

# Brownfields to Brightfields

## Transforming Polluted Sites for Renewable Energy

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Director, Environmental Services  
**NJIT TAB**



# Agenda

**What are Brownfields?**

**Clean Energy in NY**

**Introduction to Solar on Brownfields**

**Suitable Sites**

**Case Study**

# What is **TAB** TECHNICAL ASSISTANCE TO BROWNFIELD COMMUNITIES ?

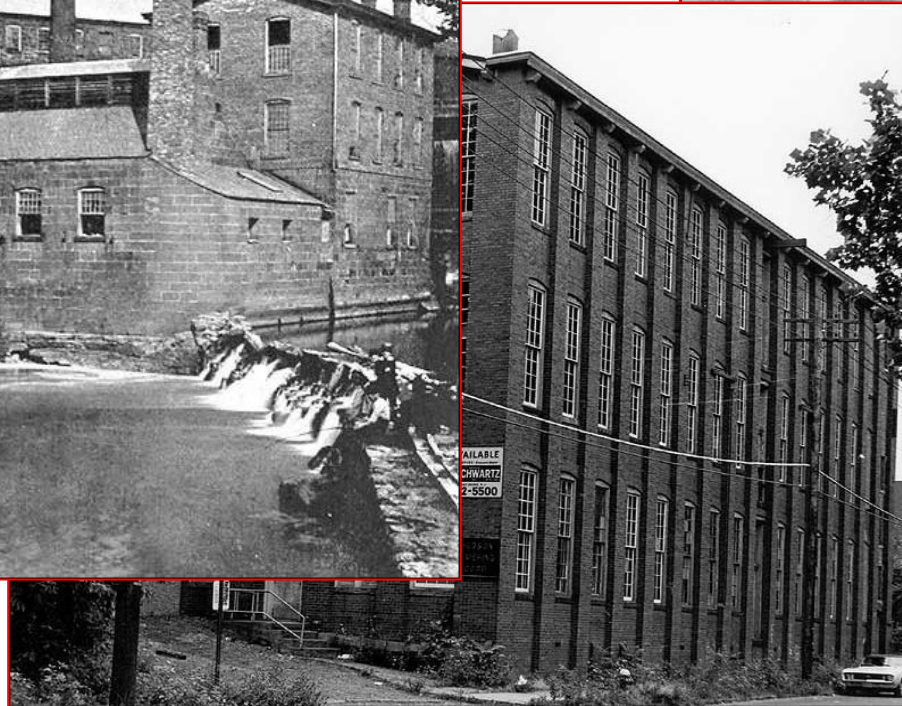
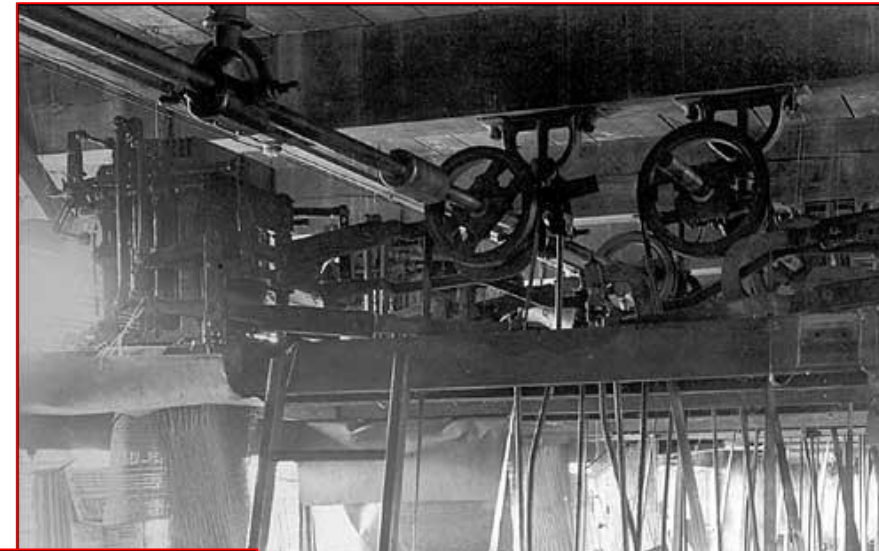
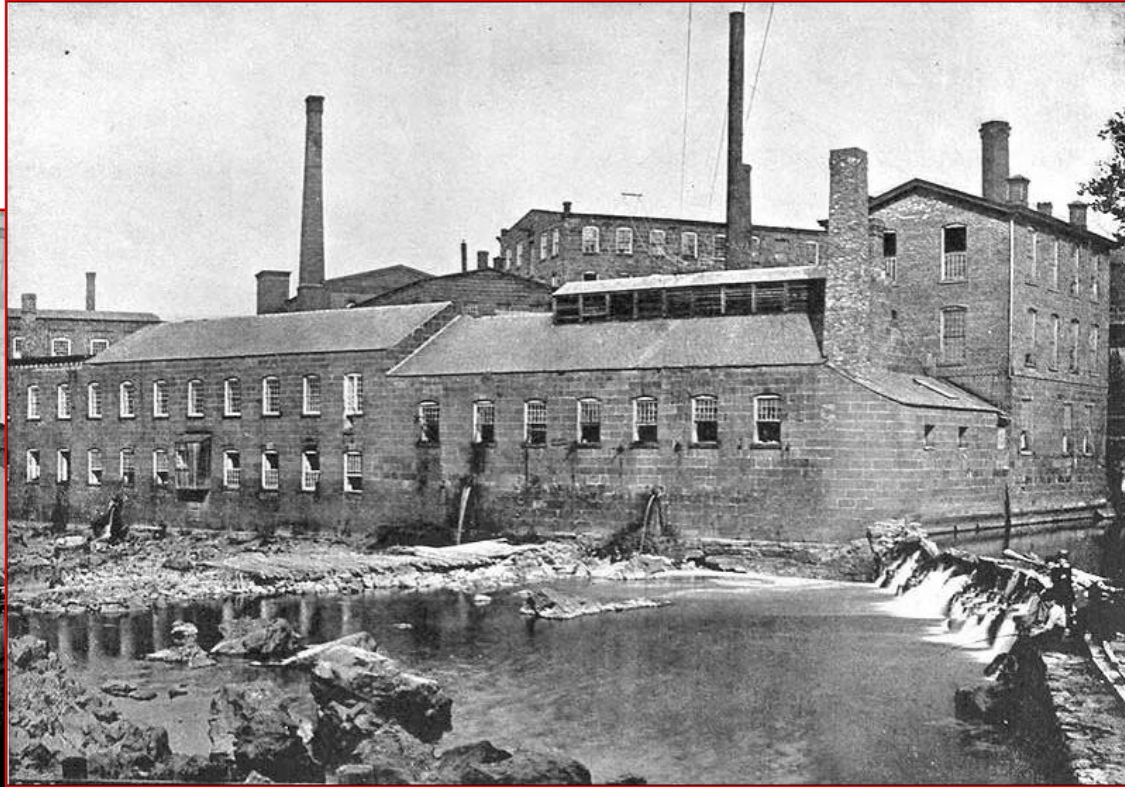
NJIT provides free technical assistance to state, regional, county, tribal, and local government entities and nonprofit organizations interested in learning about, identifying, assessing, cleaning up, and redeveloping brownfield sites in EPA Regions 2 & 4.

## **We provide assistance through our:**

- ▶ Brownfields Academy
- ▶ Brownfield Community Engagement and Educational Forums
- ▶ One-on-one Technical Assistance



# Industrial Revolution







**\* BARRELS TO BURN**—Solid waste, to be destroyed when flames also devour oil and chemicals, includes these empty containers, discarded by industries. In background are several boilers. Dumping was halted a few years ago, but remaining refuse must be removed. (Times-Union Photo by Joe Higgins)



# Brownfield Definition

**“Real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.”**

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**TAB** TECHNICAL  
ASSISTANCE TO  
BROWNFIELD  
COMMUNITIES





# New York Definition



“Any real property where a contaminant is present at levels **exceeding the soil cleanup objectives or other health-based or environmental standards**, criteria or guidance adopted by [NYSDEC] that are applicable based on the reasonably anticipated use of the property, in accordance with applicable regulations...”



# Brownfields Today



Gas Station, Canandaigua



Vacuum Oil, Rochester  
*Photo credit: NPR*



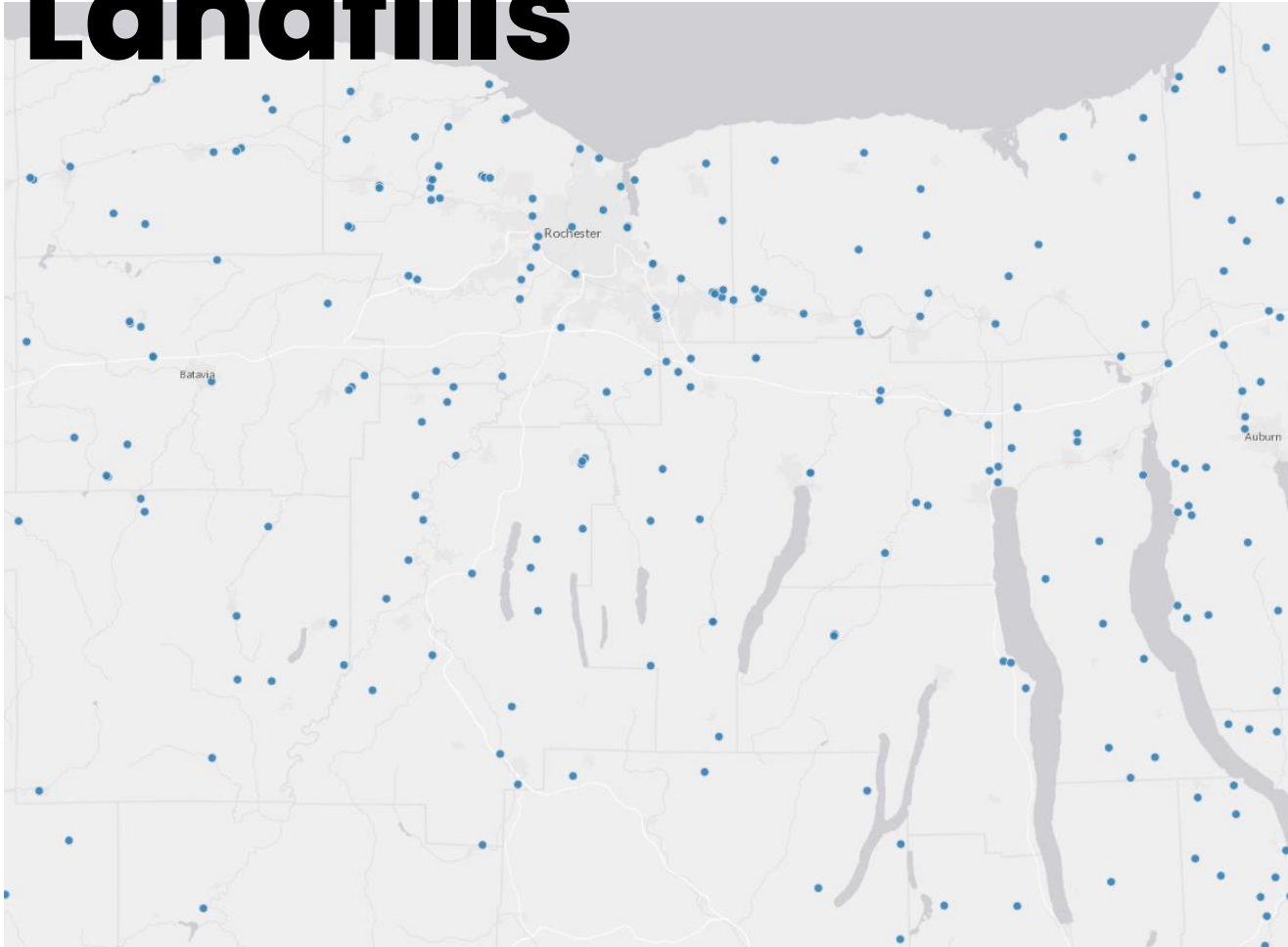
Della Penna Building, Batavia



Abandoned elevated train tracks, Geneva



# Dumps and Inactive Landfills

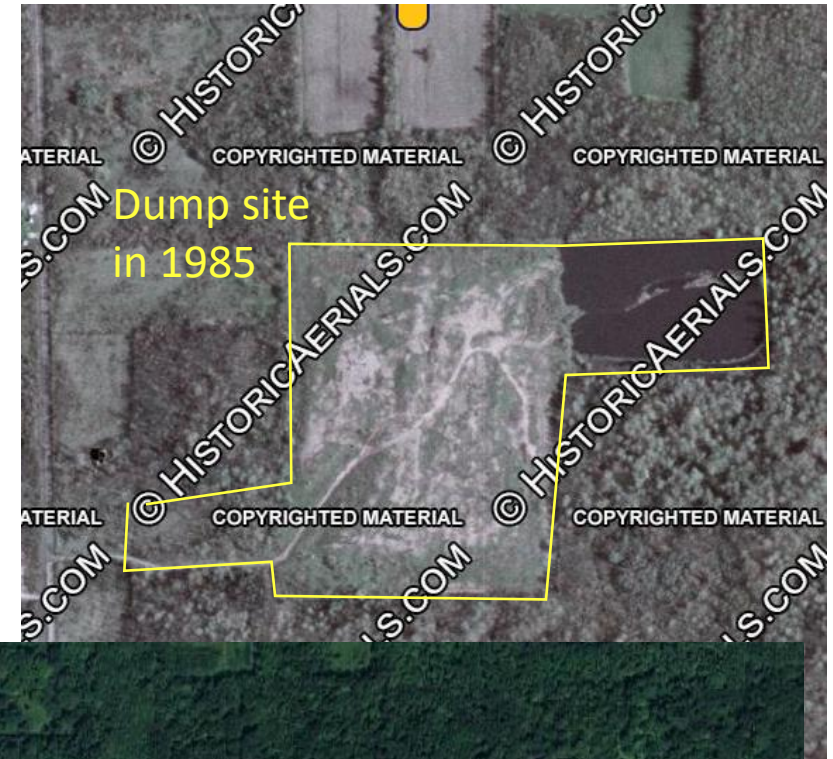


[https://data.gis.ny.gov/datasets/db9225d3962c4f8891fb72231b752ec5\\_31/about](https://data.gis.ny.gov/datasets/db9225d3962c4f8891fb72231b752ec5_31/about)

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Photo credit: historicaerials.com



Dump site  
in 1985



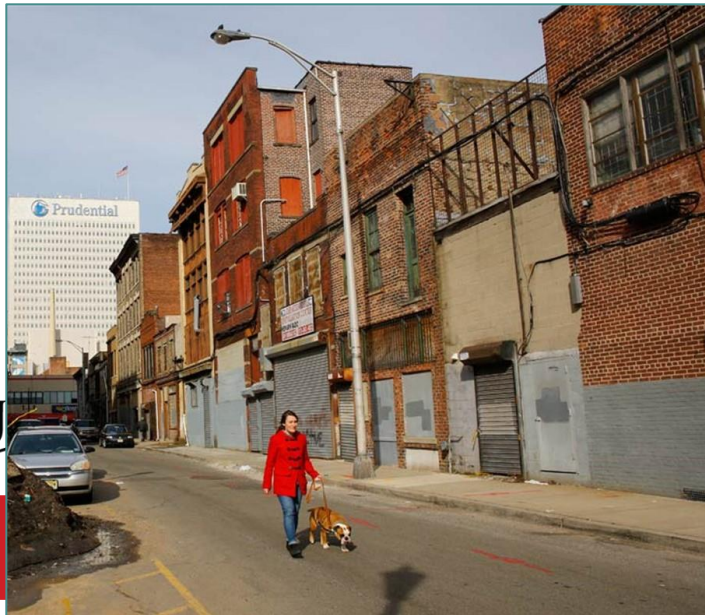
Dump site  
in 2024



# Advantages of Brownfield Sites

## Locations:

- Along waterways
- Along rail lines
- In downtowns



## Features:

- Existing infrastructure
- Architectural or historical importance



# Advantages of Brownfield Sites

BEFORE



AFTER



**"It was just piles of trash and trucks and stench, and it's turning it from an eyesore into a beautiful, solar paneled field"**



BEFORE



AFTER



# Stages of the Redevelopment Process

Community  
Engagement

Planning

Secure  
Funding

Assessment

Remediation

Site Reuse  
Vision

Redevelopment

Build  
Partnerships

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# Brightfields



- Energy production requires land
- Multiple benefits



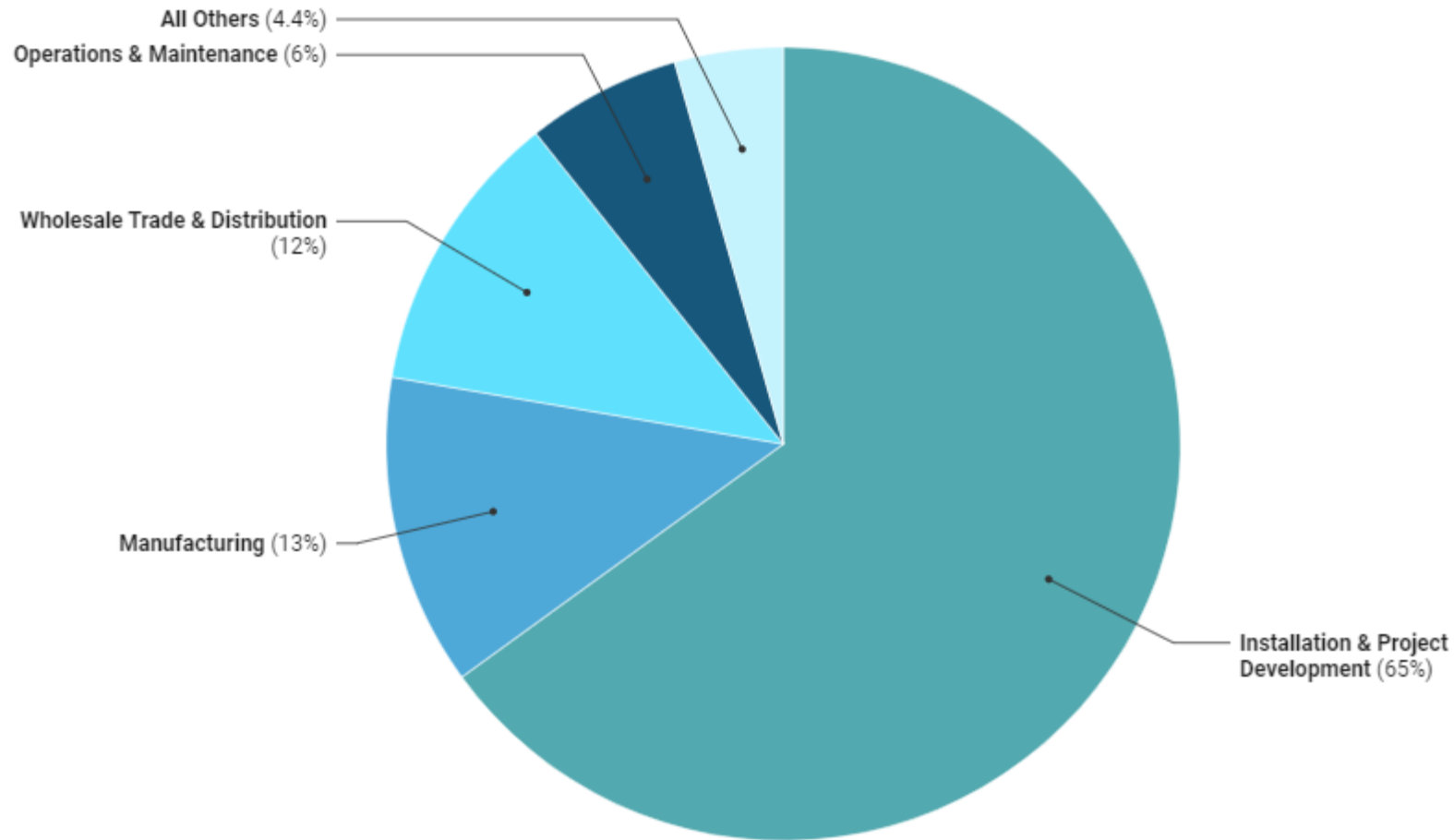


Developing  
dots to be  
would create

- 6 GW of
- million
- 60,000

## Solar Jobs by Sector

### U.S. Solar Jobs by Sector, 2022



Source: IREC National Solar Jobs Census 2022 • Created with Datawrapper

90,976

Selected







*The Climate Act requires New York to reduce economy-wide GHG emissions 40% by 2030 and 85% by 2050 from 1990 levels.*

- 70% renewable electricity by 2030
- 100% zero-emission electricity by 2040
- 40% reduction in statewide GHG emissions from 1990 levels by 2030
- 85% reduction in statewide GHG emissions from 1990 levels by 2050
- Net zero emissions statewide by 2050





## 2022 Scoping Plan study shows that:

- Feasible
- Cheaper than inaction
- Leads to better health outcomes (cleaner air, especially in Rochester area)
- Creates jobs
- More affordable for residents





# What we do

Infrastructure



Solve Complex  
Problems

buildings



Enhance our  
Experience

Waste, recycling & environmental



Advocate for  
the Future

energy



Lead the  
Way



# Why Solar on Brownfields or Landfills?

## Limited Development Potential

- Limited commercial applications
- Recreational space
- Energy generation

## Stormwater Controls in place

## Limited Tree clearing

## No agricultural land used

## Willing partners to development

## Interconnection access

## Community Acceptance

## Economic Benefits/Incentives



## Solar on Brownfields and Landfills



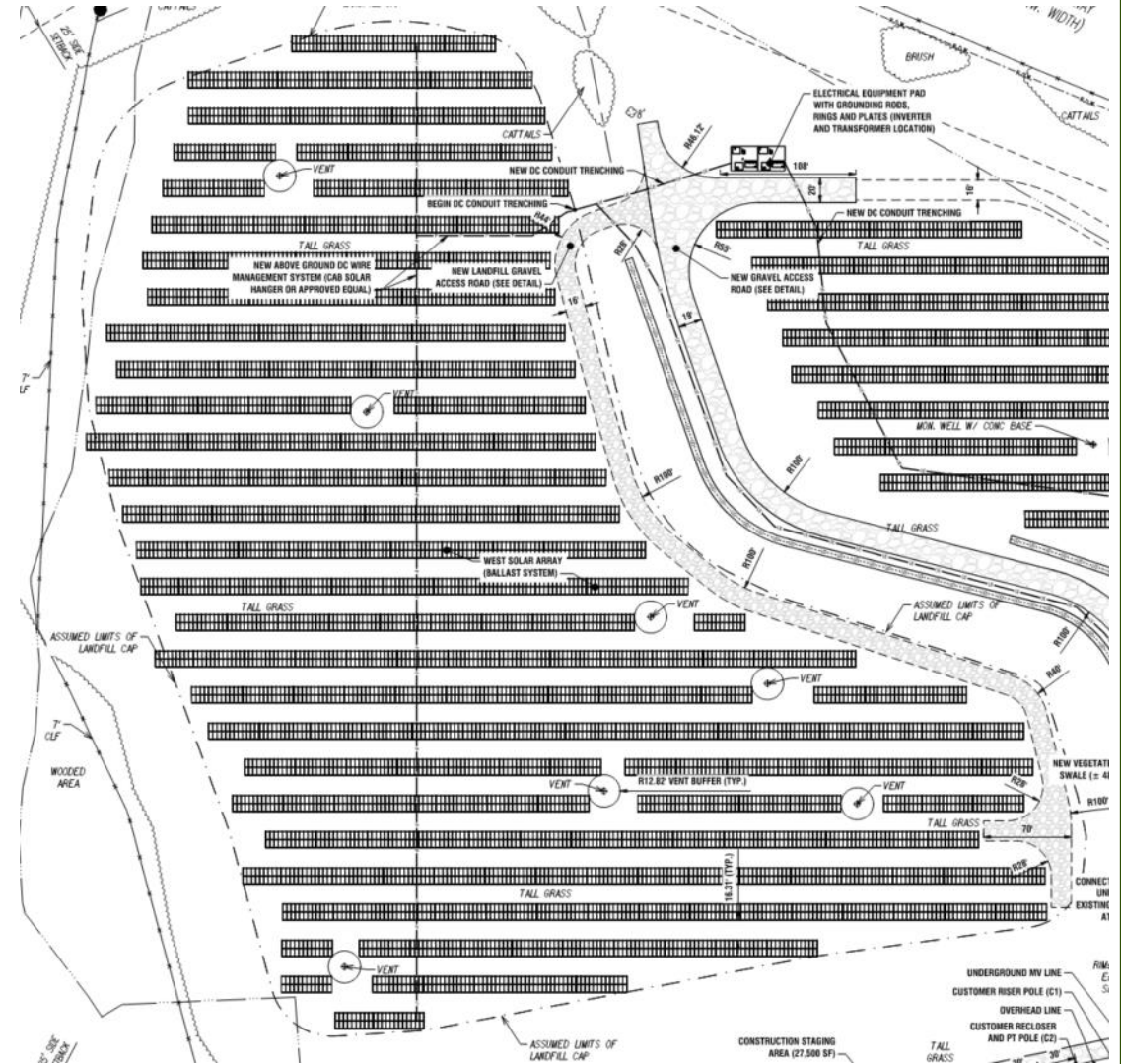
### General Siting Rules:

- Relatively flat
- $\geq 5$  acres of available area
- Within 0.5 miles of interconnection
- Available substation capacity
- Limited or no tree clearing

### Brownfield/Landfill Siting Rules:

- Remediation completed
- *No ground penetration (if cover present)*
- Stormwater controls
- Collection system(s)
  - Leachate
  - Landfill gas
  - Groundwater
- *Monitoring components*



[illegible]





## Suitable Sites – Superfund and BCP

Superfund:

- Class 3, 4, or 5
- Limited or no PFAS impacts
- Willing owner or responsible party

Brownfield:

- Class C or N
- Limited or no PFAS impacts
- Willing owner or developer



## Suitable Sites- Landfills



- Closed for minimum of 15 years (preferably 30 years or more)
- Construction and Demolition (C&D)
- Industrial (Non-Hazardous)
- Municipal Solid Waste (MSW)
- Mixed Landfills:
  - C&D + Haz Waste
  - MSW + Haz Waste
  - Industrial + Haz Waste
- Haz Waste Landfills







# Federal Funding Resources

- EPA Brownfields Grants
  - Investigation
  - Cleanup
- Community Change Grants
  - Disadvantaged communities
  - \$10-20 million for solar on brownfields
- Energy Community Tax Credit Bonus
  - Up to 10% tax credits
  - Location based (must be brownfield or community transitioning from fossil fuels)




## LEGEND

### Tract Status

-  Census tract directly adjoining a census tract with a coal closure
-  Census tract with a coal closure

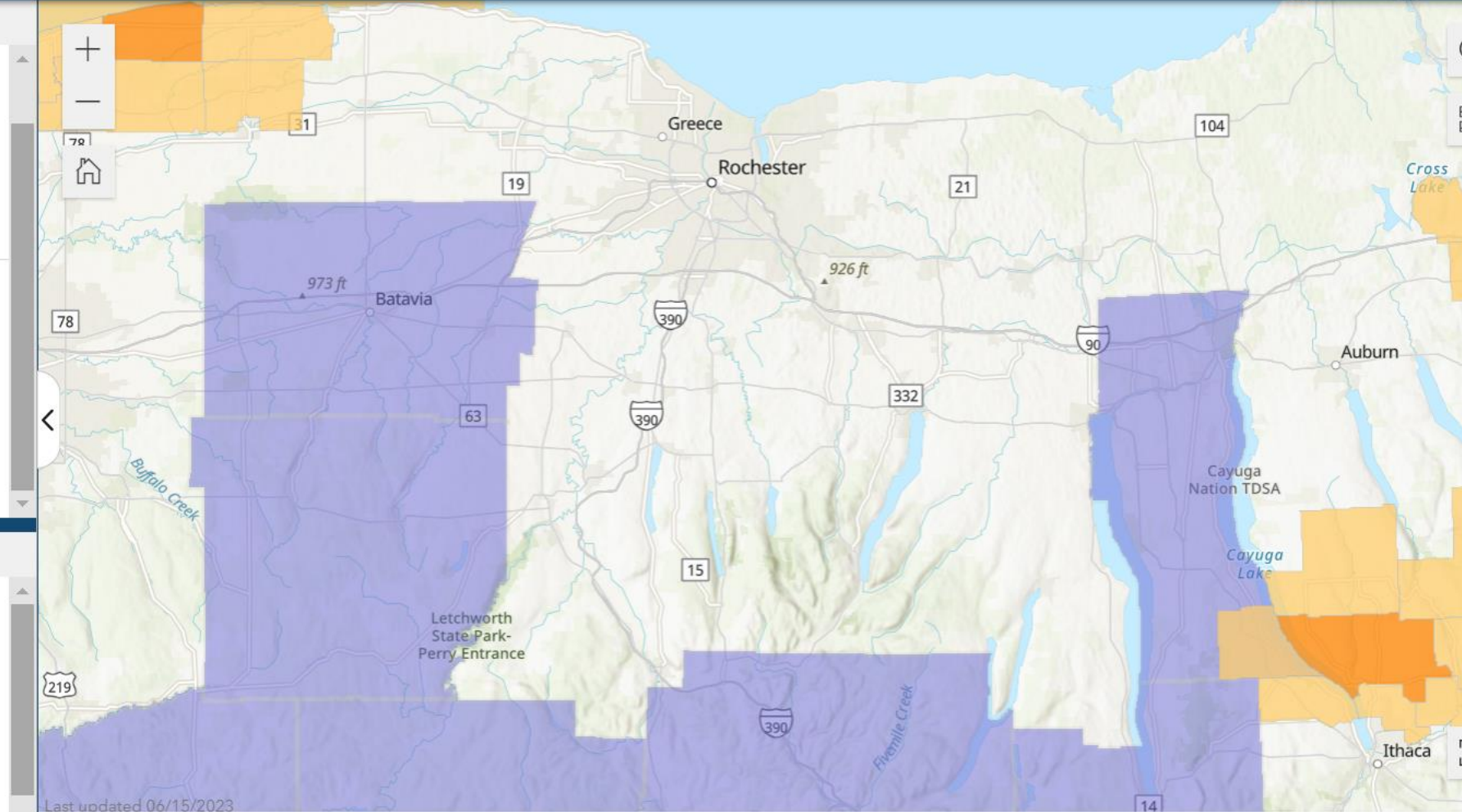
## MSA/Non-MSAs that are Energy Communities

### Status

-  MSAs/non-MSAs that meet both the Fossil Fuel Employment (FEE) threshold and the unemployment rate requirement

## MAP LAYERS

- ☒ Coal Closure Energy Communities ...
- ☒ MSA/Non-MSAs that are Energy Communities ...
- ☒ MSAs and Non-MSAs that only meet the Fossil Fuel Employment ...





## NYS CLCPA, NYSERDA, and Solar Development

Climate Leadership and Community Protection Act (CLCPA - 2019)

- Establishes goals for renewable energy deployment in NYS
  - 2025: 6,000 MW<sub>AC</sub> solar
  - 2030: 3,000 MW<sub>AC</sub> battery storage
  - 2035: 9,000 MW<sub>AC</sub> offshore wind
  - 2040: 15 GW<sub>AC</sub> dispatchable sources

NYS Energy Research and Development Agency (NYSERDA) responsible for executing renewable energy deployment





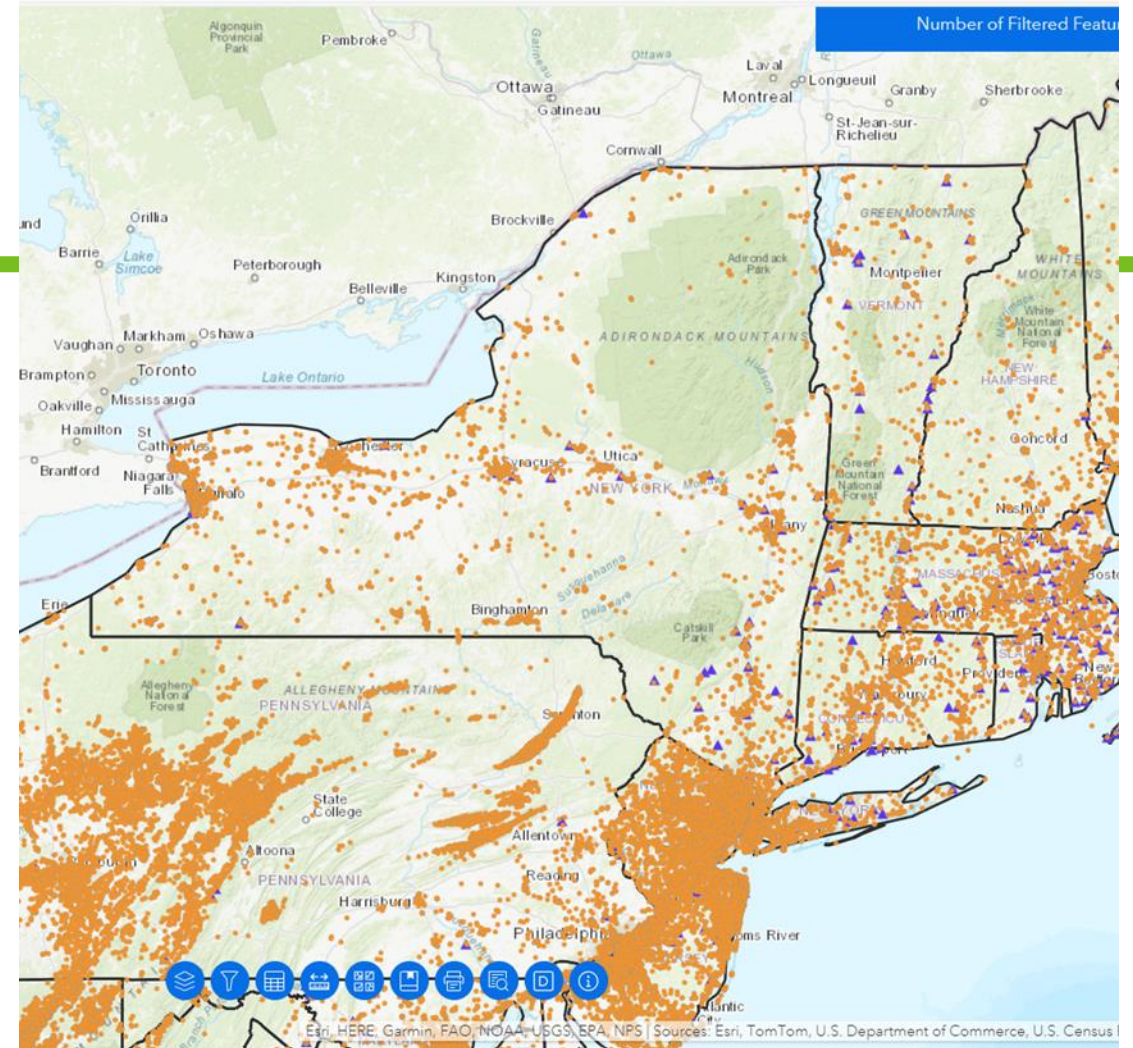
## State Incentives and Policies

# NYSERDA Build-Ready

- Partnership with local communities to develop “under-utilized lands”
- ID locations, evaluate viability
- Provide technical assistance with permitting, design, and interconnection
- Auction site to private renewable developers
- Help negotiate Host Community Agreements (HCAs)

## NY-Sun

- Program to offset solar installation costs
- \$0.30/watt incentive outside ConEdison area; must be installed by NY-Sun contractor
- Municipal tools (solar guidebook, technical assistance, solarize campaigns)







# Case Studies



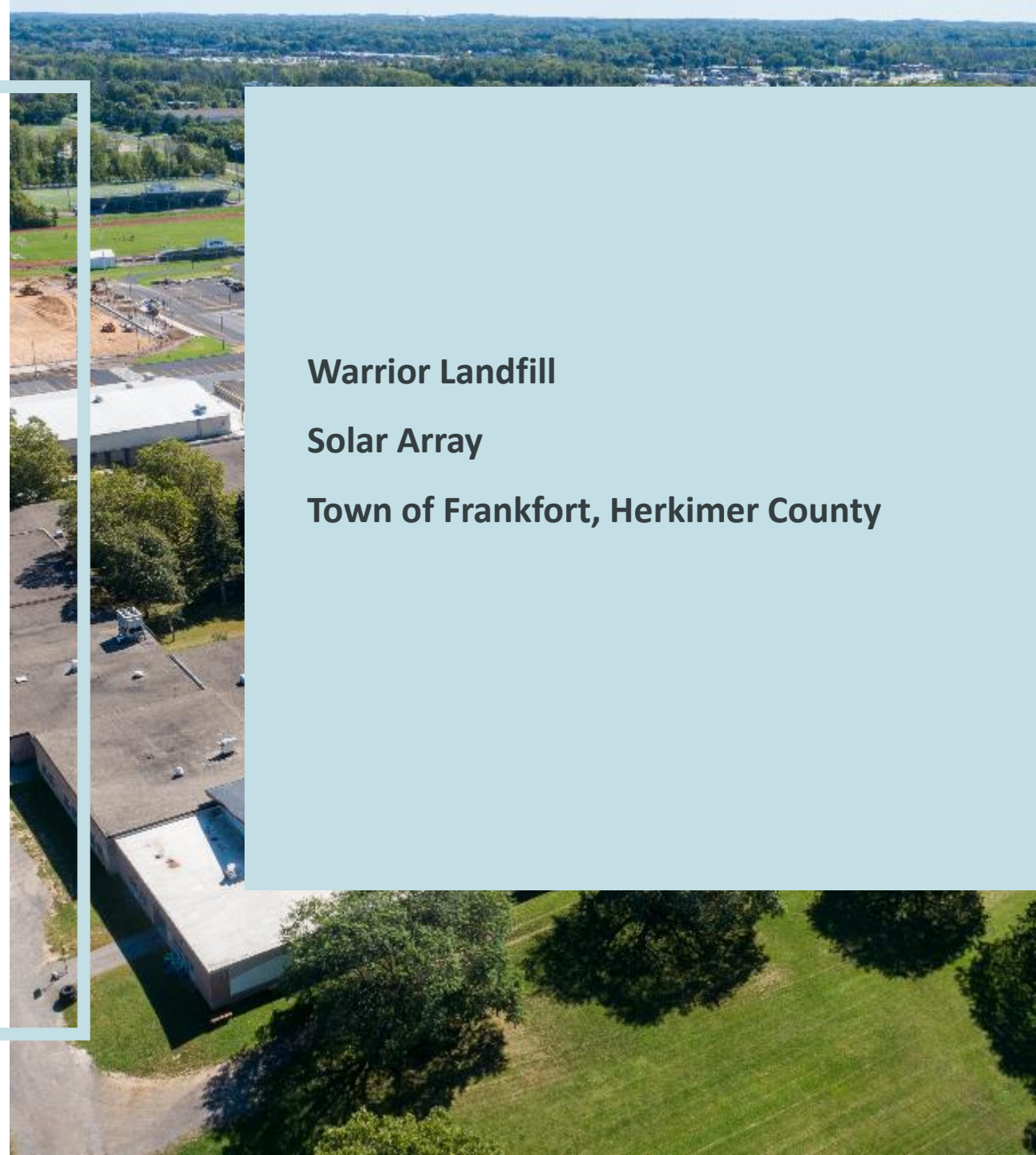
# Case Study #1

- 5 MW<sub>AC</sub> array nearing construction completion
  - Constructed on landfill and adjacent borrow area
- NYSDEC-listed No Action Site (not a Registry Site)
  - Class N site - No Further Action
  - Closure in early 1990s pursuant to Part 360
  - Final cover system, slurry wall, gas probes, GW wells, leachate/groundwater collection and treatment system, stormwater controls
- Geotechnical investigation completed off landfill cap
- DMM-4 documents approved by NYSDEC Region 6

**Warrior Landfill**

**Solar Array**

**Town of Frankfort, Herkimer County**





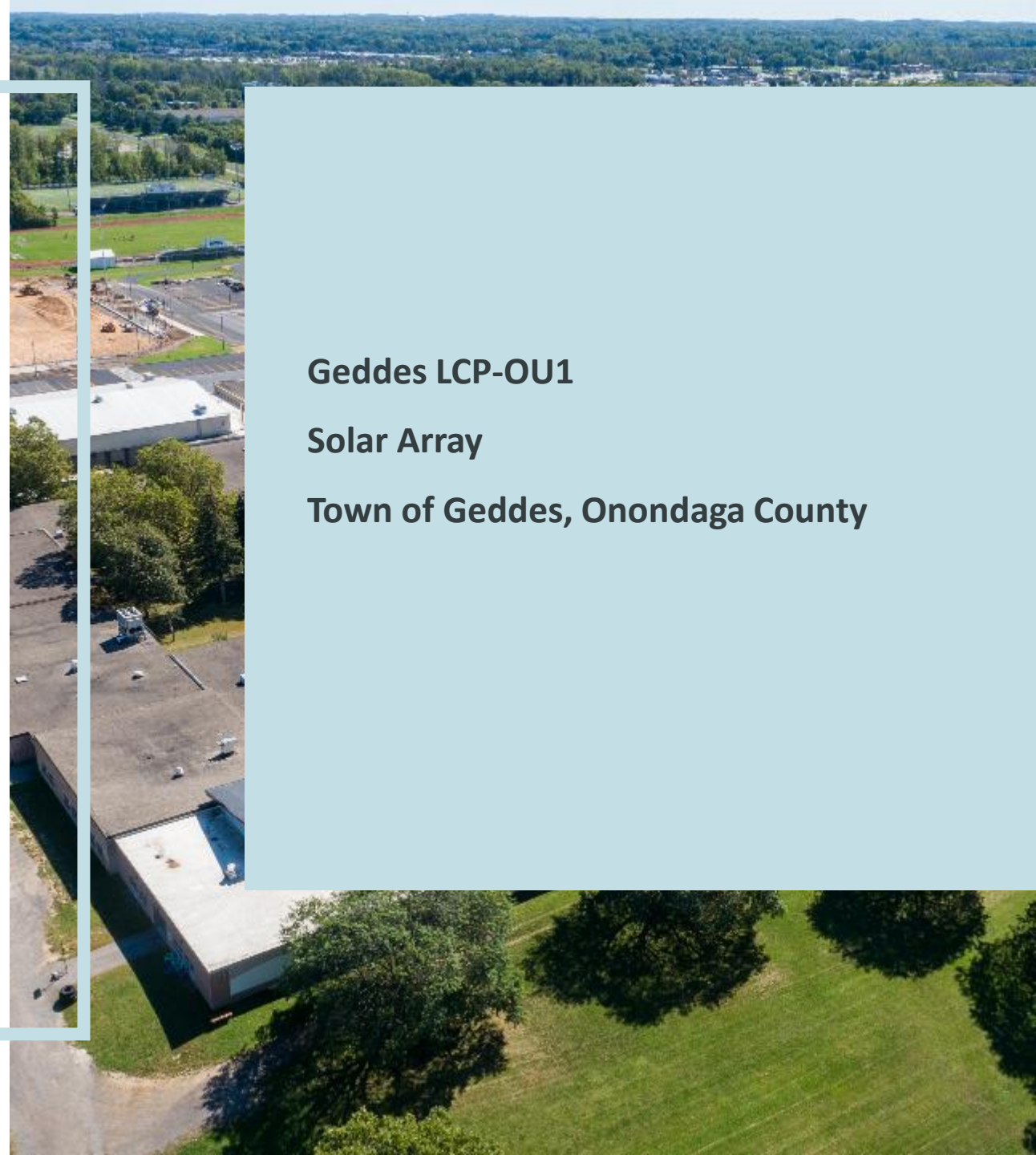
## Case Study #2

- Under construction 3.25 MW<sub>AC</sub> array
- NYSDEC-listed Registry Site
- Class 2 site; remediation has been completed
  - Cover, slurry wall installed in 2015
- Array to be constructed on cover system
- Designed to maximize array footprint, limit damage during construction
- Array currently nearing completion
- DMM-4 documents submitted to, reviewed, and approved by NYSDEC Region 7

**Geddes LCP-OU1**

**Solar Array**

**Town of Geddes, Onondaga County**





**Info for 3 former landfills were found using NYSDEC's list of state Superfund sites.**

- 1. Which of these sites can or cannot be redeveloped with a solar field? Why?**
- 2. Which of these sites is the most suitable for the development of a solar field? Why did you choose this site?**
- 3. What are the next steps to take in your redevelopment project?**





# Eastman Kodak Co. – Weiland Road Landfill

1669 Lake Avenue, Rochester, NY

This site was historically used for hazardous and non-hazardous industrial waste disposal, including radioactive material (thorium). The thorium poses no exposure risk as long as the landfill remains intact.

Acreage: 55 acres

Owner: Private

Distance to transmission: 36.98 miles

Status: Site has been properly closed but requires continued site management.



## Eastman Kodak Co. - Weiland Road Landfill

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Weiland Rd

Weiland Rd

Conrail Conrail

Conrail  
Conrail

Welland Rd

City of Rochester

Ridgeway Ave

## Town of Greece

0 0.05 0.1 0.2 Miles

Est. 1964, 1000 York Ave., New York, N.Y. 10021, U.S.A. Tel. (212) 697-1000. Fax: (212) 697-1001. E-mail: [info@edible.com](mailto:info@edible.com). Web: [www.edible.com](http://www.edible.com)



# Trimmer Road Landfill

Trimmer Road, Parma, NY

Currently unused, the site is overgrown with emergent trees and scrub growth. The site may not be used for agriculture. No site redevelopment is currently allowed within the constraints of the site remedy.

The site was remediated using phytoremediation at three areas located adjacent to the landfill. Hybrid poplar and willow trees were planted.

Acreage: 52.28 acres

Owner: Private

Distance to transmission: 36.52 miles

Status: Site has been properly closed but requires continued site management.



2

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Town of Parma

Trimmer Rd

Acreage: 52.28 acres

Owner: Private

Distance to transmission: 36.52 miles

Status: Site has been properly closed but requires continued site management.

0 0.05 0.1 0.2 Miles

New YorkState, Albany, East Greenbush Maps Contributions, 49 Spaulding Road, Albany, East Greenbush, Albany, New York, 12205, USA  
GeoTechnology, Inc., 1011 W. 10th St., Suite 100, Waco, TX 76798, USA





3

## Warsaw Village Landfill

Industrial Street, Warsaw, NY

This site is an inactive unlined landfill and is covered in fairly dense vegetation.

Previous investigations conducted at the site concluded that hazardous waste presence was not established.

Groundwater and surface water sampling conducted indicate that all concentrations were within ranges that naturally occur in groundwater in NY State and were below applicable State and Federal groundwater standards.

Acreage: 55 acres

Owner: Village of Warsaw

Distance to transmission: 45.22 miles

Status: No further action is warranted.



**Warsaw Village Landfill**  
Industrial Street, Warsaw, NY

Groundwater and surface water sampling conducted indicate that all concentrations were within ranges that naturally occur in groundwater in NY State and were below applicable State and Federal groundwater standards.

## Village of Warsaw

## Town of Warsaw

New York State, Mass., Est. Dren. & Highways Commission, 60 Spaulding Ave., Lowell, Est. Twp. & Gen. Serv. Bldg.,  
 Grand Rapids, Inc. 1211 N. Main St., N.W., 49503, Ark. Bureau of Gen. Serv. 10000, 72800



# What is



NJIT provides free technical assistance to state, regional, county, tribal, and local government entities and nonprofit organizations interested in learning about, identifying, assessing, cleaning up, and redeveloping brownfield sites in EPA Regions 2 & 4.

## Contact Us:



[tab@njit.edu](mailto:tab@njit.edu)



(973) 642-4165



[www.njit.edu/tab](http://www.njit.edu/tab)



[company/njit-tab](https://www.linkedin.com/company/njit-tab)





Thank you

# Contact and Questions

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# Brownfield Opportunity Area Program

**New York State's Consolidated Funding Application (CFA) for Round XIV of the Regional Economic Development Council Initiative is now open.  
Apply for the Brownfield Opportunity Area Program (RFP# 24-BOA-4).**

<https://www.dos.ny.gov/funding-bid-opportunities>

Written questions should be directed by email or mail to:

NYS Department of State OPD&CI  
99 Washington Avenue, Suite 1010  
Attn: BOA RFA Questions  
Albany, NY 12231

Email: [opd@dos.ny.gov](mailto:opd@dos.ny.gov)  
Subject: 24-BOA-4 RFA Questions

Responses will be posted at  
<https://www.dos.ny.gov/funding-bid-opportunities>

To apply or access related CFA materials: <http://regionalcouncils.ny.gov>



# NJIT TAB Can Help with your BOA Application

- While the CFA is open, New York State is unable to provide direct technical assistance.
- NJIT TAB can provide one-on-one technical assistance during this time:
  - Answer questions on the BOA program
  - Provide free grant application review

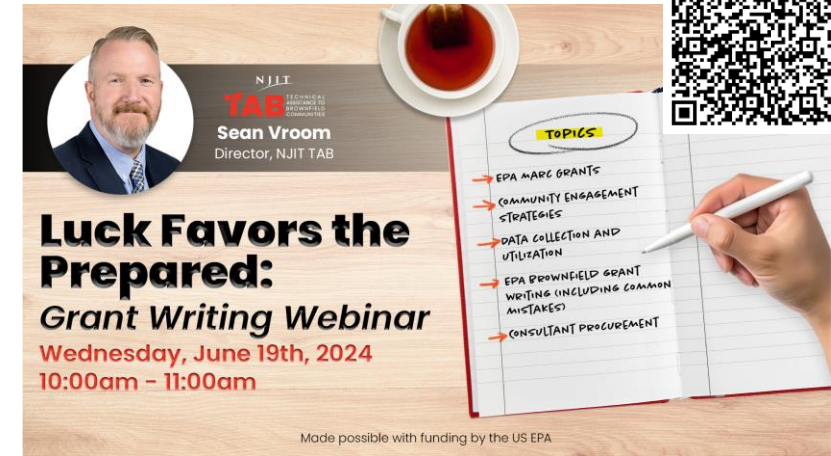
## For more information, contact:



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973-596-6415



## 2024 Timeline

May 13: RFA opens

May 22: Live Webinar

June 6: Finger Lakes Workshop

June 17: Written Questions Due

July 9: Written Answers Posted

Our Website



LinkedIn

