

# PV Siting: Where Should You Put a Solar Facility?

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# Presentation Overview

## SITING CONSIDERATIONS AND CONSTRAINTS

- Interconnection
- Local Land Use Policies
- Environmental Factors
- Community
- Other Factors
- O&M



GERONIMO ENERGY

**COMPANY BACKGROUND**

# Geronimo Energy

Geronimo has evolved into a leading North American renewable energy developer with a comprehensive development team that has successfully delivered over 1,500 megawatts of wind and solar projects to sophisticated project buyers in the U.S.

## KEY ATTRIBUTES OF GERONIMO ENERGY

- Core Value – farmer-friendly
- Established track record with new wind development
- Led the establishment of the Minnesota solar market
  - Innovator of utility-scale Aurora Solar Project – 100 MW *Solar Capacity* portfolio of projects at select distribution substations
- Community Solar Garden expertise

PV SITING

# GENERAL CONSIDERATIONS: WHERE TO START

# General Considerations

## AVAILABLE LAND

- Size of the facility
- Previously disturbed land
- Residential neighbors
- Service territory – Co-op members



## FLAT AND SQUARE

- Grading and design considerations

## SUBSTATION/FEDER PROXIMITY

- Determines risk of impacts to the system

## WILLING LANDOWNER

- Primary restriction



PRIMARY DRIVER

**INTERCONNECTION: MUST HAVE**

# Interconnection

## SUBSTATION/FEEDER PROXIMITY

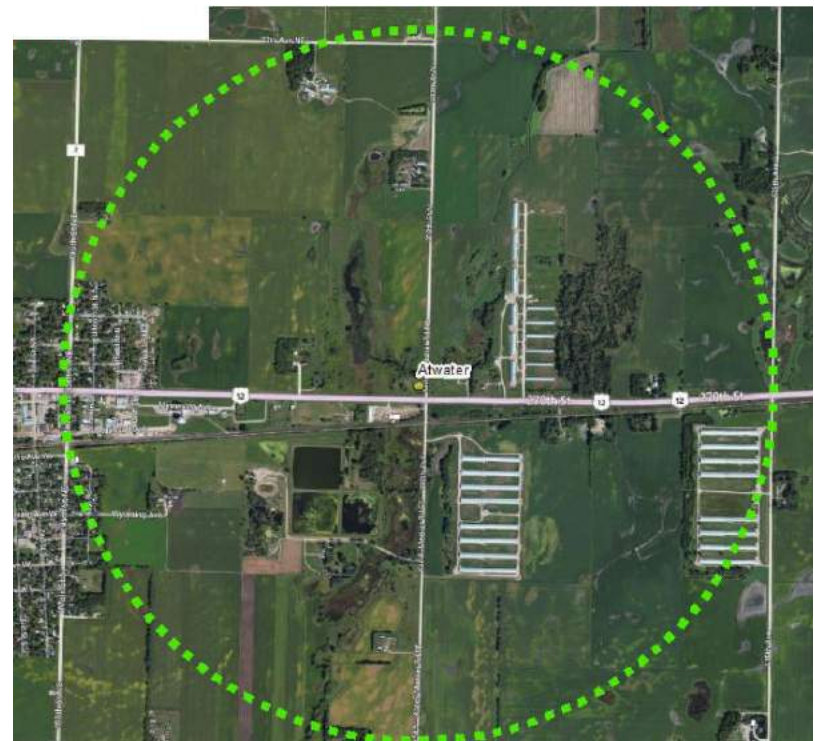
- Size of project
- Distance to substation
- Local load

## CHALLENGES

- Capacity available
- Studies

## FUTURE

- Smart Inverters and changes in modeling
- Energy Storage





LOCAL LAND USE

# GETTING THROUGH PERMITTING

# Local Land Use Considerations

Item	Evaluation
<b>Ordinance Review</b>	<ol style="list-style-type: none"> <li>1. <i>Does the ordinance include Solar?</i>            No =&gt; Ordinance amendment required            Yes =&gt; Can you meet requirements (setbacks, height, coverage limits, wetland regulations, shoreland, floodplain, variances, etc)?</li> </ol>
<b>Annexation Areas</b>	<ol style="list-style-type: none"> <li>1. <i>Do you want to annex the property?</i></li> <li>2. <i>What impacts/risks exist?</i></li> </ol>
<b>Surrounding Uses</b>	<ol style="list-style-type: none"> <li>1. <i>What is the character of the area?</i></li> <li>2. <i>What is the land value?</i></li> </ol>
<b>Comprehensive Plans</b>	<ol style="list-style-type: none"> <li>1. <i>Where are the Sewer and Water expansions?</i></li> <li>2. <i>How is the property guided and/or zoned?</i></li> <li>3. <i>What is the timeline of planned development for the property?</i></li> </ol>

ENVIRONMENTAL FACTORS

# **AVOIDING DETRIMENTAL ENVIRONMENTAL CHARACTERISTICS**

# Environmental Factors

## WATER FEATURES

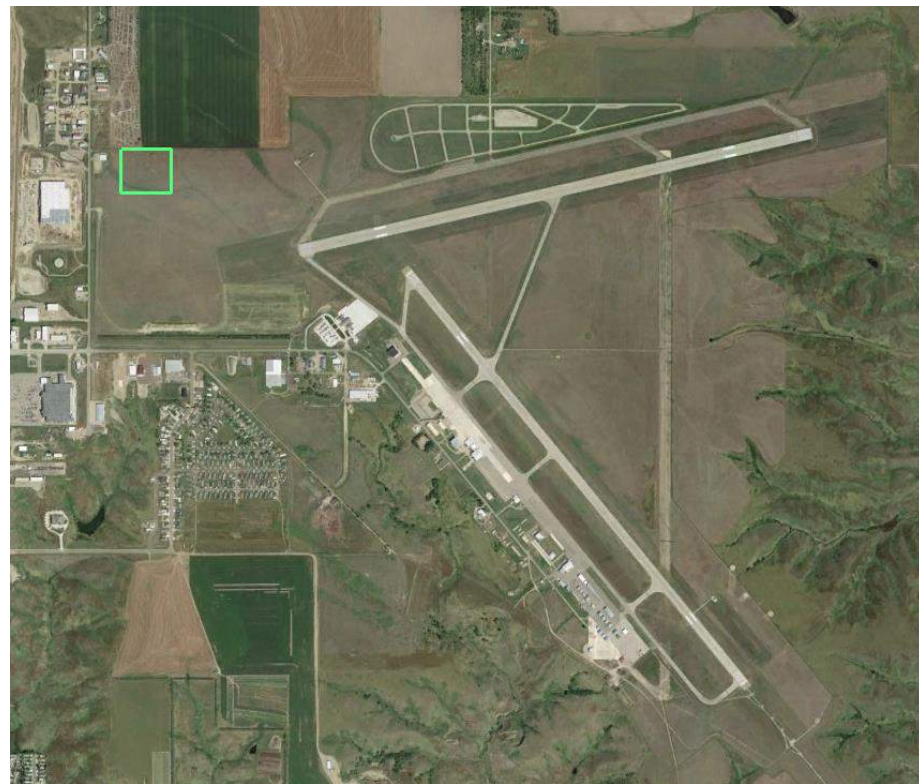
- Wetlands
- Shoreland
- Floodplain
- Riverways

## CULTURAL SIGNIFICANCE

- Bluffs
- Cultural Surveys

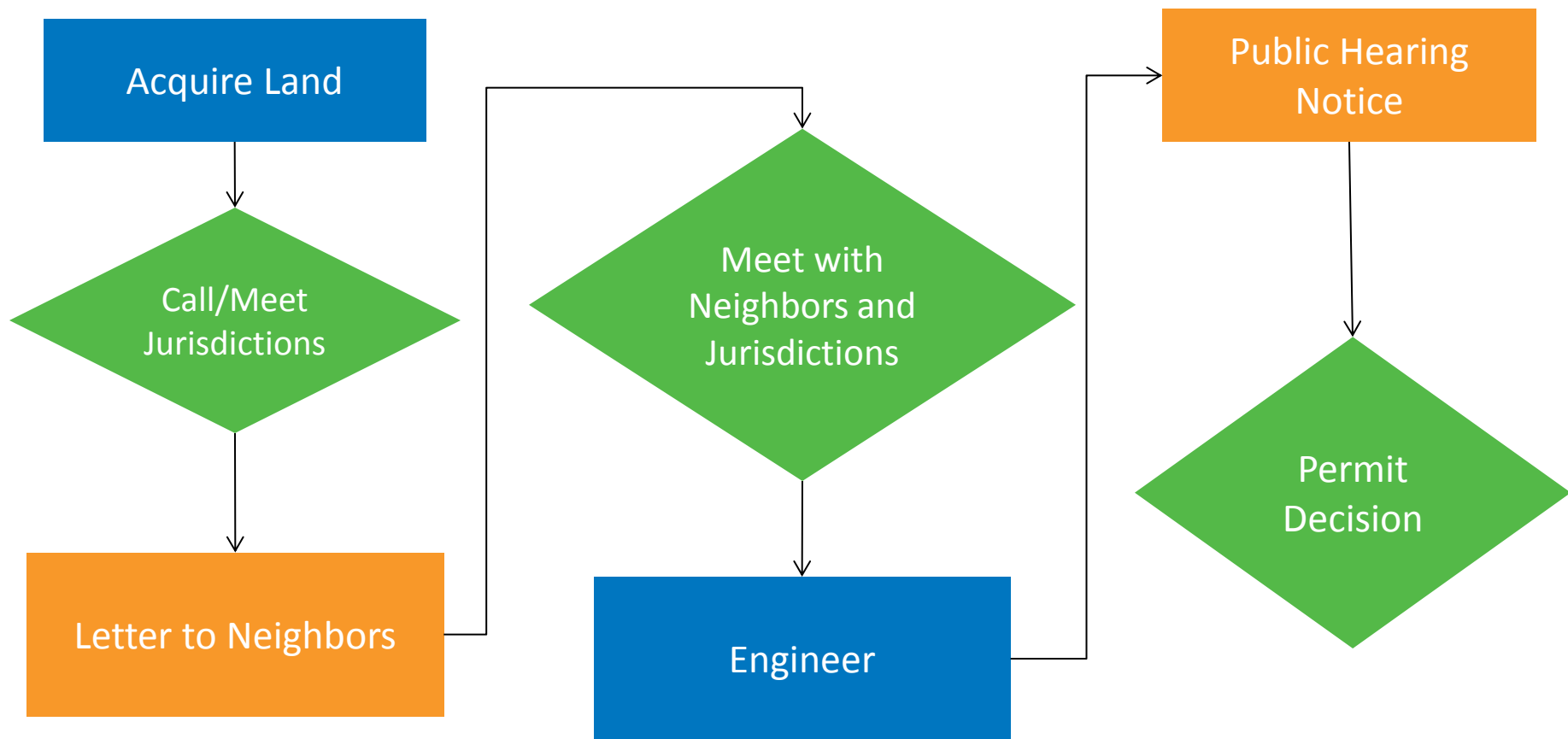
## TREES AND PLANES

- Aviation: FAA policy and Airport Zoning
- Shading: Design impacts



COMMUNITY  
**SUPPORT NEEDED**

# Community Outreach and Permitting



OTHER FACTORS

**THINGS TO KEEP IN MIND**

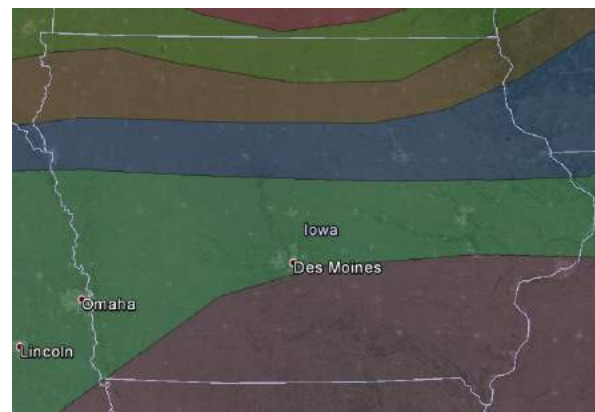
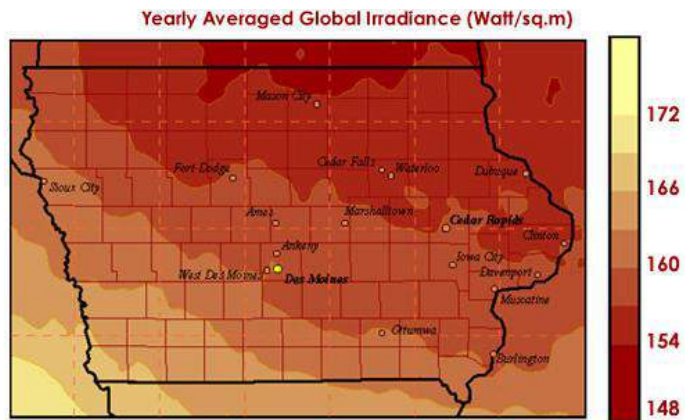
# Other Factors

## SOLAR RESOURCE

- Options available to you for locating the project

## SNOW LOADS

- Equipment impacts





# Operations and Maintenance Considerations

## WEATHER

Snow Plowing and Drifting. Rain averages to determine if you need to remove dust from panels.

## EMERGENCY SERVICES

Fire safety access, security approach (cameras, fencing, etc), police awareness, safety precautions for the community.

## VEGETATION MANAGEMENT

Establishment of vegetation underneath the panels and any screening. Maintenance of the vegetation is important depending on the seed mix or planting choice.

## EQUIPMENT MAINTENANCE & ONSITE MANAGEMENT

There are weekly, monthly, quarterly, yearly checks that need to happen. For example, fans on inverters, voltage checks, hot spots, tracking system equipment, issues with modules, etc.

## Questions?

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