

Utility Scale Solar in NYS: Selected topics

CARBON NEUTRAL ENERGY PRODUCTION: WHAT DOES IT MEAN FOR LOCAL COMMUNITIES
Hosted by: Otsego 2000 and Friends of the Village Library of Cooperstown
Date & Time: October 16th, 22 Main Street Cooperstown

**CORNELL
GLOBAL
DEVELOPMENT**

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Solar in New York: metrics



Residential rooftop solar
~5-10 kw systems

New York

1 MW PV

NY: ~100-200
homes per MW

1,000 KW = 1 MW
Kilowatts to Megawatts
1,000 MW = 1 GW
Megawatts to Gigawatts

IEEE JOURNAL OF PHOTOVOLTAICS

Land Requirements for Utility-Scale PV: An
Empirical Update on Power and Energy Density

Mark Bolinger ^{ID} and Greta Bolinger ^{ID}

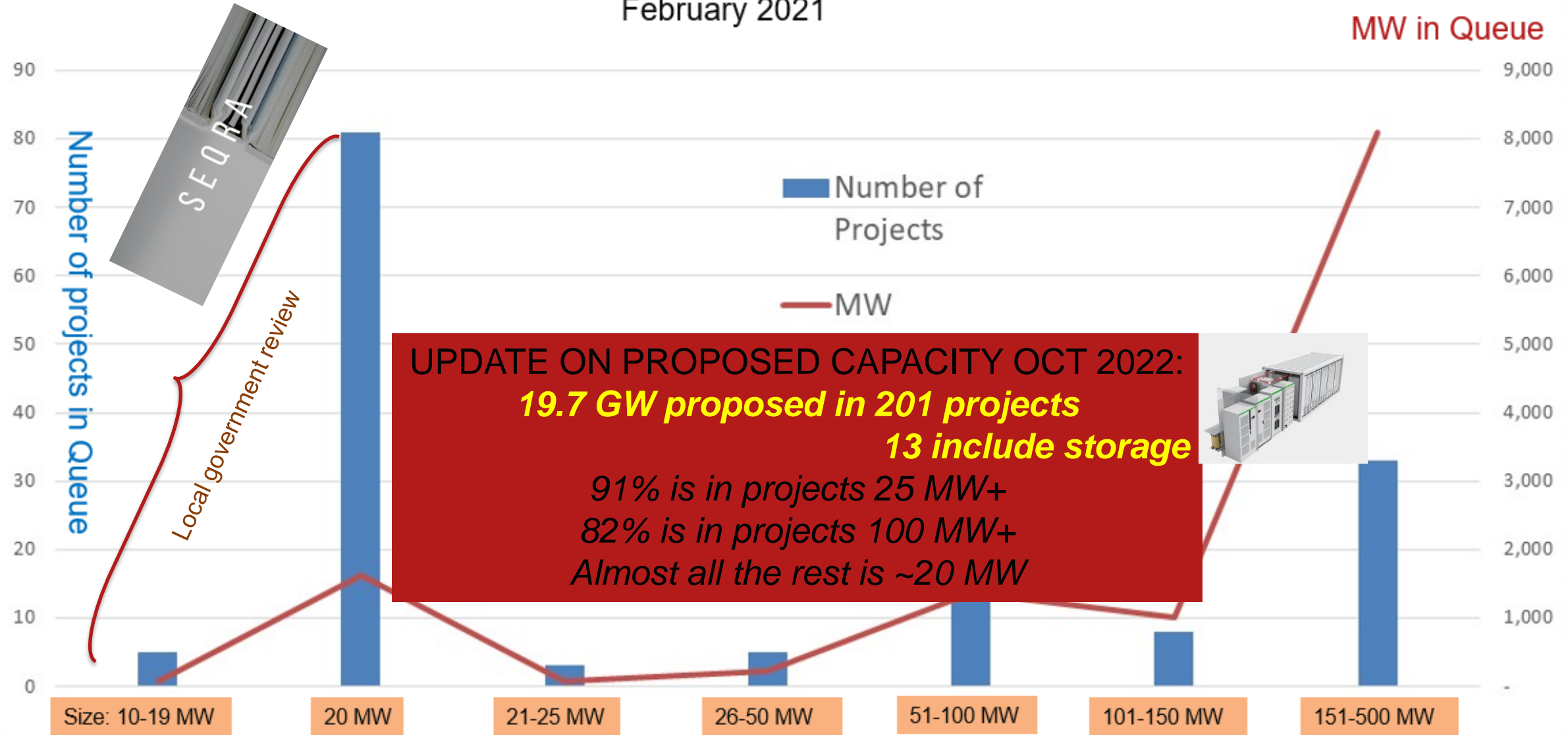
3-7 acres per MW
(average)



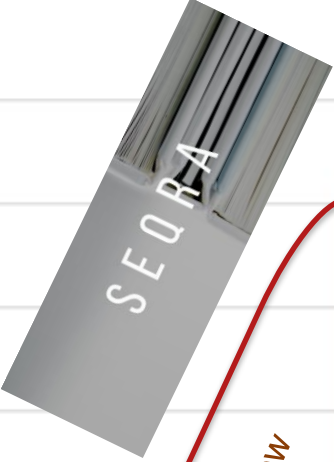
Solar Projects in NYISO Queue by Size

Number and MW of Projects

February 2021



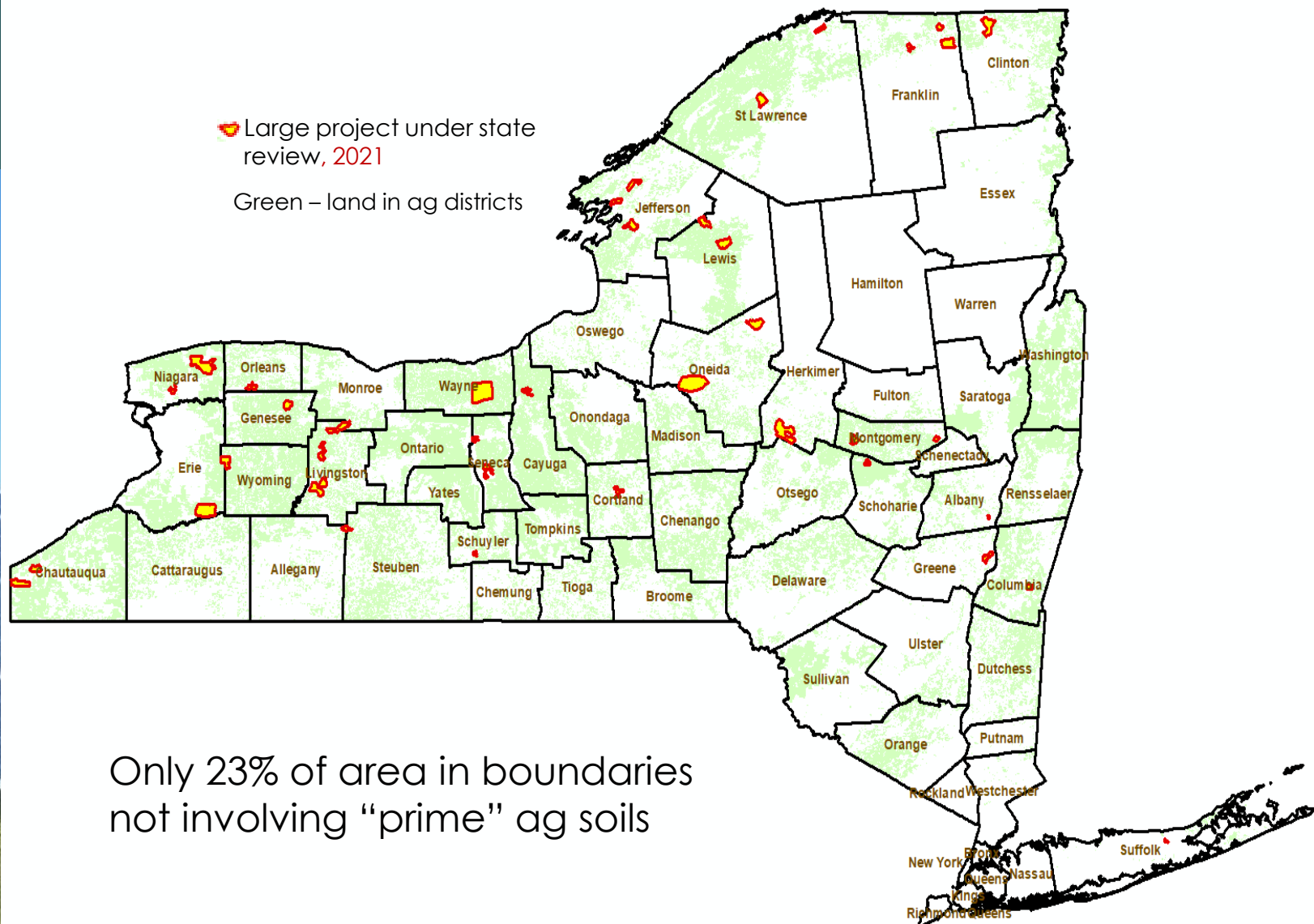
UPDATE ON PROPOSED CAPACITY OCT 2022:
19.7 GW proposed in 201 projects
13 include storage
91% is in projects 25 MW+
82% is in projects 100 MW+
Almost all the rest is ~20 MW



Local government review



Land affected by projects under state review (2021)



Only 23% of area in boundaries not involving “prime” ag soils



Agrivoltaics

What crops grow well under solar panels?

What crops can be grown under solar panels economically?

What kinds of farmers would do this?

What makes sense for a solar company?

Where do different crop/solar design interactions work well?



Potato?



Clover?



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<https://www.laborelec.com/growing-in-the-shade-of-solar-power/>



Land affected

New York State Agricultural Technical Working Group

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Scorecard Breakdown of Points By Category

95 Points for Agricultural Protection
 80 Points for Environmental Protection
 25 Points for Community Benefits & Collaboration
 + 1-5 Points for Extra Credit: Innovation

205 Points Available

Scorecard Breakdown of Points By Category

Scorecard Category	Number of Points Available		Total
	Avoidance	Minimization	
Agricultural Protection	50	45	95
Environmental Protection			80
• Forested Lands	30	5	35
• Grasslands	TBD	TBD	25
• Wetlands		20	20
Collaboration & Innovation		25	25

200 Points Available Through Scorecard

>100 Points to Pass



Agriculture Minimization Strategy Category

Strategy Category	Number of Mandatory Strategies (0 Points)	Number of Optional Strategies
Land Use and Operations: Soil Conservation	6	1
Land Use and Operations: Project Landscaping and Infrastructure	4	2
Land Use and Operations: Monitoring, Maintenance and Operations	1-3	4-6
Co-Utilization: General	1	4
Co-Utilization: Pollinators and Apiaries	0	1
Co-Utilization: Crop(s) Production	0	3
Co-Utilization: Grazing	1	8

Agrivoltaics



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The American Solar Grazing Association
Welcomes You!



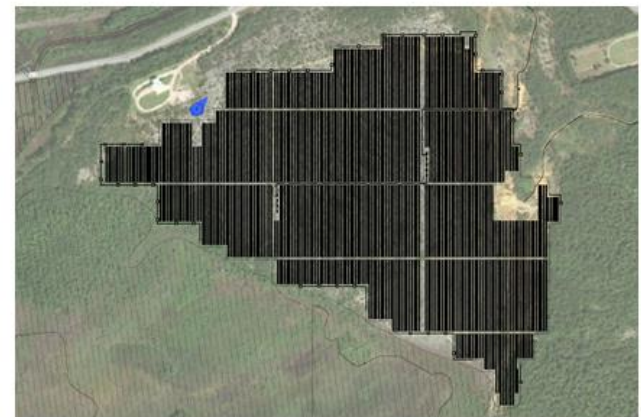
Siting on least impact sites

▶ NY BUILD READY PROGRAM

- ▶ **Prioritizes the development of existing or abandoned commercial sites, brownfields, landfills, former industrial sites, and other abandoned or underutilized sites**
 - ▶ NYS is proactive in preparing sites for development
- Advancing Projects into the Development Phase: The Build-Ready Program is advancing over a dozen projects across New York State—most notably the BR Benson Mines Solar PV project.

BR Benson Mines

The Build-Ready Program is advancing a solar project on a privately owned former iron ore mine that was closed in the 1970's. The project is to be sited on a former tailings pile with a potential buildable area of 172 acres located in the Town of Clifton, St. Lawrence County for an estimated 20 megawatts (MW) solar capacity project. The Build-Ready Program is progressing with efforts to secure site control, environmental diligence, interconnection request preparations, and engaging the host community.



Siting on least impact sites

► NY BUILD READY PROGRAM

Table 1. Snapshot of Build-Ready Pipeline

Tier	Sites Screened & Assessed
Tier I	5,738
Tier II	311
Tier III	28

Table 4. Common Challenges to Advancing Build-Ready Sites

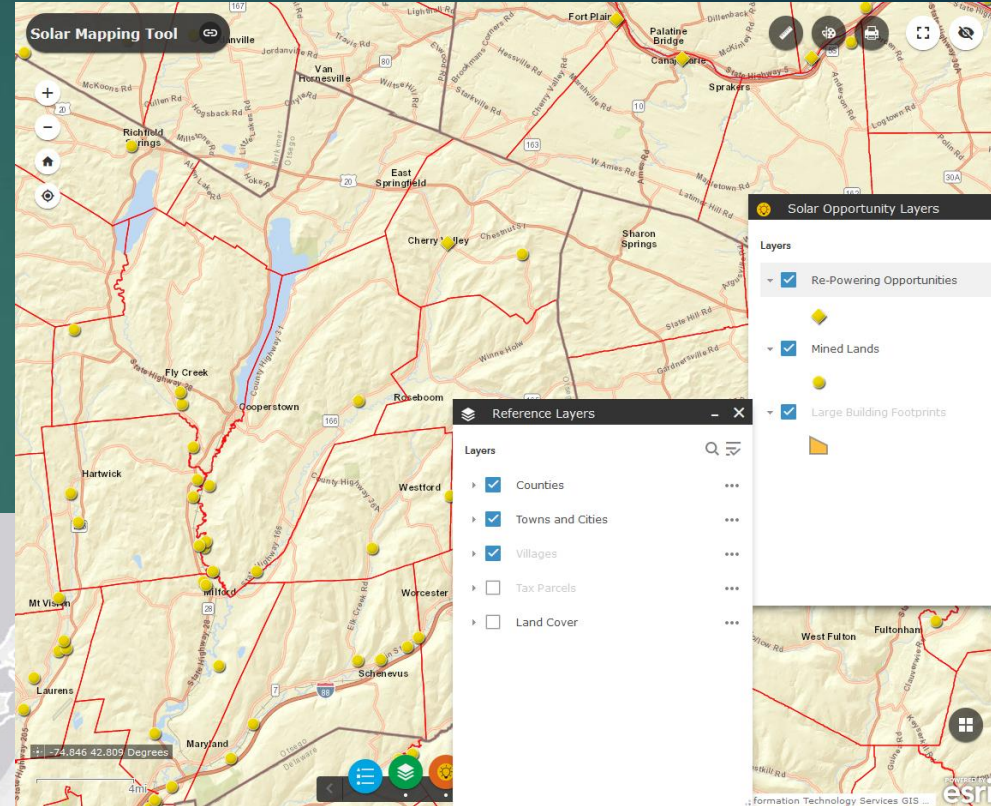
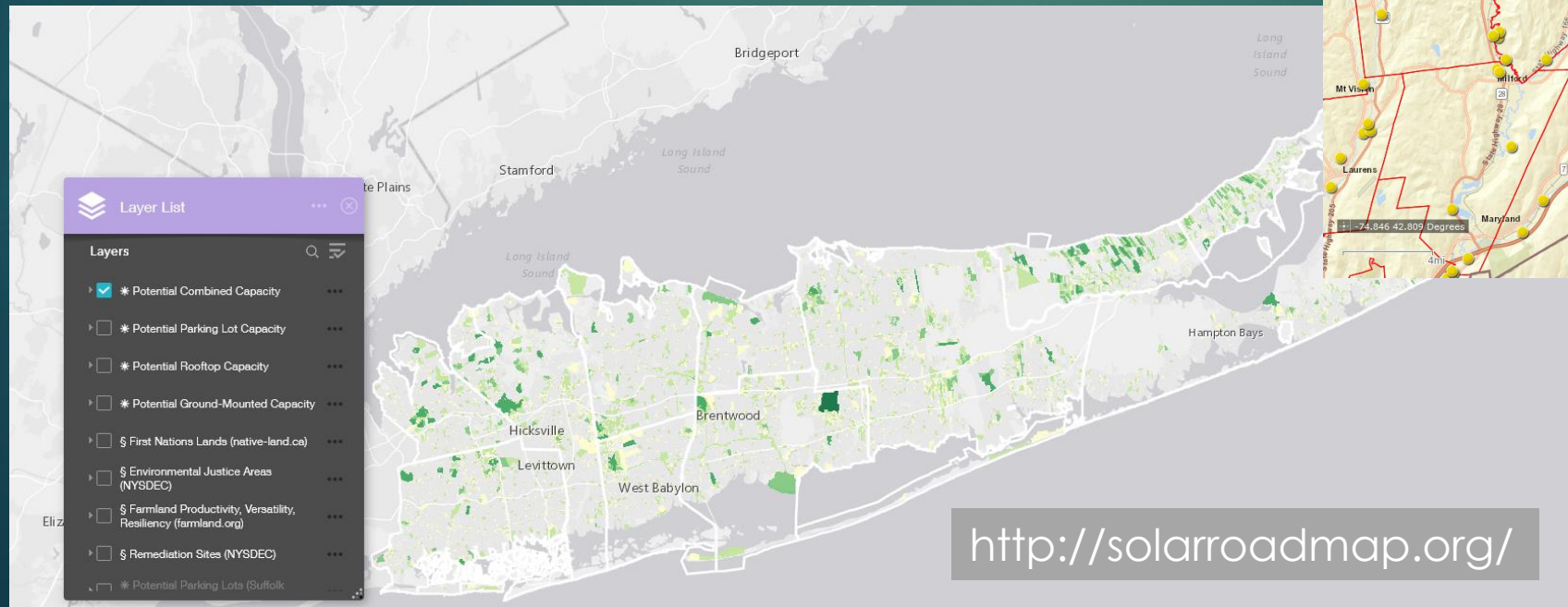
Challenge	Number of Closed Sites
Insufficient Buildable Area	45
Lack of Landowner Interest	32
Private Renewable Energy Developer Interest	21
Nonviable Interconnection	14
Environmental Issues	11
Agricultural District/Activity	9
Potential Non-Energy Use	9
Total	141

Table 2. Build-Ready Pipeline Status: Tier II and III

Tier	In-Progress	On-Hold	Closed
Tier II	169	8	134
Tier III	16	5	7
Total	185	13	141

Siting on least impact sites

- ▶ Regional tools to help planning
 - ▶ Scenic Hudson Solar Mapping Tool
 - ▶ Long Island Solar Roadmap (TNC)

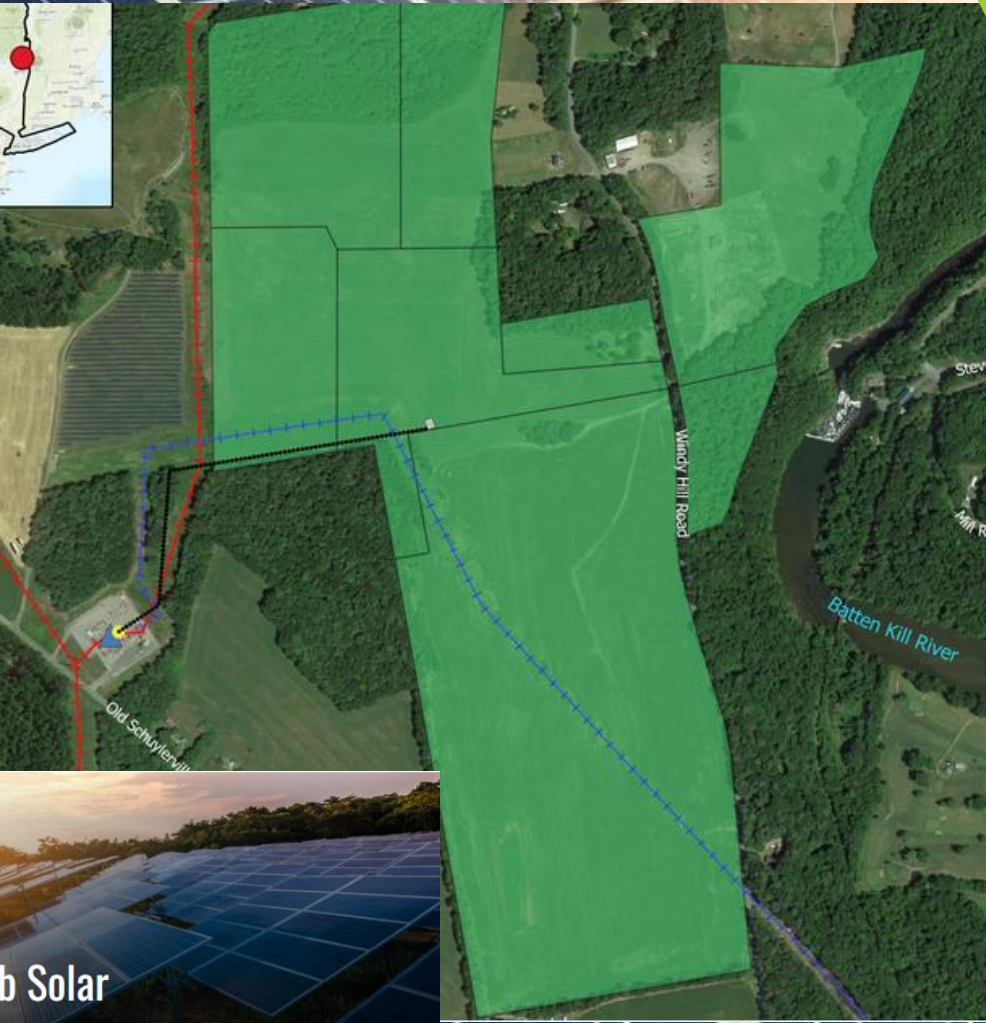


<https://www.scenichudson.org/our-work/climate/renewable-energy/welcome-to-scenic-hudsons-solar-mapping-tool/>

<http://solarroadmap.org/>

Solar "in Service"

- | | | |
|----------------------|-------|-------------------|
| 1. Upton Solar Farms | 32 MW | Suffolk County |
| 2. Shoreham Solar | 25 MW | Suffolk County |
| 3. Riverhead Solar | 20 MW | Suffolk County |
| 4. Branscomb Solar | 20 MW | Washington County |



Branscomb Solar

ORES PERMITS

SOLAR PROJECT NAME	COUNTY	TOWN(S)	DEVELOPER	MW
South Ripley Solar	ALLEGANY	Burns	Moraine Solar Energy Center, LLC (EDF)	94
Riverside Solar	ALLEGANY	Alfred	Alfred Oaks Solar, LLC (Northland Power)	100
Brookside Solar	CHAUTAUQUA	Ripley	ConnectGen Chautauqua County LLC (ConnectGen)	270 (+20 Storage)
Tracy Solar	COLUMBIA	Copake	Hecate Energy Columbia County LLC (Hecate)	60
Homer Solar	CORTLAND	Homer, Cortlandville, and Solon	Homer Solar Energy Center, LLC (EDF)	90
Bear Ridge Solar	FRANKLIN	Burke and Chateaugay	Brookside Solar LLC (Geronimo/NationalGrid)	100
Horseshoe Solar	JEFFERSON	Lyme and Brownville	Riverside Solar LLC (Geronimo/NationalGrid)	100
Shepherd's Run Solar	JEFFERSON	Orleans and Clayton	Tracy Solar Energy Center, LLC (EDF)	119
Moraine Solar	LIVINGSTON / MONROE	Caledonia/Rush	Horseshoe Solar Energy LLC (Invenergy)	180
Alfred Oaks Solar	NIAGARA	Cambria and Pendleton	Bear Ridge Solar LLC (Cypress Creek)	100

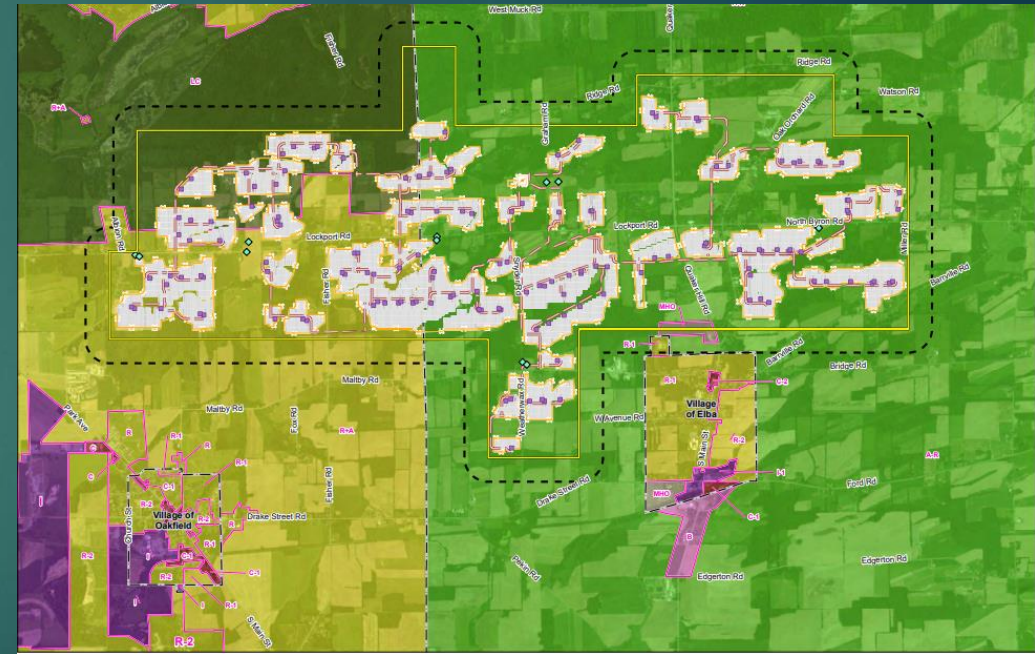
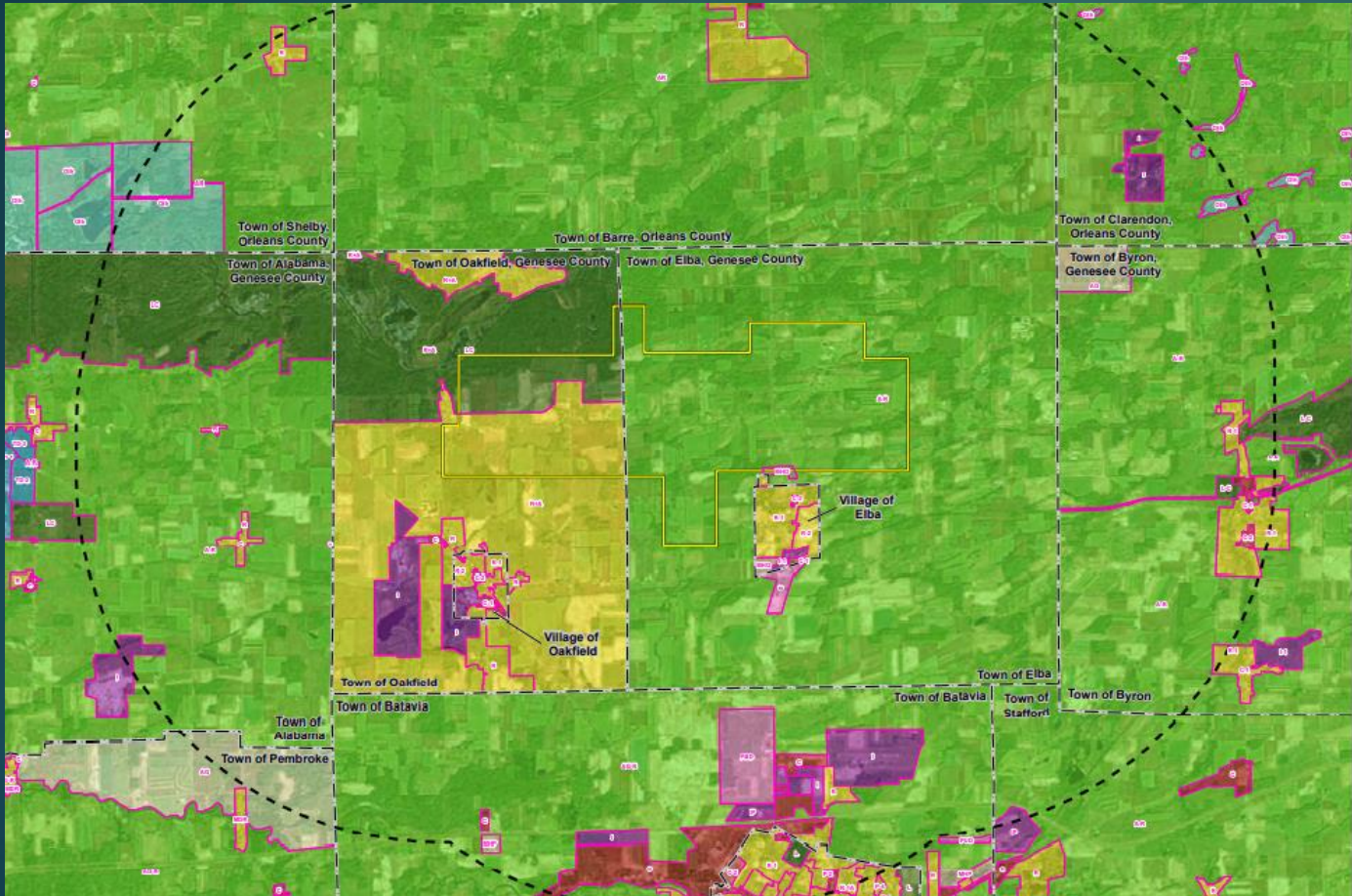
UNDER REVIEW

ORES PERMITS

PERMITTED

SOLAR PROJECT NAME	COUNTY	TOWN(S)	DEVELOPER	MW	Date issued
Riverhead Solar 2	SUFFOLK	Riverhead	Riverhead Solar 2, LLC (sPower)	36	6/21
Morris Ridge Solar	LIVINGSTON	Mount Morris	Morris Ridge Solar Energy Center, LLC (EDF)	177	6/21
Hemlock Ridge Solar	ORLEANS	Barre and Shelby	Hemlock Ridge Solar LLC (Community Energy/AES)	200	9/22
Greens Corners Solar	JEFFERSON	Hounsfield and Watertown	Greens Corners Solar LLC (Boralex)	120	9/22
Watkins Glen Solar	SCHUYLER	Dix	Watkins Glen Solar Energy Center, LLC (NextEra)	50	1/22
Cider Solar	GENESEEE	Oakfield and Elba	Hecate Energy Cider Solar, LLC (Hecate)	500	7/22
Heritage Wind	ORLEANS	Barre	Heritage Wind, LLC	185	

Area affected – Cider Solar, Genesee County 500 MW



Project Area - overall	7,518 acres
Project Footprint - disturbed	2,452 acres
Project Site – lease/buy/ease. Etc.	4,650 acres

Local communities and direct or indirect access to possible benefits/mitigations



DIRECT FROM DEVELOPER, MOSTLY INVOLVING DOLLAR PAYMENTS

- **Negotiated** payments to landowners
- Property taxes or **negotiated** in-lieu of tax payments to municipality
- “Host Community Benefit Program” benefit payments to residential utility customers residing in the municipality
- Other, more *ad hoc*, contributions **negotiated** as part of community benefit agreements

INDIRECT

- Renewables solicitation process (project impact **mitigations** proposed to the NYSERDA)
- **Mitigation** measures imposed by the permitting authority (state/local)
 - Decommissioning requirements (often some kind of performance bond or other form of security)
- **Negotiated** Project Labor Agreement or Labor Peace Agreement with the local trade representatives

OTHER

- CLCPA requires that NYS agencies, authorities and entities invest to ensure that disadvantaged communities receive 35% of overall benefits, with the goal of achieving 40%, of
 - **Clean energy and energy efficiency** programs
 - Projects or investments in the areas of **housing, workforce development, pollution reduction, low-income energy assistance, energy, transportation, and economic development**

Climate Justice

- ▶ 45 criteria used to i.d. disadvantaged communities (DAC)

Environmental Burdens and Climate Change Risk		
Land use and facilities associated with historical discrimination or disinvestment	Potential climate change risks	Potential pollution exposures
Proximity to remediation sites	Extreme heat projections	Vehicle traffic density diesel truck and bus traffic
Proximity to regulated management plan sites	Flooding in coastal and tidally influenced areas (projected)	Particulate matter (PM2.5)
Proximity to major oil storage facilities	Flooding in inland areas (projected)	Benzene concentration
Proximity to power generation facilities	Low vegetative cover	Wastewater discharge
Proximity to active landfills	Agricultural land	
Proximity to municipal waste combustors	Driving time to hospitals or urgent/critical care	
Proximity to scrap metal processors		
Industrial/manufacturing/mining land use		
Housing vacancy rate		



Department of Environmental Conservation | NYSERDA

Table 3. Population Characteristics and Health Vulnerabilities: Draft Indicators

Population Characteristics and Health Vulnerabilities

Income

- Percent <80% area median income
- Percent <100% of federal poverty line
- Percent without bachelor's degree
- Unemployment rate

Race and Ethnicity

- Percent Latino/a or Hispanic
- Percent Black or African American
- Percent Asian
- Percent Native American or Indigenous

Health Outcomes & Sensitivities

- Asthma emergency department visits
- COPD emergency department visits
- Heart attack (MI) hospitalization
- Premature deaths

Housing Mobility & Communications

- Percent renter-occupied homes
- Housing cost burden (rental costs)
- Energy poverty / cost burden
- Manufactured homes

Climate Justice

▶ Draft DACs

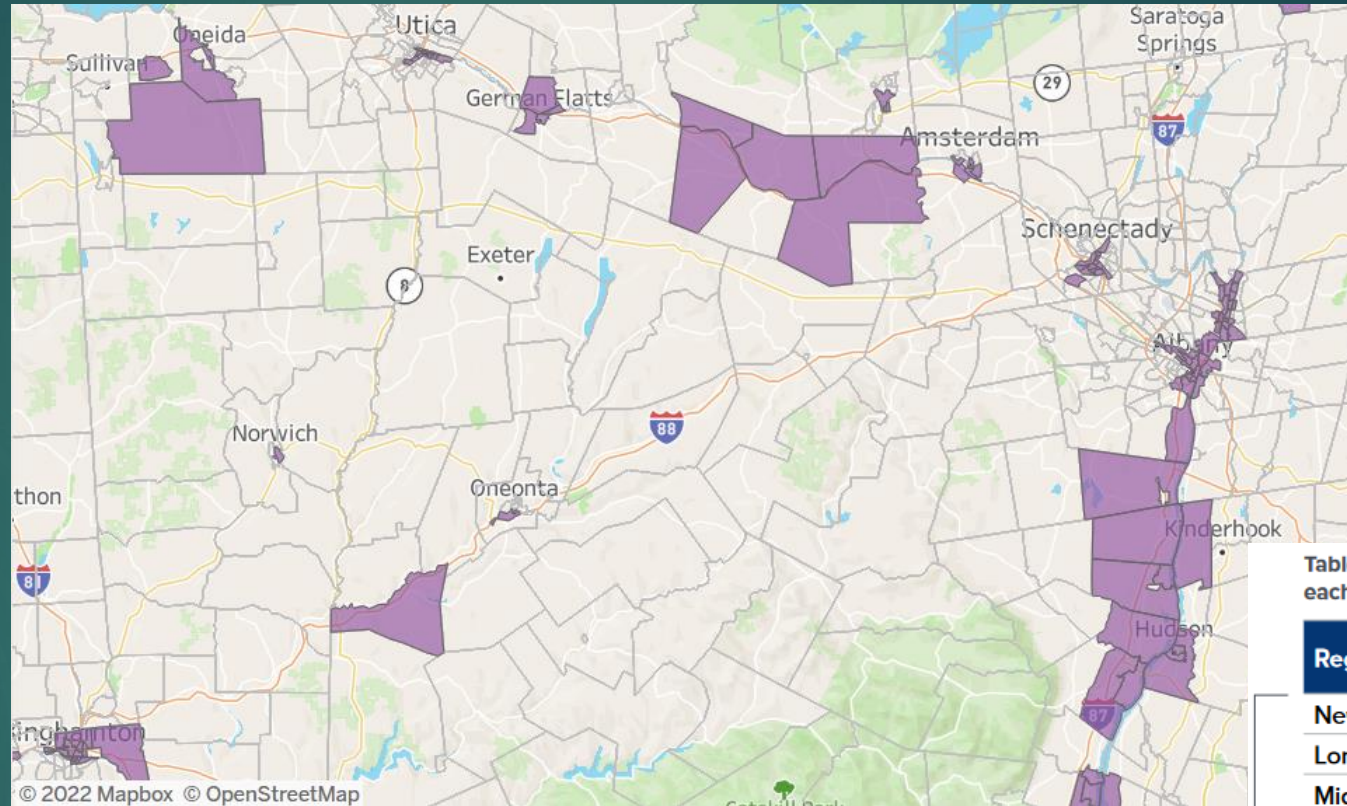


Table 1. Percentage of census tracts in each region designated a draft DAC

Region	% of tracts identified as draft DACs
New York City	45%
Long Island	12%
Mid-Hudson	45%
Western NY	32%
Finger Lakes	35%
Capital Region	22%
Central NY	36%
Southern Tier	18%
Mohawk Valley	19%
North Country	15%
Total	35%



Early Days



DISCOVER CALS



Global Development

Thank you!

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