

This story was made with [Esri's Story Map Cascade](#).  
Read it on the web at <https://arcg.is/1biuT00>.

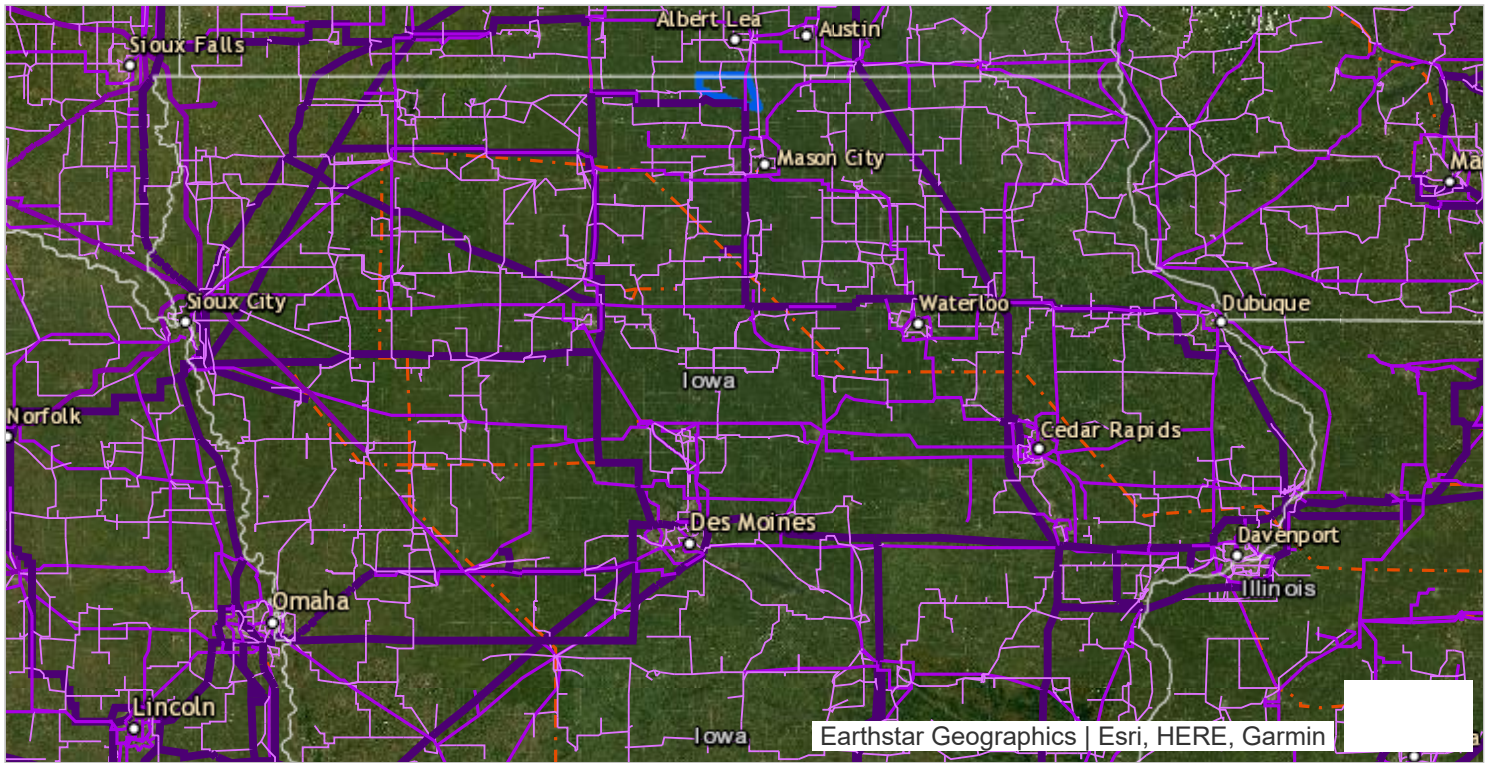


## Overview

- **Development Overview**
- **Environmental Overview**
- **Engineering Overview**
- **Development Agreement**
  - Vested Rights
  - Existing Iowa Ordinances
- **Economic Benefits**
- **Conclusion**







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### Iowa Transmission

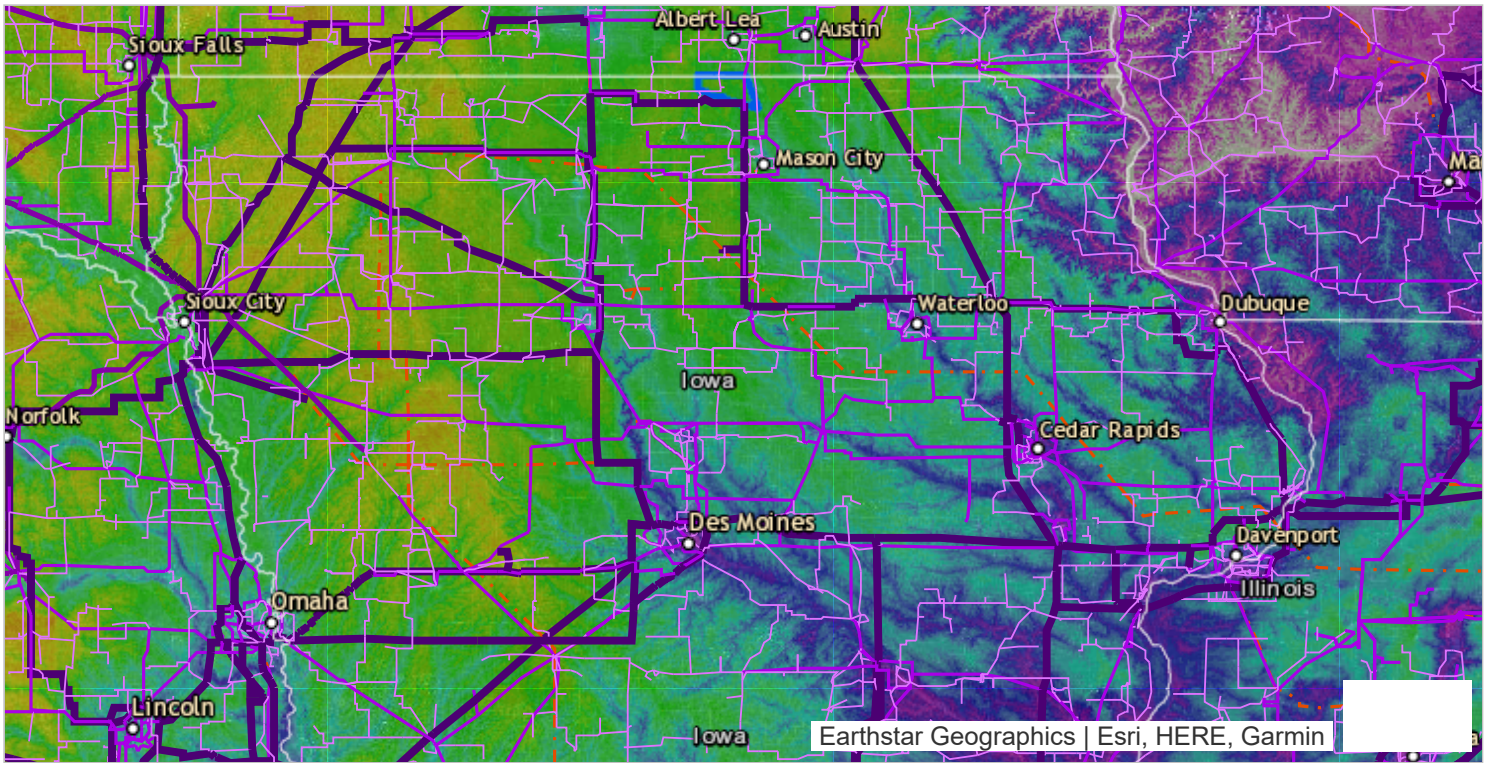
#### Ventyx Transmission Lines - Operating

-  Under 100 kV
-  100 - 161 kV
-  230 - 300 kV
-  345 - 500 kV

#### Ventyx Transmission Lines - Proposed

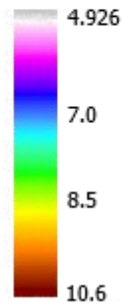
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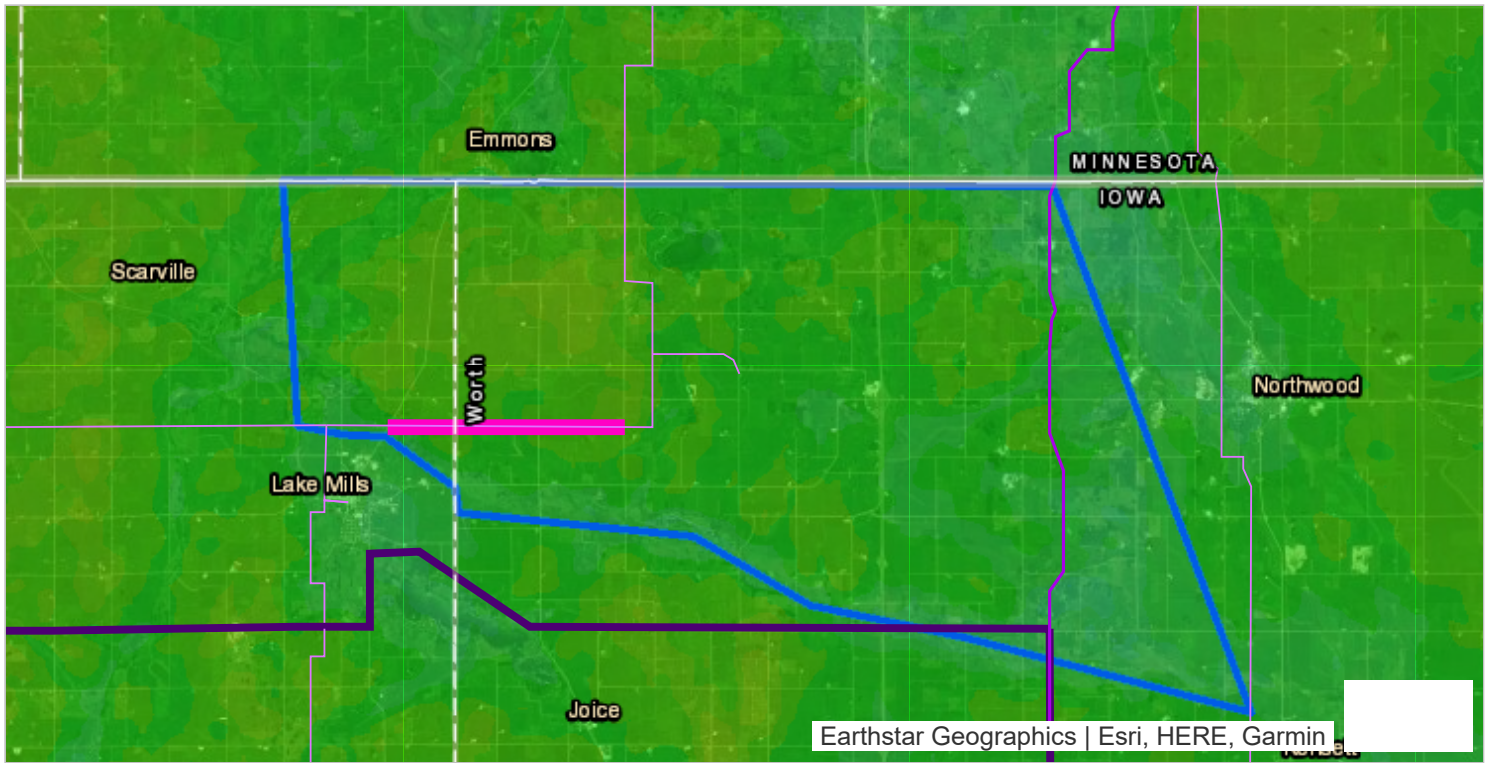




Wind Resource

Average Wind Speed At  
100 Meters (m/s)





Worthwhile Overview



Project Boundary



Ventyx Transmission Lines - Operating

- Under 100 kV
- 100 - 161 kV
- 230 - 300 kV
- 345 - 500 kV

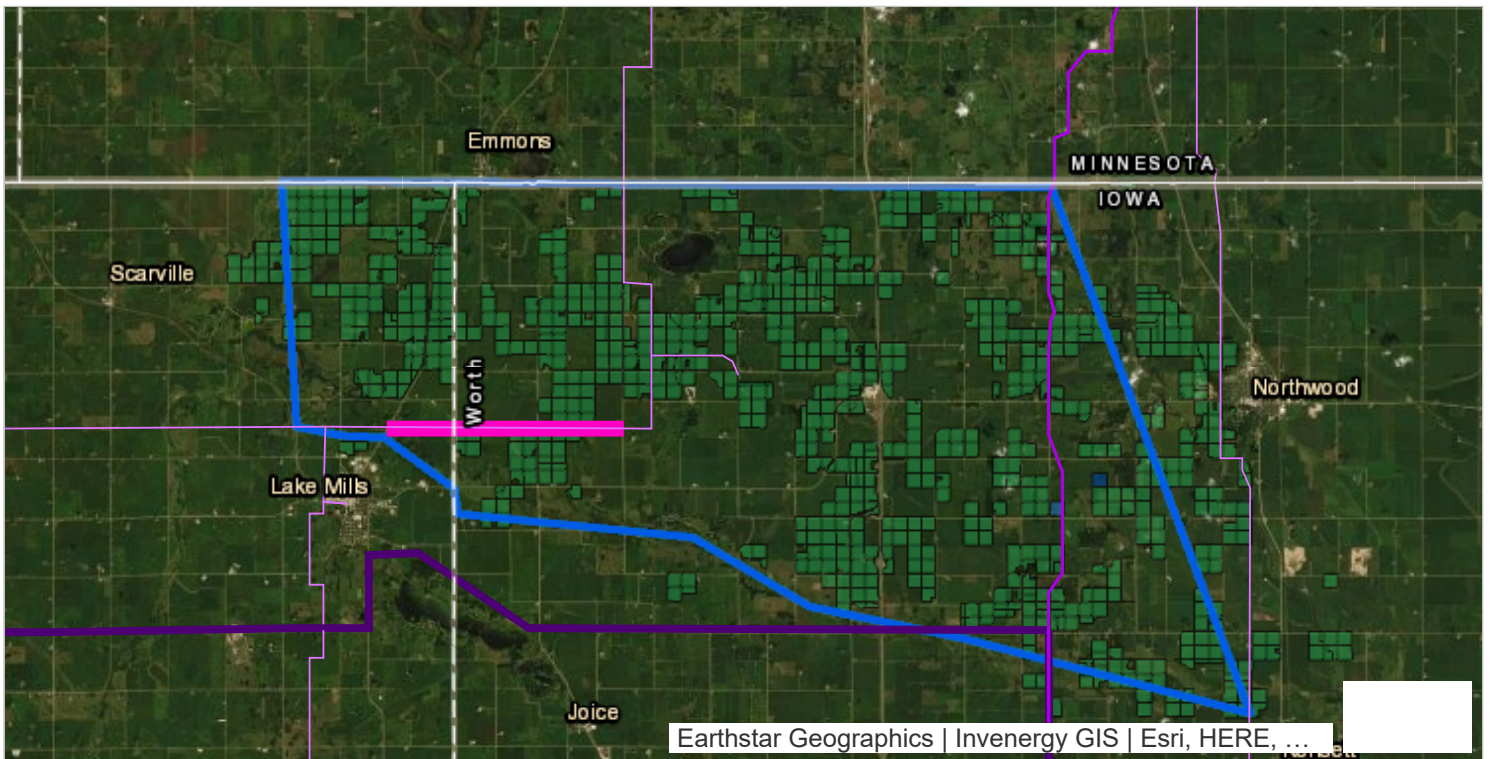
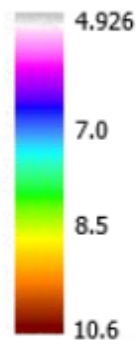
Ventyx Transmission Lines - Proposed



Ledyard (ITC) to Colby 345 kV



Average Wind Speed At 100 Meters (m/s)



## Landowner Overview

## Landowner Status

- Participating - Wind Agreement
- Participating - Option
- Participating - Transmission Agreement

## Development Conclusion

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- **Project area selected due to available/new transmission capacity**
- **Historically supportive County**
- **Windy location makes it an ideal place in the state for new generation**
  - Strategically located on state borders
- **Generally open and available land with large supportive base**
  - First agreement signed 6/29/2018
  - 200 participating land owners (over 90% of participants are lowans)
  - 30,000 participating acres
- **Great location to continue and build upon the leadership of renewables in Iowa and Worth County**

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## Environmental Overview

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- **Site Characterization Study**
  - Land Cover
  - Bat Habitat
  - Protected Lands
- **Raptor Nest Surveys**
  - Bald Eagle Tracking
- **Avian Use Surveys**
- **Environmental Setback Overview**



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# Site Characterization Study

## Objectives

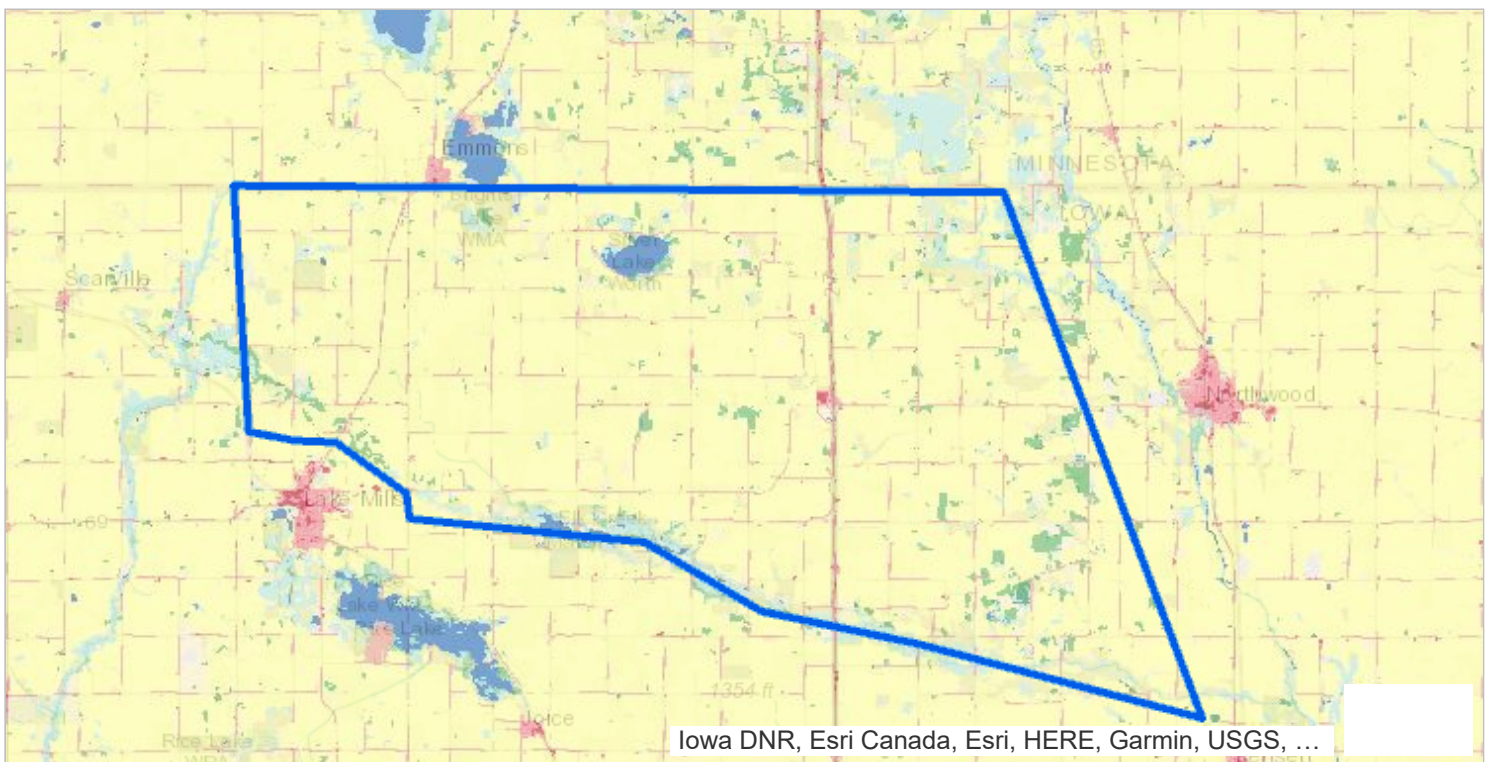
- To assess the potential for species of concern and their habitats while reviewing other natural resources within the Project Area, following the approach recommended in the USFWS's Land-based Wind Energy Guidelines.
- Identify suitable roosting and foraging habitat for the northern long-eared bat within the Project Area

## Methods

- Used existing information obtained from publicly available sources including online databases, GIS data, and IDNR *High Resolution Land Cover of Iowa* with aerial imagery
- Agency consultation to obtain rare, threatened and endangered plant and animal records for the Project Area
- Site reconnaissance conducted in spring 2019 followed by manual review conducted by experienced GIS expert and bat biologist to refine boundaries of forested habitat

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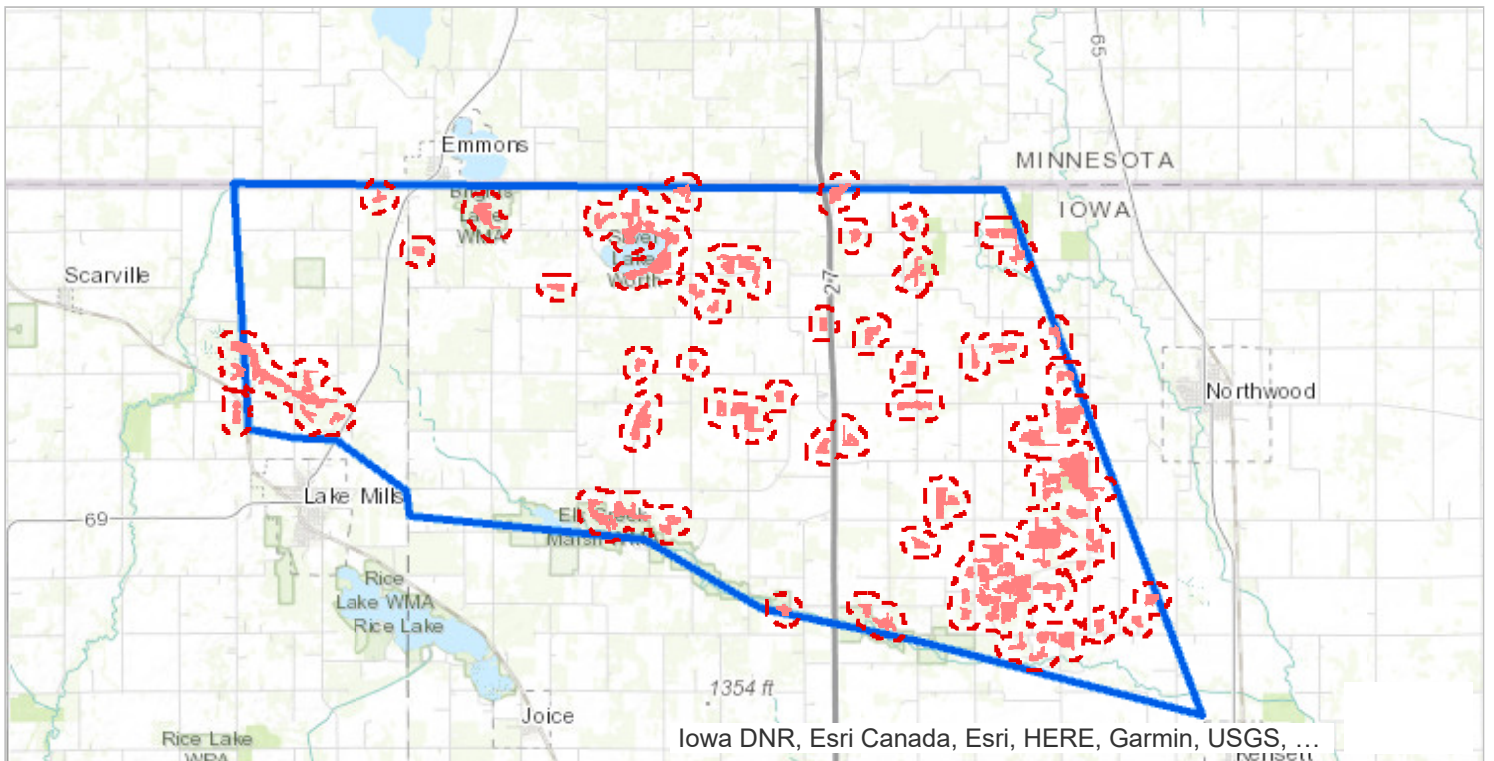
Confidential Business Information 1



National Land Cover Database

USA NLCD Land Cover

-  Open Water
-  Perennial Snow/Ice
-  Developed Open Space
-  Developed Low Intensity
-  Developed Medium Intensity
-  Developed High Intensity
-  Barren Land
-  Deciduous Forest
-  Evergreen Forest
-  Mixed Forest
-  Dwarf Scrub
-  Shrub/Scrub
-  Grassland/Herbaceous
-  Sedge/Herbaceous
-  Lichens
-  Moss
-  Pasture/Hay
-  Cultivated Crops
-  Woody Wetlands
-  Emergent Herbaceous Wetlands



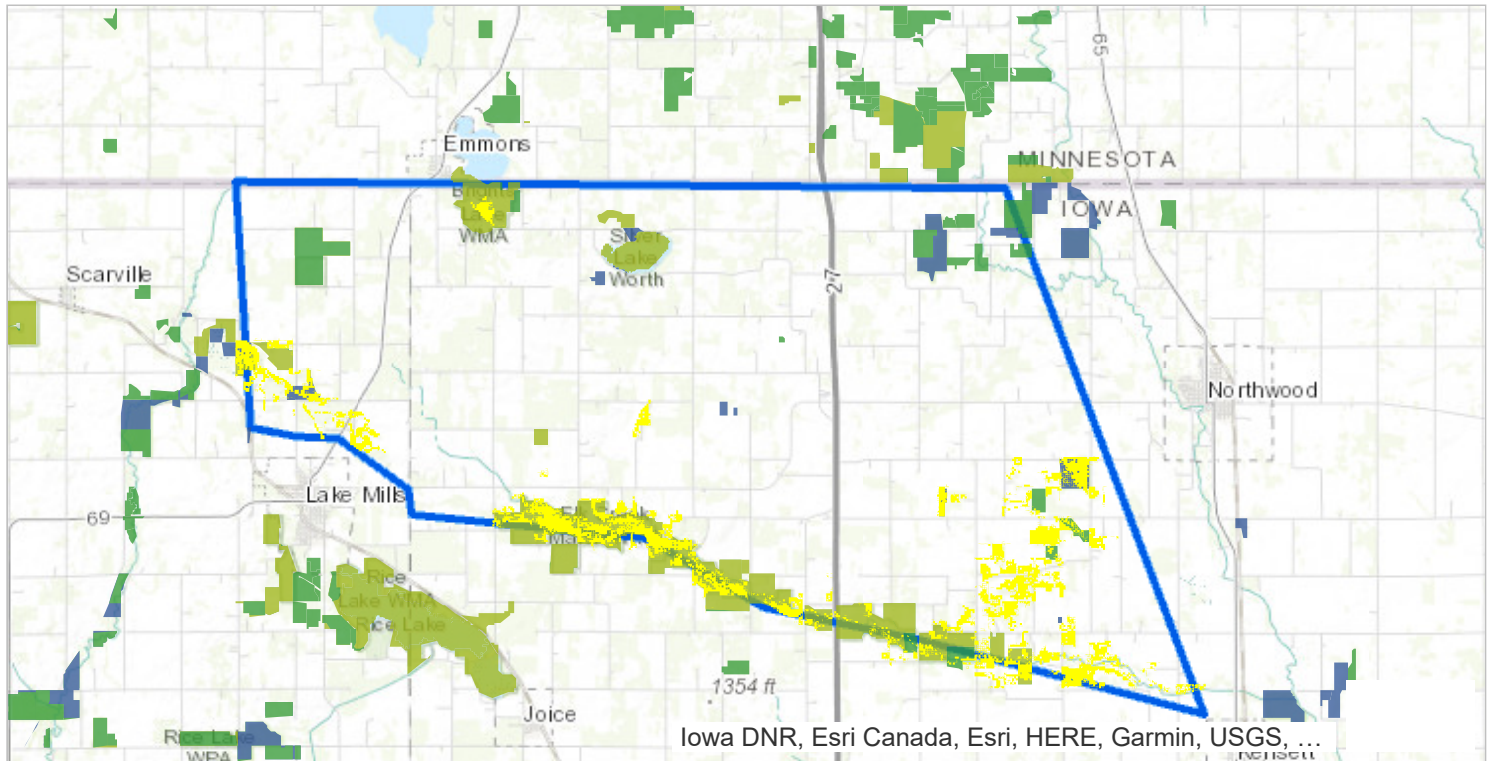
Potential Bat Habitat



Potential NLEB Habitat



Potential NLEB Habitat  
1000ft Buffer



Environmentally Sensitive Lands

40 acre Habitat



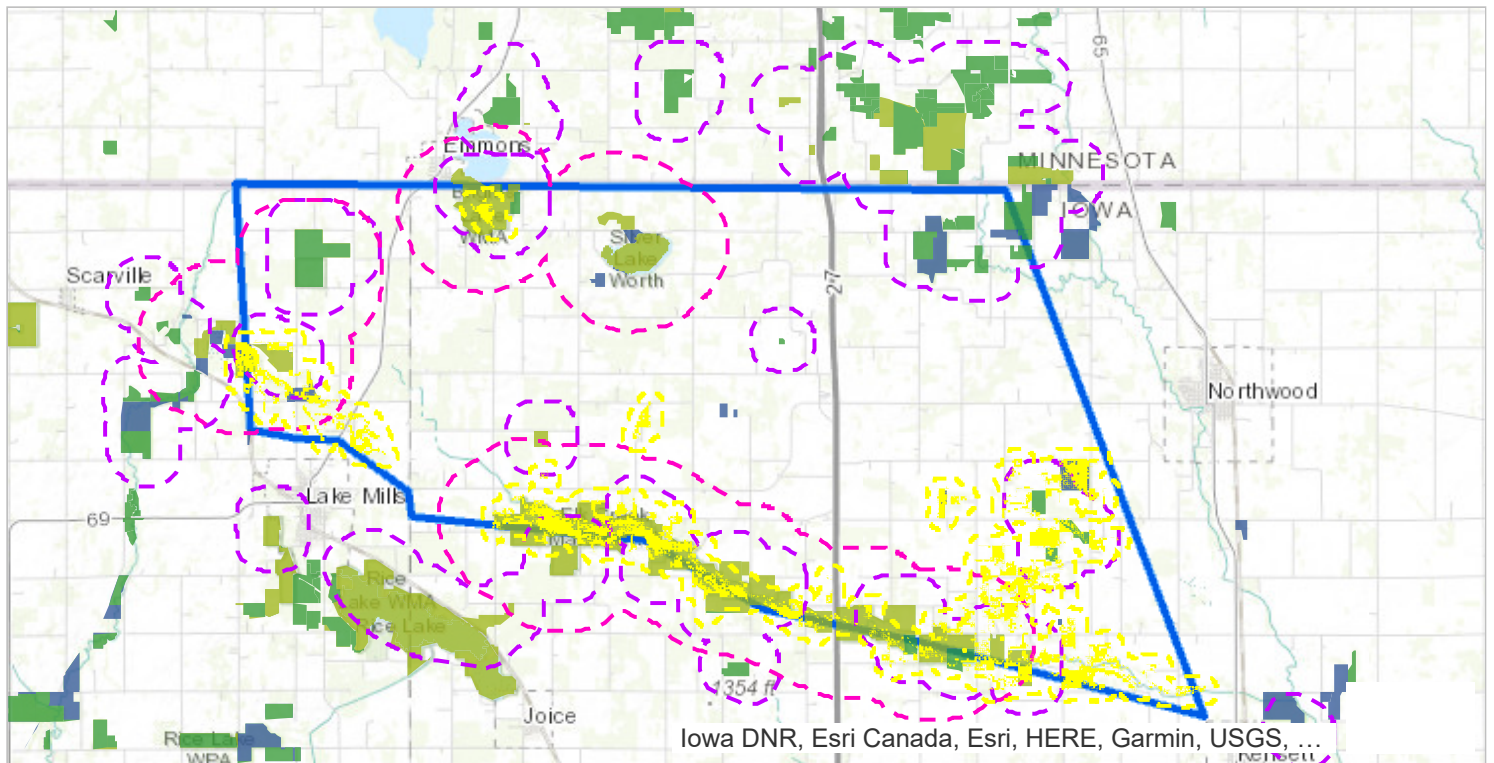
USA Protected Areas by  
Manager Type



Federal



State



Environmentally Sensitive Lands

#### Protected Land Buffer

- One Mile from WMAs
- Half Mile from other PADUS
- 1000ft from 40 acre habitat

## Raptor Nest & Eagle Flight Path Surveys

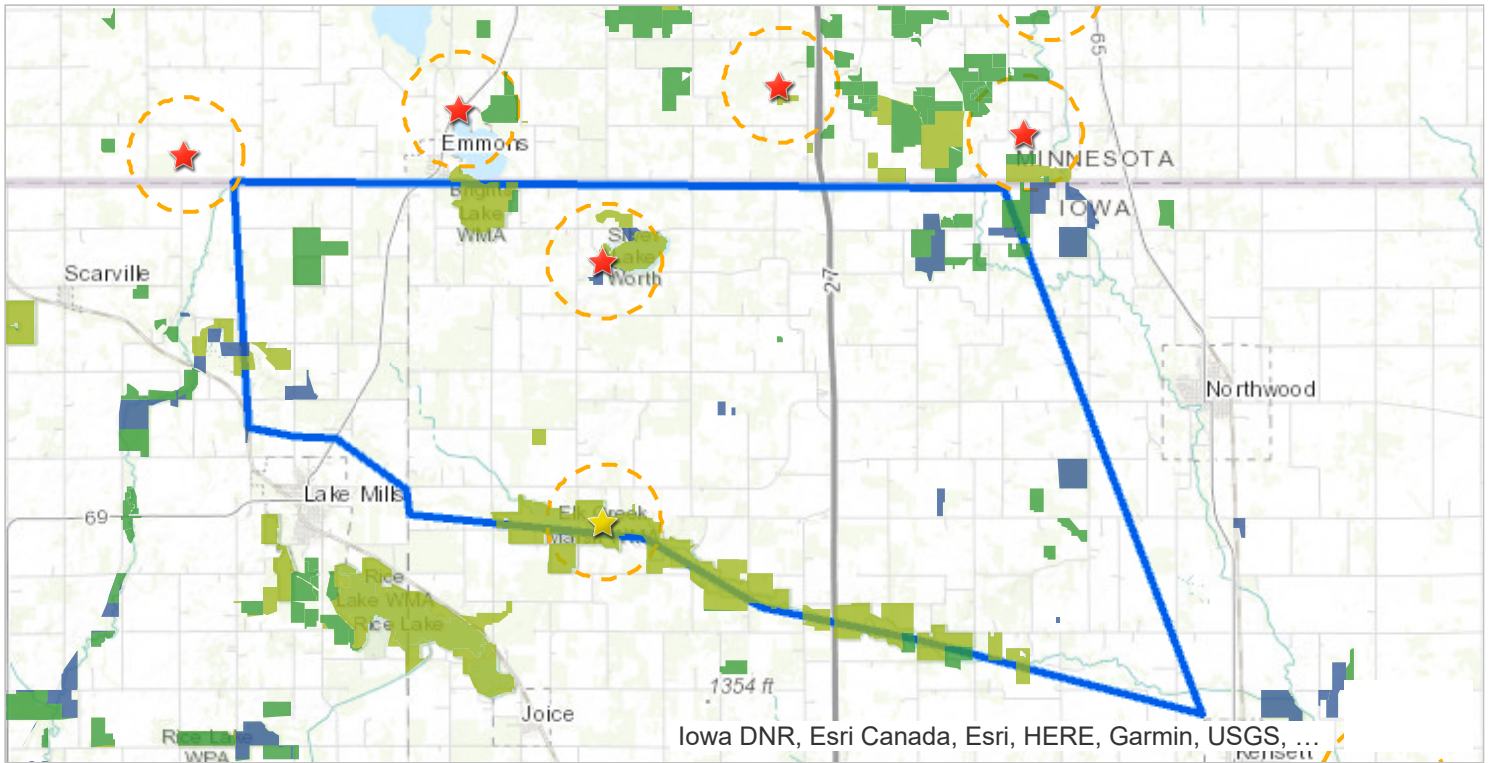
### Objectives

- Identify locations and occupancy status of potential raptor nest structures within the Project Area
- Determine nest occupancy status for eagle nests located within the Project Area and delineate eagle flight paths from nest

### Methods

- Following methods in USFWS Eagle Conservation Plan Guidance
- Eagle Nest Survey Area: targeted suitable nesting habitat
  - Studied in 2019 & 2021
    - 2019 – Aerial (fixed-wing aircraft) survey and ground-based confirmation survey
    - 2021 – Ground-based confirmation survey of bald eagle nests previously identified within the Project Area
  - Observed nests from distance to prevent disturbance of nesting eagles
  - Twice per month during the survey period, observed nests to determine:
  - Nest success





### Bald Eagle Survey Results

#### Raptor Nest Survey

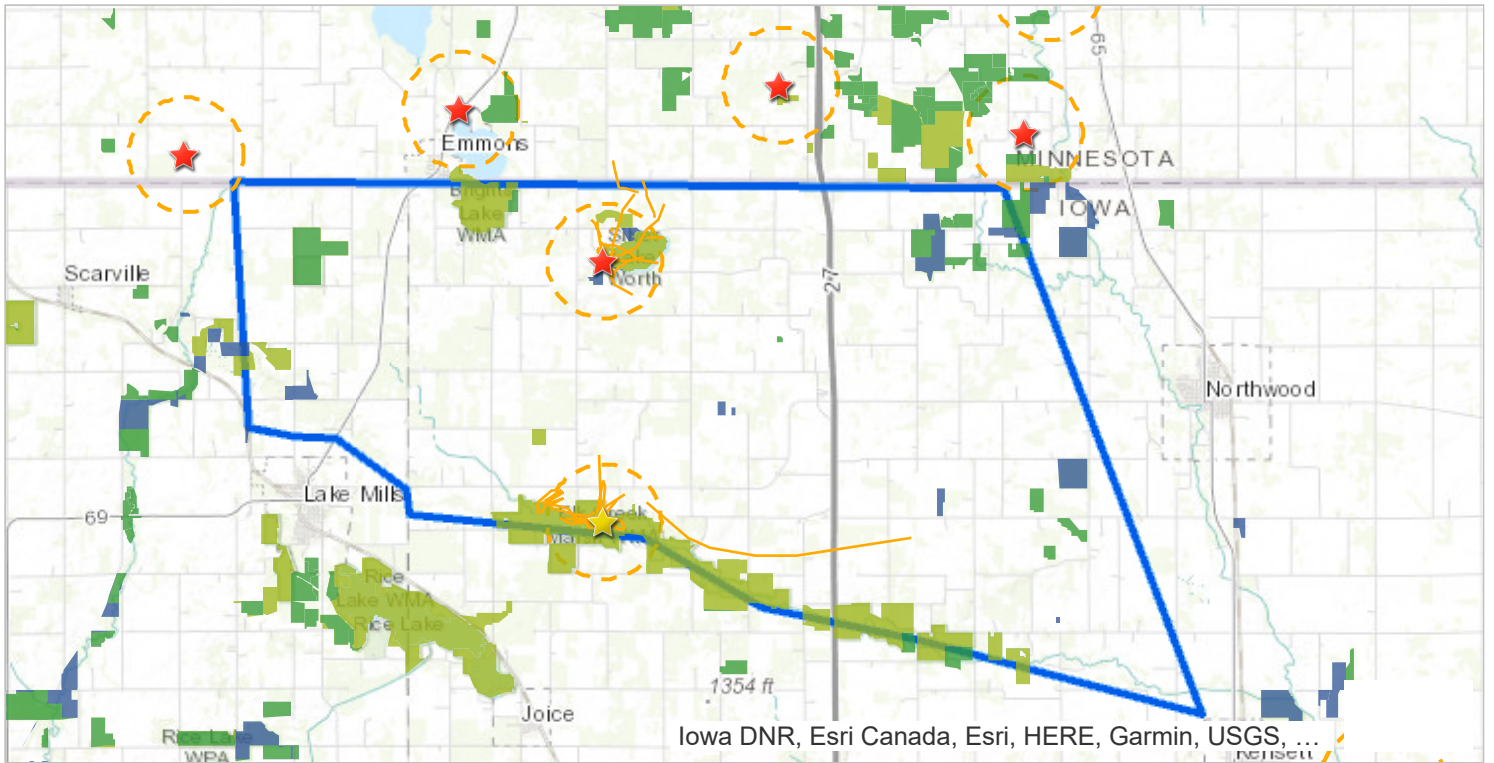
- ★ BAEA - Occupied/Active
- ★ BAEA - Historic

#### Bald Eagle Nest 1 mile Buffer



#### USA Protected Areas by Manager Type

- Federal
- State



### Bald Eagle Survey Results

#### Raptor Nest Survey

- ★ BAEA - Occupied/Active
- ★ BAEA - Historic

#### Bald Eagle Flight Paths



#### Bald Eagle Nest 1 mile Buffer



#### USA Protected Areas by Manager Type

- Federal
- State





### Raptor Nest Survey

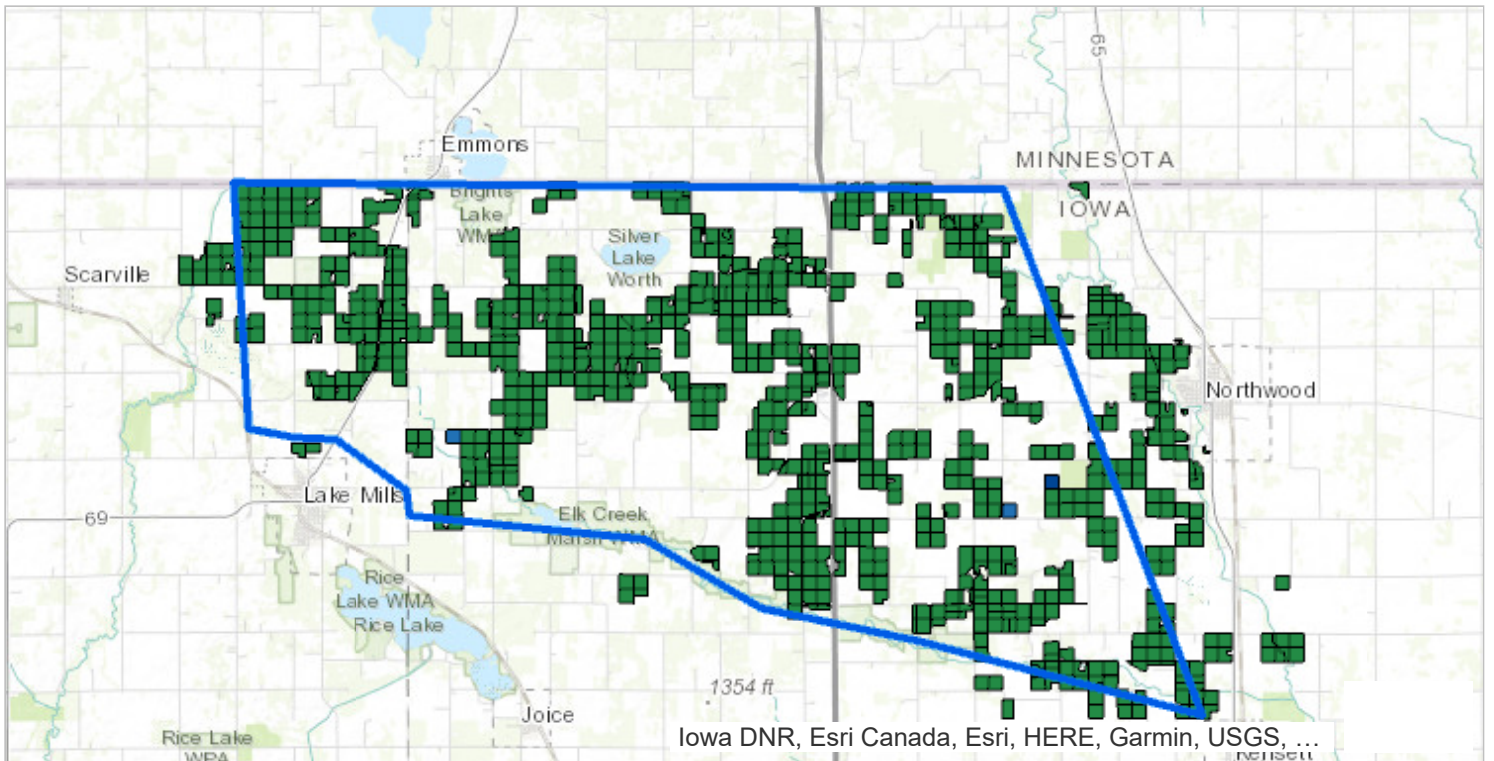
- ★ BAEA - Occupied/Active
- ★ BAEA - Historic

### Eagle Use: April 2019 - March 2020

- > 0.87 To 1.09
- > 0.65 To 0.87
- > 0.43 To 0.65
- > 0.22 To 0.43
- 0.01 To 0.22
- 0

### Buffers

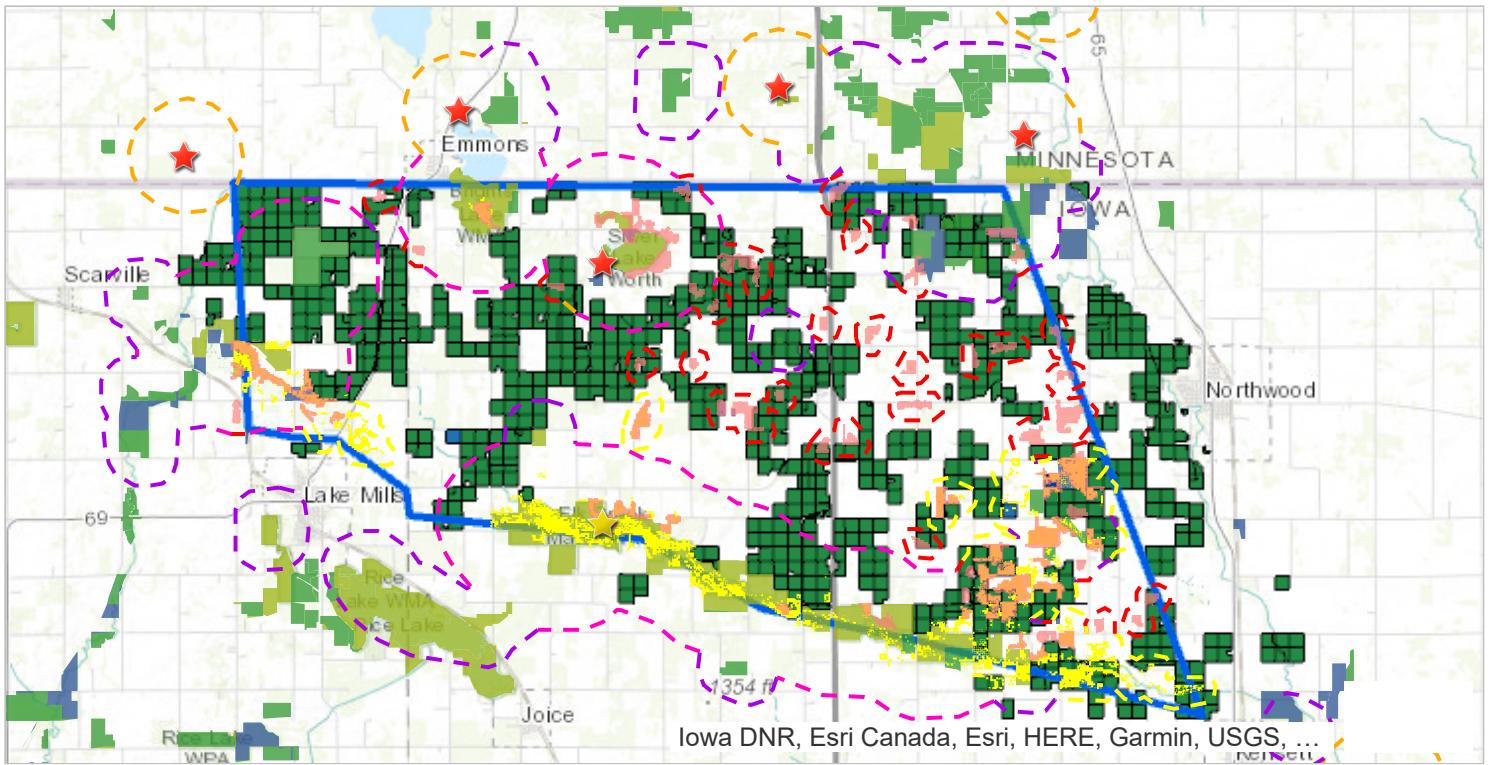
- One Mile from Bald Eagle Nest
- One Mile from WMAs
- Half Mile from other PADUS



Participating Land

Landowner Status

- Participating - Wind Agreement
- Participating - Option
- Participating - Transmission Agreement



Environmental Setback Summary

Total Environmental Setback by Type

- One Mile from WMAs
- Half Mile from other PADUS
- 1000ft from 40 acre habitat
- One Mile from Bald Eagle Nest

## Environmental Overview - Conclusion

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- **Site Characterization Study**
  - Followed the USFWS Land-Based Energy Guidelines & IDNR data layers
  - Resulted in intensely studied footprint with industry accepted setbacks to protect sensitive areas
- **Raptor Nest Studies**
  - Eagle flight mapping to better understand flight patterns, reviewed all potential habitat in the project area
- **Avian Use Study**
  - Fully classified the site to understand all avian activity in the area
  - No federally threatened or endangered species found
  - Followed USFWS guidelines

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## Environmental Overview – Conclusion Continued

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- **Setbacks**
  - One mile from active eagle nests
  - Half Mile from PADUS (Protected Area Database – United States)
  - 1,000 ft for contiguous 40 acre habitat
  - One mile from WMA (Wildlife Management Area)
- **IDNR Consultation in 2019 and 2021**
  - IDNR expressed no concerns with setbacks at the recent meeting
- **USFWS Consultation in 2019, 2020, & 2021**
- **Worth County Conservation Consultation in 2021**
- **Project area extensively studied to result in low environmental impact or risk**

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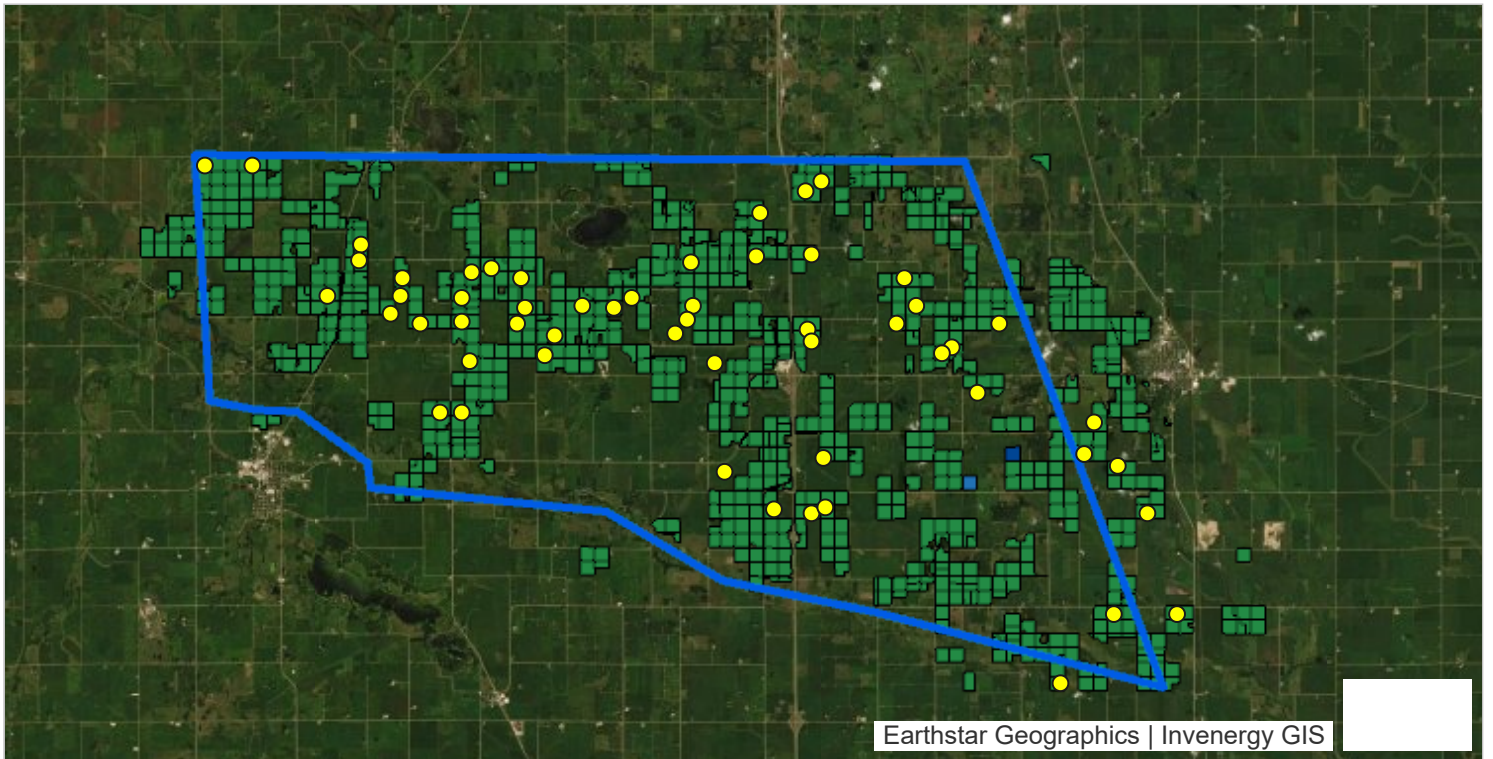


# Engineering Overview

- **Site Layout**
  - Primary vs Alternate
- **Setback Depiction**
- **Sound**
- **Flicker**
- **Engineering Conclusion**



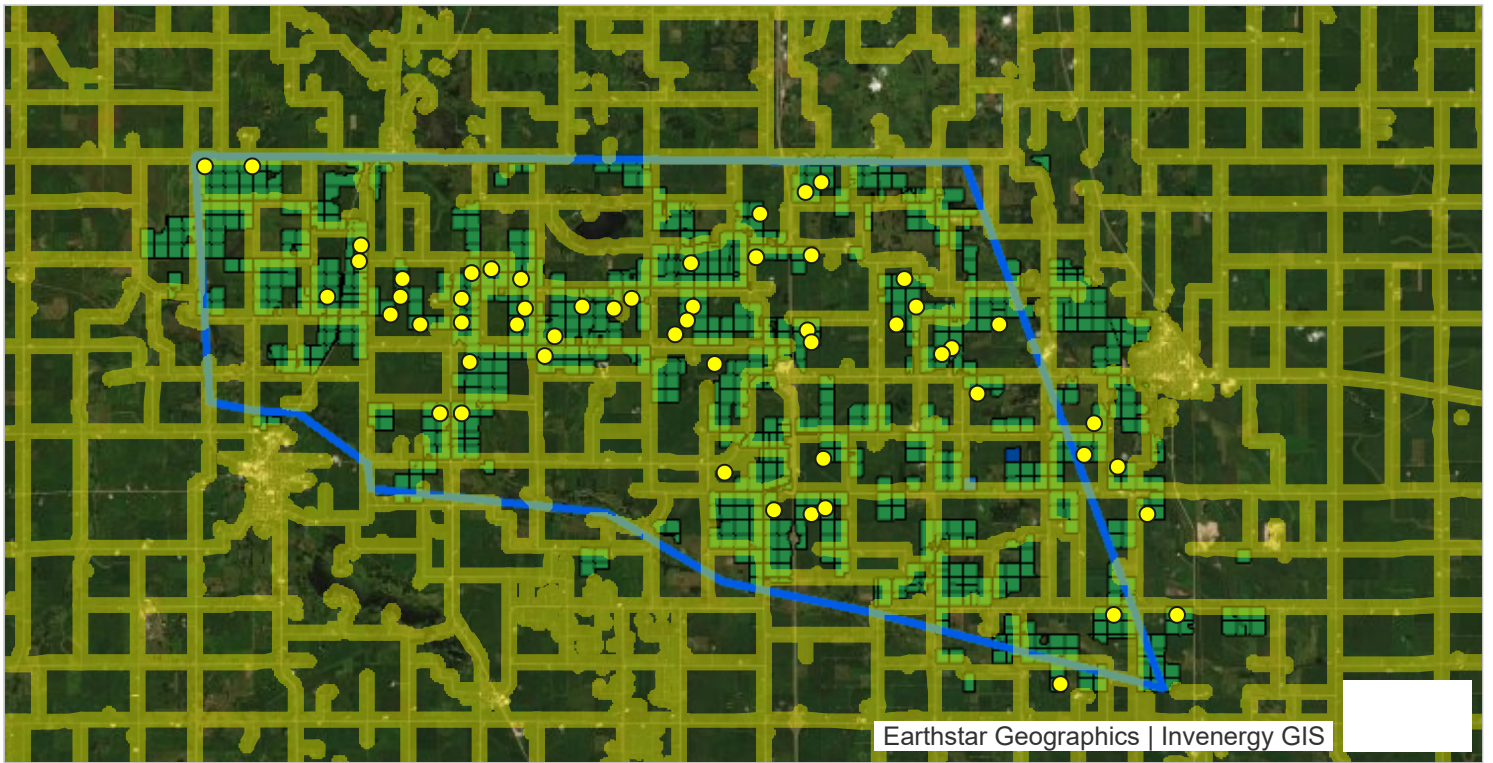
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Participating Land

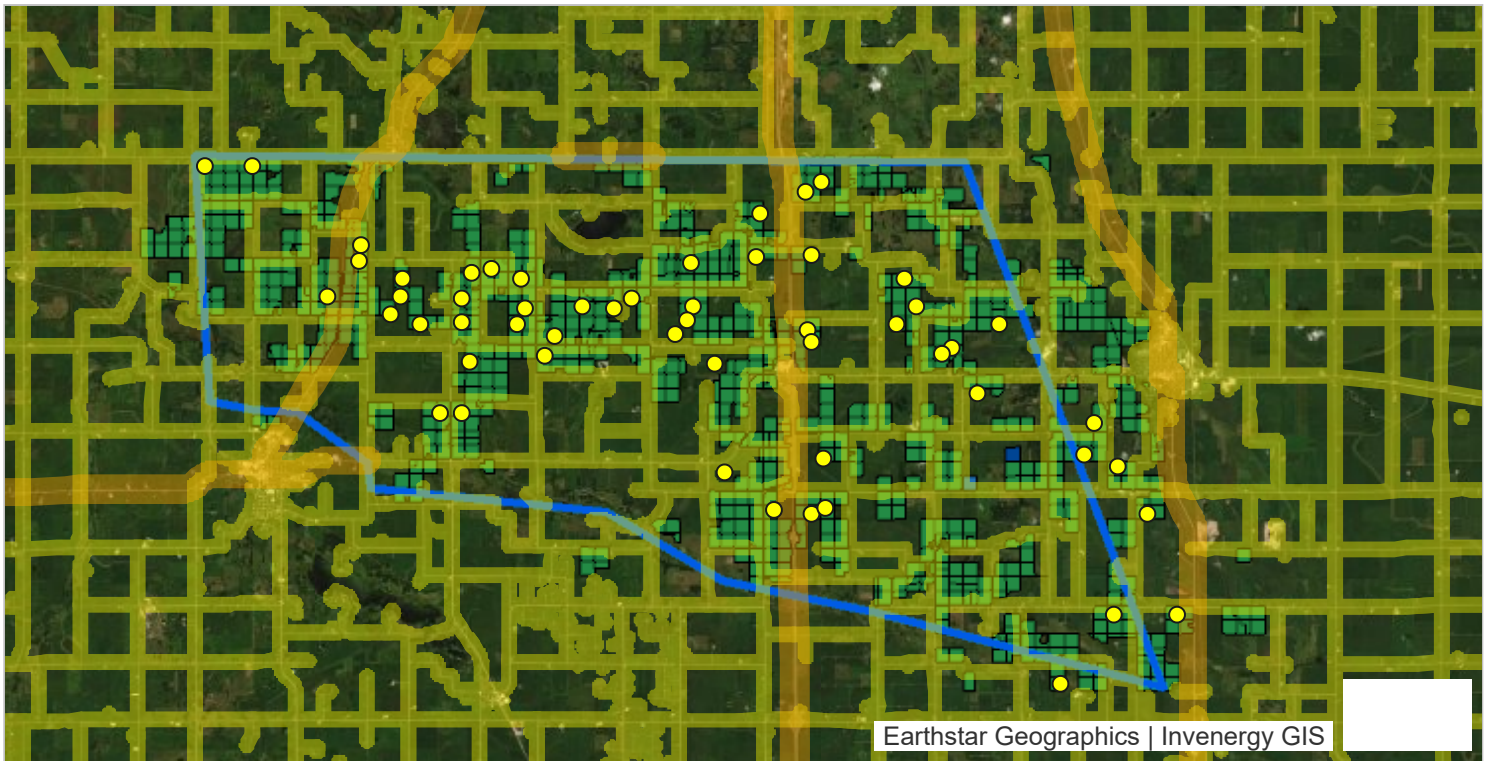


- Approximately 30,000 acres under agreement



Engineering Setbacks

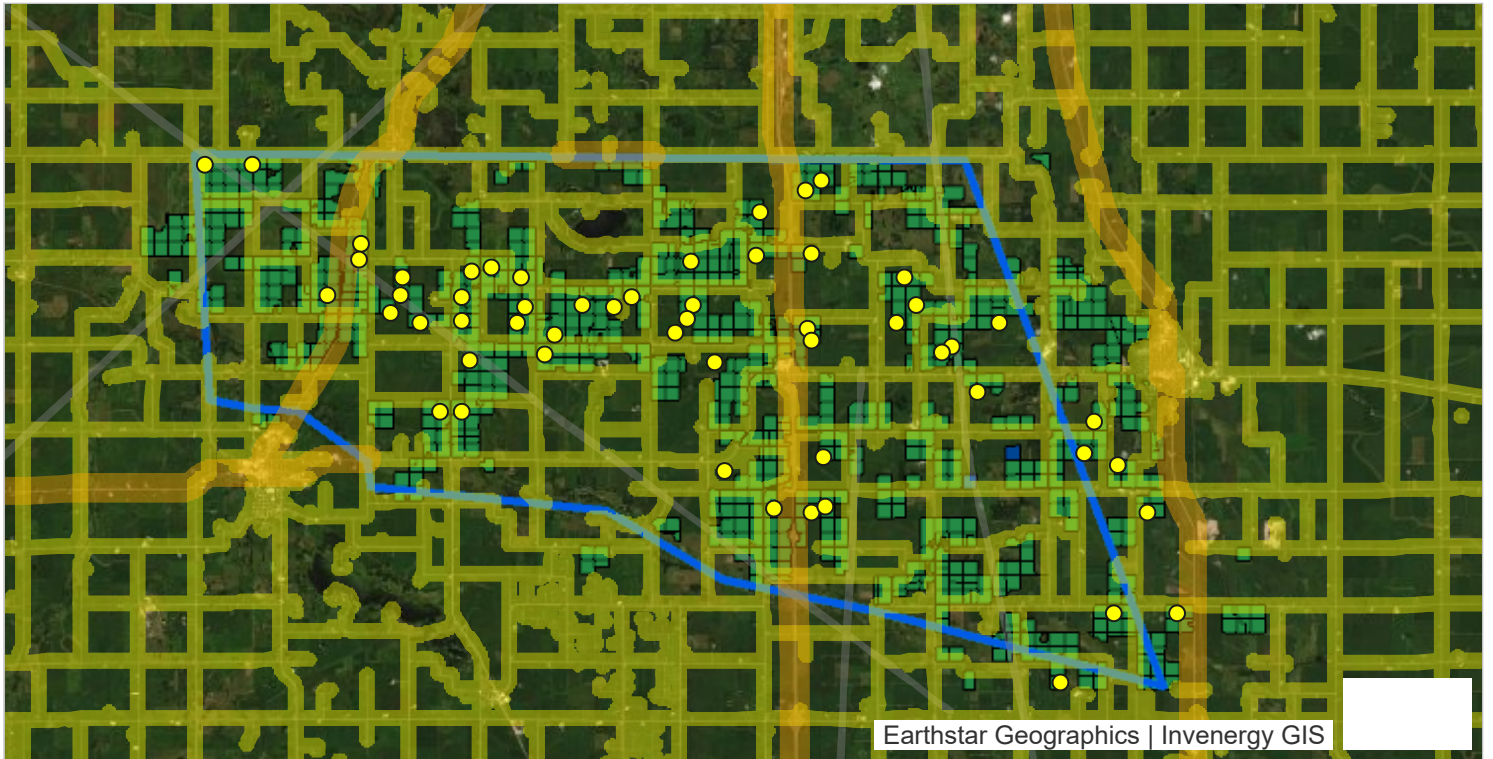
 Local Road



Engineering Setbacks



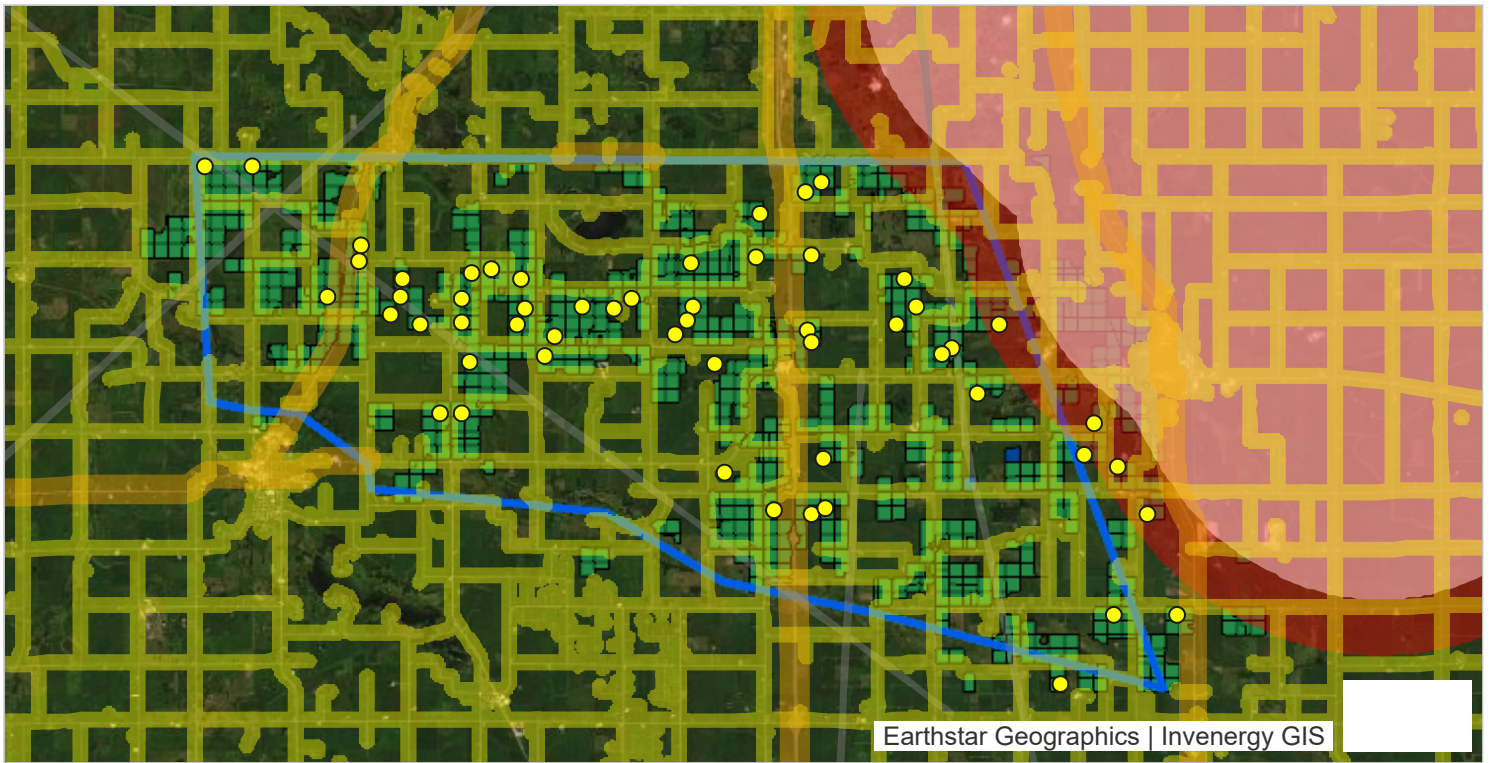
- Local Road
- Highway



Engineering Setbacks

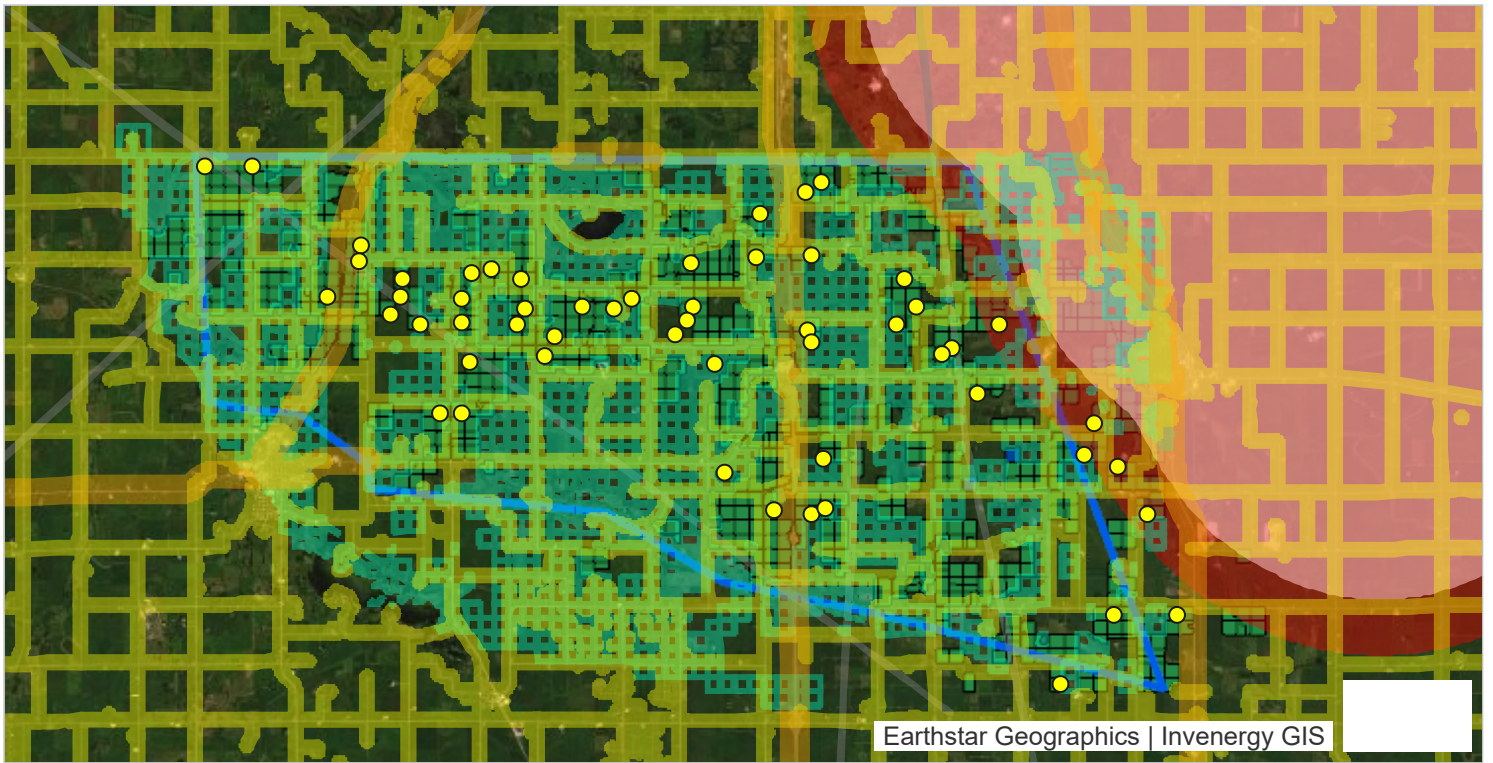
- Local Road
- Highway
- Microwave Path





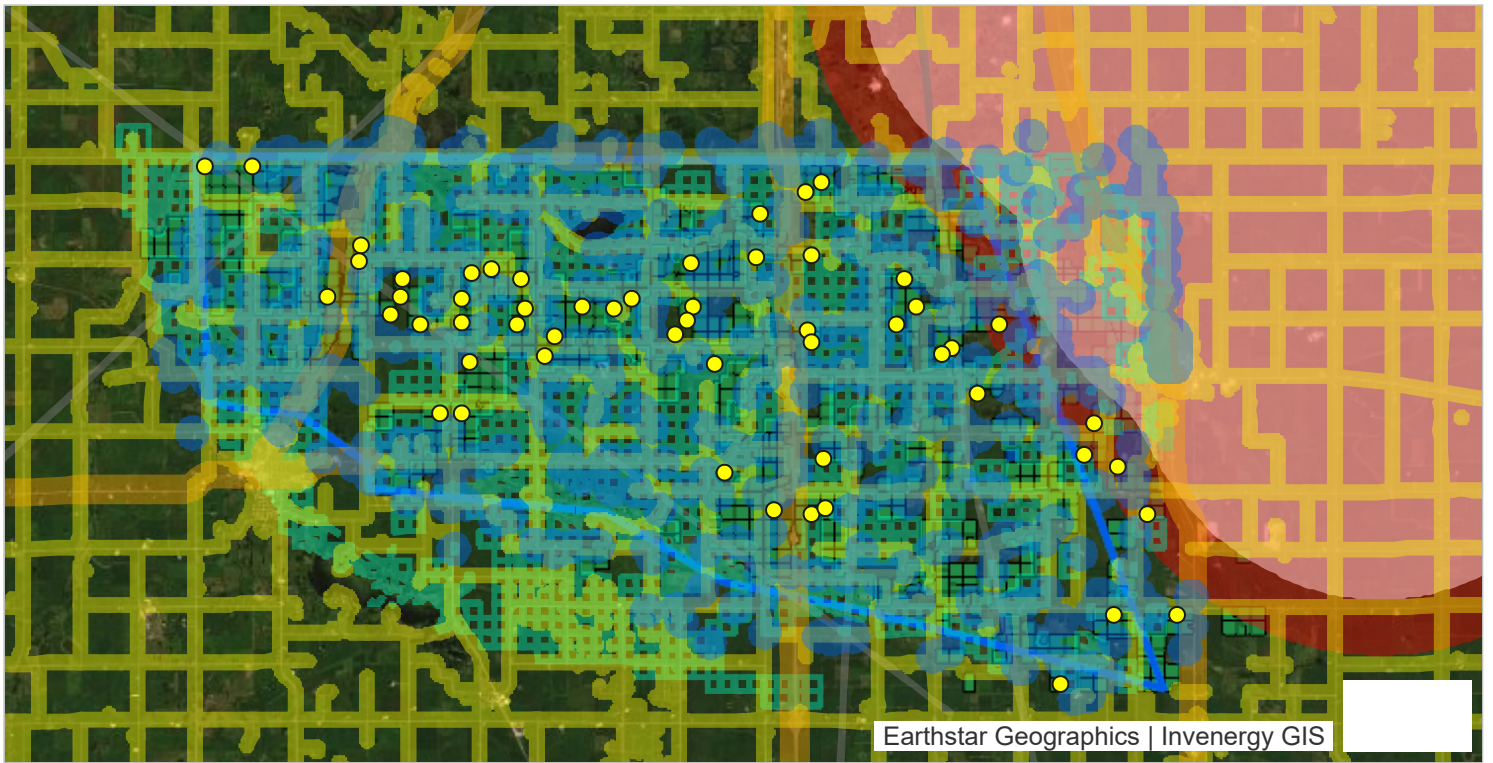
Engineering Setbacks

- Local Road
- Highway
- Microwave Path
- Freeborn Wind (4 miles)
- Freeborn Wind (5 miles)



Engineering Setbacks

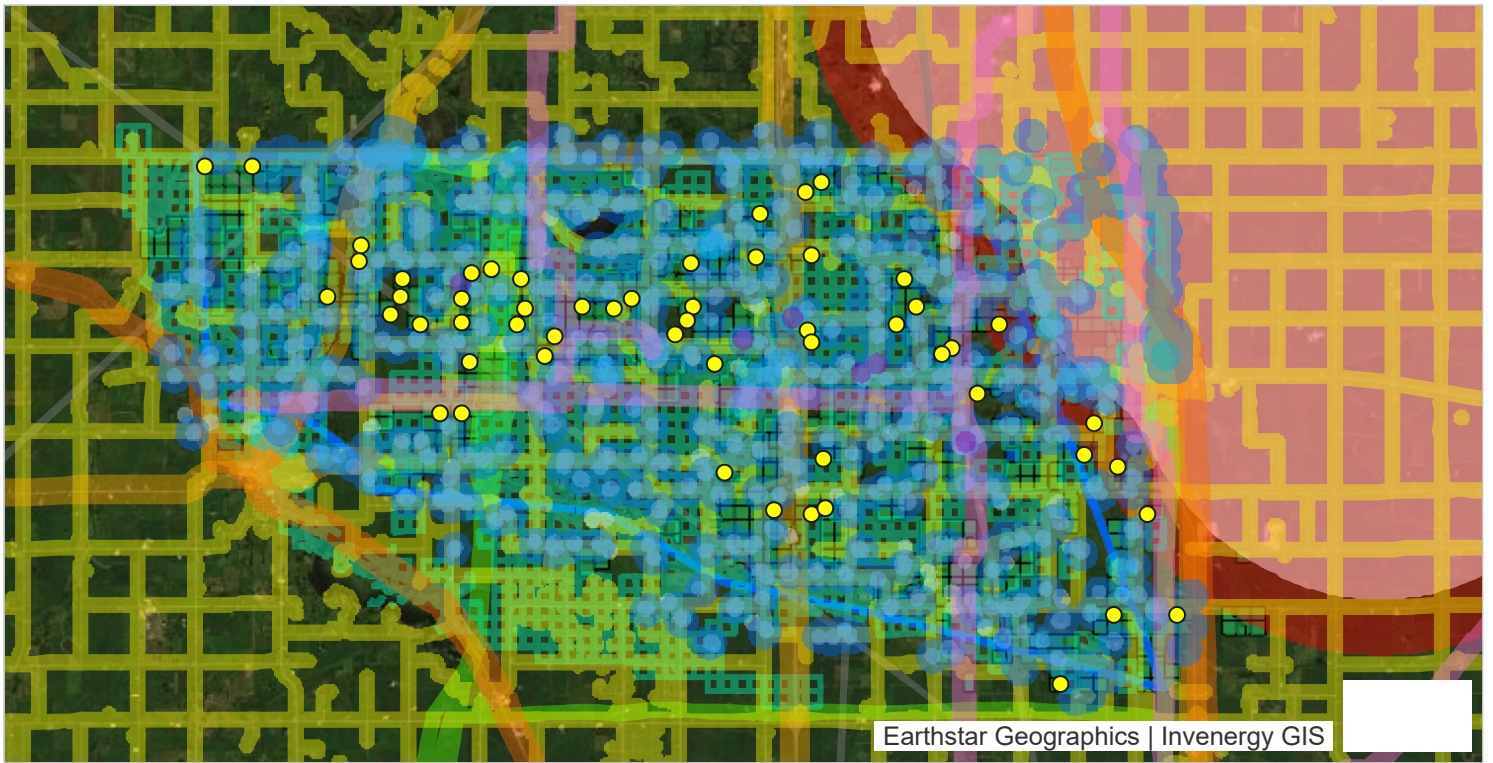
-  Local Road
-  Highway
-  Microwave Path
-  Freeborn Wind (4 miles)
-  Freeborn Wind (5 miles)
-  Property Line




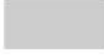








Engineering Setbacks

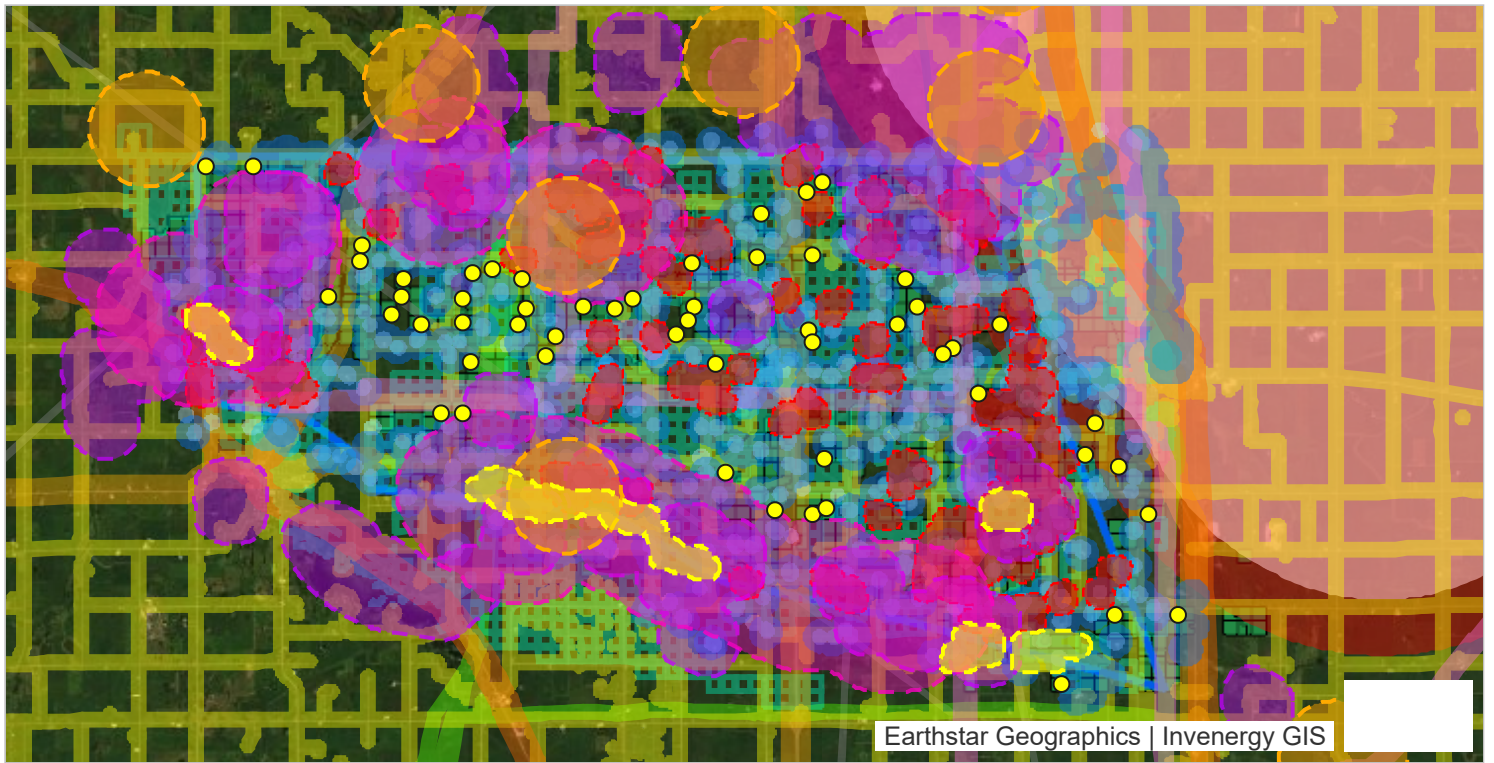
- Local Road
- Highway
- Microwave Path
- Freeborn Wind (4 miles)
- Freeborn Wind (5 miles)
- Property Line
- Residences





Additional Miscellaneous Setbacks

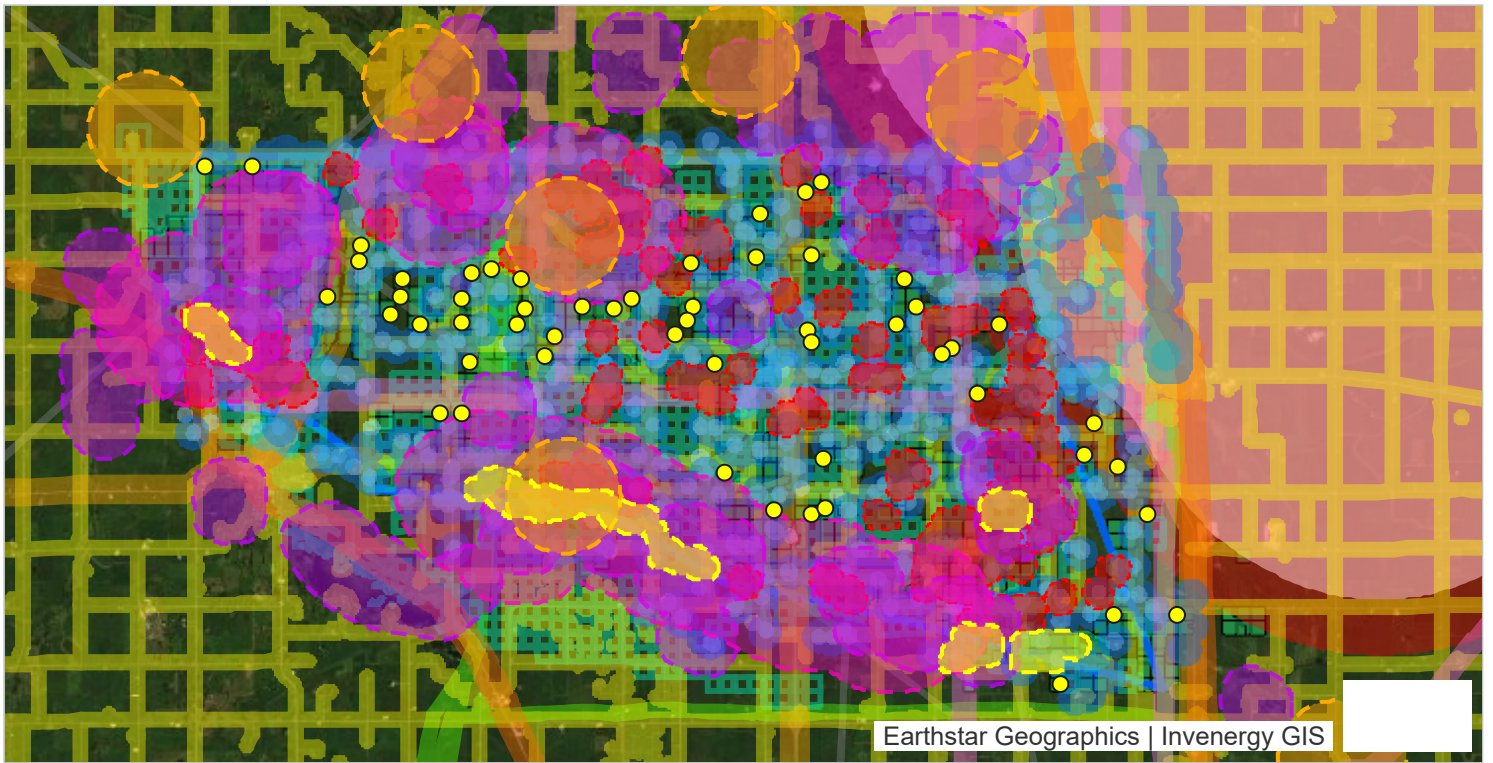
-  Local Road
-  Highway
-  Railroad
-  Microwave Path
-  Freeborn Wind (4 miles)
-  Freeborn Wind (5 miles)
-  Property Line
-  Residences
-  Commercial, Public, and Industrial Buildings
-  Farm, Livestock, and Other Buildings
-  Cemeteries
-  Communication Towers
-  Transmission Lines
-  Pipeline



Engineering & Environmental Setbacks



-  Local Road
-  Highway
-  Railroad
-  Microwave Path
-  Freeborn Wind (4 miles)
-  Freeborn Wind (5 miles)
-  Property Line
-  Residences
-  Commercial, Public, and Industrial Buildings
-  Farm, Livestock, and Other Buildings
-  Cemeteries
-  Communication Towers
-  Transmission Lines
-  Pipeline
-  40 Acre Habitat
-  Bald Eagle Nest
-  WMAs
-  Other PADUS
-  NLEB Habitat

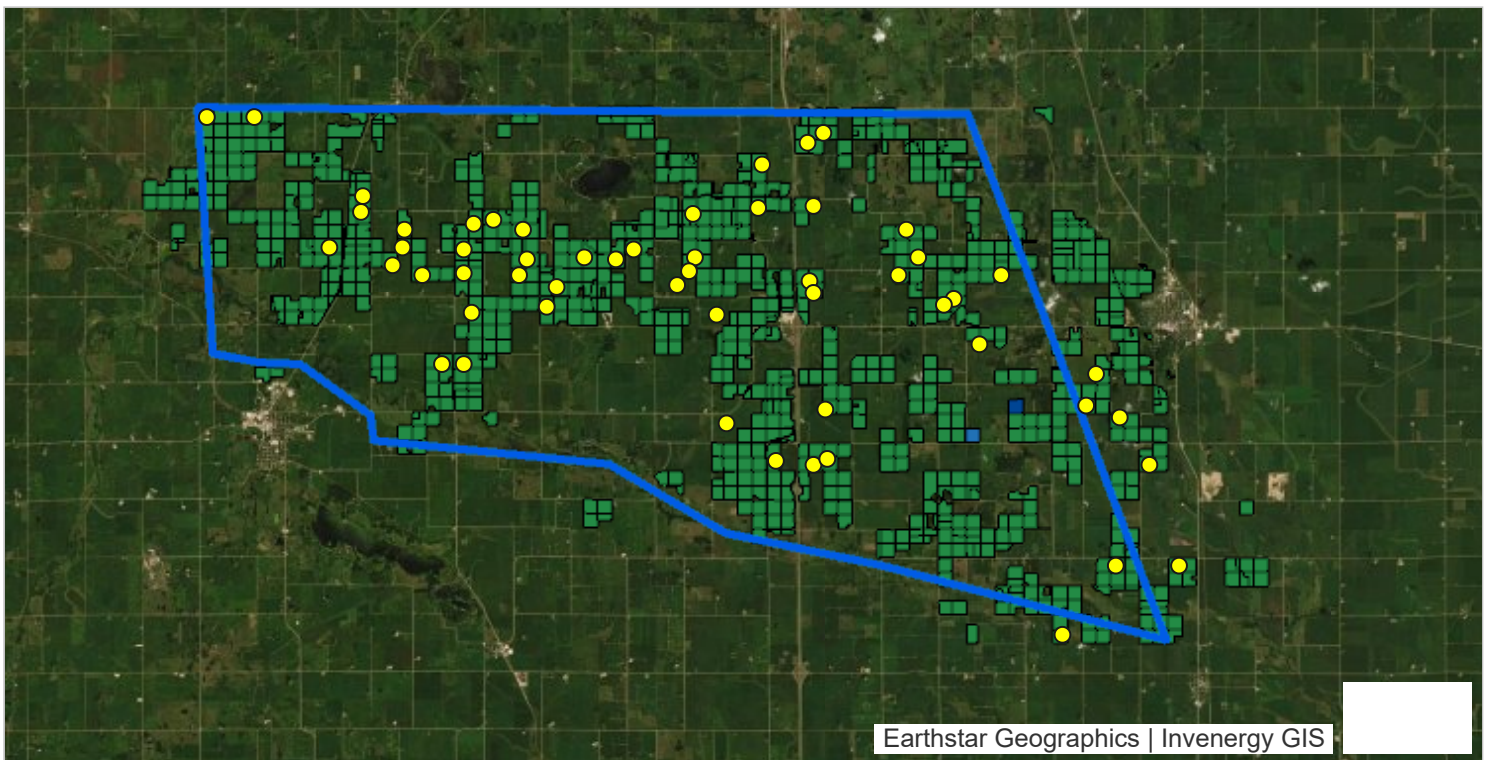


Turbine Layout

Turbine Location



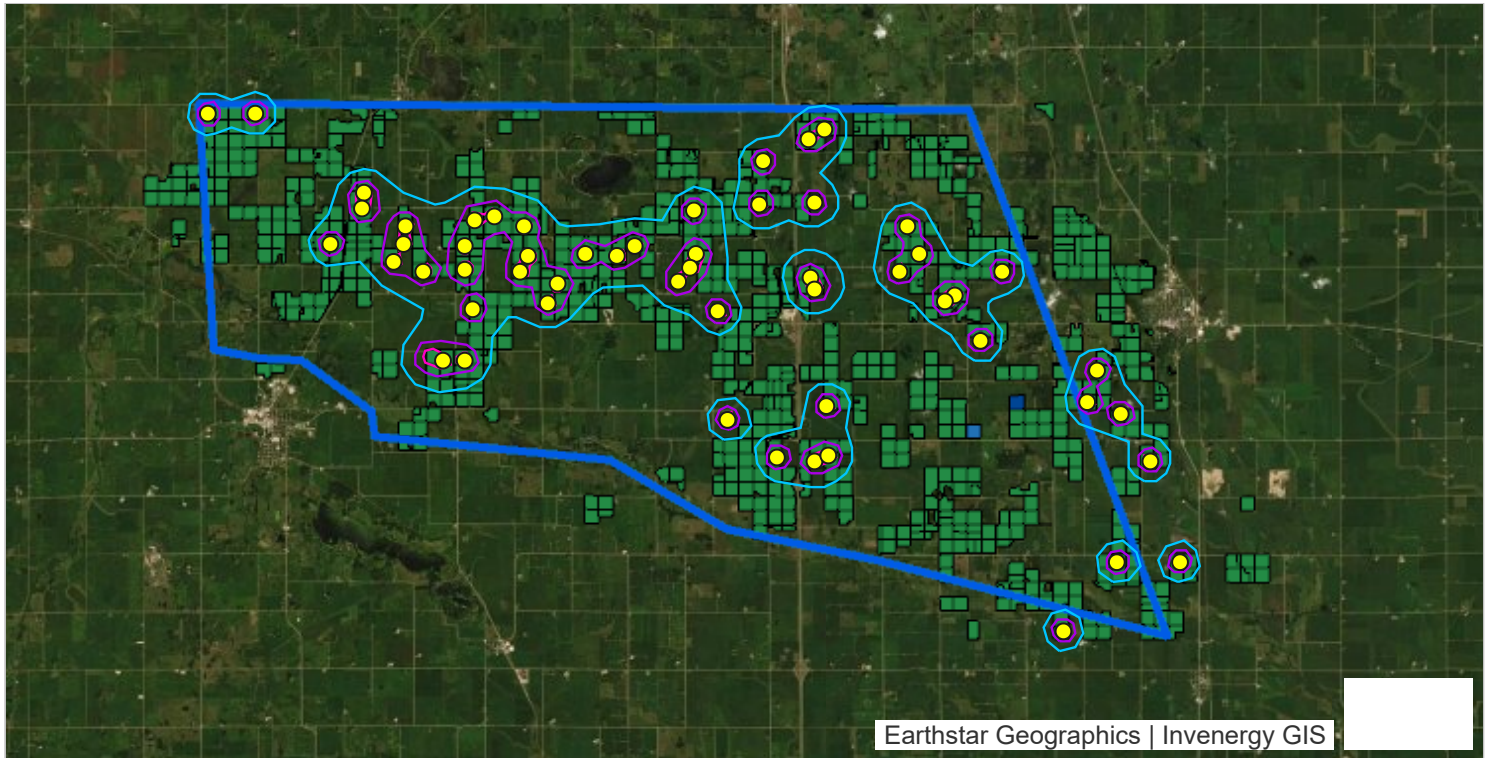
Approximately 1,700 acres suitable for citing turbines after all setbacks  
- Not including flicker and noise standard





# Turbine Layout

## Turbine Location

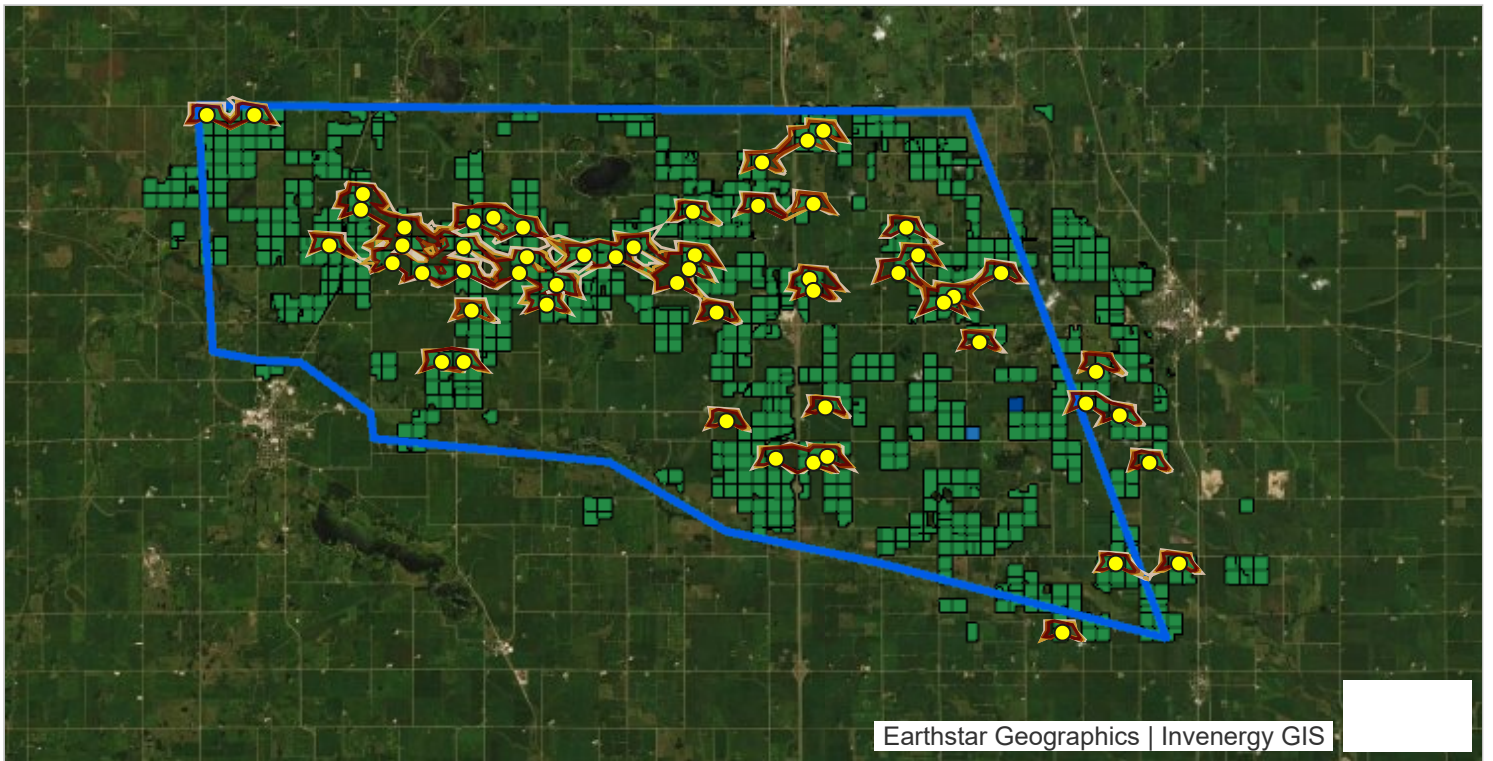


## Noise Study Results

### Noise Study Results (dBA)

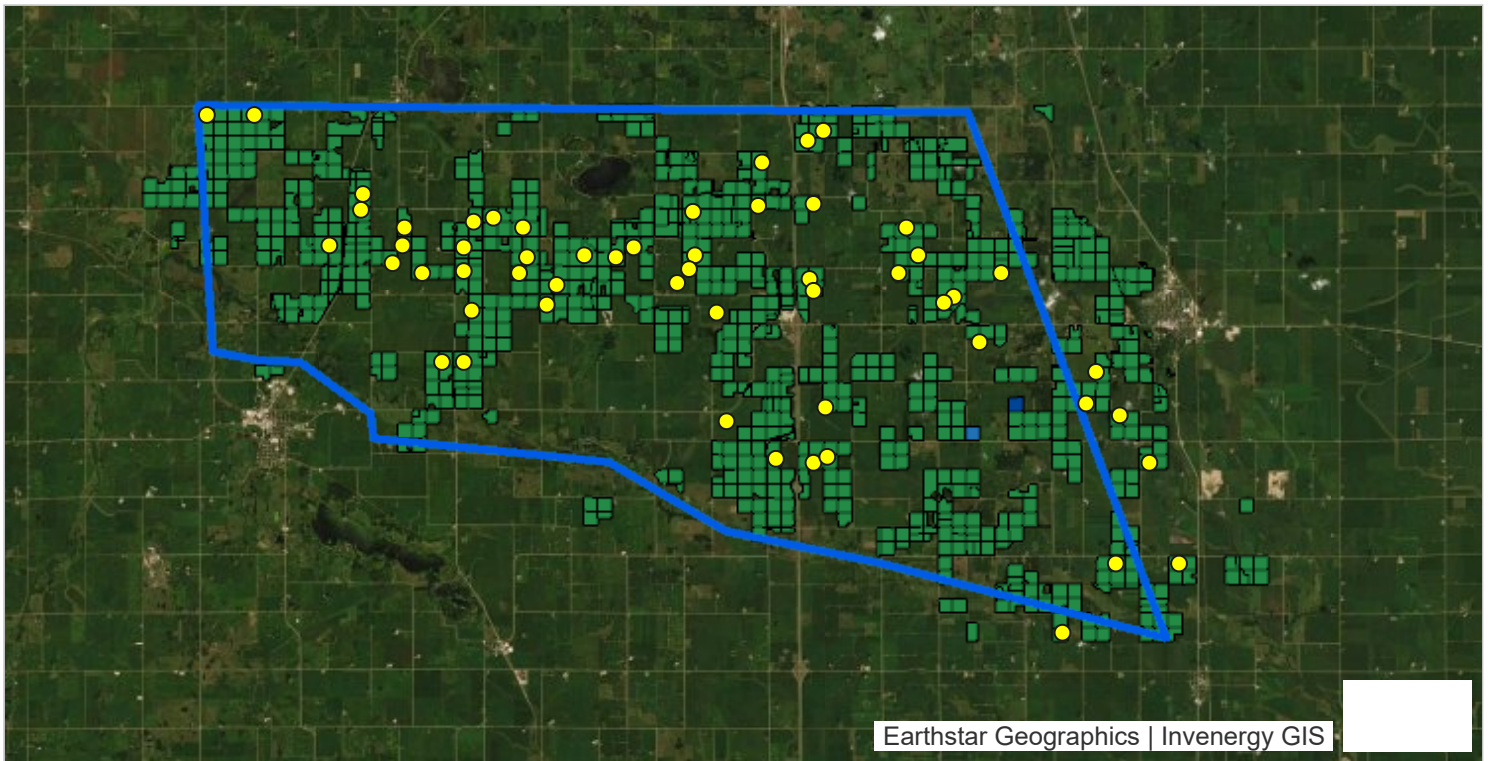
- 50
- 45
- 40





### Shadow Flicker Study Results





## Engineering Conclusion

- Extensive setbacks and design requirements
- Layout respecting non-participating parcels & residences
- Thoroughly studied, field verified, and vetted with participating owners
- Layout reflects all possible locations



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## Development Overview

- **Economic Benefit**
- **Development Agreement**
  - Review
  - Comparative Analysis
- **Vested Rights**
- **Conclusion**



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## Economic Benefit

- **Worthwhile Wind will add the following economic benefits to all of Worth County**
  - \$51,000,000 in assessed value
  - \$1,000,000 per year in property taxes alone
  - \$1,700,000 in landowner payments per year
    - Money that goes to family farms, education, diversification and more
  - Ability to TIF to add to road and school infrastructure
- **Funds from the project can be dispersed at the direction of the County Supervisors for projects and upgrades for ALL residents**

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## Development Agreement

- **Original Wind Issues**
  - Deer Creek Issues
  - Neighbor Concerns
  - Sound Concerns
  - Setback Concerns
  - General Concerns
- **Development Agreement Goals**
  - Prevent repeating the issues from Deer Creek (**main goal**)
  - Set the standards for Worthwhile
  - *Agree to workable guidelines that don't prohibit development while protecting neighbors*



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## Development Agreement

- **Original Wind Issues**
  - Deer Creek Opposition
  - Neighbor Concerns
  - Sound Concerns
  - Setback Concerns
  - General Concerns
- **Worthwhile Solutions**
  - No coordinated oppositional group in the footprint
  - Avg residential setback is over 3,100ft
  - Agreed to 50 dBA sound standard
  - Agreed to 1,500ft residential minimum setback
  - Includes road use, decommissioning, restoration, least impactful location, termination, and assignment provisions

***\*Worthwhile Wind's rights are vested\****

***\*We have addressed every core issue, a signed agreement locks these protections in place\****

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## Development Agreement (Comparative Analysis)

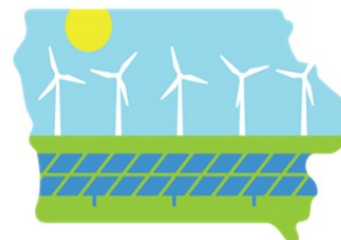
COUNTY	RESIDENTIAL DWELLING SETBACK	PROPERTY LINE SETBACK
Black Hawk	n/a	1.5x total height of turbine (about 600 – 800 feet)
Boone	750 feet	1.25x total height of turbine
Cass	1,200 feet	1x total height of turbine
Clay	1,200 feet	1.1x total height of turbine
Carroll	1,000 feet	Not less than the rotor radius from non-participating properties
Dickinson	Greater distance of 1,200 feet or 2x total height of turbine	Turbines may not overhang adjacent property lines without securing appropriate easements
Emmet	1,250 feet	1.1x total height of turbine
Greene	1,000 feet	Not less than the rotor radius from non-participating properties
Grundy	1,200 feet	1.25x total height of turbine
Ida	1,250 feet	1.1x total height of turbine
Madison	Greater distance of 1,000 feet or 2x total height of turbine	No overhang of adjoining property line without an easement
O'Brien	1,200 feet (includes accessory structures)	[None specified]
Osceola	1,250 feet	1.1x total height of turbine
Pottawattamie	100% of tower height	Manufacturer's fall distance
Poweshiek	Greater distance of 1,000 feet or 2x total height of turbine	1.1x total height of turbine
Story	Greater distance of 1,000 feet or 2x total height of turbine	No overhang of adjoining property line without an easement
Webster	1,000 feet	150 feet

- **Worthwhile Solutions**
  - No coordinated oppositional group in the footprint
  - Avg residential setback is over 3,100ft
  - Agreed to 50 dBA sound standard
  - Agreed to 1,500ft residential minimum setback
  - Includes road use, decommissioning, restoration, least impactful location, termination, and assignment provisions
- **Kossuth County**
  - No additional, more strict standards
- **Two additional counties signed ordinances or Development Agreements with significantly less protections than Worth County**

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## Conclusion

- **Jobs, economic development, local payments**
- **Environmentally conscious and heavily studied project**
  - No major environmental risks for the projects
- **Scrutinized layout with extensive setbacks**
  - Local support
- **Development Agreement**
  - Very protective set of standards
  - Delivers on the goal and promise of the Supervisors
- **Action/Vested Rights**



**WORTHWHILE**  
WIND AND SOLAR FARM

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Worthwhile Wind Farm

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**We're building a  
sustainable world.**

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