SEPA™

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Helping Utilities Make Smart Solar Decisions

The Expanding Nexus Between Utilities & Solar

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Who We Are

Educational 501(c)3 non-profit

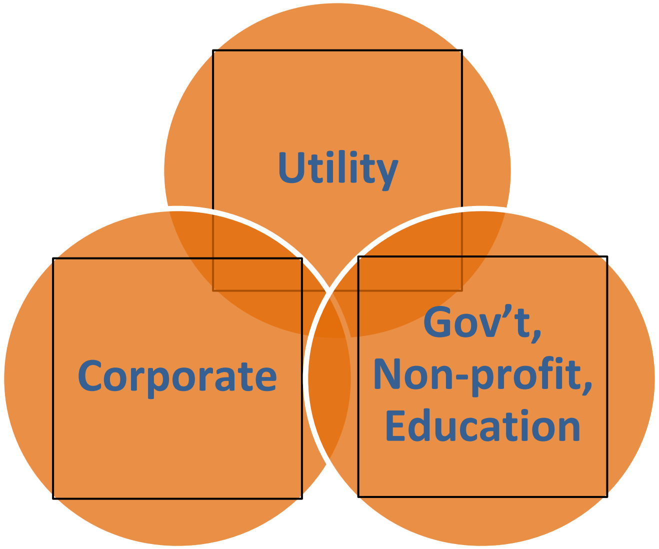
Membership

550
Utilities

450
solar
companies &
stakeholders

52% of
electricity
customers

94%
of installed
solar capacity



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What We Do

Facilitate Utility Peer Learning

Build Bridges between Utility & Solar Industries

Develop Solutions

SOLAR MARKET OVERVIEW

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Market Growth

Megawatts

2010
897
2,518

2011
1,577
4,095

2012
2,688
6,783

2013
4,198
10,981

2014
5,314
Annual MW
16,295
Cumulative MW

Number of installations

2010
68,846
158,705

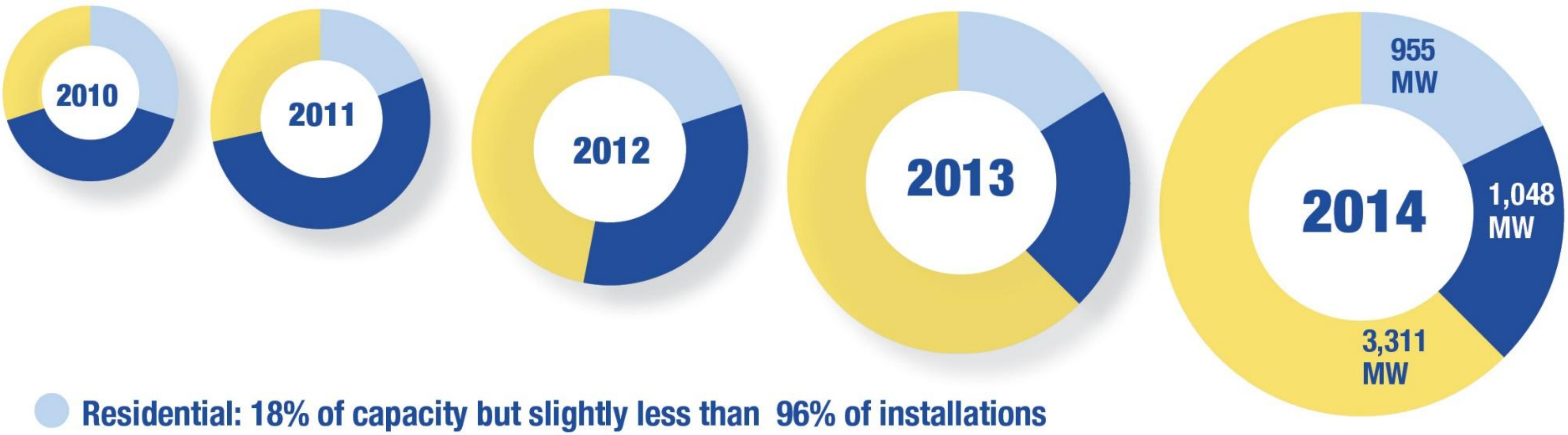
2011
85,993
244,698

2012
111,515
356,213

2013
137,056
493,269

2014
182,262
Annual Systems
675,520
Cumulative Systems

Market Segments



- Residential: 18% of capacity but slightly less than 96% of installations
- Nonresidential: 20% of capacity but 4% of installations
- Utility-scale: 62% of capacity but 0.05% of installations

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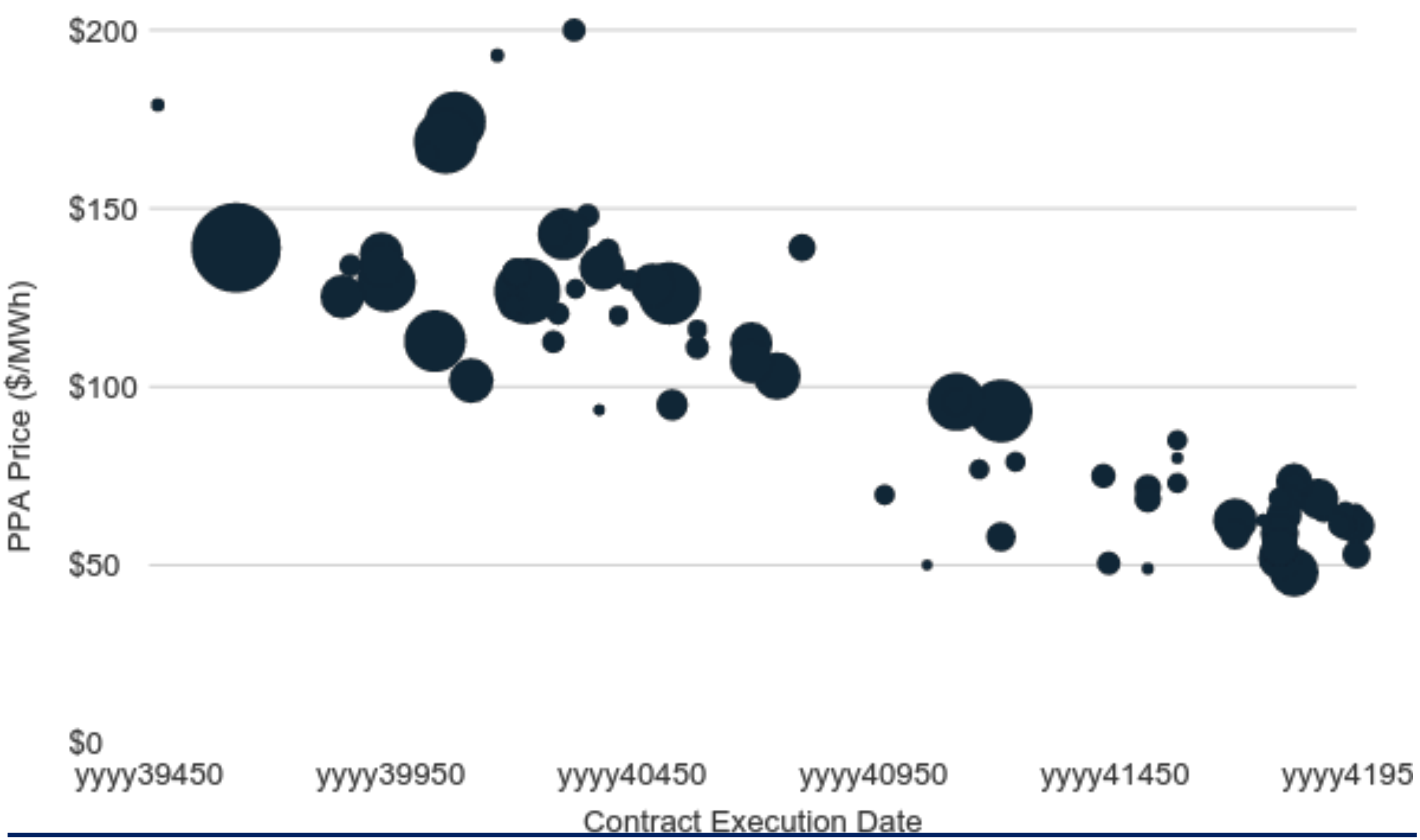
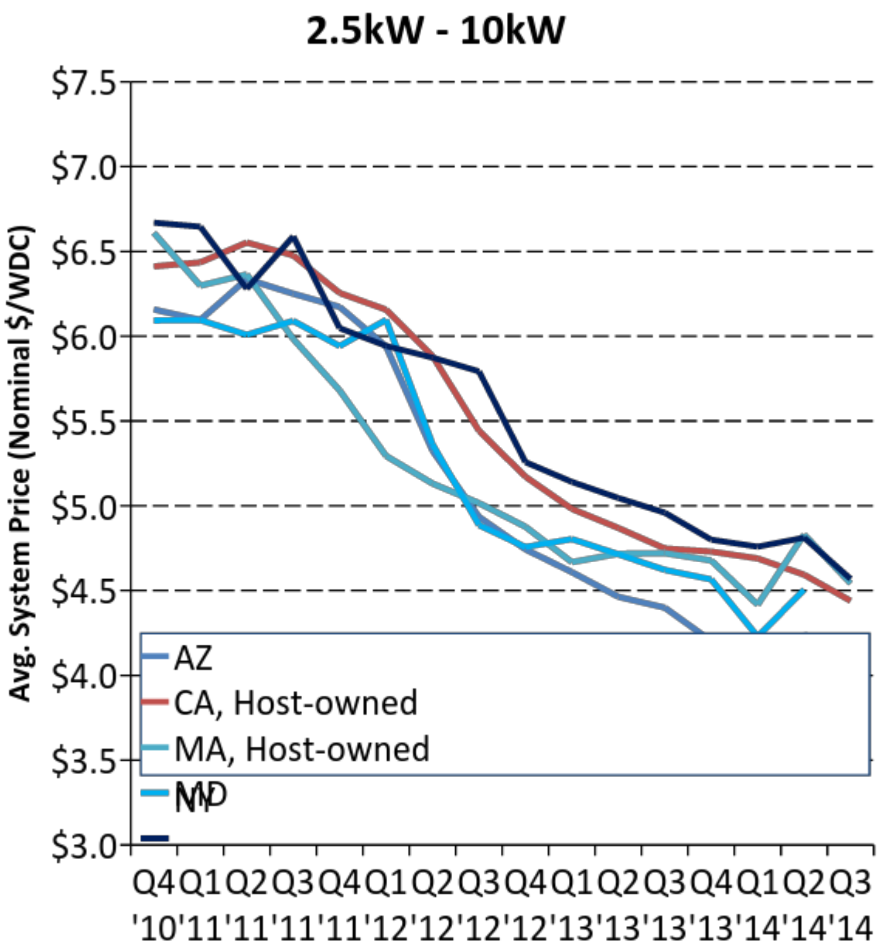
PRICING UPDATE

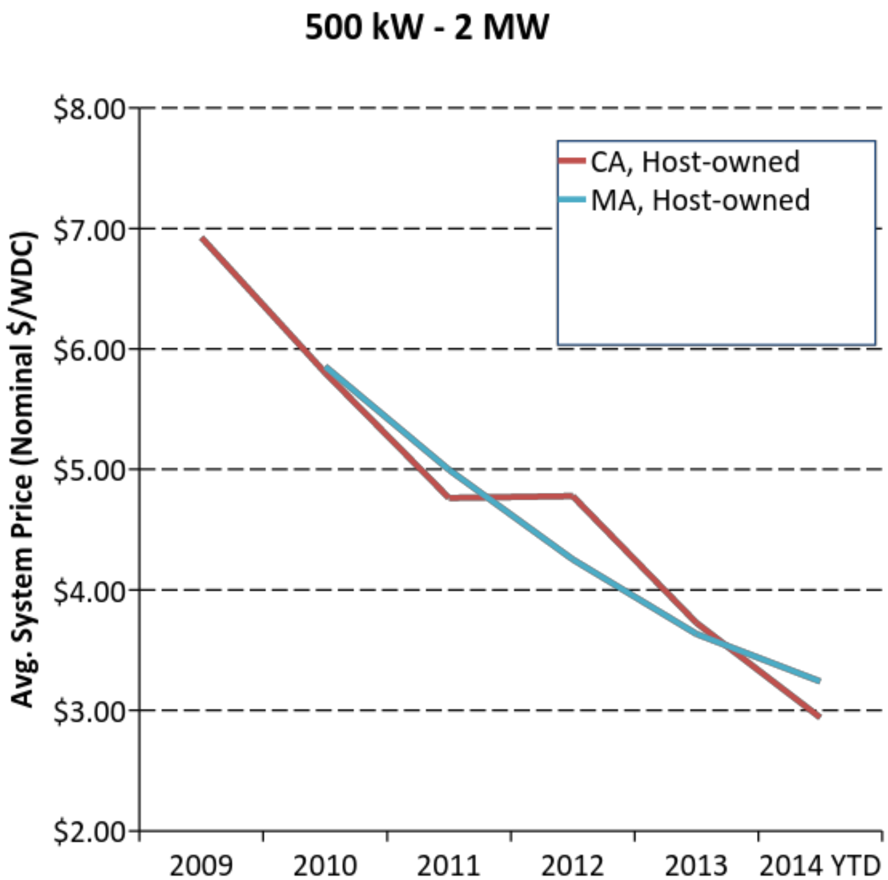
Utility-Scale PV Pricing



Source: GTM Research

Distributed PV System Pricing





Helping Utilities Make Smart Solar Decisions

NREL/DOE “Q2/Q3 ‘14 Solar Industry Update” (October 31,2014)

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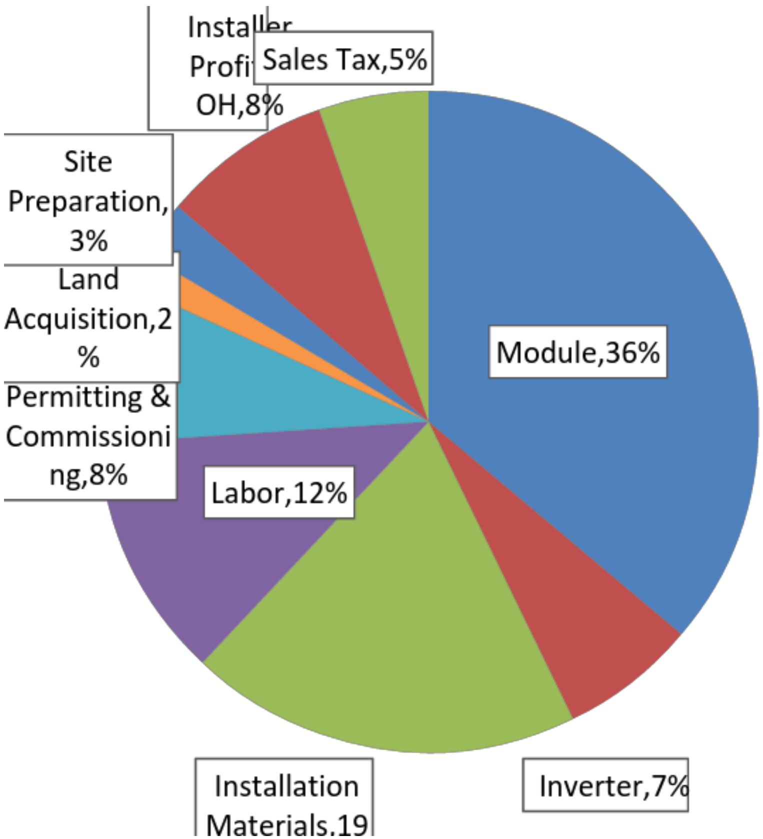
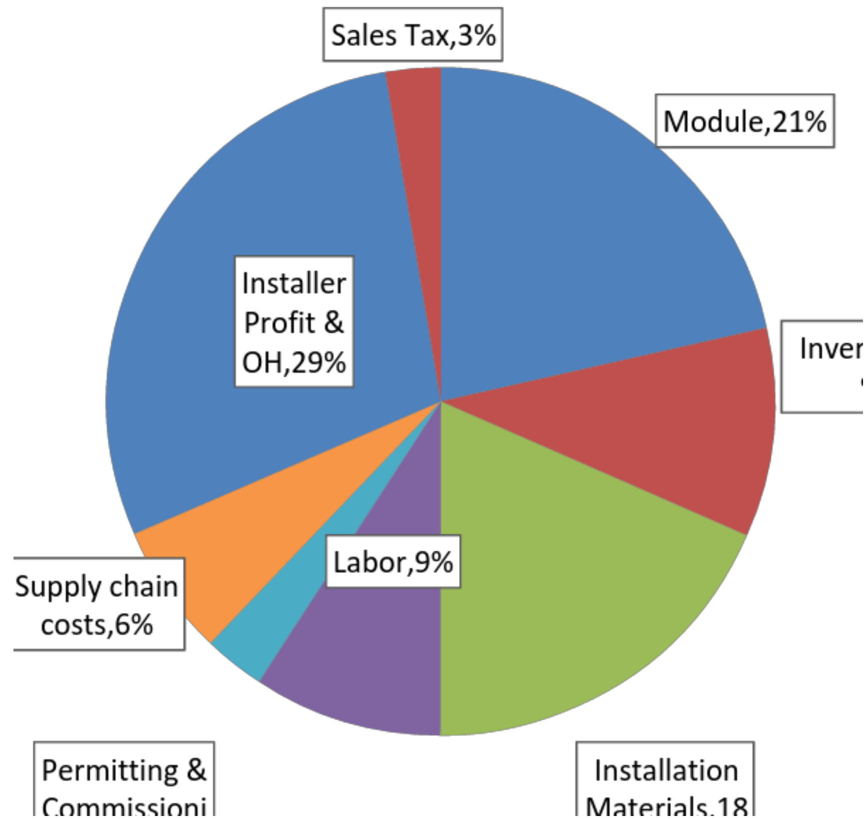
Sources of Cost

30% of Residential Rooftop installed costs are profit/overhead-related compared to 8% for utility-scale

Utility-Scale Fixed – $1.80/W



Residential Rooftop - $3.29/W



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UTILITY APPROACHES

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Comparison of Utility-Scale vs Distributed

	Utility-Scale	Distributed Generation
Interconnection Point	Utility Substation	Behind the Meter
Intermittency	High - Single Site	Mitigated - Many sites
Transaction	Rate Base / Purchased Power	Net Energy Metering
Power Quality Management	Active - Utility Responsibility	Passive - Feeder Impact
Resource Need Decision	Utility	Customer
Penetration Concerns	NA	Yes
Resource Planning Treatment	Capacity Addition	Net Load Impact
Financial	Rate of Return / Pass Through	Revenue Erosion

Tomorrow
?

Source - DOE - Results from the DOE-CPUC High Penetration Solar Forum

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Utilities Proactively Responding to Customer Demand for Rooftop Solar

Rate Reform	99% systems NEM 73% utilities exploring rate restructuring	• 55 utilities exploring value of solar tariffs • 32 utilities currently offer feed-in-tariffs
Grid Integration	122 exploring; 60 implementing 3 or more strategies	• Locational Deployment • Energy Storage • Advance Inverters • Solar Production Forecasting
Utility Ownership	Underserved markets Grid integration plays (smart inverters, location)	• IOUs: APS & TEP • Co-op: Wright-Hennepin • Muni: CPS
Community Solar	Integration benefits Cost benefits Customer benefits	• At least 93 programs, 75% utility managed • 20% up from 2013
DER Program Integration	Grid benefits Superior customer returns	• One co-op (MN) kicking off WH DR with Community Solar

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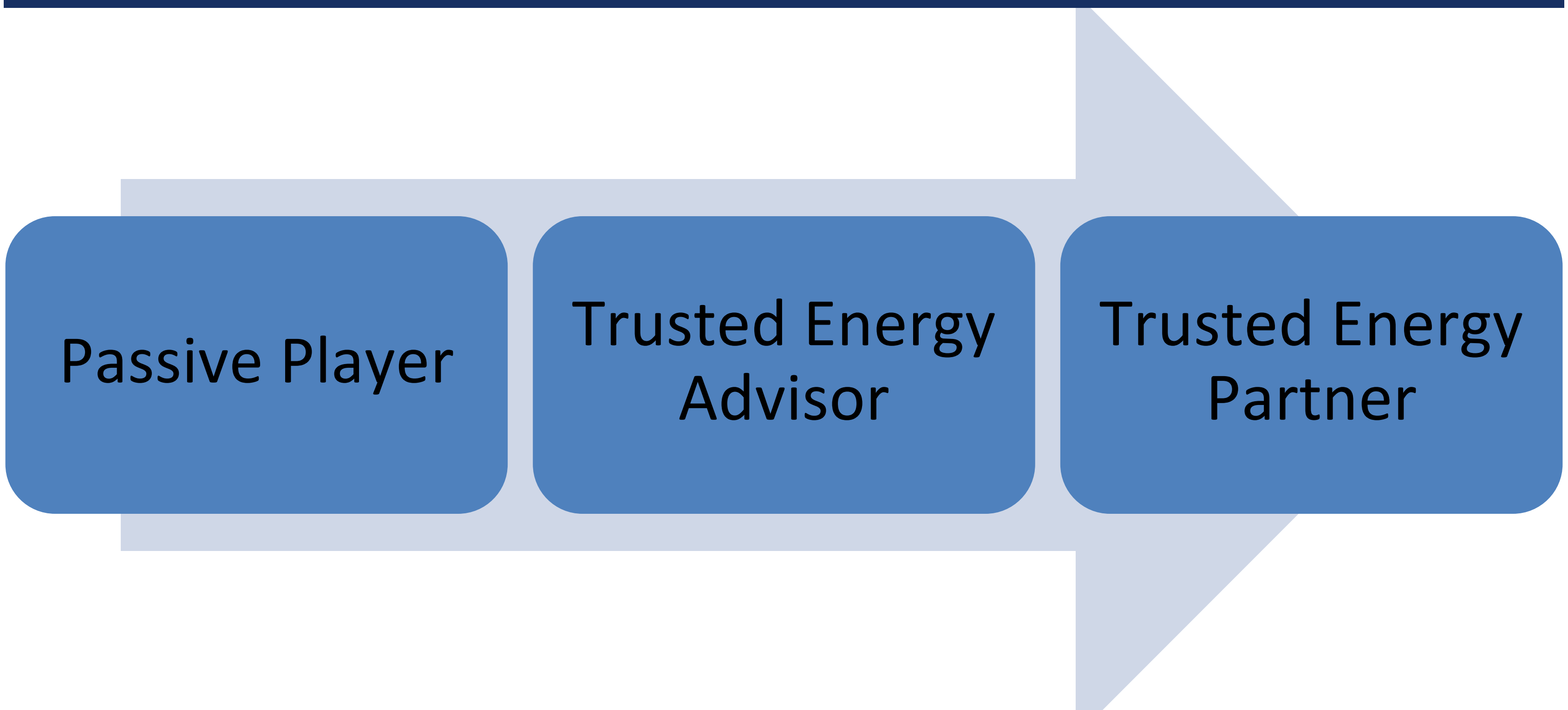
Shifting U.S. Utility Role

Transitioning from a passive player …



…to a proactive partner for customers adopting solar and other DER

Example Opportunities

Near-Term Opportunities	Mid-Term Opportunities	Long-Term Plans
Solar calculator	Tailored incentives	Smart inverters
Website FAQs	Pre-approved designs	Comprehensive rate design changes
Equipment standards	Community solar	O&M services

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Creating a (Utility) Solar Strategic Plan

What current activities are under way, and where do they fit in this horizon?

Near-Term Opportunities 0-6 month horizon	Mid-Range Opportunities 6-18 month horizon	Long-Range Plans 18+ month horizon
• Easy to implement • Regulatory approval not required • Education-focused • Mixture of one-time and repeatable activities • Create a foundation for utility expertise in solar	• Require some due diligence before launching • Enhances the overall market • Service-oriented • May require regulatory approval • Establish utility as a Trusted Energy Advisor	• Significant business case / financial modeling required before determining path forward • Require either regulatory approval or unregulated affiliate • Proactive and aggressive business models with both the customer and the industry • Transition to Trusted Energy Partner

Minnesota Cooperative Example

- Wright Hennepin formed WH Solar, LLC
- Phase I: Offering community solar
- Phase II: Offering rooftop or pedestal solar to commercial, institutional and farm consumers
- Phase III: Offering residential rooftop solar

$0 down financing options & long-term rate guarantees

WH Solar Community
Wright-Hennepin Cooperative Electric Association
A Touchstone Energy® Cooperative
A simple way to own solar

Key Take Aways

- Solar is growing fast and getting cheaper
- Distributed generation can create challenges under the current utility paradigm
- Both incremental and revolutionary approaches are underway to shift the way utilities approach their business

Mapping the Way to Utility 2.0

THE 51ST STATE

www.SEPA51.org

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Contact Information

Jennifer Szaro
Senior Director of Programs
202-559-2023
jszaro@solarelectricpower.org