SEPA™

solar electric power association

Helping Utilities Make Smart Solar Decisions

Distributed PV and Third-Party Financing 101 for Utilities

August 8, 2013

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Logistics

- Recording & slides will be sent to all registered attendees and available on the Resource Library within 2 business days
- Submit questions in the chat window at any time
- Questions will be answered at the end of the webinar.

Upcoming SEPA Events:

- September 19: Webinar: Solar Value Basics and Net Energy Metering: What It Is….and Isn't
- October 21-24: Solar Power International, Chicago, IL

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Speakers

Kristian Hanelt
SVP Renewable Capital Markets
Clean Power Finance

Eran Mahrer (Moderator)
VP Research & Strategy
SEPA

Clean Power Finance

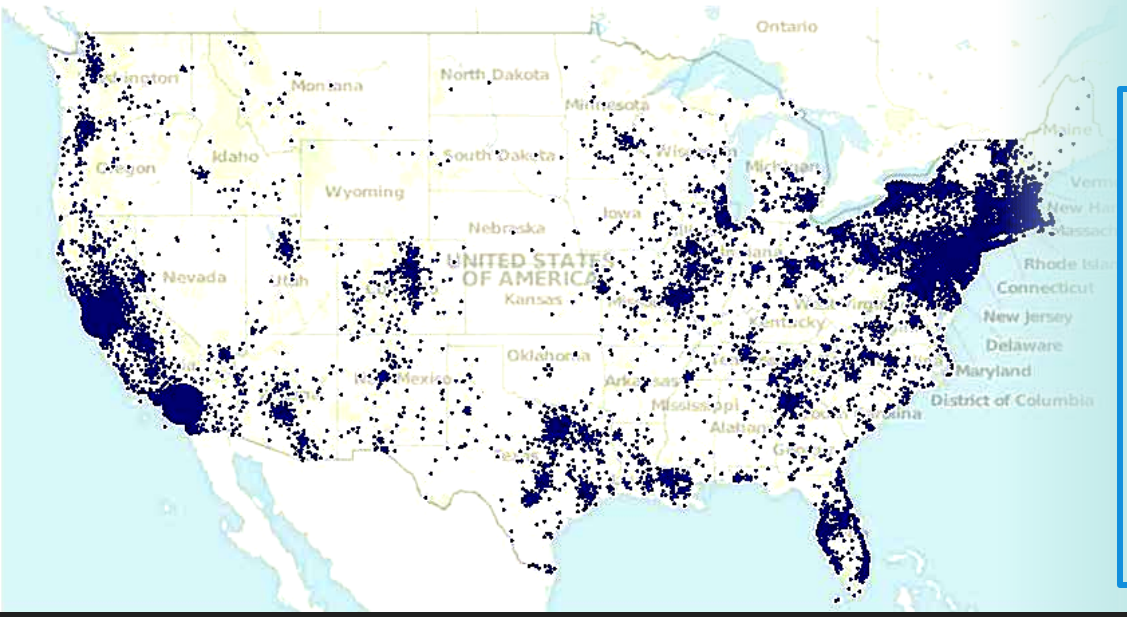
Distributed PV and Third-Party Financing 101 for Utilities

Presentation to SEPA Member Companies

August 8, 2013

Electricity Is a Universal Expense

The Next Wave of Consumer Financing



Market Opportunity

56 Million U.S. Households Will Refinance Their Electricity for the 1st Time

<1% of the Market Has Been Penetrated

MORTGAGE FINANCING	AUTO FINANCING	EDUCATION FINANCING	ELECTRICITY FINANCING
$2 Trillion	**$90 Billion**	**$26 Billion**	**$6 Billion**
Annual Market	Annual Market	Annual Market	Annual Market (E)

Sources: Securities Industry and Financial Markets Association (SIFMA), Greentech Media Research, US Census 2011, GTMR, Clean Power Finance

People are Going Solar…

…Not to Be Green, but to Save Green

Middle-Class Family Paying $200/Month for Electricity

↓

Goes Solar: New Monthly Electricity Payment Is $150

↓

Saves $600/Year on Electricity

Middle-Class Families Can Save Money With Third-Party Financed Solar

What is Third-Party Solar Financing?

Basic Premise

Homeowners Contract with a Third-Party PV Equipment Owner and Pay for the Power the System Produces or Pay a Monthly Lease for Use of the Equipment

Solar Power Purchase Agreements (PPAs)

Solar Leases

Homeowners Have Various Financing Options

- Prepay (Pay Up Front for Projected Electricity Production)
- $0 - $1000's Down Payment
- Escalators

Contracts Are Usually for 20-25 Years

Average Homeowner Offsets 70% of Electricity with Solar*

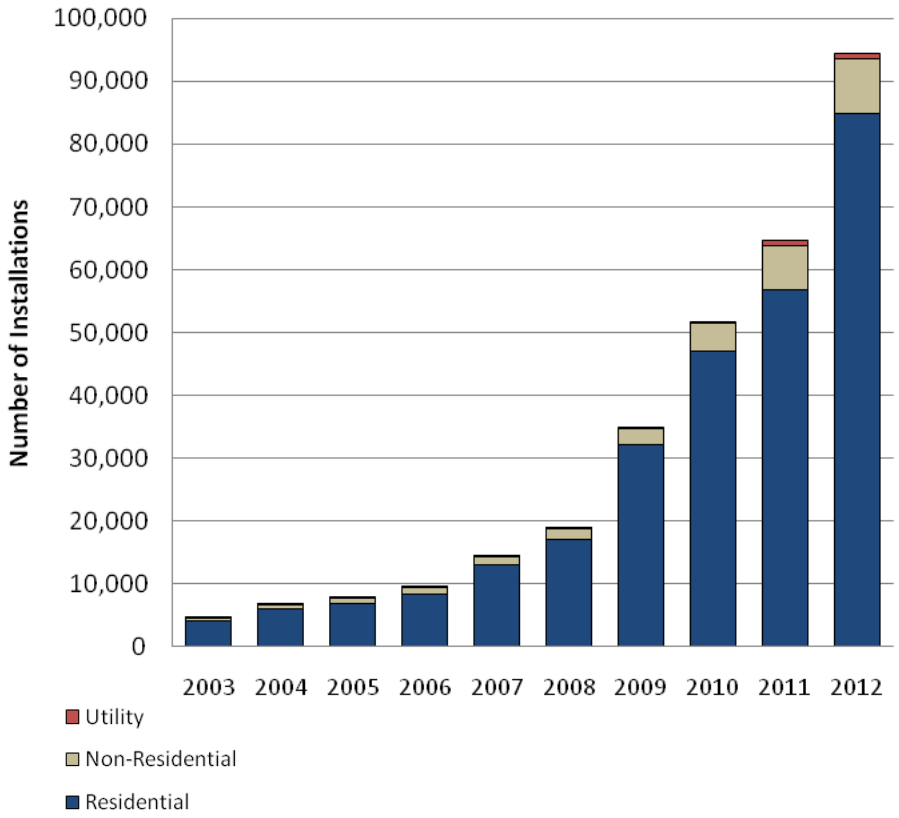
*Offset % varies by market

Homeowners Prefer to Finance Their Systems Because…

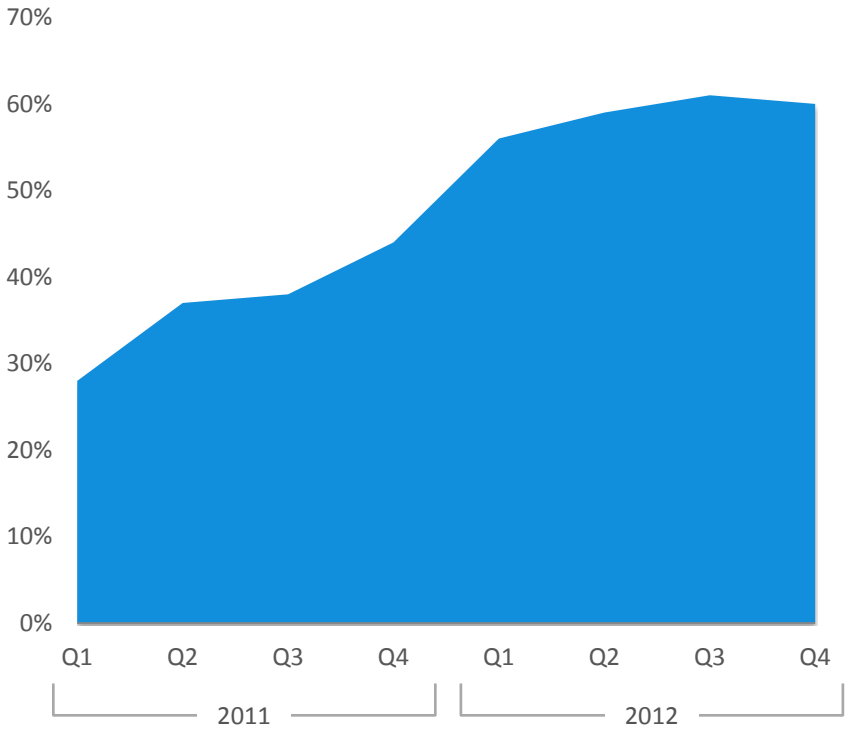
- Familiar Payment Structure
- Little to No Upfront Cost
- No Payback Period
- Immediate Savings
- Hassle-Free
- Performance Guarantee

Third-Party Financing's Effect on Solar Adoption

Number of Annual U.S. Grid-Connected PV Installations



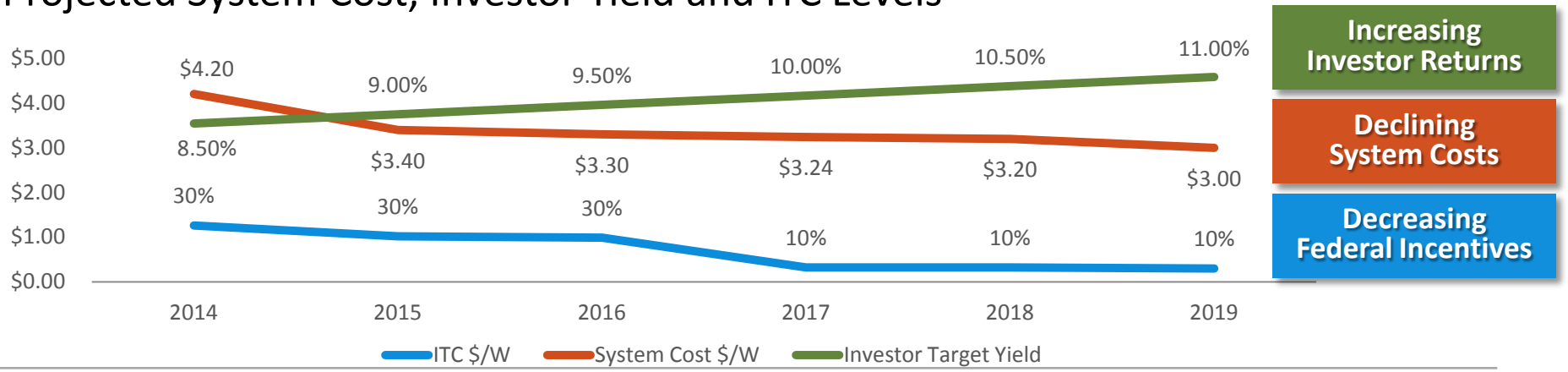
Broader Use Of Solar Financing



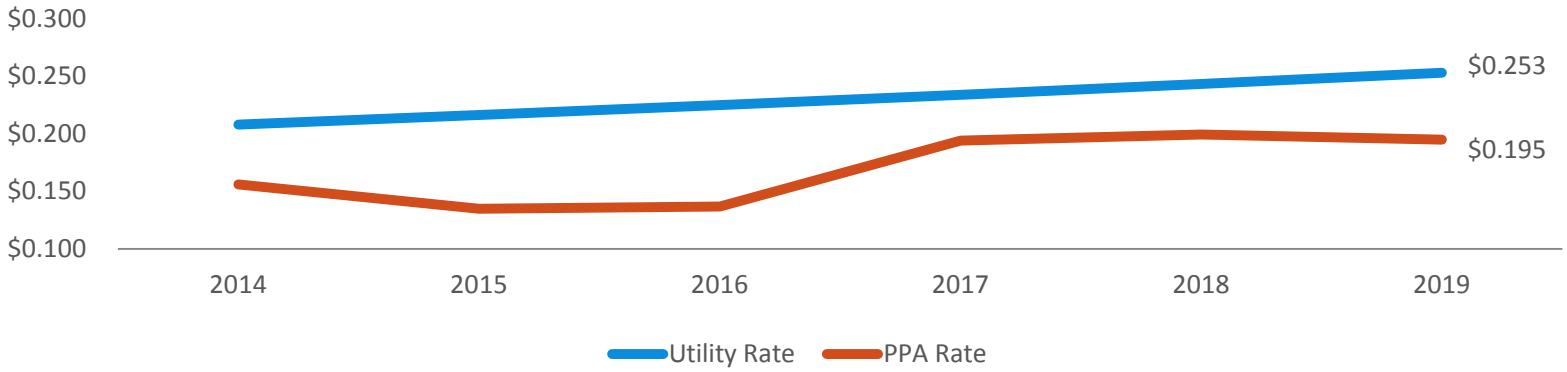
Source: IREC, U.S. Solar Market Trends 2012 (July 2013)

Compelling Macro Fundamentals For Residential Solar

Projected System Cost, Investor Yield and ITC Levels



PPA Rates vs. Future Utility Rates*



Sustained Opportunity to Sell Power at Lower Prices than Utilities

*Assumes a 3.5% Escalator for PPA and Utility Rates

Favorable Post-ITC Economics: System Costs

CA: Conservative Scenario

Economics Post 30% ITC

Assuming a Constant Utility Rate of $0.20/kWh, Constant 8% Yield, and Decreasing System Cost (per McKinsey Study), Economics Will Be Viable When ITC Drops from 30% to 10% in 2016 and Onwards

YEAR	ITC LEVEL	DEPRECIATION	PRODUCTION (kWH/kW)	UTILITY RATE ($/kWH)	SAMPLE YIELD	SYSTEM COST ($/W)	SAMPLE FUND PURCHASE PRICE	DELTA
2013	30%	Bonus	1450	$0.200	8.00%	$4.40	**$4.73**	$0.33
2014	30%	Normal	1450	$0.200	8.00%	$4.20	**$4.40**	$0.20
2015	30%	Normal	1450	$0.200	8.00%	$3.40	**$4.40**	$1.00
2016	30%	Normal	1450	$0.200	8.00%	$3.30	**$4.40**	$1.10
2017	10%	Normal	1450	$0.200	8.00%	$3.24	**$3.21**	($0.03)
2018	10%	Normal	1450	$0.200	8.00%	$3.20	**$3.21**	$0.01

Favorable Post-ITC Economics: Utility Rates

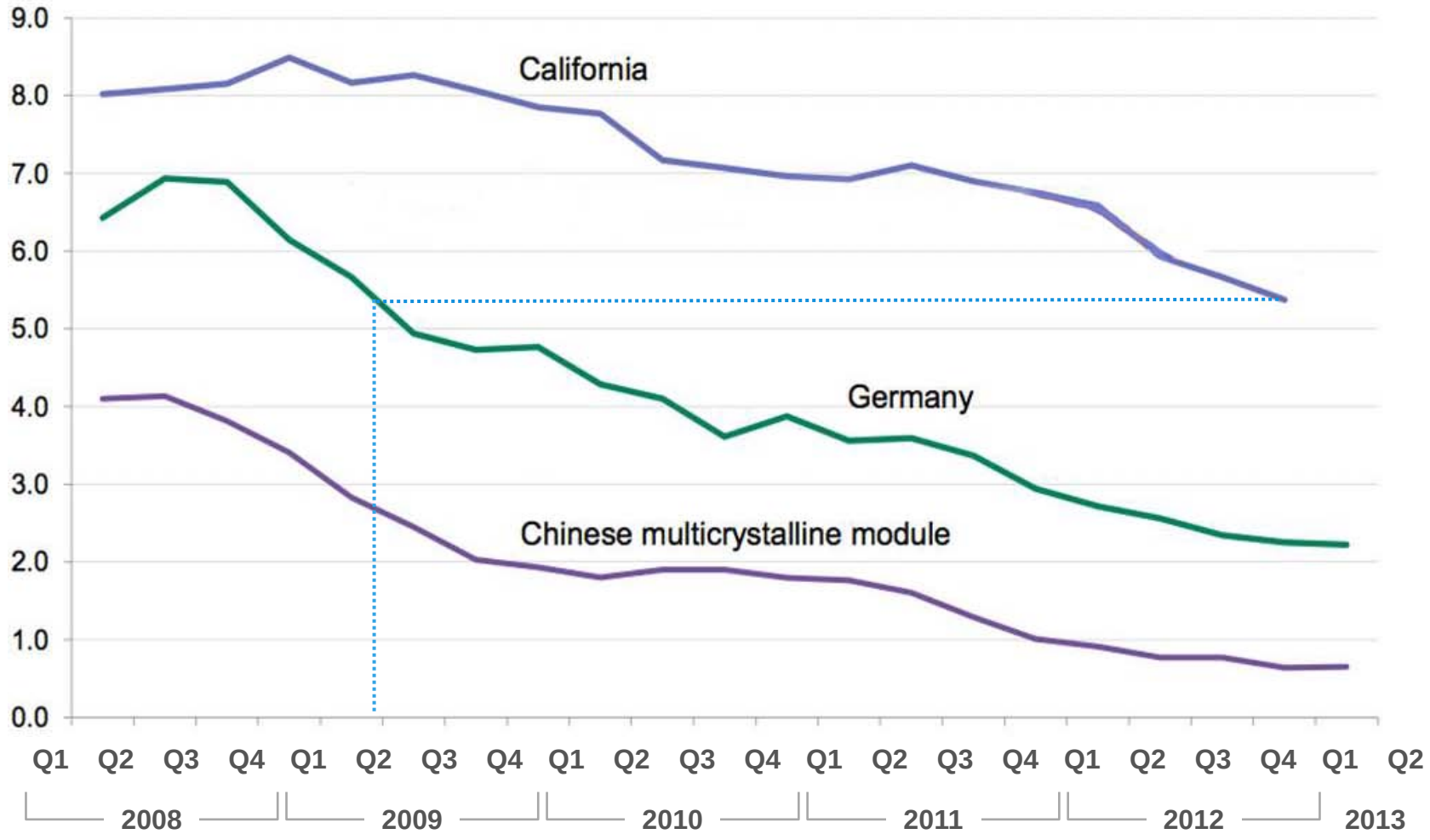
CA: Scenario with Escalating Utility Rates

Economics Post 30% ITC

Assuming Utility Rates Increase at 2.5%, Constant 8% Yield, and Decreasing System Costs (per McKinsey Study), Economics Remain Healthy Despite Decrease in ITC from 30% to 10%

YEAR	ITC LEVEL	DEPRECIATION	PRODUCTION (kWH/kW)	UTILITY RATE ($/kWH)	SAMPLE YIELD	SYSTEM COST ($/W)	SAMPLE FUND PURCHASE PRICE	DELTA
2013	30%	Bonus	1450	$0.200	8.00%	$4.40	**$4.73**	$0.33
2014	30%	Normal	1450	$0.205	8.00%	$4.20	**$4.53**	$0.20
2015	30%	Normal	1450	$0.210	8.00%	$3.40	**$4.65**	$1.25
2016	30%	Normal	1450	$0.215	8.00%	$3.30	**$4.78**	$1.48
2017	10%	Normal	1450	$0.221	8.00%	$3.24	**$3.58**	$0.34
2018	10%	Normal	1450	$0.226	8.00%	$3.20	**$3.68**	$0.48

Small (<10kW) PV System Cost in Germany and California ($/W)



Source: BSW-Solar, California Solar Initiative Filings, JPE, Bloomberg New Energy Finance

Prevalence of Loans in the Financing Mix

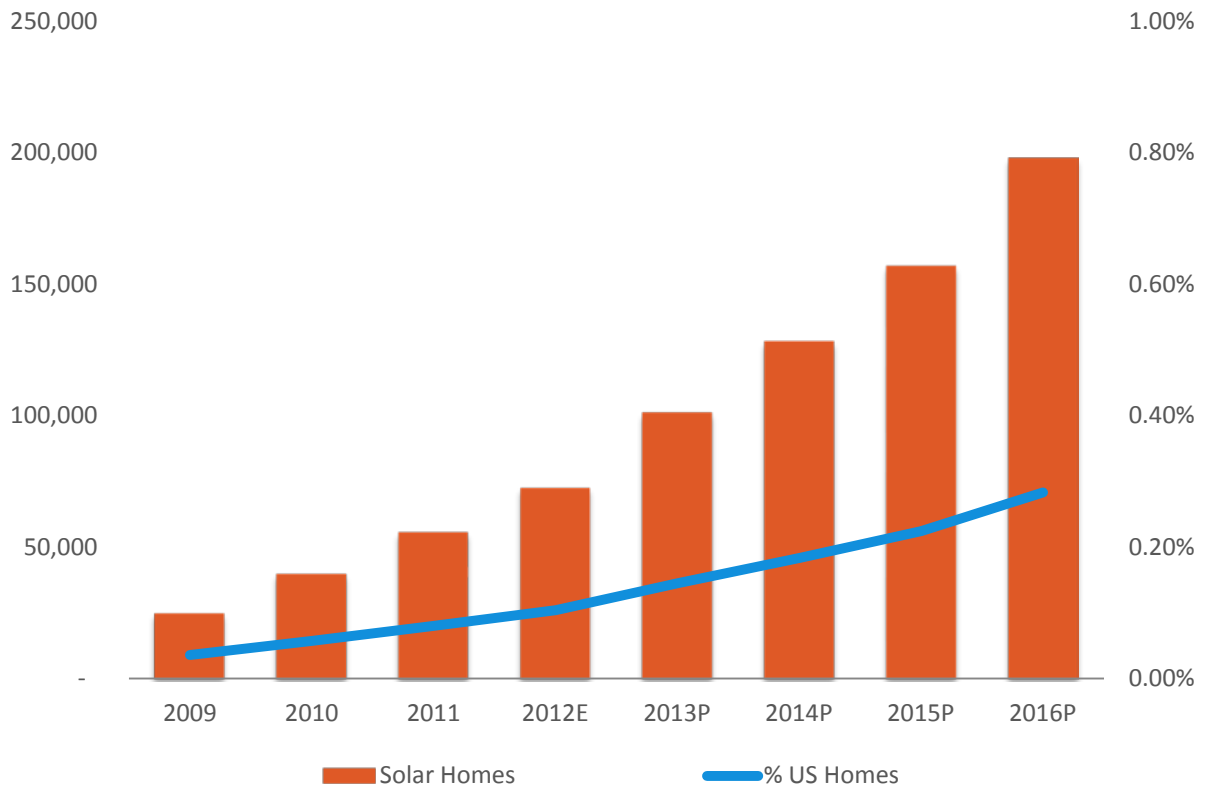
Loans Increase But Don't Replace PPAs/Leases

	Loans	PPAs/Leases
Monetize ITC?	Maybe	Yes
Monetize MACRS?	No	Yes
Monetize State Credits?	Maybe	Maybe
Includes Maintenance, Monitoring, Performance Guarantee?	No	Yes
Residual Value Drives Lower Monthly Payments?	No	Yes

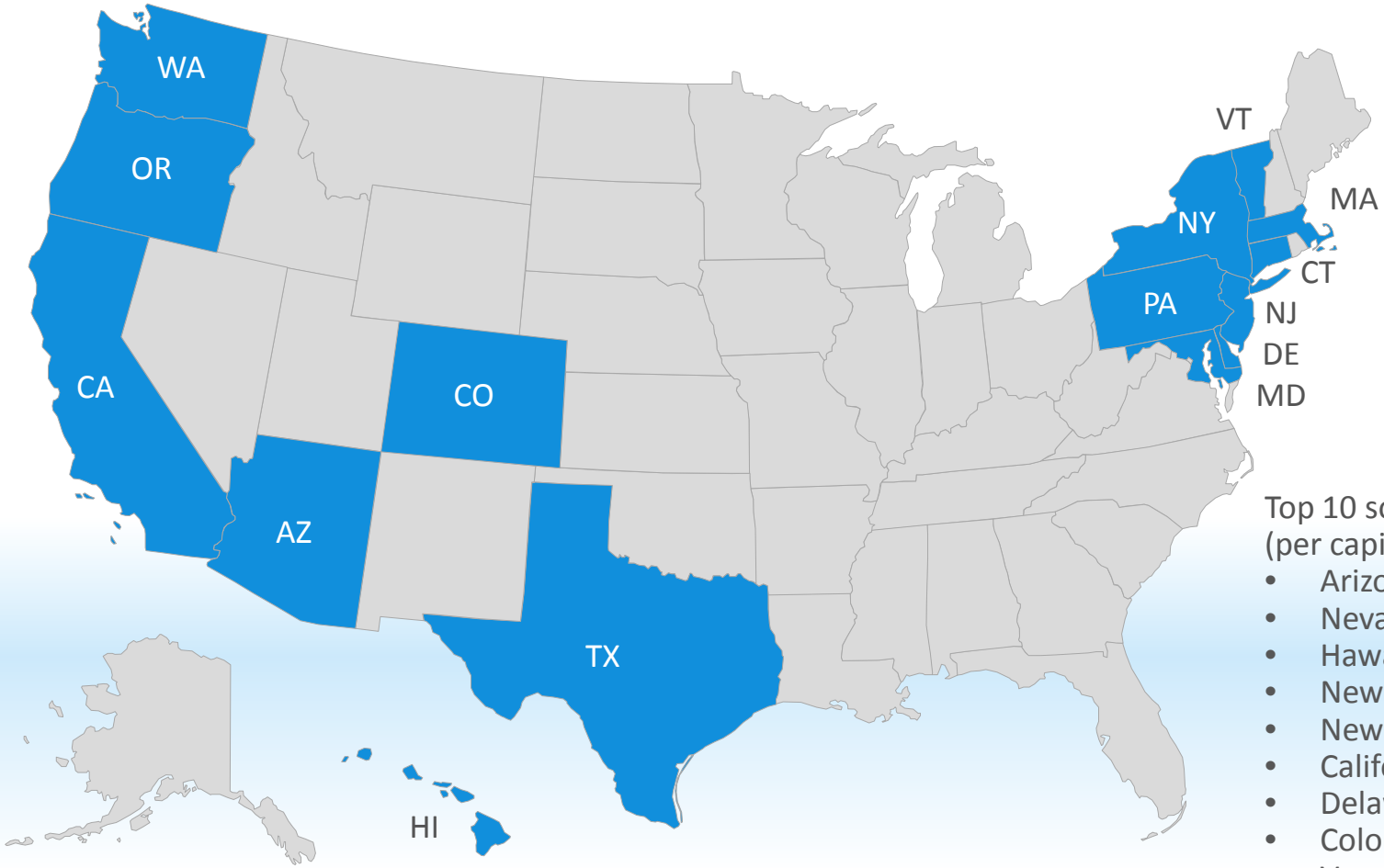
Trajectory of U.S. Residential Solar Installations

More U.S. Homes With Solar Installed

Solar Homes Installed



Residential Third-Party Financing Is Now More Available

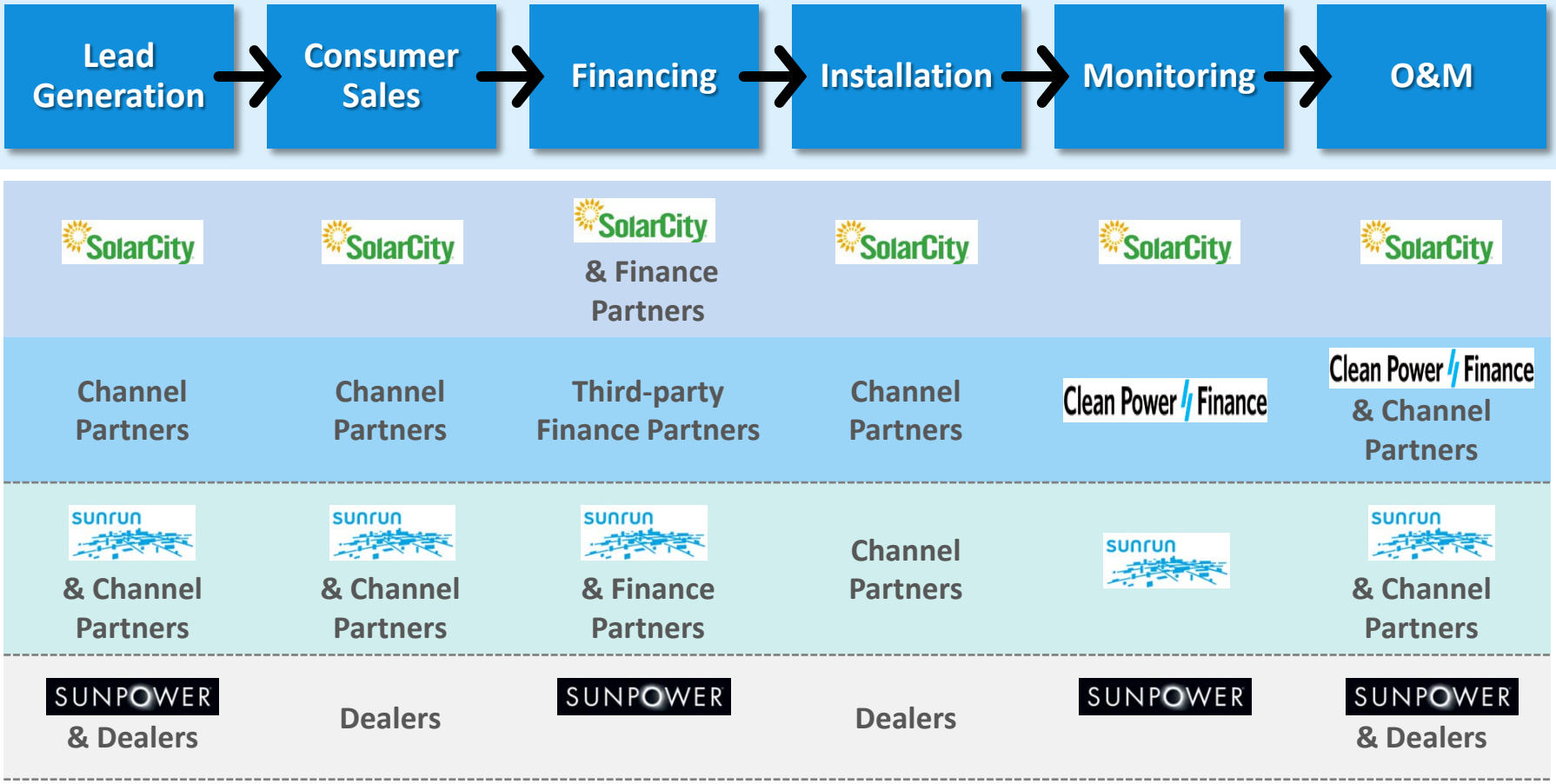


Top 10 solar states (per capita)

- Arizona
- Nevada
- Hawaii
- New Jersey
- New Mexico
- California
- Delaware
- Colorado
- Vermont
- Massachusetts

Source: GTM Research - "U.S. Residential PV Financing: The Vendor, Installer and Financier Landscape, 2013-2016

Third-Party Financing Business Models



Source: GTM Research - "U.S. Residential PV Financing: The Vendor, Installer and Financier Landscape, 2013-2016

Third-Party Tax Equity Providers for U.S. Renewables

New Entrants

Dominion

HONDA

Active

J.P.Morgan

WELLS FARGO

usbank

CREDIT SUISSE

MetLife

Bank of America

Morgan Stanley

PNC

citi

UnionBank

Goldman Sachs

STATE STREET.

Northern Trust

Non-Financial Players

Chevron

Google

SDGE

Washington Gas

Expected Exits

Rabobank

BNP PARIBAS

Sumitomo

EAST WEST BANK

ING

CIRI

Note: Does not include IPPs that self-monetize tax credits.
Source: Bloomberg New Energy Finance

How Third-Party Financing Works – Step 1

Origination and Construction → **Underwriting** → **Ongoing Operations**

Solar Professional

- Designs System
- Generates Proposal

Solar Finance Company

- Checks Consumer Credit

Investor

- Reserves Capital

How Third-Party Financing Works – Step 2

Origination → **Construction and Underwriting** → Ongoing Operations

Solar Professional

- Demonstrates Completion
- Agrees to Warranties

Solar Finance Company

- Transacts Purchase

Investor

- Owns System with or without partnership with Finance Company

How Third-Party Financing Works – Step 4

Origination and Construction → Underwriting → **Ongoing Operations**

Solar Professional

- Services Warranties
- Performs On Call Maintenance

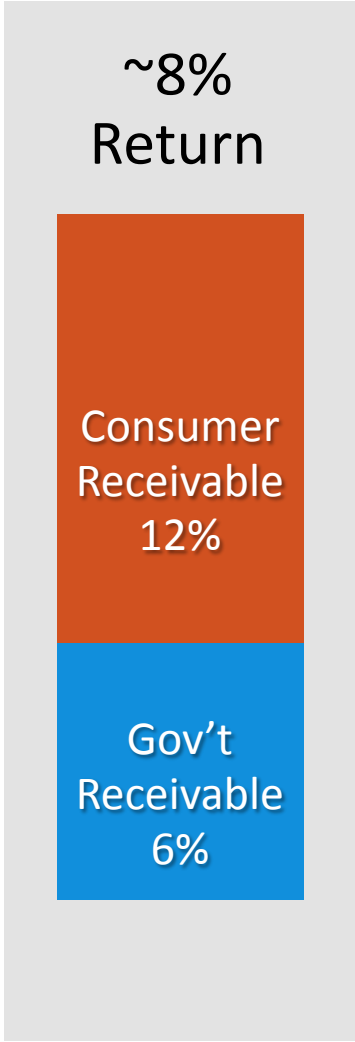
Solar Finance Company

- Bills and Collects Payment
- Distributes Payment
- Provides Customer Service
- Performs Maintenance (As Needed)
- Deploys Responders (As Needed)

Investor

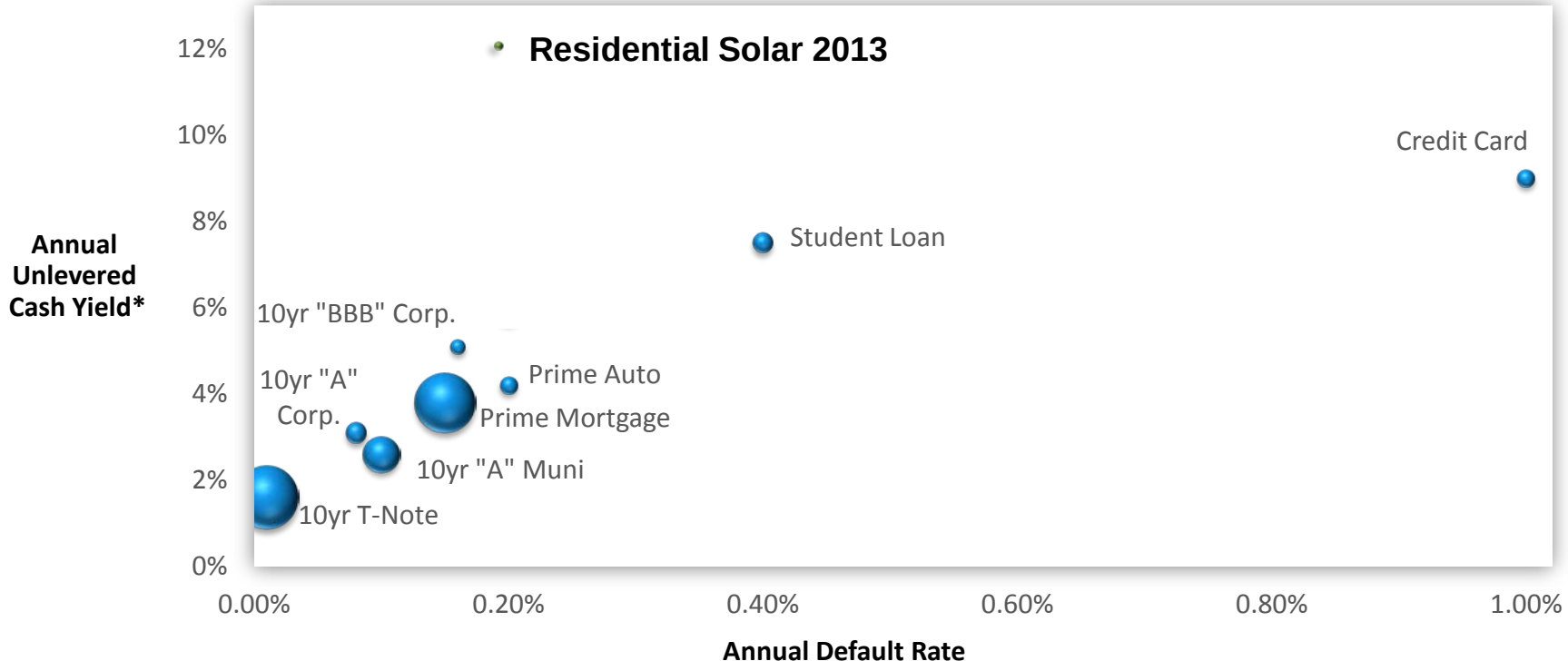
- Earns Returns

Multiple Sources of Value for Solar Asset Owners



	COUNTERPARTY	TIMING
Homeowner Down Payment	Consumer	Immediate
Homeowner Prepayment	Consumer	Immediate
Homeowner Lease / PPA Payments	Consumer	20 - 25 Years
Upfront Rebates	State Government	< 1 Year
Cash Grant / Investment Tax Credit	U.S. Government	< 1 Year
Accelerated Depreciation	U.S. Government	5 Years

A Compelling Asset Class for Investors: High Risk-Adjusted Return



Consumers Overwhelmingly Pay Their Electric Bills

*Pricing Is for Prime Consumers

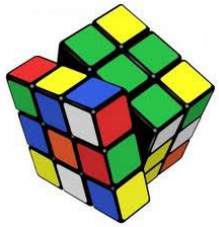
Broad Stakeholder Benefits of TPO

INVESTORS/SYSTEM OWNERS	SOLAR PROFESSIONALS	CONSUMERS
Derive Long-Term Revenue Stream and Tax Benefits	Expand Pool of Potential Customers	Lock in Low Electricity Prices for 20-25 Years
Achieve High Risk-Adjusted Returns with Low Risk	Selling Familiar Service Model, not Technology or Hardware	Increase Control Over Electric Bills with No Hassle
Provide Competitive Products for Customers	Sell More Solar and Grow Businesses	Save Money on Major Monthly Expense

Implications for Utilities

The Situation:

- Solar Is Popular and Trending Toward Mass Adoption
- Solar Is Sustainable in the Short and Long Term
- Solar Is a Great Asset Class with Significant Benefits for Investors



The Problem:

- Third-Party Financed DG Solar Poses Strategic and Operating Challenges for Regulated Utilities
  - i.e. Fewer Customers Using Less Electricity
- Utilities Will Have to Cope with Increasing Grid Penetration of DG Solar and Energy Management Technologies

The Solution:

- Work Together
- Explore New Business Models for Regulated Utilities & Wholesale Power Companies to Benefit from Solar

Clean Power Finance

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Q&A

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