Solar Powering Your Community

Addressing Soft Costs and Barriers

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U.S. Department of Energy

About the SunShot Solar Outreach Partnership

ICMA
Leaders at the Core of Better Communities

APA
American Planning Association
Making Great Communities Happen

NARC
Building Regional Communities
National Association of Regional Councils

ICLEI
Local Governments for Sustainability USA

IREC
Interstate Renewable Energy Council

MEISTER
CONSULTANTS GROUP

NORTH CAROLINA
Solar Center

THE SOLAR FOUNDATION
Research and Education to Advance Solar Energy

SEPA
solar electric power association

The SunShot Solar Outreach Partnership (SolarOPs) is a U.S. Department of Energy (DOE) program designed to increase the use and integration of solar energy in communities across the US.

About the SunShot Solar Outreach Partnership

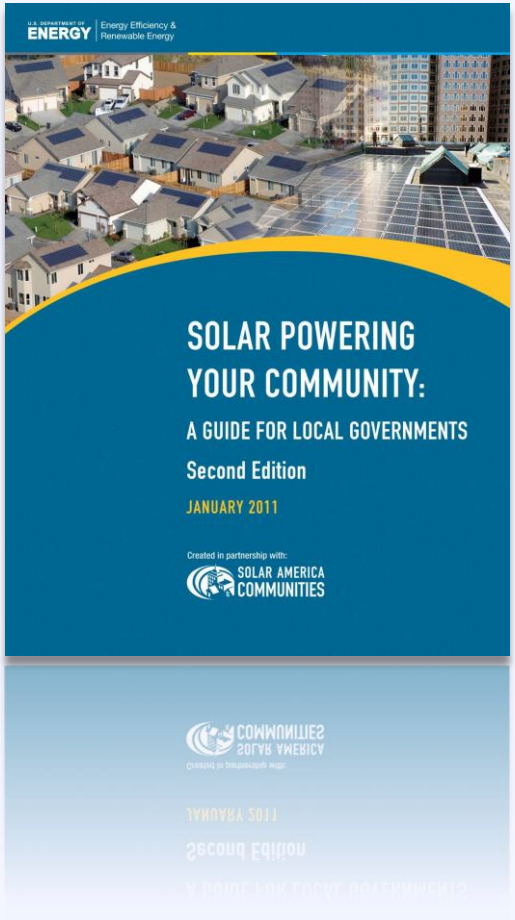
- Increase installed capacity of solar electricity in U.S. communities
- Streamline and standardize permitting and interconnection processes
- Improve planning and zoning codes/regulations for solar electric technologies
- Increase access to solar financing options

About the SunShot Solar Outreach Partnership

Resource **Solar Powering Your Community Guide**

A comprehensive resource to assist local governments and stakeholders in building local solar markets.

www.energy.gov



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About the SunShot Solar Outreach Partnership

Resource Sunshot Resource Center

- Case Studies
- Fact Sheets
- How-To Guides
- Model Ordinances
- Technical Reports
- Sample Government Docs

www4.eere.energy.gov/solar/sunshot/resource_center

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Amy Heinemann

NC Solar Center / DSIRE

amy.heinemann@ncsu.edu

(919) 515 - 5693

Jayson Uppal

Meister Consultants Group

jayson.uppal@mc-group.com

(617) 209 -1990

Agenda

08:40 – 09:10	Introductions & Discussion
09:10 – 10:00	Creating a Regulatory Landscape for Solar
10:00 – 10:10	*Break*
10:10 – 11:00	Making Solar More Affordable
11:00 – 11:40	Installing Solar on Municipal Facilities
11:40 – 11:50	*Break*
11:50 – 12:10	Zoning for Solar in Pittsburgh Region
12:10 – 12:30	Next Steps for Solar in Region

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Poll

Who's in the room?

Poll

What is your experience with solar?

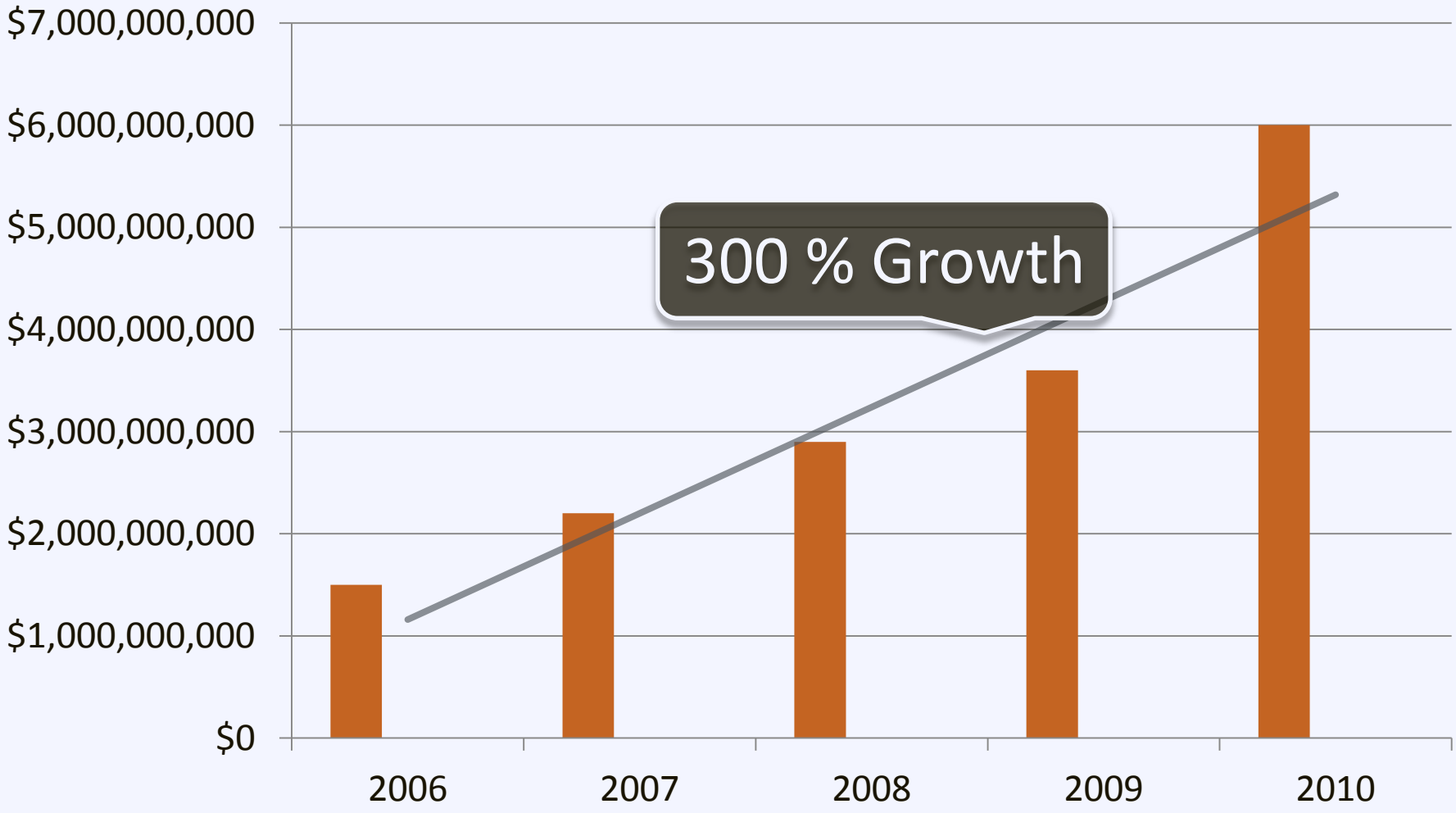
Discussion

Why solar in your region?

Benefits

- Local economy growth
- Local jobs
- Energy independence
- Stabilizes price volatility
- Valuable to utilities
- Smart Investment

Benefit: Economic Growth



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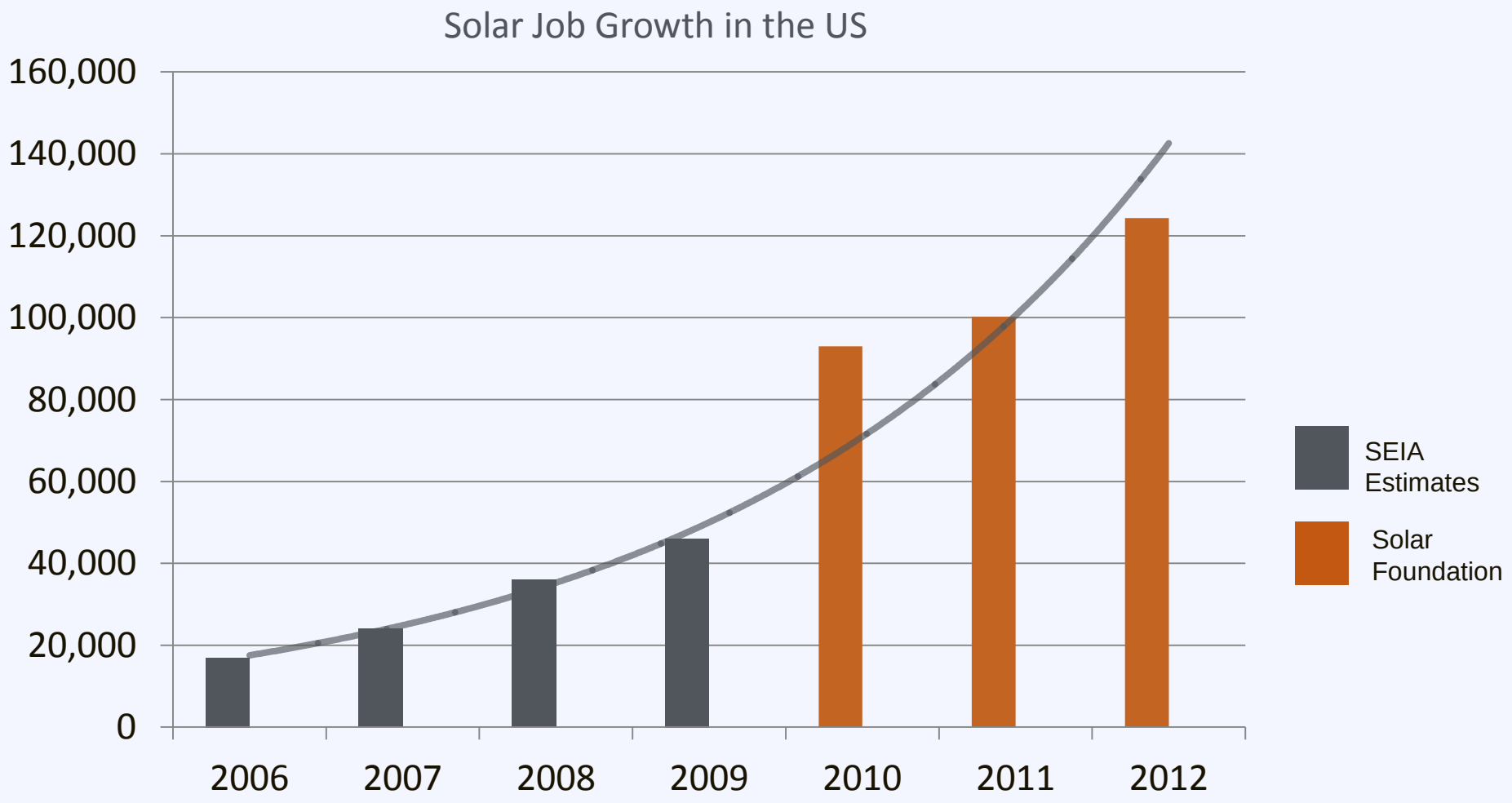
Source: SEIA/GTM Research - 2010 Year in Review Report http://www.seia.org/galleries/pdf/SMI-YIR-2010-ES.pdf SEIA/GTM Research- 2009 year in Review Supplemental Charts

Benefit: Job Growth



Source: SEIA Estimates (2006-2009), The Solar Foundation's National Solar Jobs Census 2010 (2010), The Solar Foundation's National Solar Jobs Census 2011 (2011-2012).

Discussion

What barriers have you come up against in your community?

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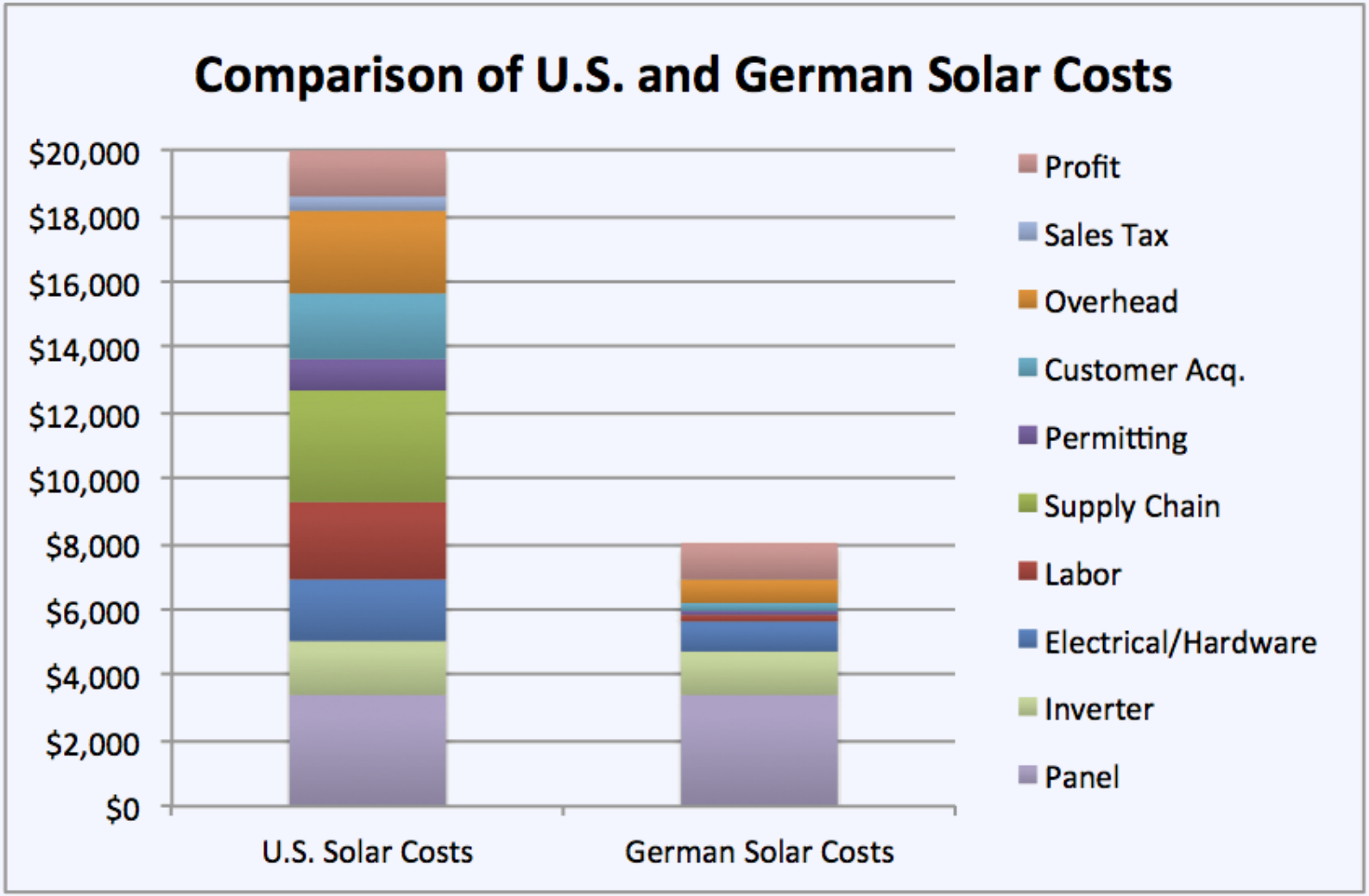
The Cost of Solar in the US



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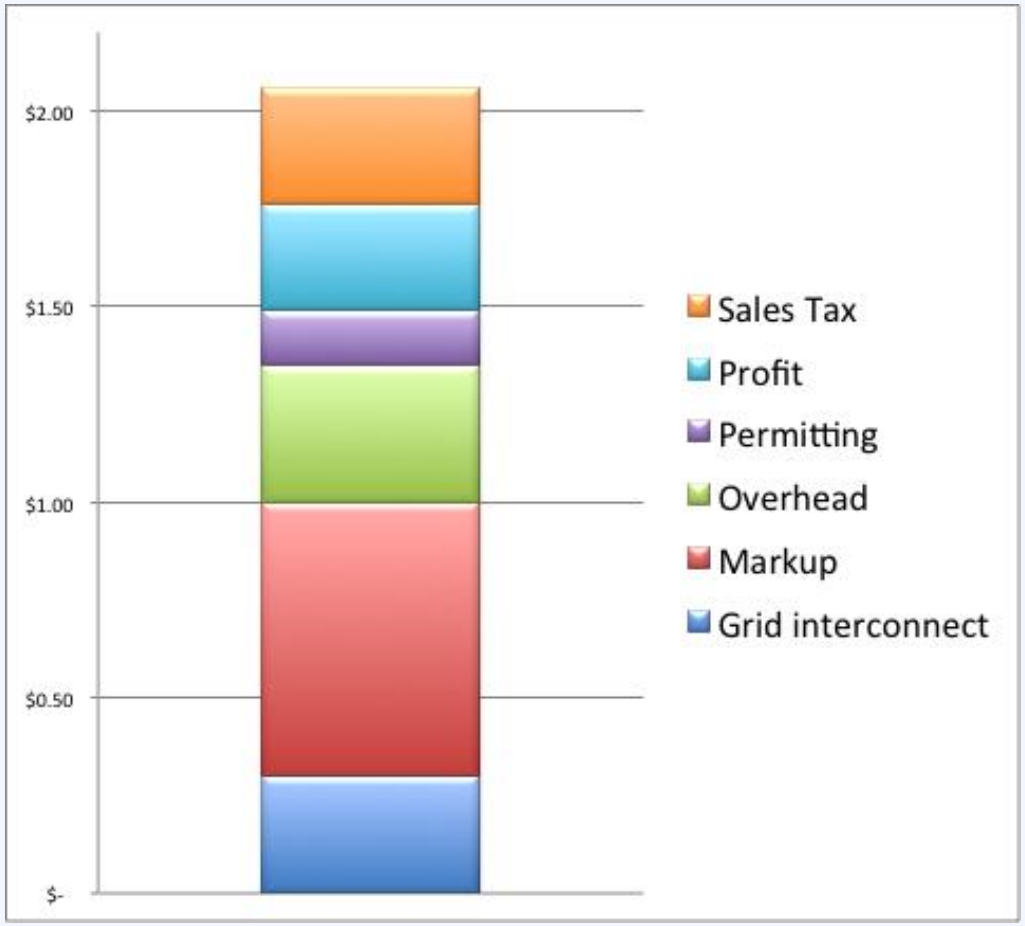
Forbes: http://www.forbes.com/sites/toddwoody/2012/07/05/cut-the-price-of-solar-in-half-by-cutting-red-tape/

The Cost of Solar in the US

- 36% of total cost
- Permitting
- Overhead
- Interconnect



Time to Installation

New York City's Goal

100 days

from inception to completion

Germany Today

8 days

from inception to completion

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Photon Magazine

Installed Capacity

Total installed solar capacity in the US

4 GW

Capacity installed in Germany in Dec 2011

4 GW

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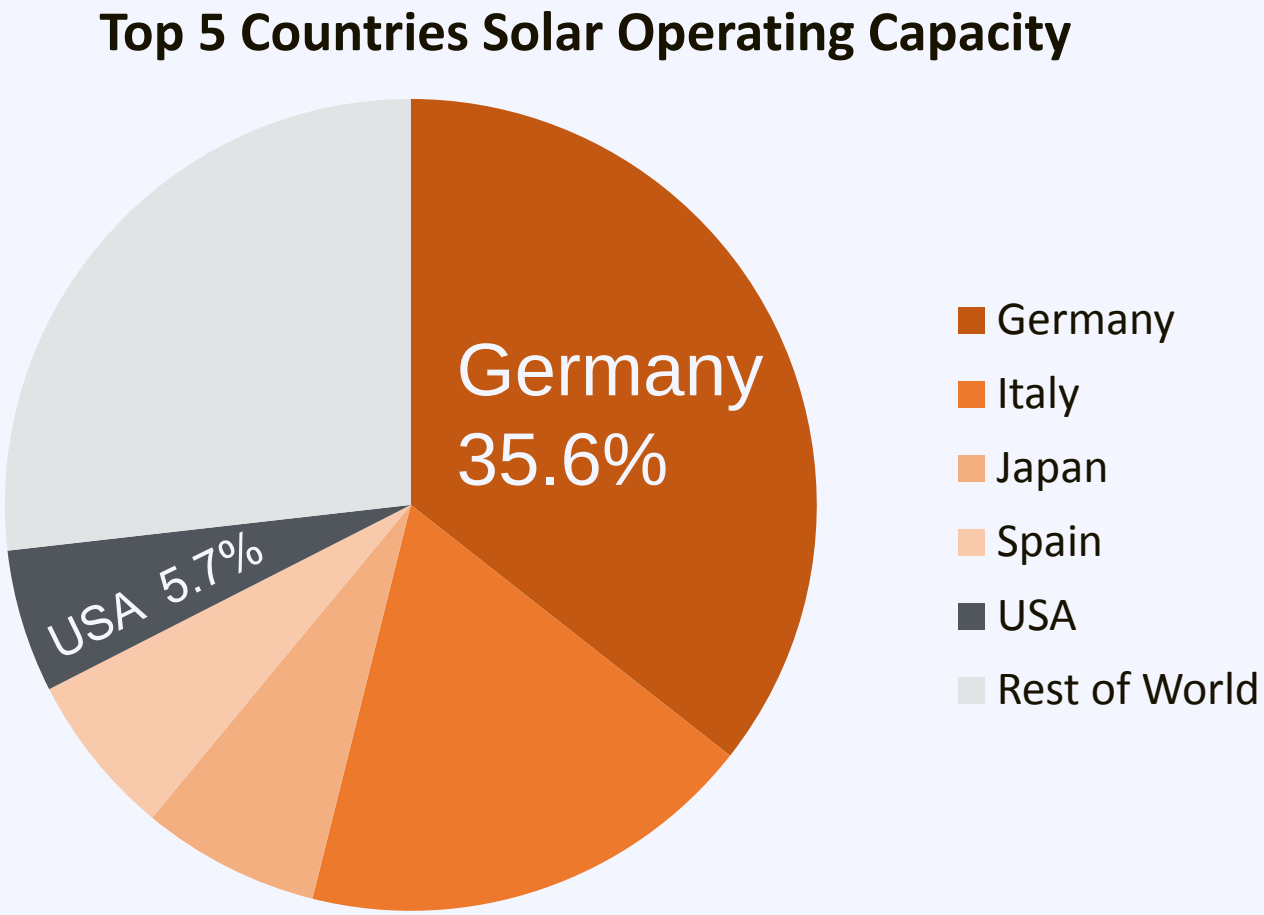
http://www.map.ren21.net/GSR/GSR2012.pdf

Installed Capacity



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http://www.map.ren21.net/GSR/GSR2012.pdf

Germany's Success

Consistency and Transparency

through a

Standardized Processes

Creating the Regulatory Landscape for Solar Success

Who Regulates What?

State

- Utility Regulation
- Interconnection Process
- Third-Party Power Sales

Local

- Building and Zoning Codes
- Solar Access
- Permitting Process

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Who Regulates What?

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Utility Regulation

Third Party Financing

Third-Party Power Sales

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Building and Zoning Codes

Solar Access

Permitting Process

Zoning Code: As-of-Right

With "as-of-right" siting, development may proceed without the need for a special permit, variance, amendment, waiver, or other discretionary approval

Zoning Code: As-of-Right

Model "As of Right" Zoning Provisions:

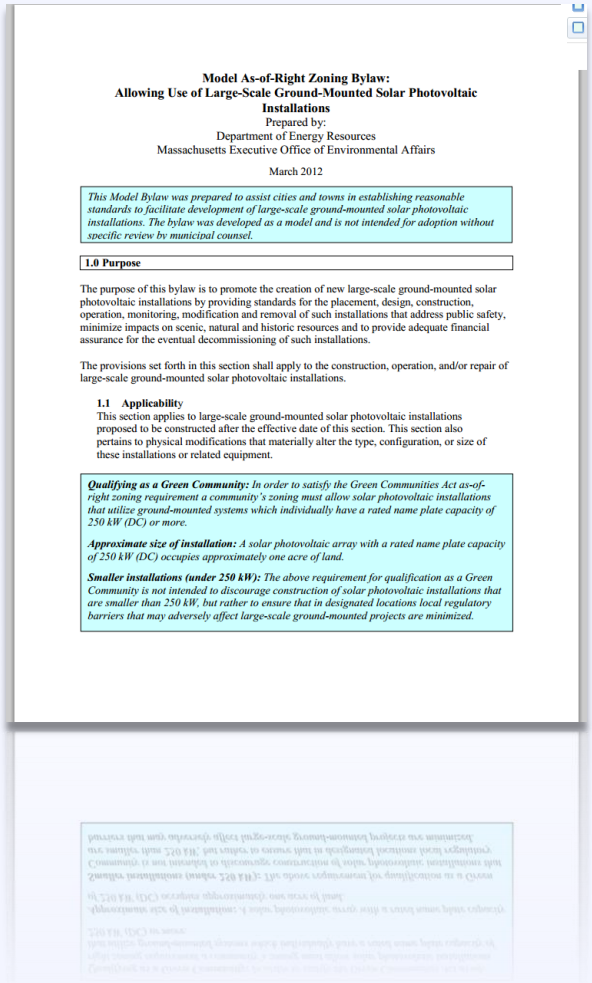
- Compliance with local regulations
- Building permit and inspection
- Fees
- Setbacks
- Signs and Lighting

Zoning Code: As-of-Right

Resource **As-of-Right Zoning Model Ordinance**

Prepared to assist local governments in establishing reasonable standards to facilitate the development of large scale solar installations

www.mass.gov



Model As-of-Right Zoning Bylaw:
Allowing Use of Large-Scale Ground-Mounted Solar Photovoltaic Installations
Prepared by:
Department of Energy Resources
Massachusetts Executive Office of Environmental Affairs

March 2012

This Model Bylaw was prepared to assist cities and towns in establishing reasonable standards to facilitate development of large-scale ground-mounted solar photovoltaic installations. The bylaw was developed as a model and is not intended for adoption without specific review by municipal counsel.

1.0 Purpose

The purpose of this bylaw is to promote the creation of new large-scale ground-mounted solar photovoltaic installations by providing standards for the placement, design, construction, operation, monitoring, modification and removal of such installations that address public safety, minimize impacts on scenic, natural and historic resources and to provide adequate financial assurance for the eventual decommissioning of such installations.

The provisions set forth in this section shall apply to the construction, operation, and/or repair of large-scale ground-mounted solar photovoltaic installations.

1.1 Applicability
This section applies to large-scale ground-mounted solar photovoltaic installations proposed to be constructed after the effective date of this section. This section also pertains to physical modifications that materially alter the type, configuration, or size of these installations or related equipment.

Qualifying as a Green Community: *In order to satisfy the Green Communities Act as-of-right zoning requirement a community's zoning must allow solar photovoltaic installations that utilize ground-mounted systems which individually have a rated name plate capacity of 250 kW (DC) or more.*

Approximate size of installation: *A solar photovoltaic array with a rated name plate capacity of 250 kW (DC) occupies approximately one acre of land.*

Smaller installations (under 250 kW): *The above requirement for qualification as a Green Community is not intended to discourage construction of solar photovoltaic installations that are smaller than 250 kW, but rather to ensure that in designated locations local regulatory barriers that may adversely affect large-scale ground-mounted projects are minimized.*

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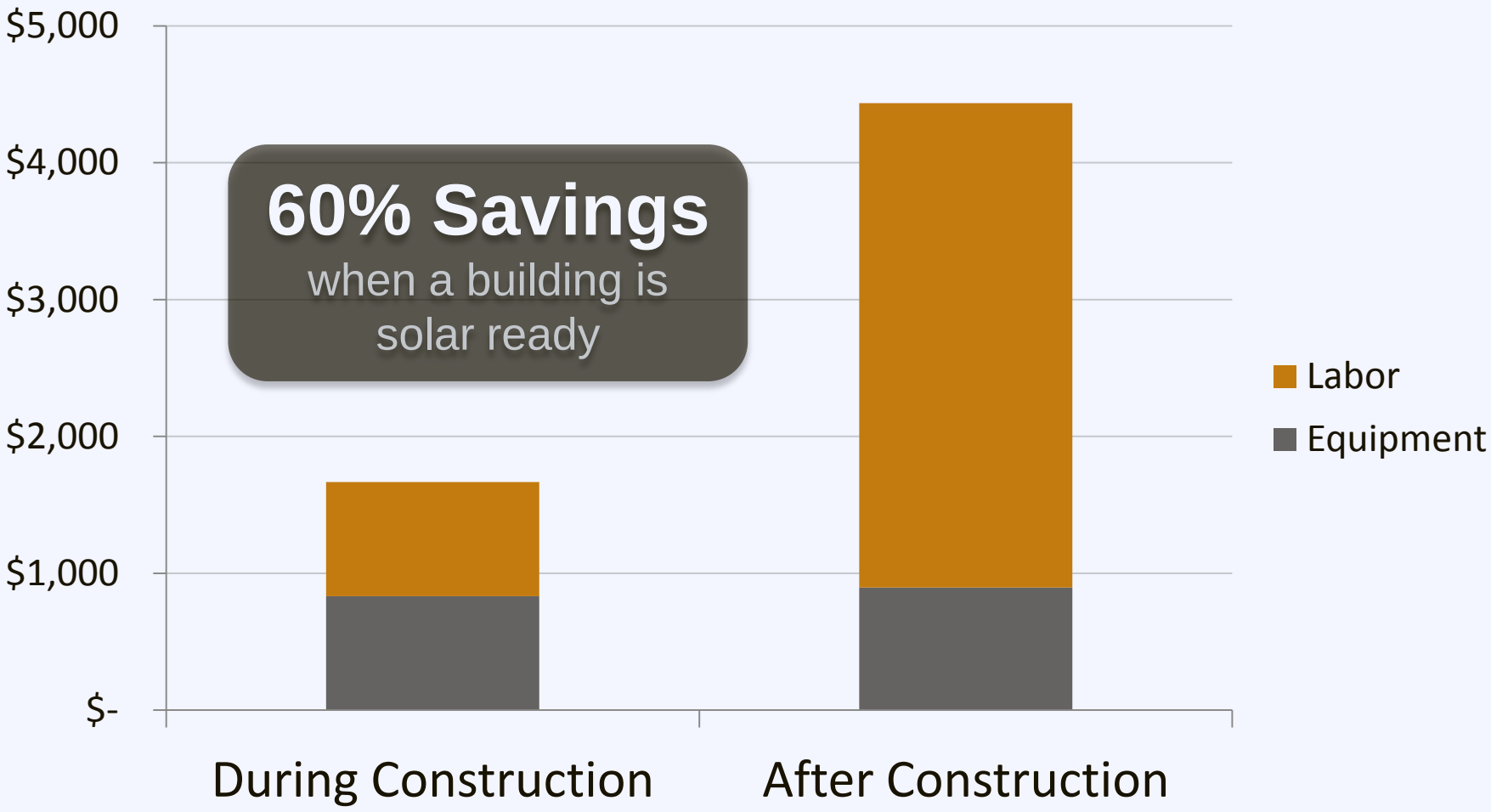
Solar Readiness

Encourage builders to:

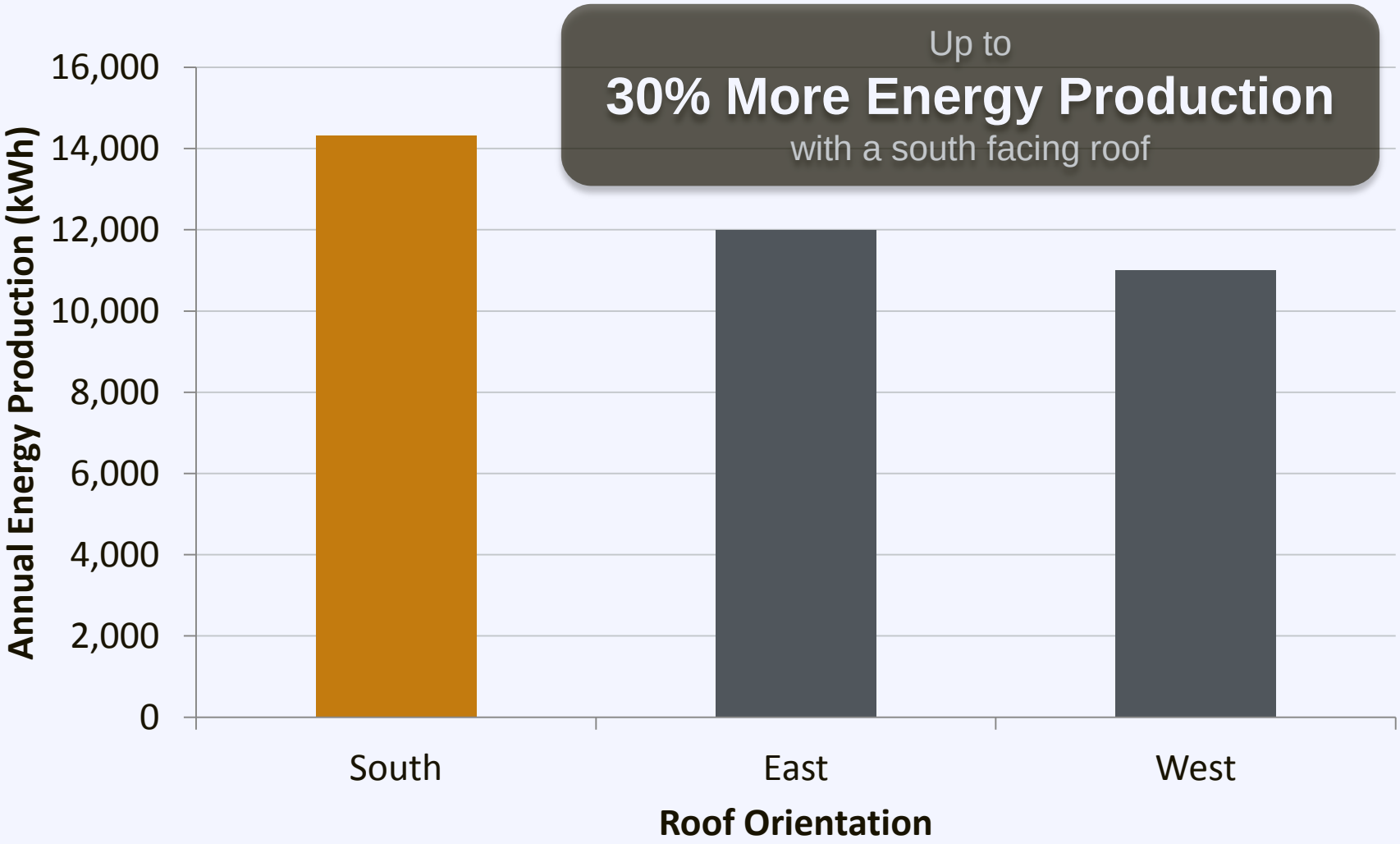
- ✓ Minimize rooftop equipment
- ✓ Plan for the structure to be oriented to avoid shading from trees and buildings
- ✓ Install a roof that will support the extra loads of a solar array
- ✓ Record roof specifications on drawings
- ✓ Plan for wiring and inverter placement

Solar Readiness



Source: Solar Ready: An Overview of Implementation Practices [Draft]. NREL, Feb. 18, 2011.

Solar Readiness



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Source: *Solar Ready: An Overview of Implementation Practices [Draft].* NREL, Feb. 18, 2011.

Solar Readiness

Resource **Tucson AZ**

Solar Design Requirements for Homes

Requires all new homes either to have a PV and ST system installed, or to have all the necessary hardware installed so that a system can easily be installed at a later date

Source: http://cms3.tucsonaz.gov/files/dsd/PV_Prep.pdf

Solar Readiness

Resource **Tucson AZ**

- Installation of conduit or hot water pipe
- Site plan indicates best location for panels
- Provide roof structure designed for weight
- Site plan indicates best location for equipment

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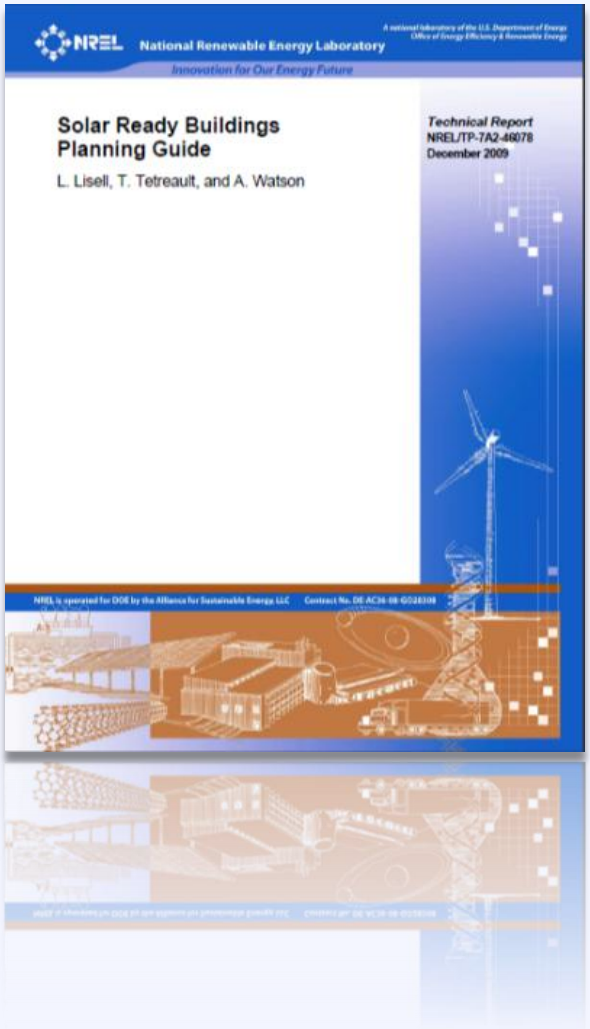
Source: http://cms3.tucsonaz.gov/files/dsd/PV_Prep.pdf

Solar Readiness

Resource **NREL**

Creating a solar ready guide for buildings:

- Legislation
- Certification programs
- Stakeholder Education



Who Regulates What?

State

- Utility Regulation
- Interconnection Process
- Third-Party Power Sales

Local

- Building and Zoning Codes
- Solar Access
- Permitting Process

Solar Access

The right to install solar and the ability to access sunlight

1. Override public restrictions that prohibit installation
2. Override private restrictions that prohibit installation
3. Protection from having existing system impacted by future development

Fontainebleau V. Eden Roc (1959)

A landowner does not have any legal right to the free flow of light and air across the adjoining land of his neighbor.

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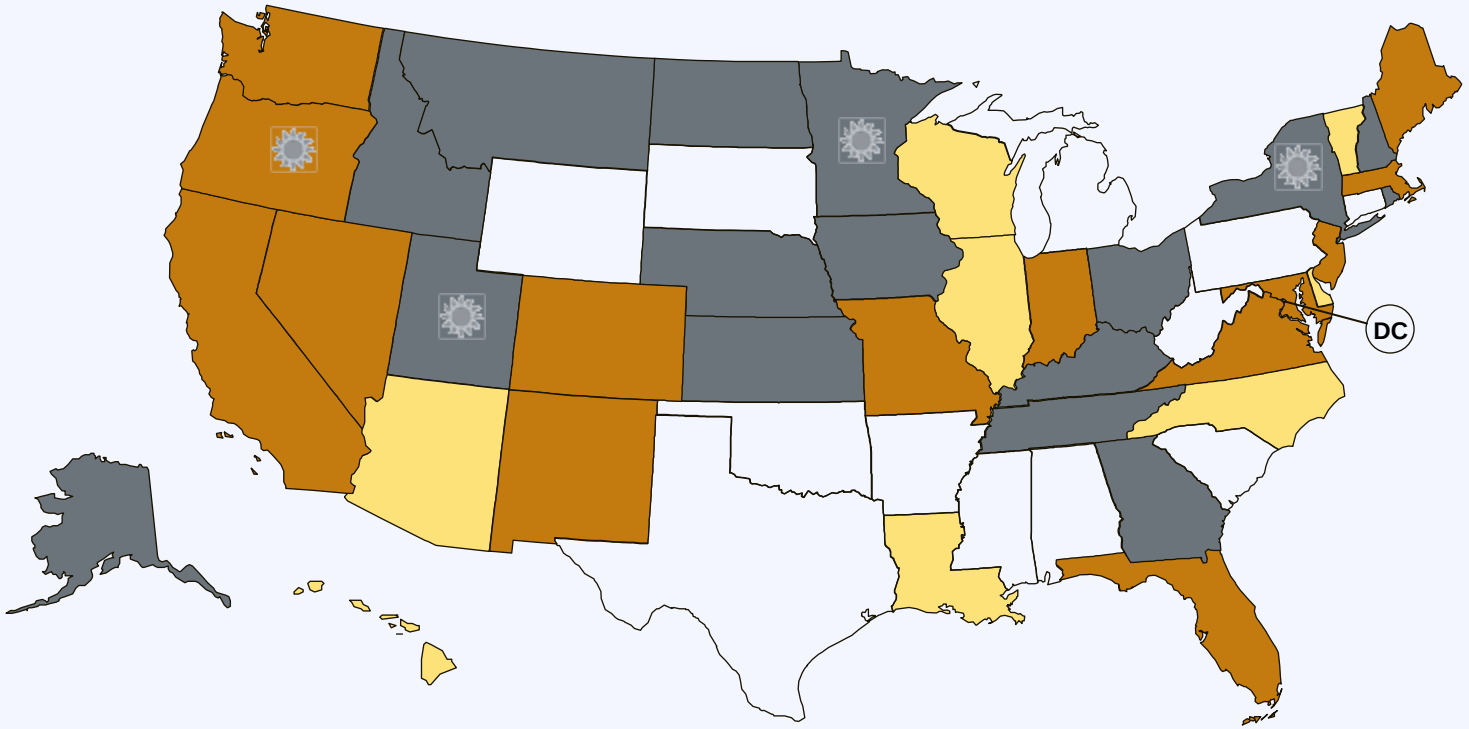
Source: Google Earth

Solar Access



Solar Easements Provision

Solar Rights Provision

Solar Easements and Solar Rights Provisions

U.S. Virgin Islands

Local option to create solar rights provision

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U.S. Department of Energy

Source: DSIRE

Solar Readiness

What can you do?

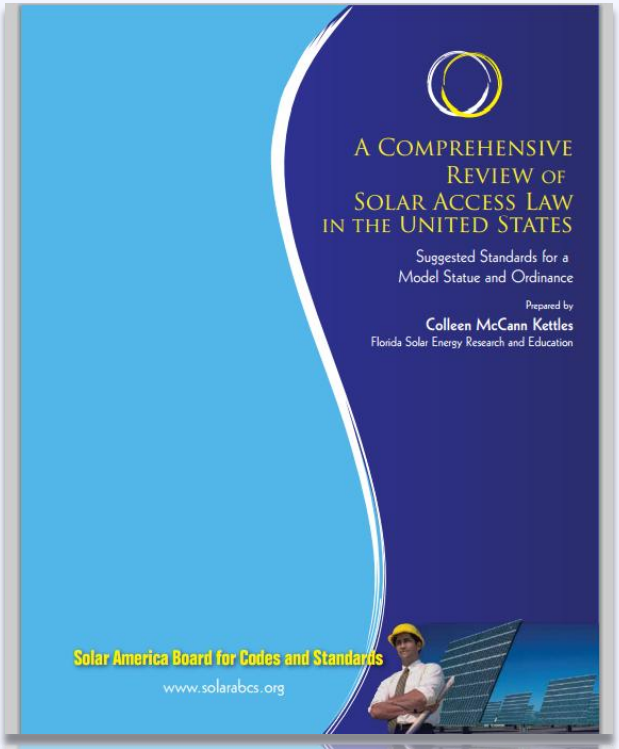
- ✓ Establish a procedure for a obtaining a solar access permit to protect a solar energy system from vegetation that would shade the collector
- ✓ Enact an ordinance to require the trimming of vegetation that blocks solar energy equipment.
- ✓ Provide that deed restrictions (and other instruments) that prohibit the use of solar are void and unenforceable

Solar Access

Resource **Solar ABCs**

A comprehensive review of solar access law in the US – Suggested standards for a model ordinance

www.solarabcs.org



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Permitting for Solar is Broken

Local permitting processes add on average

$2,516

to the installation cost of residential PV

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Source: SunRun

Permitting for Solar is Broken

Source: Forbes

Streamlined Permitting

What can you do?

- ✓ Understand the entire permitting and inspection process.
- ✓ Simplify permit application forms and review processes.
- ✓ Coordinate permitting procedures with nearby jurisdictions.
- ✓ Provide training to building and electrical inspectors.
- ✓ Allow online or over-the-counter building permits.

Streamlined Permitting

What ELSE can you do?

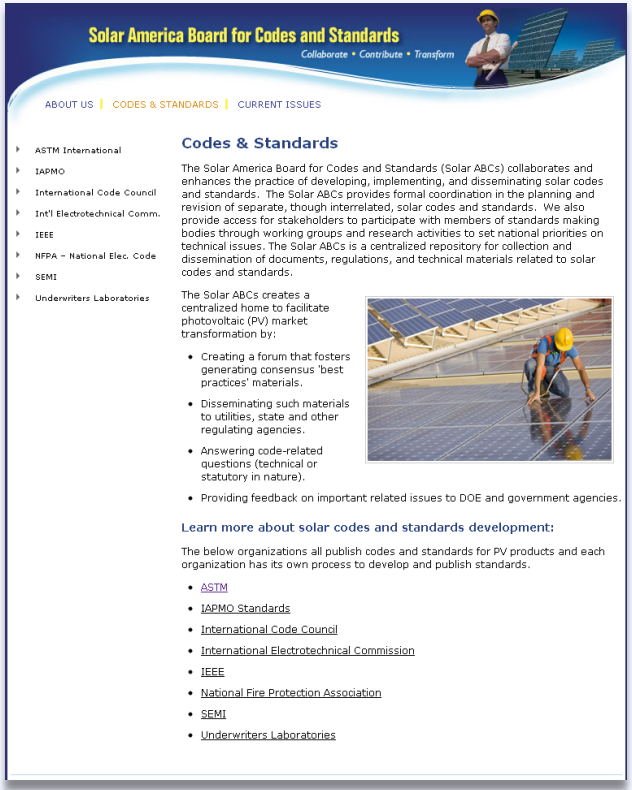
- ✓ Publicize the fee structure on the permitting agency's Web site.
- ✓ Allow document exchanges to be conducted by company representatives, not just the licensed electrician.
- ✓ Fast-track solar permits to the extent appropriate.
- ✓ Establish a clear path for communications between code enforcement offices and the local utility provider.

Streamlined Permitting

Resource **Solar ABCs**

Resource for local governments interested in implementing solar codes and standards:

- Expedited Permitting
- Interconnection
- Fire Safety



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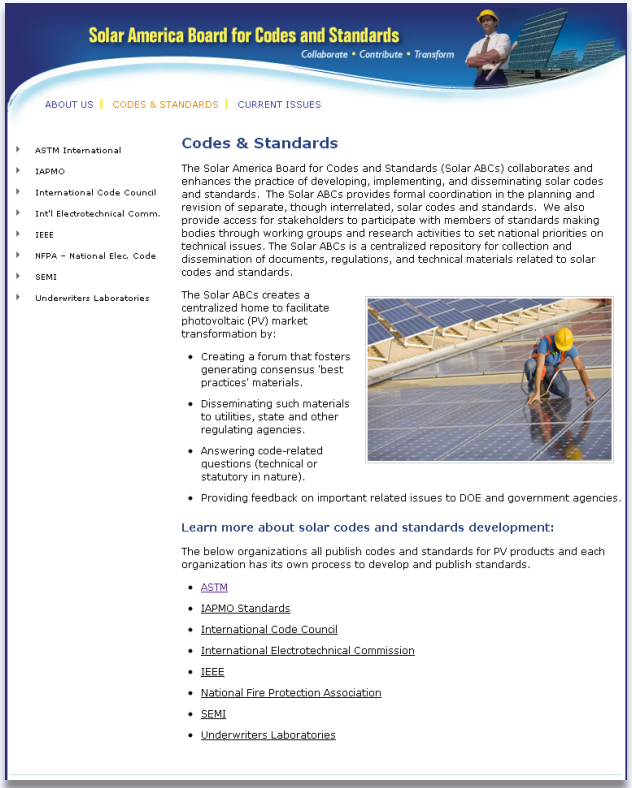
Streamlined Permitting

Resource **Solar ABCs**

Expedited Permitting:

- Simplifies requirements for PV applications
- Facilitates efficient review of content
- Minimize need for detailed studies and unnecessary delays



Case Study: Philadelphia

If the Licensed Electrical Contractor can commit to meeting predetermined installation conditions, the City will waive the requirement for a separate building permit.

Source: City of Philadelphia

Case Study: Philadelphia

Conditions

- ✓ Installation must be on the roof of a one- or two-family dwelling.
- ✓ Installation is 10 kW or less
- ✓ Installation may not occur on roof systems comprised of engineered trusses
- ✓ Property is not designated historical
- ✓ Electrical Contractor must agree to accept responsibility for the structural installation of the roof-top equipment.

Source: City of Philadelphia

Case Study: Philadelphia

Installation Limitations

- ✓ Weight is less than 5 pounds per square foot (psf).
- ✓ No more than 45 psf point load in any location.
- ✓ Height is less than 18 inches above the adjacent roof.
- ✓ Three foot clearance must be provided
- ✓ Designed for a wind load of 90 mph.

Source: City of Philadelphia

Who Regulates What?

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Who Regulates What?

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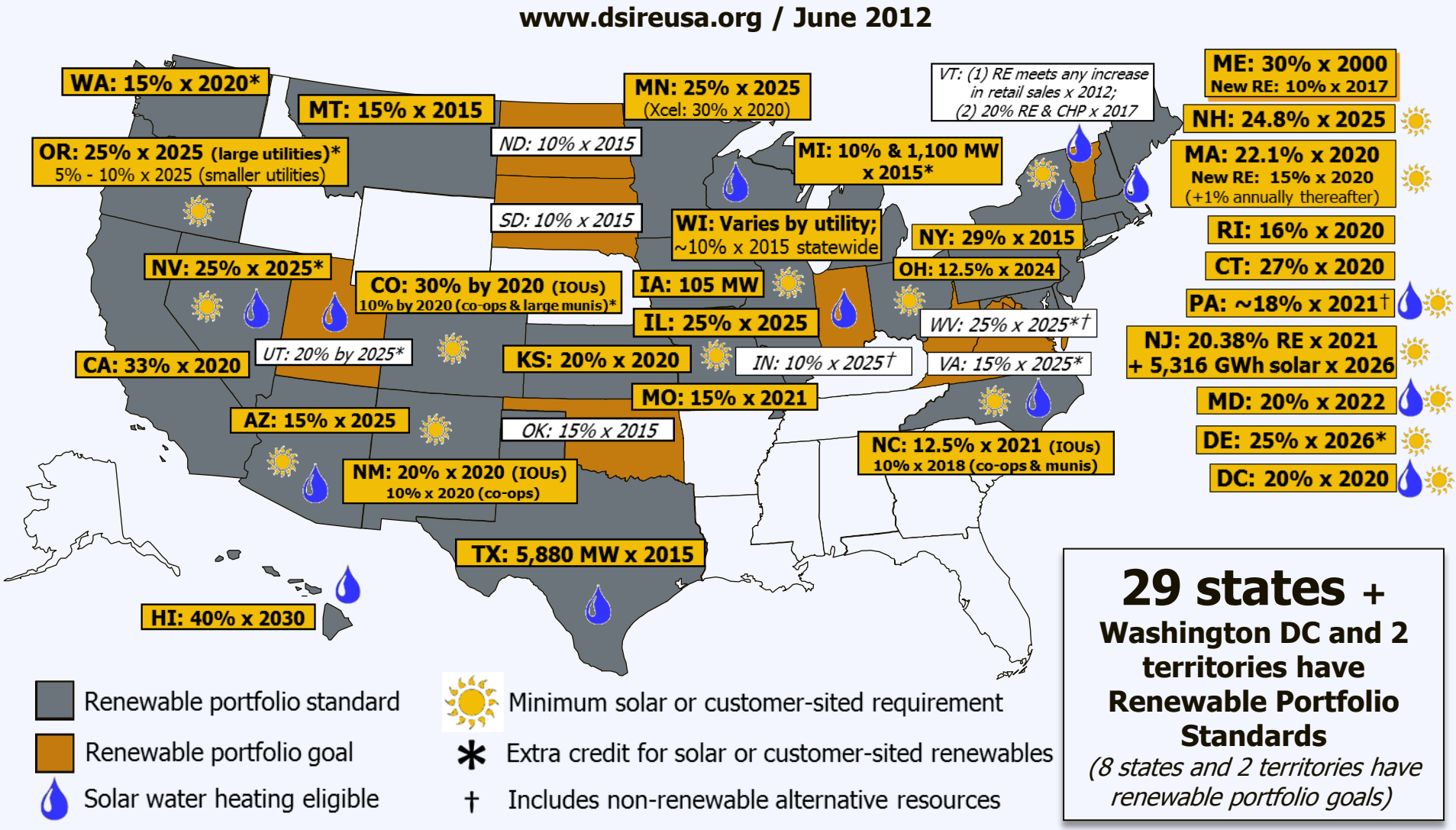
RPS

Net Metering

Local

- Building and Zoning Codes
- Solar Access
- Permitting Process

RPS: State Policies



29 states +
Washington DC and 2 territories have Renewable Portfolio Standards
(8 states and 2 territories have renewable portfolio goals)

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Renewable Portfolio Standard

Renewable portfolio standards (RPSs) require utilities to use renewable energy or renewable energy credits (RECs) to account for a certain percentage of their retail electricity sales -- or a certain amount of generating capacity -- according to a specified schedule.

Solar Renewable Energy Credits

The term "set-aside" or "carve-out" refers to a provision within an RPS that requires utilities to use a specific renewable resource (usually solar energy) to account for a certain percentage of their retail electricity sales (or a certain amount of generating capacity) according to a set schedule. With a solar carve-out, compliance is established using solar renewable energy credits (SRECs).

Net Metering

Net metering allows customers to export power to the grid during times of excess generation, and receive credits that can be applied to later electricity usage

Net Metering: Overview

Morning

Net Metering: Overview

Afternoon

Net Metering: Overview

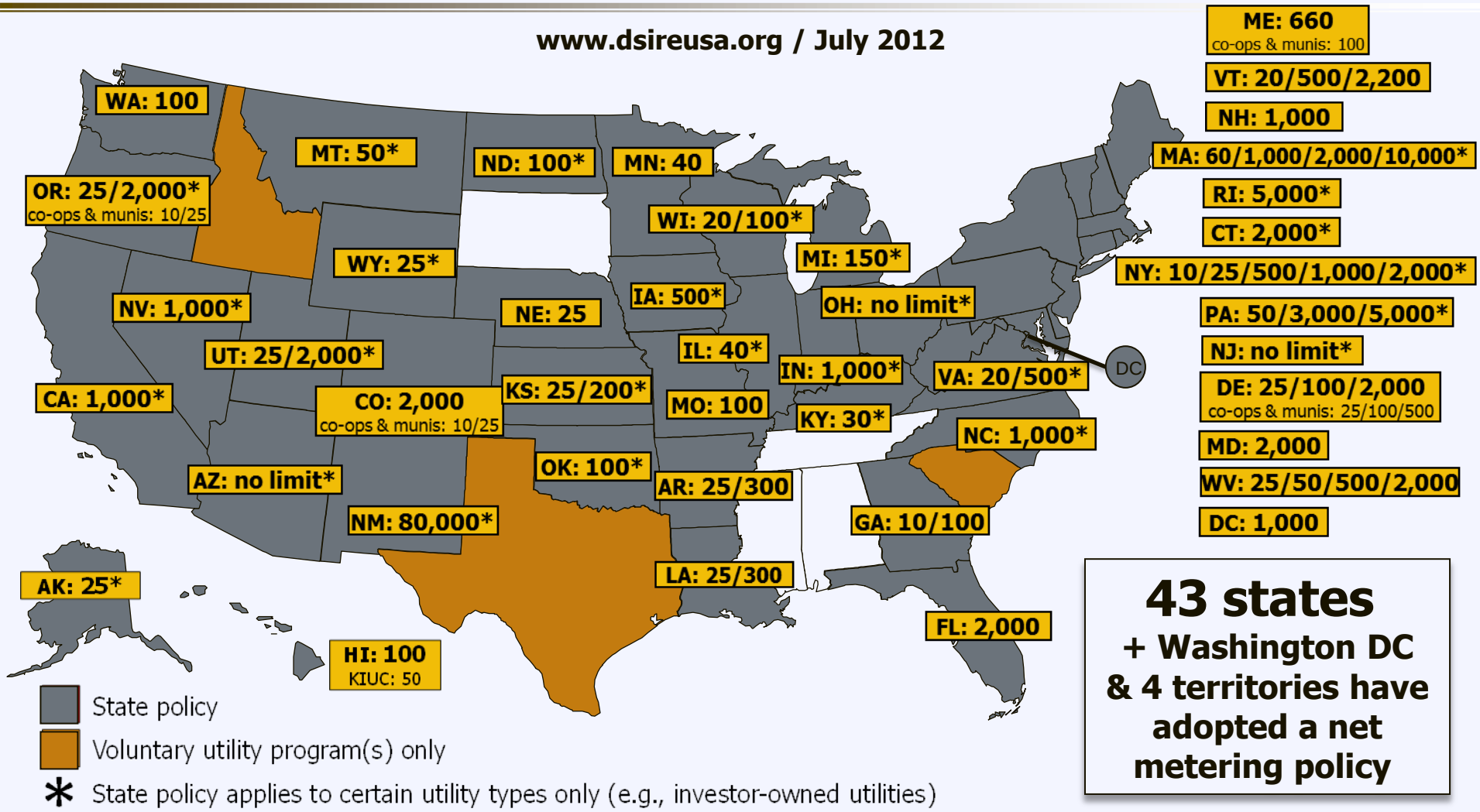
Night

Customer

Utility

Solar covers 100% of the customer's load, even at night!

Net Metering: State Policies



Note: Numbers indicate individual system capacity limit in kilowatts. Some limits vary by customer type, technology and/or application. Other limits might also apply. This map generally does not address statutory changes until administrative rules have been adopted to implement such changes.

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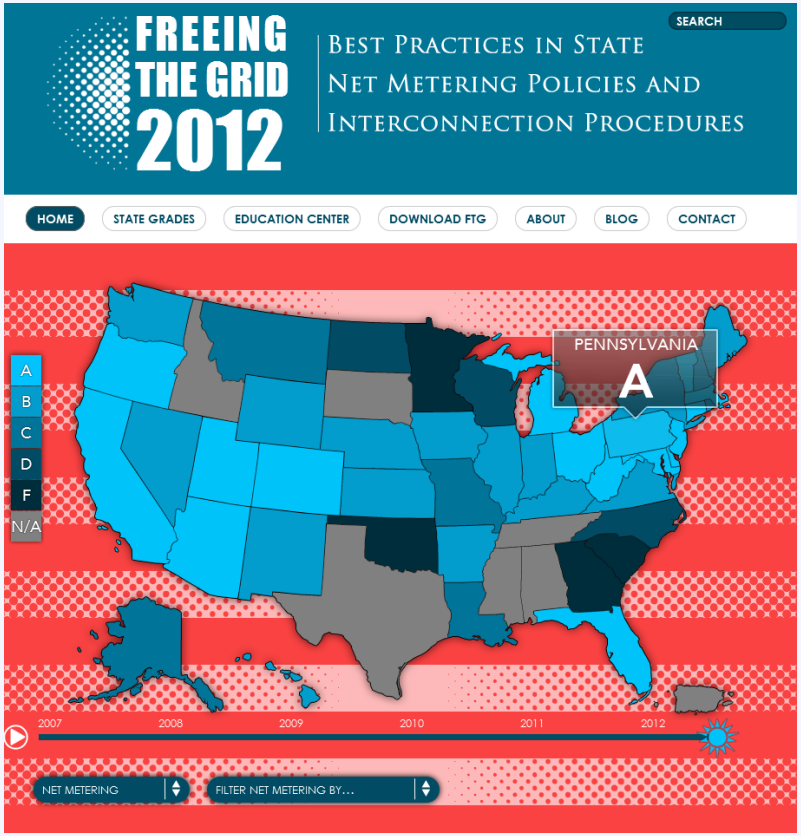
Net Metering: Resources

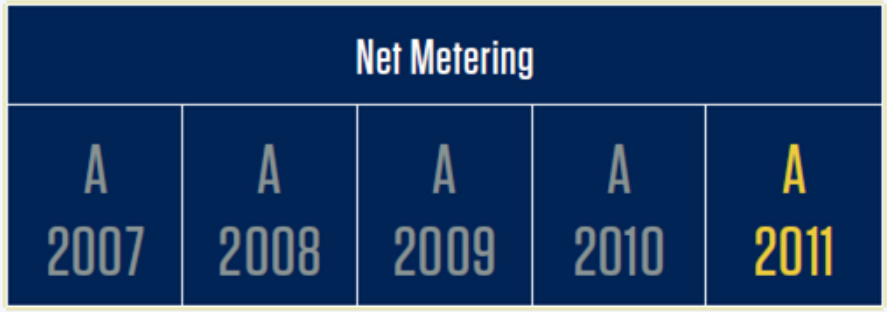
Resource **Freeing the Grid**

Provides a "report card" for state policy on net metering and interconnection

http://freeingthegrid.org/

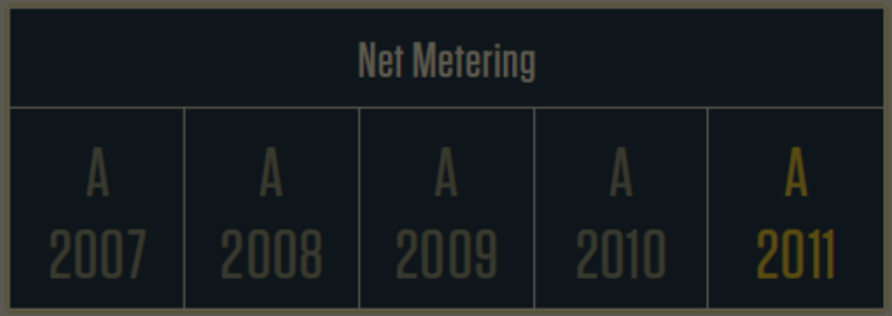


Net Metering: Pennsylvania



Eligible Renewable/ Other Technologies:	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Fuel Cells, Municipal Solid Waste, CHP/ Cogeneration, Waste Coal, Coal-Mine Methane, Anaerobic Digestion, Small Hydroelectric, Other Distributed Generation Technologies
Applicable Sectors:	Commercial, Industrial, Residential, Nonprofit, Schools, Local Government, State Government, Fed. Government, Agricultural, Institutional
Applicable Utilities:	Investor-owned utilities
System Capacity Limit:	5 MW for microgrid and emergency systems; 3 MW for non-residential; 50 kW for residential
Aggregate Capacity Limit:	No limit specified
Net Excess Generation:	Credited to customer's next bill at retail rate; reconciled at end of year at "price-to-compare"
REC Ownership:	Customer owns RECs
Meter Aggregation:	Virtual meter aggregation allowed

Net Metering: Pennsylvania



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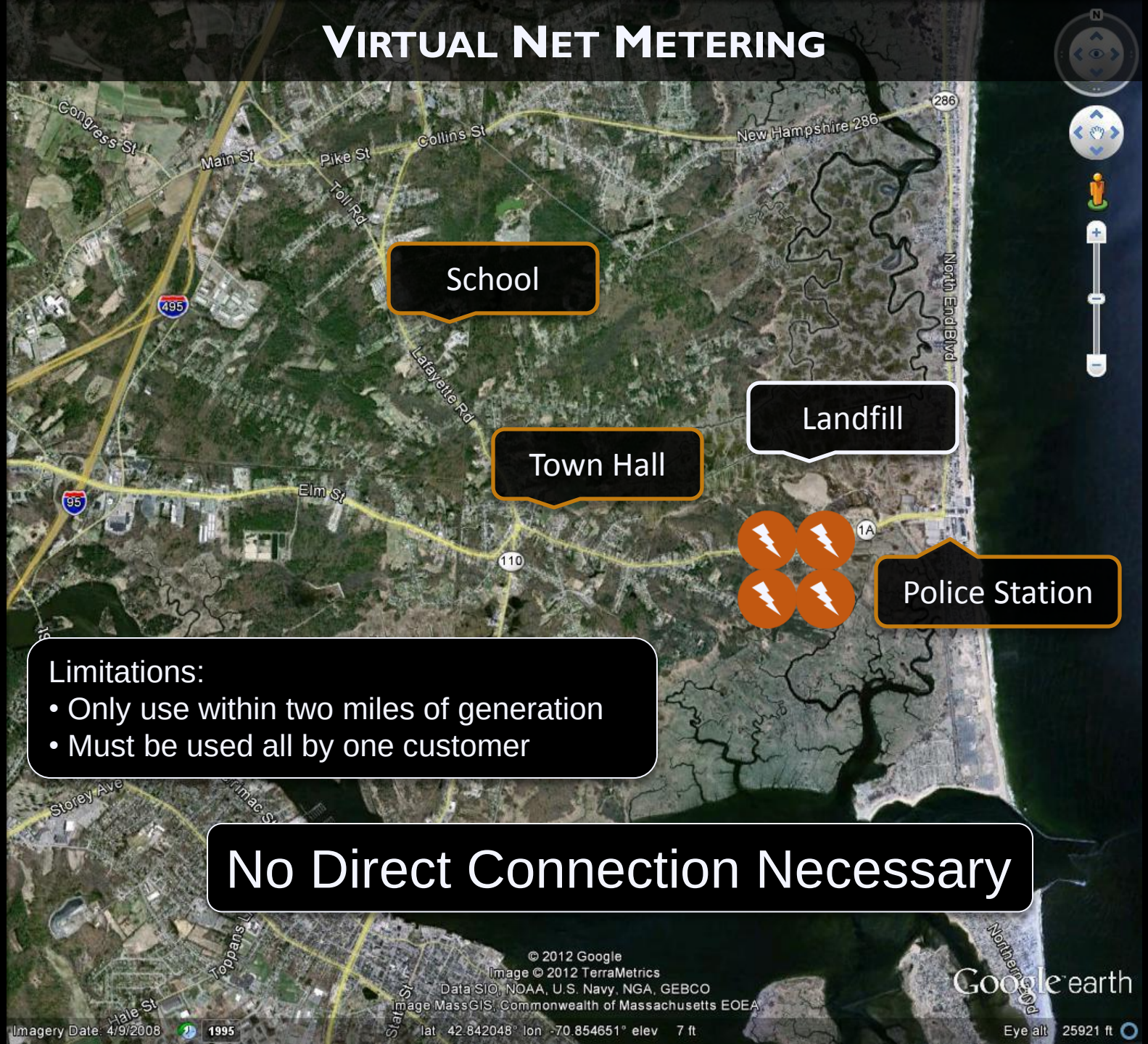
Virtual Net Metering

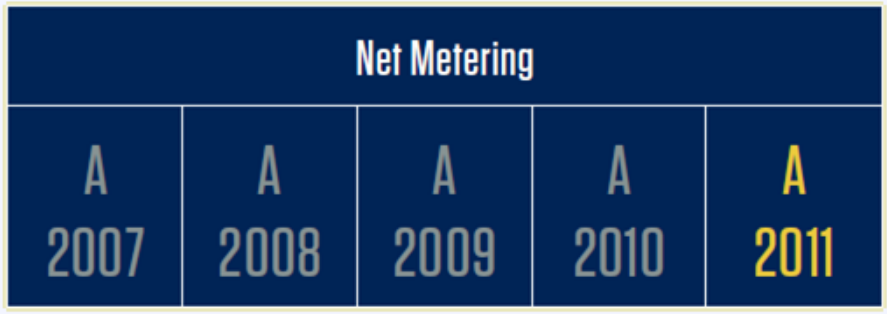


Limitations:

- Only use within two miles of generation
- Must be used all by one customer

No Direct Connection Necessary

Net Metering: Pennsylvania



Recommendations:

- Expand net metering procedures to all utilities (i.e., munis and co-ops)

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Local

- Building and Zoning Codes
- Solar Access
- Permitting Process

Interconnection: Background

2000: NREL finds that interconnection is a significant barrier to customer sited DG

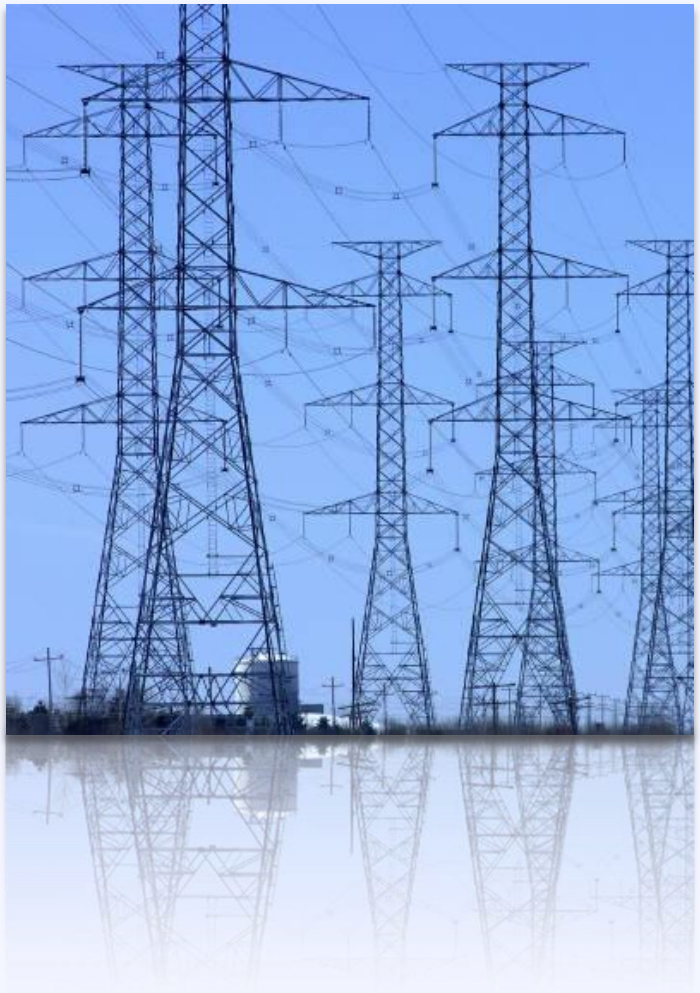
2005: Congress requires state regulator authorities to consider an interconnection standard (IEEE 1547)

2012: 43 States & DC have adopted interconnection standards

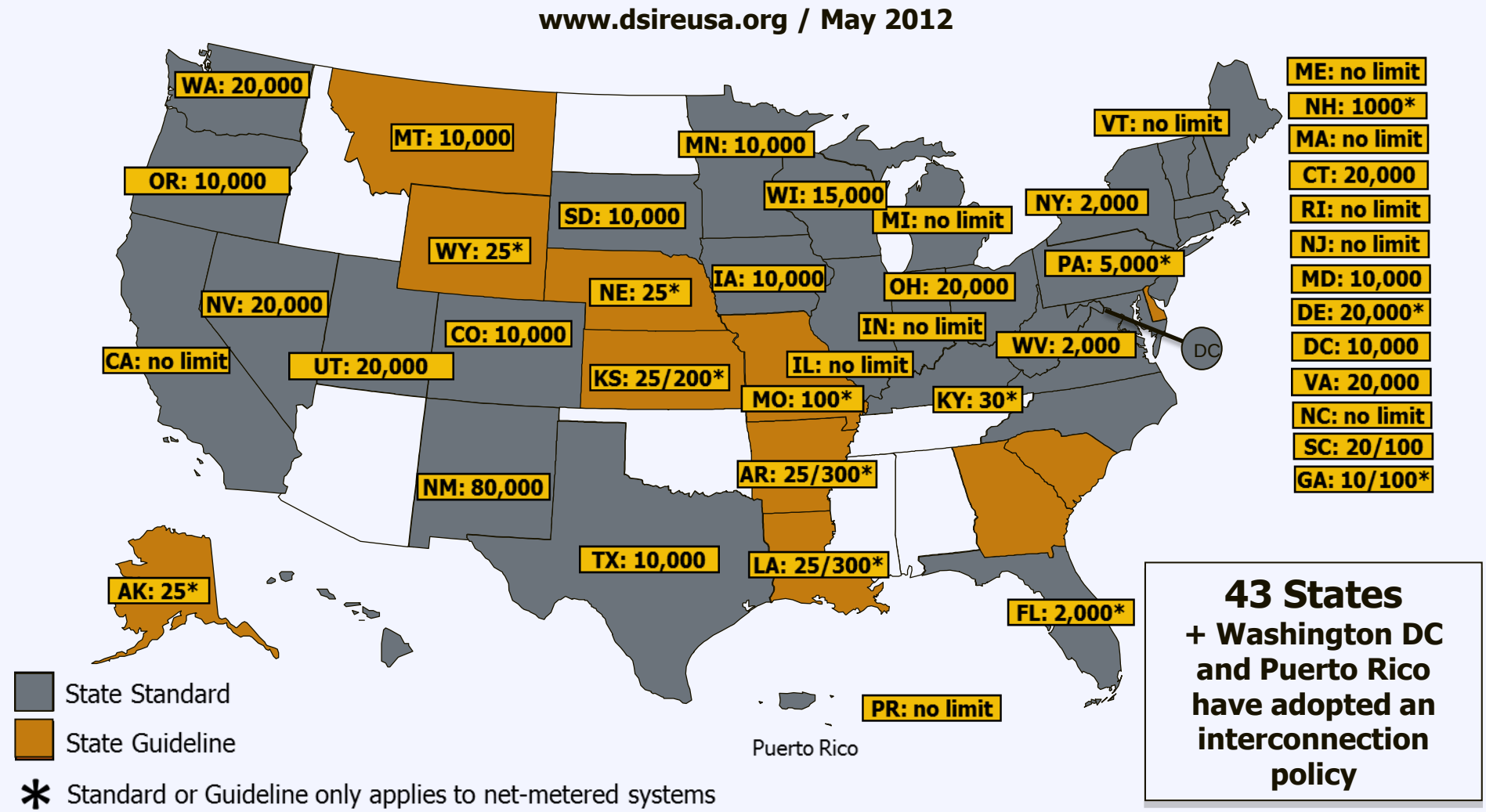
- CA Rule 21
- FERC SGIP
- MADRI Procedures
- IREC Procedures

Interconnection: Best Practices

1. Use standard forms and agreements
2. Implement expedited process
3. Implement simplified procedure for small solar arrays



Interconnection: State Policies



Notes: Numbers indicate system capacity limit in kW. Some state limits vary by customer type (e.g., residential versus non-residential). "No limit" means that there is no stated maximum size for individual systems. Other limits may apply. Generally, state interconnection standards apply only to investor-owned utilities.

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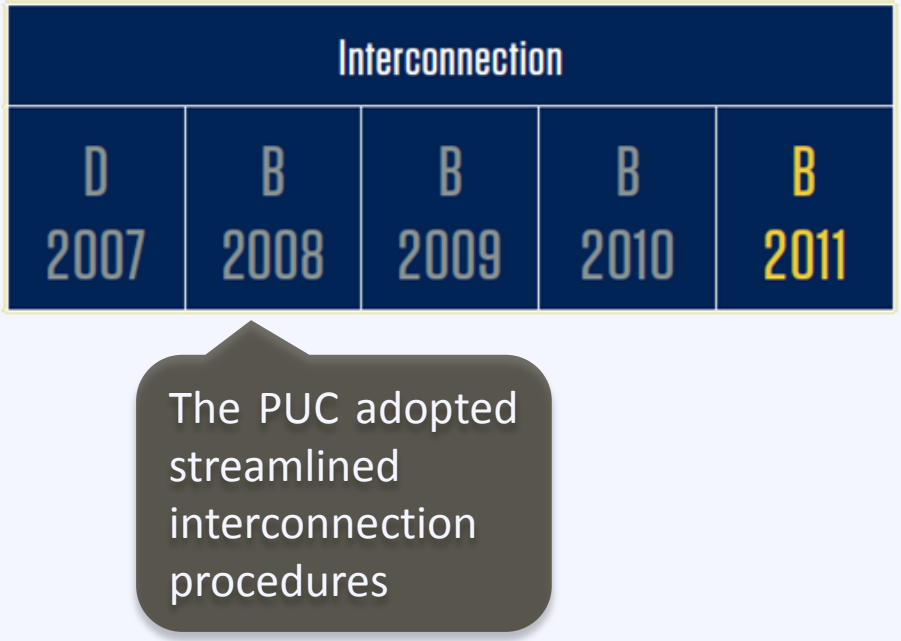
U.S. Department of Energy

Interconnection: Pennsylvania



Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Fuel Cells, Municipal Solid Waste, CHP/Cogeneration, Waste Coal, Coal-Mine Methane, Anaerobic Digestion, Small Hydroelectric, Other Distributed Generation Technologies
Applicable Sectors:	Commercial, Industrial, Residential, Nonprofit, Schools, Local Government, State Government, Fed. Government, Agricultural, Institutional
Applicable Utilities:	Investor-owned utilities
System Capacity Limit:	5 MW (seek utility guidance for systems above 2MW)
Standard Agreement:	Yes
Insurance Requirements:	"Additional" liability insurance not required
External Disconnect Switch:	Required
Net Metering Required:	Yes

Interconnection: Pennsylvania

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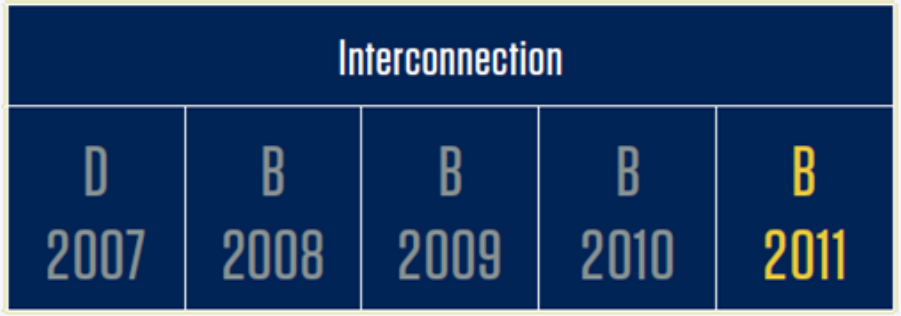

Recommendations:

- Remove requirements for redundant external disconnect switch for customers of investor owned utilities.
- Expand interconnection procedures to all utilities (i.e., munis and co-ops)

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Who Regulates What?

State

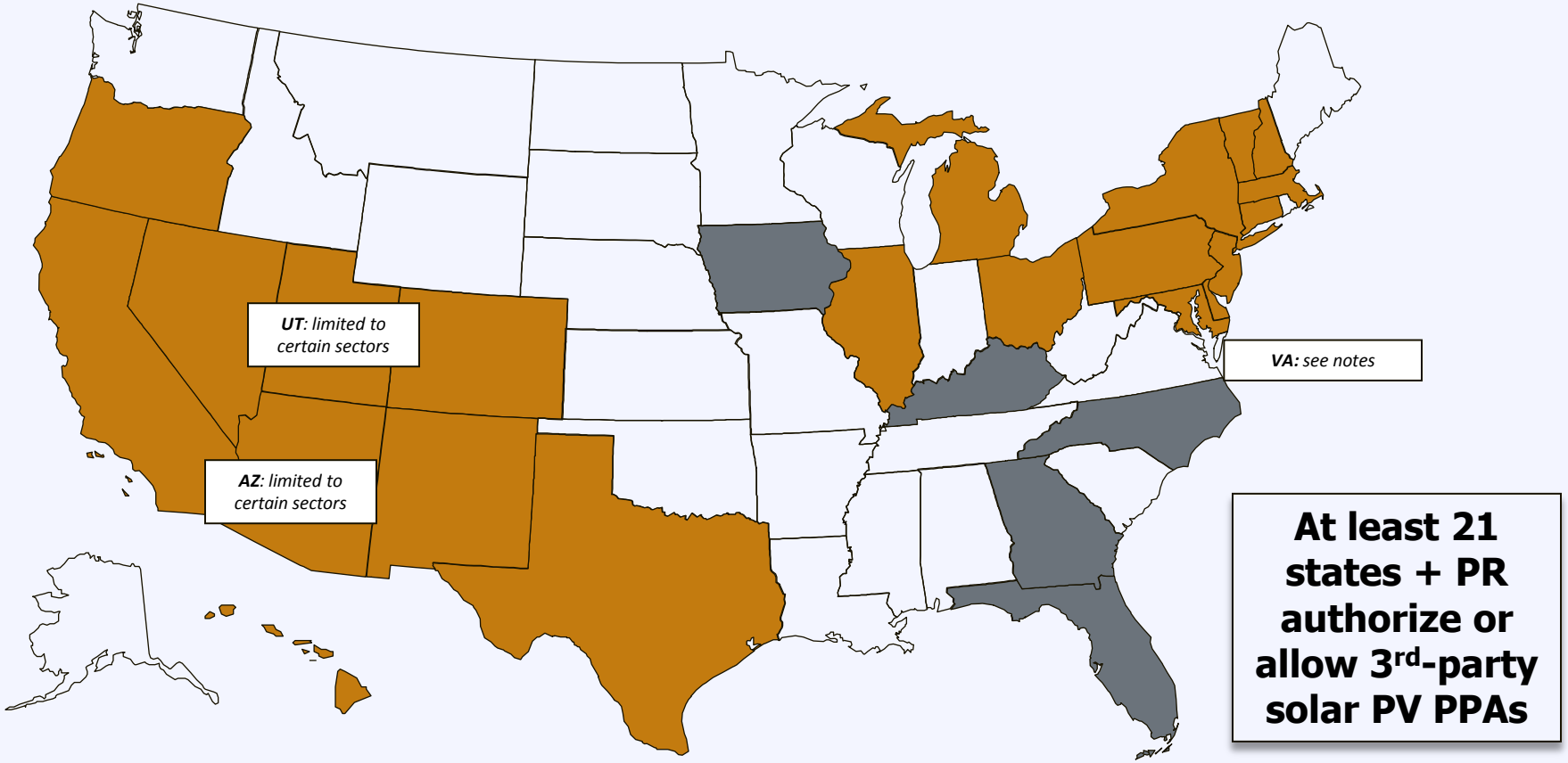
- Utility Regulation
- Interconnection Process
- Third-Party Power Sales

Local

- Building and Zoning Codes
- Solar Access
- Permitting Process

3rd-Party Solar PV Power Purchase Agreements (PPAs)

www.dsireusa.org / April 2012



Note: This map is intended to serve as an unofficial guide; it does not constitute legal advice. Seek qualified legal expertise before making binding financial decisions related to a 3rd-party PPA. See following slides for additional important information and authority references.

Agenda

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09:10 – 10:00	Creating a Regulatory Landscape for Solar
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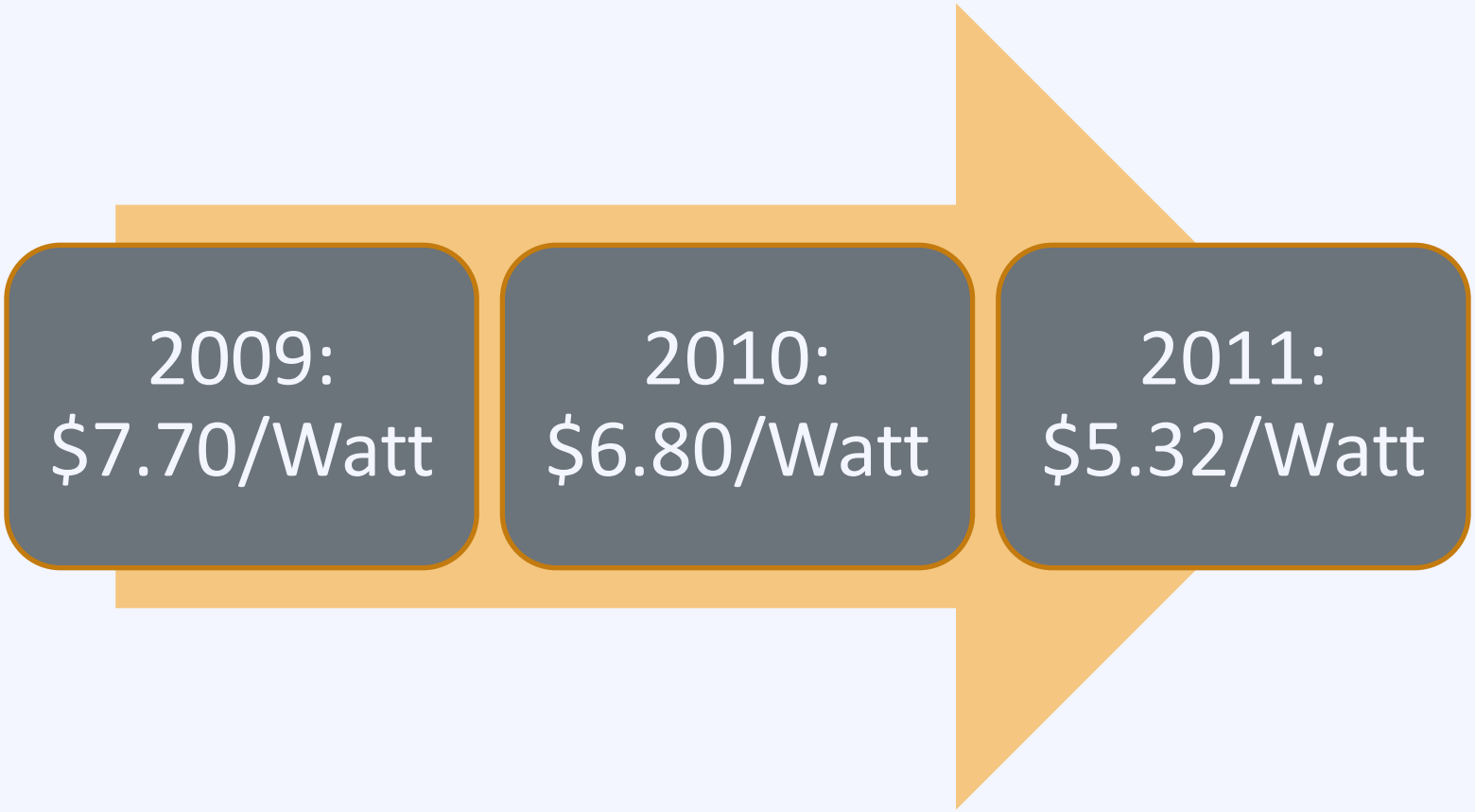
Making Solar More Affordable

Cost of Residential Photovoltaics



Pennsylvania Profile

- Solid on regulatory framework
  - Net metering
  - Interconnection
  - Renewable Portfolio Standard with solar carve-out
  - Allow 3rd party PPAs
- Light on financial incentives
  - Had Pennsylvania Sunshine with $100 million budget
  - Have loans through PBF, not really for residential

SRECs in Pennsylvania

Value of SREC in Summer 2010:

$310

Value of SREC in July 2012:

$20

RPS: Pennsylvania Overview

- Pennsylvania's RPS calls for ~18% renewables by 2021.
- Solar carve-out of 0.5% by 2021
- Massive oversupply of SRECs
- No defined alternative compliance payment
- HB 1580 would have increased solar carve-out, stalled

Direct Cash Incentives

- Grant
- Rebate
- Performance-based incentive
  - Feed-in tariff
  - SREC purchase program

Pennsylvania Sunshine Program

$85 million spent on PV

70.4 MW PV installed

5,432 systems installed

In 2009, PA **not** in top 10 for solar states

#5 in 2011, #6 cumulatively

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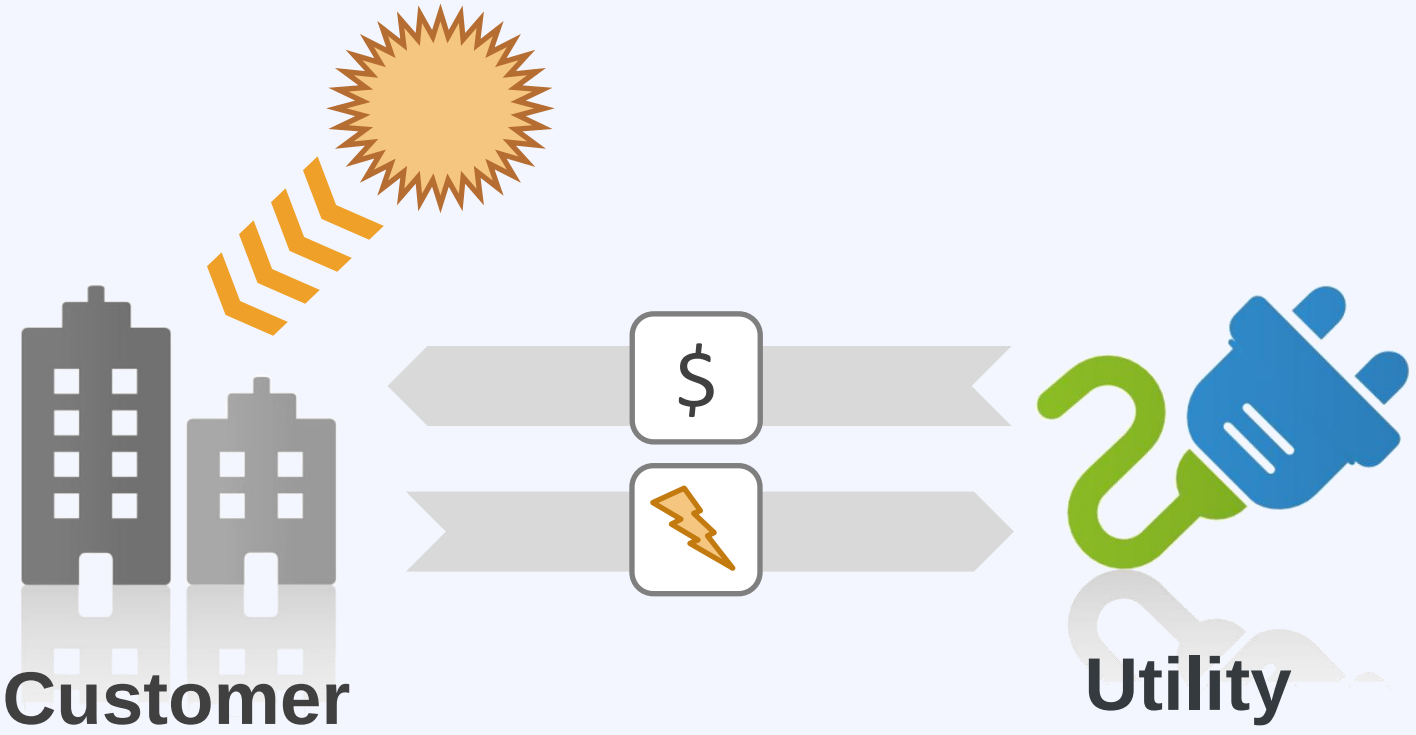
U.S. Department of Energy

What is a Feed in Tariff?



Components of a Feed in Tariff

- Fixed price payment
- Long term contract
- Guaranteed power purchase
- Price based on generation cost

Financing: Attractive Loan Options

- PA has some options
- Local governments and utilities can develop loan programs:
  - direct loans (e.g., revolving loan fund)
  - loans through private lenders (e.g., credit enhancement)
- Benefits and drawbacks exist for both approaches
- The goal is to increase ***access*** to financing or induce ***additional*** improvements
- Various funding options exist

Property Assessed Clean Energy

City creates type of land-secured financing district or similar legal mechanism (a special assessment district)

Property owners voluntarily sign-up for financing and make energy improvements

Proceeds from revenue bond or other financing provided to property owner to pay for energy project

Property owner pays assessment through property tax bill (up to 20 years)

Property & Sales Tax Exemptions

- Nothing exists statewide in PA, no local option
- Situation is complicated because there are 7-8 types of local governments in PA and different rules apply to each
- Residential PV typically doesn't add to value to assessment
- If property classified as commercial equipment, not subject to property taxes
- Philadelphia has 10-year property tax abatement

Group Purchasing

- Many people come together to purchase solar equipment and installation services in bulk
- Economies of scale = lower price per watt

SunShares
Go Solar with Group Buying Power

georgetownenergy.com
HELPING WASHINGTON DC GO SOLAR

solarize portland

Community Shared Solar

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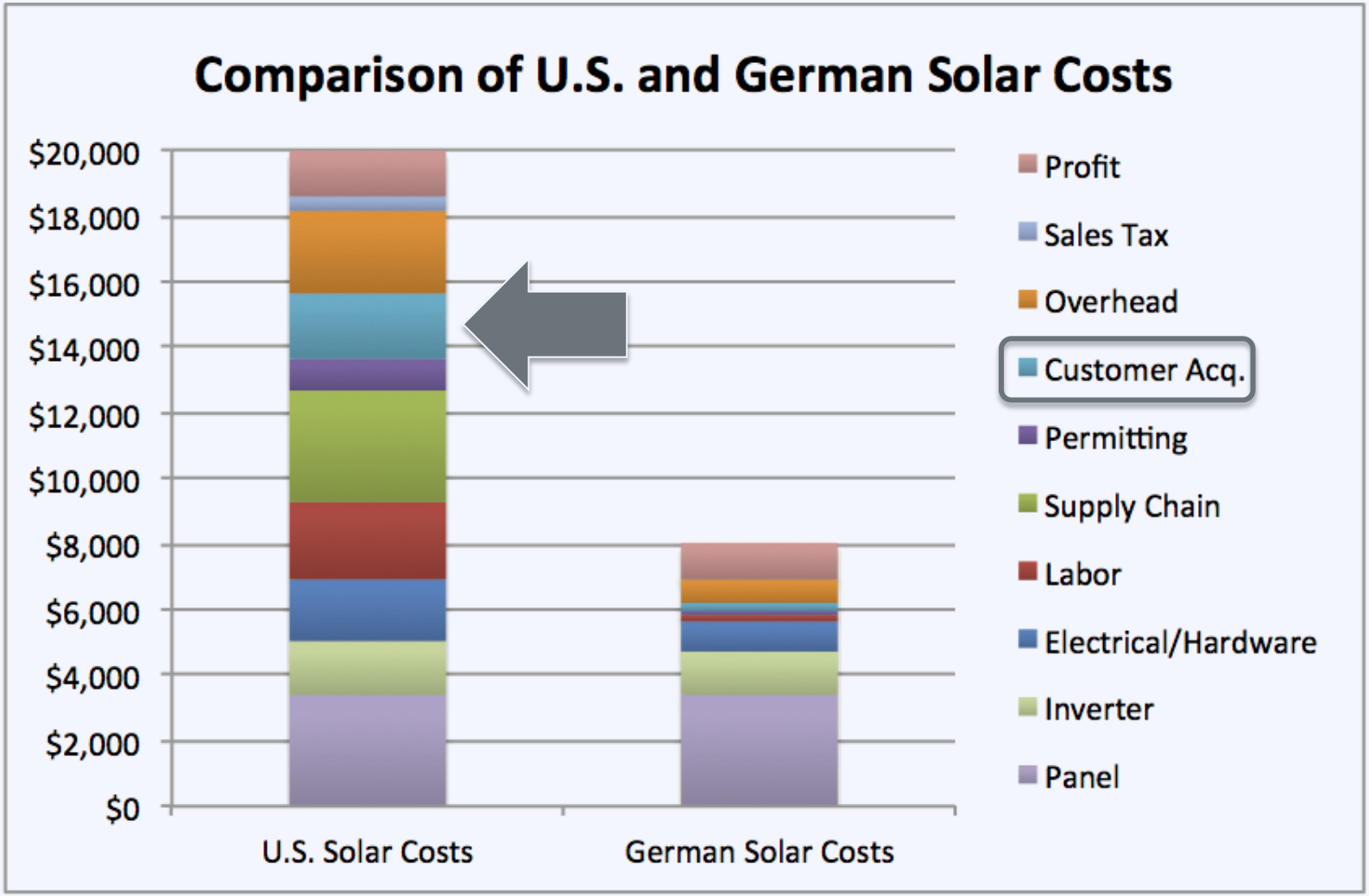
U.S. Department of Energy

Seattle City Light's Jefferson Park Project

Other Local Government Strategies



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Forbes: http://www.forbes.com/sites/toddwoody/2012/07/05/cut-the-price-of-solar-in-half-by-cutting-red-tape/

Identifying Customer Acquisition Strategies

Customer Acquisition

Solarize

Group Purchasing

Solarize: Advantages

Barriers		Solutions
High upfront cost	→	Group purchase
Complexity	→	Community outreach
Customer inertia	→	Limited-time offer

Solarize: Advantages

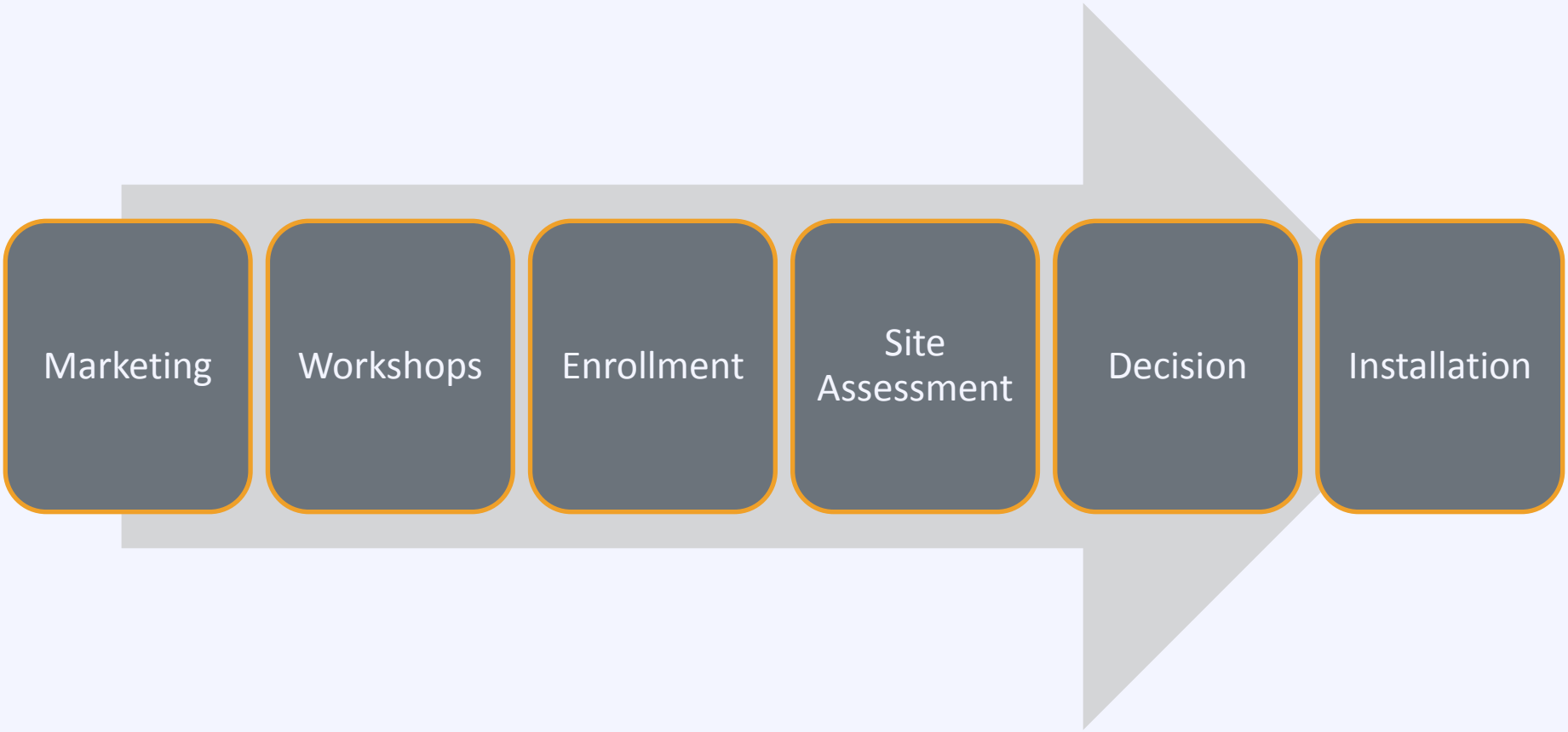
Benefits to Local Government:

Low implementation cost: $5,000 - $10,000

Quick turn-around: 9 Months

Long-term impact: Sustainable ecosystem

Solarize: Process



Solarize: Case Study

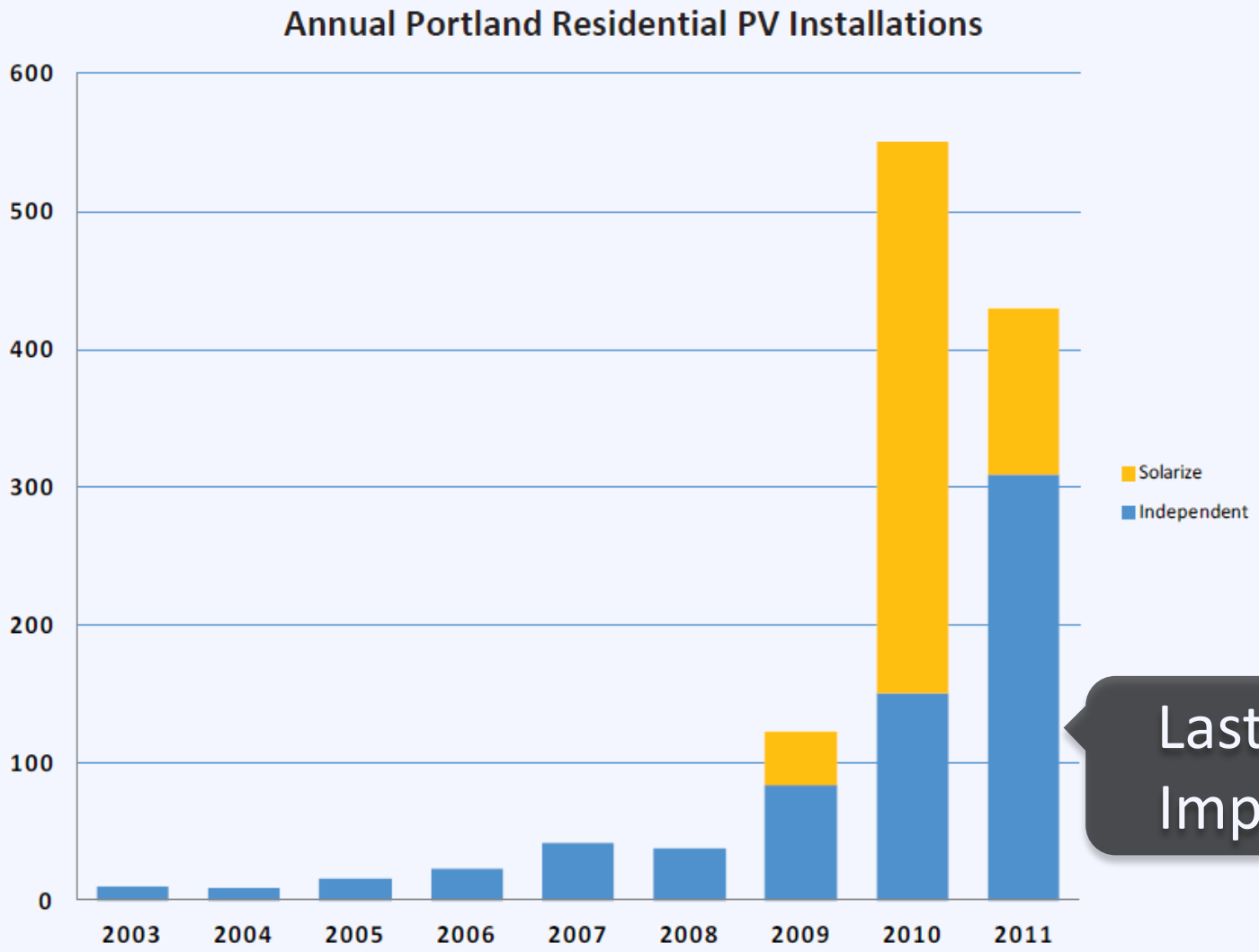
solarize portland

560 new installations totaling 1.7 MW

30% reduction in installation costs

50 permanent jobs created

Solarize: Case Study



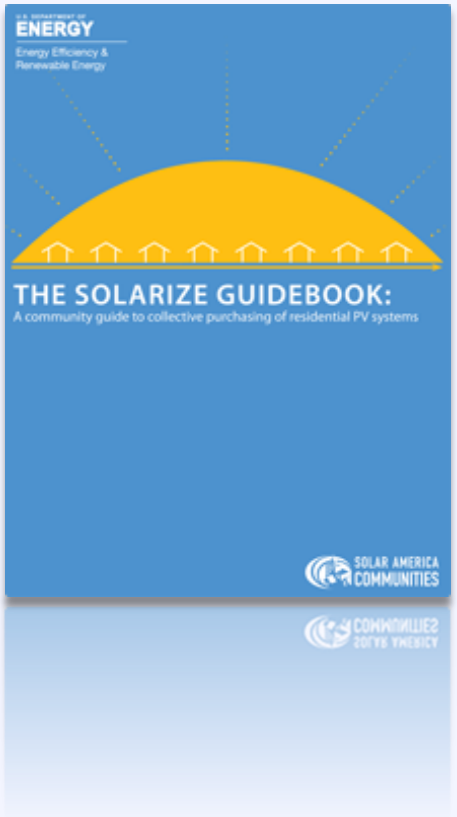
Source: NREL

Solarize: Resources

Resource **The Solarize Guidebook**

A roadmap for project planners and solar advocates who want to create their own successful Solarize campaigns.

www.nrel.gov



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Process

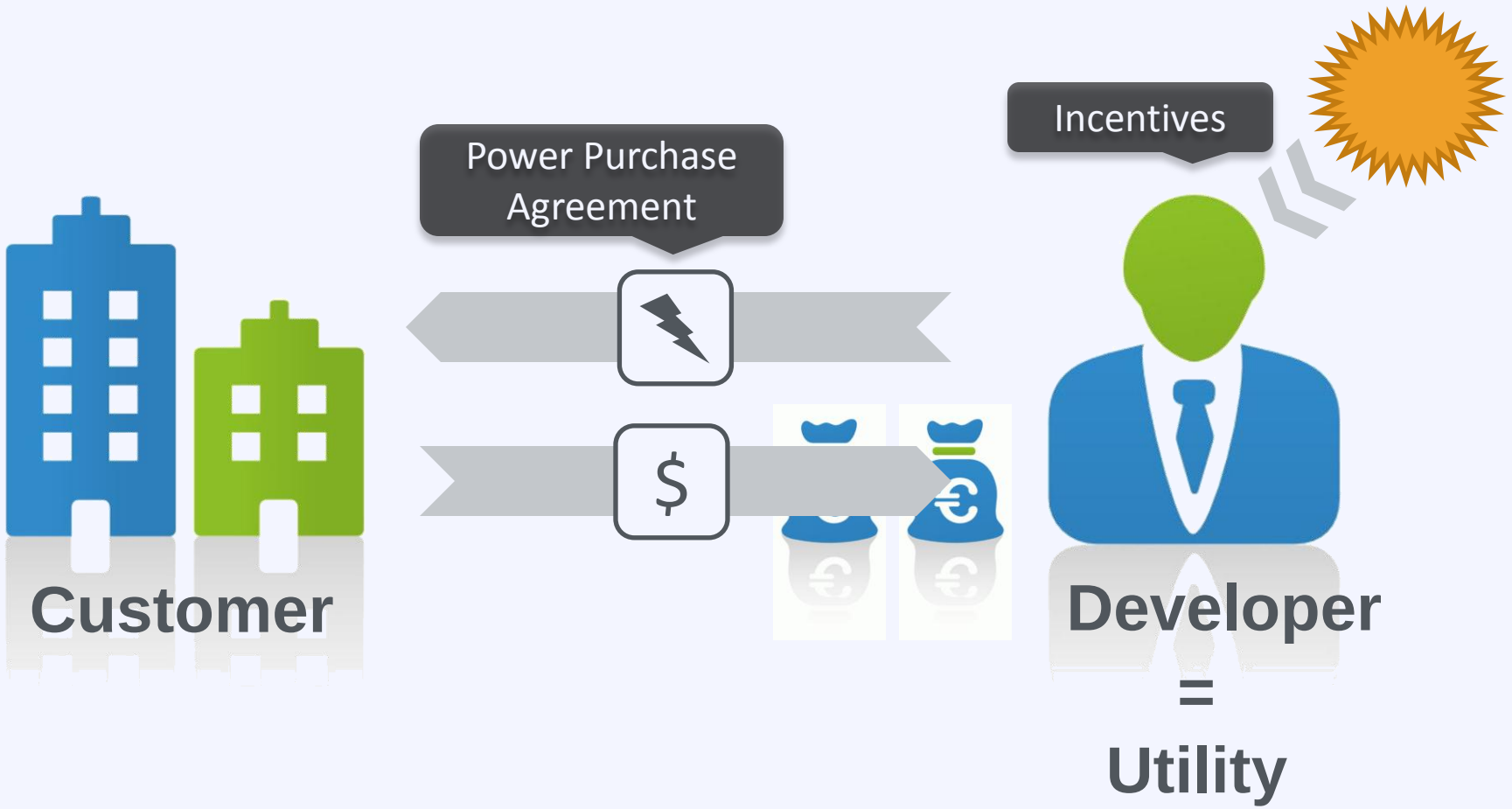
Decide on Ownership Structure

Option 1: Direct Ownership

Option 2: Third Party Ownership

Direct Ownership

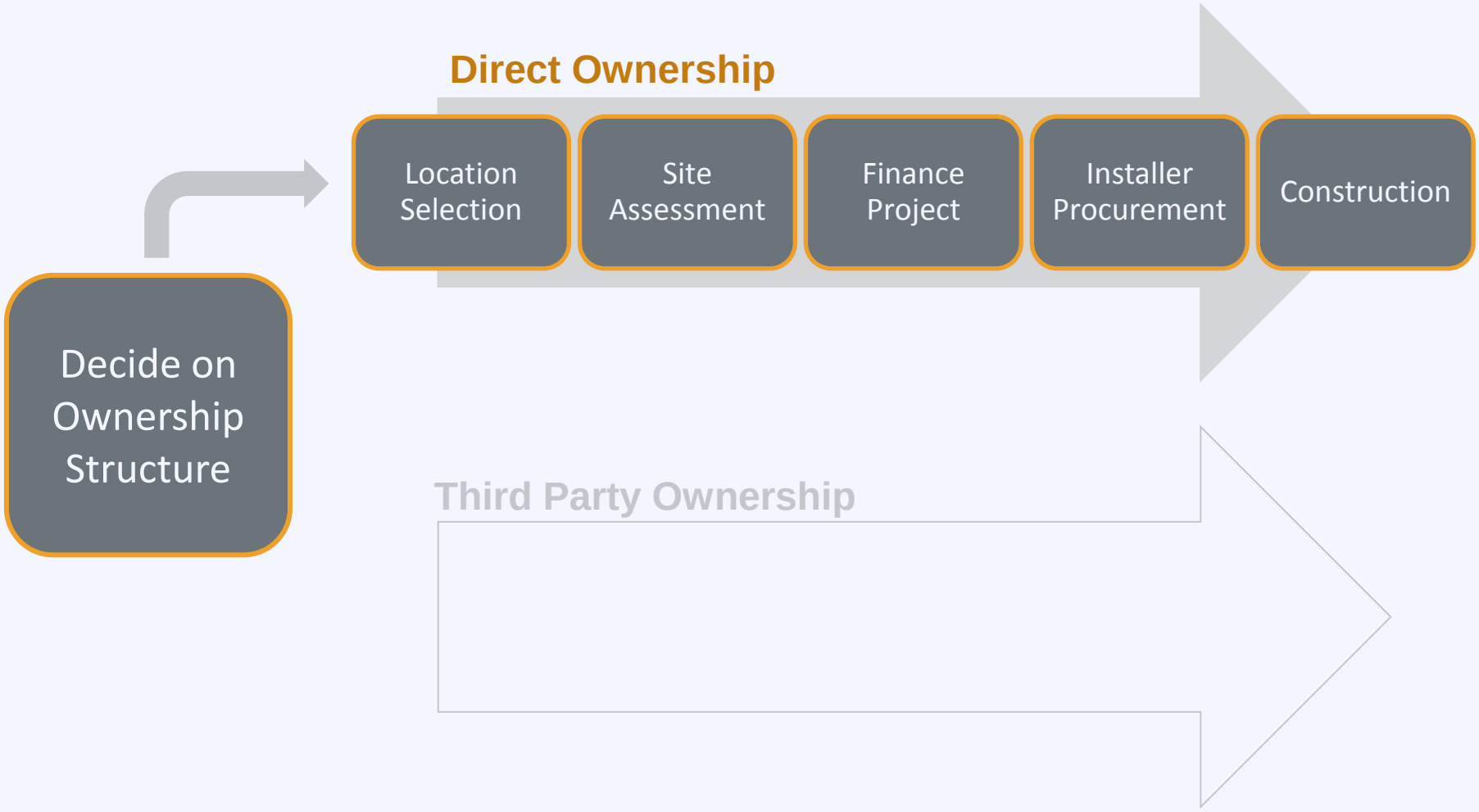
Third Party Ownership



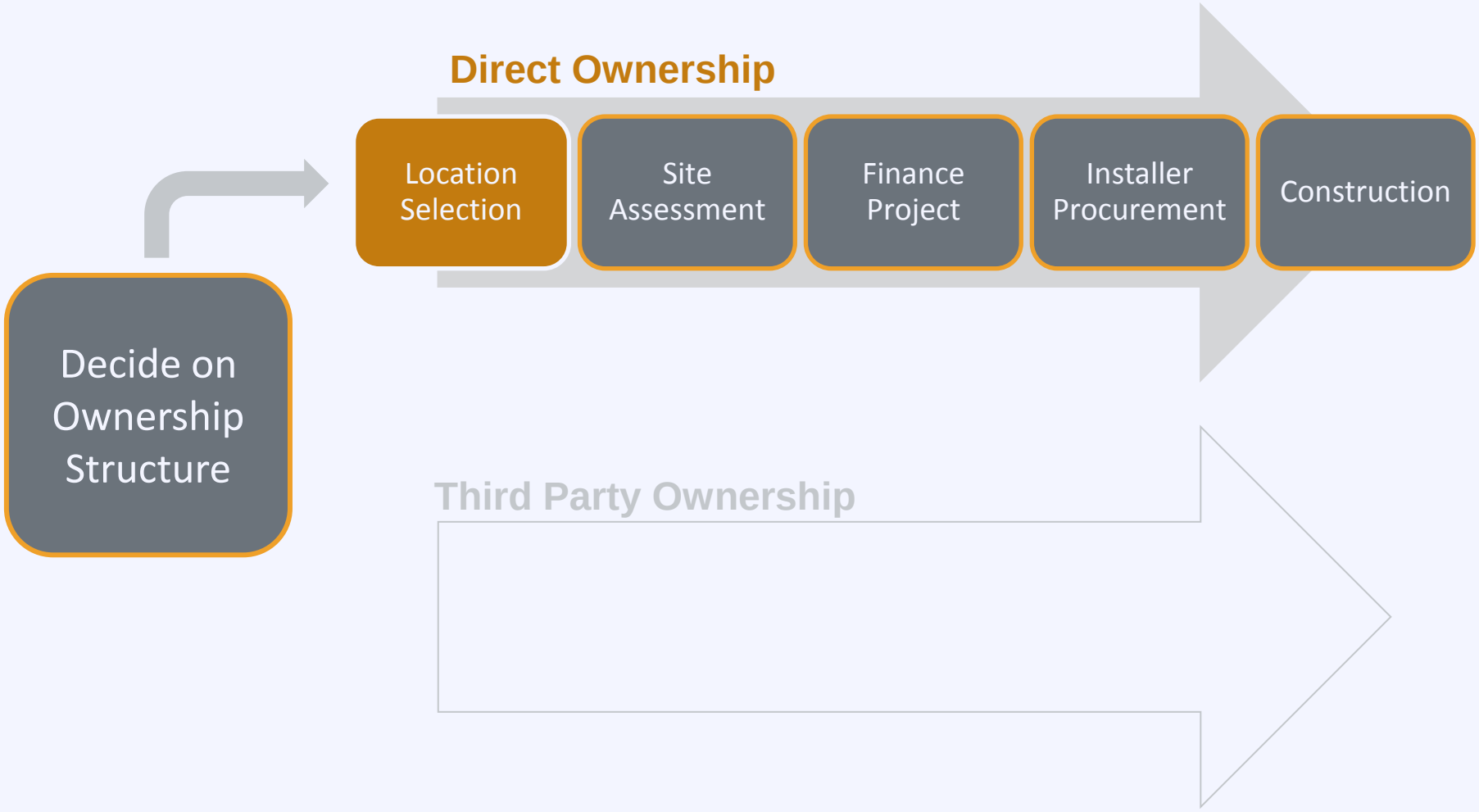
Ownership Structure Decision

- Are you a taxpaying entity?
- Do you have access to financing or available cash?
- How does this compare to other opportunities?
- Can you enter into long-term contracts?
- Do you want to own the system?
- Do you have a municipal utility?
- Do you need the RECs for compliance?

Process


Direct Ownership
Location Selection
Site Assessment
Finance Project
Installer Procurement
Construction
Decide on Ownership Structure
Third Party Ownership

Process


Direct Ownership
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Decide on Ownership Structure
Third Party Ownership

Step 1: Location Selection

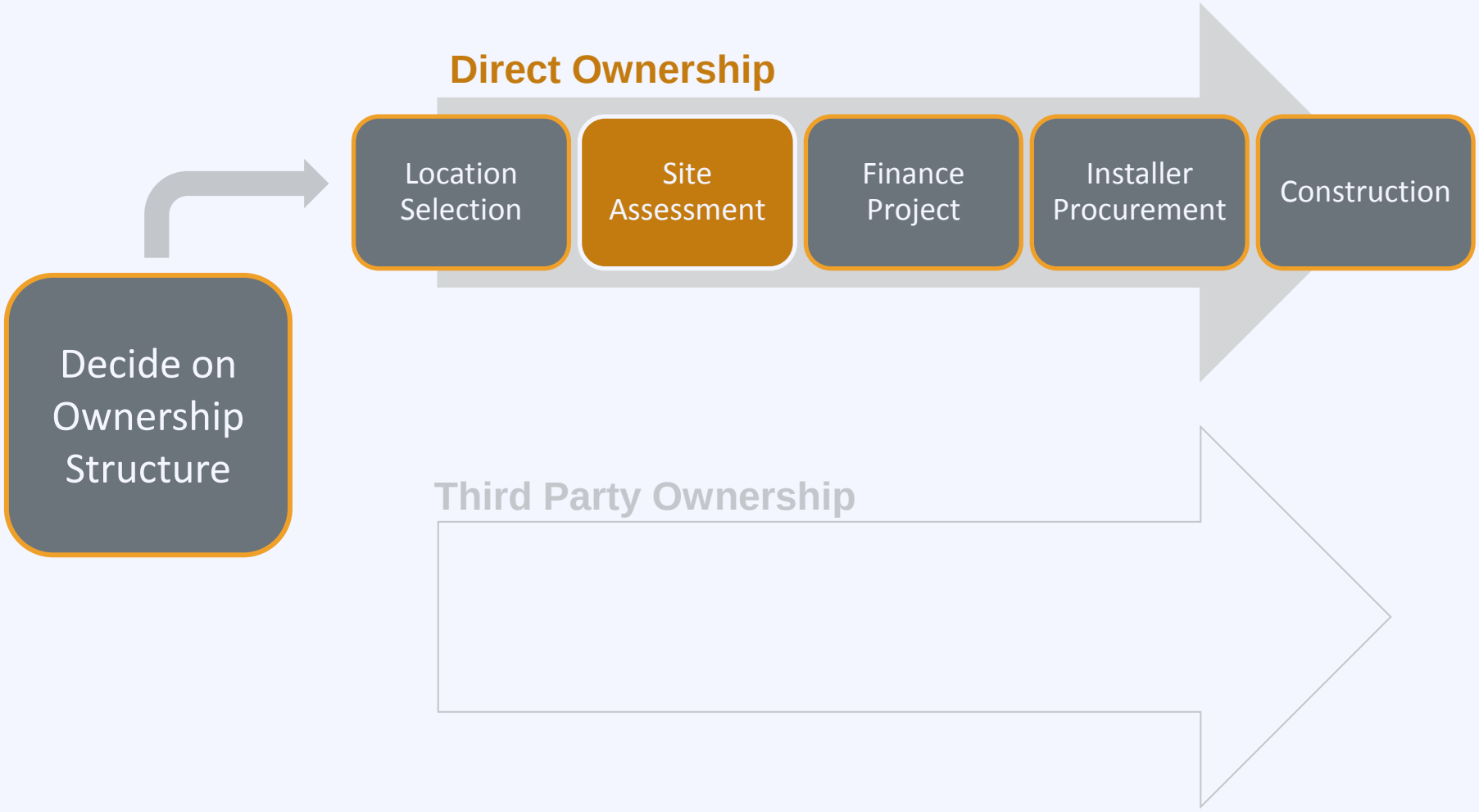
- Who is using the energy?
- Where is the energy being used?
- What is the user's energy load?
- What is the user's energy cost?

Step 1: Location Selection

Rooftop

Ground

Process


Direct Ownership
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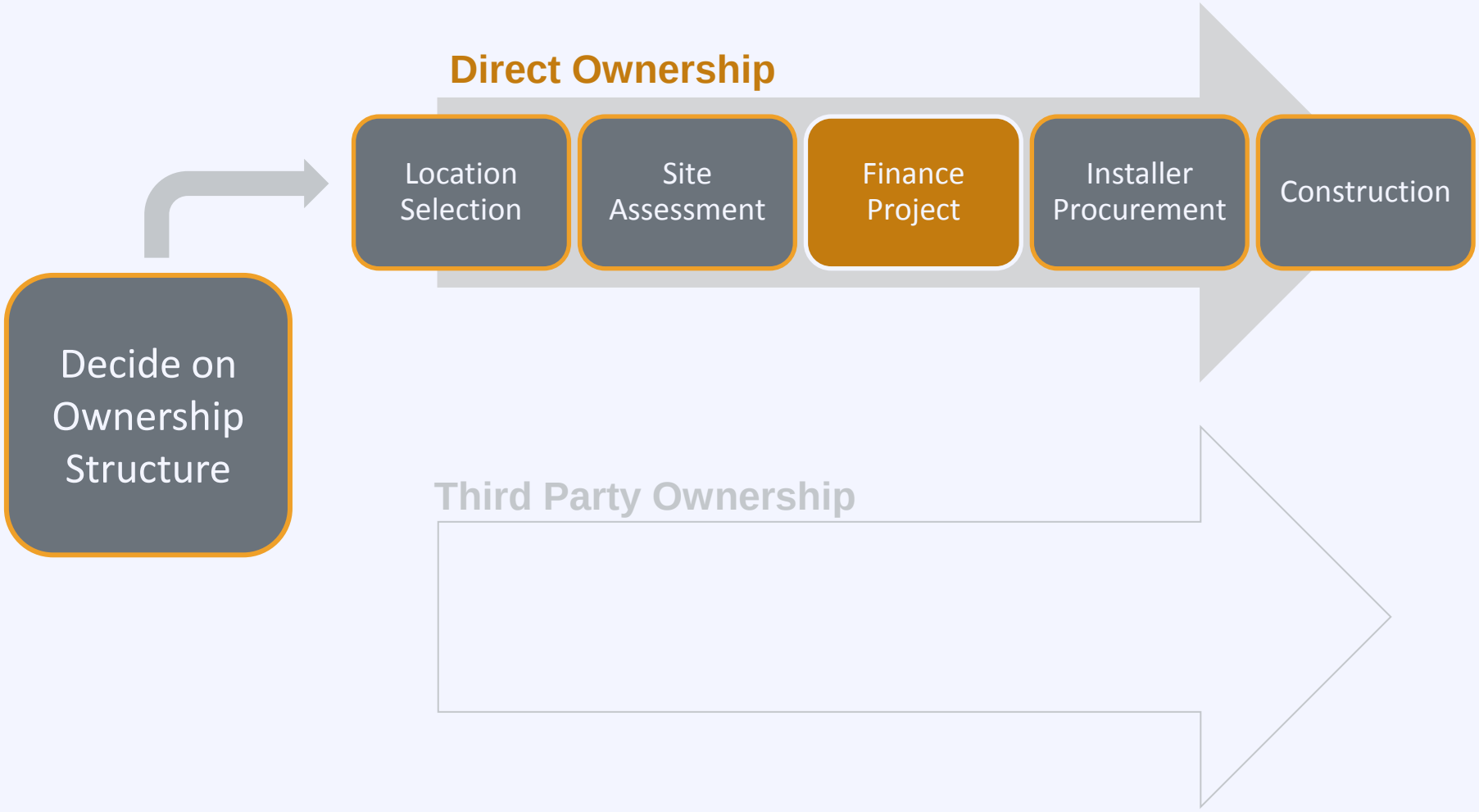
Step 2: Site Assessment

- Solar Access Rights
- Interconnection
- Wind loading
- Roof age, type, & warranty
- Electrical configuration
- Slope, Shading and orientation

Step 2: Site Assessment

- Usable acreage
- Slope
- Distance to transmission lines
- Distance to graded roads
- Conservation areas

Process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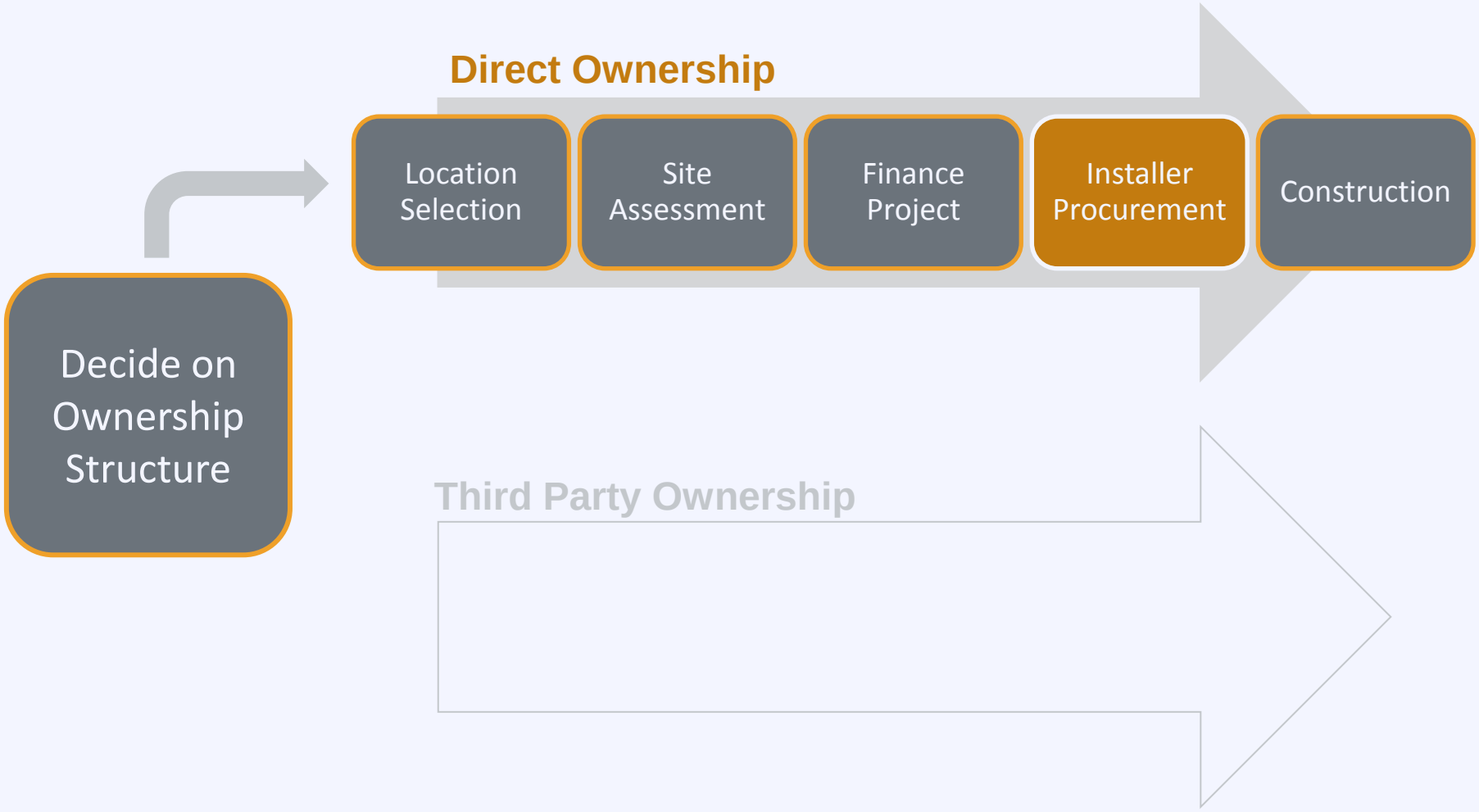
Step 3: Finance Project

- Direct purchase
- Grant financed
- ESCO/performance contracting
- Loans
- Bonds

Process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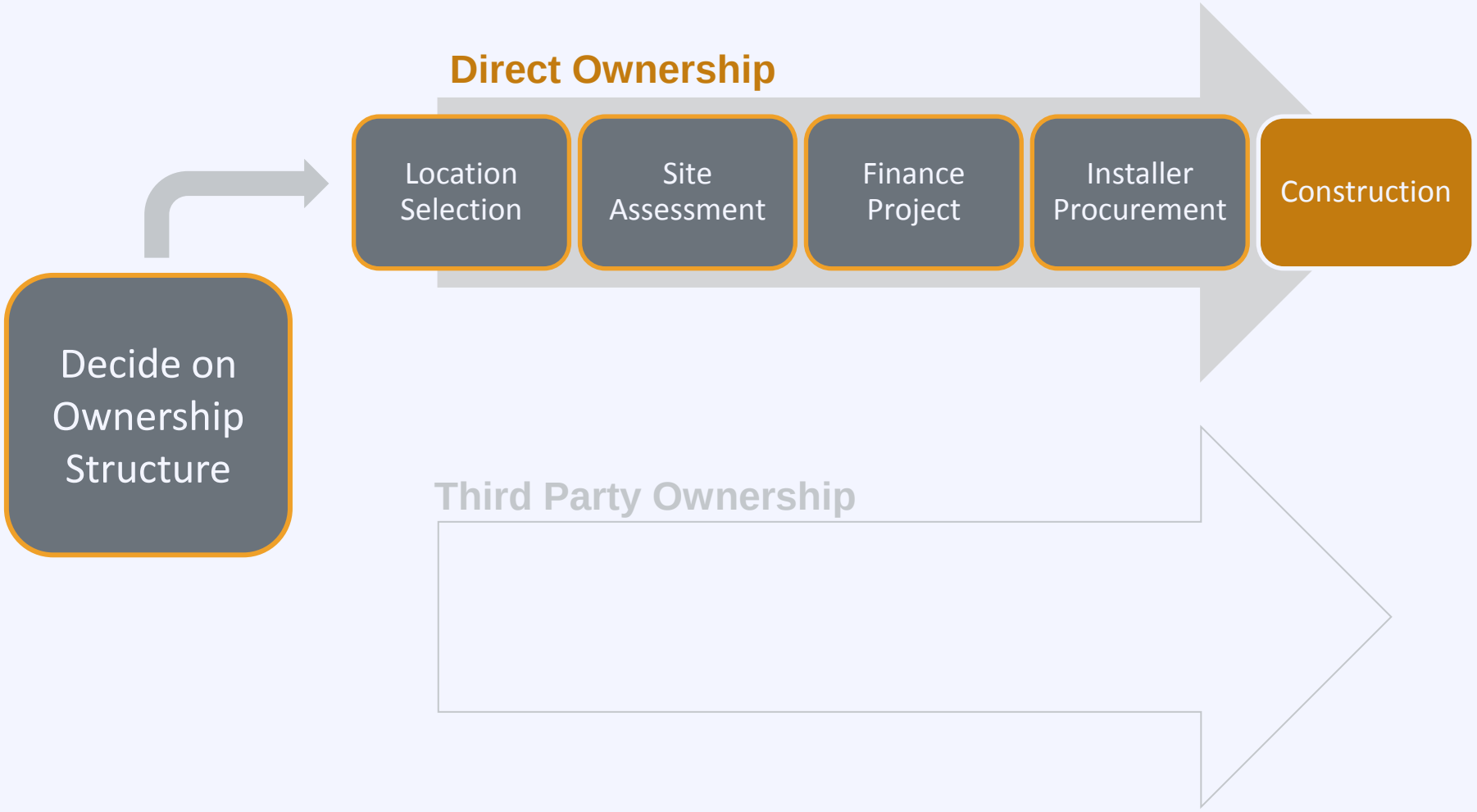
Step 4: Installer Procurement

EPC = Engineer, Procure, Construct

- Designs the project
- Completes necessary permitting requirements
- Works with the utility to file for interconnection
- Assists in procuring components
- Applies for incentives
- Manages project construction

Process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Direct Ownership

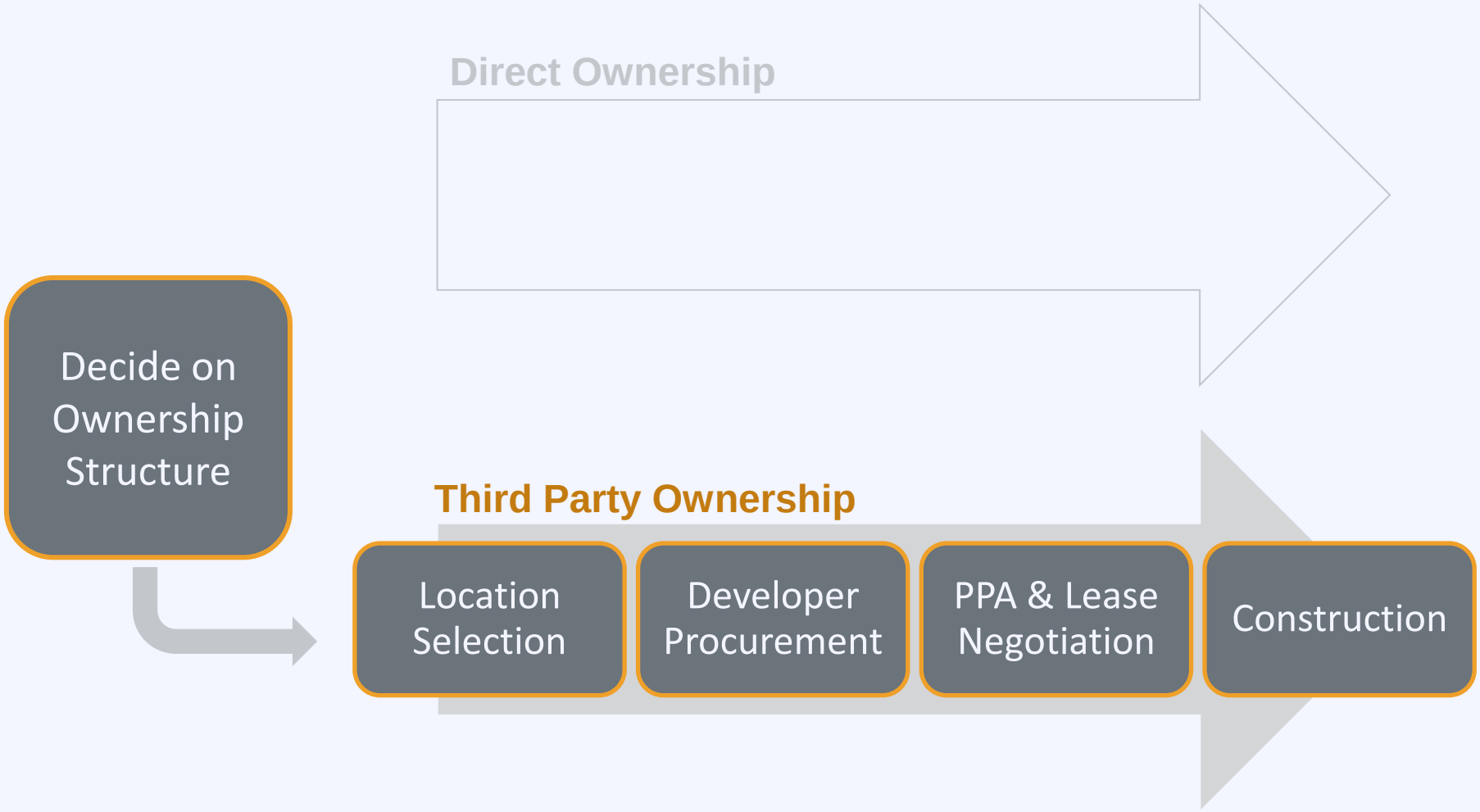
Pros

- Low – cost electricity
- REC revenue
- Maximize underutilized spaces

Cons

- Large upfront cost
- Long term management
- Can't take all incentives
- Development risk
- Performance risk

Process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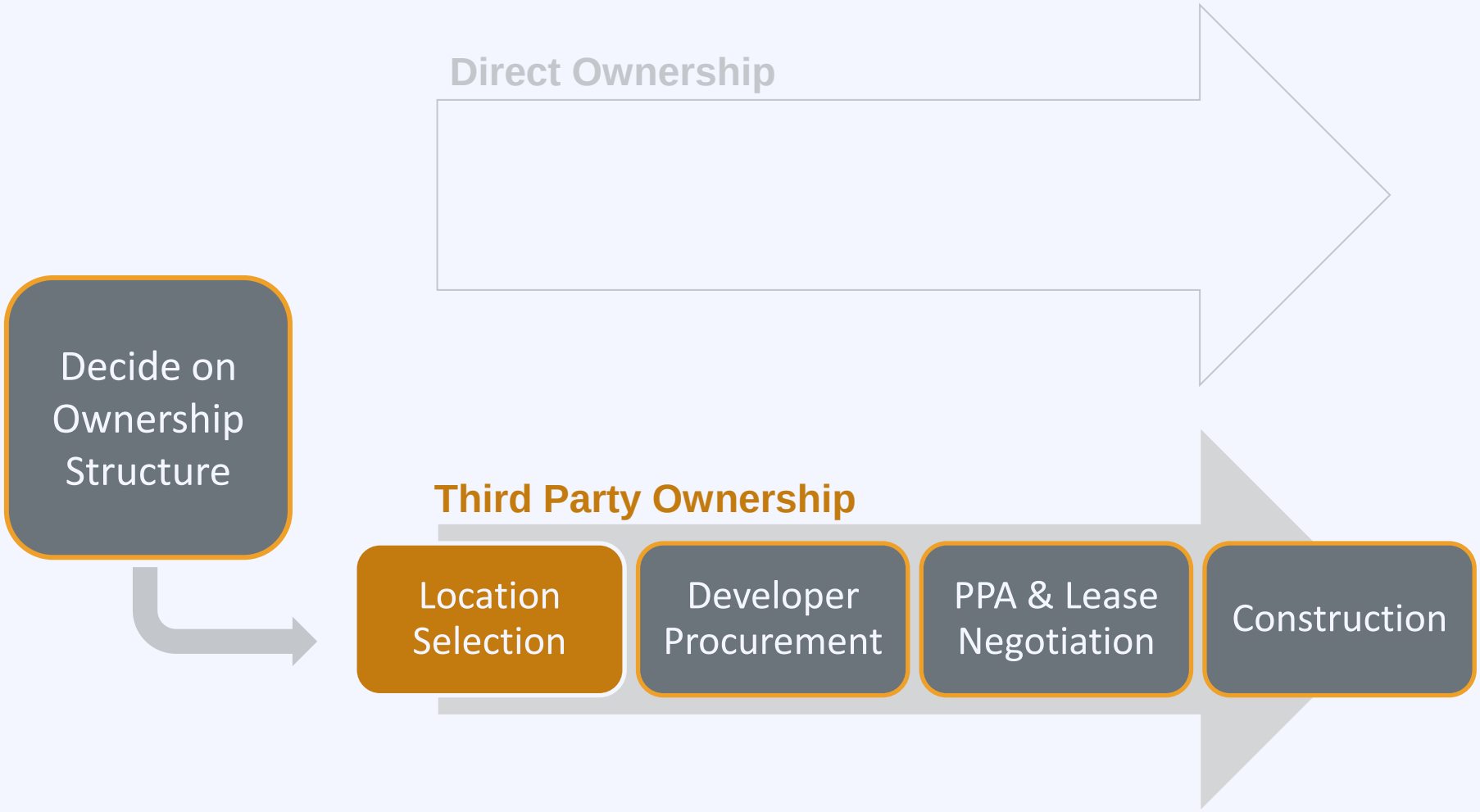
Decide on Ownership Structure
Third Party Ownership
Location Selection
Developer Procurement
PPA & Lease Negotiation
Construction

Process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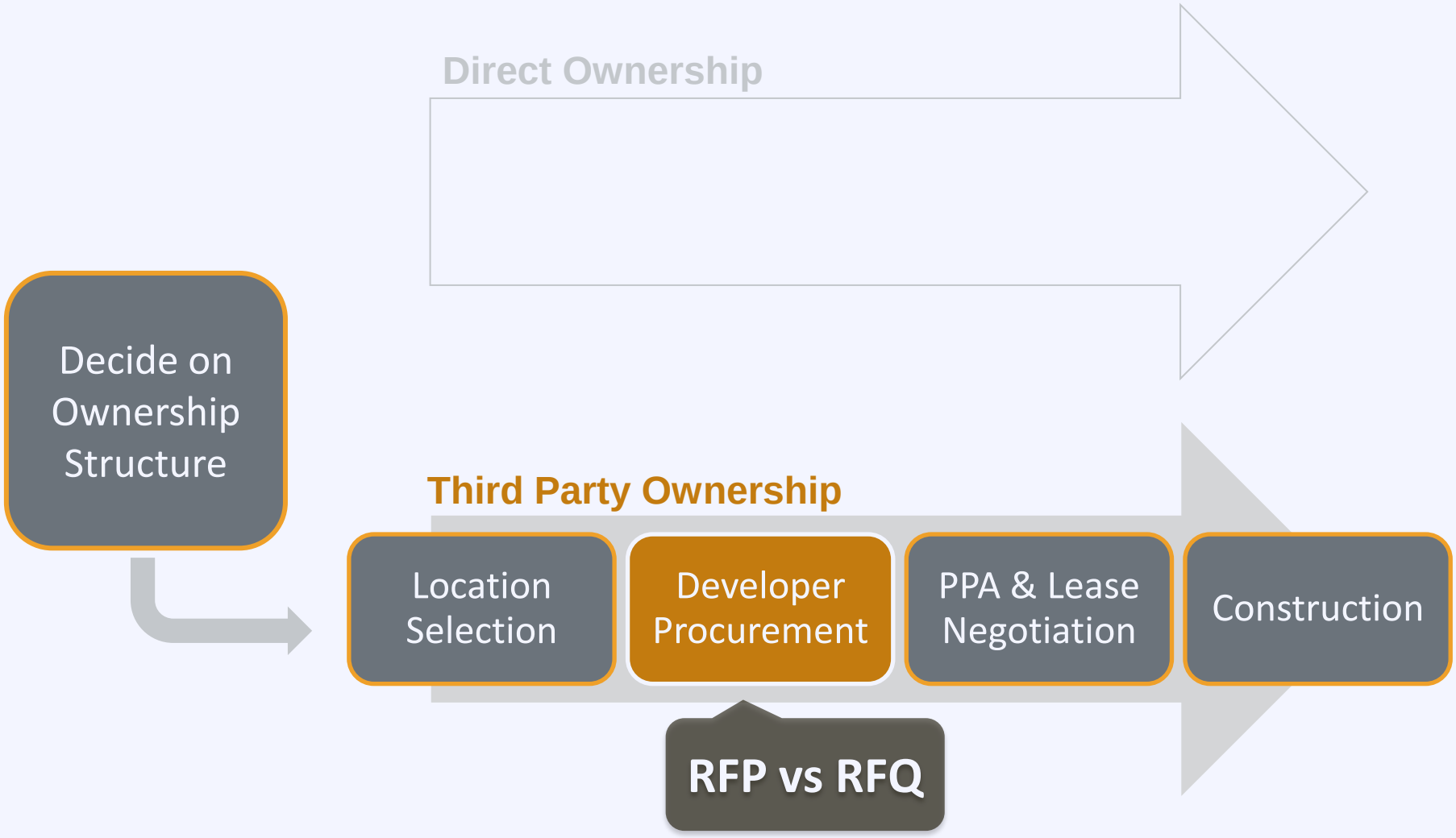
Direct Ownership
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Construction
RFP vs RFQ

Step 2: Developer Procurement

Avoid Five Common Pitfalls:

- RFP/RFQ specifications are too restrictive or too unstructured
- Competing measures of system efficiency
- Finding sufficient number of qualified bidders
- Lack of effective O&M program
- Lack of strong monitoring program

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U.S. Department of Energy

Source: NREL Webinar "Procuring and Implementing Solar Projects on Public Buildings: How to Avoid Common Pitfalls" December 8, 2010

Step 2: Developer Procurement

In Santa Clara County, CA, nine municipalities collaboratively bid out 47 sites. Benefits include:

50% savings in administrative costs

10-15% reduction in energy cost

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U.S. Department of Energy

Source: NREL Webinar "Procuring and Implementing Solar Projects on Public Buildings: How to Avoid Common Pitfalls" December 8, 2010

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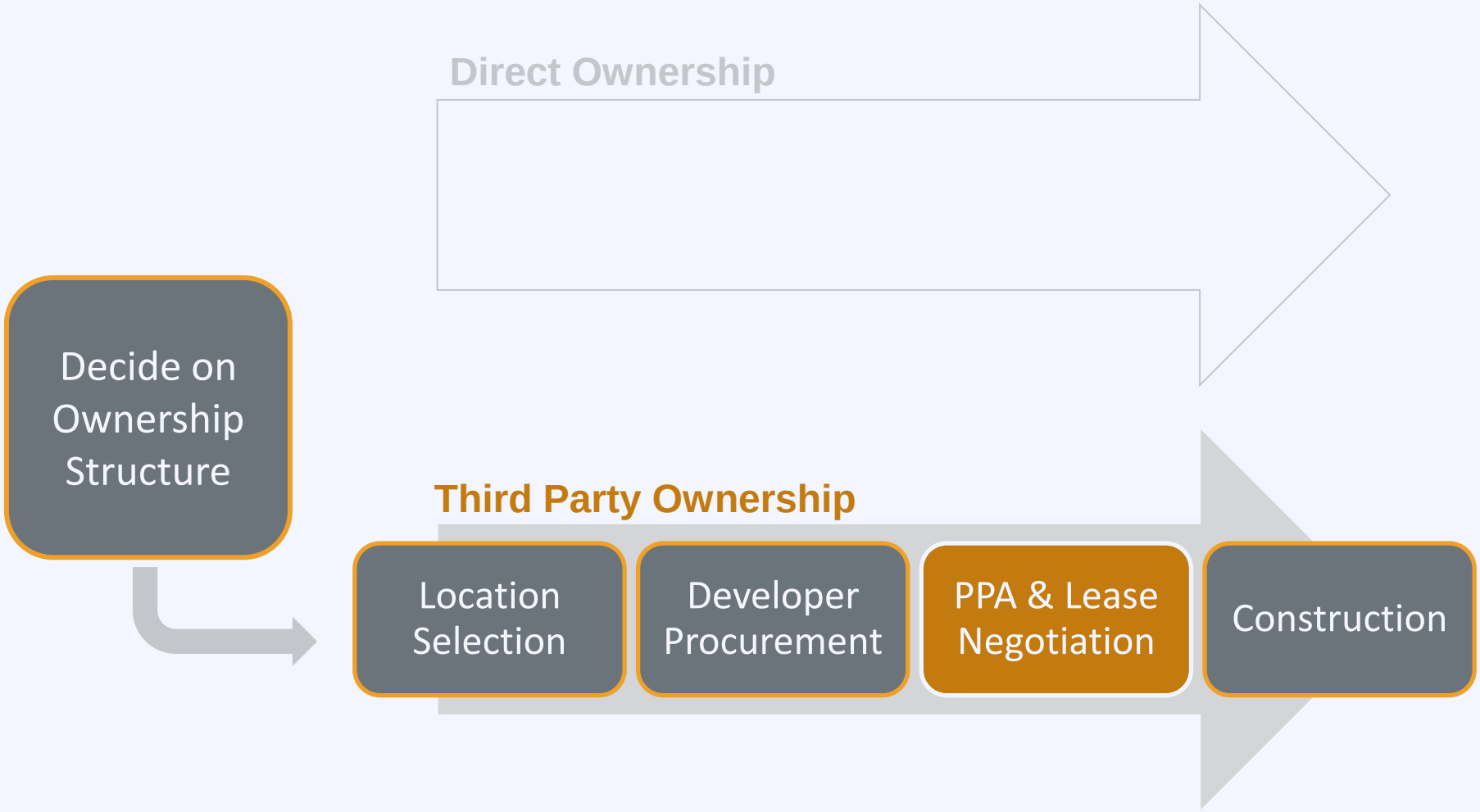
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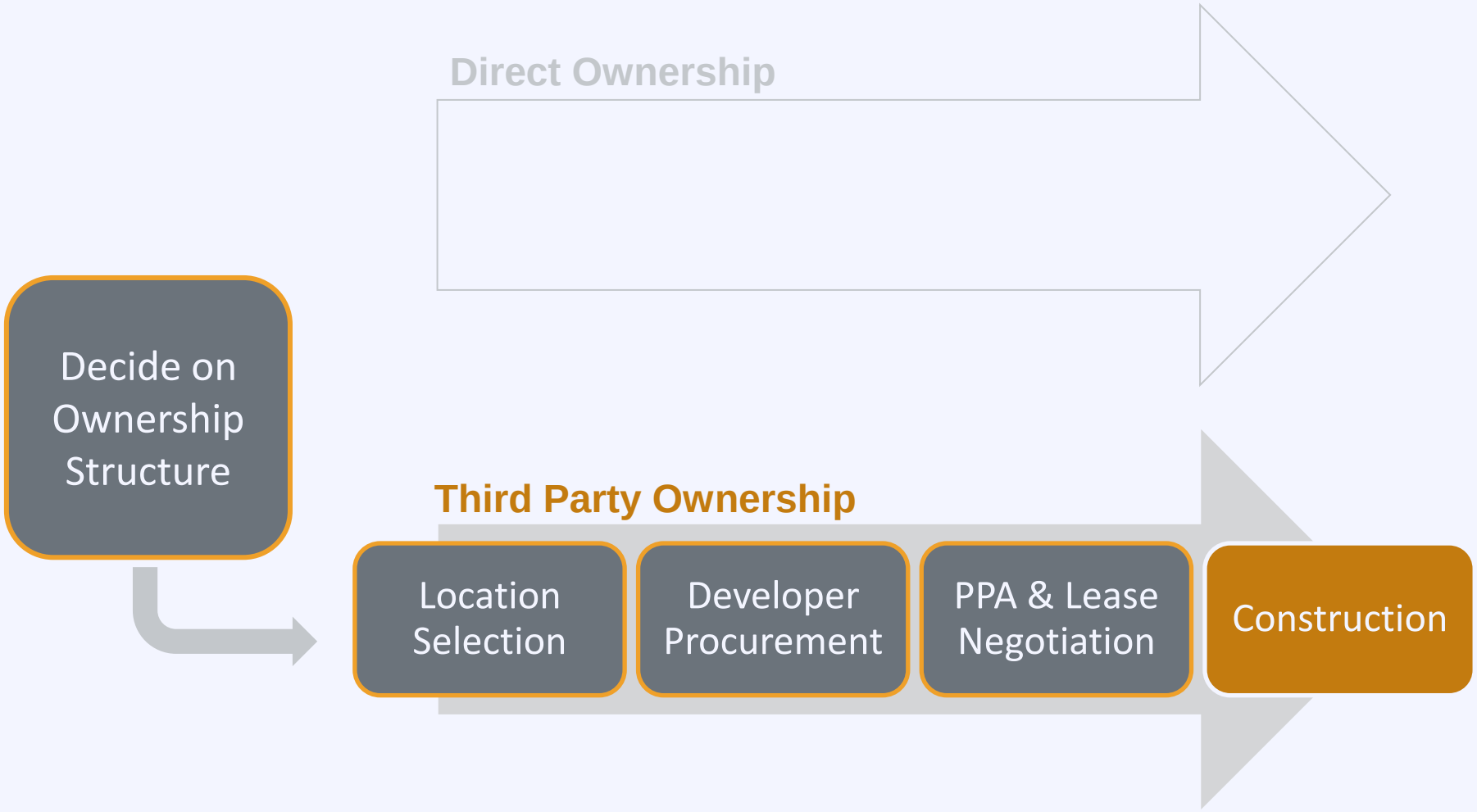
Step 3: Contract Negotiation

Negotiation points:

- Fixed or floating electricity price
- Price escalator
- Contract term length
- Property taxes
- Liability
- Performance guarantee
- Regulatory risk

Process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Construction

Third Party Ownership

Pros

- No upfront cost
- No O&M costs
- Low risk
- Predictable payments

Cons

- Market electricity price risk
- Limited opportunity in PA
- Don't keep RECs

Factors PPA Providers Look For

- States that allow PPA providers to operate without being regulated as utility
- State financial incentives – tax credit or rebate
- REC market
- Good net metering and interconnection
- PPA providers allowed to net meter

Property Leases

- Site owner leases site to third party solar developer
- Typical lease runs 20 years or longer
- Leasing company owns the equipment and energy produced, but pays site owner for use of the site (roof, land)
- Las Cruces, NM leased 240 acres to SunEdison = $2.3 million for the city

Brockton Brightfields
Type of Site: Remediated Landfill
Location: Brockton, MA

Size of PV system: 425 kW
Photo credit: AECOM

Exelon City Solar
Type of Site: Remediated Industrial Brownfield
Location: Chicago, IL

Size of PV system: 10 MW
Photo credit: Exelon

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Sunshine TEAM

FACILITATING SOLAR ENERGY STANDARDS IN YOUR COMMUNITY

Partner Organizations

- PennFuture
- City of Pittsburgh
- Allegheny County
- Southwestern Pennsylvania Commission
- CONNECT (Congress of Neighboring Communities
- SUNWPA (Solar Unified Network of Western Pennsylvania
- Green Building Alliance

Consultants and Experts

- Environmental Planning & Design, Inc (EPD)
- Clean Energy Finance Center
- Municipal and building code attorneys
- Bill Brooks, national solar inspection expert

Municipal Leaders

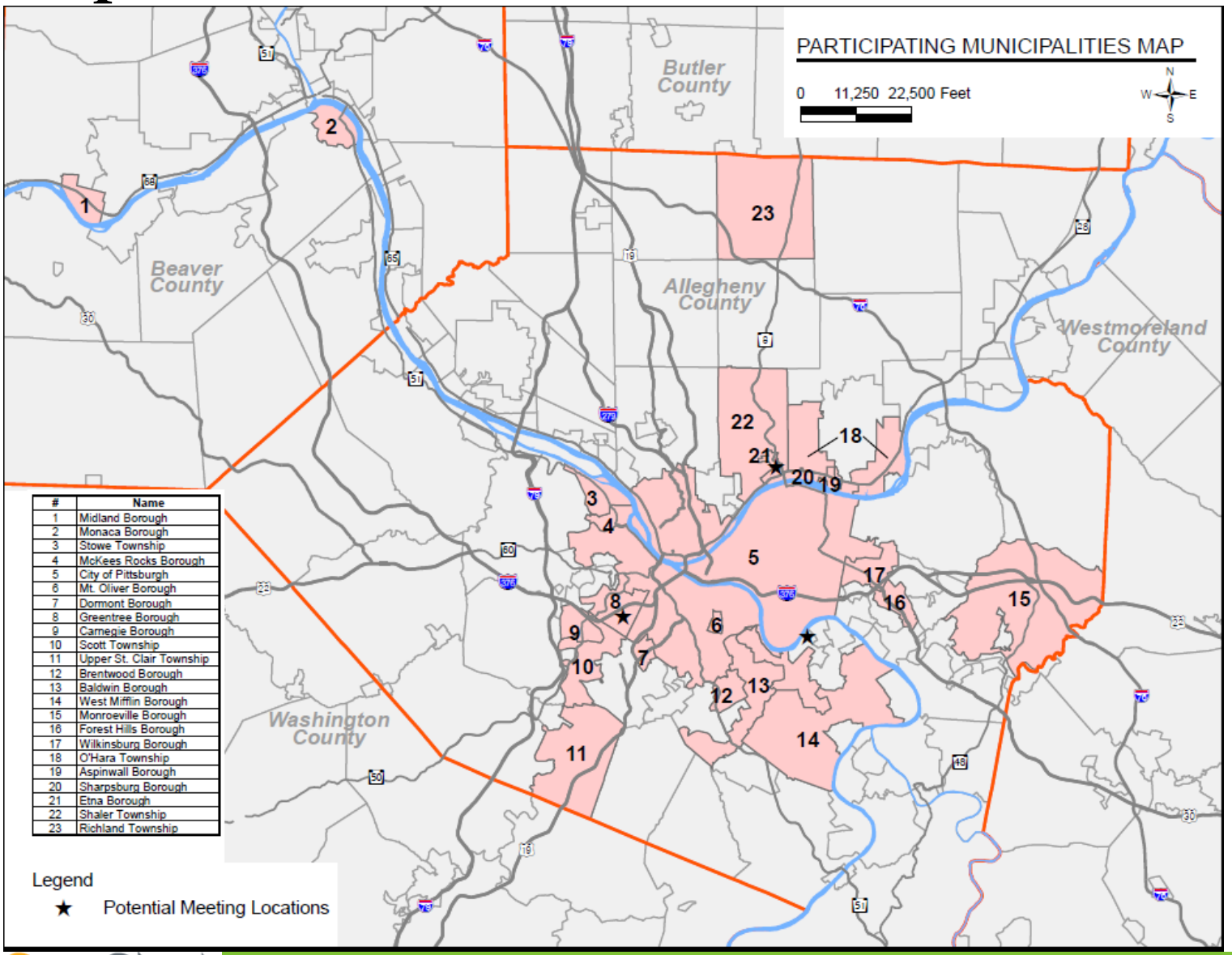
Allegheny County

Aspinwall
Baldwin Borough
Brentwood
Carnegie
Dormont
Etna
Forest Hills
Green Tree
McKees Rocks
Monroeville
Mount Oliver
O'Hara
Pittsburgh
Richland
Scott
Sharpsburg
Shaler
Stowe
Upper St. Clair
West Mifflin
Wilkinsburg

Beaver County

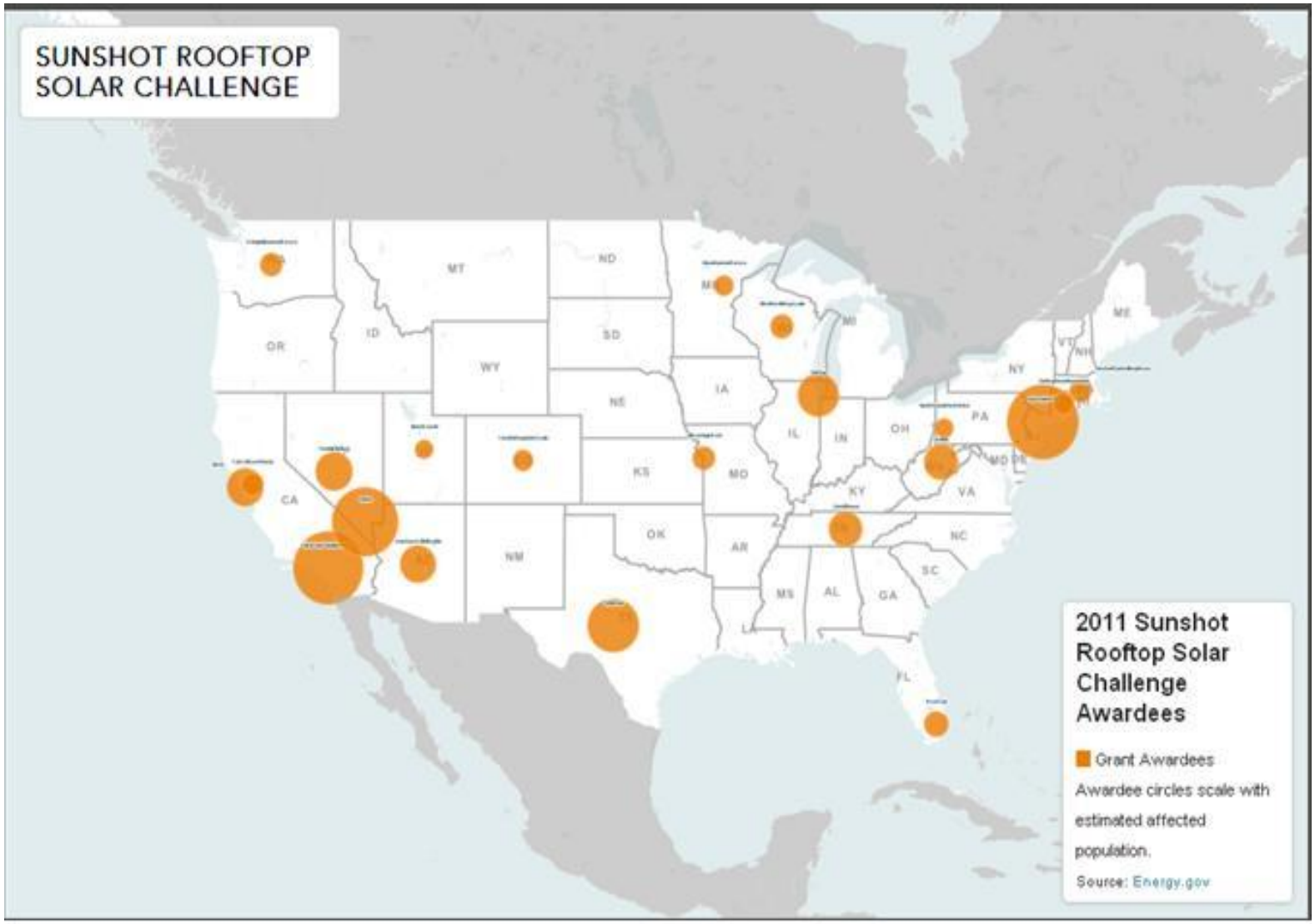
Midland
Monaca

Municipal Leaders



#	Name
1	Midland Borough
2	Monaca Borough
3	Stowe Township
4	McKees Rocks Borough
5	City of Pittsburgh
6	Mt. Oliver Borough
7	Dormont Borough
8	Greentree Borough
9	Carnegie Borough
10	Scott Township
11	Upper St. Clair Township
12	Brentwood Borough
13	Baldwin Borough
14	West Mifflin Borough
15	Monroeville Borough
16	Forest Hills Borough
17	Wilkinsburg Borough
18	O'Hara Township
19	Aspinwall Borough
20	Sharpsburg Borough
21	Etna Borough
22	Shaler Township
23	Richland Township

Rooftop Challenge - 22 Teams



Why Rooftop Solar Challenge?

The Department of Energy found that inappropriate zoning, permitting and inspection procedures were a significant burden to installing solar energy:

- Sometimes adding excessive costs to customers (inappropriate permitting fees, variances, municipal hearings)

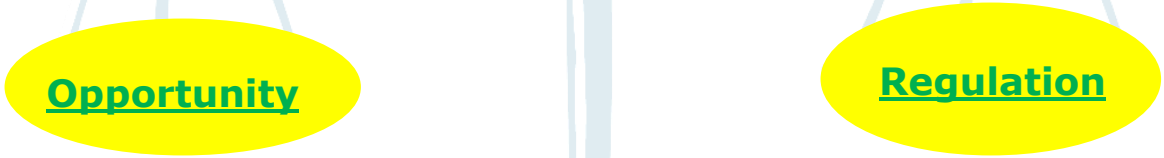
- Delaying installation of solar systems through lag time on inspection and interconnection by utilities

- Requiring the industry to navigate a wide range of inconsistent policies across jurisdictions

Why Rooftop Solar Challenge?

Most communities in our region do not have any established zoning, permitting, or inspection procedures for solar energy

As a result, communities either under-regulate or over-regulate.



We need a balanced approach

Benefits for Municipalities of Participating

Prepare to serve your community. Solar panels will be going up on rooftops across our region as residents and businesses strive for clean and independent sources of energy.

Lead the region, state and nation in municipal cooperation to streamline permitting, zoning and inspection processes for solar.

Receive researched solutions and best practices at minimal inconvenience and cost. Receive technical assistance of experienced experts, solar industry, attorneys, and others.

Result in appropriate practices for use in your municipality within the year. Become "solar-ready."

Ease the burden on municipal staff and resources. Uniform standard enable the industry to provide you with necessary documents**.**

Rooftop Solar Challenge Objective

Create appropriate and uniform zoning, permitting and inspection best practices so that we:

- **Encourage solar energy in our region**

- **Minimize barriers to installing solar** so as to not improperly interfere with a property owners' rights to access solar energy

- **Comply with existing standards and regulations (MPC, UCC, NEC, etc)** to protect the health, safety and welfare of our residents, businesses and communities

Specific Goals of the Rooftop Solar Challenge in Western PA

- Create model zoning ordinance and best practices for expedited permitting and inspection processes

- Make available best practices to 23 participating municipalities for residential (<10kW) and small commercial (<300kW) rooftop solar systems throughout southwestern Pennsylvania

- Develop a certification designation for municipalities that implement the model zoning, permitting and inspection processes.

Specific Goals of the Rooftop Solar Challenge in Western PA

- Hold region-wide training for code inspectors on DOE Solar ABCs for expedited review and inspection.

- Conduct an education campaign to councils of government, planning departments, municipalities, and zoning officers for non-grant-participating municipalities to disseminate information regarding the model zoning, permitting and inspection processes.

- Work with area utilities to clarify and provide education around interconnection processes and procedures and to develop best practices for interconnection, including improving response time.

Specific Goals of the Rooftop Solar Challenge in Western PA

- Explore opportunities for training utility personnel to achieve standard interconnection practices.

- Create a regional reporting system to track problems experienced by customer-generators, bring issues to the utilities, and monitor and assist in resolutions.

- Convene a regional finance strategy group to explore creative opportunities for project financing, including: low-interest solar loans, public-private solar investment fund, "crowd-funding," group purchasing, and community solar.

Solar in Pennsylvania

- We currently have >150 MW of solar, enough to power about 15,000 homes - almost all of that has been installed since 2008.

- There are 4,700 solar jobs in PA.

- In western PA, we have 18 companies installing or developing solar.

- There is solar energy systems in every county of western PA.

Solar in Pennsylvania

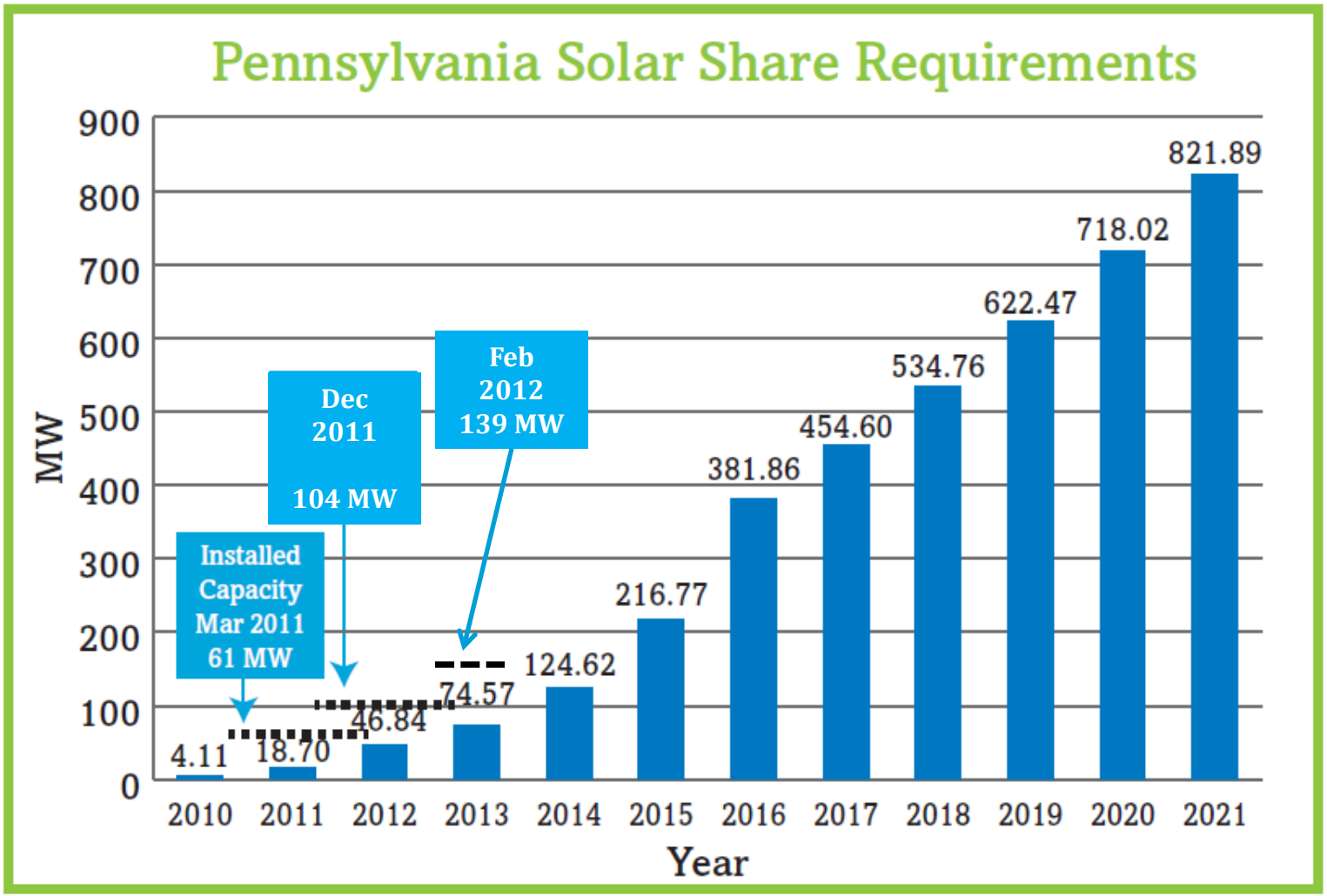
Alternative Energy Portfolio Standard (AEPS)

- Signed into law by Gov. Rendell in November 2004
- Requires that 18% of retail electricity be generated from alternative resources by 2021
- Two tiers
  - Renewable Tier 8% - Solar PV and thermal, wind, low-impact hydropower, geothermal, biomass, fuel cells, etc.

    Solar carve out of 0.5%

  - Alternative Energy Tier II 10 % - Large-scale hydropower, waste coal, energy efficiency, municipal solid waste, byproducts of wood processing, etc.

Solar in Pennsylvania

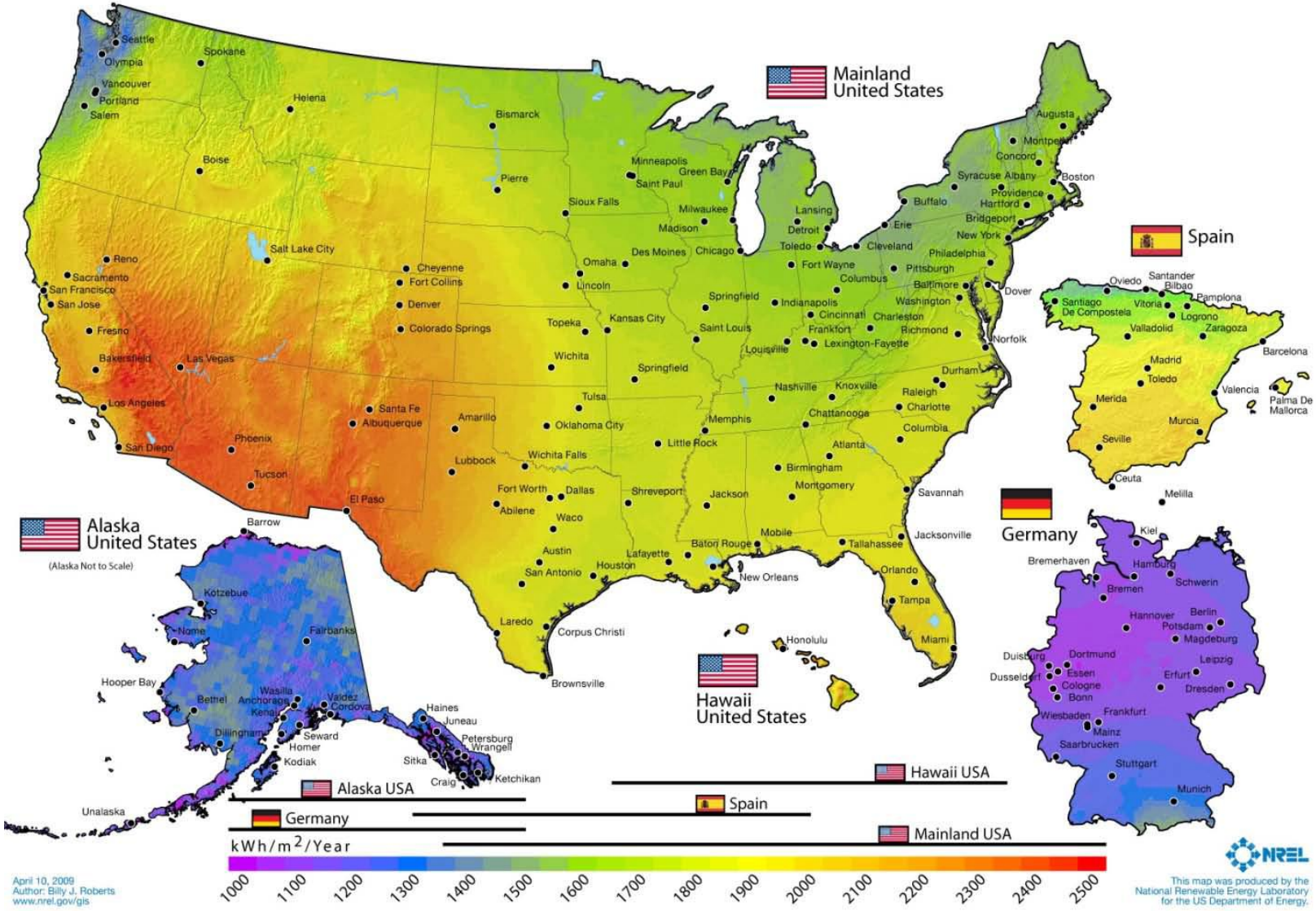


Funding for Solar Installations

- US Tax credit allows for a 30% credit on federal income tax returns based on the entire installation cost
- PA Sunshine Grant
- Solar Renewable Energy Credit (SREC)
- Net metering
- Power Purchase Agreements (PPA)

Suntricity, eastern PA

SunShot Rooftop Solar Challenge Project



Become a Certified Solar Community!

Sunshine TEAM

FACILITATING SOLAR ENERGY STANDARDS IN YOUR COMMUNITY

Agenda

08:40 – 09:10	Introductions & Discussion
09:10 – 10:00	Creating a Regulatory Landscape for Solar
10:00 – 10:10	*Break*
10:10 – 11:00	Financing Opportunities in Pennsylvania
11:00 – 11:40	Installing Solar on Municipal Facilities
11:40 – 11:50	*Break*
11:50 – 12:10	Zoning for Solar in Pittsburgh Region
12:10 – 12:30	Next Steps for Solar in Region

Discussion

What are some tools from this workshop that you can take back to your community?

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U.S. Department of Energy

Amy Heinemann

NC Solar Center / DSIRE

amy.heinemann@ncsu.edu

(919) 515 - 5693

Jayson Uppal

Meister Consultants Group

jayson.uppal@mc-group.com

(617) 209 -1990