Grow Solar A Midwest Partnership to Move Markets

Powered by SunShot U.S. Department of Energy

Solar in the Midwest

Utility Opportunities to Effect Positive Customer Experience
Modelling Interconnection Process Frameworks

May 28, 2015

BUSINESS CONSULTANTS

DEEP TECHNOLOGISTS

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Agenda

- An overview of the Grow Solar Partnership's Published Report: Current State Findings of Solar Enrollment Processes at Midwest Utilities
- 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.

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.

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.

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**.**
  - **Core Partners:** Midwest Renewable Energy Association, West Monroe Partners, Environmental Law and Policy Center, Great Plains Institute, City of Milwaukee, Clean Energy Resource Teams, Illinois Green Economy Network
  - **State Energy Offices:** Illinois Department of Commerce and Economic Opportunity, Minnesota State Energy Office, Wisconsin State Energy Office

- West Monroe Partners is leading the Utility Interconnection Process workstream:

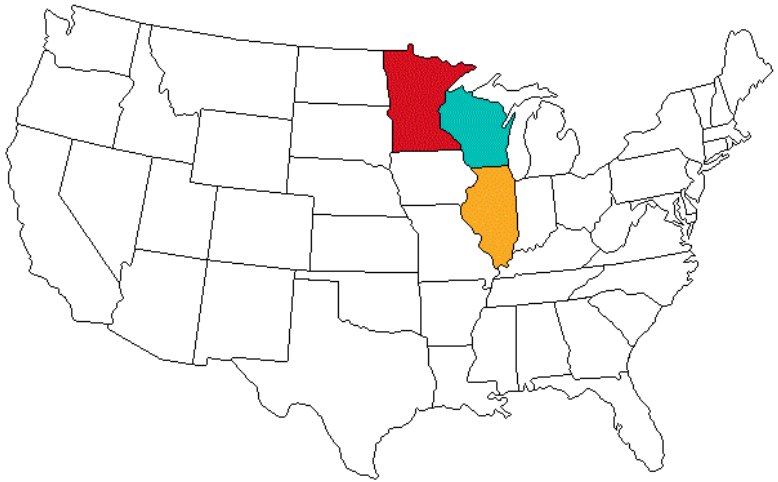
  Complete:
  - Current State Findings Report, which highlighted current utility- and stakeholder-identified pain points and best practices across four major target areas: application, information access, processing time, and inspections

  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

Ownership Type	Number of Customers Served (2012, EIA)	Percent of Total Served	Number of Utilities
Investor-Owned	9,042,032	**75%**	21 *(top 10 serve 73%)*
Cooperative	1,288,454	11%	95
Municipality	760,160	6%	199
Retail Power Marketer (ARES)	1,022,193	8%	28
Total	**9 Million Customers**	100%	**343 Utilities**
Total Population (2012, USCB)	**24 Million Population**		

Regulatory Landscape: a Utility's obligation to follow standard rules regarding solar enrollment processes varies by state and ownership type



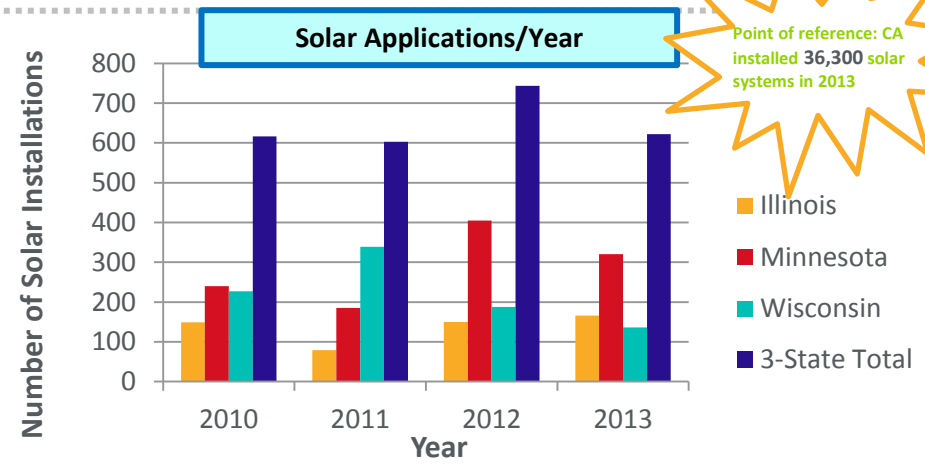
***Regulated utilities**: subject to regulation by state legislature*

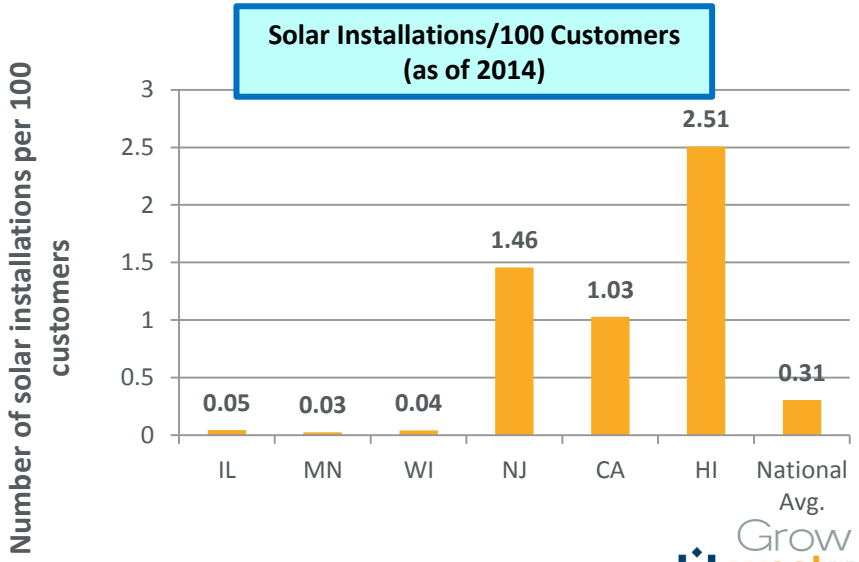
***Unregulated utilities**: not subject to regulation by state legislature, these entities may follow individual/member-organization/regulated procedures*

	Regulated	Unregulated
Illinois	• IOUs • Alternative Retail Electric Suppliers	• Cooperatives • Municipals
Minnesota	• IOUs • Cooperatives • Municipals	• None
Wisconsin	• IOUs • Municipals	• 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
  - Illinois: Illinois Department of Commerce & Economic Activity, Solar and Wind Energy Rebate Program
  - 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

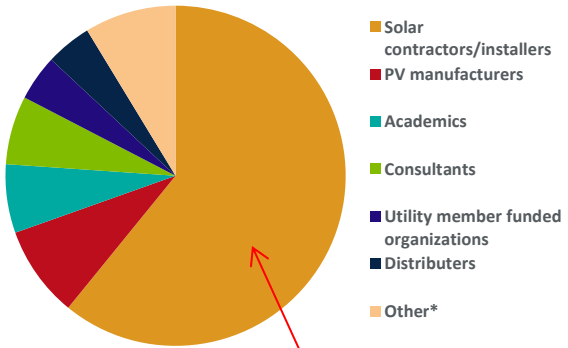




Online Surveys were circulated to utility contacts and additional distributed generation stakeholders to harvest information about current solar enrollment processes

Stakeholder Survey

- **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



*Other: government employee, solar advocacy group employee, PV solar owner, solar developer

Utility Survey

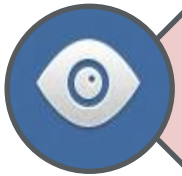
- **21 utilities have participated in the survey to-date and serve approximately 51% of total customer base**
  - Regulated: 20 participants
  - Unregulated: 1 participant

State	IOUs	Muni's /Coops
WI	3	13
MN	2	2
IL	1	0

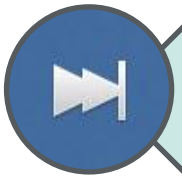
60% of respondents were Contractors with direct utility application experience

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

	Pain Points	Best Practice
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.

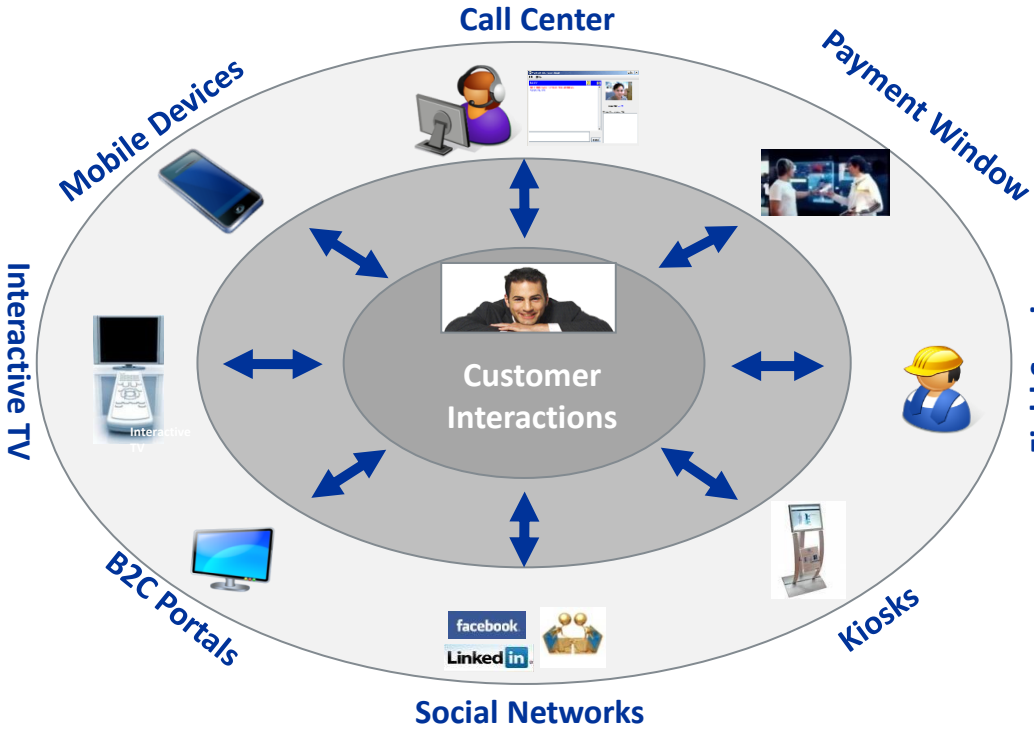
Major shifts offer both challenges and opportunities

Customer expectations have changed dramatically

DG applications can be about more than reliability

As customer-enabled technologies, social media and cloud solutions change the game, customers needs continue to evolve and utilities need to adapt

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	Connect the multi-channel experience
Setup a program to measure and act	Build CX capabilities and architecture

Optimize Channels

Channel Strategy	Brand Laddering
Marketing Program Design & Execution	E-Commerce and Digital Portals

Reduce Cost to Serve

Optimize customer service model	Use self service appropriately
Use each touch-point to drive value	Focus on first time call resolution

Enable 1:1 Marketing

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.

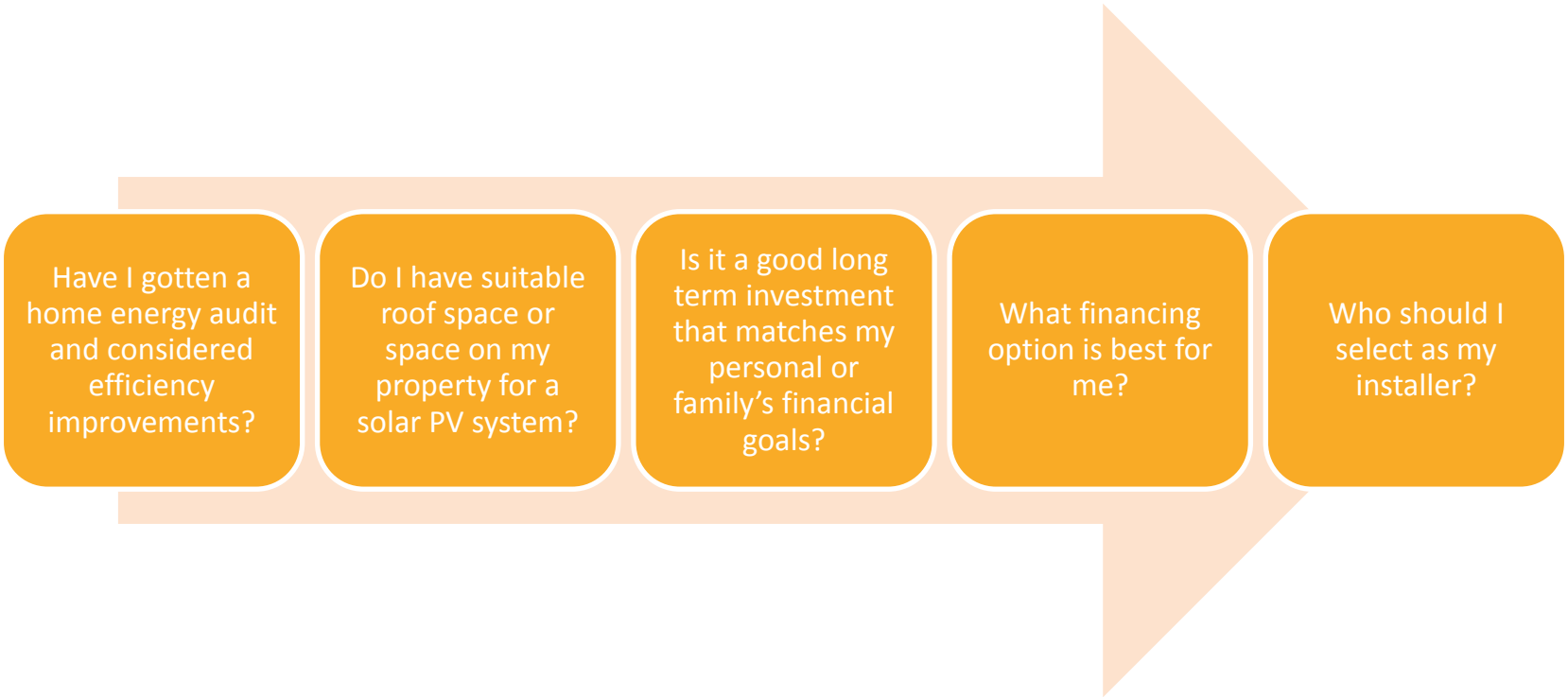
Solar enrollment processes and supporting technologies

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

Before your customers contact you for interconnection and net metering applications, they have already made significant decisions.



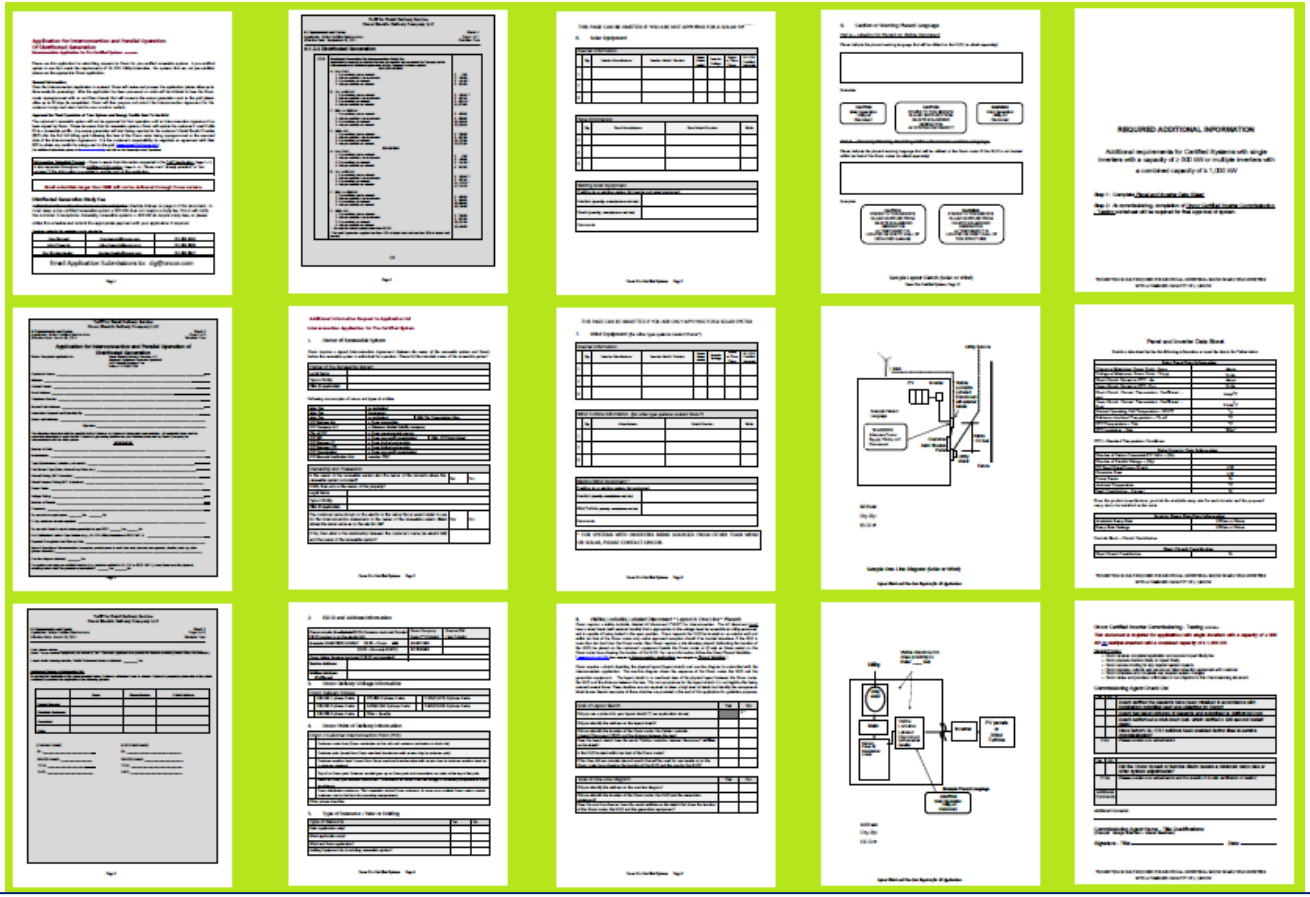
Installing residential solar is a significant investment decision for your customers. They will have already invested significant time and effort before contacting their utility.

Source: NC Clean Energy Technology Center

The enrollment and approval along with related activities should be easy, timely, and transparent.

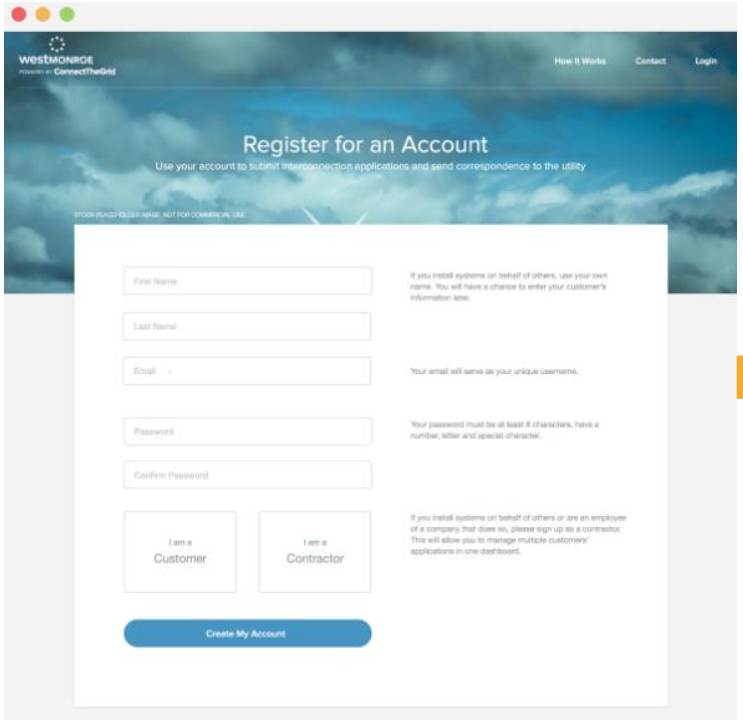
- Enrollment is often the first interaction the customer has with the utility
- Visibility into the process and progress is key
- Establish KPIs can give a measure of the effectiveness of your process:
- Most customers enrolling are technology savvy, so having a process that meets there expectations 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

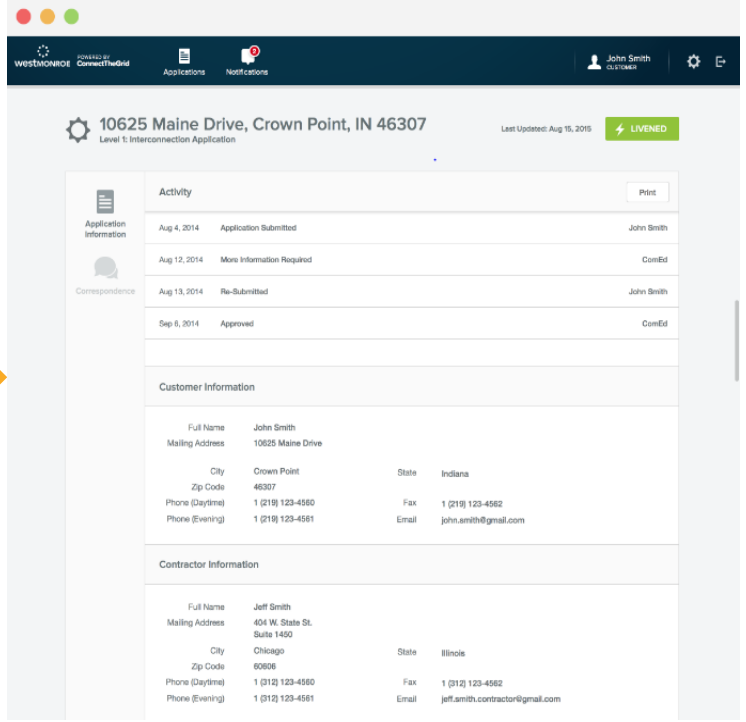
The current “customer experience” for many utility customers with a typical “paper” (or PDF) type of application process.



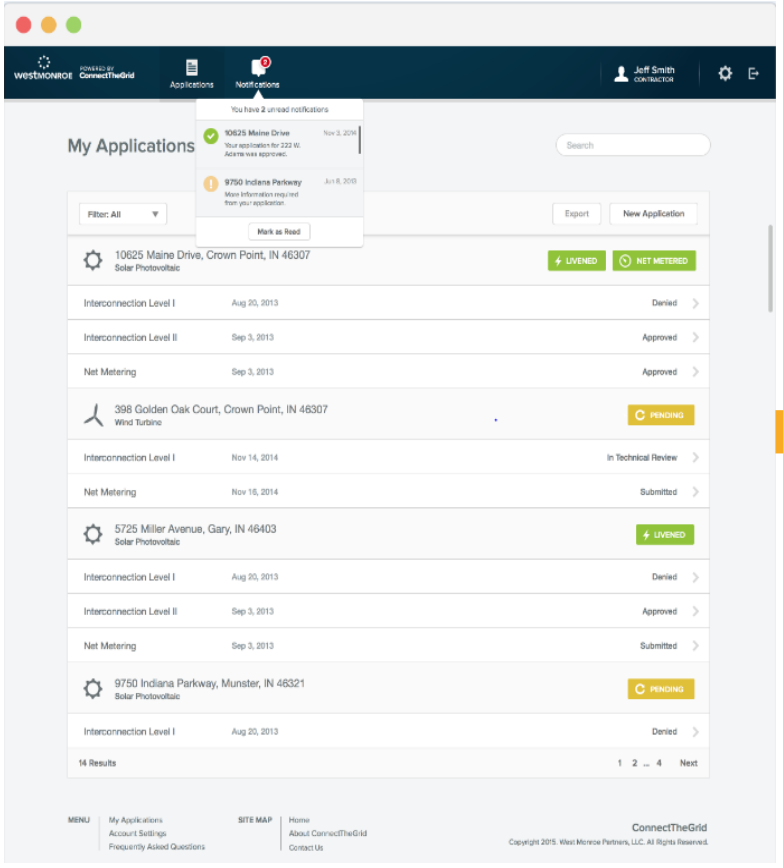
Paper processes don’t scale as application volumes increase

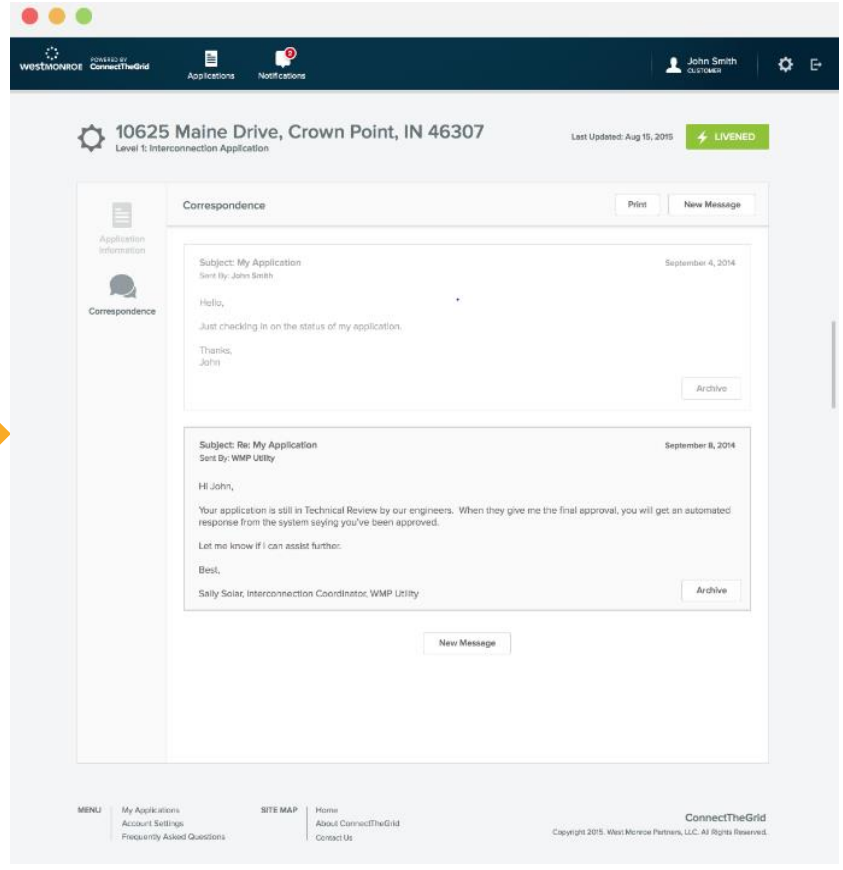
The enrollment process can have the “look and feel” typical of online applications providing a feeling of familiarity (an ease of use) to the customer…



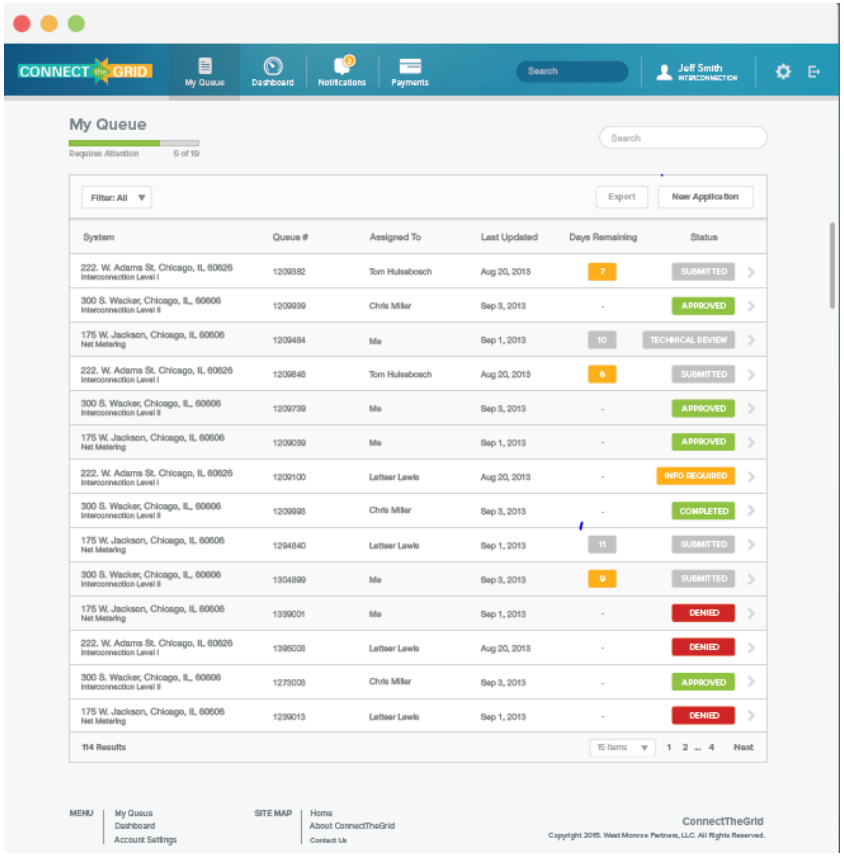


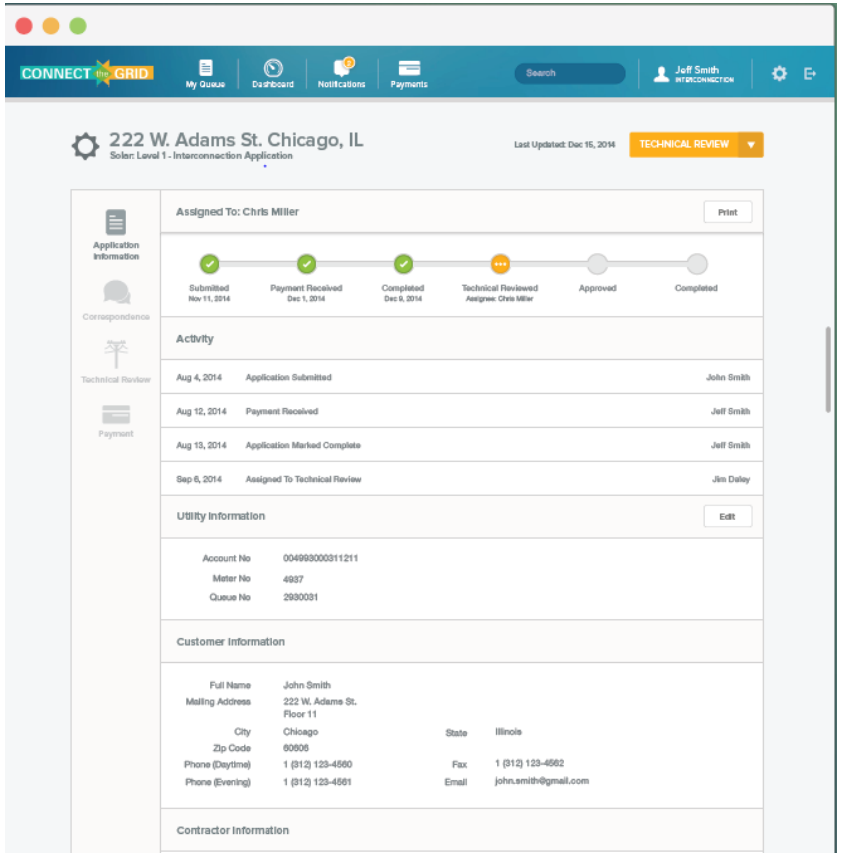
All information and related correspondences can be captured in a single database that customers and the utility can access at any time.





From the utility perspective, application can be handled via dashboards, improving communication and cycle times, while reducing soft costs.





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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***

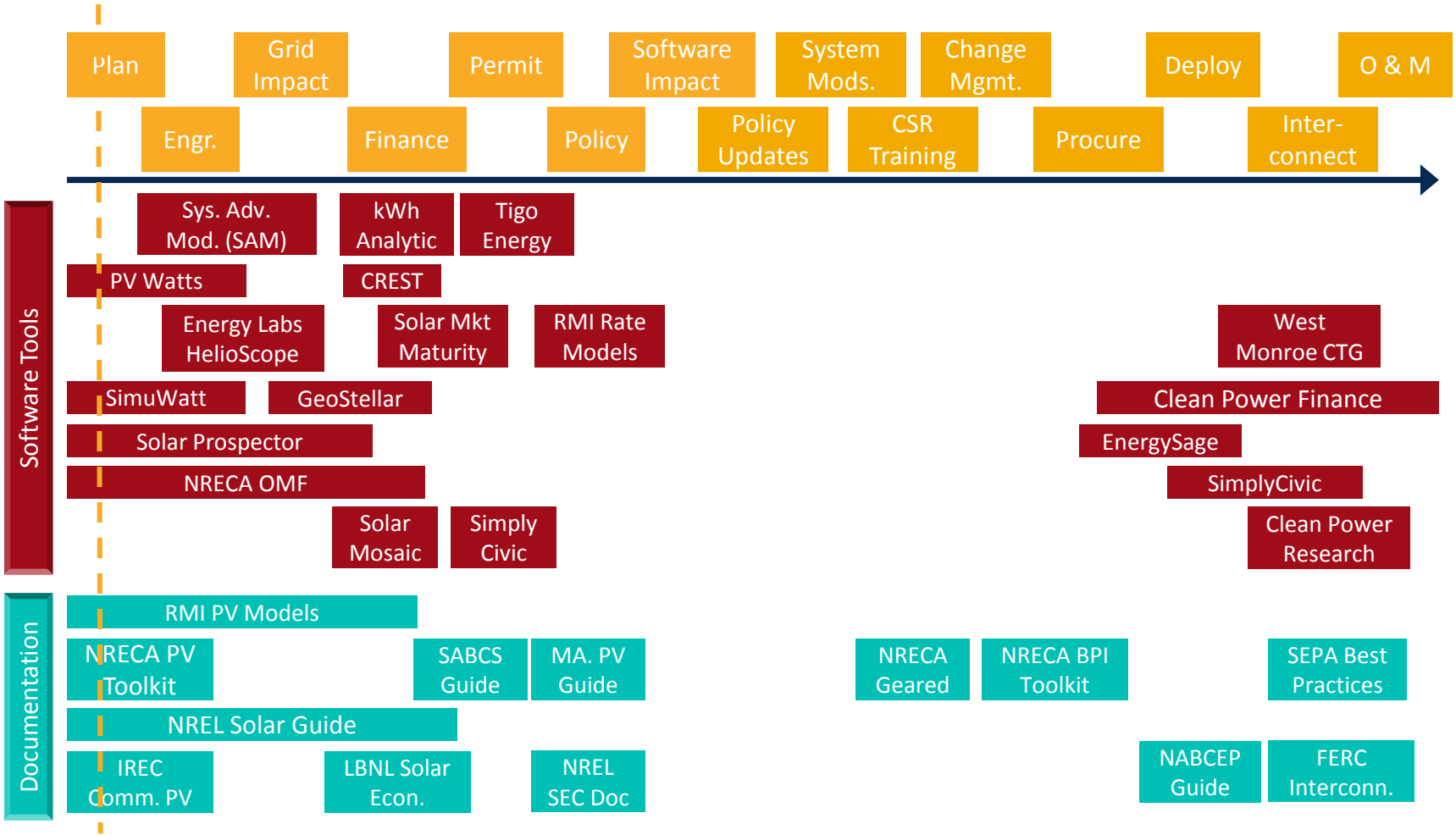
Technical Challenges

- **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



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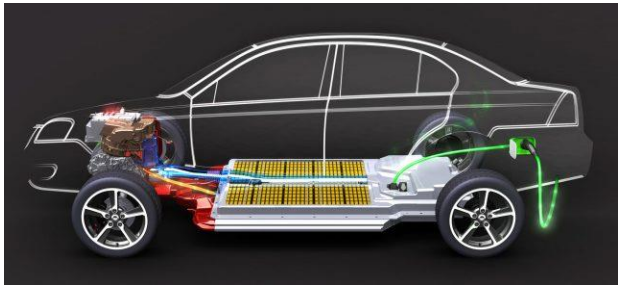
Leveraging Future Technologies

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)

21 cents per kWh just to provide regulating capacity!

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Annual Average $/MW-hr										
California (Reg = up + dn)										
Regulation	26.9	35.5	28.7	35.2	38.5	26.1	33.4	12.6	10.6	16.1
Spin	4.3	6.4	7.9	9.9	8.4	4.5	6.0	3.9	4.1	7.2
Non-Spin	1.8	3.6	4.7	3.2	2.5	2.8	1.3	1.4	0.6	1.0
Replacement	0.90	2.9	2.5	1.9	1.5	2.0	1.4			
ERCOT (Reg = up + dn)										
Regulation		16.9	22.6	38.6	25.2	21.4	43.1	17.0	18.1	31.3
Responsive		7.3	8.3	16.6	14.6	12.6	27.2	10.0	9.1	22.9
Non-Spin		3.2	1.9	6.1	4.2	3.0	4.4	2.3	4.3	11.8
MISO (day ahead)										
Regulation								12.3	12.2	10.8
Spin								4.0	4.0	2.8
Non Spin								0.3	1.5	1.2
New England (Reg = "mileage")										
Regulation			54.6	30.2	22.7	12.7	13.8	9.3	7.1	7.2
Spin					0.3	0.4	1.7	0.7	1.8	1.0
10 Minute					0.1	0.3	1.2	0.5	1.6	0.4
30 Minute					0.0	0.1	0.1	0.1	0.4	0.3

Courtesy of Brendan Kirby

Eastern Date Hour	n
10/1/2009 0:00	28
10/1/2009 1:00	28
10/1/2009 2:00	28
10/1/2009 3:00	28
10/1/2009 4:00	28
10/1/2009 5:00	45
10/1/2009 6:00	209.02
10/1/2009 7:00	39.5
10/1/2009 8:00	43
10/1/2009 9:00	41.5
10/1/2009 14:00	28
10/1/2009 15:00	28
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10/1/2009 18:00	41.5
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10/1/2009 21:00	41.5
10/1/2009 22:00	41.5
10/1/2009 23:00	28

From EIA, NREL, Active Power Control from Wind

Looking ahead, The Grow Solar Partnership will focus on three trends influencing Utility solar enrollment processes

Trend # 1: Increased Distributed Solar Applications

- Customers driven to install PV by decreases in cost of PV and greater interest in environmental matters
- 80% of large IOU respondents are anticipating increased solar applications in the next 3 years
- State-level rebate and performance-based incentive program adoption

Trend #2: Increased Distributed Solar Grid Penetration

- Legislative mandate: Minnesota's 2013 legislation requires 1.5% of electricity be generated by solar by 2020
- Legislative mandate: 6% of annual generation must be supplied by solar PV in Illinois by June 1, 2015 and thereafter

Trend #3: Direct Utility Participation in Solar Projects

- Minnesota: Xcel's Community Solar Gardens (MN PSC Article 10, Section 2)
- Minnesota: Made in Minnesota (MiM) performance based inventives
- Illinois: possible community solar carve out in Supplemental Photovoltaic Procurement Plan
- Cross-Collaboration with multiple DOE-funded Solar Market Pathways grants

Questions?