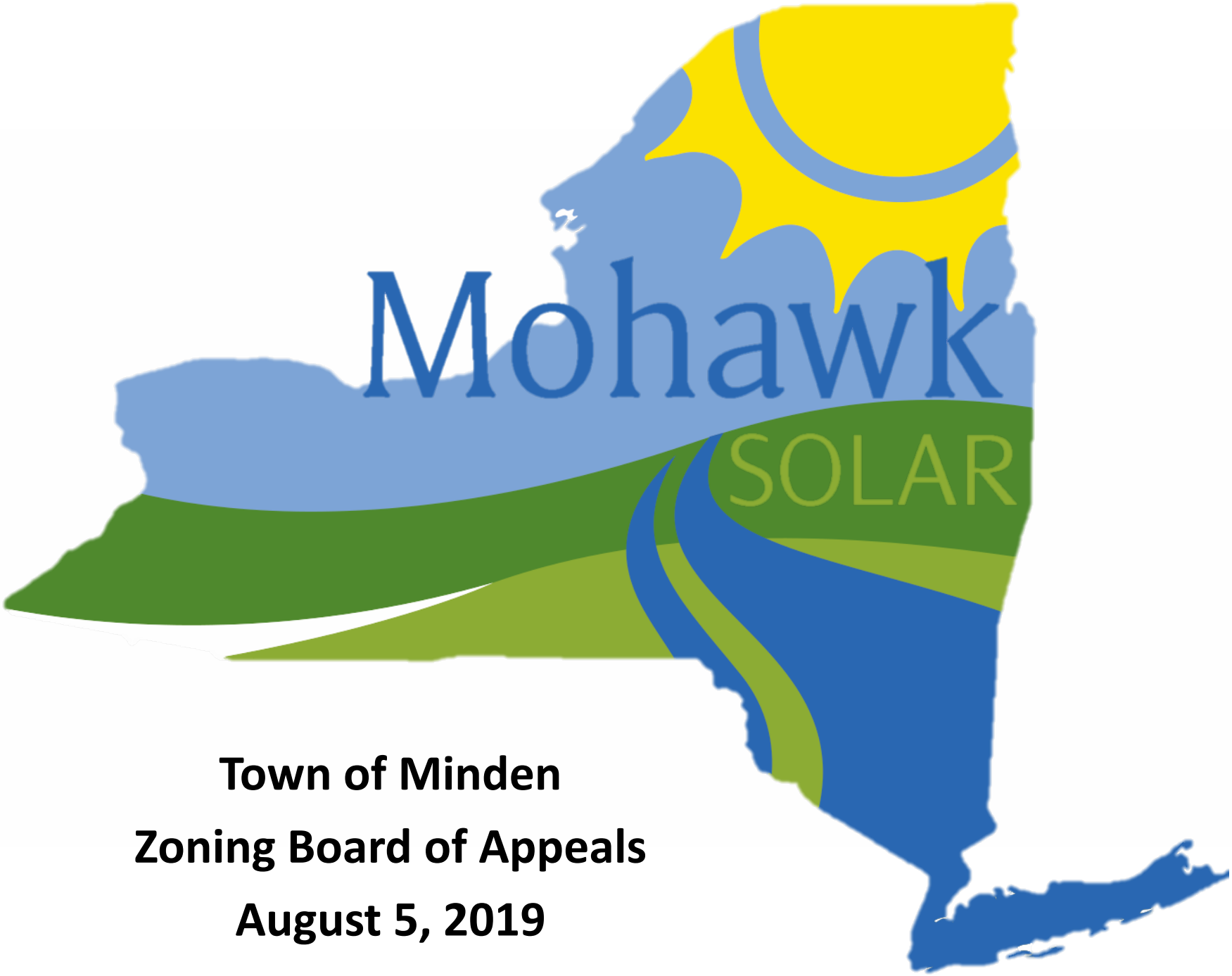


Town of Minden

Zoning Board of Appeals

August 5, 2019

Mohawk Solar Project Team

AVANGRID RENEWABLES

COMMUNITY ENERGY SOLAR

edr

MOTT MACDONALD

WEST Inc.

HARRIS BEACH PLLC
ATTORNEYS AT LAW

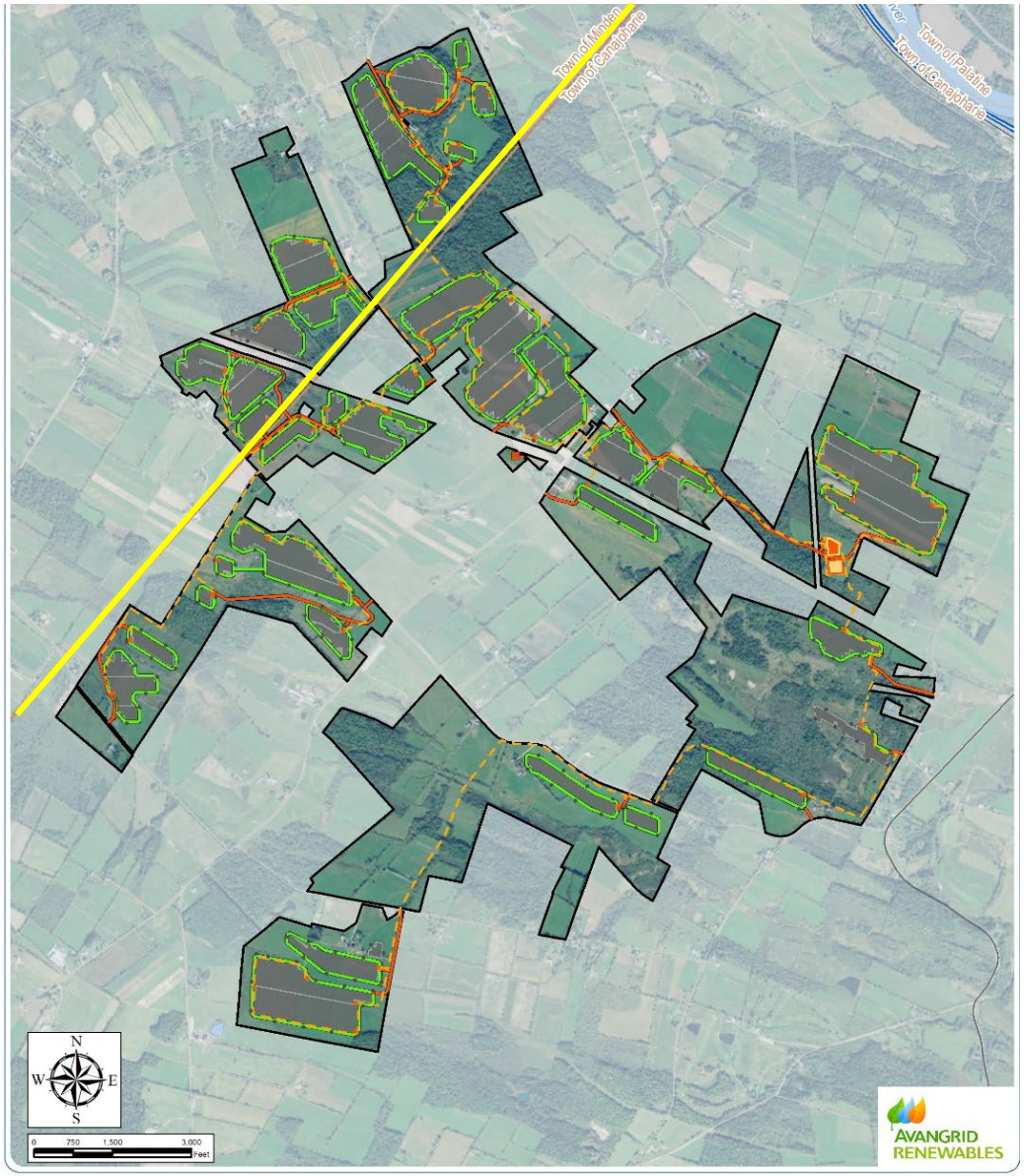
The Ayers Law Firm, PLLC

Hessler Associates, Inc.
WORLDWIDE CONSULTING IN ENGINEERING ACOUSTICS

Mohawk Solar

Owner/Developer	Avangrid Renewables
Permitting/Operation Authority	NYS Siting Board, pursuant to Article 10 of the NYS Public Service Law (Project Case #: 17-F-0182)
Energy Generation	90.5 MW/expected to meet annual average electricity consumption of 28,000 households
Interconnect	St. Johnsville-Marshville 115 kV Line
Facility Site	Towns of Minden & Canajoharie, NY 30 privately owned parcels totaling ~2,590 acres. **Minden: 4 parcels totaling ~413 acres**
Photovoltaic (PV) Panels	Project: 37 fenced array clusters totaling ~700 acres **Minden: 12 array clusters totaling ~175 acres**
Facility Components	PV arrays, access roads, collection lines, collection substation, interconnection switchyard, O&M facility, fencing & landscape screening.

Facility Layout



Mohawk Solar
Towns of Canajoharie and Minden, Montgomery County, New York

Figure 1: Project Site and Facility Layout

Notes: 1. Basemap: USDA NAIP "2017 New York" Orthoimagery, ESRI StreetMap North America, 2008. **2.** This map was generated in ArcMap by Environmental Design and Research on July 23, 2019. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.

Proposed Facility Components
- O&M Building
- Transformer
- Collection Substation
- POI Switchyard
- Fence Line
- Buried Collection Line
- Grass Access Road
- Gravel Access Road
- PV Panel Array
- Facility Site

Civil Boundaries
- County Boundary
- City/Village Boundary
- Town Boundary

Project Schedule

- Project Development/Environmental Studies 2016-2019
- NYSDPS Article 10 Application submitted June 5, 2019
- Town of Minden Area Variance submitted July 11, 2019
  - Permitting complete: Q3 2020
  - Interconnection Agreement: Q2 2020
  - Construction start/complete: Q3 2020/Q3 2021
  - Commercial Operation: November 30, 2021

Key Driver of Facility Design: Environmental Studies

- ✓ Based on environmental and other studies conducted as part of the Article 10 process, the Facility design **has been modified** to avoid, or minimize, potential impacts to prime farmland, wetlands, forested areas, threatened and endangered species, viewpoints, and ambient noise conditions, among others.

Wetlands

Rare/Threatened/ Endangered Species

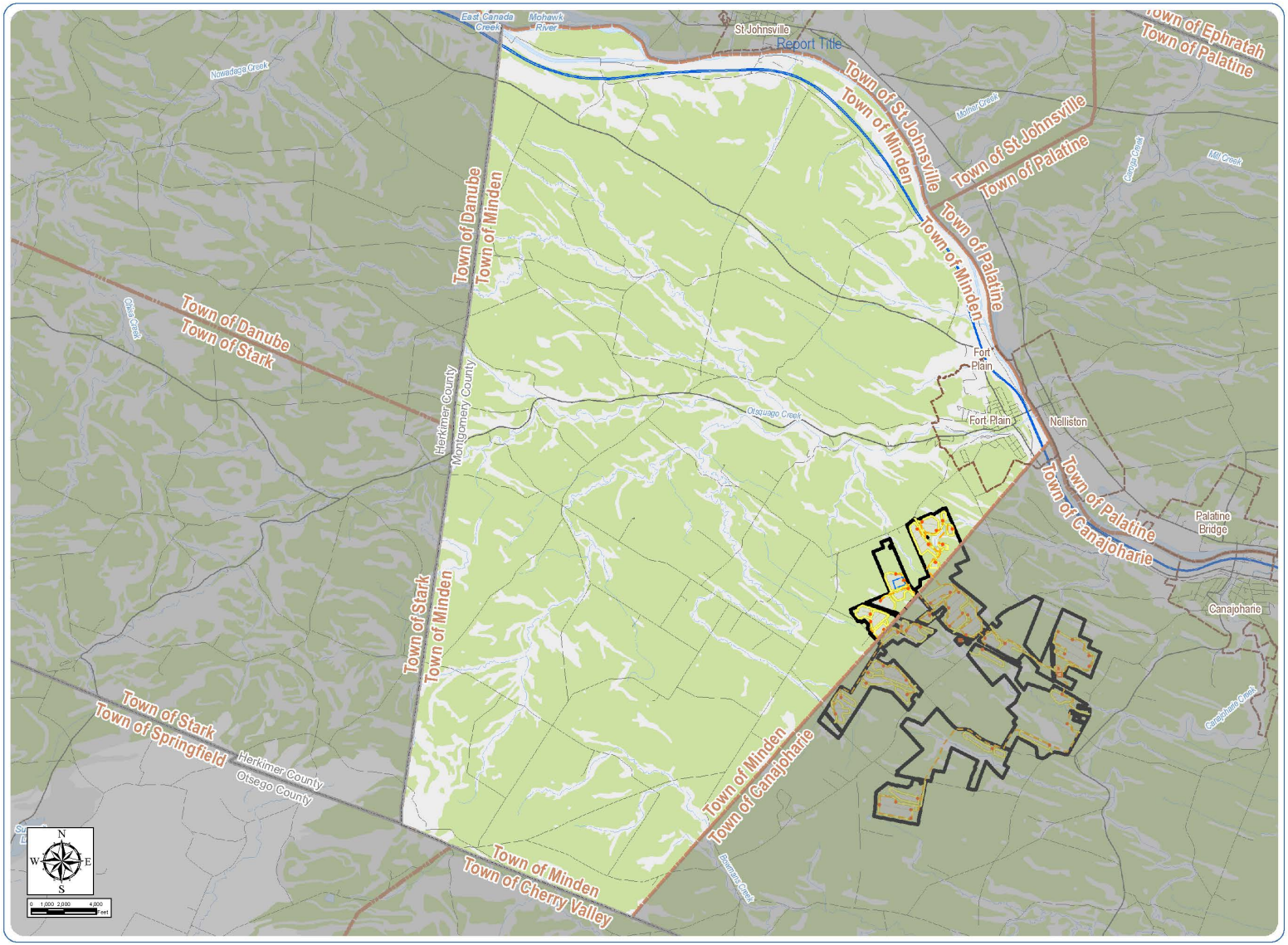
Historic Resources & Archaeology

Prime Farmland

Visual Impacts

Town of Minden Zoning Law

- The intent and purpose of the Minden Zoning for solar facilities is **“to accommodate solar energy systems”** and **“promote the effective and efficient use of solar energy resources.”**
  - Facility Designed to:
    - Comply with Minden’s Zoning Law where possible, and,
    - Request, where needed, the minimum area variance needed to minimize environmental impacts while achieving design goals.
  - Design Considerations:
    - Utilize relatively flat, open land with southern exposure
    - Minimize impact on:
      - Community character
      - Prime farmland
      - Community health & safety
      - Environmental resources



Mohawk Solar

Towns of Canajoharie and Minden, Montgomery County, New York

Town of Minden
Agricultural Soils

- O&M Building
- Transformer
- Collection Substation
- POI Switchyard
- Laydown Area
- Fence Line
- Buried Collection Line
- Access Road
- PV Panel Array
- Facility Site

Farmland Classification

- Prime Farmland, Prime farmland if drained, or Farmland of Statewide Importance
- Not prime farmland
- City/Village Boundary
- Town Boundary
- County Boundary

Notes: 1. Basemap:ESRI StreetMap North America, 2008. **2.** This map was generated in ArcMap by Environmental Design and Research on August 2, 2019. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.

AVANGRID RENEWABLES

Area Variance Summary

Mohawk Solar is applying for an area variance from those provisions of Minden Zoning that:

A. Require a minimum 100- foot boundary line setback from **all** Facility components, regardless of "Project Participant" status;

B. Limit the construction of utility-scale solar energy systems on no more than 20%, or 10 acres, of any farmed parcel, or on a parcel less than 20 acres; and,

C. Require the Facility to be fully visually screened.

Project Parcels

61.-1-20 (Moyer)	62.-2-24 (J. Heiser)
77.-1.6.112 (Hudson)	61.-1-24.3 (Stoltzfus)

A. 100-ft Boundary Line Setback

The Facility design ensures that no solar array panels will be located within the 100-foot boundary line setbacks, ***except for***:

- Parcel boundaries of Facility lease and easement holders ("Project Participants") with common parcel boundaries,
- Right-of-way boundaries with National Grid's transmission line and Dominion pipeline corridors, and for,
- Certain residential unpaved driveways designated as Town roads (Moyer Drive and Dunkel Road).

❖ By design, this strategically limits the environmental impacts that would otherwise occur if located elsewhere, such as in wetland and forested areas within the parcels.

Why Area Variance Required

- Facility could not otherwise connect to electric grid or be accessed from a public highway
- Locating panels within the boundary line setback of adjoining Project Participates, utility ROW, certain town “roads” will minimize environmental impacts
- Locating fencing, access roads, underground electrical collection lines and landscaping within setback minimizes the additional acreage needed to comply.

Why Area Variance Required

- Similarly recommended by NYSERDA, New York Solar Guidebook, January 2019

Appendix 2: Parcel Line Setbacks

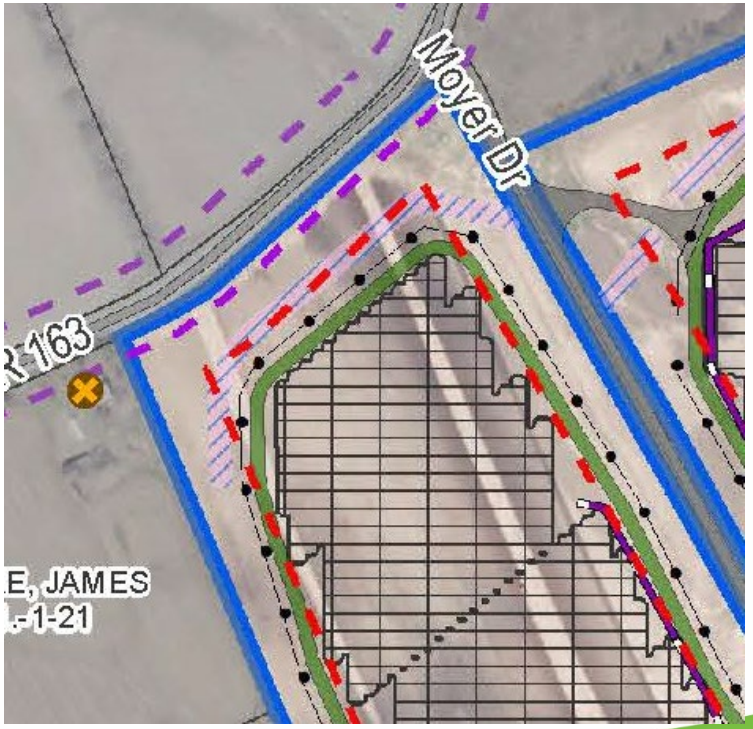
The following table provides parcel line setback requirements for Ground-Mounted Solar Energy Systems. Fencing, access roads and landscaping may occur within the setback.

Table 2: Parcel Line Setback Requirements

	Tier 3 Ground-Mounted		
Zoning District	Front	Side	Rear
Residential Low Density	100'	100'	100'
Residential High Density	—	—	—
Commercial / Business	30'	15'	25'
Light Industrial	30'	15'	25'
Heavy Industrial	30'	15'	25'
Agricultural / Residential	30'	15'	25'

Key:

—: Not Allowed



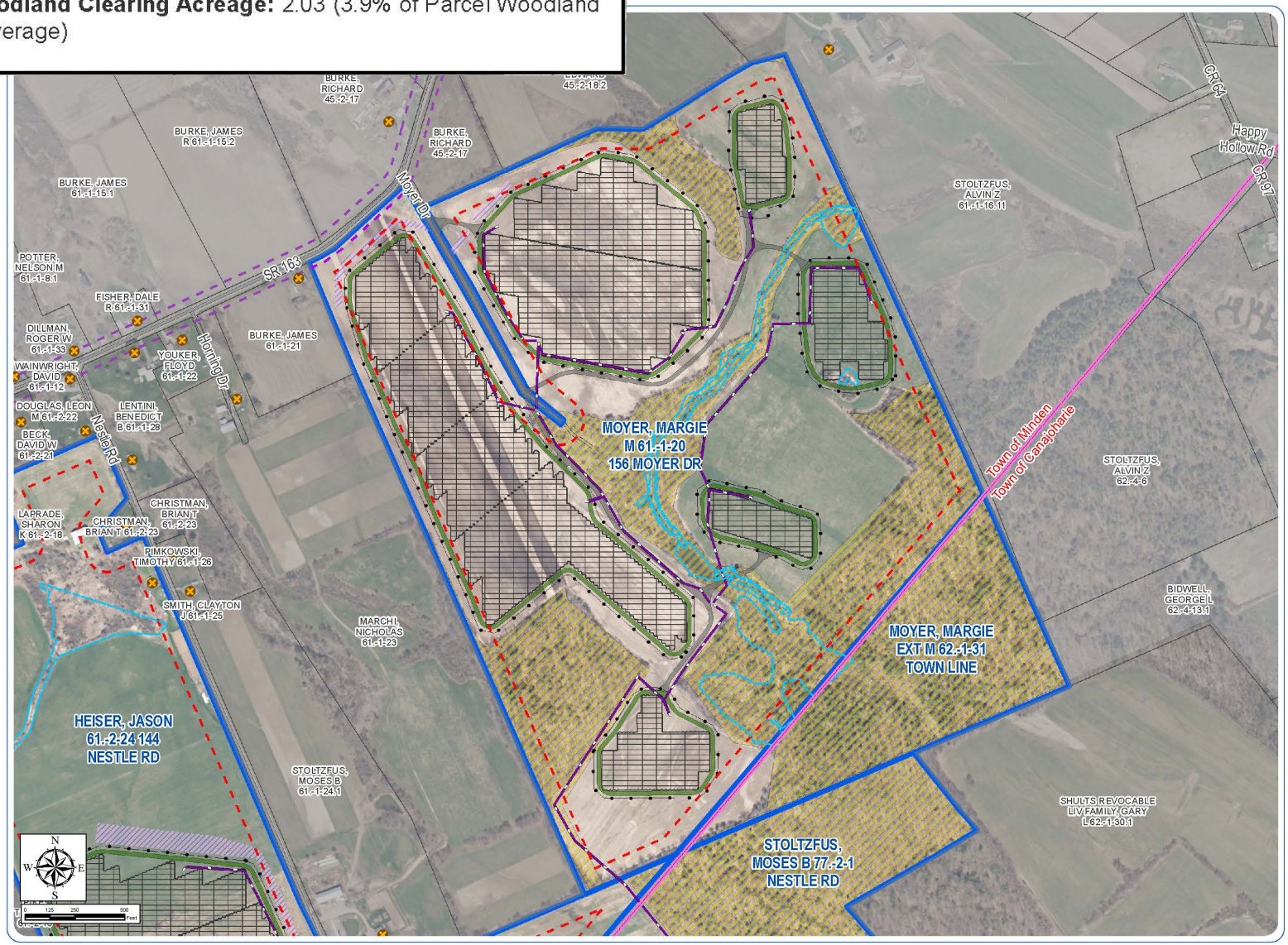
B. Parcel Occupancy/Size Limitations Why Area Variance Required

- Clustered development and preservation of open space is promoted in the Town's Comprehensive Plan
  - Complying with occupancy/area coverage limits would require **4x** the number of parcels (minimum of 19) to achieve the ~32 MW energy production in Minden
  - Current design proposes 3 parcels with above-ground and 1 with below grade components
    - Parcel with below grade components less than minimum 20-acre parcel size at ~10.4 acres
- Scattering nonagricultural development may:
  1. Interfere with effective operation of existing agricultural activities;
  2. Increase potential for farmland conversion; and
  3. Reduce strength of overall agricultural community

Continuing Agricultural Use

- To avoid farmland conversion and promote continued agricultural use of farmland within the Facility area, Mohawk Solar proposes to amend landowner leases in the Town of Minden to allow agricultural activities that are consistent with the operational, safety, and maintenance goals of the Facility, including vegetation control.
- These agricultural uses may include grazing by sheep or establishing pollinator habitats within the Facility's perimeter fenced areas.
- **There is no design configuration that would allow the Facility to comply with the acreage limits in the Minden Zoning within the Facility's Article 10 Application footprint.**

Facility Parcel: 61.-1-20
Parcel Acreage: 183.09
Perimeter Fenced Acreage: 76.4 (41.7% of Parcel)
Woodland Clearing Acreage: 2.03 (3.9% of Parcel Woodland Coverage)



Mohawk Solar

Towns of Canajoharie and Minden - Montgomery County New York

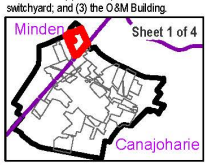
Facility Layout and Setbacks - Town of Minden

Proposed Facility and Civil Boundaries
- Fence
- Collection Line
- PV Panel Layout
- Footprint of Gravel Access Roads
- Footprint of Grass Access Roads
- Planting Module
- Facility Site Parcel Boundary
- Town Boundary

Setbacks
- Town of Minden 100-foot Property Line Setback
- All Delineated Streams and Wetlands 10 Foot Design Setback
- Existing Overhead Transmission Line and Major Road 60 Foot Design Setback

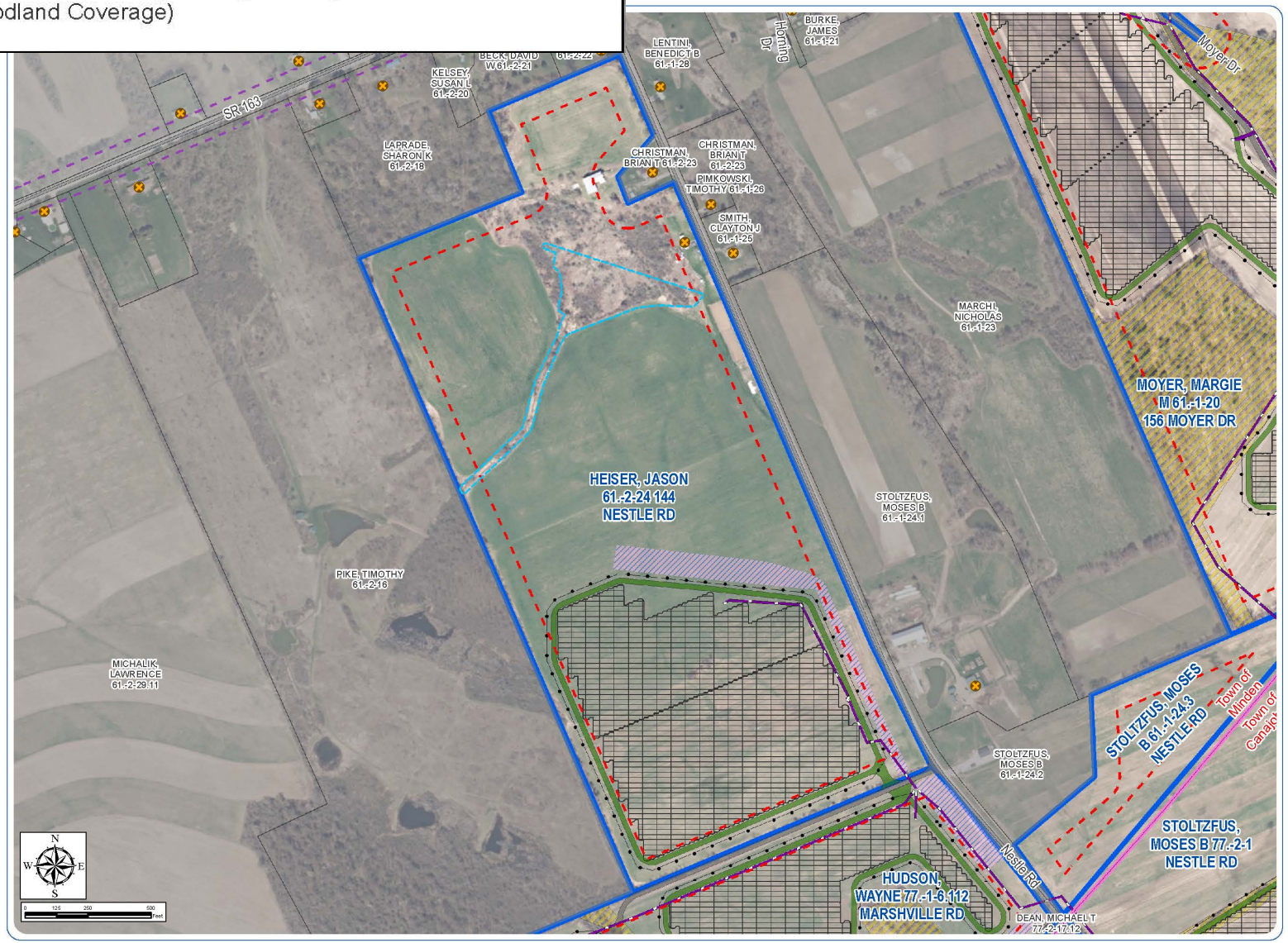
Constraints
- Residences
- Natural Gas Pipelines
- Existing Transmission Line
- Forested Area

Notes: 1. Basemap: ESRI ArcGIS Online "World Imagery" map service; and ESRI StreetMap North America, 2008. 2. This map was generated in ArcMap on August 1, 2019. 3.This is a color graphic. Reproduction in grayscale may misrepresent the data. 4. Impervious surfaces associated with the proposed Facility include all gravel access roads, transformer pads, and the fenced footprint of: (1) the substation; (2) the point of interconnect switchyard; and (3) the O&M Building.



AVANGRID RENEWABLES

Facility Parcel: 61.-2-24
Parcel Acreage: 83.55
Perimeter Fenced Acreage: 25 (29.9% of Parcel)
Woodland Clearing Acreage: 0.00 (Less Than 1% of Parcel Woodland Coverage)



Mohawk Solar

Towns of Canajoharie and Minden - Montgomery County New York

Facility Layout and Setbacks - Town of Minden

Proposed Facility and Civil Boundaries

- Fence
- Collection Line
- PV Panel Layout
- Footprint of Gravel Access Roads
- Footprint of Grass Access Roads
- Planting Module
- Facility Site Parcel Boundary
- Town Boundary

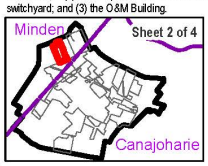
Setbacks

- Town of Minden 100-foot Property Line Setback
- All Delineated Streams and Wetlands 10 Foot Design Setback
- Existing Overhead Transmission Line and Major Road 60 Foot Design Setback

Constraints

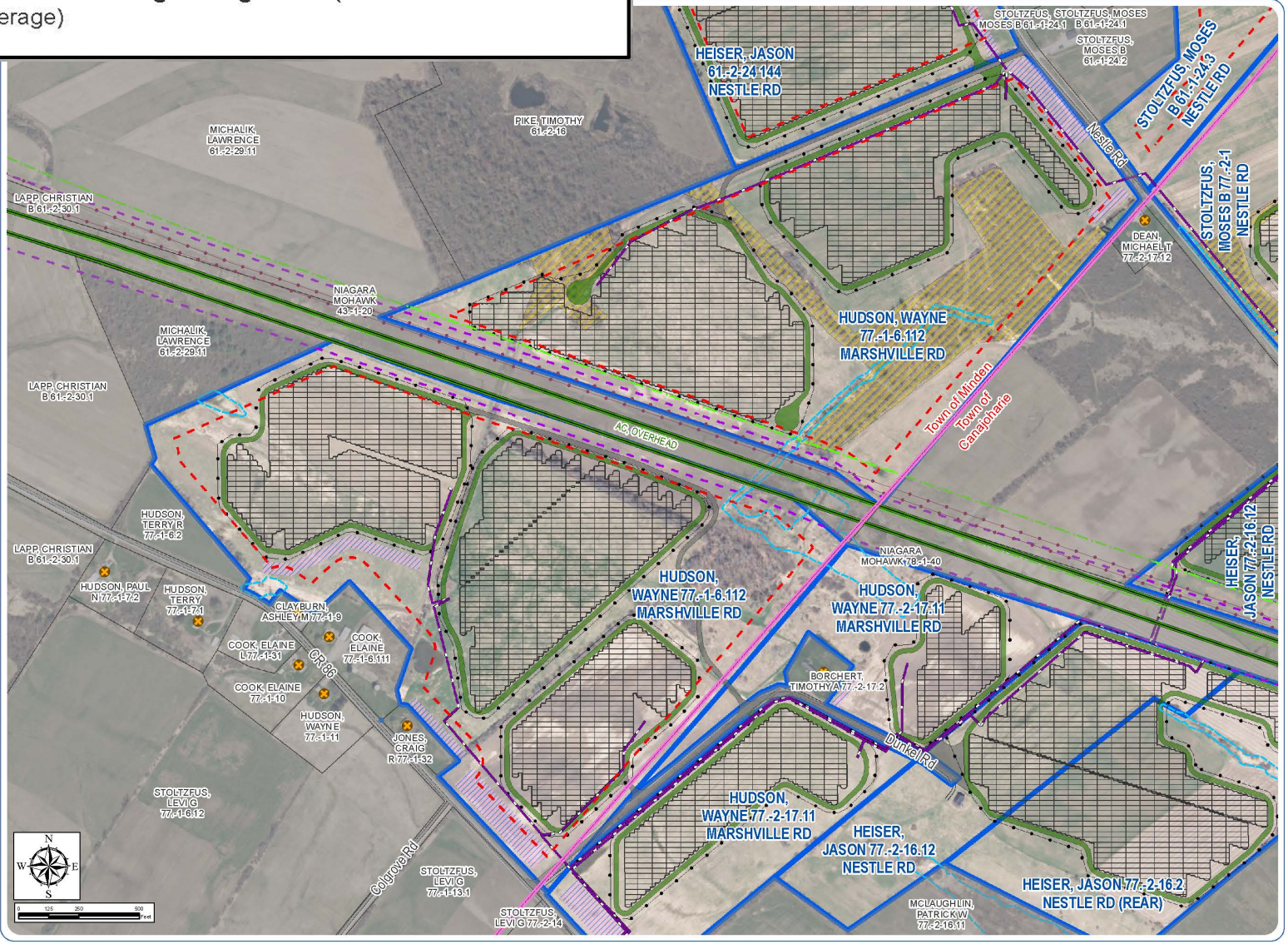
- Residences
- Natural Gas Pipelines
- Existing Transmission Line
- Forested Area

Notes: 1. Basemap: ESRI ArcGIS Online "World Imagery" map service; and ESRI StreetMap North America, 2008. 2. This map was generated in ArcMap on August 1, 2019. 3.This is a color graphic. Reproduction in grayscale may misrepresent the data. 4. Impervious surfaces associated with the proposed Facility include all gravel access roads, transformer pads, and the fenced footprint of: (1) the substation; (2) the point of interconnect switchyard; and (3) the O&M Building.



AVANGRID RENEWABLES

Facility Parcel: 77.-1-6.112
Parcel Acreage: 136.01
Perimeter Fenced Acreage: 73.5 (54.1% of Parcel)
Woodland Clearing Acreage: 1.70 (12.1% of Parcel Woodland Coverage)



Mohawk Solar

Towns of Canajoharie and Minden - Montgomery County New York

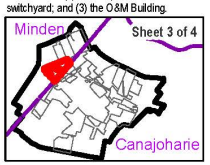
Facility Layout and Setbacks - Town of Minden

Proposed Facility and Civil Boundaries
- Fence
- Collection Line
- PV Panel Layout
- Footprint of Gravel Access Roads
- Footprint of Grass Access Roads
- Planting Module
- Facility Site Parcel Boundary
- Town Boundary

Setbacks
- Town of Minden 100-foot Property Line Setback
- All Delineated Streams and Wetlands 10 Foot Design Setback
- Existing Overhead Transmission Line and Major Road 60 Foot Design Setback
- Dominion Pipeline Centerline 65 Foot Design Setback

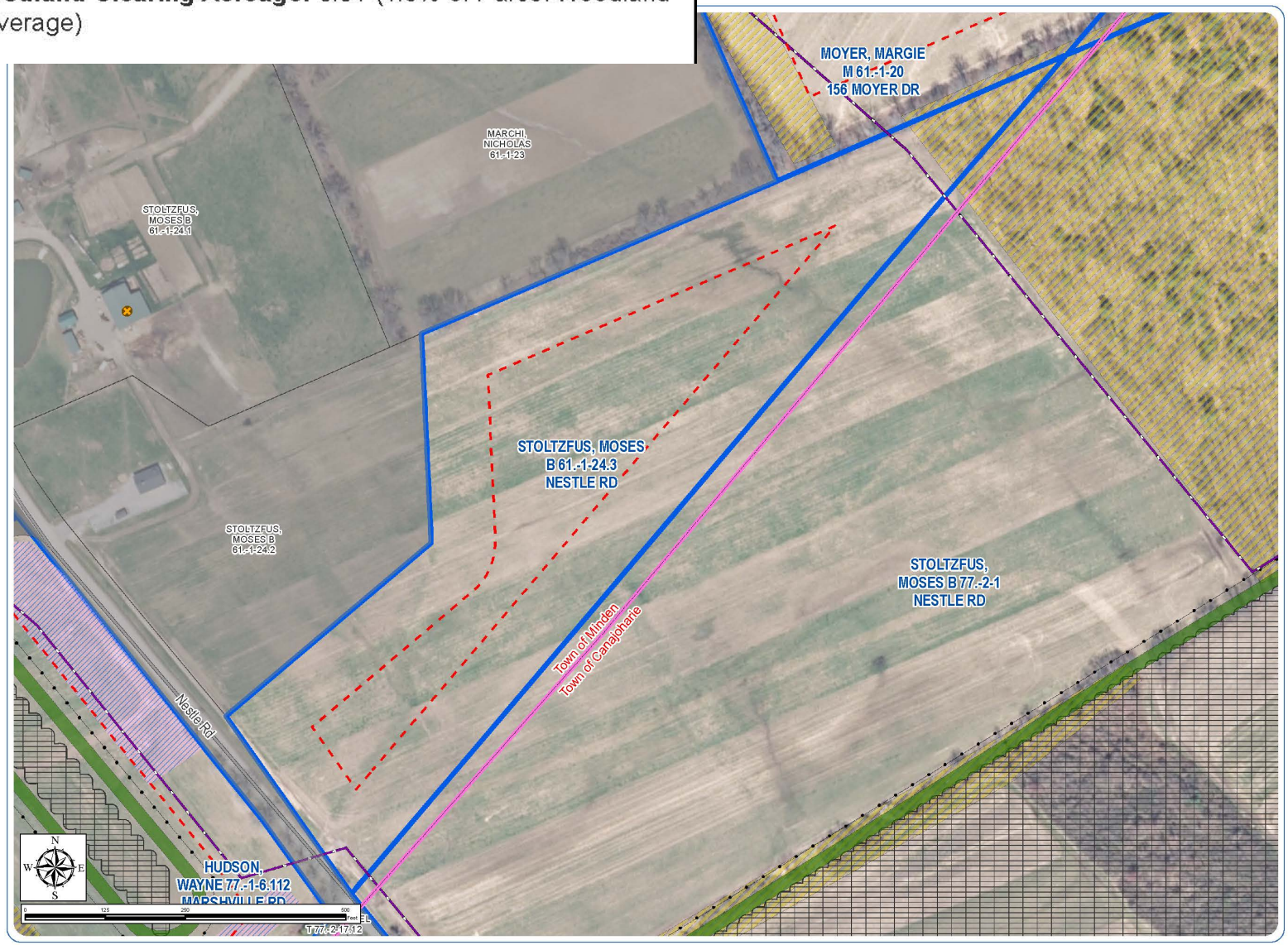
Constraints
- Residences
- Natural Gas Pipelines
- Existing Transmission Line
- Forested Area

Notes: 1. Basemap: ESRI ArcGIS Online "World Imagery" map service; and ESRI StreetMap North America, 2008. 2. This map was generated in ArcMap on August 1, 2019. 3.This is a color graphic. Reproduction in grayscale may misrepresent the data. 4. Impervious surfaces associated with the proposed Facility include all gravel access roads, transformer pads, and the fenced footprint of: (1) the substation; (2) the point of interconnect switchyard; and (3) the O&M Building.



AVANGRID RENEWABLES

Facility Parcel: 61.-1-24.3
Parcel Acreage: 10.56
Perimeter Fenced Acreage: 0 (0% of Parcel)
Woodland Clearing Acreage: 0.01 (1.9% of Parcel Woodland Coverage)



Mohawk Solar

Towns of Canajoharie and Minden - Montgomery County New York

Facility Layout and Setbacks - Town of Minden

Proposed Facility and Civil Boundaries

- Fence
- Collection Line
- PV Panel Layout
- Footprint of Gravel Access Roads
- Footprint of Grass Access Roads
- Planting Module
- Facility Site Parcel Boundary
- Town Boundary

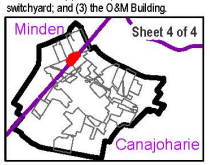
Setbacks

- Town of Minden 100-foot Property Line Setback
- All Delineated Streams and Wetlands 10 Foot Design Setback
- Existing Overhead Transmission Line and Major Road 60 Foot Design Setback

Constraints

- Residences
- Natural Gas Pipelines
- Existing Transmission Line
- Forested Area

Notes: 1. Basemap: ESRI ArcGIS Online "World Imagery" map service; and ESRI StreetMap North America, 2008. 2. This map was generated in ArcMap on August 1, 2019. 3.This is a color graphic. Reproduction in grayscale may misrepresent the data. 4. Impervious surfaces associated with the proposed Facility include all gravel access roads, transformer pads, and the fenced footprint of: (1) the substation; (2) the point of interconnect switchyard; and (3) the O&M Building.

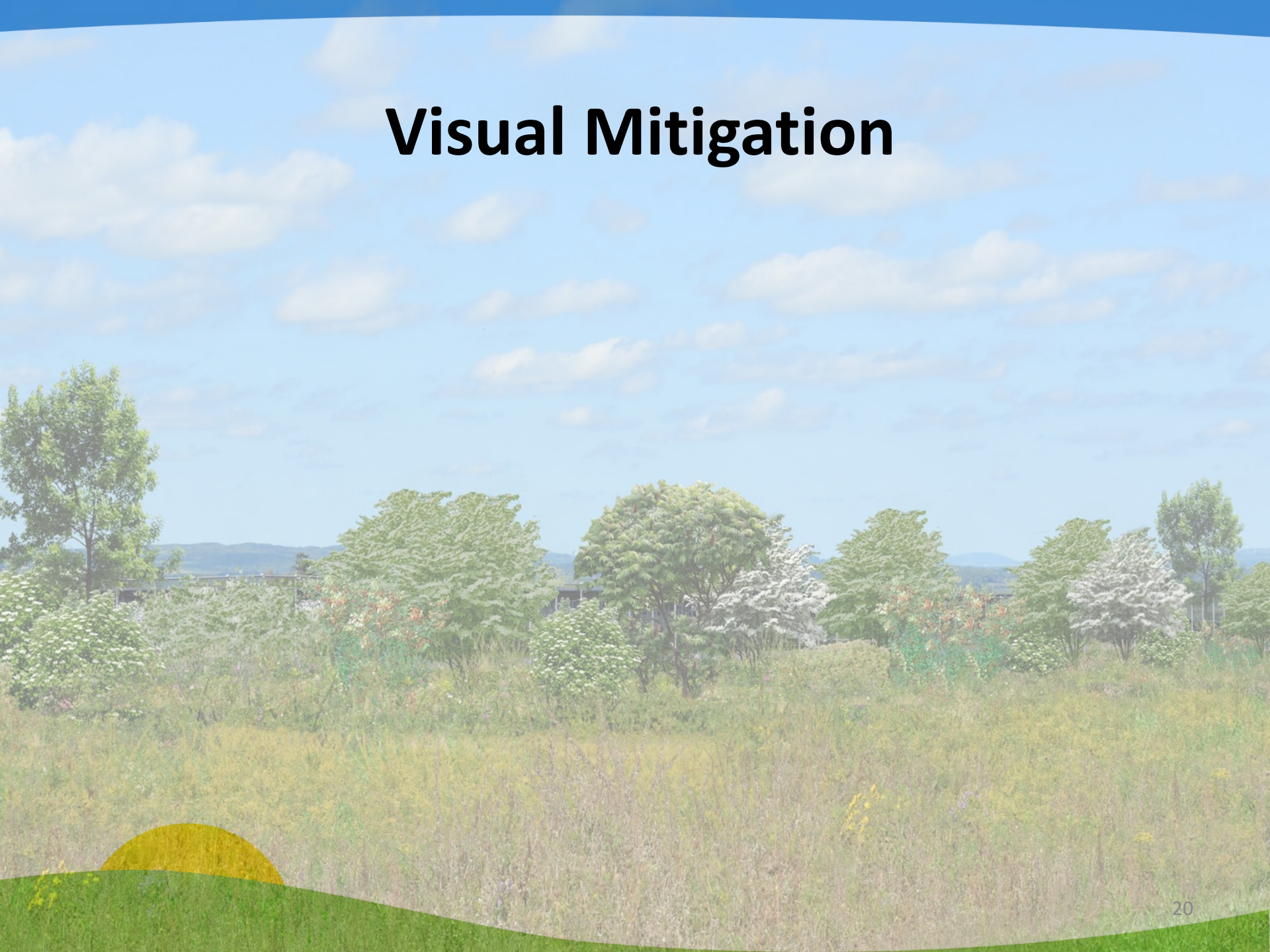


AVANGRID RENEWABLES

C. Full Visual Screening of Facility Why Full Screening Variance Required

- Full screening measures (berming, screen or opaque enclosure) considered but ultimately not proposed
- Full visual screening would:
  - Introduce conflicting visual elements into landscape inconsistent with existing visual character
  - Require additional soil disturbance and impact soil character/future use (berming)
  - Require additional farmland and/or divide up farmland and reduce efficiency
  - Increase potential for negative environmental impacts

Visual Mitigation



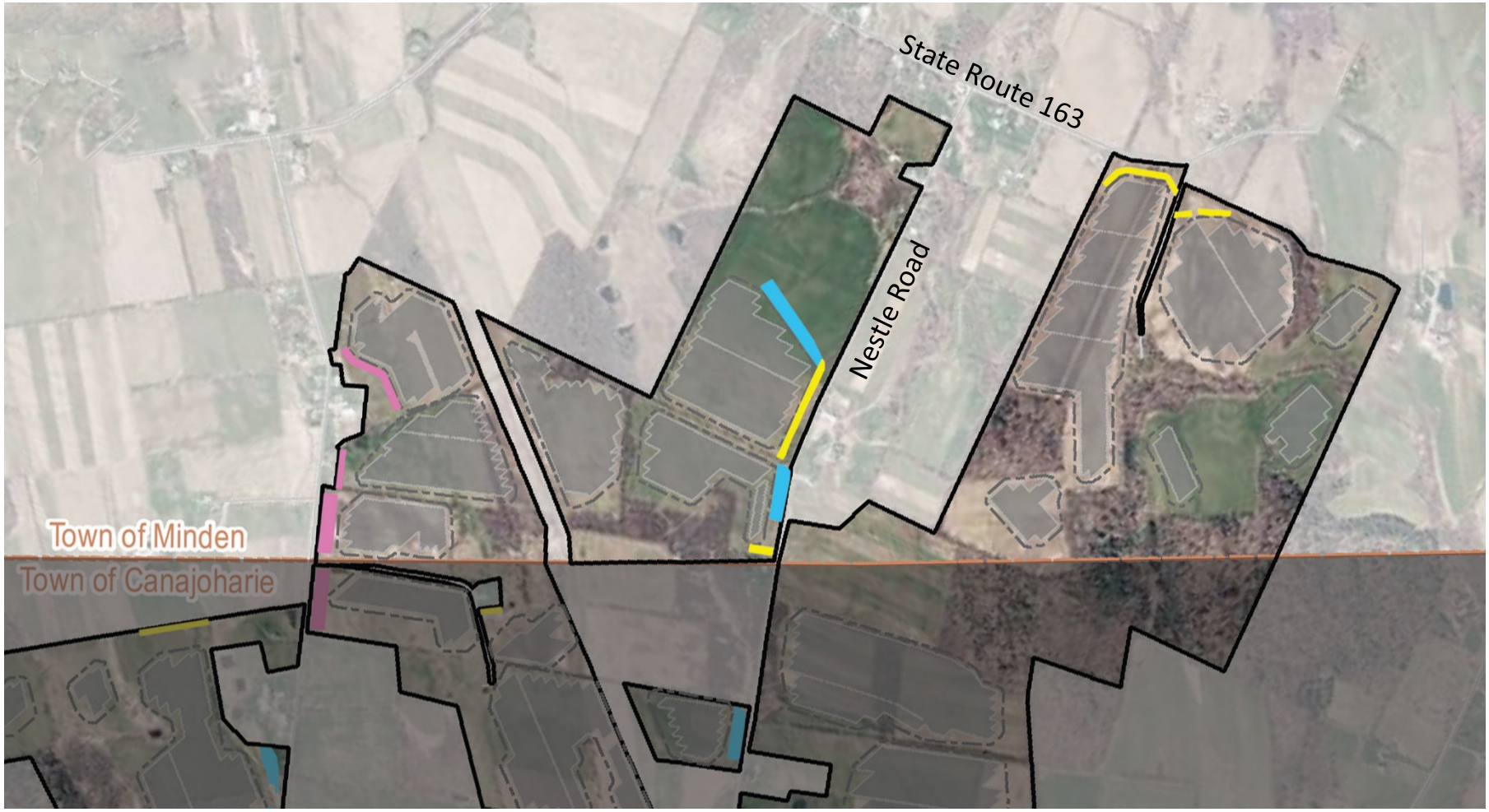
Proposed Visual Screening of Facility

- Proposed visual screening would:
  - Utilize existing vegetative material
  - Replicate existing landscape vernacular/character
  - Incorporate native planting materials
  - Decrease potential for environmental/visual impacts
  - Soften views of the Project with different combinations of sizes and varieties of vegetation
  - Allow for open views to background mountains and Mohawk Valley

Mitigation Planting Plan Design

- Conceptual Planting Modules:
  - **Roadside Enhancement A**
  - **Roadside Enhancement B**
  - **Adjacent Resource/Residence Screening**

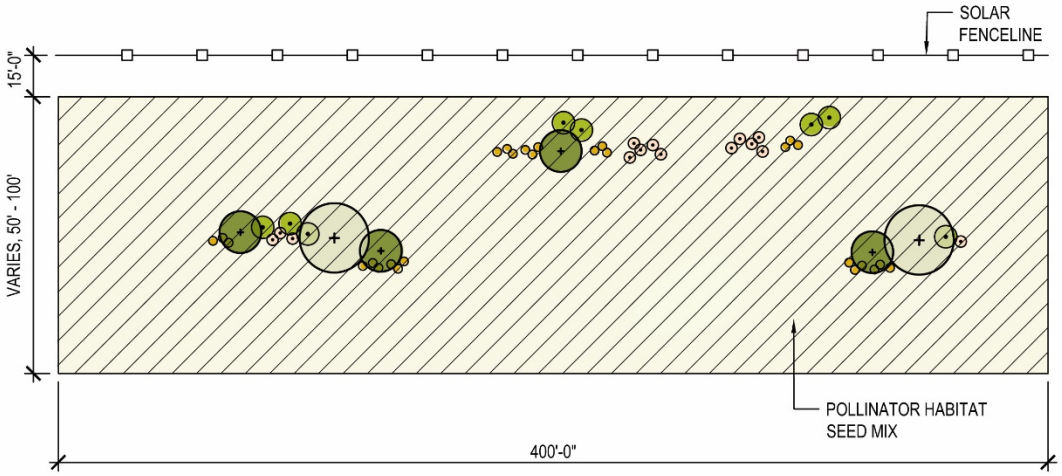
Mitigation Planting Plan Locations

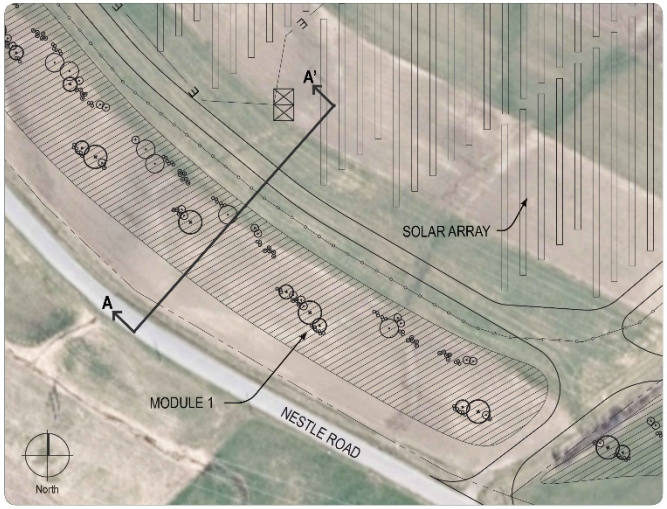


Plantings

- Module 1 - Roadside Enhancement A
- Module 2 - Roadside Enhancement B
- Module 3 - Hedgerow In-Fill
- Module 4 - Adjacent Resource/Residence

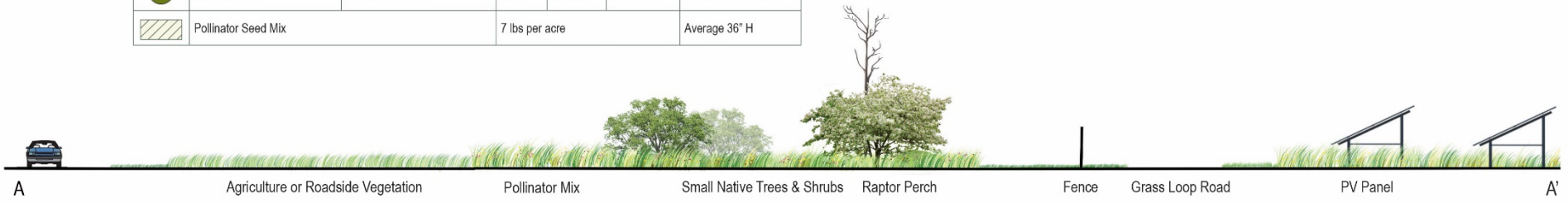
Roadside Enhancement A





PLANT LIST

KEY	BOTANICAL NAME	COMMON NAME	SIZE	TYPE	SPACING	MATURE SIZE
	Amelanchier stolonifera	Running Serviceberry	24" ht	#5 cont	4' on center	4-6' H x 4-5' W
	Aronia arbutifolia	Red Chokeberry	4' ht	B&B	5' on center	6-10' H x 6-10' W
	Crataegus crus-galli	Cockspur Hawthorn	1 3/4" cal	B&B	As shown	25-35' H x 25-35' W
	Diervilla lonicera	Bush-Honeysuckle	18" ht	#3 cont	3' on center	2-3' H x 3-4' W
	Rhus typhina	Staghorn Sumac	5' ht	#5 cont	As shown	10-20' H x 20-30' W
	Pollinator Seed Mix		7 lbs per acre			Average 36" H

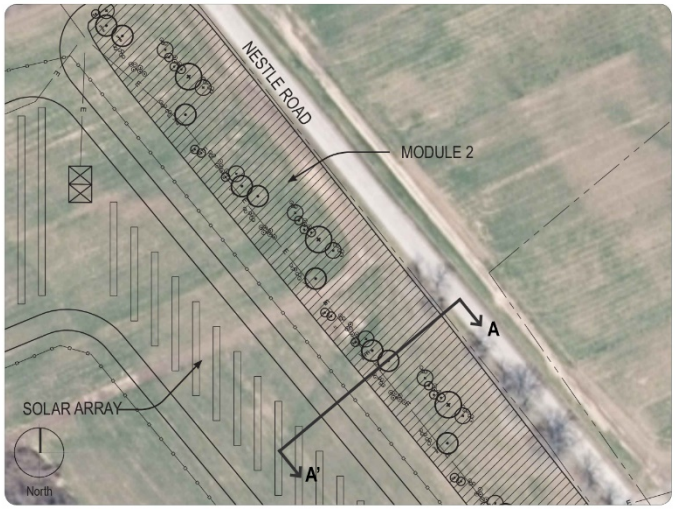


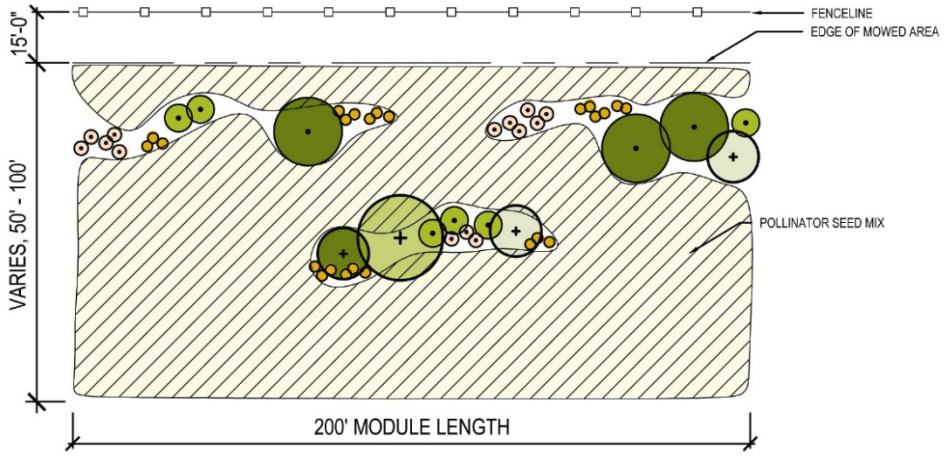
Roadside Enhancement A

Roadside Enhancement A

Roadside Enhancement A

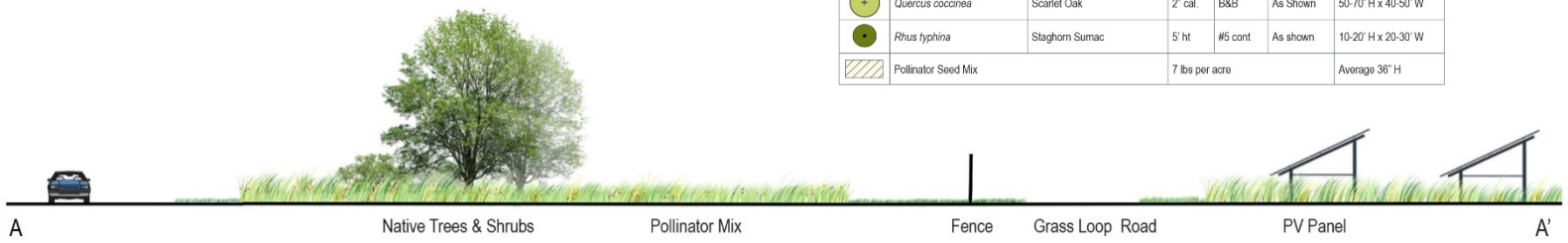
Roadside Enhancement B





PLANT LIST

KEY	BOTANICAL NAME	COMMON NAME	SIZE	TYPE	SPACING	MATURE SIZE
	Amelanchier stolonifera	Running Serviceberry	24" ht	#5 cont	4' on center	4-6' H x 4-5' W
	Aronia arbutifolia	Red Chokeberry	4' ht	B&B	5' on center	6-10' H x 6-10' W
	Crataegus crus-galli	Cockspur Hawthorn	1 3/4" cal	B&B	As Shown	25-35' H x 25-35' W
	Diervilla lonicera	Bush-Honeysuckle	18" ht	#3 cont	3' on center	2-3' H x 3-4' W
	Hamamelis virginiana	Common Witch-Hazel	3' ht	B&B	As shown	15-20' H x 10-15' W
	Quercus coccinea	Scarlet Oak	2" cal.	B&B	As Shown	50-70' H x 40-50' W
	Rhus typhina	Staghorn Sumac	5' ht	#5 cont	As shown	10-20' H x 20-30' W
	Pollinator Seed Mix		7 lbs per acre			Average 36" H

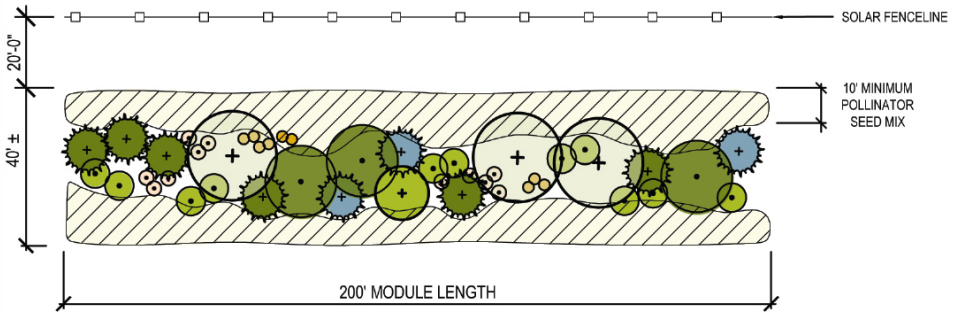


Roadside Enhancement B

Roadside Enhancement B

Roadside Enhancement B

Adjacent Resource



PLANT LIST

KEY	BOTANICAL NAME	COMMON NAME	SIZE	TYPE	SPACING	MATURE SIZE
	Acer rubrum	Red Maple	2" cal.	B&B	As Shown	40-70" H x 15-25' W
	Crataegus crus-galli	Cockspur Hawthorn	1 3/4" cal.	B&B	As Shown	25-35' H x 25-35' W
	Picea glauca	White Spruce	8' ht	B&B	As Shown	40-60' H x 20-25' W
	Pinus strobus	Eastern White Pine	6' ht.	B&B	As Shown	70-80' H x 20-35' W
	Amelanchier stolonifera	Running Serviceberry	24" ht	#5 cont	4' on center	4-6' H x 4-5' W
	Diervilla lonicera	Bush-Honeysuckle	18" ht	#3 cont	3' on center	2-3' H x 3-4' W
	Rhus typhina	Staghorn Sumac	5' ht	#5 cont	As shown	10-20' H x 20-30' W
	Pollinator Seed Mix		7 lbs per acre			Average 36" H

Adjacent Resource

Adjacent Resource

Adjacent Resource

Adjacent Resource

Adjacent Resource

Adjacent Resource

Mohawk
SOLAR

THANK YOU!