



Cornell **CALS**
College of Agriculture and Life Sciences

Community and Regional Development Institute

Planning for Large Scale Solar Electric Facilities in NYS

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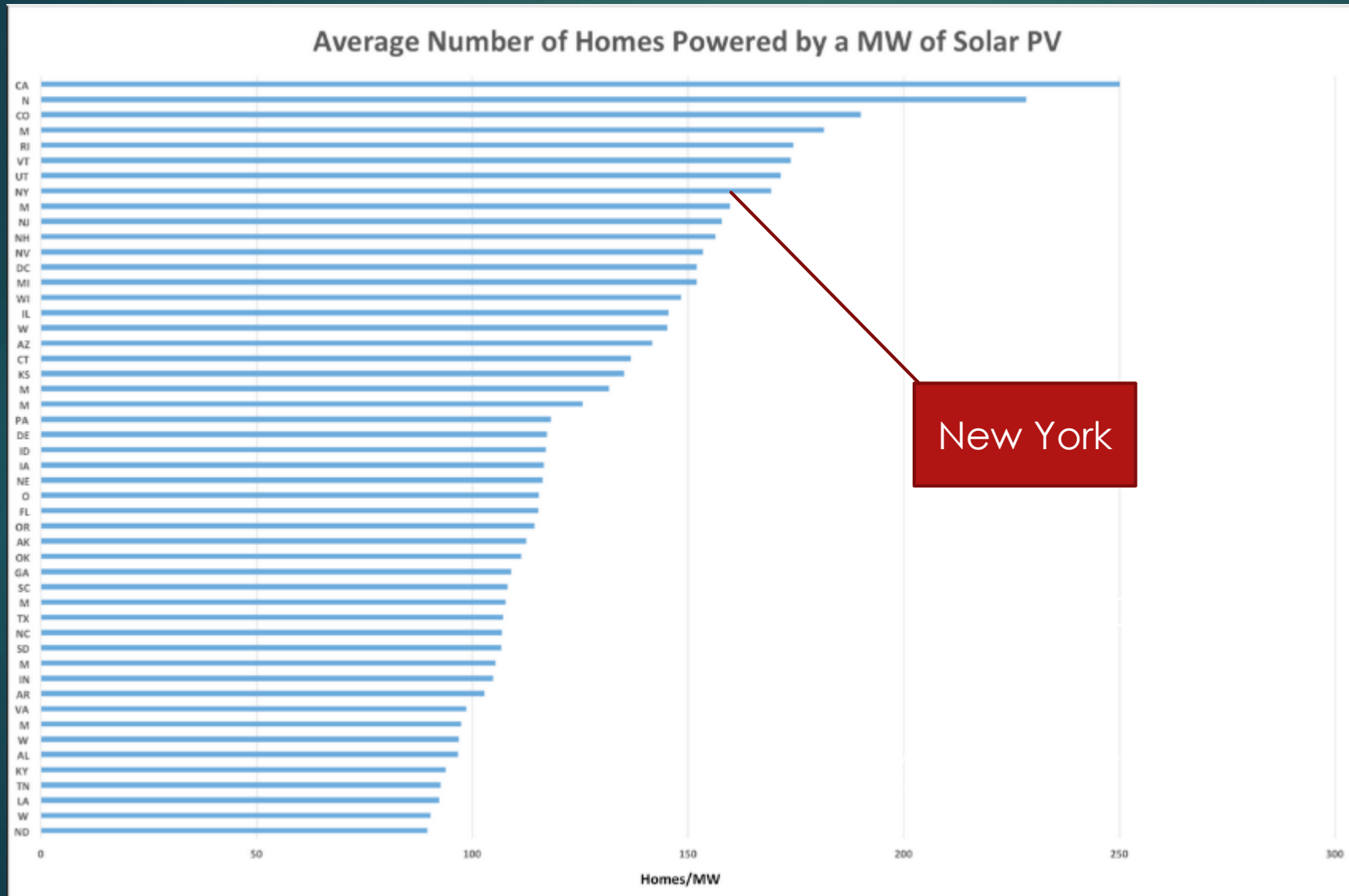
Onondaga Planning Federation, 32nd Annual Symposium
March 11, 2020 8:00 – 5:00
Marriott Syracuse Downtown



General Themes

- ▶ It is important to consider scale & context
 - ▶ Individual facility scale (site specific)
 - ▶ Scale of development overall
- ▶ It is important to consider location & context
 - ▶ Within a site
 - ▶ Within regions and the state
- ▶ It is important to consider how much electricity NY will need, and where it should come from

Solar in New York



**NY: ~150-200
homes per MW
(average)**

**5-7+ acres per
MW (average)**

1,000 KW = 1 MW

1000 MW = 1 GW

<https://www.seia.org/initiatives/whats-megawatt>

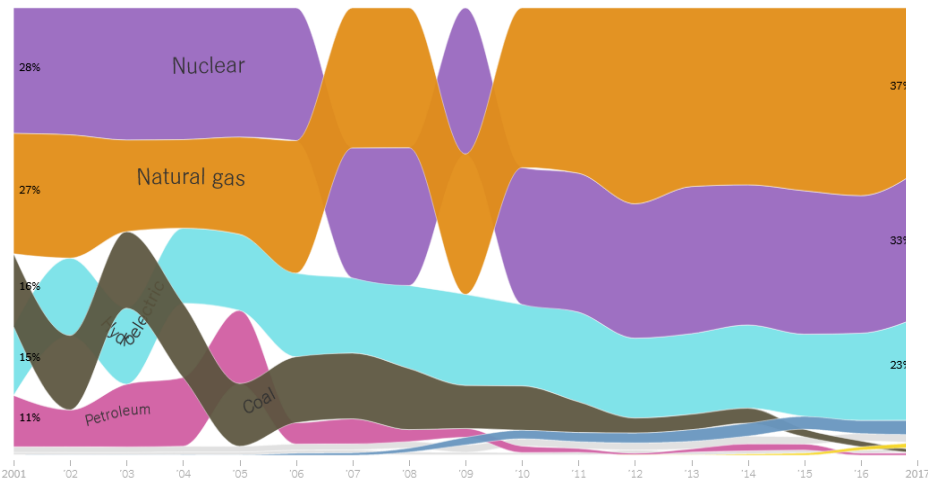
Electricity Generation in NYS

Nonhydro renewables so far = wind upstate

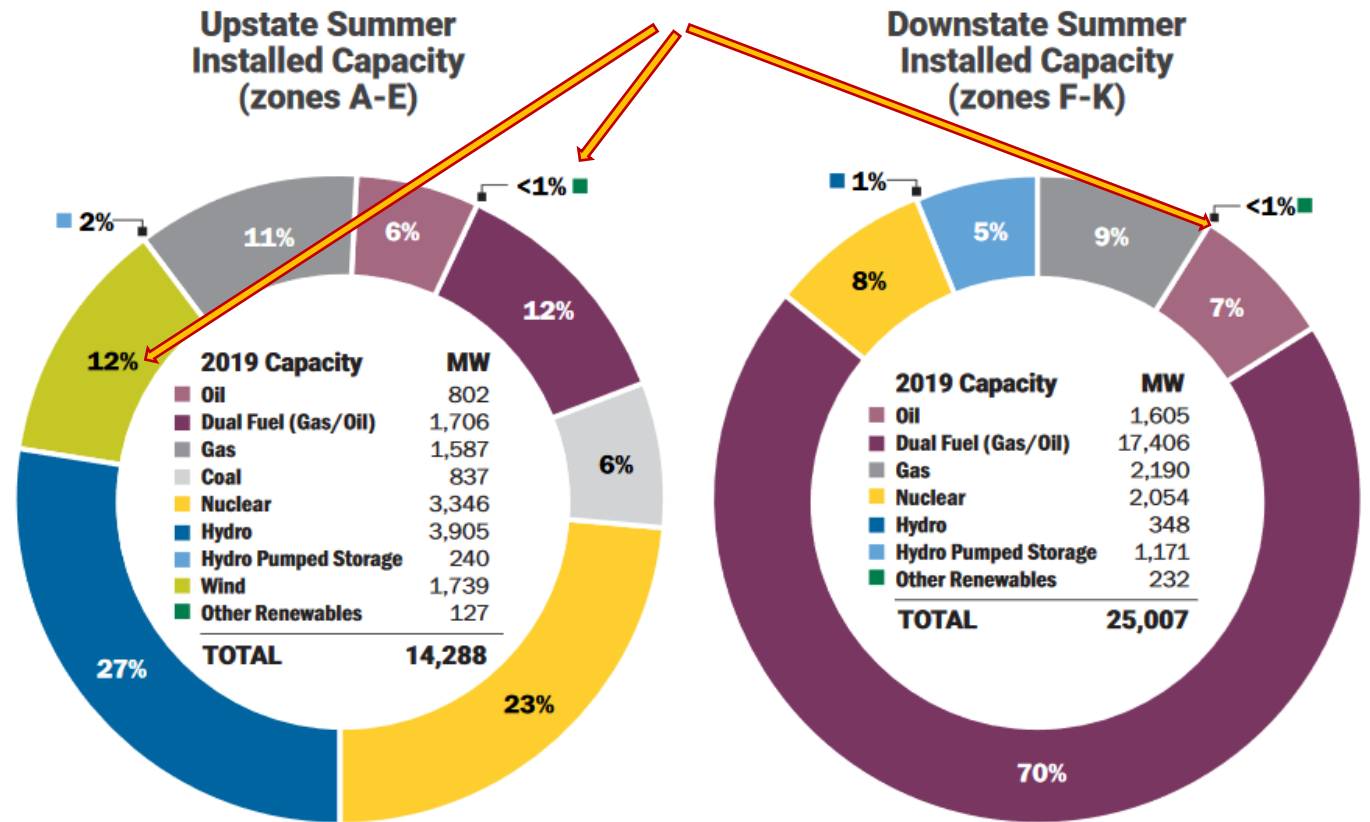
Trending:
Away from coal and oil, towards
natural gas (and wind, solar)

How New York generated electricity from 2001 to 2017

Percentage of power produced from each energy source



<https://www.nytimes.com/interactive/2018/12/24/climate/how-electricity-generation-changed-in-your-state.html>



Source: Power Trends 2019

<https://www.nyiso.com/documents/20142/2223020/2019-Power-Trends-Report.pdf/0e8d65ee-820c-a718-452c-6c59b2d4818b>

NY SUN Projects (NYS supported)

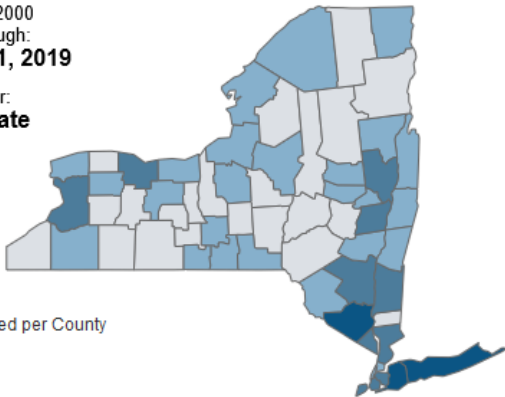
Statewide Solar Projects

Based on interconnection data, this map represents the most comprehensive summary available of installed solar capacity and annual trends, including projects that did not receive State funding, for all of New York since 2000.

To get started, click on the map for county-specific data or hold Ctrl and click multiple counties. To see statewide data, click outside the map. Questions or issues accessing this data should be directed to solardata@nyserda.ny.gov.

Data beginning 2000
and current through:
December 31, 2019

Showing Data for:
New York State



Megawatts installed per County

- 0 to 10 MW
- >10 to 50 MW
- >50 to 100 MW
- >100 MW

Total Capacity (MW DC)
2,223 MW

Number of Projects
131,937

Data Sources: NYS DPS, NYISO. Click icon for more info

Cumulative installed: **1,661 MW**
“In pipeline”: **1,295 MW**

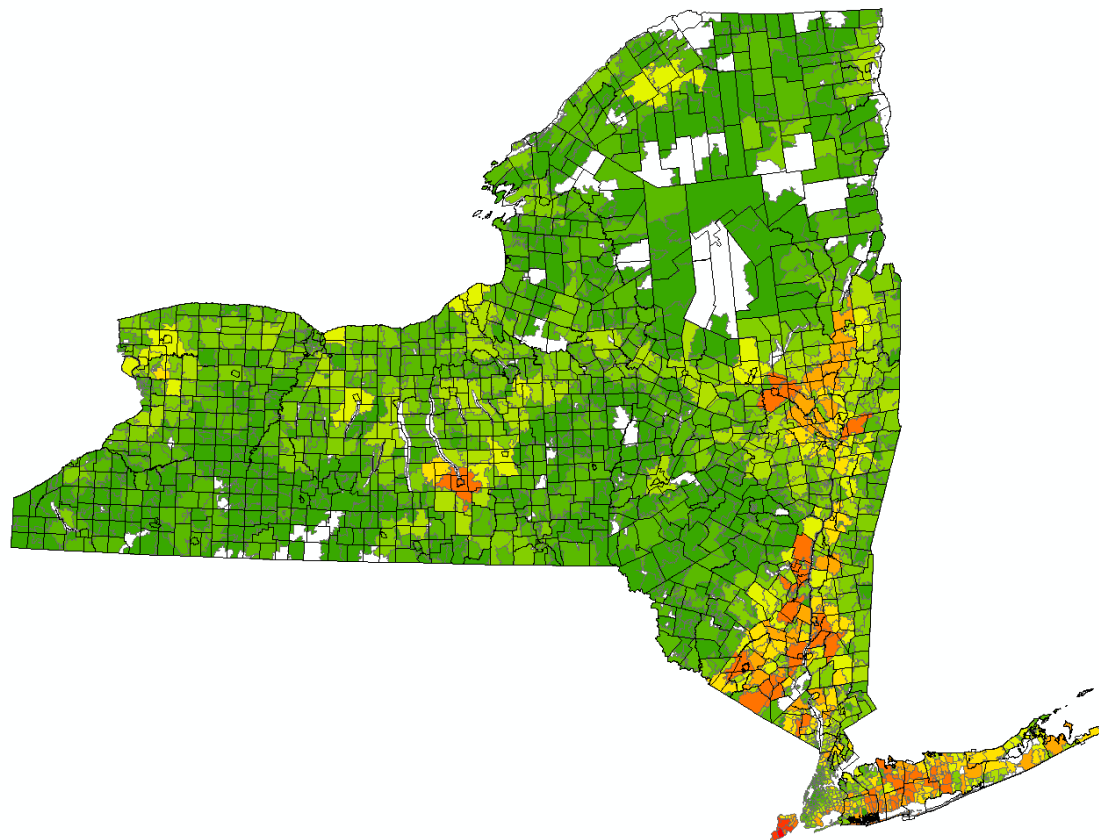
Summary:

- Lots of small projects
- Residential reflects population
- **~3 GW total here & on the way**

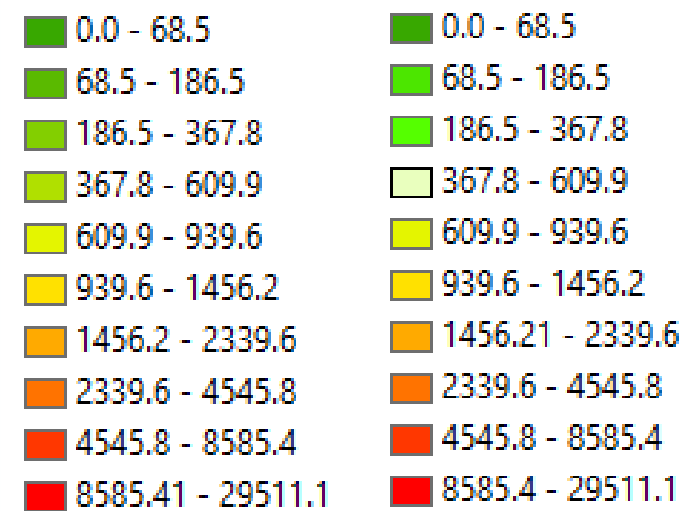
104,545 projects (2000-2020)
107 (0.1%) of these 5-10 MW

Completed Residential Solar Projects by Zipcode

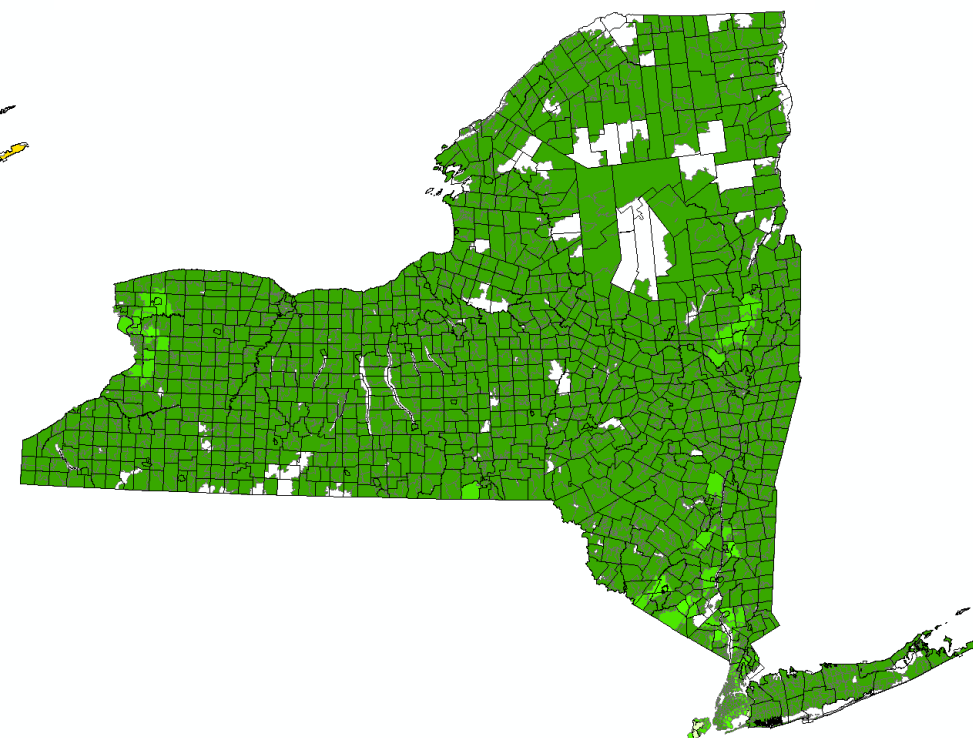
(nameplate
capacity in
kW)



Nameplate capacity in kW

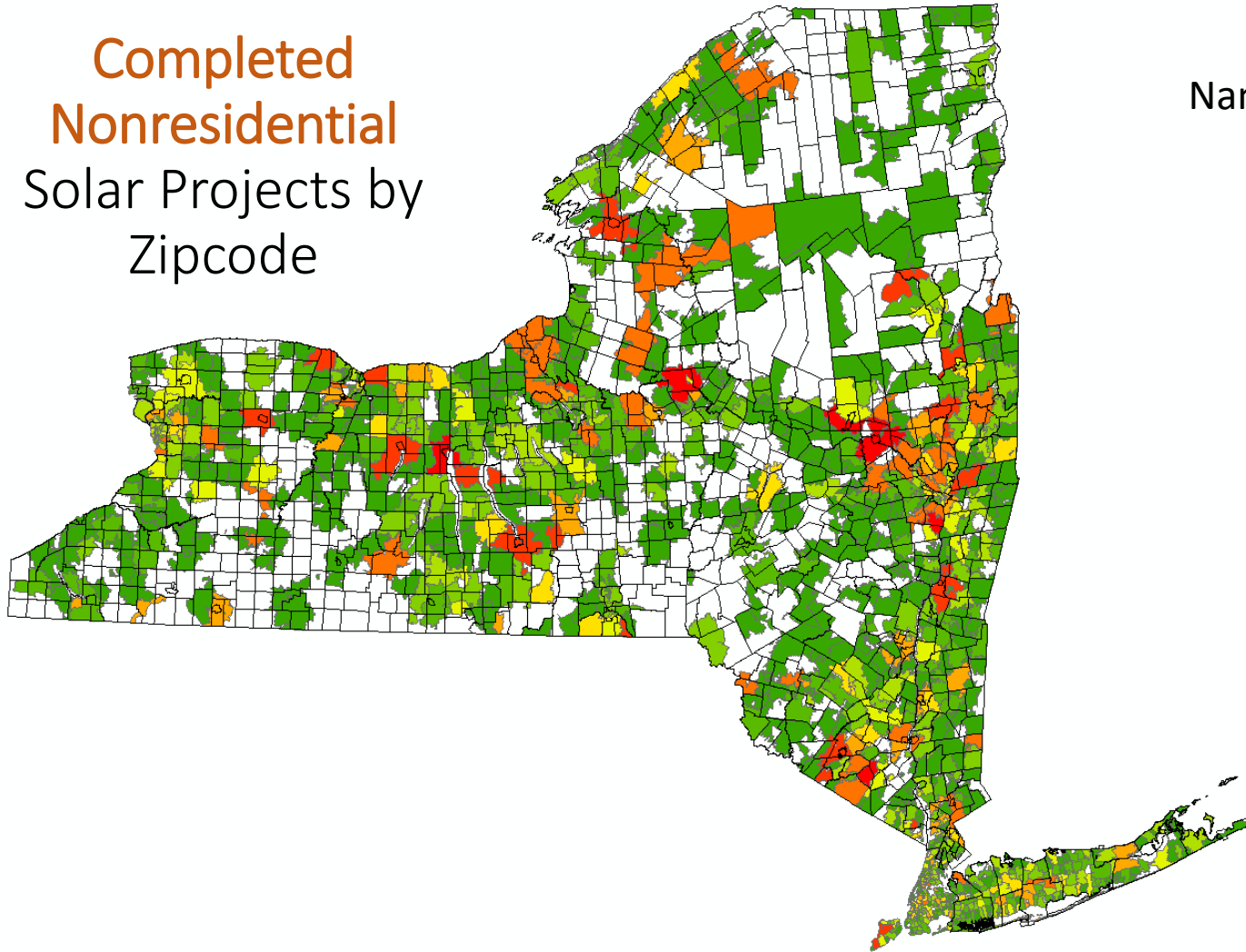


Pipeline Residential Solar Projects by Zipcode



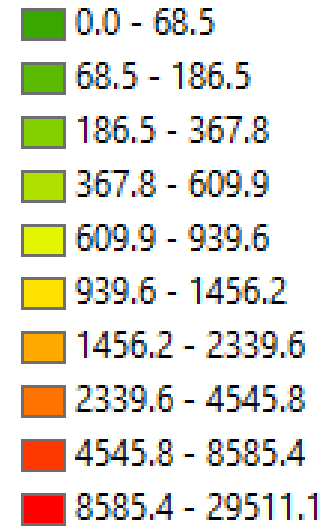
As of late 2019. Maximum size of individual project is about 5 MW, most very much smaller. NY SUN data

Completed Nonresidential Solar Projects by Zipcode

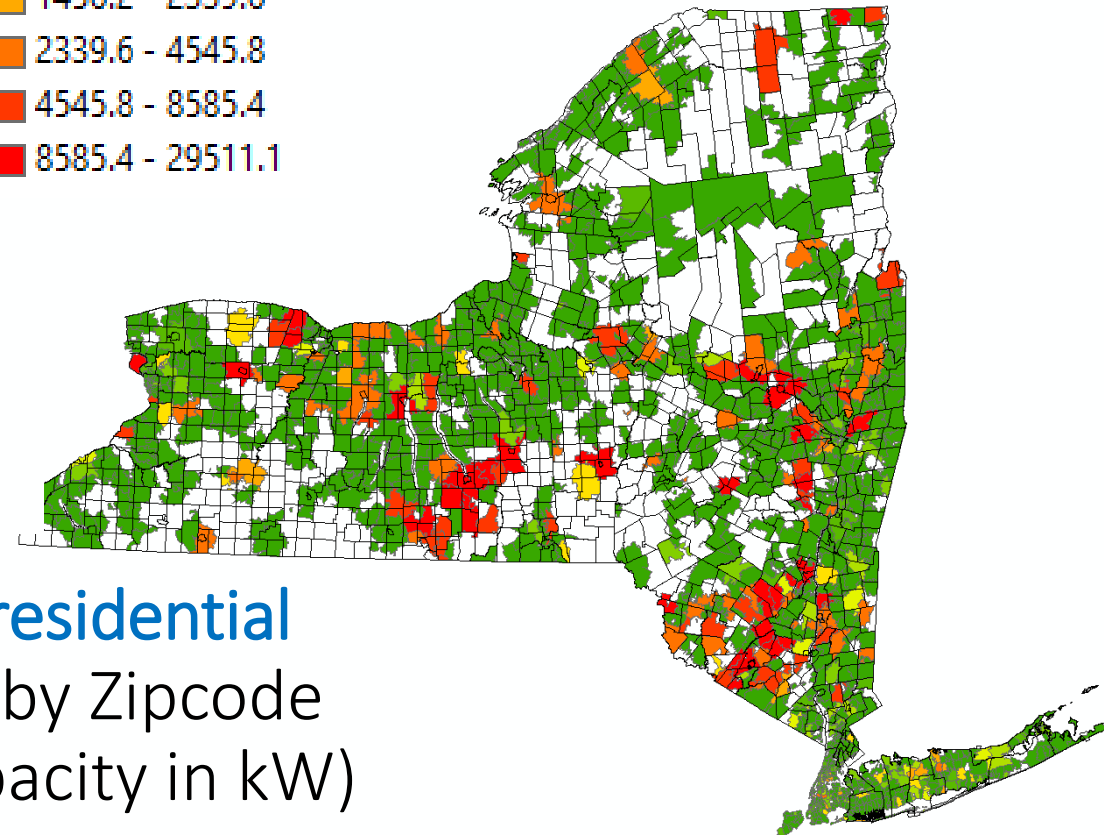


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Nameplate capacity in kW



Pipeline Nonresidential Solar Projects by Zipcode (nameplate capacity in kW)





Climate Leadership and Community Protection Act Goals

6 GW *distributed* solar PV by 2025

- NY SUN ~3 GW total already here or on the way

9 GW offshore wind by 2035

3 GW storage by 2030

JULY 18, 2019 | Albany, NY

Governor Cuomo Executes the Nation's Largest Offshore Wind Agreement and Signs Historic Climate Leadership and Community Protection Act

ENVIRONMENT

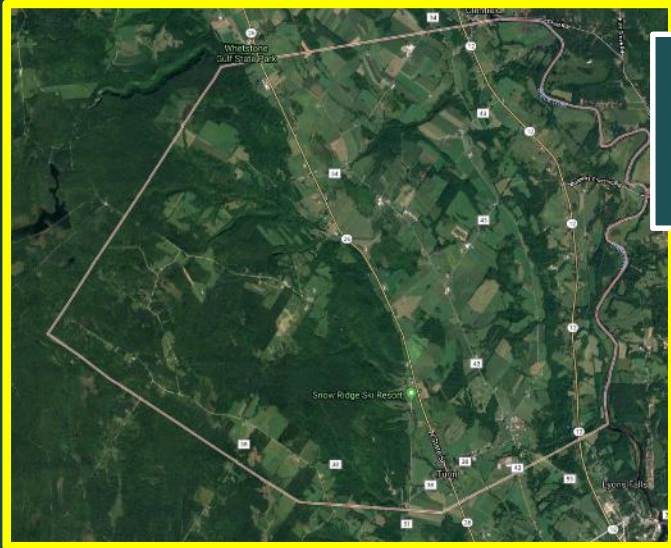
ENERGY

NYS Transmission System and Distribution System – Projects in the NYISO “Queue”

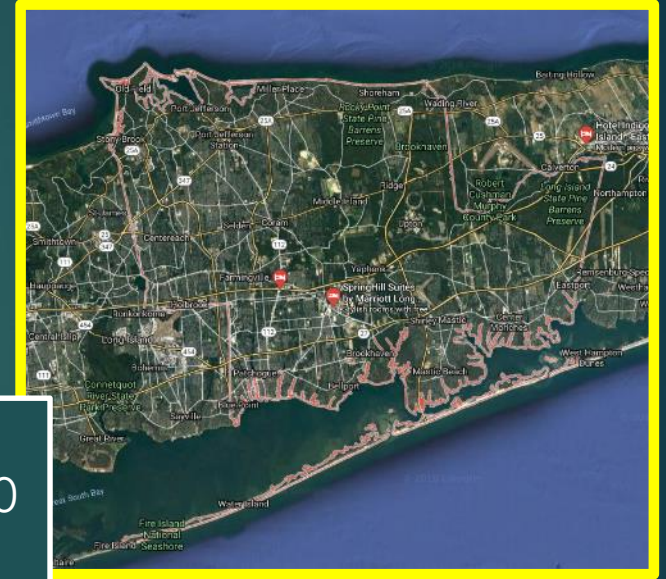
*NYISO governs interconnection to the electric grid
Officially proposed projects are assigned a position in the queue*



Community and Scale - Solar



Lewis County
Town Population < 1000
Households ~ 110



Suffolk County
Town Population ~ 500,000
Households ~ 165,000



2 MW

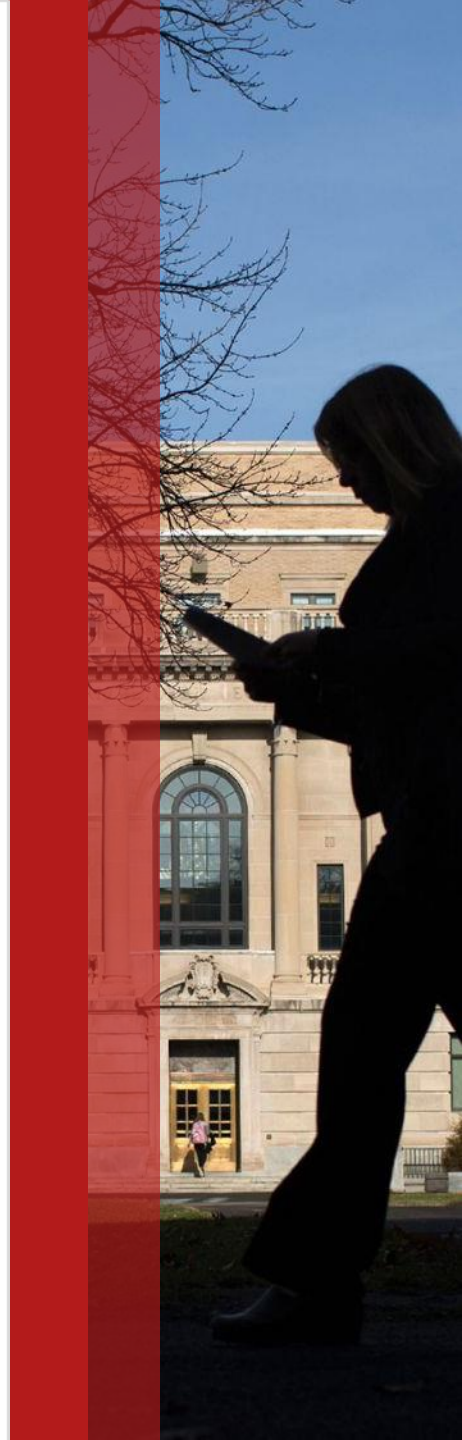
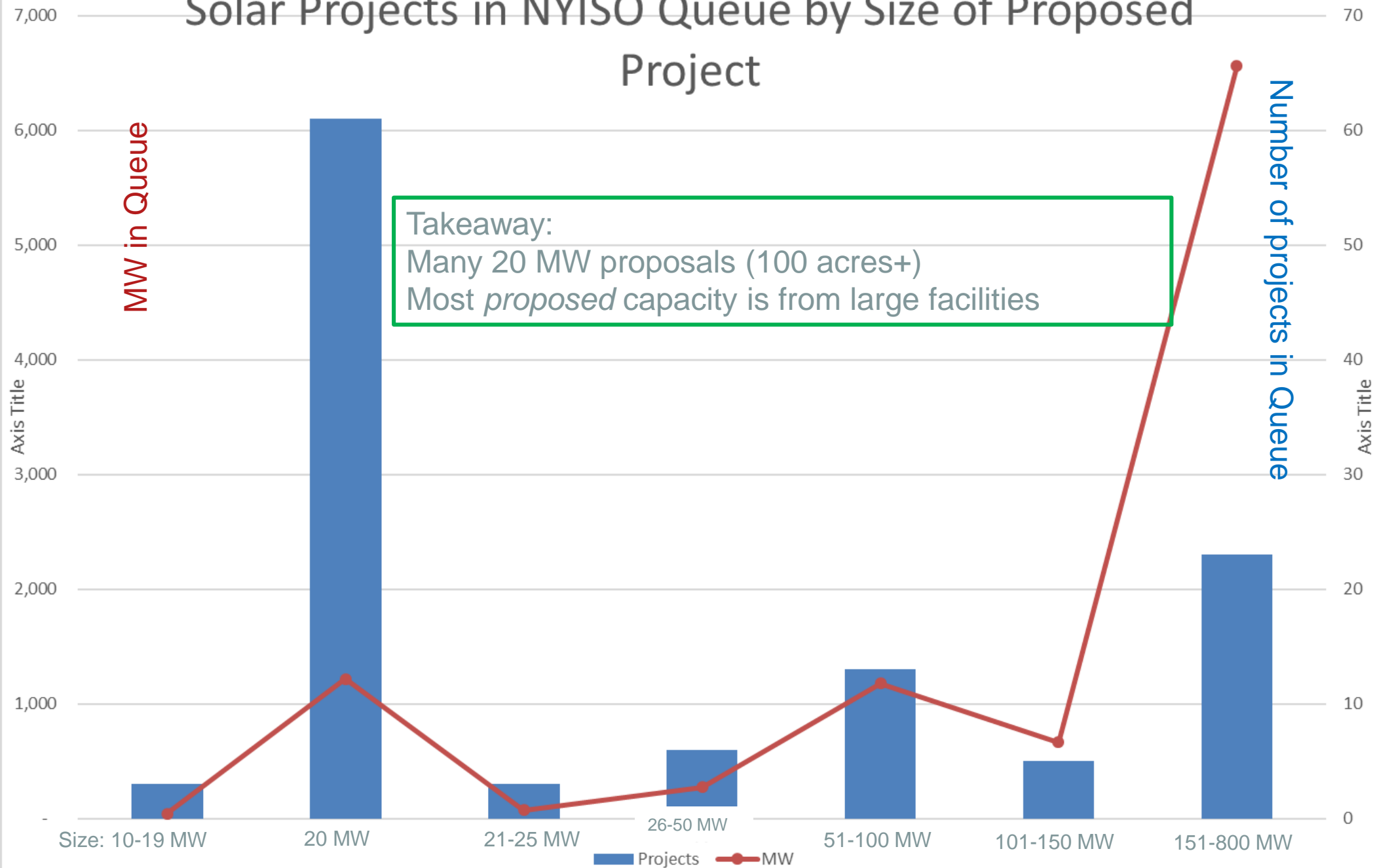


32 MW



~150 of these or ~ 9 of these?

Solar Projects in NYISO Queue by Size of Proposed Project



Climate Leadership and Community Protection Act Goals

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3 GW storage by 2030

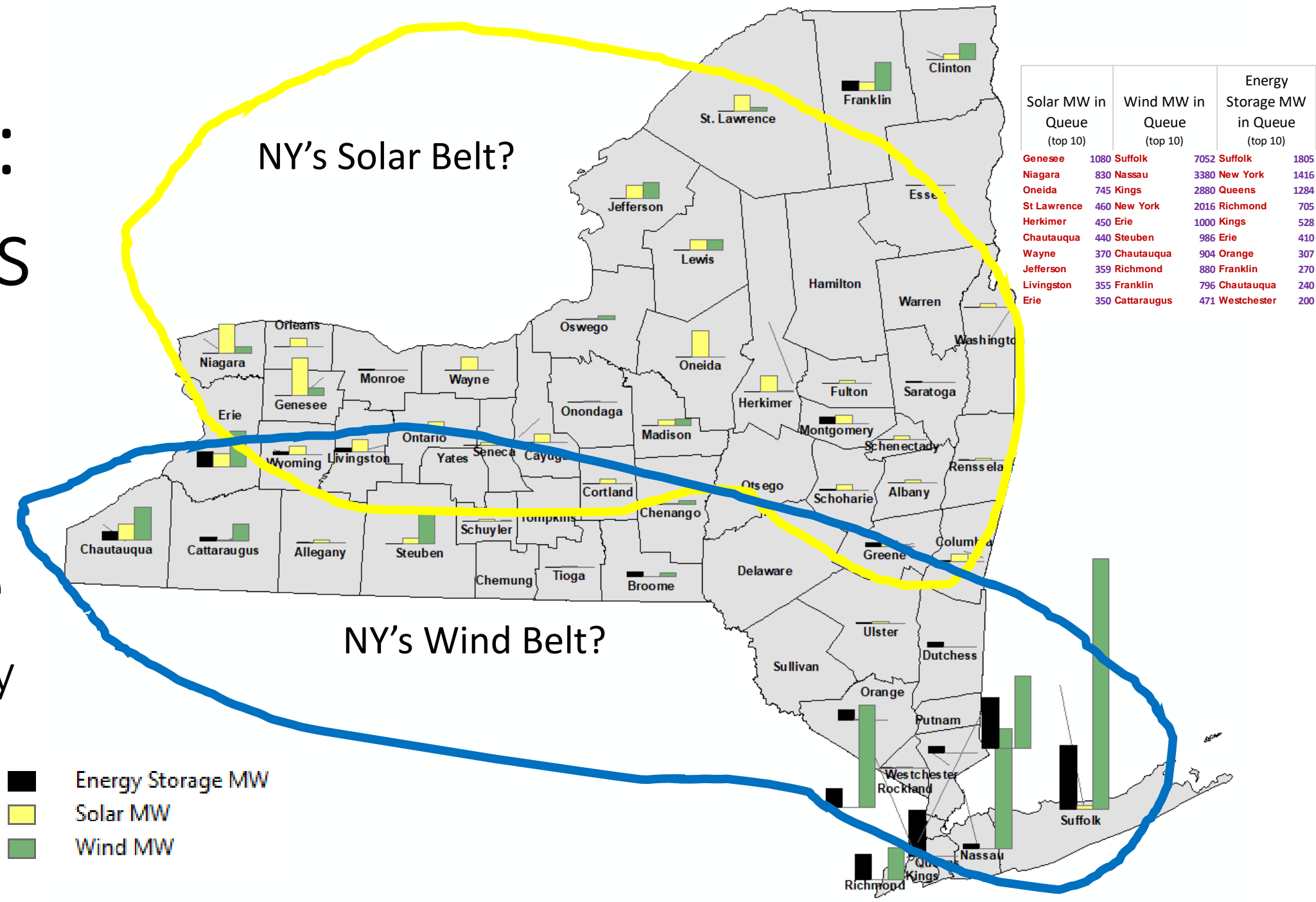


Markets determine the mix beyond these targets

Renewables in the NYISO Queue :

1. Solar projects in queue
 1. 113 (41% of total #)
 2. $\Sigma=9.4$ GW (23% of total GW)
 3. 83 MW (average capacity)
2. Wind projects in queue
 1. 57 (23% of total #)
 2. $\Sigma=22.6$ GW (56% of total GW)
 3. 397 MW (average capacity)
3. Energy storage projects in queue
 1. 91 (24% of total #)
 2. $\Sigma=8.4$ GW (21% of total GW)
 3. 92 MW (average capacity)
4. Other (Fuel cell/hydro/solid waste/bio)
 1. 7 projects, 102 MW

NY ISO: Projects in Active Queue MW Capacity by County, 2020



Board on Electric Generation Siting and the Environment – Article 10 Law

Board on Electric Generation Siting and the Environment

Article 10 Law

Article 10 Regulations

Board Members

Information Coordinator

Press Releases

Procedures and
Hearing Rules

Projects Under Review

Requests for Declaratory
Rulings

Webcast Schedule

Guides

Forms

FAQ



Largest (32 MW)
NYS Solar Array
Brookhaven Lab

Online: 2011

<http://www3.dps.ny.gov/W/PSCWeb.nsf/All/1392EC6DD904BBC285257F4E005BE810>
<https://www.bnl.gov/newsroom/news.php?a=22828>



Article 10 – A Few Basics

- Applies to siting review for all new, repowered, modified major electric generating facilities of 25 MW or more
 - Renewable and nonrenewable facilities
- Review board **members**
 - 5 State (DPS, DEC, DOH, NYSERDA, DED)
 - 2 “ad hoc public members, both of whom shall reside within the municipality in which the facility is proposed to be located”
 - Appointment: 1 by Senate, 1 by Assembly
- Last major modification, 2011
 - Expanded authority for Board review, new 25 MW threshold (was 80 MW)
- Governor’s Budget Bill *proposal* recently introduced
 - “The accelerated renewable energy growth and community benefit act”
 - Proposes a number of major changes



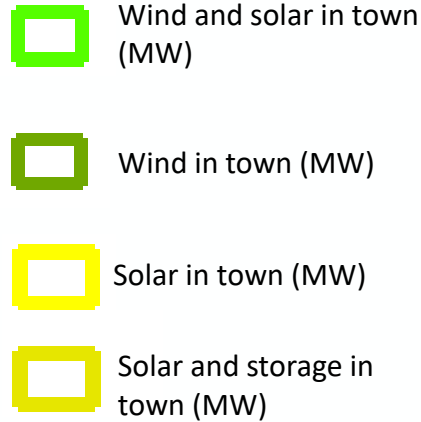
Article 10: Solar Projects under Review

Projects Under Review

<u>Step 1: Public Involvement Program Submittals</u>	24	Projects, 4.5 GW
<u>Step 2: Preliminary Scoping Statement Submittals</u>	9	Projects, 1.2 GW
<u>Step 3: Applications Submitted</u>	7	Projects, 0.3 GW
<u>Step 4: Applications Deemed Compliant</u>	1	Project, 0.1 GW
<u>Step 5: Applications Approved</u>	0	
<u>Step 6: Certified Projects</u>	0	

NO SOLAR PROJECTS HAVE
COMPLETED ARTICLE 10 REVIEW

Just over 6 GW total



Article 10: Active Wind & Solar Projects

A Sense of Scale

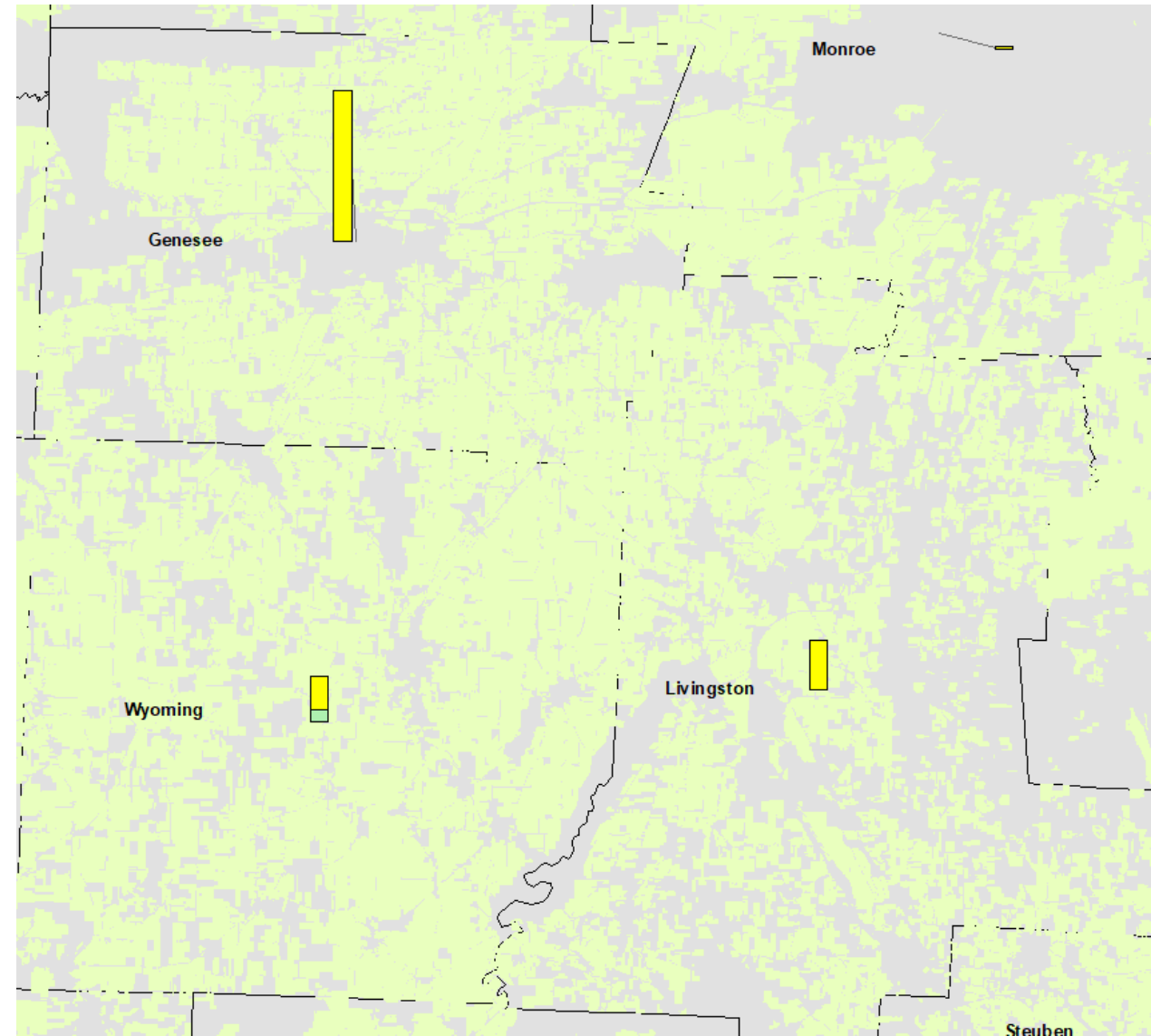
Genesee County = 495 mi sq

Livingston County = 640 mi sq

Wyoming County = 596 mi sq

Two largest individual projects at scoping stage of review *(the one at compliance phase is 98 MW)*

- **Excelsior Energy, Genesee County**
 - 280 MW
 - ~3,400 acres (~5.3 mi sq)
 - ~12 acres/MW
- **Horseshoe Solar, Livingston County**
 - 180 MW
 - ~1,600 acres (~2.5 mi sq)
 - ~9 acres/MW



A Sense of Scale

Livingston County = 640 mi sq
Town of Mt. Morris = 50 sq mi

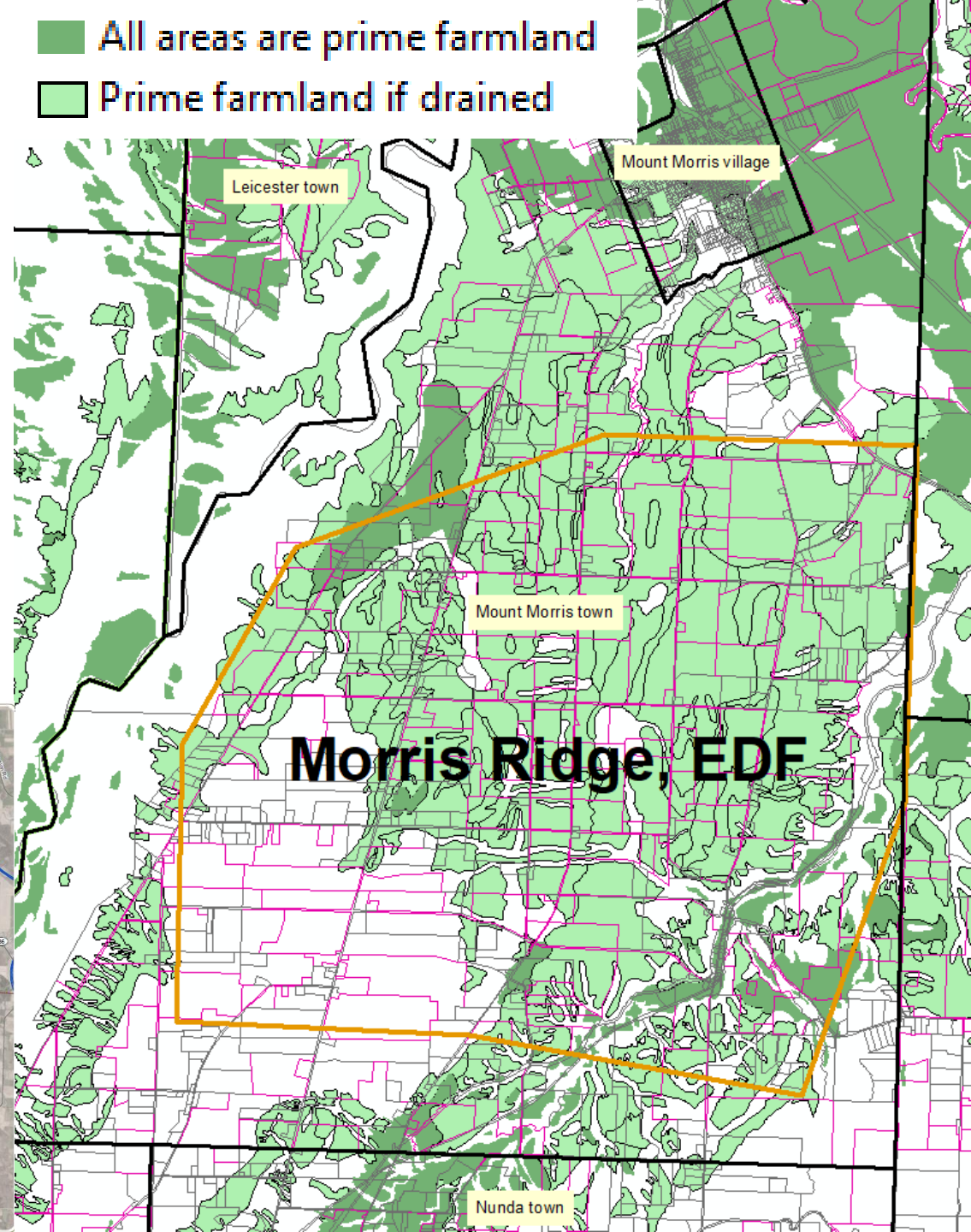
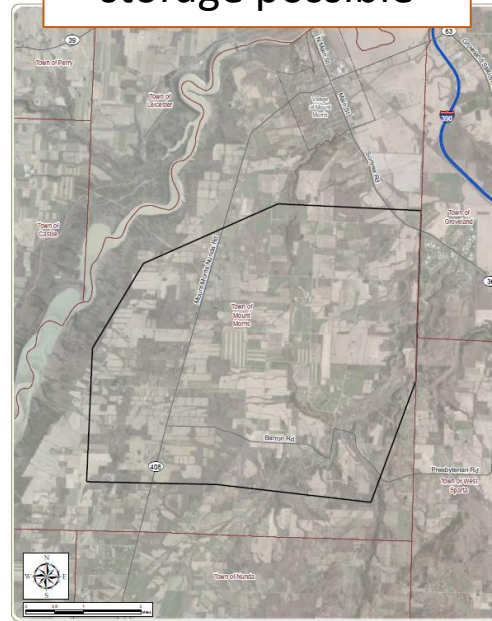
Acreage in project boundary shown ~
24 sq mi

- “Facility will *ultimately be sited* on approx. 1,000 acres [**~1.6. sq mi.**] of leased private land within the Facility Area, which consists primarily of cleared land.”
- 1000 acres implies 5.7 acres/MW

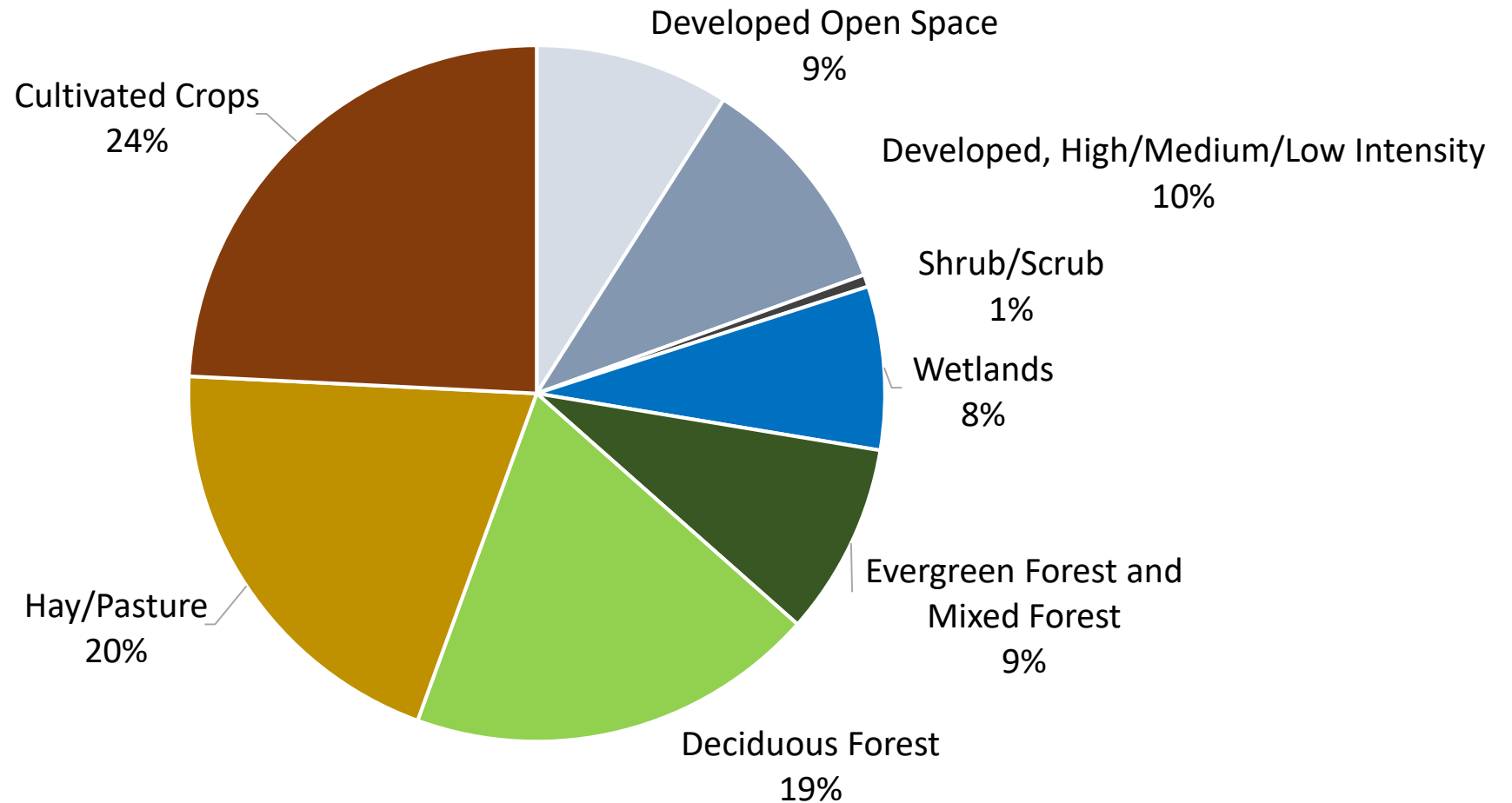
Agricultural land Within Boundary

23% of parcels
65% of acreage
72% of assessed land value
45% of assessed land + building value

Morris Ridge Solar
175 megawatt PV
20 MW battery
storage possible



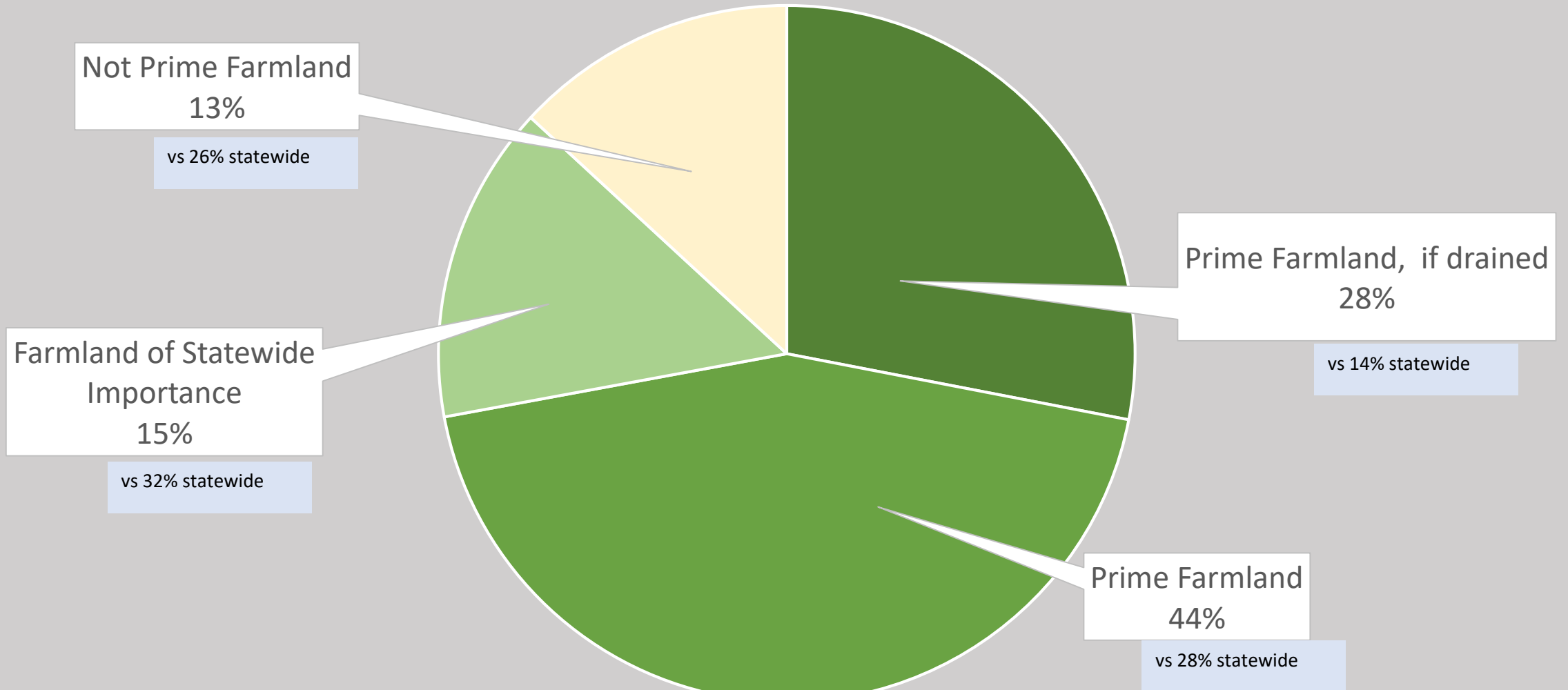
What categories of land are “covered” by solar installations?



NYS Agricultural land “under” solar

NRCS/USDA Soil Classifications

Solar located disproportionately on better farmland????



NYS Agricultural land “under” solar:

A small fraction of all farm land???

Prime Farmland, if drained	0.12%
Prime Farmland	0.10%
Farmland of Statewide Importance	0.03%
Not Prime Farmland	0.03%
OVERALL	0.06%



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Thank you!

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