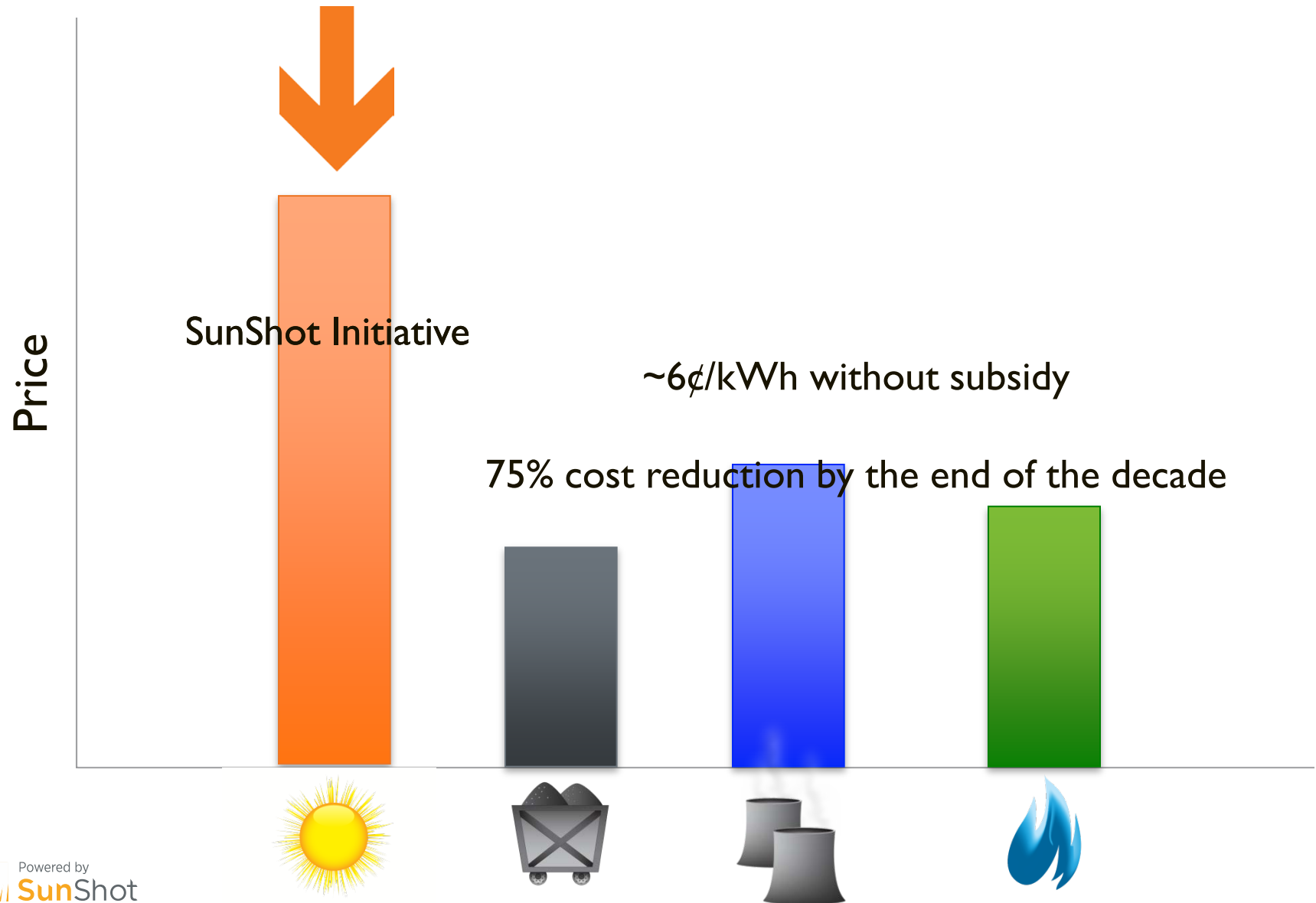


# Solar Action Webinar Series: Innovation and Success in Solar Net Metering & Interconnection August 7, 2013

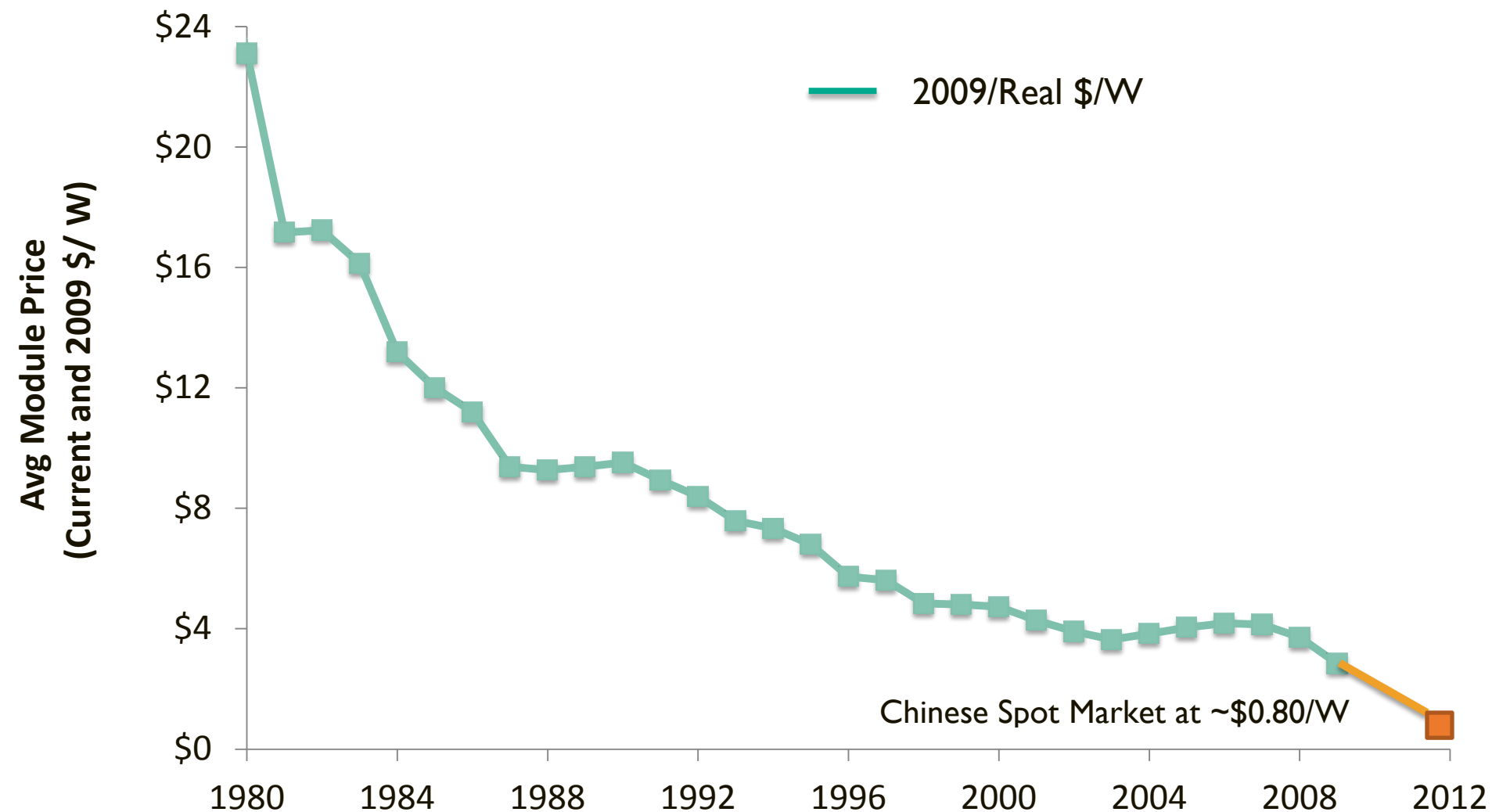


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U.S. Department of Energy

# Why we're here: The Big Picture



# Panel Prices Plummeted



# However...

“Even if you paid nothing for the hardware, you'd still pay thousands of dollars to install a residential solar power system.”

- Former Secretary Chu



# What is SunShot targeting?

## Soft Costs

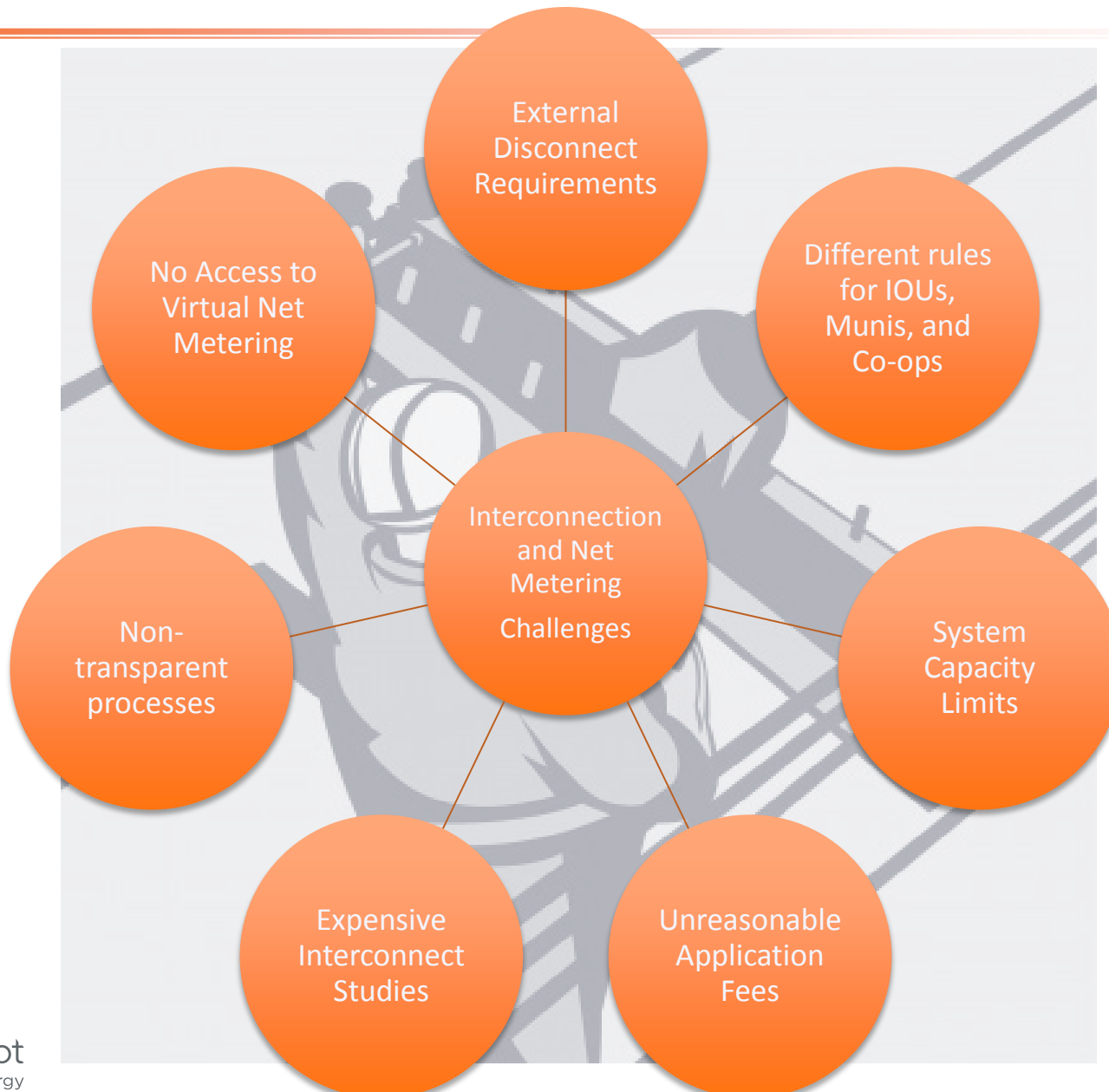


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Up to **50%** of the  
cost of a solar  
installation



# Potential Problems with Plugging In



# ROOFTOP SOLAR CHALLENGE

## Southeast

12,500,000 People

## Midwest

5,000,000 People

## Northeast

10,200,000 People

## Southwest

20,500,000 People

## Northwest

790,000 People

47M TOTAL

# Rooftop Solar Challenge Successes

## Permitting

- 40% Faster
- 12% Cheaper



**Overall Time Saved: One Week**





# What Does One Week of Time Mean?

PV Installed in RSC locales:

Residential: 225 MW

Commercial: 357 MW

37,960 Residential  
Systems

3,148 Commercial  
Systems

Average Business Days  
Saved Per Install = 5.1

Average Business Days  
Saved Per Install = 4.1

Which means the RSC saved  
Americans from an  
estimated...

**792 YEARS OF RED TAPE**

# Today's Presenters

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## Evergreen State Solar Partnership

- **Linda Irvine**, Project Manager
  - Northwest SEED
- **Jack Brautigam**, Renewable Energy Program Manager
  - Seattle City Light
- **Tim Stearns**, Senior Energy Policy Specialist
  - Washington State Department of Commerce

## The Chicago Region SunShot Initiative: Rooftop Solar PV Challenge

- **Alison Andrews**
  - West Monroe Partners
- **Robyn Mackey**, Senior Business Analyst
  - ComEd
- **Michael Berkshire**, Green Projects Administrator
  - City of Chicago

# Evergreen State Solar Partnership: Working on Interconnection



# Washington State Context

- 62 electric utilities
  - 3 IOUs serve 45%
  - 59 COUs serve 55%
- 18 MW DG installed
  - 90% residential PV
- Production Incentive
  - Until 2020



# Evergreen State Solar Partnership



**Department of Commerce**  
Innovation is in our nature.



**Edmonds/Snohomish PUD**



**Bellevue/Puget Sound Energy**



**Seattle/Municipal Utility**



**Ellensburg/Municipal Utility**

WA Dept. of  
Commerce

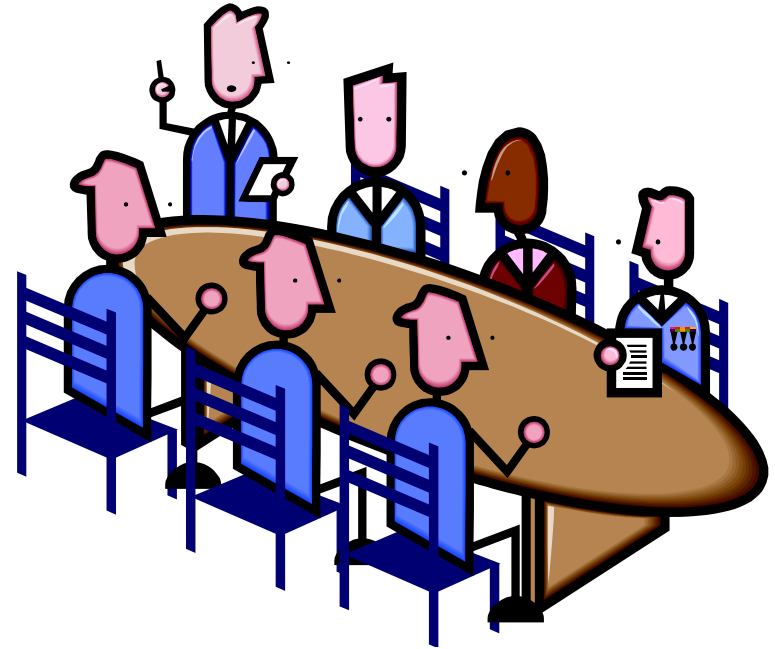
NWSEED

Allies



# Interconnection Work Group

- Reviewed Best Practices
  - Freeing the Grid
  - IREC Model Procedures
- Compared Actual to Ideal
- Report & Survey
  - [Nwsolarcommunities.org](http://Nwsolarcommunities.org)
- Crafted Action Plans
- Submitted Joint Comments to UTC





# Interconnection: Streamlining

# EZ Interconnection Application

# IC, NM, PM

## Incentive Certification?

## Electrical permit?

# Online submittal

# Single point of contact

## Streamlined inspections



## Within each utility

# Interconnection: Standardizing

Standard Application

- same terms
- same form

Standard 1-line diagram

Standard Process – for customer



Across all utilities

# Utility Action Plan

## Near Term

- Enhance communication to customer and installer (single POC)
- Improve coordination (City/Utility)
- Reduce timelines to process interconnections, production meters, incentives

## Long Term

- Adopt standard “EZ” IC application and I-line diagram
- Implement online application submittal
- Combine applications for IC, incentives, electrical
- Develop new customer data management system to include generator data

# Standard Application Proposal

## Utility-Specific Cover Sheet

### Standard Application & 1 Line

- Electrical permit
- Interconnection

EQUIPMENT SCHEDULE			
TAG	DESCRIPTION	PART NUMBER	NOTES
1	SOLAR PV MODULE		
2	PV ARRAY		
3	J-BOX (IF USED)		
4	COMBINER (IF USED)		
5	DC DISCONNECT		
6	DC/AC INVERTER		
7	GEN METER (IF USED)		
8	AC DISCONNECT (IF USED)		
9	SERVICE PANEL		

VAC. \_\_\_\_\_ A MAIN. \_\_\_\_\_ A BUS. \_\_\_\_\_ A INVERTER OCPD

Contractor - Installer Information      Date: \_\_\_\_\_  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Contact Name: \_\_\_\_\_  
Contact Phone: \_\_\_\_\_  
Email: \_\_\_\_\_

1 2 3 4 5 6 7 8 9 M

MODULES IN SERIES SOURCE-CIRCUIT

MODULES IN SERIES SOURCE-CIRCUIT

MODULES IN SERIES SOURCE-CIRCUIT

MODULES IN SERIES SOURCE-CIRCUIT

FOR UNUSED SERIES STRINGS PUT 'N/A' IN BLANK ABOVE

J-BOX

COMBINER

DC DISCO

INVERTER

AC DISCO

UTILITY METER

MAIN OCPD

INVERTER OCPD

MAIN SERVICE PANEL

BUILDING GROUNDING ELECTRODE

DC EGC Size: \_\_\_\_\_

Fuse Size: \_\_\_\_\_

INV GEC Size: \_\_\_\_\_

TAG	Conductor Insulation Type	CU/AL	Conductors			* Derated Amps	Raceway		Ambient Temp		Distance off Roof
			Size	Amps	Num		Size	Type	Roof	Attic	
1											
2											
3											
4											

\*Note: Derating of conductors based on, number of conductors in raceway, ambient temp and distance off roof where applicable. (See NEC 310.15)

Standard Electrical Diagram - Residential Small Scale PV System  
Central Inverter Systems

THIS PLAN MUST BE PROVIDED TO THE INSPECTOR AT THE JOB SITE

Site Name: \_\_\_\_\_

Site Address: \_\_\_\_\_

This plan is NOT intended to be used with micro inverters or transformer-less inverters. Conductors, where installed outdoors in raceways shall be "W" rated and have an insulation rating of 90 deg C.

## Utility-Specific Agreements – “Terms and Conditions”

# Progress!

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- Standard 1 – line for permitting and interconnection – **Adopted!**
- EZ Interconnection Application – **Drafted!**
- UTC Ruling – **Favorable!**
  - 3 Tiers for Interconnection
  - AC disconnect switch not required unless State electrical inspector requires it
  - Clarifies that 3<sup>rd</sup> party systems can net meter (but still not eligible for state incentives)

# How Far Can We Go?

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- Combine production incentive certification with application?
- Simplify administration of state incentives?
- Allow installers to inspect on behalf of utility?
- Minimal screens for inverter-based systems <25 kW?
- Standard training & procedures

*More in the ESSP Interconnection Report  
Available at: [nwsolarcommunities.org](http://nwsolarcommunities.org)*





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**SunShot**

U.S. Department of Energy

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# City of Chicago, ComEd and West Monroe Partners: Innovation and Success in Solar Net Metering and Interconnection



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U.S. Department of Energy

# Background

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- In 2012, the City of Chicago, partnering with Environmental Law and Policy Center and West Monroe Partners, won a grant under the Department of Energy's SunShot Initiative to support solar PV installations by reducing market barriers and soft costs
- The grant was sponsored through the Department of Housing and Economic Development, and the team was comprised of multiple City, industry, utility, non-profit, and institutional stakeholders.
- The main action areas of the grant included Permitting, Zoning, Interconnection, Collaboration/Education, and Finance

# Approach

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- The Chicago Team worked with ComEd to identify interconnection process improvements based on three critical capabilities: people, process, and technology
- Interconnection & Net Metering Approach:
  - Current state process mapping
  - Best practices review
  - Future state design requirements



# Current State Process Mapping



# Outcome

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- ComEd partnered with West Monroe Partners to deploy a cloud-based distributed generation management platform to process electronic applications for interconnection and net metering



# Overview of Improvements

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- Starting in late summer 2013, applicants may submit interconnection and net metering applications electronically to ComEd
- Electronic forms have smart features, including field based error-checking, auto-fill, completeness review, etc.
- Application status is tracked and updated through the Applicant Dashboard to reflect progression through the approval milestones
- Electronic fee payment options for credit card / ACH (coming soon)

# Expected Benefits

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- Reduced time to complete forms and required fields tailored to system scope
- Improved accuracy/completion in submissions
- Applicants can save an application and return later to complete and submit
- Increased processing capacity and recordkeeping of Distributed Generation applications by ComEd
- Enhanced transparency allows applicants to electronically track status and manage workflow

# Home Page

## Welcome to the Online Interconnection and Net Metering home page.

Before you get started, we have provided a Frequently Asked Questions document as well as an Interconnection and Net Metering User Guide that will walk you through the entire application process.

[Frequently Asked Questions](#)[ComEd Interconnection & Net Metering User Guide](#)

The Illinois Commerce Commission has defined all of the Regulatory Requirements related to interconnection for Illinois. To review the Regulations, click on the link below.

[Electric Interconnection of Distributed Generation Facilities - Part 466](#)

For applications greater than 10MVA please return to the Interconnection-Distribution webpage to download the appropriate application form.

[ComEd Interconnection-Distribution](#)

Applicants will be able to review the FAQ document or User Guide prior to completing their application.

If you already have login information, Please login below; otherwise, please register as a new user.

### Log in

[LOG IN](#)[Forgot Password? Click Here.](#)

### New Users Register Here

[NEW USER REGISTRATION](#)

Existing users will login here and new users will complete registration.

NOTE: This account is not linked to the Manage My Account for ComEd billing. Separate login information will need to be created for the interconnection and net metering application process.

# Home Page

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[ComEd Interconnection-Distribution](#)

To complete a new application, please select the options below to get started:

### Application Forms (select all that apply):

☐ Yes ☒ No I want to submit an Interconnection Application

☐ Yes ☒ No I want to submit a Net Metering Application

### Interconnection Level (select one):

☒ Level 1: 10kVA or less, lab certified inverter based DG facility

☐ Level 2: 2MVA or less, lab certified DG facility

☐ Level 3: 10MVA or less, the DG facility does not export power

☐ Level 4: 10MVA or less that do not qualify for Levels 1 through 3

[To complete a new application, please click here](#)

To begin a new application after logging in, the applicant will need to select if they are completing Interconnection, Net Metering or both.

If the applicant is completing an Interconnection application, they must select the level for which they are applying.

# Application Forms

**Customer Contact** Contractor Facility Terms & Conditions Signature & Payment

### Interconnection Customer Contact Information

**Name \***

**Mailing Address \***

**City \***

**State \***

**Zip Code \***

**Telephone (Daytime) \***

Telephone (Evening)

Facsimile Number (Fax)

**Email Address \***

The bubbles can be used as navigation to move from one page to the next.

The first page of a Level 1 application requests the Customer Contact information. If a System Owner is filling out the application, this information will be pre-populated with information from their register profile. Additionally, an alternate contact is requested, but not required.



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August 7, 2013

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August 7, 2013