

An aerial photograph of the Minnesota State Capitol building in Minneapolis. The central feature is the large, ornate dome. The surrounding building complex has a green roof with several large solar panel arrays installed. The text is overlaid on the image in a bold, yellow font with a drop shadow.

Site Identification and Data Collection

Minnesota Solar Energy
Procurement Workshop
Minneapolis | September 18, 2019

Project Development Process

1. Identify Project Lead & Convene Stakeholders

2. Goal Setting

3. Site Identification and Data Collection

4. Site Feasibility Screening

5. Financing Options Assessment

6. RFP Development & Solicitation

7. Pre-Proposal Conference & Site Visit

8. Proposal Evaluation & Comparison

9. Contract Selection & Negotiation

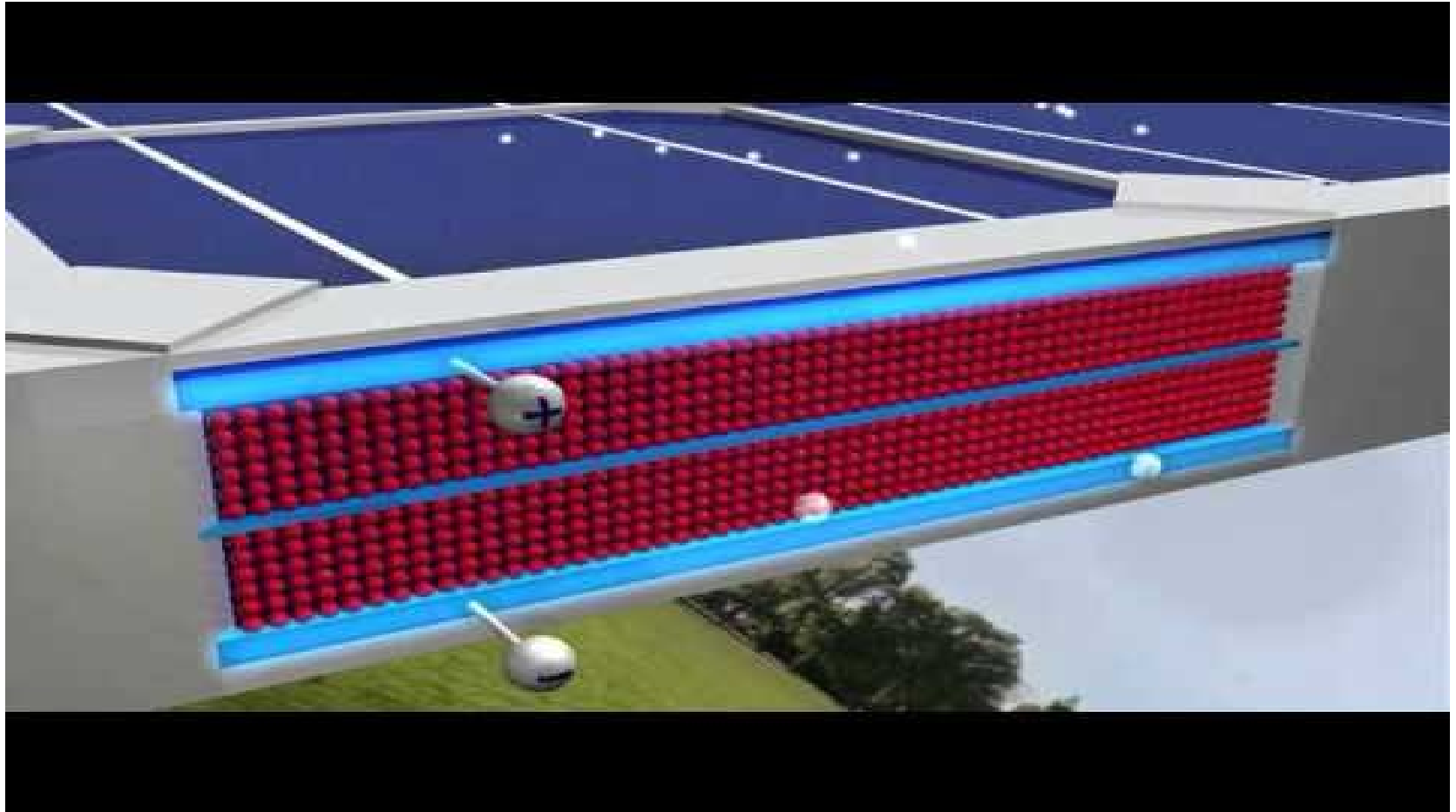
10. Project Construction

11. Project Commissioning & Optimization

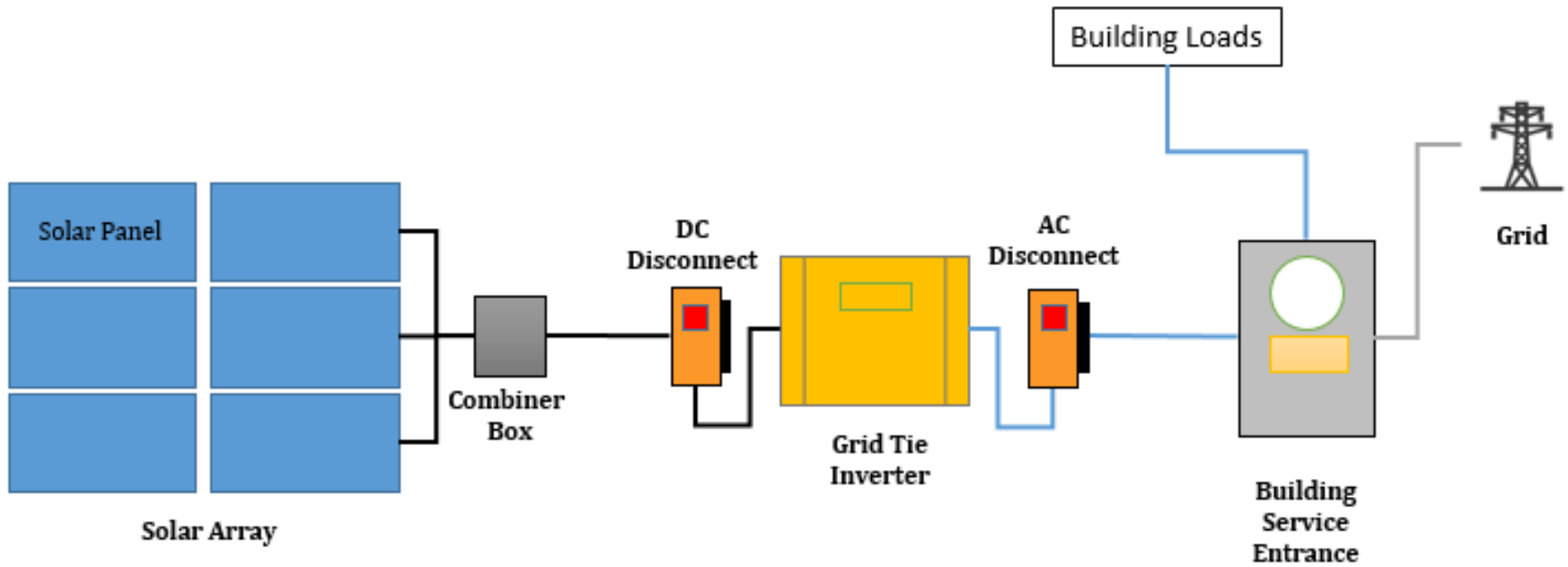
12. Operations and Maintenance



Solar Energy



Basic Solar Project Components



Illustrative Graphic of Simple Solar PV System

Municipal Solar Site Options

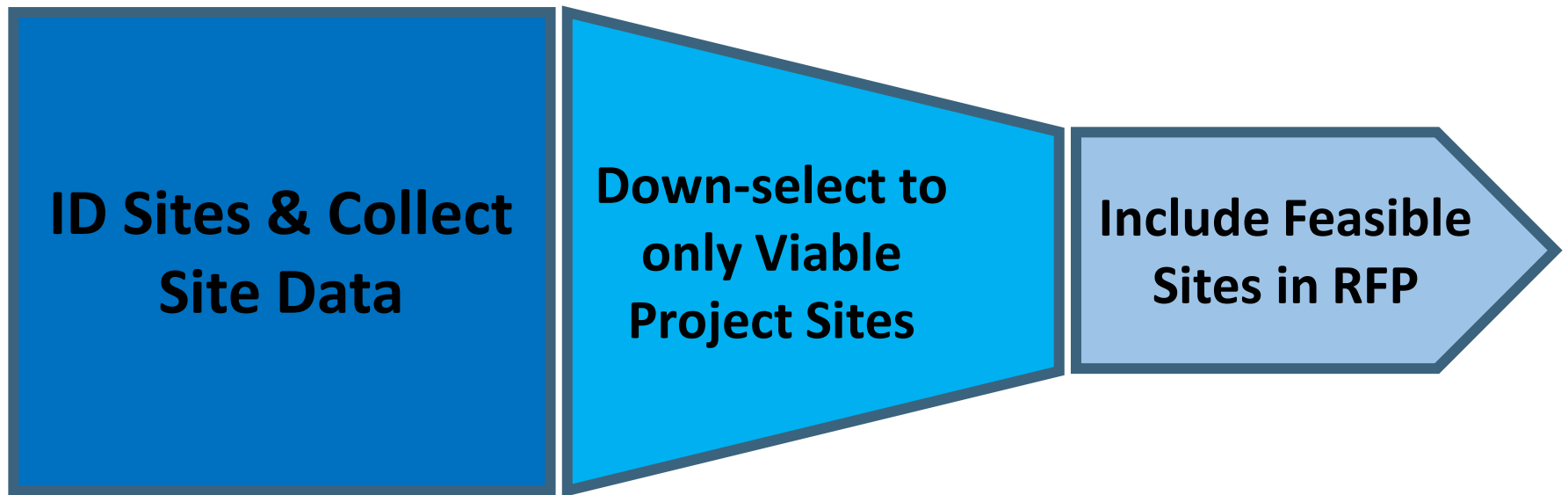
- Government Buildings (Administrative, public works etc.)
- Critical infrastructure (Police, Fire etc.)
- Municipal school buildings
- Parking lots/garages
- Brownfields/underutilized properties
- Municipal Airfields



**How many sites do you estimate your
municipality has for solar?**

Why is identifying sites and collecting data important?

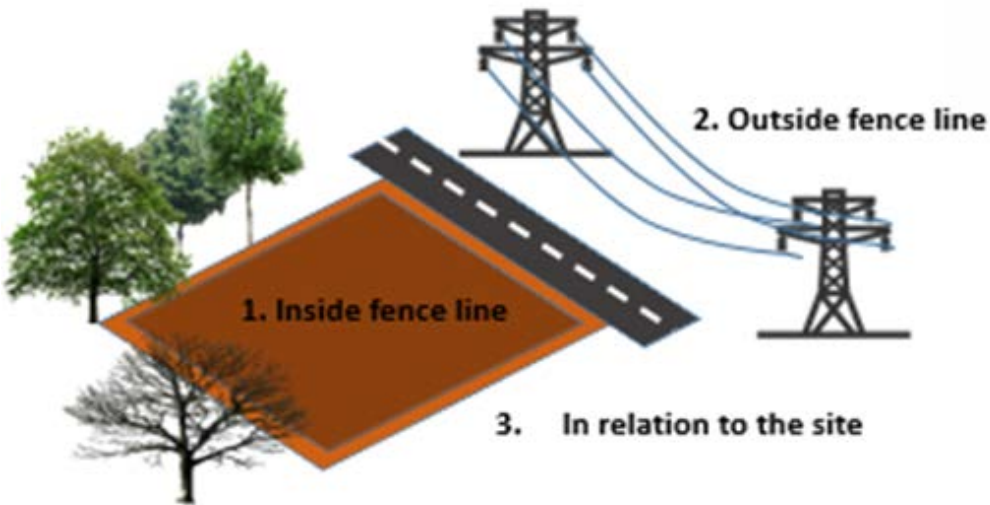
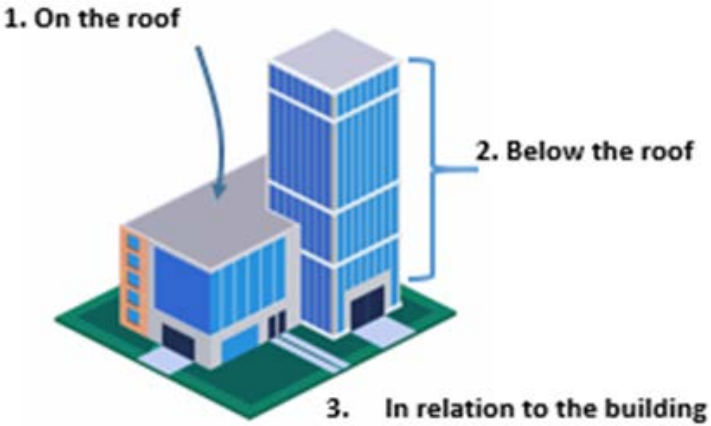
- Reduces total number of sites to only those that are technically feasible
- Avoids pursuing sites that will not ultimately result in an economic feasible project
- Some sites are better suited to achieve different goals
- Your RFP should only include sites that have passed an initial feasibility assessment



How does site data help a solar bidder?

- Site data helps identify:
 - a suitable location for the solar array
 - the site's solar resource availability at the solar array location
 - the mounting method(s) for the array
 - where the balance of system components will be located
 - how the PV system will be interfaced with the site's electrical infrastructure or interconnected to nearby transmission/distribution lines
- Site data informs bidders how to offer the best solution at the lowest cost

Site Data Collection



Breakout Activity

- Divide yourselves into smaller groups
- Read your case study example
- Ideate a short list of site data/information for your site
- Report back to the group your ideas for site data collection

Site Data Element Examples

- Site Name
- Site Location
- Site Type
- Type of solar application (roof, ground etc.)
- Number of Building Stories
- Current Building Use
- Future Building Use – Site Use Changes
- Utility Provider
- Retail Rate name
- Retail Rate Schedule
- Site Usage/Consumption (kWh per month; per year)
- Electric Service Voltage to Site
- Electric Service Amperage to Site
- Electric Service Panel/Enclosure Amperage
- Estimated Distance of Electric Service Panel to Roof Area
- Site Building Plan / Architectural Drawing
- Site Plot Plan
- Site Electrical Line Drawing
- Type of Roof
- Year roof installed
- Roof Condition
- Roof Slop and Azimuth
- Roof Equipment
- Roof Access
- Roof Warranty
- Site Usable Acreage
- Soil & Sub Soil Type
- Shading
- Distance to Transmission/Distribution Lines
- Landfill Characteristics

Electrical Service Enclosures

Work with your Facilities or Engineering departments to identify electrical service enclosures and their ratings

Your Home



Your Municipal Building



Roof Equipment

Feasible



Feasible?



Roof Access



Consider the number of stories of the building and the access points to the roof. Keep in mind the building's intended use and whether access will need to be controlled to not interfere with the building's operations. Consider safety issues for building occupants and solar developers alike.

Types of Roofing Materials

- Metal Panel
 - Built Up Roofing/Tar & Gravel
 - Asphalt
 - Two-Ply Modified Bitumen
 - Single-Ply Synthetic Membranes
 - Others – seek input from facilities staff
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- Roof age and condition are the most important attributes next to the structural integrity of the roof itself

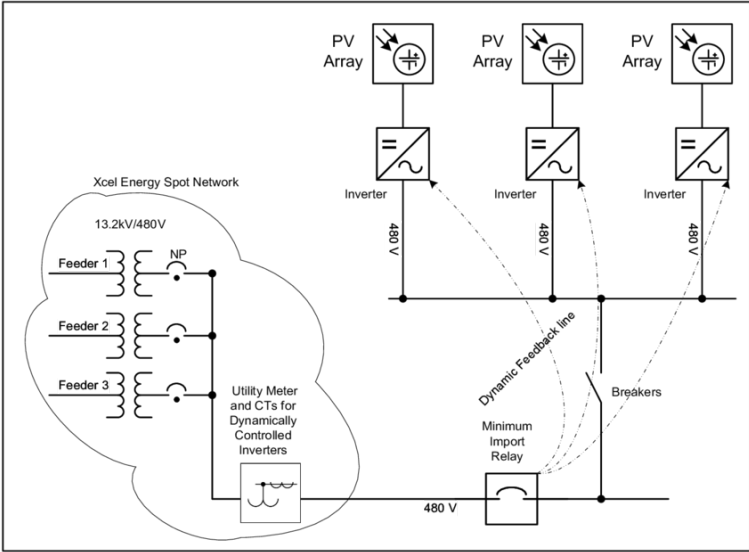


Site Drawings and Photos

Site Plan Drawing



Single Line Electrical Drawing



Any additional architectural, electrical and structural drawings are helpful.
Take photos of the proposed site.

Thanks!

Other Resources

- Utility Rate Schedule: https://openei.org/wiki/Utility_Rate_Database
- Net-Metering Size Limits: <https://www.dsireusa.org/>
- PVWatts: <https://pvwatts.nrel.gov/>