

Developing joint development agreements

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Lynn Markham, Karen Blaha & Matthew Hurley



Center for Land Use Education
College of Natural Resources
University of Wisconsin-Stevens Point



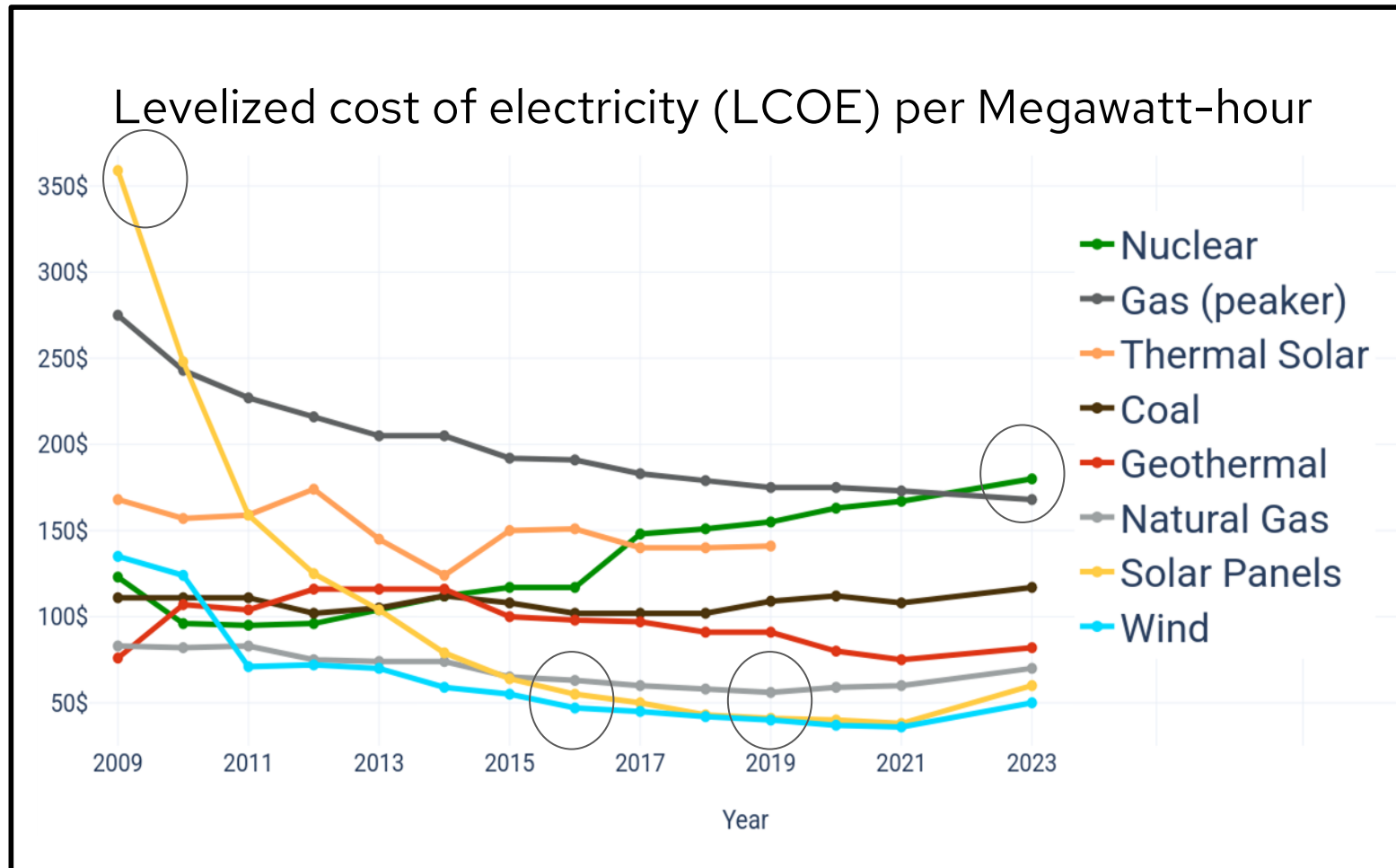
Extension
UNIVERSITY OF WISCONSIN-MADISON



Outline

1. Driving factors behind solar & wind growth
2. Permitting process & local government options
3. Solar contracts = joint development agreements + more
4. Resources based on analysis of 14 solar contracts
5. Expert panel!!

Costs of electricity production



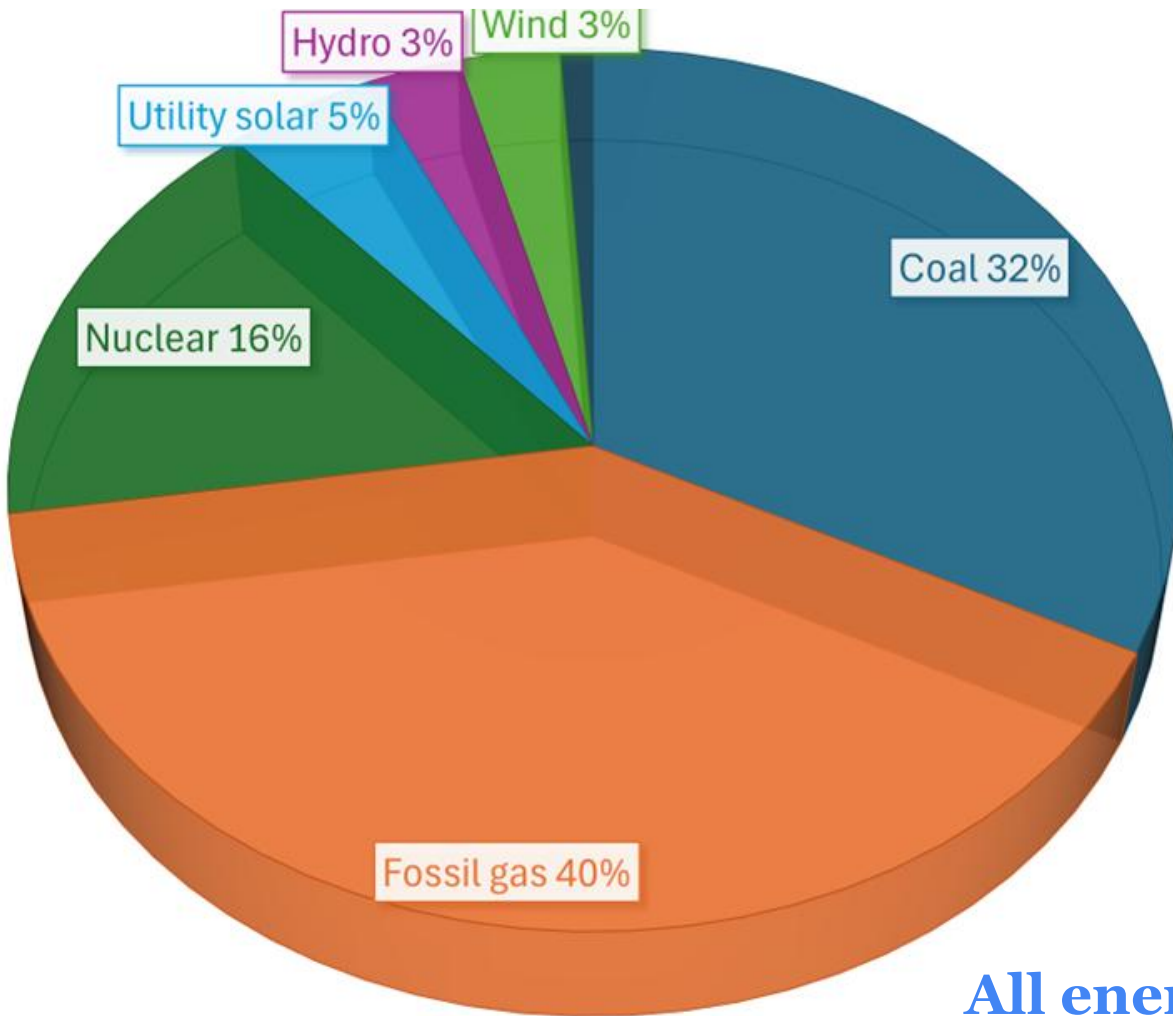
Costs shown here include:

- Building power plant
- Operating plant including fuel
- Divided by electricity generated

*Does not include subsidies

First utility solar projects approved in 2019 in Wisconsin

Wisconsin electric generation 2024



88% of electricity comes from out-of-state energy sources

- coal
- natural/fossil gas
- nuclear

WI has no fossil fuel sources and pays ~\$18 billion per year to import energy sources for electricity, heating and vehicle fuels

12% of electricity comes from in-state energy sources

- solar
- wind
- hydroelectric dams
- biomass

All energy sources have advantages & disadvantages

Coal

- None in WI, so coal is hauled 1,000 miles by diesel trains from Wyoming (top photo)
- Weston coal-fired plants burn all coal from a train that is 1 mile long each day
- To produce electricity for **1 house for 1 year** burns almost 5 tons of coal (9,576 pounds)
- Soot particles that harm people's lungs

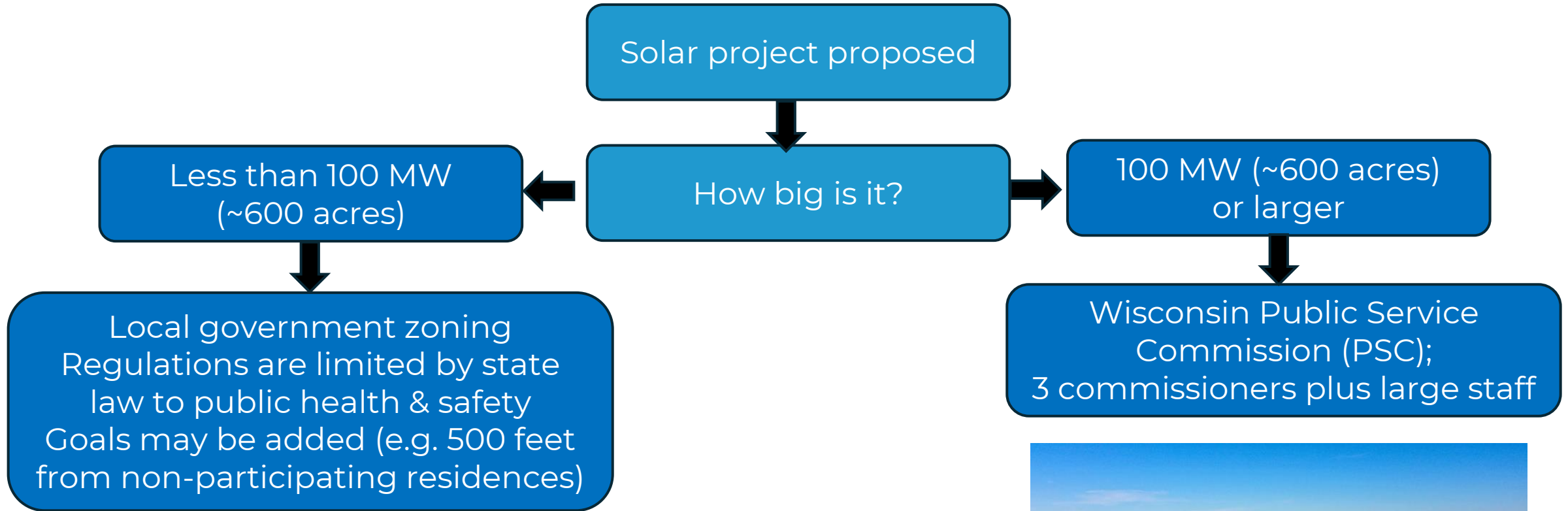


Weston coal plants
945 MW total

Solar: Lots of land & fences; no fuel or emissions



Laws that apply: Who decides?



Utility aid payments
when project is online:
\$5,000 per MW
~\$1,000 per acre



Permitting process for solar projects 100 MW or larger

Red = local government steps
 Blue = required solar developer steps
 Purple = local government & developer

Before PSC process

County options

Local government adopts solar map and rationale
 Shares with solar developers

Developer applies to Midcontinent Independent System Operator to connect to grid

Developer identifies solar project locations, seeks land leases & plans project
 Developer is not required to notify local governments until 6 months before applying to the Public Service Commission of WI (PSC)

Leverage

Local government and developer negotiate solar contract; voluntary, but legally binding
 Can occur before, during, or after PSC process

CPCN statutory standard:
 The proposed facility will not unreasonably interfere with orderly land use and development plans s. 196.491(3)(d)6

PSC process

Developer applies to PSC for Certificate for Public Convenience & Necessity

Local government hires an attorney to advise, assist and prepare legal documents

Local gov comments on environmental assessment or env impact statement

Issue 3: If approved, would the proposed project comply with Wis. Stat. § 196.491(3)(d)6. and not unreasonably interfere with the orderly land use and development plans for the area involved?		
Issue Scope: The Commission must find that the proposed project will not unreasonably interfere with orderly local land use and development plans before issuing a CPCN.		
PARTY POSITIONS	AMOUNT	TRANSCRIPT REFERENCES
Commission Staff: A number of environmental, local land use, planning, and development impacts can be expected from the proposed project. No impacts are expected to unreasonably interfere with orderly land use and development.		Ex.-PSC-FEIS
COMMISSION ALTERNATIVES		
Alternative One: Yes, the project complies with Wis. Stat. § 196.491(3)(d)6. and would not unreasonably interfere with the orderly land use and development plans for the area involved.		
Alternative Two: No, the project does not comply with Wis. Stat. § 196.491(3)(d)6. and would unreasonably interfere with the orderly land use and development plans for the area involved.		
Commissioner Notes:		

PSC decisions

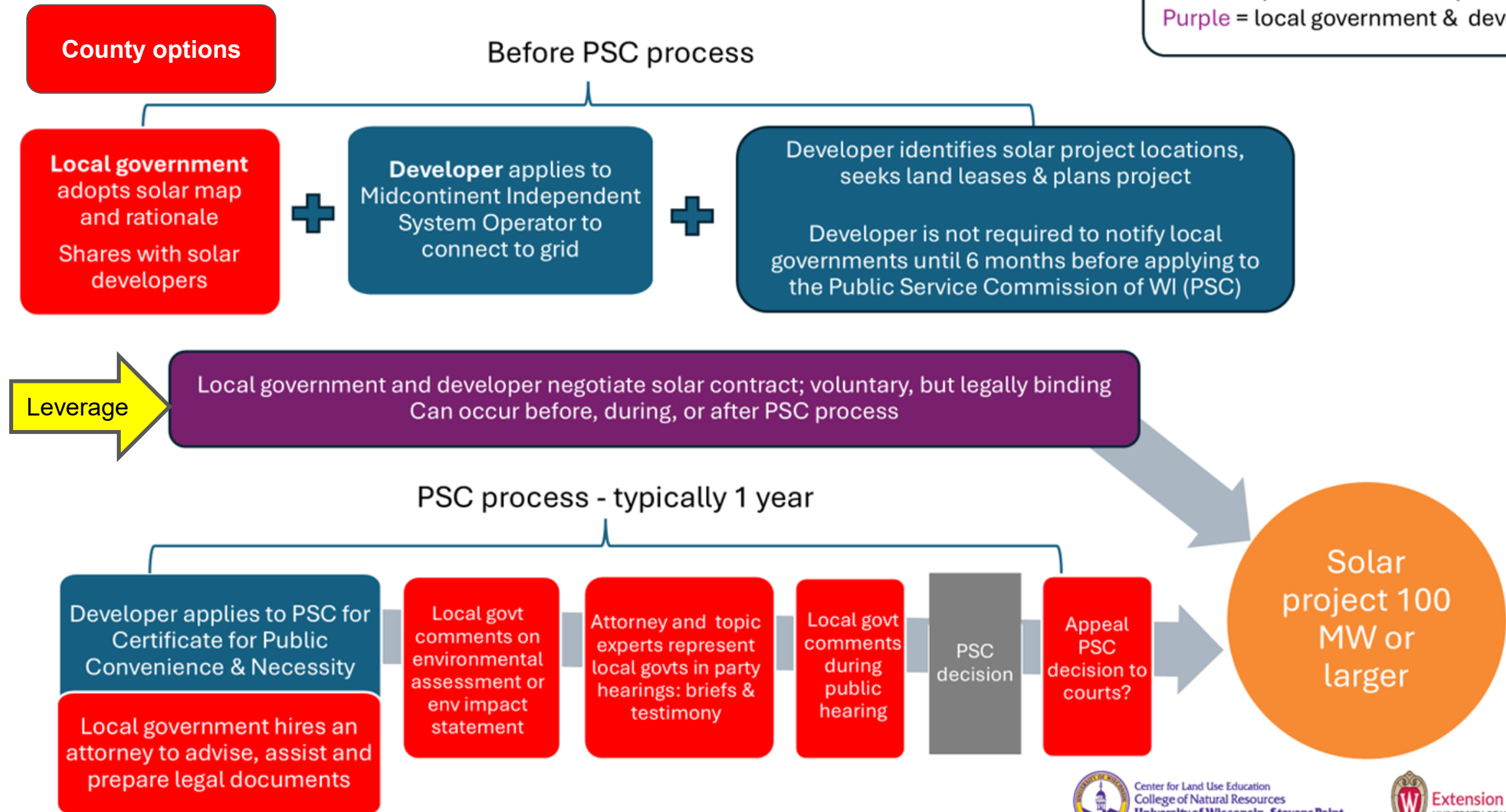
- Approved over 20 solar projects 100 MW+
- Denied none

Example requirements

PSC did not add requirements to	PSC sometimes added requirements to
Move arrays off agricultural land ⁱⁱ	Require relocation of a laydown yard (construction hub) away from a neighbor's home ⁱ
Move arrays off red pine plantation land ^{iv}	Reduce fence height to seven feet near documented threatened prairie species breeding grounds ⁱⁱⁱ
Move arrays away from a neighbor's home ^{vi}	Require fencing with a specified size of bottom openings, or one opening every 100 feet, in specified fence areas or around all arrays to allow small wildlife movement as recommended by DNR staff ^v
Move arrays away from key documented habitat for a threatened wildlife species as recommended by DNR wildlife biologists ^{viii}	Exclude non-native aggressive plant species from the seed mix to be planted on the site as recommended by DNR staff ^{vii}
Avoid trap situations for large wildlife as recommended by a wildlife biologist ^x	Require winter soil stabilization ^{ix}

Permitting process for solar projects 100 MW or larger

Red = local government steps
Blue = required solar developer steps
Purple = local government & developer



Questionnaire

- Developed by Center for Land Use Education
- Sent questionnaire to 19 counties that had solar projects 100 MW or larger proposed in their counties
- 15 counties responded
- Many sent completed JDAs

Section 1 of 3

County Solar Questionnaire

B *I* U ↺ ↻

Please answer the following questions.

1. Name: *

Short answer text

2. Position: *

Short answer text

3. Have you ever pursued a Joint Development Agreement (JDA) for a solar project? *

Note: In this survey we use "JDA" broadly to also include Local Operating Contracts, Memoranda of Understanding, etc.

Yes

No

If yes what is the name of the solar project?

Short answer text

4. Did your local government complete a JDA with the solar developer? *

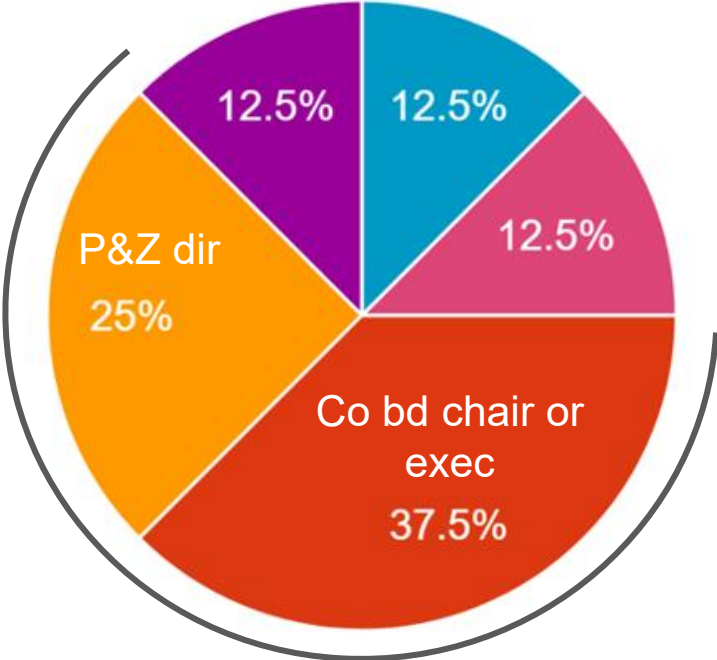
Yes

No

Who decided whether to develop a JDA?

“NO” did not complete a JDA

62% of counties that DID NOT pursue a JDA were decided by individuals



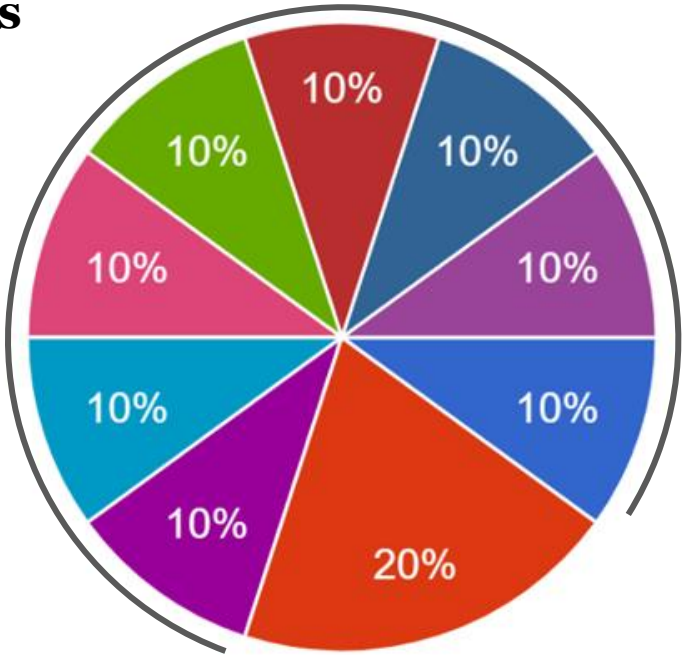
- County board
- County board chair or executive
- Planning and zoning director
- Land conservationist
- Solar developer did not request one from the county.
- Project did not cross County owned property
- Group effort

• One person may feel overwhelmed about drafting a JDA

Who decided whether to develop a JDA?

“YES” did complete a JDA

80% of counties that DID pursue a JDA decided as a group

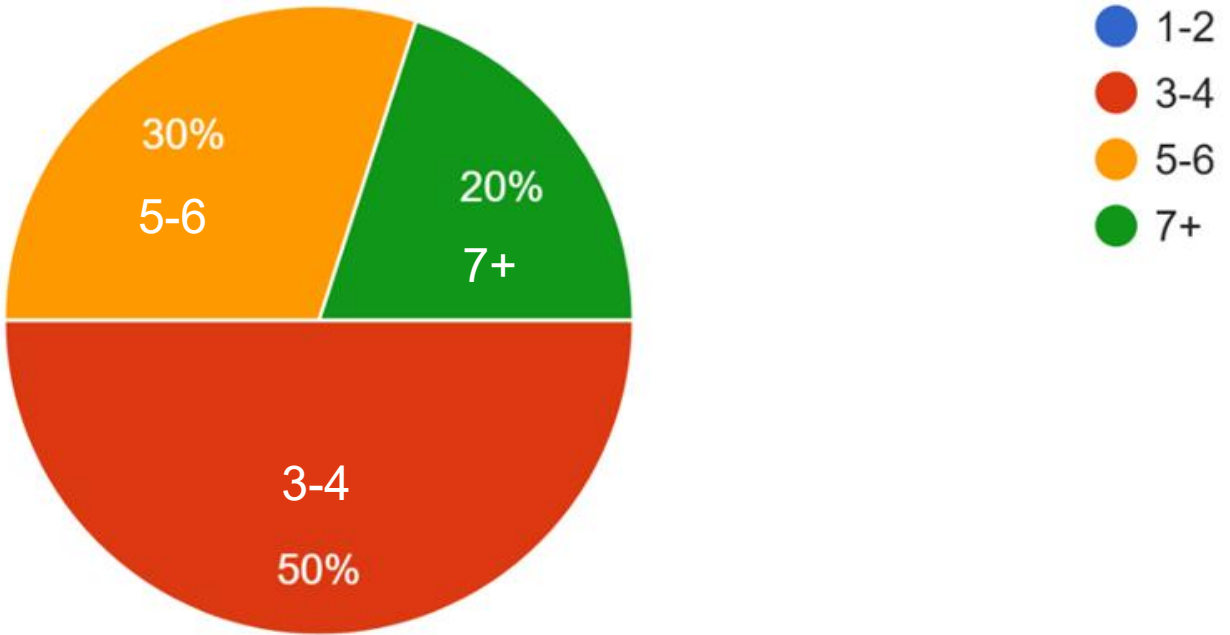


- County board
- County board chair or executive
- Planning and zoning director
- Land conservationist
- County Corporation Counsel and Cou...
- Group decision
- Corp Counsel / LRP Staff and Developer
- County Board, with recommendation f...
- Public Works and Planning Directors
- Joint...Town, Planning & Conservation Dir, County Admin & Highway Commissioner
- Combination of above in collaboration with municipality

Include staff with expertise from multiple departments to create JDA content & not be overwhelmed

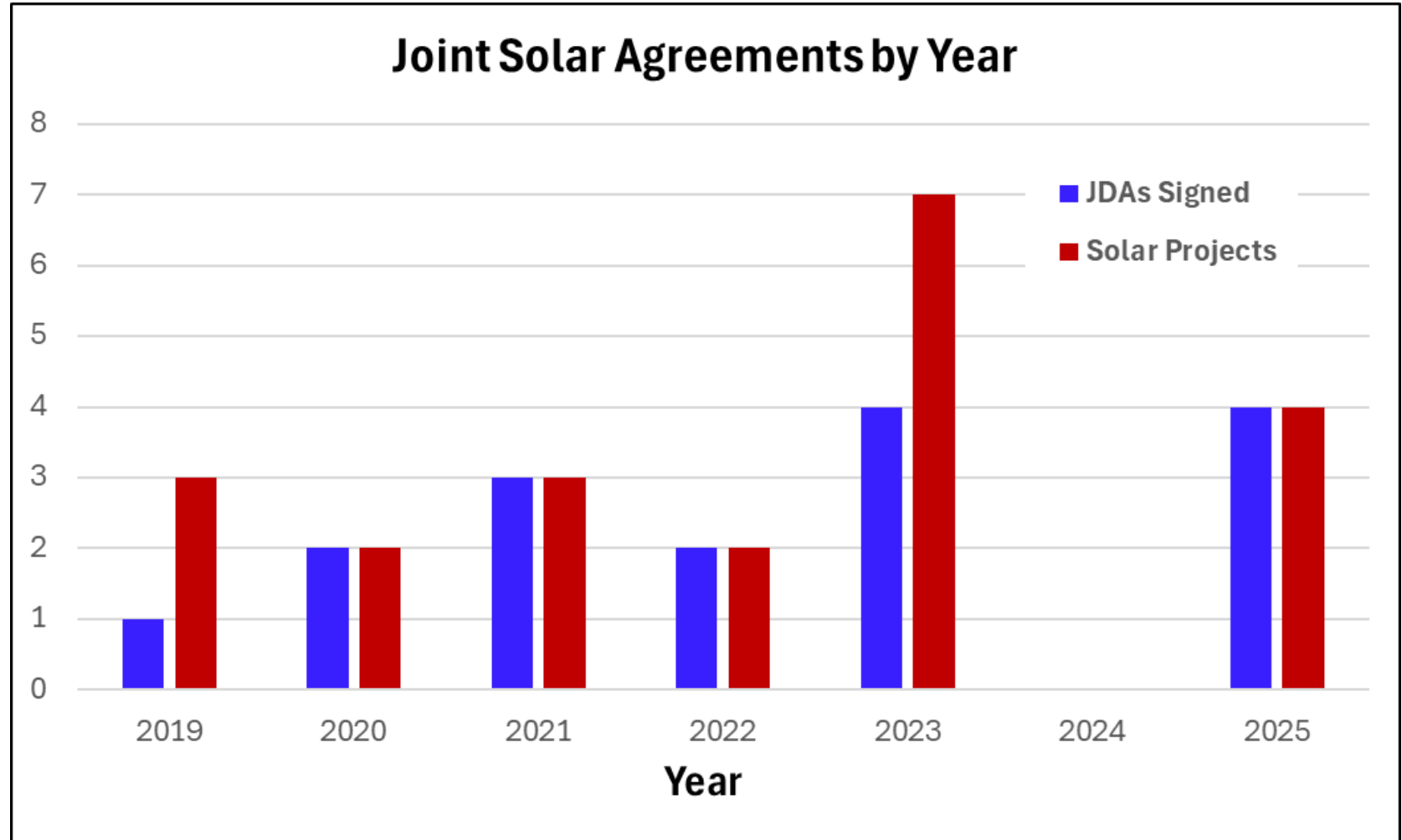
Approximately how many meetings did it take to complete the JDA?

10 Responses



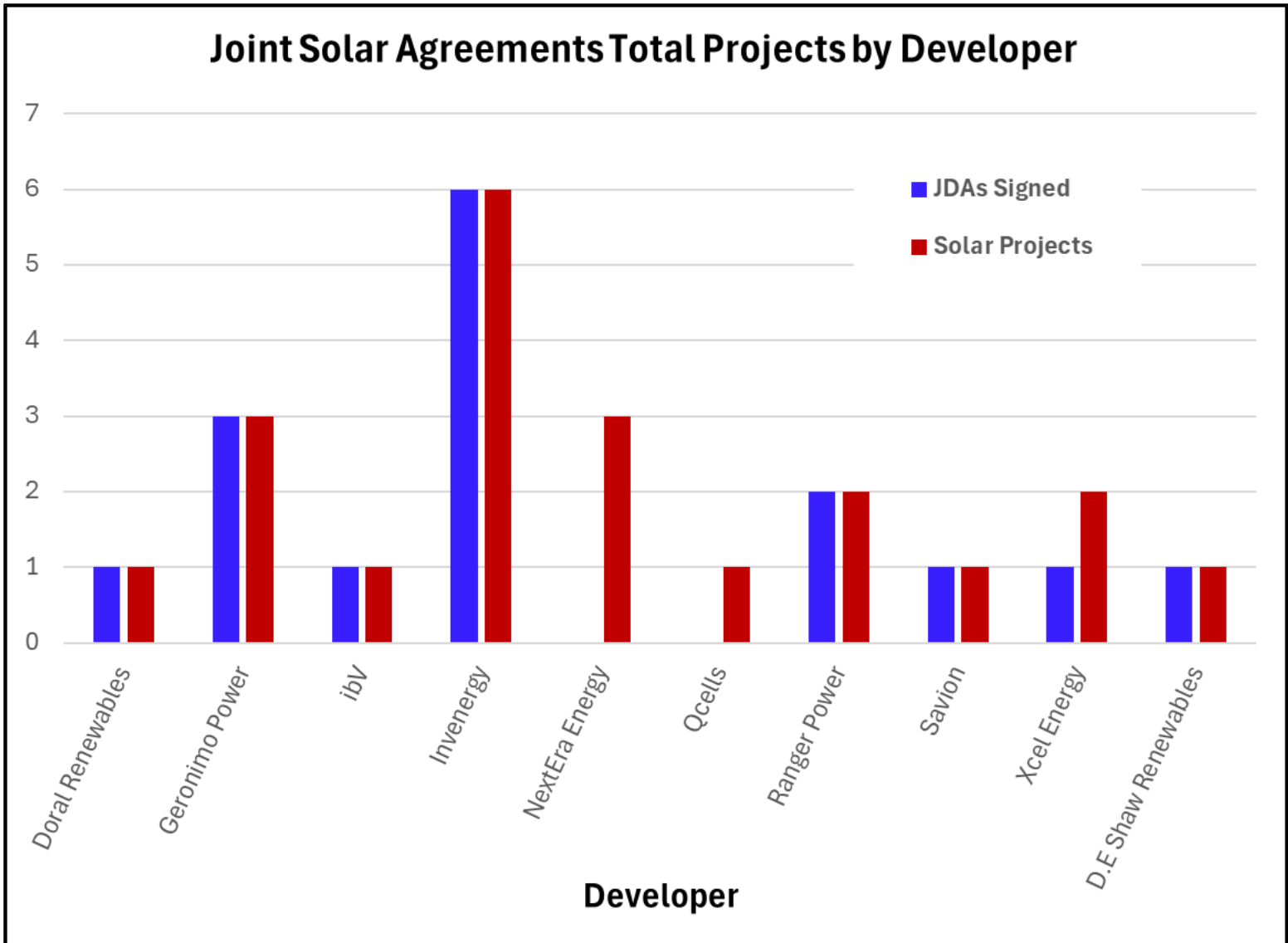
Totals through 2025

- 21 solar projects
100 MW+
approved by PSC
- 16 projects with
JDAs
- 5 projects without



Totals through 2025

- Most developers have signed JDAs for all their projects through 2025
- NextEra Energy is the exception



Resources from analyzing 14 signed solar contracts

1. Introduction to solar contracts **HANDOUT**
2. 15 full-text solar contracts **DONE**
3. Spreadsheet with summaries from all 15 contracts **DONE**
4. Solar contract standards - 24 types **COMING SOON**
 - Explanation of standard
 - Most favorable language found for each standard

Postcard will lead you to these resources!

If you want updates give us your email address!

Renewable energy cohort forming for summer



CLIMATE RESILIENCE: Renewable Energy

County Role in Siting Renewable Energy Projects

Industries and governments are setting goals to reduce greenhouse gas emissions to mitigate the impacts of climate change. This requires replacing carbon emitting energy sources like coal and natural gas with renewable energy options like wind and solar. Technological advancements have made wind and solar energy cheaper to develop, spurring industry expansion. Renewable energy also enables energy independence at the state and national level, and can be a source of local revenue for rural communities.

The expansion of these projects have also brought confusion at the community level around benefits, concerns, and local authority.

Wisconsin Land+Water is committed to supporting our members with the resources they need to navigate Wisconsin's evolving renewable energy landscape.

[WI LAND+WATER RENEWABLE ENERGY GUIDE](#)

[WI LAND+WATER GUIDE TO LOCAL REGULATION](#)

[WI LAND+WATER ADDRESSING COMMUNITY CONCERNS](#)

[WI LAND+WATER KEY DEFINITIONS HANDOUT](#)



Why now? +

Future needs +

Land use pressure +

Where are projects? +

Conservation +

Renewable Energy Tax Series

The University of Michigan's Center for EmPowering Communities has developed a series of State-specific policy briefs explaining local tax benefits and Excel-based calculators to serve as companions to the factsheets.

[WI LOCAL PROPERTY TAX IMPACTS](#)

[WI PROPERTY TAXES CALCULATOR](#)

Guide to Solar Agreements

The University of Wisconsin–Stevens Point Center for Land Use Education is currently reviewing agreements between local governments and developers to develop resources that help members negotiate outcomes that best serve their communities. Visit our new webpage to view finalized contracts and access new tools as they become available.

[LEARN MORE](#)



Utility Scale Solar Contracts Resources for Communities

<https://bit.ly/4cAGMgi>



Blue highlighted text is the most favorable language identified in the solar	Location Developer Developer Home Office	Vista Sands Portage County, Towns of Grant, Plover and Buena Vista, Village of Plover Doral Renewables part of Doral Group Renewable Energy Resources Ltd. Doral Renewables, Philadelphia, PA; Doral Group in Israel	Wood County Solar Wood County, Town of Saratoga Savion owned by Shell Savion in Kansas City, MO; Shell in London, England	Apple River Solar Polk County, Town of Beaver, Town of Clayton, Town of Apple River, Town of National Grid Renewables became Geronimo Power owned by Brookfield Asset Management Geronimo, Bloomington, MN; Brookfield Management in Toronto, Canada	Portage Geronimo
Standards	Most Favorable Text	Vista Sands	Wood County Solar	Apple River Solar	Portage
Road Use/ Damage & Repair	<p>Geronimo Power: Portage - addresses site roads with mention of culvert installation. Then explains process of how site roads will be built in detail. Maintains that the roads will not be the responsibility of the local governments including snowplowing. #Muddy Creek - developer agrees to maintain the road per local government standards #Ranger Power: Onion River - makes developer responsible for the costs of repair or repair itself #IbV Energy: Maple Grove - allows for local governments to approve of the subject matter expert. Also makes developer responsible for private driveways which were possibly impacted #Invenergy: Badger Hollow - slopes, ditches and right of way are eligible for repairs. Requires the satisfaction of local governments after repairs. # Paris - allows local governments more flexibility for road repair options. #High Noon - explicitly mentions that the developer is responsible for the cost of repairs</p>	<p>Project site roads are those that are within the project boundaries. Developer shall construct 12-16 foot wide site roads to access public roadways and for on-site equipment and up to 20 foot wide roads when needed for emergency response. The roads will be primarily constructed at grade for drainage characteristics. Developer may install culverts in areas of confined/preferential flow to maintain surface water flow under access roads. Developer shall obtain all necessary permits. Construction will begin by removing topsoil and organic matter then compacting and construction based on civil design. The roads shall consist of an all weather surface, local governments shall not be responsible for construction or maintenance of any roads this includes snow plowing. Developer shall try to maintain roads for dust so it doesn't leave the projects real property and impact neighboring properties. Developer shall document all public roads pre-construction via video to be used during post construction. Developer shall commission a report by an independent licensed civil engineer to document and confirm the condition of the public roads prior to the start of construction. Motor vehicles used by the developer that exceed 7.5 tons shall use only the "Local Government Roads". No other roads can be used by the developer with vehicles of 7.5 tons or more expect any agreed to with local government jurisdiction. After construction the developer shall: 1. During construction, repaving and decommissioning developer shall reconstruct any Local Government Roads deemed necessary by local governments to good or better quality than in pre-construction. 2. During any time not listed in (1) repair shall be limited to reimbursing the local governments for reasonable repair for Local Government Roads damaged by Developer. 3. Developer shall pay 75 percent of the costs for conditions described in (1) and 50 percent of costs described in (2) for reconstruction, repaving and resurfacing for specified Local Government Roads. Parties acknowledge that facilities may cross rights-of-way or drainage systems. Developer shall obtain all permits applicable with local government ordinances.</p>	<p>A Highway Use Agreement was signed. Use of town highways by the developer are not restricted if they are less than 48,000 lbs. Use of "heavy vehicles" (weighing more than 48,000 lbs) are restricted barring any special permission provided by the town in writing. Developer may use the town highway segments for heavy vehicle traffic, as highlighted in a map, these are referred to as the Permitted Town Highway Segments. Any restrictions are waived for heavy vehicle use on the Permitted Town Highway Segments during the construction phase. Developer will engage a professional engineer to prepare an initial condition report for the Permitted Town Highway Segments, the same engineer will reform a post-construction road condition report for these segments. During construction the town is responsible for the continued routine maintenance of the Permitted Town Highway Segments at the expense of the developer if a proper itemized invoice is filed. After construction developer shall provide the town with the post construction road condition report which will be the basis for the "Final Repairs Plan". The Final Repairs Plan will serve as the basis for developer reimbursement to the town for the cost of any repair of damage to the Permitted Town Highway Segments or drainage systems, to as good or better condition than was outlined in the report prior to construction. The initial report shall serve as a guide for the level of repairs needed or required. To ensure compliance to the terms of agreement during construction and until the completion of the final repairs the developer shall furnish security initially in the form of a bond, letter of credit, parent guaranty or escrow equal to the amount of \$50,000. These funds will be available to the town and are subject to allowable withdrawals until the completion of the final repairs plan and satisfaction of the town. (Wood County Solar, Exhibit B)</p>	<p>Developer shall develop an Erosion Control Plan and Stormwater Management Plan and a Stormwater Management Plan or a similar plan approved by the PSCW. If not in the Erosion Control Plan the developer shall provide a plan to remedy damage to public drain infrastructure caused by construction or compensate the local government to repair such public drainage infrastructure (Apple River Solar, 2)</p>	<p>The roads open construction Developer flow road materials desired The government maintain Developer leave property Developer provide compensation to developer prior Motor shall can exceed construction repair any government 2. Developer reimbursement</p>
Stormwater management plans (drainage & erosion)	<p>Language is similar across most (not all) of the developer/projects regarding developer's responsibility in repair damage/erosion within the project area and areas impacted outside project area to pre-existing conditions, timely repairs. Xcel Energy: Elk Creek Solar, IbV Energy Partners: Maple Grove Solar - specify timeframe for town repair completion. # Doral: Vista Sands, Xcel Energy: Elk Creek Solar, IbV Energy Partners: Maple Grove Solar - specify timeframe for local government receipt of tile maps of project area. # Invenergy: Paris Solar, Paris Solar outlines this in an Exhibit. # Geronimo Power: Muddy Creek, Ranger Power: Onion River & Badger State, eXcel Energy: Elk Creek - specify that prior to construction developer will consult with Local County Land & Water Conservation Division for review. # Ranger Power: Onion River Solar - Specifies that pre and post construction conditions include video documentation.</p>	<p>Number Developer shall develop an Erosion Control Plan and Stormwater Management Plan and a Stormwater Management Plan or a similar plan approved by the PSCW. Developer agrees to maintain any existing drainage system in the project footprint for proper drainage and to repair or replace any drain tiles damaged by the Developer. If not in the erosion control plan the Developer shall provide the drain tile maps of the project footprint to the local governments and shall design the project to avoid any damage to known project drainage tiles. The developer shall have 30 days prior to the completion of the project to provide the applicable drain tile map to the local governments as well as a plan to (a) remedy damage to public and private drainage infrastructure within the project footprint caused by construction activities that negatively impact drainage systems outside of the project footprint including promptly repairing or replacing any drain tiles that are damaged during construction and if applicable (b) compensate the applicable local government to repair such public drainage infrastructure to a level comparable to the pre-construction level. (Vista Sands, 3)</p>	<p>Developer will prepare and comply with an Erosion Control and Stormwater Management Plan in accordance with the Wisconsin General Permit to discharge under the Wisconsin Pollutant Discharge Elimination System following regulations set by the Clean Water Act and guided by the WDNR (Wood County Solar, 6, 17)</p>	<p>Developer shall develop an Erosion Control Plan and Stormwater Management Plan and a Stormwater Management Plan or a similar plan approved by the PSCW. If not in the Erosion Control Plan the developer shall provide a plan to remedy damage to public drain infrastructure caused by construction or compensate the local government to repair such public drainage infrastructure (Apple River Solar, 3)</p>	<p>Developer Stormwater Plan Erosion reimbursement such</p>
Decommissioning plans and requirements (initial and updates)	<p>Doral: Vista Sands, Geronimo Power: Portage, Muddy Creek, Xcel Energy: Elk Creek - decommissioning financial security provided at common intervals; 10% before, 70% 5th yr, 100% 10th yr, 20th yr review update every 5 yrs until fully decommissioned. # Geronimo Power: Apple River - more aggressive financial security time frame, 20% of</p>	<p>Before construction developer shall provide the county with copies of financial assurance to the towns, with cash, a bond, or a letter of credit to cover 10 percent of the estimated costs of the decommissioning plan filed by with the PSCW, net any of salvage value if not otherwise accounted for in the plan costs. On or before the fifth anniversary of the COD the developer shall provide financial</p>	<p>Before construction the developer will provide the town with a detailed decommissioning plan, which shall include an obligation for the developer to provide a commercially available reasonable financial assurance in the form of a surety bond, letter of credit, escrow fund, parent guaranty or other reasonable means of security reasonably</p>	<p>On or before the first anniversary of the COD, Developer shall provide the County with cash, a bond, or a letter of credit (Financial Assurance) to cover 20 percent of the estimated costs of the decommissioning plan filed with the PSCW, net of any salvage value if not otherwise accounted for in the decommissioning plan costs. Similarly, on the fourth anniversary 50 percent</p>	<p>Before with bond costs any</p>

Introduction to solar contracts - Handout

Tips for developing a solar contract

1. Do you have a good attorney who can devote time to it?
2. Identify community priorities related to solar
 - Sift according to what is doable to focus on
3. Share the workload in developing a solar contract
4. Words matter: Use strong language
5. Pay attention for who is responsible
6. Learn from experienced people (listed) & looking at signed contracts
7. Share the contract standards & rationale with contractors and subcontractors

Solar contract standards

We expect most communities would want to include the following standards in their solar contracts for fiscal and oversight reasons:

1. Project's use of roads and road repair obligations
2. Drainage and tile repair obligations – ditches, culverts and tiles
3. Decommissioning - removal of equipment and restoration
4. Guaranteed level of revenue sharing for local governments
5. Replacement of lost tax revenue to school districts and technical colleges
6. Professional fee reimbursement for services from experts related to developing and negotiating the solar contract language
7. Establishing lines of communication, compliance and enforcement

Solar contract standards

Additional standards:

- Erosion control & stormwater management
- Wind erosion
- Construction phasing
- Ground cover vegetation
- Vegetation management
- Grazing animals
- Topsoil preservation
- Wetland setbacks
- Siting and fencing to reduce impacts on wildlife
- Visual concerns and buffers
- Noise impacts
- Lighting and glare
- Public safety & emergency management
- Battery energy storage systems
- Cooperation

Solar contract standards – coming soon

Siting and fencing to reduce impacts on wildlife

Explanation: The National Electrical Code requires fences around solar arrays and substations. Fencing thousands of acres of land can take 20 miles or more of fence and can be a concern for both small and large wildlife movement.

Standard to address	Most Favorable Language Found	How language benefits local governments and communities	State Statutes/BMP Recommendations	Unanswered Questions in Existing Contract Language
Roadway Fencing Setbacks	Fencing shall be a minimum of 40 yards from the traveled portion of the roadway or a distance shorter if needed by the developer to maintain operation. (Vista Sands, 6.e.6)	40 yards is much further than most setback requirements. Lesser road setbacks may result in an increase in large mammal-vehicle collisions		Does the developer need to provide evidence of the need to input shorter setback distances?
Non-Navigable Fencing Setbacks	If not deemed “navigable”, a minimum twenty-foot setback will be maintained to all above ground project components. (Badger State, 6.a.2)	Explicit mention of a setback for any non-navigable waterways is positive and helps protect crucial habitat for local wildlife.		

Solar contract standards

Wildlife corridors

Explanation: When not located prudently, large scale solar projects can inhibit the movement of large mammals such as deer, elk, wolves, and bears. The fenced arrays act as a barrier which could cause habitat fragmentation and disruption to daily movement and migratory patterns.

Fences

- Modify array fence height to be as low as possible while adhering to safety standards. 7'
- Avoid using barbed wire on top of the fences except when surrounding substations.
- Provide ramps along the inside of the fence at regular intervals for larger wildlife if frequent entrapment is occurring. ?
- Utilize [small wildlife permeable fencing \(must be defined\)](#) around all solar arrays or when adjacent to wetlands, waterways, and/or natural areas. Options include:
 - Raise the fence a minimum of 6-8" off the ground; [preferred](#) because it allows wildlife passage under the entire fence allowing prey animals a much greater chance of survival
 - Ensure that the openings at the bottom of the fence are a minimum 12" wide by 8" tall
 - Install 1' x 1' openings every 50-100'

Corridors

- Break up array fencing where known wildlife corridors are already present such as along waterways, wetlands, or other natural habitats. [Need to define where corridors are.](#)
- Developer shall divide large portions of the project into 160 acres or less sub-parcels to establish unfenced corridors for wildlife and other uses.

Map navigation controls including a search bar labeled "Find address or place" and icons for zooming, information, street view, printing, and sharing.

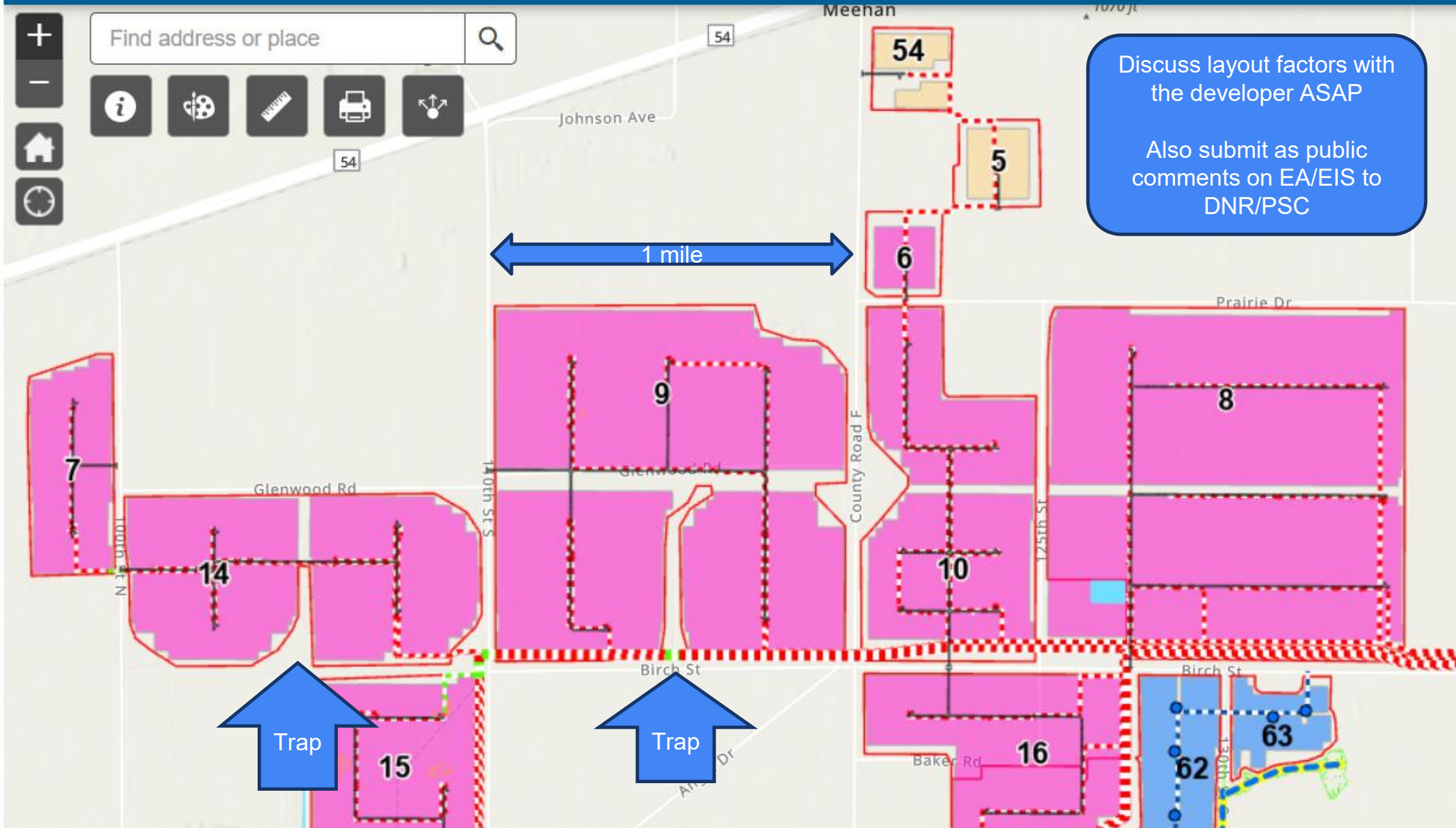
Discuss layout factors with the developer ASAP

Also submit as public comments on EA/EIS to DNR/PSC

1 mile

Trap

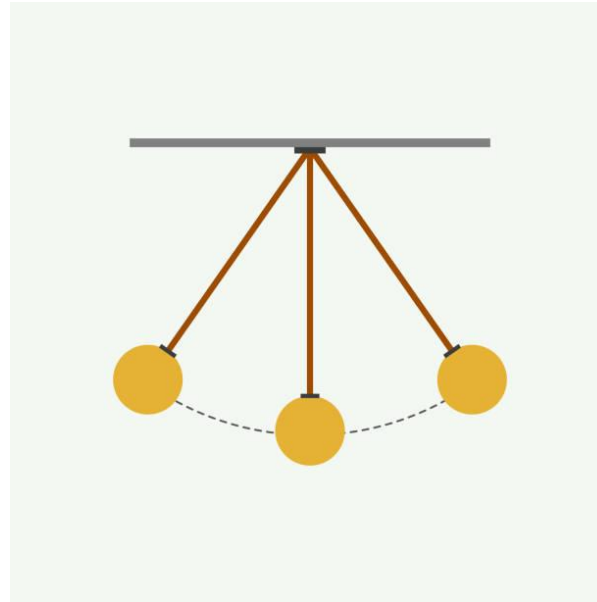
Trap



State policy options for 100 MW+

Current law

- PSC decides
- JDAs common but voluntary



Options

1. Solar adm code like PSC 128 (PSC + leg)
2. State law requiring negotiation with local govt, like landfill siting; \$ resources to pay experts for local govts (leg)
3. Extend PSC time between engineering plan and CPCN to 1 year

SB3

- Local govt decides 1st
- Complete app not required
- No standards
- 90 -180 days to decide
- Only applies to solar and wind, not natural gas, coal or nuclear plants

Thanks to all who make this work possible

- All of the people who jumped in and developed solar contracts
- Wisconsin Land + Water
- WCCA
- Matthew and Karen at CLUE
- Our reviewers
- Our panelists
- DNR staff who recommend environmental requirements to PSC

Panel of experts

- Kurt Calkins, Columbia County Land Resources Director
- Matt Zangl, Jefferson County Director of Planning and Development
- Keith Lane, Grant County Administrator of Conservation, Sanitation and Zoning
- Shannon Haydin, DNR Stormwater Section Manager

Panel questions with audience input

1. When in the permitting process to start (and try to finish) negotiating a JDA/solar contract
2. Tips for developing communication lines with the solar developers & contractors, compliance and enforcement
3. A key contract/JDA standard you'd like to highlight?
Fence setbacks from roads, waterways or wildlife corridors, fence types, construction phasing, topsoil preservation, lighting and noise, etc.

Audience questions!!

Thank You!

Lynn Markham, Karen Blaha & Matthew Hurley
Center for Land Use Education

715-346-3879

lmarkham@uwsp.edu



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