



# Getting Your Community “Solar Ready”

**Presented by:**

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## Solar Powering Iowa 2016

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Cedar Rapids, Iowa

March 24, 2016

# Introduction, Presenter and Topic

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## ❖ Mike Fisher, REM

- Vice President Impact7G, Inc.
- 25 Years Environment/Energy
- Renewable Energy Installations
- Renewable Energy Professional
- MREA Certified PV Site Assessor
- Renewables Feasibility Analysis
- Manager Kirkwood Wind Project
- Wind and Solar Energy Owner
- Environmental Impact Analysis
- Registered Environmental Manager
- Grant Writer
- Volunteer

## ❖ Impact7G, Inc.

- Sustainability Planning
- Renewable Energy Consulting
- Brownfields Redevelopment
- National Environmental Policy Act
- Natural Resources Assessments
- Wetlands Delineation, Permitting
- Environmental Compliance
- Asbestos/Lead Based Paint/Mold
- Drilling, Geoprobe Sampling/Wells
- Underground Tank Cleanup
- Contaminated Site Investigations
- Grant Writing



# Agenda

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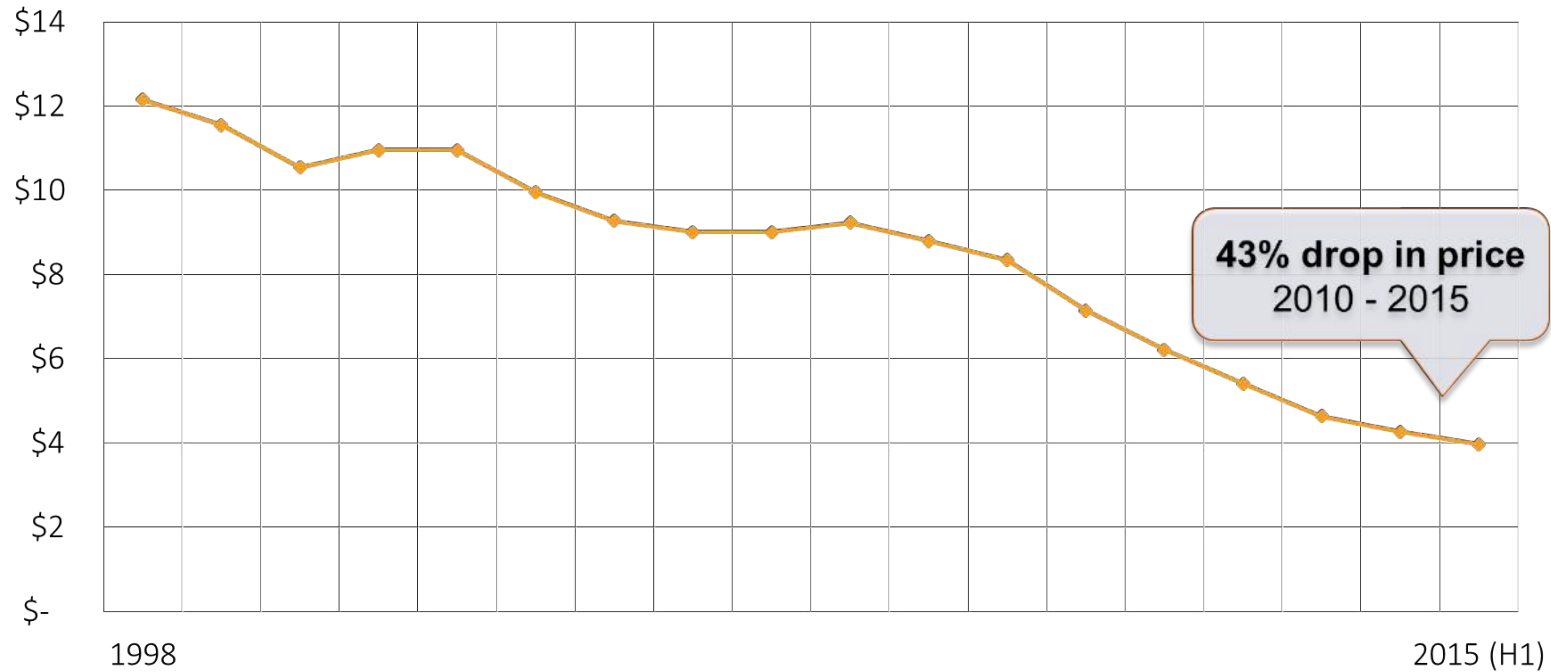
- ❖ Background – Why Become “Solar Ready”
- ❖ Planning and Zoning
- ❖ Permitting and Inspection
- ❖ Financing Options and Incentives
- ❖ Benefits of Soft Cost Reduction
- ❖ SPARC Program
- ❖ Brian Ross Presentation
- ❖ Community Investment
- ❖ Concluding Remarks
- ❖ Q&A



# Background

## The Cost of Solar PV

US Average Installed Cost for Residential PV

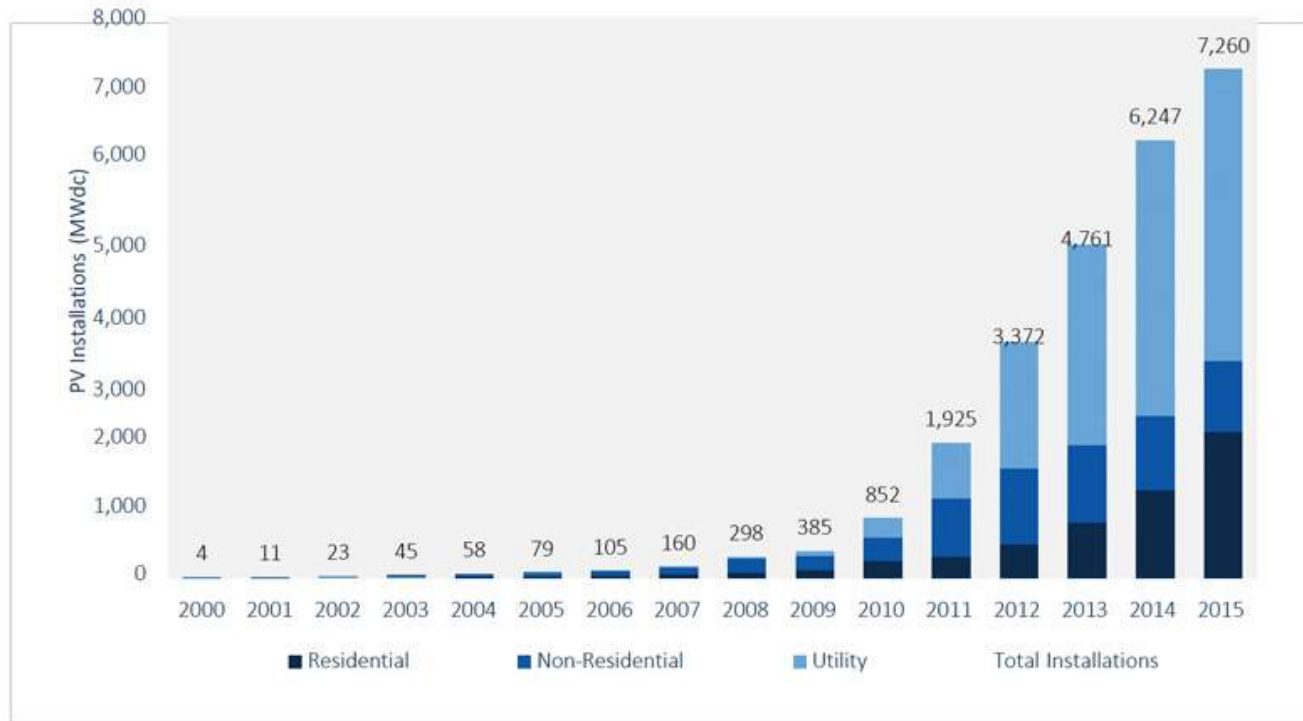


Tracking the Sun VIII: The Installed Cost of Photovoltaics in the US from 1998-2014 (LBNL)



# Background

Figure 1.1 Annual U.S. Solar PV Installations, 2000-2015



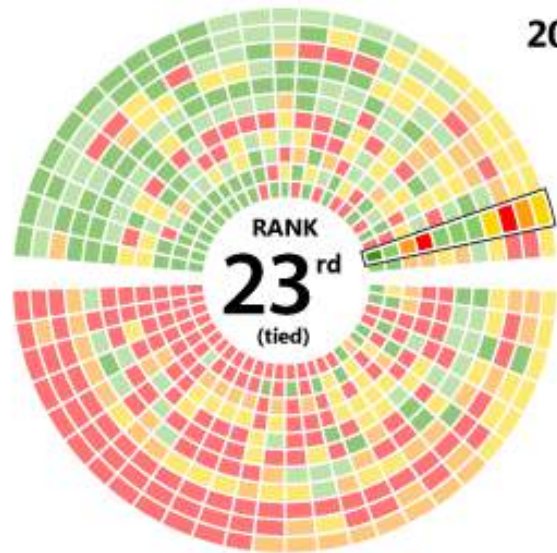
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gtmresearch

SEIA  
Solar Energy  
Industry  
Association

IMPACT7G

# Background



## Iowa 2016 SOLAR REPORT CARD



**Overall Grade:**

**C**

### Policy

- D** RPS Law
- F** Solar Carve-Out
- C** Electricity Cost
- B** Net Metering
- B** Interconnection

### Incentives

- B** Tax Credits
- F** Rebates
- D** Performance Payments
- B** Property Tax Exemption
- A** Sales Tax Exemption

**5-kW Solar Payback Time:**

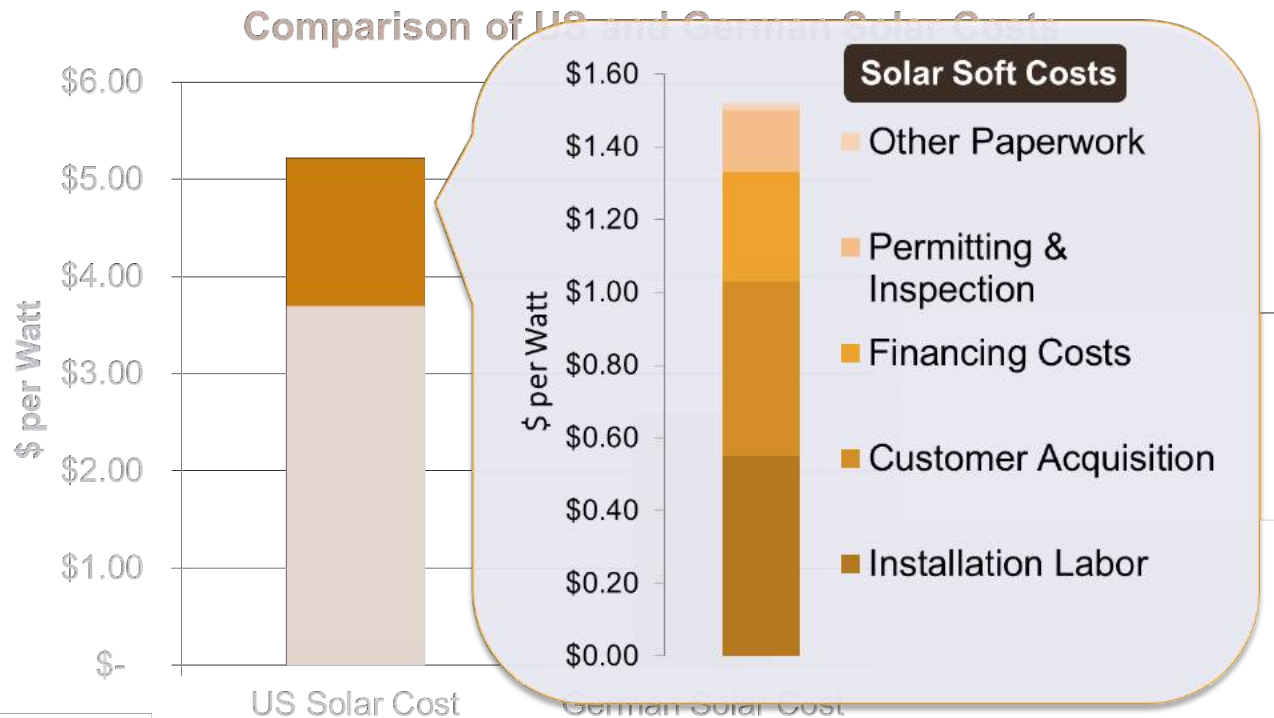
**13 Years**

**Investment Return (IRR):**

**8.7%**

# Background

## The Cost of Solar in the US



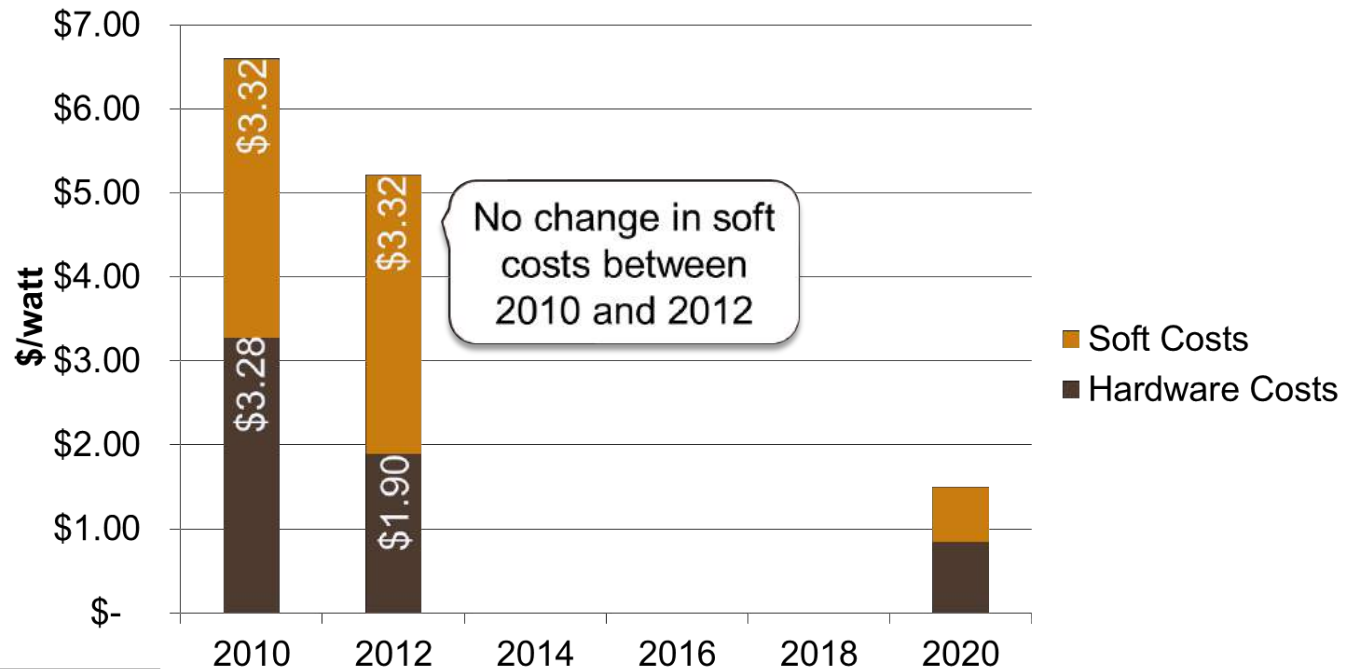
Source: NREL (<http://www.nrel.gov/docs/fy14osti/60412.pdf>)

LBNL (<http://emp.lbl.gov/sites/all/files/lbnl-6350e.pdf>)([http://www1.eere.energy.gov/solar/pdfs/sunshot\\_webinar\\_20130226.pdf](http://www1.eere.energy.gov/solar/pdfs/sunshot_webinar_20130226.pdf))

# Background

## The Cost of Solar in the US

Change in Soft Costs and Hardware Costs Over Time



Source: NREL (<http://www.nrel.gov/docs/fy14osti/60412.pdf>)

LBNL (<http://emp.lbl.gov/sites/all/files/lbnl-6350e.pdf>)([http://www1.eere.energy.gov/solar/pdfs/sunshot\\_webinar\\_20130226.pdf](http://www1.eere.energy.gov/solar/pdfs/sunshot_webinar_20130226.pdf))










# Planning and Zoning

 High alignment

 Moderate alignment

 Low alignment

Planning and zoning		
PZ 1		Is there a state or local law that protects property owner rights to install solar systems on their property?
PZ 2		Is there a state or local law that provides for solar easements to protect access to sunlight (solar access)?
PZ 3		Is there a state or local process for a PV system to be registered in order to protect solar access?
PZ 4	--	Are there any developments, districts, zones, or other elements that create specific rules that restrict or limit solar?
PZ 5		Are there local standards for new construction that reduce barriers to solar deployment?
PZ 6		Does the jurisdiction have long-term planning documents with solar energy goals?
PZ 7	--	Do zoning codes have rules specifically for solar installations?

## Solar Powering America by Recognizing Communities (SPARC)



# Permitting and Inspection

## Permitting and inspection

PI 1	●	What submittals are required for a solar permit application?
PI 2	●	What are the options for obtaining a solar permit application?
PI 3	●	What are the options for submitting a solar permit application?
PI 4	●	To how many departments does an installer have to submit separate solar permit applications for a typical installation?
PI 5	●	What types of departmental approvals are required for a typical solar installation?
PI 6	●	What solar permitting information is available online?
PI 7	●	Is there a policy to issue/deny PV permits within a specified number of business days from submission of application?
PI 8	●	What is the average number of business days between solar permit application submission and decision (issuance or denial)?
PI 9	--	Are there mechanisms in place for accelerating solar permitting processes under certain conditions?
PI 10	●	What is the average total for the applicable permit fee(s) for typical solar installations?
PI 11	●	How are the solar permit fee(s) structured?
PI 12	●	What is the average number of business days from inspection request to actual inspection for solar energy systems?
PI 13	●	What is the typical window of time given to the installer for final onsite inspection of a solar energy system?
PI 14	●	How many separate inspection trips are required for a typical solar energy system installation?

# Financing Options and Incentives

## Financing options and incentives

FI 1	<input checked="" type="radio"/>	Is there legislation/regulation that allows for third-party ownership structures?
FI 2	<input checked="" type="radio"/>	Does state and/or local legislation enable property assessed clean energy (PACE) program creation?
FI 3	<input checked="" type="radio"/>	What kinds of loan financing programs are offered for PV consumers in the jurisdiction or utility territory?
FI 4	<input type="radio"/>	Is there legislation/regulation that accepts one or more of the following community solar enabling mechanisms?
FI 5	<input type="radio"/>	Are there community solar programs in the jurisdiction?



# Benefits of Reducing Soft Cost

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- Reduced Installation Costs = **Increased Return on Investment** for System Owners

Permitting processes alone can impose significant costs. For a typical 5-kW residential PV installation, **onerous permitting procedures can add \$700** to the installation price. When considering permitting along with other local regulatory processes, the **total price impact can be up to \$2,500** for a typical system.

- Streamlined processes can deliver a **time and cost savings for municipal staff.**

Increased and readily available access to information about technical and procedural requirements can reduce staff time and costs due to fewer requests for information, questions from installers, and incomplete permit applications, all of which can be a drain on limited local resources.

# Benefits of Reducing Soft Cost

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- Reducing red-tape for solar can result in **improved business prospects for solar companies**.
- More than 1 in 3 installers **avoid selling solar in an average of 3.5 areas** because of associated permitting difficulties.
- Opening your community for solar business can have **positive impacts on jobs and economic development**.

For each megawatt of installed capacity (approximately 200 average-sized residential systems):

29.4 construction jobs are created for residential solar

15.8 construction jobs are created for non-residential solar

2.8 construction jobs are created for utility-scale solar

Solar Powering America by Recognizing Communities

## Technical Assistance & National Designation

- Goal: To increase solar deployment by reducing local barriers and soft costs
- Vehicle: Technical assistance
- Recognition: National SPARC solar designation



[www.gosparc.org](http://www.gosparc.org)



# SPARC Program



## No Cost Technical Assistance

Communities pursuing SPARC designation will be **eligible for up to 100 hours (on average) of no-cost technical assistance** from national solar experts.

Technical assistance will be designed to **help a community achieve the basic requirements for designation**. Depending on demand, some TA may also be available to help more advanced communities achieve higher levels of designation.

**Possible topic areas** for TA include: streamlining permitting and inspection processes for solar, planning and zoning for solar, solar financing options, codes and standards, community and utility engagement, market development programs, and others.

**FIRST ROUND OF COMMUNITY SELECTION BEGINS: April 2016**



# SPARC Designation

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## What does the designation mean?

- The designation is a way to recognize and award communities across the United States that have adopted policies that reduce barriers to solar deployment.
- It will serve as a signal to the solar market that the community is “open for solar business,” which should result in increased local economic development opportunities and decreased costs for solar customers.
- The designation will also represent a point of pride for recipient communities, their elected officials and staff, and their residents.



# SPARC Contact Information

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**Visit** [www.gosparc.org](http://www.gosparc.org)

**Email or Call**

Chris Walker

[cwalker@solarfound.org](mailto:cwalker@solarfound.org)

202-846-7502



# Community Investment in Solar

## Community Interest – 2 Perspectives

1. Encourage private sector investment
2. Cities and counties pursue solar for their facilities



# Community Investment in Solar – Goal?

1. Reduce City/County Operational Cost
2. Hedge Energy Cost
3. Meet a comprehensive plan goal (e.g., 30% renewable by 2030)
4. Sustainability (Economic/Environmental/Social) reasons.



Photo by: Ron Reeg /  
Creative Commons

# Community Investment in Solar - Options

1. **Purchase outright** (no incentives for communities except potential production tax credit (large systems))
2. **Lease a system** (usually 5 year FMV lease, purchase year 6 or 7)
3. Purchase power off a system installed on city/county property but **owned by a third party** – a.k.a. 3<sup>rd</sup> party power purchase agreement (PPA)



Johnson County Iowa  
15 kW Array  
(3<sup>rd</sup> Party PPA)



# Community Investment – Strategy/ Objectives

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1. Control or reduce City/County operational cost – purchase outright with low interest long term debt (cash flow)
2. Hedge Energy Cost - 3<sup>rd</sup> party power purchase agreement
3. Meet a comprehensive plan goal (e.g., 30% renewable by 2030) – combination of options
4. Environmental sustainability reasons – any option/fair market value (FMV) lease mechanism w/o capital.  
*“Capacity or “size” of system may influence strategy.”*



# Community Investment – Simple Example

## Net Meter Community Ownership Opportunity

Target Facility:	City Hall
Annual Electricity Usage:	100,000 kWhs
Electricity “Energy Charge”:	<b>\$0.13/kWh</b> ( <del>\$0.15/kWh</del> )
<b>Annual Electricity Cost:</b>	<b>\$13,000</b> ( <del>\$15,000</del> )
PV System Size:	75 kiloWatts
PV System Cost:	\$200,000 (\$2.75/Watt)
Debt:	20 yrs @2.5% (AERLP/Bank/Bond)
Monthly Payment:	\$1,060
<b>Annual Payments:</b>	\$12,720
<b>Annual Savings:</b>	<b>\$280.00</b> ( <del>\$2,280</del> )
<b>20 Year Savings:</b>	<b>\$5,600.00</b> ( <del>\$45,600</del> )

*Reality is average annual savings will potentially be higher (i.e., \$0.15/kWh, 20 years) as energy charges increase over time.*



# Concluding Remarks

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- **Clean, non-polluting PV** solar technology is **not a fad**;
- The **PV market is ripe** for both private sector and community-installed solar;
- Correctly interconnected, permitted, and installed solar constitutes a locally produced **sustainable source of energy** with economic, social, and environmental community benefits;
- Communities should have **systems and processes** in place for planning and zoning, permitting, and, if possible, financing PV systems;
- **Soft cost reduction** initiatives are ongoing such as SPARC;
- Technology improvements are being developed and could **reduce hard cost** in the long term; and
- Programmable **energy storage technologies** have penetrated the Iowa market helping consumers manage their solar energy.

# Questions?

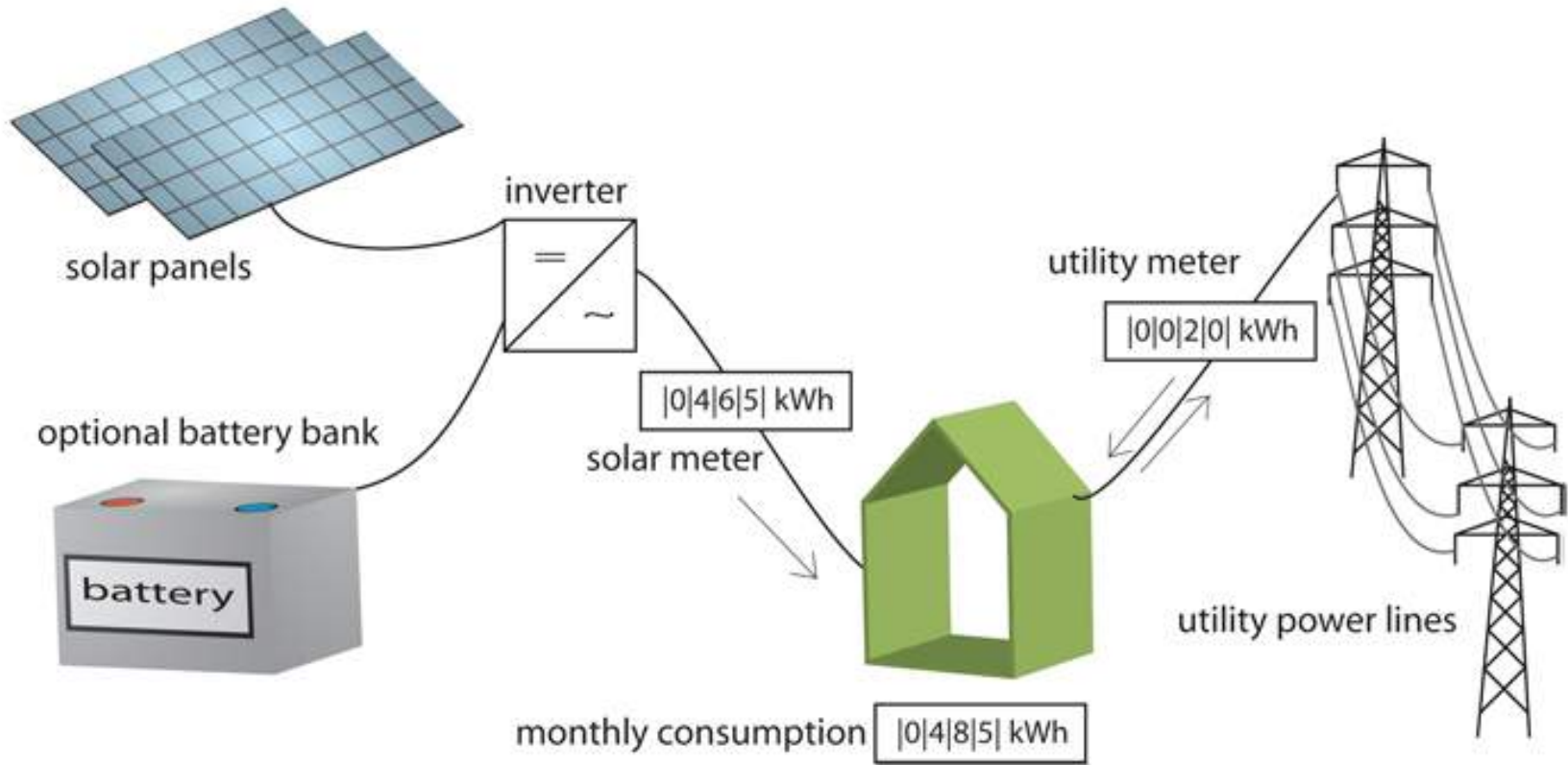
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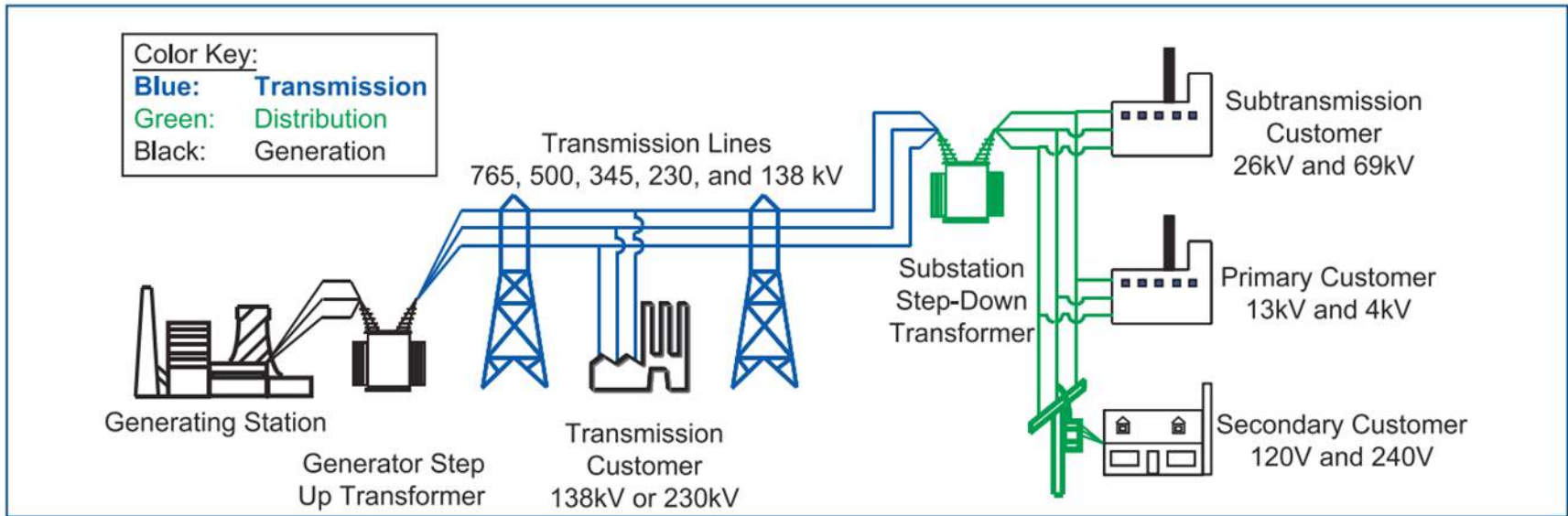
Slides 21+ for Q&A Purposes if Needed

# Net Metering



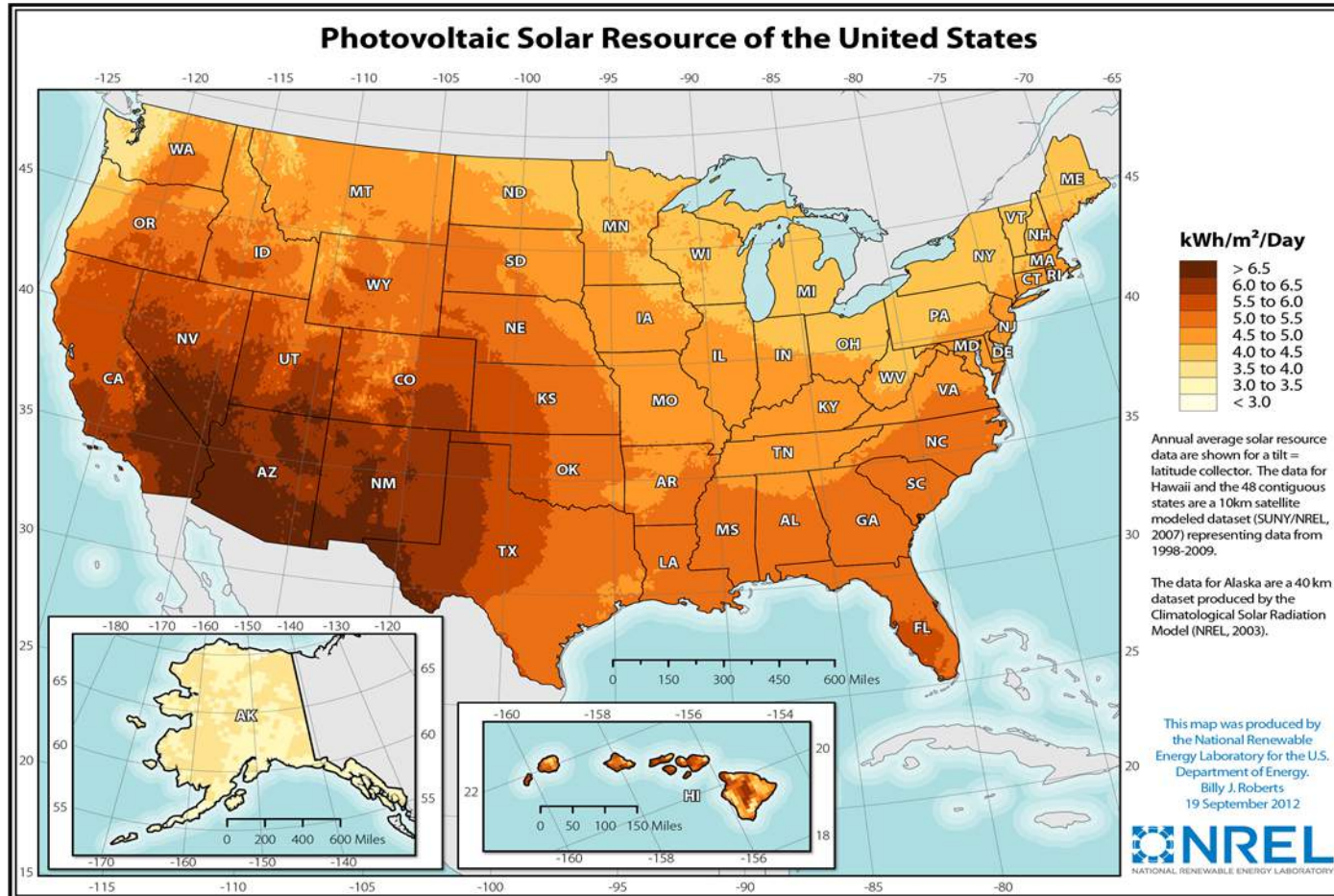
# Electric System Basic Structure

- ❖ Net Metering
- ❖ Grid Infrastructure Considerations
- ❖ Interconnection Location



Source: <http://www.ferc.gov/industries/electric/indus-act/reliability/blackout/ch1-3.pdf>

# Solar Insolation Map



# Incentives

## ❖ Federal Investment Tax Credit

### FEDERAL SOLAR TAX CREDIT PHASE OUT

ADOPTED DEC. 2015

