Welcome to the Energy Bar Association Program
Energy Bar Association's Mission Statement

EBA has approximately 2,600 members and promotes the professional excellence and ethical integrity of its members in the practice, administration, and development of energy laws, regulations and policies by providing:

- superior educational programming,
- networking opportunities, and
- information resources.
Please visit www.EBA-Net.org

Calendar of Events for information on upcoming seminars, programs and conferences.
Mark Your Calendars

2016 Annual Meeting & Conference
June 7-8, 2016
Washington, DC
Growing Clean Energy Markets Quickly with Green Bank Financing Tools

Jeffrey Schub, Executive Director
Coalition for Green Capital

March 2016
Green Banks fill the financing gap and draw in the capital needed to make clean energy markets grow.

A Green Bank is a public financing authority that leverages private capital with limited public-purpose dollars to accelerate the growth of clean energy markets.

- Deploy public-purpose capital efficiently to maximize private investment
- Implement new market behavior and lower price to spark demand
Green Bank is a public institution that channels public and private investment.

1. Capitalization of Green Bank
2. Innovative financing structures
3. Private investment flows

Government

Creation & Public Capitalization

1

Green Bank

2

Private Investors

3

Public Investment

Payback

Public Investment

Payback

Low Carbon Projects

Consumer Savings, Job Creation, Taxpayers Protected, GHG Reductions
Financing structured so that repayment plus remaining utility bill are less than prior utility bill.
DG solar penetration is still minimal

**DG Solar Generation as % of Retail Sales**

- **Current Market Share**: 0.3%
- **Addressable Market**: 3.9%

Example: CGB’s Residential Solar Tax Equity Fund expands customer access to rooftop solar

- CGB created unique public-private financing platform
- Product enables local developers to offer financing to customers who otherwise would have to pay all upfront

Green Bank
- Subordinated Debt
- Loan Loss Reserve
- Equity

Private Investors
- Senior Debt
- Tax Equity

Residential Solar Lease Fund

Local Installers

Solar Customers
Example: Connecticut Green Bank grows residential solar with more financing and less subsidy

![Chart showing installation costs and capacity growth over years.]
In only 5 years, Connecticut Green Bank increased clean energy investment 20x per year!
Green Banks are quickly spreading across U.S.

Green Banks Operating Or Under Development/Consideration:

- CA
- CO
- CT
- DE
- DC
- HI
- MA
- MD
- NV
- NY
- RI
- VT
- VA
Green Banks operating around the world

Sources: OECD, “Green Investment Banks – Policy Perspective.”
Global Green Bank Network just launched, hub for new Green Bank development, knowledge sharing

Green Bank Network

- **Green Bank Creation**
  - Help Gov’t Create New Institutions

- **Attract Capital**
  - Connect Investors & DFIs with Green Banks

- **Know-How**
  - Best Practices & Data from All Green Banks
Thank You

Comments and Questions:
Jeffrey Schub, Executive Director,
jeff@coalitionforgreencapital.com
EBA Renewable Energy
Subcommittee Spring 2016

Rick Umoff
Solar Energy Industries Association
Regulatory Counsel and Director
March 29, 2016
About SEIA

• U.S. National Trade Association for Solar Energy
  • Founded in 1974
  • 1,000 member companies from all 50 states
• Our Mission: Build a strong solar industry to power America
• Our Goal: 100 gigawatts of solar capacity by 2020
Solar as an Economic Engine

• Nearly 209,000 American workers in solar – more than double the number in 2010 – at more than 8,000 companies

Investment in Solar has increased 10x since 2006

Yearly U.S. Solar Investment

Source: SEIA/GTM Research U.S. Solar Market Insight Q4 2014
greentechmedia.com/research/ussmi;
NREL, Concentrating Solar Power Projects
2015 by the Solar Numbers

• Estimated 7.4 GW of solar installed in 2015
  – 19% growth in Photovoltaic (PV) market over 2014
  – Compound annual growth rate of 58% since 2010

• Over 27 GW of total solar capacity installed
  – Generates enough electricity to power 5.7 million homes

• Solar prices dropped 3% from 2014
  – Prices have dropped over 70% since 2006
  – Utility-Scale PPAs now signed for $0.04/kWh or less

• Solar has reached 1% of total generation
  – Up from 0.1% just 5 years ago
  – Expected to hit 3.5% by 2020

Source: 2015 projections from SEIA/GTM Research U.S. Solar Market Insight
Projected 2015 Year-End Cumulative Solar PV Capacity (MWdc)

- California, 11,710
- Arizona, 2,036
- New Jersey, 1,717
- North Carolina, 1,996
- Nevada, 1,165
- New York, 672
- Massachusetts, 1,026
- Hawaii, 623
- Texas, 560
- Georgia, 447
- Others, 3,817

Source: 2015 projections from SEIA/GTM Research U.S. Solar Market Insight
Extending the ITC

• Extended at 30% through the end of 2019
  – Drops to 26% in 2020 and 22% in 2021
  – After 2021, Commercial credit drops to 10%, Residential credit expires

• Commence Construction language added
  – Projects must be placed in service before the end of 2023
What ITC Extension Means

• Addition of 72 GW from 2016-2020
  – 25 GW more than without the ITC

• By 2020, nearly 100 GW of solar installed
  – Enough to power 20 million homes

• From 2016-20, more than 220,000 jobs added
  – By 2020, more than 420,000 solar industry jobs, or
    180,000 more than without ITC extension

• $132 Billion in investment from 2016-20
  – By 2020, Solar adds $30 billion annually to the economy

• Fully Offsets any additional emissions from lift of Oil Export Ban by 2019

Source: From SEIA
https://www.seia.org/research-resources/impacts-solar-investment-tax-credit-extension based off GTM Research
Preliminary U.S. PV Forecast_Omnibus ITC Extension
2016 and Beyond

• Over 13 GW of solar expected in 2016
  – Nearly double the 2015 total
  – Equal to half of the solar capacity online today

• Developers add to massive project pipeline
  – Build-out pressure decreases with extension
  – Nearly 19 GW contracted BEFORE extension of ITC

• New States enter the mix
  – Continued price declines, ITC Extension, Clean Power Plan bring formerly marginal states into play

Source: GTM Research
Preliminary U.S. PV Forecast, Omnibus ITC Extension
Net Metering

- Under current NEM rules, distributed generation solar at grid parity in 20 states

Source: Shayle Kann, GTM Research
U.S. Solar Market Insight Conference
Keynote: The Future of Solar
Net Metering

- If export rate is cut in half, 0 states at grid parity
- Nevada outcome looms large, but not emblematic of NEM policy nationally

Source: Shayle Kann, GTM Research
Policy Should be Based on Full and Fair CBA of DER
Clean Power Plan

- CPP will drive 20 GW of additional capacity by 2030
- Will open up solar markets in additional states
  - Already seeing procurement in preparation for CPP

EPA Projected Solar Capacity in 2030

Source: EPA
Other Key Policy Trends

• Rate Design
  – Smart rates that encourage customers to take control of their electricity use and enable renewable and distributed resources

• Renewable Portfolio Standards/Low Carbon Portfolio Planning
  – State RE goals designed to drive in state investment and balance state energy portfolios (HI; VT; WA; OR; NY expand RPS) / DG carve out / Low carbon IRPs being discussed

• Utility Business Model Reform
  – Increased transparency around distribution planning; re-aligning utility incentives to embrace renewable energy and distributed energy trends (CA; NY; MA; MN)

• Reduction of Regulatory Barriers
  – Streamlined interconnection and permitting standards

• Community Solar
  – Shared solar programs that expand customer opportunities to participate in solar market

• Corporate Offtakers
  – Interest on part of large corporate buyers to purchase renewable energy directly or in partnership with utility

• Incentive Programs
  – Declining incentives that allow the industry to scale up to grid parity in marginal markets
Other Issues to Watch

• **Access to Capital**
• **Workforce Development**
  – Industry will double number of employees over 5 years
  – Committed to hiring 50,000 veterans by 2020
• **Technology Advances**
  – Storage, Electric Vehicles, Continued Price Declines
• **Grid Integration**
  – What does the grid of the future look like?
Thank You