Solar in the Midwest
Utility Opportunities to Effect Positive Customer Experience
Modelling Interconnection Process Frameworks

May 28, 2015
Agenda

- How updated utility processes can lead to positive customer experiences
- Solar enrollment processes & supporting technologies
- A preview upcoming challenges and opportunities in distributed energy like community solar
Speakers

Tom Kerestes is a member of the Energy & Utilities Practice of West Monroe. With nearly 40 years of electric and gas utility experience, including 15 years in the water and wastewater utility industry, Tom executes and advances strategies that drive advantages to Clients through innovative transformation.

Emily McGavisk is a Consultant in the Energy & Utilities practice at West Monroe Partners. She began her career in August of 2014 after receiving her Master’s degree in Civil and Environmental Engineering from Carnegie Mellon University.

Dean Moretton is a consultant with 27 years of experience in designing and implementing a broad spectrum of technology and business processes for energy clients. His expertise includes analyzing, designing & procuring community solar solutions, securing grants and incentives for such projects, and project management.

Sean Murphy is an experienced business builder with a proven track record in strategic planning, product management, and innovation. He has more than 20 years experience in companies including Motorola, NEC, Nokia and Microsoft.
An Overview of the Grow Solar Partnership’s Published Report

- Current State Findings of Solar Enrollment Processes at Midwest Utilities
Question: What do you feel is the biggest process challenge related to rooftop solar deployment?

A. Permit process
B. Interconnection application
C. Transparency
D. Inspections
The Grow Solar Partnership works to reduce the barriers to solar generation across the Midwest

◆ Funded through DOE SunShot Initiative’s Rooftop Solar Challenge (Phase II) grant, the Grow Solar Partnership is a network of regional partners working to leverage private, local, and state support to reduce barriers to rooftop solar across the 3-state region of Illinois, Minnesota, and Wisconsin.

◆ The Grow Solar Partnership is a combination of three SunShot Rooftop Solar Challenge Phase I recipients.

◆ West Monroe Partners is leading the Utility Interconnection Process workstream:
  Complete:
  • Current State Findings Report, which highlighted current utility- and stakeholder-identified pain points and best practices across four major target areas: application, information access, processing time, and inspections
  Next Steps:
  • Developing Interconnection/Net metering process improvements design and implementation paths with regional utility stakeholder groups to feed Best Practices Report
  • Providing technical assistance in creating pilot utility multi-year Solar Adoption Roadmaps with technology / process improvements for six utilities
Ownership Landscape: Approximately 9 million customers are served by electric utilities in the 3-state region, and 75% served by investor owned utilities

<table>
<thead>
<tr>
<th>Ownership Type</th>
<th>Number of Customers Served (2012, EIA)</th>
<th>Percent of Total Served</th>
<th>Number of Utilities</th>
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<tbody>
<tr>
<td>Investor-Owned</td>
<td>9,042,032</td>
<td>75%</td>
<td>21 (top 10 serve 73%)</td>
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<tr>
<td>Cooperative</td>
<td>1,288,454</td>
<td>11%</td>
<td>95</td>
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<tr>
<td>Municipality</td>
<td>760,160</td>
<td>6%</td>
<td>199</td>
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<tr>
<td>Retail Power Marketer (ARES)</td>
<td>1,022,193</td>
<td>8%</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td>9 Million Customers</td>
<td>100%</td>
<td>343 Utilities</td>
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<tr>
<td>Total Population (2012, USCB)</td>
<td>24 Million Population</td>
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Regulatory Landscape: a Utility’s obligation to follow standard rules regarding solar enrollment processes varies by state and ownership type

**Regulated utilities**: subject to regulation by state legislature

**Unregulated utilities**: not subject to regulation by state legislature, these entities may follow individual/member-organization/regulated procedures

- **Illinois**
  - Regulated: IOUs, Alternative Retail Electric Suppliers
  - Unregulated: Cooperatives, Municipals

- **Minnesota**
  - Regulated: IOUs, Cooperatives, Municipals
  - Unregulated: None

- **Wisconsin**
  - Regulated: IOUs, Municipals
  - Unregulated: Cooperatives
In recent years, utilities in the 3-state region have annually interconnected between 600 and 750 systems

- No existing public record of number of solar systems installed annually for Midwest states

- Data collection methodology varied between states
  - Minnesota: MN Department of Commerce, Division of Energy Resource
  - Wisconsin: Focus on Energy solar rebate applications

- The estimated cumulative number of solar installations per 100 customers in the 3-state region was far below that of the national average as of 2014

Point of reference: CA installed 36,300 solar systems in 2013
Almost 50 contractors have participated in the stakeholder survey to-date and report working with 8 of the 10 largest investor owned utilities in the region.

Surveyed groups included:
- Solar Minnesota, MnSEIA
- WI SEIA
- ISEA
- Clean Energy Project Builders (through CERTS)
- MREA solar contractors
- IGEN contractors

21 utilities have participated in the survey to-date and serve approximately 51% of total customer base:
- Regulated: 20 participants
- Unregulated: 1 participant

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<tr>
<th>State</th>
<th>IOUs</th>
<th>Muni’s /Coops</th>
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<tr>
<td>WI</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>MN</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>IL</td>
<td>1</td>
<td>0</td>
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*Other: government employee, solar advocacy group employee, PV solar owner, solar developer

60% of respondents were Contractors with direct utility application experience
Stakeholder Survey themes were broken down by application, information access, processing time, and inspections

- **Application:** *standardized* and *automated* applications can save customers, contractors, and utilities time and energy.

- **Information Access:** customers would like to see *transparency* in application requirements and *tracking* throughout the process.

- **Processing Time:** Timely application processing depends on established *utility review* and *customer response* expectations.

- **Inspections:** having *defined procedures* (forms, cost, time) and *City coordination* allows customers to efficiently complete their system go-live.
Feedback was aggregated to identify widespread pain points and observed best practices

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<th>Pain Points</th>
<th>Best Practice</th>
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| **Application**     | • Paper forms or semi-electronic applications  
                        • Unclear interconnection policies and application instructions  
                        • Unnecessarily complicated applications for small systems  
                        • Adoption of online tools endorsed by customers and installers  
                        • Adoption of standardized forms and having someone and dedicated to answering customer questions  
                        • Creation of simplified, 1-2 page applications for small systems |
| **Information Access** | • Lack of transparency in how to access and submit applications  
                        • No visibility into where application is in approvals process  
                        • Unexplained required system testing and costs  
                        • Providing online application materials  
                        • Adoption of standardized forms and having someone and dedicated to answering customer questions  
                        • Required documentation of when and why additional tests/costs are incurred |
| **Processing Time** | • Inconsistencies in application approval timings (even among regulated utilities)  
                        • Lengthy application reviews resulting from multiple returns of an application for being incomplete  
                        • Slow review times due to limited staff  
                        • Standardizing the time for individual portions of the overall application review  
                        • Providing clear, user-friendly instructions and identifying a utility contacts to answer questions  
                        • Creating streamlined review processes for small systems |
| **Inspections**     | • A lack of communication exists between solar installers and utility engineers  
                        • Unnecessary precautions required for small systems  
                        • Redundancies exist in paperwork required by utilities, cities/ municipalities, and states (for federal grant applications)  
                        • Providing interface for communications or providing standardized checklist to both parties  
                        • Creating less stringent inspection requirements based on system size  
                        • Creation of integrated application for different entities or a scheduling tool to better coordinate site visits |
How updated utility processes can lead to positive customer experiences
Question: What new opportunities for customer engagement do you see that solar interconnection represents?

A. Very little at this point. The opportunity is still too new.
B. Improvement of customer satisfaction via improving the interconnection process flow
C. A chance to cross-sell other services (e.g. energy efficiency)
D. Analytics-based new services to help customers manage their solar investment
Disruptive technology always brings both challenges and opportunities. Utilities need to do their best to ensure DG is leveraged as a positive opportunity.

Major shifts offer both challenges and opportunities

Customer expectations have changed dramatically

DG applications can be about more than reliability
Consumers are changing how they interact with companies they do business with due to the explosion of smart devices and communication channels available to them.

As a result, companies are questioning where and how customers prefer to transact, relate and experience their communications with them.

Differentiated Service
How do I balance cost effectiveness with customer preference and experience?

Channel Optimization
How do I provide channel choice but also influence channel selection to minimize cost to serve?

Seamless Experience
How do we design and realize a seamless and integrated cross-channel customer experience?
Utilities have multiple areas to leverage these fundamental shifts in customer engagement.

How do you engage customers to improve Customer Engagement & Satisfaction?

- **Enhance Customer Experience**
  - Segment your customers
  - Setup a program to measure and act

- **Optimize Channels**
  - Connect the multi-channel experience
  - Build CX capabilities and architecture

- **Reduce Cost to Serve**
  - Channel Strategy
  - Brand Laddering
  - Marketing Program Design & Execution
  - E-Commerce and Digital Portals

- **Enable 1:1 Marketing**
  - Optimize customer service model
  - Use each touch-point to drive value
  - Use self service appropriately
  - Focus on first time call resolution
  - Reshape your marketing mix
  - Personalize offers and relationships
  - Capture data and unlock insight
  - Build an efficient technology platform
Like “making sausage”, many activities take place within the utility during the application and approval process that customers won’t want to see in detail.

- Separate internal and external focused items
- Be transparent on external items
- Remember most customers don’t speak ‘utilitize’
- Contractors communicate to your customers
- Be proactive
- Implement a scalable process
- Prepare now for inevitable DG boom
Once the installation is complete, the utility still has the opportunity to be “more than another monthly bill”

- Highlight and promote customer benefits
- Leverage interval data to offer proactive analysis and diagnostics
  - Shows the utility is “trying to help”
  - Can also lead to word of mouth awareness on both the value of DG and the customer’s experience with the utility
- “Close the Loop” and actively seek input and feedback from your customers.

These are opportunities to stay engaged with the customer while providing information they find valuable.
Solar enrollment processes and supporting technologies
Question: What is the current solar interconnection application process approach?

A. Paper and telephone
B. Paper and email
C. Online form and email
D. Online form and account status
Residential Solar Purchase Lifecycle

- Need/Want Recognition
- Post Purchase
- Purchase & Enroll
- Research
- Evaluate
Before your customers contact you for interconnection and net metering applications, they have already made significant decisions.

- Have I gotten a home energy audit and considered efficiency improvements?
- Do I have suitable roof space or space on my property for a solar PV system?
- Is it a good long term investment that matches my personal or family’s financial goals?
- What financing option is best for me?
- Who should I select as my installer?

Installing residential solar is a significant investment decision for your customers. They will have already invested significant time and effort before contacting their utility.

Source: NC Clean Energy Technology Center
Enrollment is often the first interaction the customer has with the utility
Visibility into the process and progress is key
Establish KPIs can give a measure of the effectiveness of your process:
Most customers enrolling are technology savvy, so having a process that meets their expectations may include things such as:
- Web-Based Enrollment
- On-Line Payment (of application fee)
- Ability to trace progress of application on-line
- Time to complete initial screen
- Time to move through application to approval
The current “customer experience” for many utility customers with a typical “paper” (or PDF) type of application process.

Paper processes don’t scale as application volumes increase
The enrollment process can have the “look and feel” typical of online applications providing a feeling of familiarity (an ease of use) to the customer...
All information and related correspondences can be captured in a single database that customers and the utility can access at any time.
From the utility perspective, application can be handled via dashboards, improving communication and cycle times, while reducing soft costs.
A preview upcoming challenges and opportunities in distributed energy like community solar
Question: You expect significant solar PV to deploy in your area by... ?

A. We’re already seeing it
B. 2016-2017
C. 2018-2019
D. Not likely in the next 5 years
Specific utility concerns include developing online tools for customers, adjusting billing software, and responding to grid operation impacts.

**Administrative Challenges**
- Having staff in adequate number to process applications in a timely manner
  - 67% of respondents reported that they expect the administrative burden on staff to review applications to be a **high or medium concern** for their company in coming years
- Deploying online tools to efficiently manage applications
  - Only 38% of utility survey respondents make applications available online and **10% have an online submission processes in place**

**Technical Challenges**
- Technical evaluation of the system/grid conditions
- Responding to grid operation impacts of distributed generation (power flows, load forecasts, etc.)
- Ensuring safe operation of installed systems
- Adjusting billing software/meter reading system to handle net metering issues

**Legislative Challenges**
- Responding to legislative carve out requirements
- Creating shared solar programs (legislative or voluntary)
- Creating appropriate applications and paying structures for self-regulated utilities
- Regulatory reporting on application timeframes and approvals
- EPA’s proposed 111(d) rule for existing power plants
Solar DG Project Lifecycle – Analytics & Design Tools/Documentation
Leveraging Future Technologies

Optimal DG Placement
- Distribution System Plan
- Optimal Locations
- Enabling Infrastructure

Evolving DG Technologies
- Storage
- Electric Vehicles
- Microgrids (renewables, CHP, fuel cell, IC engine)

Managing DG Resources
- Net Metering
- Energy Markets (capacity & ancillary services)

From EIA, NREL, Active Power Control from Wind
Looking ahead, The Grow Solar Partnership will focus on three trends influencing Utility solar enrollment processes

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<tr>
<th>Trend #1: Increased Distributed Solar Applications</th>
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<tr>
<td>• Customers driven to install PV by decreases in cost of PV and greater interest in environmental matters</td>
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<td>• 80% of large IOU respondents are anticipating increased solar applications in the next 3 years</td>
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<td>• State-level rebate and performance-based incentive program adoption</td>
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<tr>
<th>Trend #2: Increased Distributed Solar Grid Penetration</th>
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<td>• Legislative mandate: Minnesota’s 2013 legislation requires 1.5% of electricity be generated by solar by 2020</td>
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<tr>
<td>• Legislative mandate: 6% of annual generation must be supplied by solar PV in Illinois by June 1, 2015 and thereafter</td>
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<th>Trend #3: Direct Utility Participation in Solar Projects</th>
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<td>• Minnesota: Xcel’s Community Solar Gardens (MN PSC Article 10, Section 2)</td>
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<td>• Minnesota: Made in Minnesota (MiM) performance based inventives</td>
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<tr>
<td>• Illinois: possible community solar carve out in Supplemental Photovoltaic Procurement Plan</td>
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<tr>
<td>• Cross-Collaboration with multiple DOE-funded Solar Market Pathways grants</td>
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Questions?