2%	2%	2%	1%
Niagara Mohawk (Nat'l Grid)	Natural Gas	44%	37%	39%	39%	44%	50%	54%	NYGATS labels 2016, 2017, 2018, 2019, 2020, 2021, 2022								
	Nuclear	34%	35%	34%	35%	33%	27%	24%	https://nygats.ny.gov/ng/Report/getdto view Report PublicEDPLabel								
	Hydro	12%	19%	18%	19%	15%	14%	11%	Compiled by Gerri Wiley gerriwiley@yahoo.com								
	Wind	3%	3%	2%	2%	2%	2%	1%									
	Coal	4%	3%	3%	3%	2%	2%	2%									
	Solid Waste	2%	2%	2%	2%	2%	2%	3%									
	Solar	0%	0%	0%	0%	0%	2%	3%									
	Other	1%	1%	2%	1%	2%	1%	2%									

Utilities' Electricity Source-Mix (Past 7 Years)

Each utility purchases RECs (Renewable Electricity Certificates) and ZECs (Zero Emissions Certificates) based on NYS PSC's requirements. The balance of the source mix is 'socialized' among the utilities and is based upon electricity sales to end-users.

NYISO's "Tale of Two Grids"

Transmission

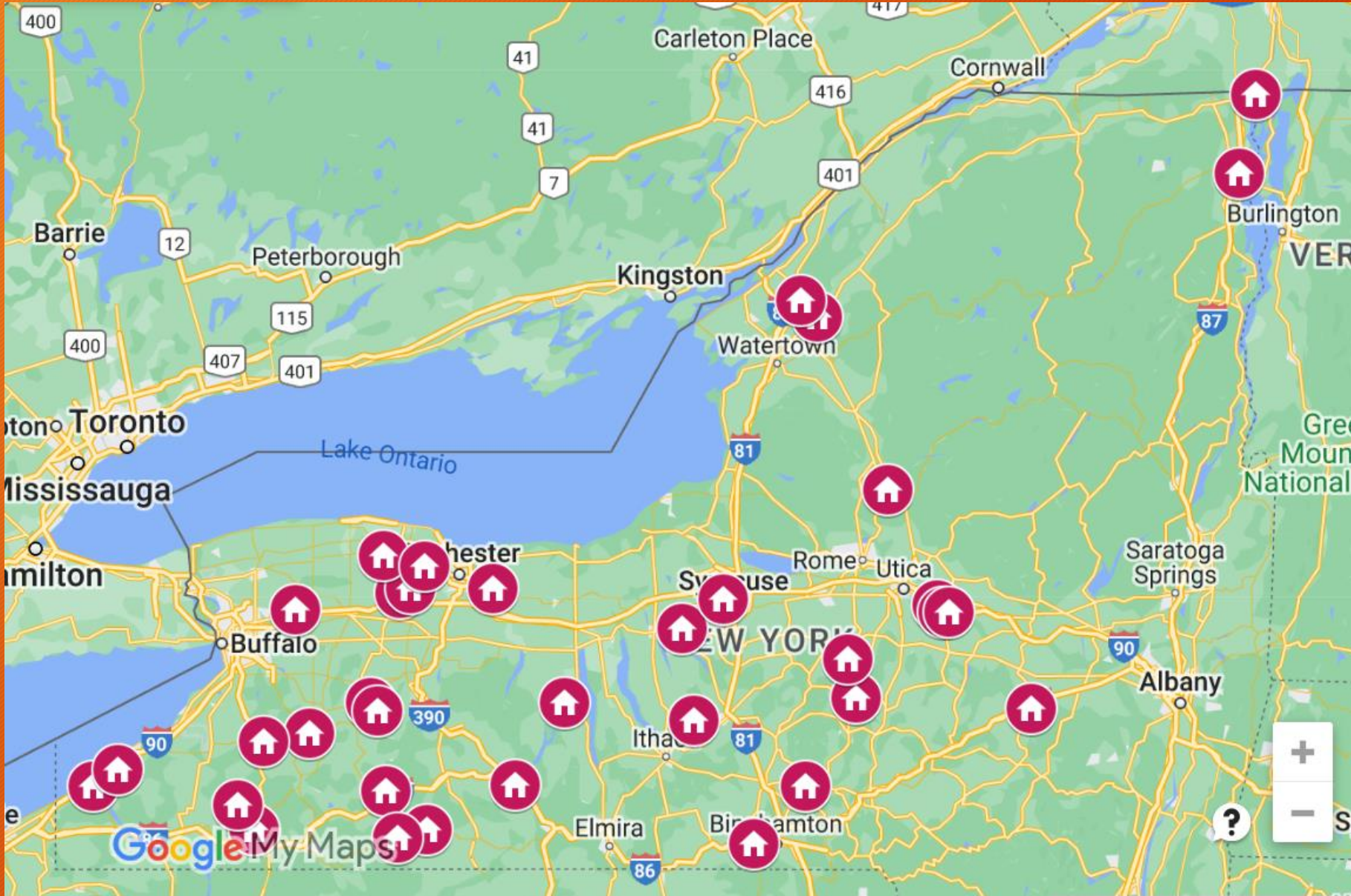


You've ended up being a Clean Kid ...with a Dirty Grid!

Dreaming
of clean
kWhs!



New York Municipal Power Agency (NYMPA)



100%
Hydro
Nuclear
Wind

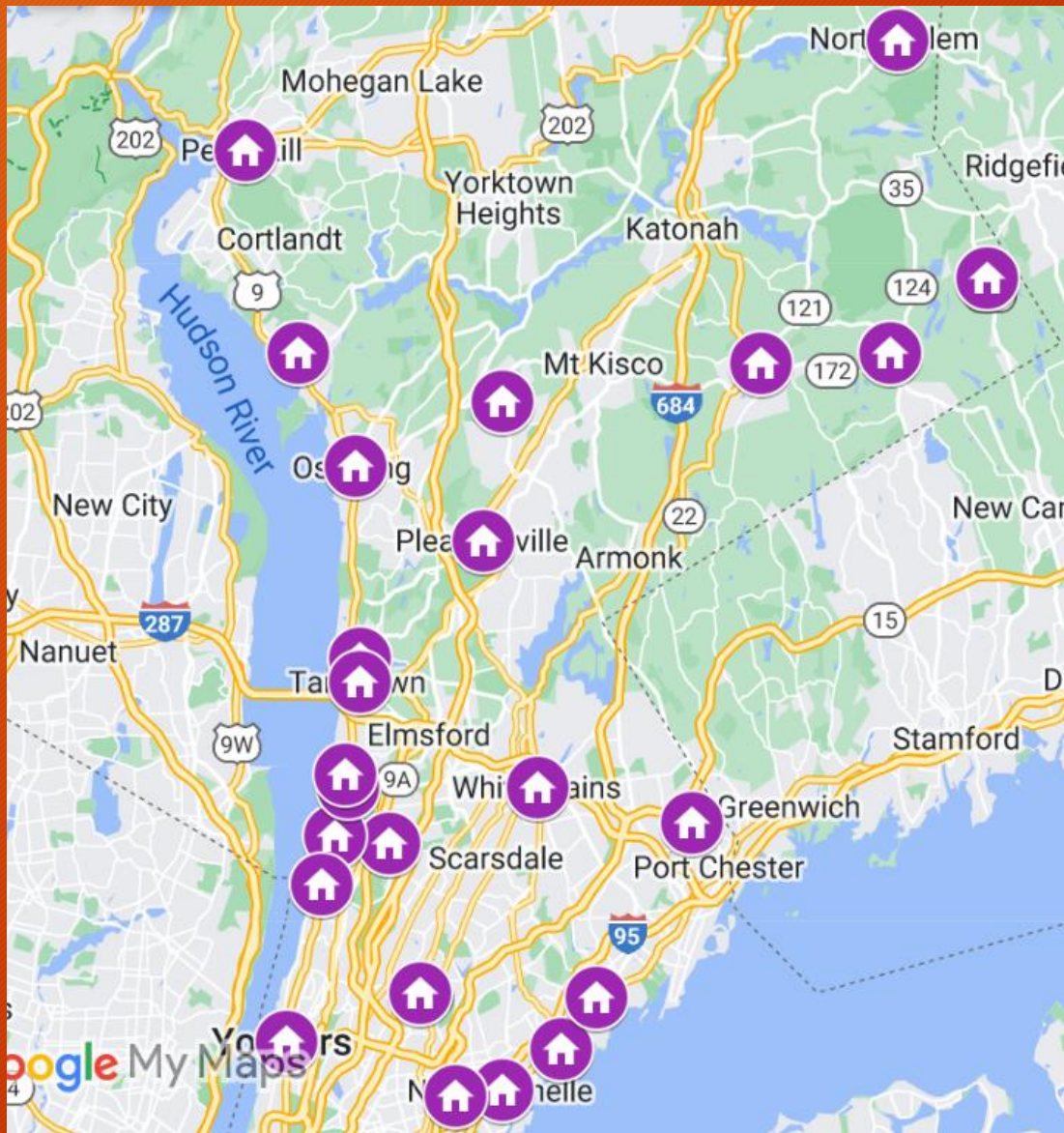
35 Zero Emission
Electricity
Municipalities
in New York State

Data Source: NYGATS 2022

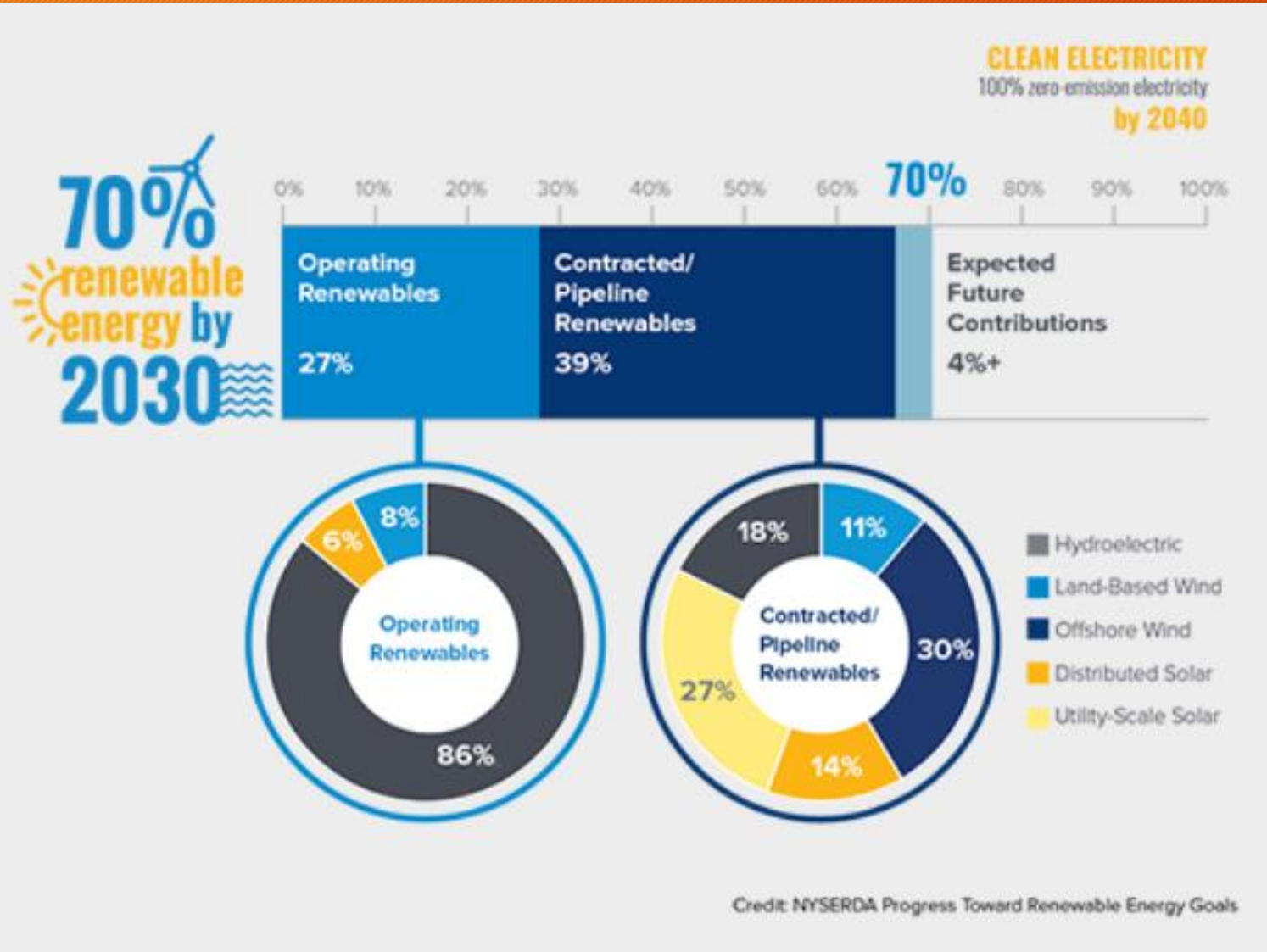
32 CCA Municipalities - Electricity Supplied by 100% Renewable Sources



Joule Community Power	
Municipality	County
City of Rochester	Monroe
Town of Geneva	Ontario
Village of Brockport	Monroe
Village of Lima	Livingston



Westchester Power
Ardsville
Bedford
Croton-on-Hudson
Dobbs Ferry
Greenburgh
Hastings-on-Hudson
Irvington
Larchmont
Lewisboro
Mararoneck
New Castle
New Rochelle
North Salem
Ossining
Peekskill
V. Pelham
Pleasantville
Pound Ridge
Rye
Sleepy Hollow
Tarrytown
Tuckahoe
While Plains
Yonkers



70% Renewable Energy by 2030

The New York State Public Service

Commission on Oct. 12 denied petitions filed by a group of offshore wind developers and a state renewable energy trade association seeking additional funding for 86 land-based wind & solar projects.

Load serving entities (LSE) can check their compliance and progress toward the CES 70% by 2030 goal using the [New York Generation Attribute Tracking System \(NYGATS\)](#). NYGATS records and tracks information on electricity generated, imported, and consumed within New York State.

100% Renewable Electricity ESCOs

Electricity Supplier	Type	Source	Price
NYSEG	Variable	14% renewable*	6.56 cents/kWh
Verde	Fixed 12 month	100% renewable*	9.59 cents/kWh
ECA	Variable	100% renewable*	10.29 cents/kWh

*verified by 2022 NYGATS

Market
Tweaks

Data: <https://documents.dps.ny.gov/PTC/home>

Subscription Solar

Solar Company	Website	Phone	Discount	Status
Nexamp	https://www.nexamp.com/	(855) 727-4636	10%	NYSEG - 6-9 month wait
				RG&E, Central Hudson - 0 - 3 month wait
				National Grid - estimated 6-12 month wait
				O&R, ConEd - 3-6 month wait
Meadow*	https://www.meadow.energy/	(845) 414-3491	5%	NYSEG, RG&E - available space
				National Grid - Open enrollment - project going live in 2-3 months
			10%	Orange & Rockland - Open enrollment - project going live in 2-3 months
				NYSEG, RG&E, Central Hudson - immediate availability

*Meadow is the new public-facing portion of what was prior to May 1st called Delaware River Solar (DRS) See <https://www.meadow.energy/>

Data: Subscription Solar Companies serving NYS

Stuck in the interconnection queue due to need for new transmission equipment or upgrades

NYSEG and RG&E

Company	Division	Circuit	Description
NYSEG	Lockport	510	Chestnut Ridge (32006)
NYSEG	Lancaster	520	Cobble Hill (31053), S. Colden (31035), Holland (31023)
NYSEG	Lancaster	548	Cobble Hill (31053)
NYSEG	Lancaster	500	Legion Drive (31001), Dayton (31002), Frog Valley (31007)
RG&E	Genesee Valley	753	S158, S160, S184, S170, S8373, S8312, S8316, S8332, S8301
RG&E	Genesee Valley	758	S180, S179, S171, S170, S8345, S7318, S7320, S9035
RG&E	Genesee Valley	754	S180, S247, S163, S175, S249, S8303, S7313, S8327
RG&E	Genesee Valley	760	S249, S176, S174, S178, S8210, S8379, S8333
RG&E	Genesee Valley	755	S178, S173, S8375, S8376
NYSEG	Hornell	546	Troupsburg (53020), Woodhull (53025), South Addison (52044)
NYSEG	Ithaca	531	Candor (43012), Willsesville (43049), Brooktondale (43011)

NYSEG	Hornell	543	Canaseraga, distribution out of Moraine Rd (53007)
NYSEG	Elmira	535	North Urbana Tap (52063), Fish Hatchery (N/A)
NYSEG	Elmira	501	Ridge Road (52065), Cayuta (52021)
NYSEG	Elmira	529	Ridge Road (52016), Tuttle Place (52011)
NYSEG	Liberty	352	Hazel (24105), Roscoe (24027), Fremont Center Tap (24044), Callicoon (24038)
NYSEG	Oneonta	808	Edmeston (FAC ID 49), New Berling (FAC ID 41), Morris (FAC ID 16), Columbus (FAC ID 35)
NYSEG	Hornell	544	Wayland (FAC ID 24), Spring Water (FAC ID 19)
NYSEG	Hornell	N/A	Bennett (FAC ID 6)
NYSEG	Binghamton	455	Morningside Heights (FAC ID 42), Chenango Bridge (FAC ID 17), Chenango Valley Tap (FAC ID 78), Nowlan Road (FAC ID 15)
NYSEG	Binghamton	430	Sanitaria Springs (FAC ID 49), Martin Hill Tap (FAC ID 57)

NYSEG	Ithaca	529	Candor (43012)
NYSEG	Ithaca	530	Candor (43012), Spencer (43013), Van EttenTap (43027), Halsey Valley Tap (43025)
NYSEG	Binghamton	417/418	Willet (81044), Marathon (81034), Lisle Tap (81079), Whitney Point (81026)
NYSEG	Binghamton	422	Willet (81044), Tarbell (81036), Genegantslet Corners Tap (81023)
NYSEG	Ithaca	524	Etna (43009), Dryden (43010), Cornell Farm (43043), Harford Mills (43040), Berkshire (81039)
NYSEG	Binghamton	420	Greene (81033), Greene Muni (N/A)
NYSEG	Binghamton	426	Kattelville (81046), Chenango Forks (81031), Greene (81033), Greene Muni (N/A)
NYSEG	Liberty	349	Short Cut Rd (24043), Fosterdale (24012), Villa Roma Tap (24041), Jeffersonville (24016)

NYSEG	Binghamton	430	Sanitaria Springs (FAC ID 49), Martin Hill Tap (FAC ID 57)
NYSEG	Binghamton	458	Morningside Heights (FAC ID 42)
NYSEG	Binghamton	428	Chenango Bridge (FAC ID 17)
NYSEG	Oneonta	813	Eaton (FAC ID 48), Eaton Co-op (N/A)
NYSEG	Hornell	South Perry Sub	All substations supplied by South Perry Substation: Federal Street (FAC ID 10), Perry Center (FAC ID 16), Warsaw (FAC ID 23), Silver Springs (FAC ID 18), Robeson (FAC ID 38), Gainesville (FAC ID 37), Castle Muni (N/A), Portageville (FAC ID 17), Leicester (N/A), Stanton Ave (FAC ID 20)
NYSEG	Plattsburgh	877	Tom Miller (FAC ID 50)
NYSEG	Plattsburgh	800	Keeseville (FAC ID 30)
NYSEG	Plattsburgh	879	Peru (FAC ID 32)
NYSEG	Plattsburgh	871	Dannemora (FAC ID 22)
NYSEG	Plattsburgh	885	Dannemora (FAC ID 22)
NYSEG	Oneonta	504	Brothertown Rd (FAC ID 27)

NYSEG	Elmira	508	Montour Falls (52020), Watkins Glen Muni (N/A), Burdett (45021), Valois (45020)
RG&E	Lakeshore	804	S194, S198
NYSEG	Elmira	598	Prattsburg (52041), Pultney (52043), Branchport (N/A)
NYSEG	Geneva	580	Bankert Rd (42033), Palmyra (42002)
RG&E	Genesee Valley	756	S158, S8377, S167
NYSEG	Auburn	530	Jordan Rd (44013), Warners (44050), Whiting Rd Tap (N/A)
NYSEG	Binghamton	429	Afton (81029)
NYSEG	Binghamton	460	Afton (81029)
NYSEG	Binghamton	512	Apalachin (81019), Main St (N/A), Hilton Rd (N/A), E. Marshland (N/A)
NYSEG	Binghamton	513	Owego Lower (81019), Canal St (81016), Bodle Hill Tap (81058), Gaskill Rd (N/A), Foster Valley (N/A)
NYSEG	Binghamton	515	Lockheed Martin (N/A), Bodle Hill (81058), Sammina Tap (N/A)

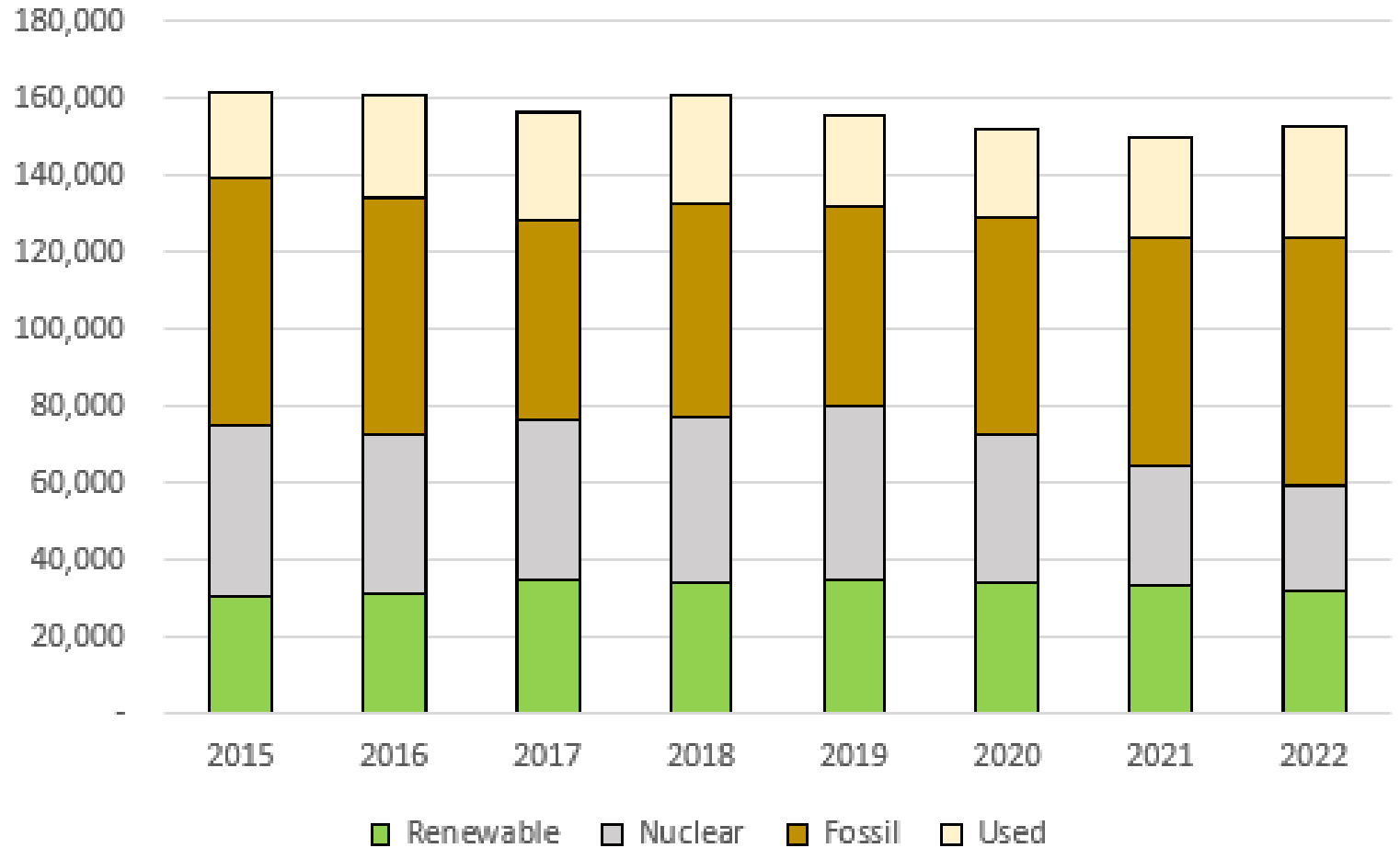
NYSEG	Oneonta	515	East Norwich (FAC ID 55)
NYSEG	Ithaca	555	Interlaken (FAC ID 18), Trumansburg (FAC ID 17), County Hospital (FAC ID 16), County Hospital - Trumansburg (FAC ID 53)
NYSEG	Ithaca	540	County Hospital (FAC ID 16)
NYSEG	Ithaca	532	County Hospital (FAC ID 16)
NYSEG	Ithaca	545	County Hospital (FAC ID 16)
RG&E	Canandaigua	736	Station 145
RG&E	Canandaigua	737	Station 142
NYSEG	Oneonta	802	Otego (23005), Unadilla (23009)
NYSEG	Geneva	589	Van Buren (42004)
NYSEG	Elmira	556	Goss Rd (52017)
NYSEG	Elmira	532	Campbell (52033)
NYSEG	Binghamton	427	Langdon (FAC ID 27)
NYSEG	Binghamton	430	Langdon (FAC ID 27)
NYSEG	Binghamton	432	Langdon (FAC ID 27)
NYSEG	Elmira	531	Kanona (52046)

NYSEG	Binghamton	516	Lockheed Martin (N/A)
NYSEG	Binghamton	540	Distribution (limited by transmission substation transformer)
NYSEG	Mechanicsville	626	Comstock (12013), West Granville (N/A), Granville (12013), Slateville Tap (2089), Tiplady's Tap (2018), New Salem (N/A)
NYSEG	Auburn	511	Marietta (44016), Otisco (44015)
NYSEG	Auburn	508	Marcellus (44014)
NYSEG	Geneva	589	Hall (42022), Gorham (42021), Voak Rd Tap (42039), Blodgett Rd Tap (42043), Rushville (42023)
NYSEG	Plattsburgh	513	Chateaugay (15001), Constable Recloser (N/A)
NYSEG	Plattsburgh	514	Chateaugay (15001), Prison Recloser (N/A), Bull Run Recloser (N/A), Town Garage Recloser (N/A)
NYSEG	Plattsburgh	515	Chateaugay (15001), Chasm Hydro (N/A)
RG&E	Lakeshore	708	S189, S181

NYSEG	Hornell	536	Howard (FAC ID 11), Wallace (FAC ID 22)
NYSEG	Oneonta	916	Grand Gorge (23076), Axtell Rd (23070)

Based on existing transmission system and current queue as of 11-15-23

Energy Production for NYS End Users



Renewable

Production

in 2022 was

27.5% of

stated NYS production when

counting biogas, biomass, & solid

waste as renewable. The

corrected value would be 25.6%

However, if none of the imports

are renewable, it is further

reduced to 21.1% of energy

needed for end-users, the CLCPA

requirement.

**GOAL: 70%
Renewable
by 2030
(end-user)**

Break out of the dream and start planning!

4
STEPS



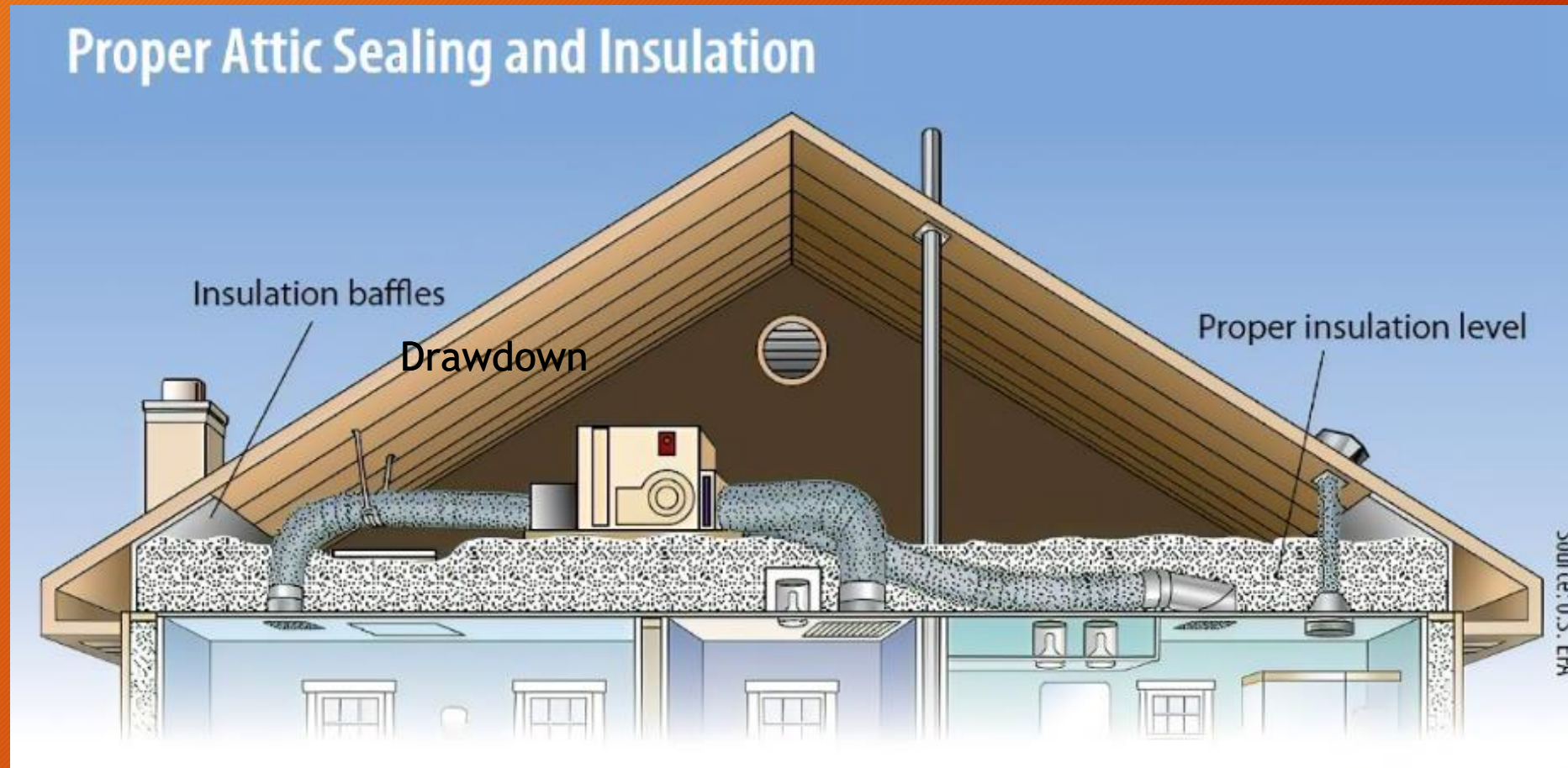
Step 1: Home Energy Assessment



Drawdown

Step 2: Insulation and Sealing

Drawdown

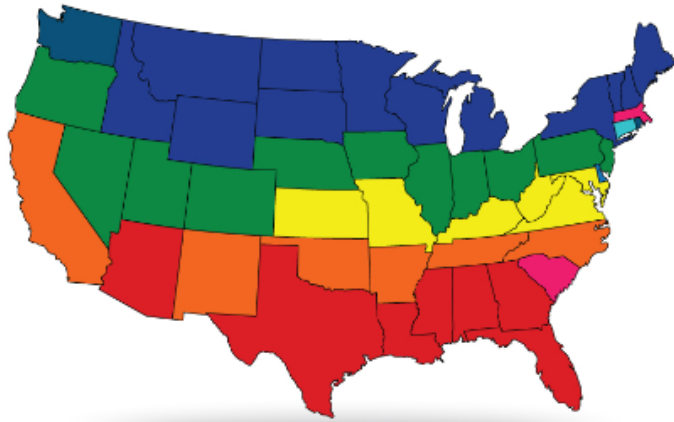


www.energystar.gov/sealandinsulate

Step 3: Right-size your heat pump system

Drawdown

What Size Heat Pump Do I Need



	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5
1.5 Tons	700-1100 sf	700-1050 sf	600-1000 sf	600-950 sf	600-900 sf
2 Tons	1101-1400 sf	1051-1350 sf	1001-1300 sf	951-1250 sf	901-1200 sf
2.5 Tons	1401-1650 sf	1351-1600 sf	1301-1600 sf	1251-1500 sf	1201-1500 sf
3 Tons	1651-2100 sf	1501-2000 sf	1601-1900 sf	1501-1850 sf	1501-1800 sf
3.5 Tons	2101-2300 sf	2001-2250 sf	1901-2200 sf	1851-2150 sf	1801-2100 sf
4 Tons	2301-2700 sf	2251-2700 sf	2201-2600 sf	2151-2500 sf	2101-2400 sf
5 Tons	2701-3300 sf	2751-3300 sf	2601-3200 sf	2501-3100 sf	2401-3000 sf

Step 4: Cover your load with on or offsite solar

Avoid
Dangling
Kwhs



Kilowatts? Have you got them covered ?

Power
your
load.

4 **Power** - Cover your energy use with solar.



3 **Electrify** - Decarbonize your home energy



2 **Weatherize** - Minimize your energy load.



1 **Audit** - Analyze your home energy system.

...which underlines the importance of reducing your home energy load every step of the way so that you can power all or most of it yourself and reduce grid dependency.

Draw down your energy load

Power it with your own solar power plant

Reduce your dependence on the dirty grid!

Empower
yourself!



Questions?

Gerri Wiley
Energy Navigator
gerriwiley@yahoo.com
607-342-3159


?

What's going on?

REC-less

“In short, many of the land-based wind, solar and offshore wind projects that have NYSERDA contracts have to actually get built and then start generating RECs. There's a huge backlog now of projects that can't get permitted and then built and therefore enough new RECs aren't coming on the system.”

“Community Choice Aggregations (CCAs) are responsible for 30% of the purchased voluntary renewables in the state and approximately 1.2 million MWhs of New York Renewable Energy Credits (RECs), contributing to the stability of the state’s renewable power industry. This is on top of helping our client municipalities achieve their climate and climate justice goals by avoiding over some 138,000 MT of carbon annually.”



Community Solar is behind a utility
meter (behind the meter)
and reduces what NYISO must
supply to the grid.

FIGURE 18: WIND GENERATION & CURTAILMENT (GWh): 2004-2022

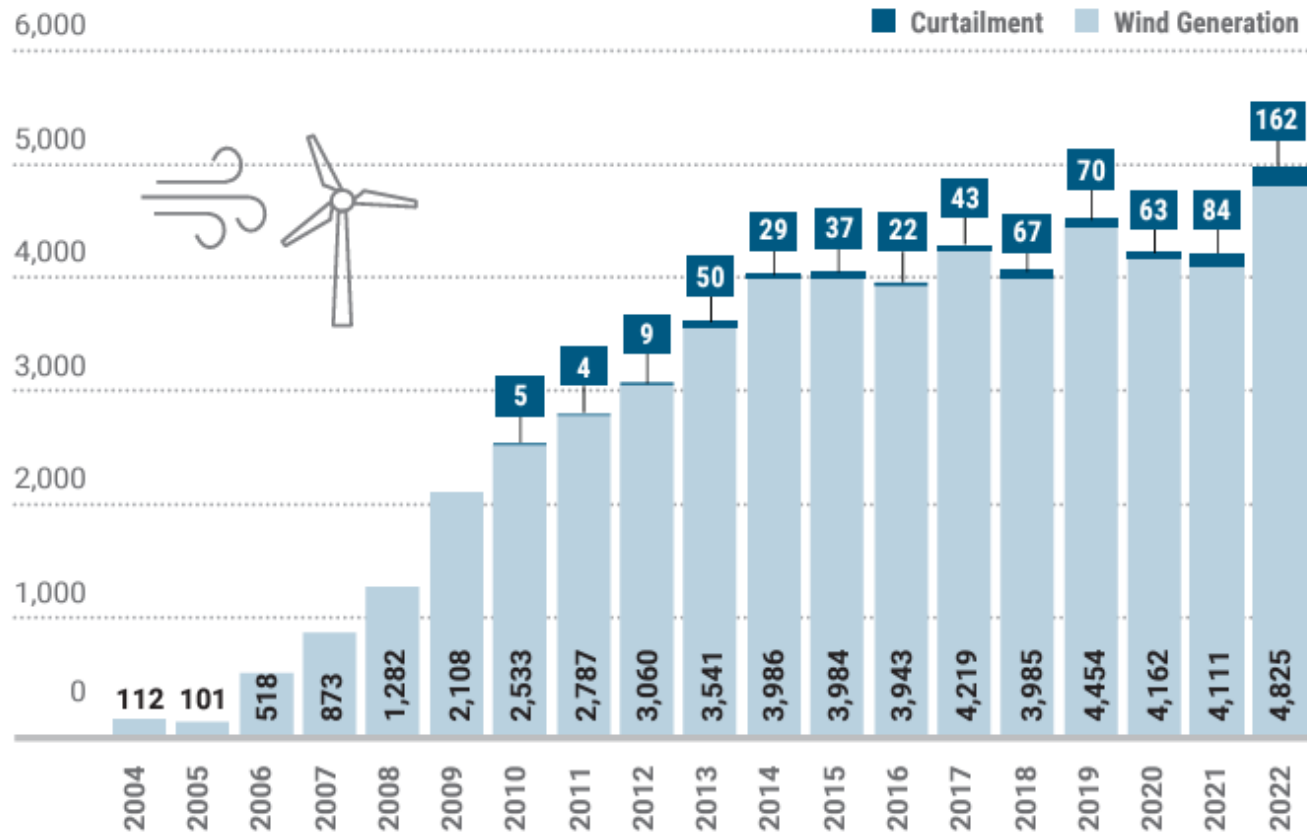


FIGURE 18 | Ongoing transmission upgrades contributed to greater curtailment of wind resources in 2022. Much of the curtailment was concentrated in NYISO Zones D and E and impacted by ongoing construction work on the Smart Path transmission project and the AC Upgrade from the Mohawk Valley to the lower Hudson Valley.

Two GWs Community Solar - 11/23
3 GWs other Solar
3.3 Gws Solar being developed
Equals 8.3 Gws Solar (capacity)

Community Solar is behind a utility meter (behind the meter) and reduces what NYISO must supply to the grid.

Only utility-scale solar is indicated on Power Trends (starting in 2023 report - because previously there was just one 30 MW solar plant on LI.

Looks like the current 200 MW of utility scale solar produced 110 GWhs electricity in 2022.