April 25, 2013

Chicago Region Solar Market Transformation Team
SunShot Initiative - Rooftop Solar Challenge (RSC) I
Final Report

To: Josh Huneycutt, DOE Program Administrator

This final report represents the City of Chicago's deliverables and activities summary for the RSC I grant funded program. For more specific metrics details regarding the baseline and end-state solar market maturity, please refer to the NREL's web portal (https://solarmetrics.nrel.gov/).

Contents

The goal of Chicago's RSC I grant program was to induce a scaled rooftop solar PV market in Chicago. The principal motives driving this project were economic growth and increasing local clean energy resources. To buttress the City's commitment to the RSC I project, the City released a 2015 Sustainable Chicago Action Agenda that announced the City's goal is to create an additional 20 megawatts (MW) of renewable energy by 2015. From the report: **"Cut the solar permit approval time in half, and reduce the complexity of zoning for local solar installations."**

Chicago RSC I's major accomplishments (activities, products, and SOPO deliverables) for each of the Action Areas are included below.

Chicago RSC I Action Areas

Permitting

1.1 Create Expedited Permitting Process

Objective: Create an expedited solar permit process where qualifying projects can receive same-day permit approvals at reduced fees.

The City of Chicago's Department of Buildings has a permitting process in place (that existed prior to SunShot grant) to ensure all construction projects, including rooftop solar PV systems, meet public safety criteria and ensure code compliance. All solar installations must complete a permitting application, go through the City of Chicago's review process, and post-approval complete a final electrical inspection. Through Chicago's RSC I program, the team worked with the Department of Buildings to create an expedited permit process for solar installations that meet a given criteria. The report below outlines the criteria for the Expedited Permit Process.

Final Expedited PV guidelines:

PV Panel Package 4-9-13.pdf

The new solar permitting document and Ron Cowgill's contractor testimonial (below) outline the requirements and user experience and confirm how the new process reduced the 'soft costs' of his residential project that was piloted as well as provided end-state market assessment feedback for the City.

The team went through several iterations of requirements that evolved into the Expedited PV Guidelines. The leading up deliverables are embedded below for reference:

Permitting process implementation design & recommendations presentation, published and presented (PowerPoint deck)

Small Expedited Review (SER) - Eligibil

Future state permitting process flow map, published and disseminated (Visio document)

Future State Visio diagram - permitting.p

1.2 Adopt Solar Installer Certification Program

Objective: Adopt a certification program that allows certified installers to complete solar permitting applications without requiring additionalt deck)

Self Certification - Solar Eligibility Criteria

1.3 Create Electronic Application Process

Objective: Create a process by which applications (including all related drawings and technical content) can be submitted and approved electronically without requiring in-person meetings.

Deliverables

Electronic application process design & recommendations presentation, published and presented (PowerPoint deck)

2012 09 20 DoIT Permitting Meeting_fil

Electronic Application Process_to DOIT.pdf

1.4 Create Code Official Training Program

Objective: Create a solar inspection training program for City Code Officials, thereby increasing consistency and reducing time and cost required for inspections. This training will leverage training already being developed by the US Department of Energy via the Solar Instructor Training Network.

Deliverables

Code official training program design & recommendations presentation, published and presented (PowerPoint deck)

Code Official Training Programs v3 (2).pdf

1.5 Develop Applicant Educational Content

Objective: **Create web based solar educational material focused on providing solar applicants and installers with easily accessible information on new solar permitting process, and links to useful solar resources. This effort will leverage the existing tools and resources developed by the US DOE and others.**

Deliverables

Solar application education manual, published to City website (html pages)

City of Chicago Educational Content_

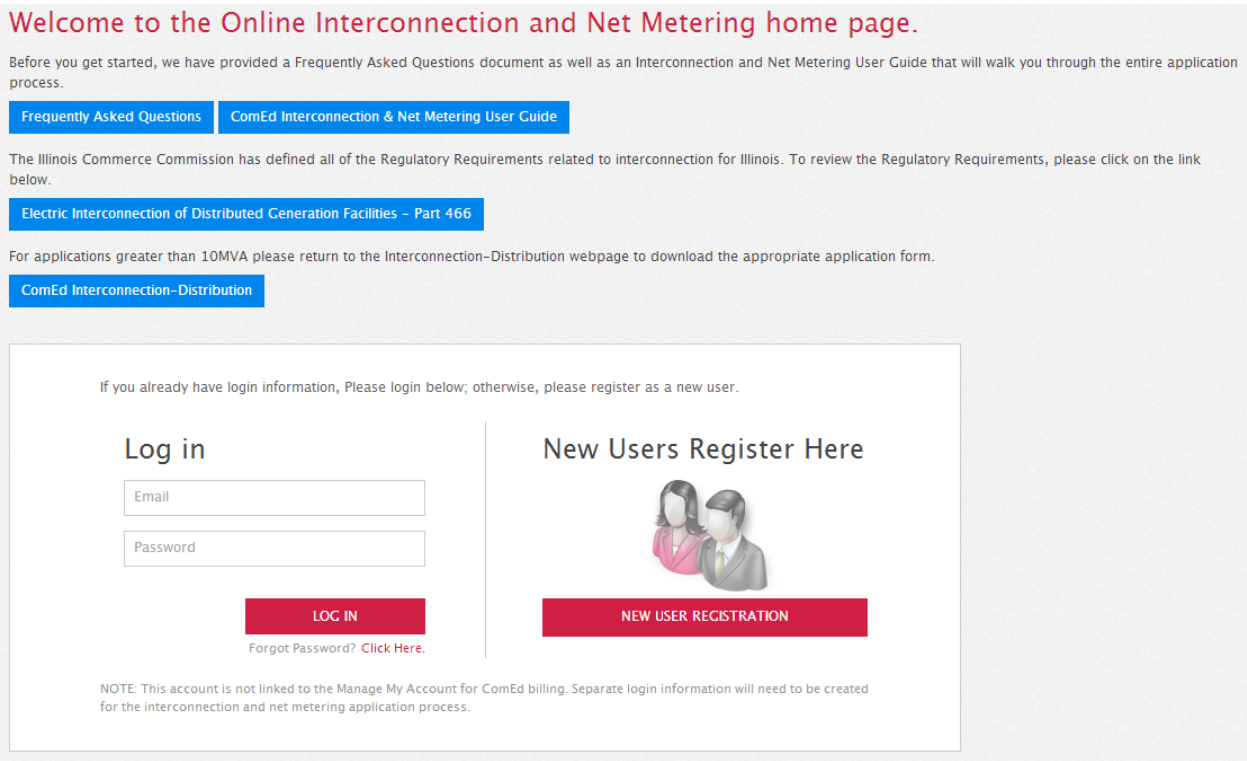
Interconnection/Net Metering

Objective: Online Interconnection and Net Metering Enrollment with ComEd

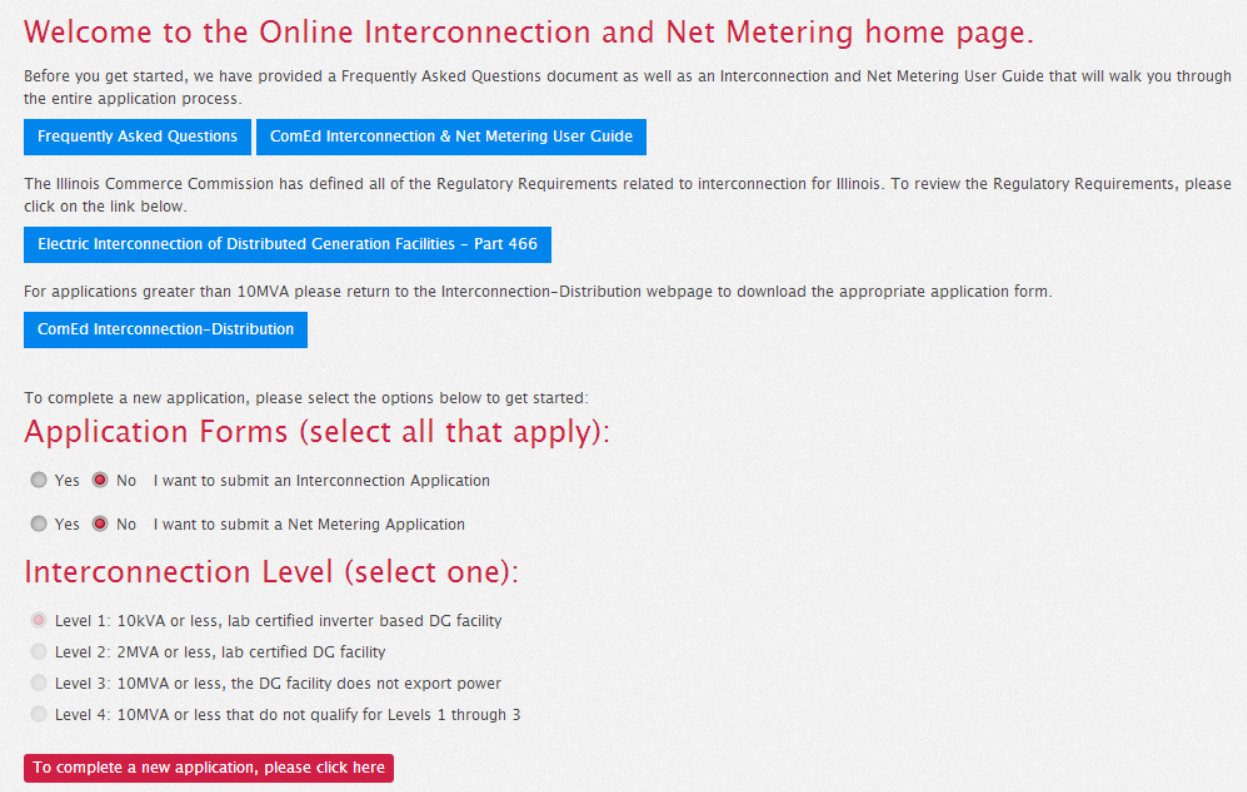
ComEd is launching an online tool in May 2013 (designed by SunShot team) that will allow all interconnection/net metering applicants to submit/track/pay for applications in an online platform. The applicants will have the ability to complete their application online and if needed, they can save their in process application and return to complete at a later date. Contractors will also be able to submit interconnection applications on behalf of the customer, while still allowing the customer visibility to their own application.

Below are a few screen shots related to the customer's application submission process:

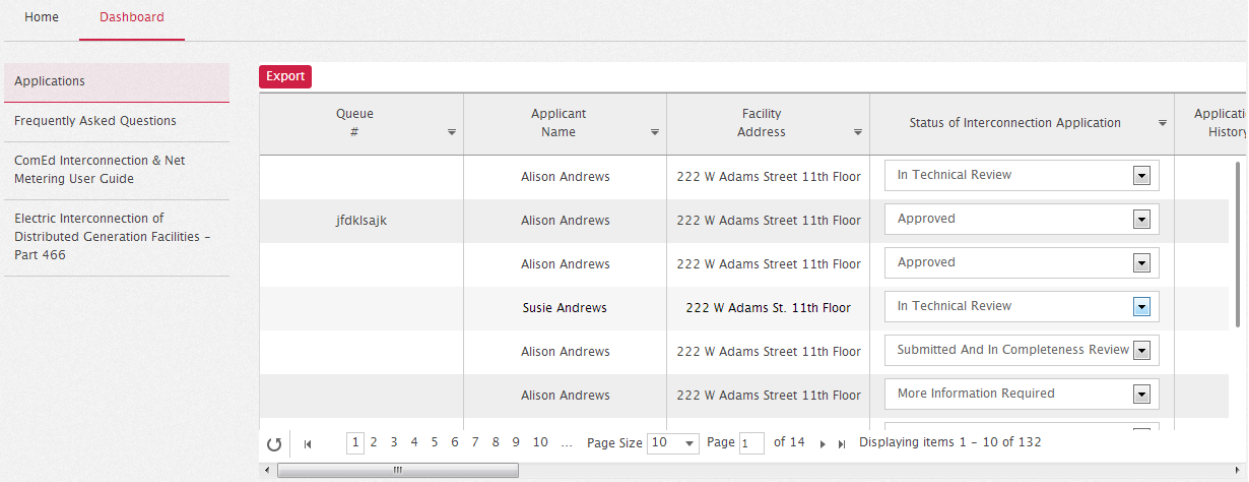
Home page:



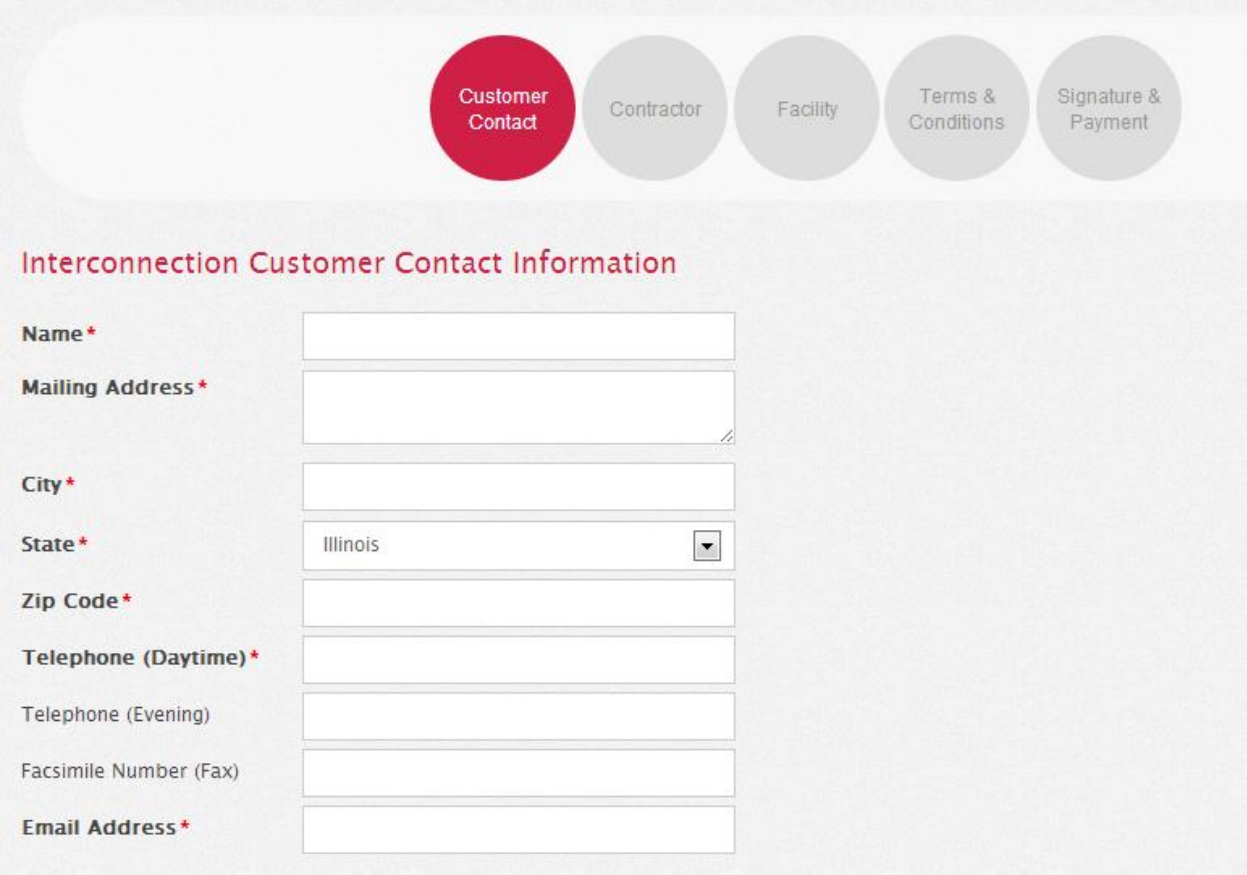
Beginning the application process:



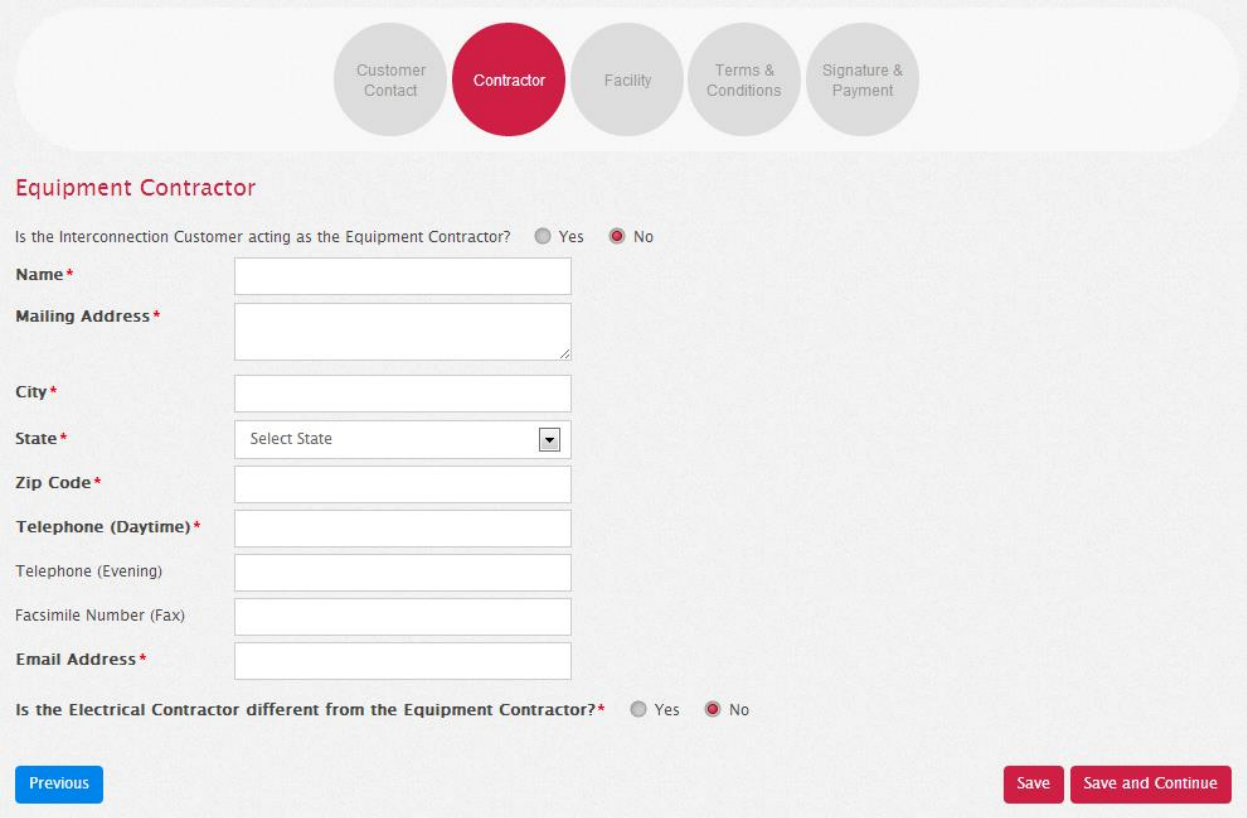
System Owner/Contractor Dashboard:



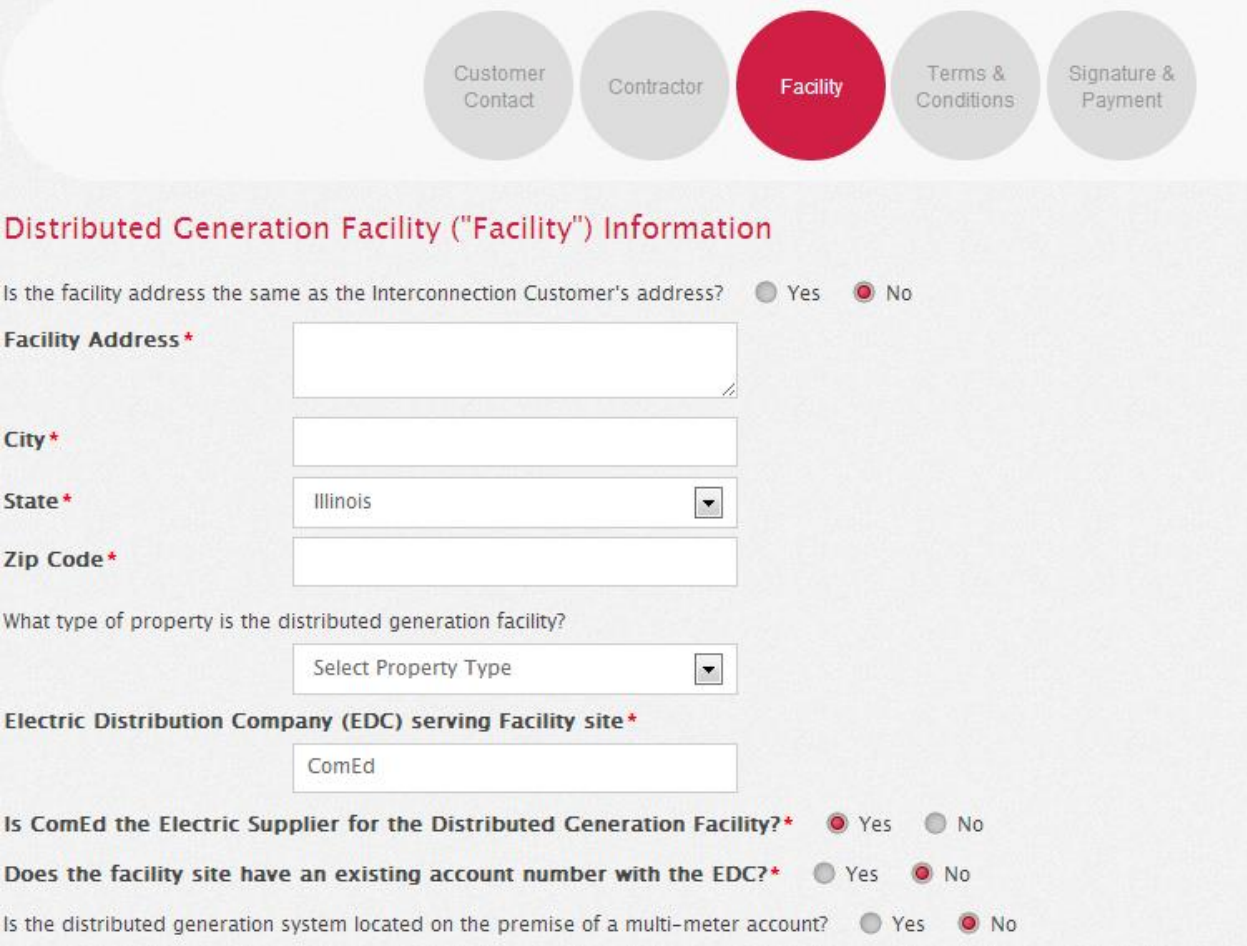
Customer Contact Information for Interconnection Application:



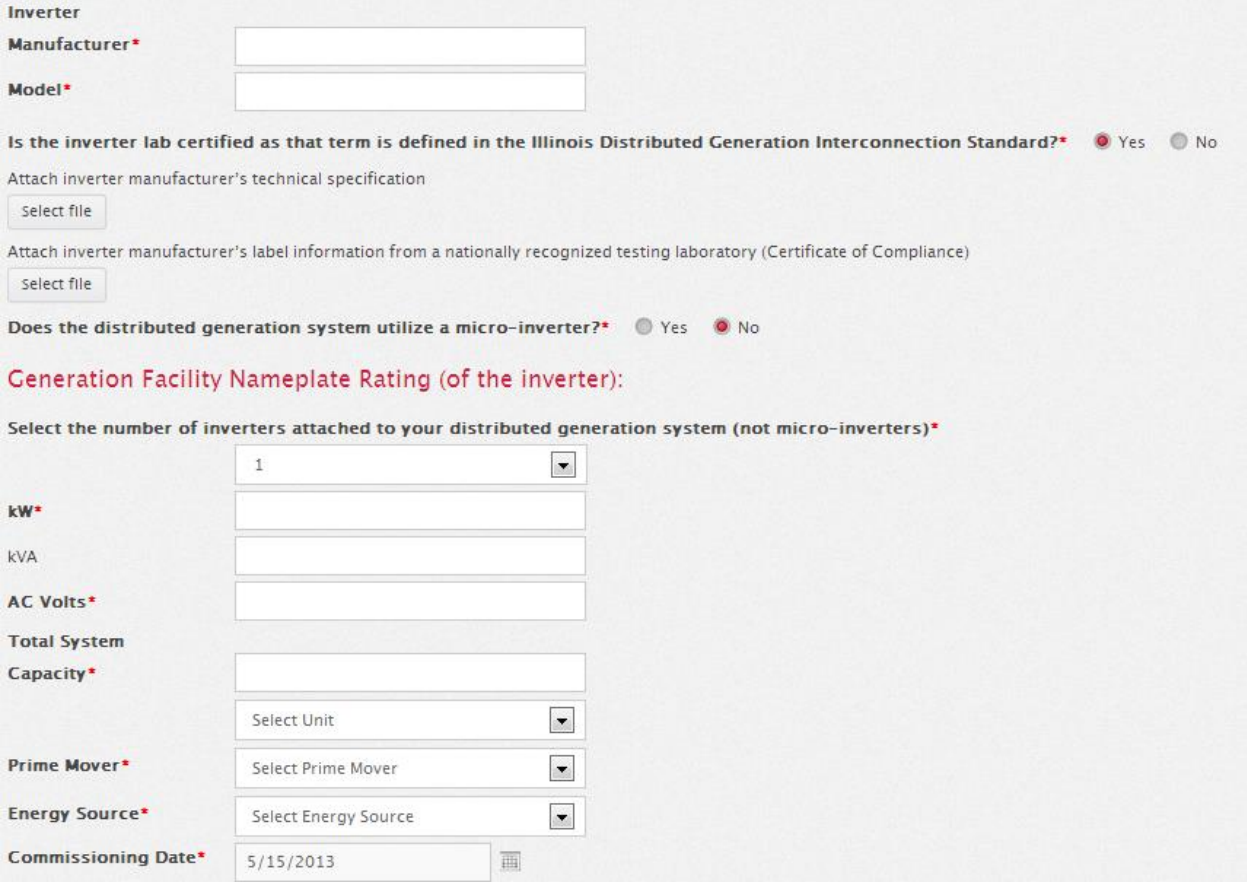
Equipment Contractor Information:



Facility Information Part 1:



Facility Information Part 2:



After the applications have been submitted to ComEd, the Interconnection Single Point of Contact (Interconnection SPOC) and Net Metering Single Point of Contact (Net Metering SPOC) will have the ability to view the applications, email the customer directly, request more information from the customer, and update the status of the application. When the status is updated, an email will be sent to the customer notifying of the status change and what point in the review process their application is currently in. Also, after the applications have been approved the customer or the Interconnection/Net Metering SPOCs have the ability to upload the post-inspection forms to the tool.

Below are a few screen shots from the Interconnection and Net Metering Single Point of Contact dashboards:

Interconnection Single Point of Contact Dashboard Part 1:

Queue #	Status of Application	Date of Initial Application Submission	Feeder Number	Nameplate Capacity	Interconnection Request Level	Net Metering?
Q642	Denied	02/13/2013 01:56 PM	F123	0.21	1	Yes
	In Technical Review	02/13/2013 10:59 AM		3.2	1	No
	Submitted And In Completeness Review	02/13/2013 10:59 AM			3	No
312	Approved	02/13/2013 09:18 AM	F468	6.5	1	Yes
456	In Technical Review	02/13/2013 08:28 AM	F314	8	1	Yes
	Submitted And In Completeness Review	02/13/2013 07:33 AM		0.21	1	Yes
	Submitted And In Completeness Review	02/12/2013 12:00 AM			1	Yes
	Submitted And In Completeness Review	02/12/2013 12:00 AM			1	Yes
	Submitted And In Completeness Review	02/13/2013 10:49 AM		3.56	1	No

1 Page Size 10 Page 1 of 1 Displaying iten

Interconnection Single Point of Contact Dashboard Part 2:

Duration of Completeness Review	Duration of Technical Review	View Interconnection Application	Email Interconnection Application	Status of Net Metering Application	Date of Application Submission
0 business days, 0 hours	0 business days, 14 hours	View/Print/Update Application		Submitted And In Review	04/24/2013 08:28 A
0 business days, 0 hours	0 business days, 0 hours	View/Print/Update Application			
0 business days, 2 hours	2 business days, 4 hours	View/Print/Update Application		More Information Required	04/19/2013 12:56 PI
3 business days, 6 hours	1 business days, 2 hours	View/Print/Update Application			
4 business days, 11 hours	Not Started	View/Print/Update Application		On Hold	04/18/2013 11:16 A
0 business days, 0 hours	Not Started	View/Print/Update Application		More Information Required	04/18/2013 10:46 A
5 business days, 6 hours	Not Started	View/Print/Update Application			

Interconnection Single Point of Contact Dashboard Part 3:

Date of Application Submission	Duration of Net Metering Application Review	View Net Metering Application	Email Net Metering Application	Interconnection / Livening Date (per Appendix B)	Certficate of Completion Upload (Appendix B)	Related Document Uploads (Appendices D-G)	Net Metering Election Form Upload
24/2013 08:28 AM	0 business days, 14 hours	View/Print Application					
19/2013 12:56 PM	2 business days, 7 hours	View/Print Application					
18/2013 11:16 AM	0 business days, 0 hours	View/Print Application					
18/2013 10:46 AM	0 business days, 0 hours	View/Print Application					

2.0 Interconnection Process

Activities/Deliverables leading up to creation and launch of the online tool:

2.1 Develop Online Application Submission & Tracking

Objective: Work with local utility to provide self-service online submission and payment process to alleviate process bottlenecks as Chicago's solar market expands to mature market size.

Deliverables

Online interconnection process design & recommendations presentation, published and presented (PowerPoint deck)

Interconnection Future State Design -

2.2 Develop Applicant Educational Content

Objective: Develop improved web-based application information for solar applicants that covers all process requirements in easy to understand format.

Deliverables

Interconnection application education manual, published via City website (html pages)


ComEd
Interconnection User

3.0 Interconnection Standards

Interconnection standard tasks will be closely aligned with the work described in Section 2, Interconnection Process.

3.1 Create Interconnection Stakeholder Group

Objective: This group will include utility staff, developers, representatives from state and local government, and policy and technical advisors. It will assess development barriers in the current interconnection process and make recommendations to facilitate development.

Deliverables

1. Interconnection stakeholder group charter document (explaining group participants, objectives and management processes) published and disseminated (Word document)


Interconnection Net
Metering Standards D

3.2 Assess Development Barriers

Objective: The Interconnection Stakeholder Group will assess development barriers associated with the current Interconnection Rules and make recommendations to facilitate development.

Deliverables

Interconnection assessment report, published and disseminated (Word document)


Interconnection Net
Metering Standards D

4.0 Net Metering Standards

Objective: Net metering tasks will focus on assessing the implications of the changes made to Illinois' net metering statute in the Illinois General Assembly's Fall 2011 Veto Session.

4.1 Determine Whether a Legislative "Fix" is Necessary to Protect Residential and Small Commercial Net Metering:

If so, prepare recommendations and develop a constituency to support recommendations.

Deliverables

Net metering assessment report, published and disseminated (Word document)

Interconnection Net Metering Standards D

Finance

5.0 Financing Options

Objective: Define financing goals and initiatives that focus on providing lower cost, widely accessible options to improve the financial viability of solar in Chicago.

5.1 Create Standard PPA and Lease Contract Language

Objective: Develop standard contract language, appropriate for the Chicago and Illinois market.

Deliverables

PPA lease contract document, published and disseminated (Word document)

PPA-Lease Legality Analysis in Illinois (5.1

5.2 Collaborate and Develop a Municipal Bond Solar Finance Fund

Objective: Work with Illinois agencies to develop credit enhancement tools to lower the cost of financing for solar projects in Illinois.

Deliverables

Municipal bond solar fund design & recommendations presentation, published and presented (PowerPoint deck)

SunShot_Financial_Solution_20120607.pdf

5.3 Develop a Backstop Fund for Residential and Small Business Loans

Objective: Develop backstop fund to reduce loan risk and, correspondingly, rate charged for solar project financing.

Deliverables

Backstop fund design & recommendations presentation, published and presented (PowerPoint deck)

SunShot_Financial_Solution_20120607.pdf

5.4 Design Community Solar Program

Objective: Work collaboratively with the local utility and relevant stakeholders to design a Community Solar program.

Deliverables

Community solar program design & recommendations presentation, published and presented (PowerPoint deck)

Community_Solar_Final.pdf

5.5 Economic Analysis and Promotion

Objective: The City will substantiate and promote project efforts on permitting, interconnection, zoning and financial options, by developing an economic analysis that will "make the case" for solar in Chicago.

Deliverables

Economic analysis findings and recommendations presentation, published and presented (PowerPoint deck)

Solar Market Drivers
- Municipal Best Pract

Zoning

The City of Chicago Zoning department reviews specific projects to ensure conformity in a neighborhood as well as review for compliance with the City's Zoning Ordinance.

As part of the SunShot Grant, the team implemented a best-practice solar zoning policy: A published solar zoning policy provides ordinance interpretation and design guidance for all solar types in all sectors.

Through the SunShot grant, the City of Chicago's Department of Housing and Economic Development drafted a formal Solar Zoning Policy that provides guidelines for solar installations.

Additionally, the City updated its Sustainable Development Policy to include Solar PV: Applicants can now off-set green roof requirements with a 25% (by area) coverage with solar PV.

City_of_Chicago_Sol
ar_Zoning_Policy_FIN

The City of Chicago updated its Sustainable Development Policy to include rooftop solar as a qualifying mechanism in the Green Matrix. This is an additional market driver for solar PV installations for property owners who are currently required to conform with green roof placements.

Activities/Deliverables leading up to success:

6.1 Implement Formal Best Practice Solar Zoning Policy

Objective: Assess and implement best practice solar zoning policy which solidifies the City's existing favorable solar zoning practices.

Deliverables

Solar zoning policy published and disseminated (Word Document)

See above

6.2 Develop Solar Ready Building Standards

Objective: Develop best practice solar ready building standards and integrate into the City's existing Green Building Program and Sustainable Development Policies.

Deliverables

Solar building standards published and disseminated (Word Document)

Chicago SunShot - Zoning Deliverables .p

6.3 Create Solar Easement Contract

Objective: Develop solar easement language and contract to provide a voluntary legal path for property owners to secure sunlight access for solar systems.

Deliverables

Solar easement contract document, published and disseminated (Word document)

Chicago SunShot - Zoning Deliverables .p

6.4 Develop Zoning Educational Content

Objective: Develop web based Planning & Zoning educational content related to Planning & Zoning initiatives to promote in conjunction with solar permitting process.

Deliverables

Solar zoning education material, published to City website (html pages)

City of Chicago Educational Content_

Project Management & Reporting

Objective: Submit project progress reports, financial reports, and other deliverables provided in accordance with the Federal Assistance Reporting Checklist DOE F 4600.2 and the instructions therein.

Project Charter:

Chicago Solar Market Transformation Team

Steering Committee Decks:

SunShot Full Project Team kickoff Deck 04

SunShot Steering Committee Meeting_(

Chicago SunShot Steering Committee M

SunShot Steering Committee Meeting_1

SunShot Steering Committee Meeting_1

SunShot Steering Committee Meeting_1

Industry Testimonials

Permitting Process / Zoning

WinSol Power Company

WINSOL Power Company

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13 Feb 13

Jeff Smith, CEM
222 W. Adams St.
11th Floor
Chicago, IL 60606

Dear Mr. Smith,

The City of Chicago's new expedited solar permitting/zoning process will be a significant benefit to my residential projects. I just recently worked with the City's SunShot team and Department of Buildings to 'beta-test' an actual 8 kW rooftop solar PV project through the new expedited permit guidelines and submission process. I was able to use the worksheets to show structural conditions (instead of hiring a structural engineer for ~$2,000 - $4,000), pay the reduced flat fee (saved $100), and submit my application package through the City's Easy Permit Process desk (same day approval, compared to 30-45 days typically). As a solar contractor in Chicago, I am excited about the economic development opportunity to offer lower costs to my customers as a result of Chicago's new permitting/zoning process.

Respectfully,

Ronald E. Cowgill, CR, CKBR, GCP, UDCP
WinSol Power Company, INC.

Solar Service Inc

"I have participated in a number of the City of Chicago's SunShot workshops (permitting, interconnection, and zoning) over the past several years. Recently, my colleague and I participated in the Department of Buildings' 'beta-testing' of the new PV guidelines and submission process. As a solar contractor in Chicago, I am optimistic about the possible solar market improvements made during the City's Sunshot program. I am eager to begin submitting applications under the new process, communicating these changes to customers and passing those savings on to customers. We hope that

the removal of some of the permitting processing and cost barriers for customers will increase adoption of solar in Chicago and we can all reap the myriad of benefits. Although this is just the first step, I hope the city will continue to review and improve these steps and encourage growth in clean energy, impacting an even greater portion of the housing and commercial stock. "

- Lisa Albrecht, Renewable Energy Specialist, Solar Service Inc.

Lisa Albrecht
Solar Service
NABCEP Certified PV Technical Sales™

SoCore Energy

"As a Structural Engineer engaged in large commercial rooftop solar PV projects throughout the country, it is incredible that the City of Chicago to move outside of the Chicago Building Code to recognizing the following design methods: ***ASCE 7-05, Minimum Design Loads for Buildings and other Structures of the American Society of Civil Engineers*** *and* ***SEAOC PV2-2012, Wind Design For Low-Profile Solar Photovoltaic Arrays on Flat Roofs of the Structural Engineers Association of California.*** *This transition will allow SoCore, a solar developer is based in the City of Chicago, and others, to permit and install ballasted solar mounting systems in the City of Chicago."*

Andrew Lane, PE, Structural Engineering Manager, SoCore Energy

Andy Lane, SE, PE **| SoCore Energy**
225 W Hubbard Street, Suite 302 | Chicago, IL 60654
O : (773) 913 4415 | M : (312) 909 0180
alane@socoreenergy.com
www.socoreenergy.com

Interconnection Process

Tom Hulsebosch (Owner-builder, Interconnection/NM applicant)

"I am a homeowner is ComEd's service territory and participated in the pilot test of completing both my Interconnection and Net Metering applications through the electronic tool. I was able to submit my Interconnection and Net Metering applications as well as the supplemental documents (Technical Specification Sheet and Certificate of Compliance from the Nationally Recognized Testing Laboratory) via electronic submission for my 4.7 kW rooftop installation. This process is a significant improvement to the current PDF forms with the mail-in submission.

I am excited at the opportunity this electronic submission process will provide for future customers as well as for the internal ComEd resources to communicate more effectively with the customers about the status of their applications and more efficiently track the applications from submission through final review. I think many other utilities would benefit from this tool and there is an opportunity to grow the functionality to support jurisdiction and utility needs."

-Tom Hulsebosch, tomh60074@gmail.com