1. How many distributed generation installations have you worked on in Wisconsin?
(21 responses)

2. What types of distributed generation have you installed in Wisconsin?
(21 responses)

Q2. “Other” responses included:
- Hydro (1)
- Solar Thermal (1)
- Digester Biogas (1)
- Battery Backup (1)
- Off-grid PV (1)
3. What sizes of distributed generation installations have you worked on in Wisconsin?
(21 responses)

<table>
<thead>
<tr>
<th>Size</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 10 kW</td>
<td>17</td>
<td>81%</td>
</tr>
<tr>
<td>10 - 50 kW</td>
<td>17</td>
<td>81%</td>
</tr>
<tr>
<td>50 - 100 kW</td>
<td>8</td>
<td>38.1%</td>
</tr>
<tr>
<td>100 - 500 kW</td>
<td>7</td>
<td>33.3%</td>
</tr>
<tr>
<td>500 kW - 1 MW</td>
<td>5</td>
<td>26.6%</td>
</tr>
<tr>
<td>Greater than</td>
<td>3</td>
<td>14.3%</td>
</tr>
</tbody>
</table>

4. Looking ahead, what types of newer distributed generation technologies do you personally expect to be working on in Wisconsin within the next 5 years?
(21 responses)

- 42.9%
- 52.4%

Q4. "Other" responses included:
- Energy storage (7)
- Micro-grids (2)
- Off grid (1)
- Optimizers (1)
5. Which of the following are the most difficult aspects of working with an electric provider on an interconnection?

(21 responses)

Q5 asked for respondents to choose up to 3 options. Answer options included:

a. Initial interconnection application
b. Engineering review
c. Distribution system study
d. Timeframe for interconnection
e. Siting and land rights
f. Email and phone communication with utility
g. Installation testing
h. Insurance requirements
i. Technical requirements
j. Distribution system relaying protection communication requirements
k. Other

“Other” responses included:

- Haven’t had any issues thus far
- We are a distributor
- Anti-solar attitudes & policies
- Over reach of Utility – They are not responsible for anything beyond “Service Point”
- Dual metering requirement - simply not necessary. They should simply use one bi-directional meter, but instead they try to drive up installation costs by requiring removal of customer’s meter pedestal and replacement with a dual meter pedestal.
- Interconnection Costs
- Buyback rates
- Ensuring metering reprogramming/change out has occurred or work order has been completed. Some utilities won’t do it before energizing system, some will, seems like an easy task that can be done right when an application is approved and shouldn’t have to be something we ask for separately...
6. Have you experienced any delays during the interconnection process?

<table>
<thead>
<tr>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>no</td>
</tr>
<tr>
<td>No, we are a distributor</td>
</tr>
<tr>
<td>Unsure</td>
</tr>
<tr>
<td>YES, some utilities seem to be dragging their feet more than in the past.</td>
</tr>
<tr>
<td>Yes, Certificate of Insurance</td>
</tr>
<tr>
<td>Yes, Utilities often try and dictate how a system is installed. Beyond metering requirements they have no say. The inspector and codes do. Yes, in getting responses from utility</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Minimal communication delay</td>
</tr>
<tr>
<td>Yes, dual metering requirement was not clearly stated during the application process, and caused later delays in project commissioning. The process has evolved over time requiring more site visits by both the utility and installer adding only costs without value</td>
</tr>
<tr>
<td>Yes, Long lead time for utility equipment</td>
</tr>
<tr>
<td>Yes, I had a utility representative claim that the standard COI from a customer’s insurance agent with the appropriate limits was inadequate to install a solar system. He insisted this right up to being contacted by the customer’s lawyer. Utilities typically have little idea what to do with small wind systems</td>
</tr>
<tr>
<td>Yes, documentation hiccups. Lack of consistency within a utility and especially utility to utility. New requirements every chance the utilities get, like the disconnect being within 10' of the meter. New requirement to show in your drawing that the disconnect is within 10' of the meter. Extensive steps and paperwork</td>
</tr>
<tr>
<td>Yes, Inverters are UL1741 listed and reduce total load of building. This should be fairly easy to approve. Yes, with meter reprogramming. See answer for Other in #5</td>
</tr>
<tr>
<td>Yes, for the most common systems, we can procure parts and install faster than application is processed. Yes because the utility is changing its protocol</td>
</tr>
</tbody>
</table>
7. Was your interconnection application ever deemed incomplete after you first submitted it for approval?

(21 responses)

<table>
<thead>
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<tbody>
<tr>
<td>No</td>
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<td>No</td>
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<td>No</td>
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<tr>
<td>No</td>
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<tr>
<td>No</td>
</tr>
<tr>
<td>We are a Distributor</td>
</tr>
<tr>
<td>Unsure</td>
</tr>
<tr>
<td>YES, utility requirements change and we never get notified</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>NO</td>
</tr>
<tr>
<td>Yes, Additional information requested.</td>
</tr>
<tr>
<td>Yes, One utility required the use of their interconnection application form even though the content was identical to the PSC 6027 and their form was not a fillable pdf.</td>
</tr>
<tr>
<td>Yes, usually a misunderstanding on the part of the utility</td>
</tr>
<tr>
<td>Yes, didn't indicate on drawing that disconnect is within 10' of meter. Last year they didn't even require a knockable disconnect on residential projects! New requirements to include inverter and module specification sheets. Utility questioning code issues on the DC side, which has nothing to do with the AC connection to their system and should be the purview of the AHJ.</td>
</tr>
<tr>
<td>Yes. For attachments.</td>
</tr>
<tr>
<td>Yes, despite providing all documentation to required contact, local utility office requests same documents that were originally provided.</td>
</tr>
<tr>
<td>yes but only few times</td>
</tr>
</tbody>
</table>
8. Did you research or otherwise know the characteristics of the distribution lines serving the locations of your installations prior to submitting your interconnection applications?

(21 responses)

- Yes, I generally know the characteristics of the distribution lines prior to submitting an application
- No, I usually do not know the characteristics of the distribution lines prior to submitting an application.

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Why do you not know the characteristics of the distribution lines prior to submitting an application?

(8 responses)

- Sounds like a daunting task, probably a lot of back and forth communication with the utility
- We area Distributor
- We install only C&I systems which connect prior to a customer's meter.
- How would you?
- The interconnection requirements limit the system size to be less than or equal to the load. Therefore, it is unlikely that the system would cause any need to analyze the distribution line capacity.
- Information from utility not determined until line study.
- The transformer size is not readily visible at the service.
- It is not available as far as I know.
9. Do you believe you have experienced inconsistent application of interconnection procedures and technical standards on installations you have worked on?
(21 responses)

![Pie chart showing 57.1% Yes and 42.9% No]

- No, any differences have been due to site specific characteristics
- Yes, procedures and standards have not been uniformly applied.

Please explain how procedures and standards have not been uniformly applied.
(12 responses)

- Primarily metering changes:
  - The requirements vary widely from one utility to the next.
  - Net metering on multiple meter facilities are often fought.
  - Pricing for same components/fees differs widely across utilities.
  - Engineers are all different on what they deem is necessary
  - Different utilities have different interconnection requirements.
  - Different forms, different inspection requirements
  - Different utilities interpret the interconnection standards for their own service territories for their own benefit, usually to disuade the installation.

- See previous answers:
  - Each utility and local AHU have different expectations, understanding, and requirements. It is difficult to keep them all straight.
  - With interconnection of small systems being routine, some utilities require separate meter which adds significant cost, with no benefit to consumer.
  - They are labeling requirements and kWh meter requirements
10. What would you most like to discuss or get more information about from the utilities?
(21 responses)

- Common project barriers from installer/contractor perspective (47.6%)
- Updating technical rules (14.3%)
- Adding clarity to each party's responsibilities (14.3%)
- Interconnection fees (14.3%)
- Developing standard educational and communication tools (i.e. guides, manuals, etc.) (9.5%)

11. If you could spend time with utilities discussing one of the following, which would you choose?
(21 responses)

- Interconnection process - timelines, paperwork, procedure (52.4%)
- Technical interconnection details - technical requirements, equipment standards, study procedures (47.6%)
12. What improvements in the interconnection process would you suggest?
(21 responses)

- Make the application process online, get rid of email and paperwork
- We are a distributor
- Standardized metering and methods
- Unsure
- Standardized statewide process.
- Standardized insurance requirements.
- Less control from the utility. They simply supply power.
- Overly high fees
- Consistent application of the rules
- Improved communication on approval and project clearance
- Each utility should provide a simple list of equipment requirements immediately upon contact for a potential system. Specifically any metering requirements and sample one-line diagrams.
- Implement two-way metering and load side connection
- Eliminate the site commissioning process
- Eliminate external disconnect
- Interconnection costs should only be what is required to get the project online. Additional utility upgrades should not be added to the project costs.
- Standardized rules across all IOUs and Coops
- Less subjective manipulation of the interconnection process by the utility
- The state PSC should enforce uniform progressive standards, and not let the utilities all do it on their own inconsistent way.
- Quick approval to simple grid-tie UL1741 systems.
- Consistent co-op rules
- Metering requirements (one meter vs. multiple) should be standardized.
- Streamline application process/timing for common systems.
- Better communication with the home owner from the utility
13. Would you be interested in attending an educational, information-sharing forum for electric providers and installers/contractors in Wisconsin regarding distributed generation interconnection?
   (21 responses)
   - Yes. I would attend a half day forum: 47.6%
   - Yes. I would attend a full day forum: 38.1%
   - No, I would not be interested in attending a forum: 14.3%

14. When is the best time to hold an educational, information-sharing forum for electric providers and installers/contractors in Wisconsin regarding distributed generation interconnection?
   (21 responses)
   - Any time of year is fine: 81%
   - Hold it in winter to avoid installation construction season: 19%