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Engaging Private Capital to Drive Clean Energy Finance

The Broadcast will Begin at 1:00pm EST

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Katie Kramer
Vice President
Council of Development Finance Agencies
Columbus, OH

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CDFA // BNY MELLON
DEVELOPMENT FINANCE
WEBCAST SERIES
Engaging Private Capital to Drive Clean Energy Finance

Panelists

Rena Nakashima, Moderator
Senior Project Manager
BNY Mellon

Karen Wayland
Deputy Director for State and Local Cooperation
U.S. Department of Energy

Doug Sims
Director of Strategy and Finance
Natural Resources Defense Council's Center for Market Innovation

Andrew McAllister
Commissioner
California Energy Commission
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Engaging Private Capital to Drive Clean Energy Finance

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Engaging Private Capital to Drive Clean Energy Finance

Karen Wayland
Deputy Director for State and Local Cooperation
U.S. Department of Energy

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Energy Investment Partnerships
Dr. Karen Wayland
Energy Policy and Systems Analysis
U.S. Department of Energy
• A technical document co-authored by CDFA under the supervision of the DOE.
• Details unique case studies across the United States where EIPs are most successfully utilized.
• State profiles include CA, CT, FL, HI, NJ, NY, OH, OR
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<tr>
<th>State</th>
<th>Entity</th>
<th>Programs (in report)</th>
<th>Legal Structure</th>
<th>Capitalization</th>
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<td>CA Alternative Energy &amp; Advanced Transportation Financing Authority</td>
<td>PACE Loss Reserve; CA Hub for Energy Efficiency Financing</td>
<td>State agency</td>
<td>State allocation + CA Public Utility Commission allocation</td>
<td>Residential &amp; commercial; efficiency &amp; renewables</td>
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<td>CA Infrastructure and Economic Development Bank</td>
<td>CA Lending for Energy and Environmental Needs Center</td>
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<td>Self-capitalized</td>
<td>State and local govt.; efficiency, renewable, water conservation, &amp; distribution</td>
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<td>CT Solar Lease; Energize CT Smart E-Loan; Commercial PACE; CT Solar Loan</td>
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<td>Systems Benefits Charge + RGGI funds + U.S. Dept. of Energy grant + private investments + fees</td>
<td>Residential &amp; commercial; efficiency &amp; renewables</td>
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<td>Clean Energy Loan Fund</td>
<td>Nonprofit, CDFI</td>
<td>U.S. Dept. of Energy grant + private investments</td>
<td>Residential &amp; commercial; efficiency &amp; renewables</td>
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<td>HI</td>
<td>Hawaii Green Infrastructure Authority</td>
<td>Green Energy Market Securitization</td>
<td>State agency</td>
<td>Bonds + utility fees</td>
<td>Residential &amp; commercial; efficiency &amp; renewables</td>
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<td>NJ</td>
<td>NJ Board of Public Utilities</td>
<td>NJ Clean Energy</td>
<td>State agency</td>
<td>Self-capitalized</td>
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<td>NJ</td>
<td>NJ Energy Resilience Bank</td>
<td>Wastewater and Water Treatment Plant Funding</td>
<td>State agency</td>
<td>U.S. Dept. of Housing &amp; Urban Development grant</td>
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<td>NY</td>
<td>NY Green Bank</td>
<td>Clean energy financial products and advisory services</td>
<td>Division of a state agency, NYSERDA</td>
<td>Allocation of uncommitted Efficiency &amp; Renewable Portfolio Standard &amp; System Benefits Charge funds</td>
<td>Residential &amp; commercial; efficiency &amp; renewables</td>
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<td>OH</td>
<td>Greater Cincinnati Energy Alliance</td>
<td>Greater Cincinnati Home Energy Loan; Building Communities Loan</td>
<td>Nonprofit</td>
<td>U.S. Dept. of Energy grant + private impact investment + fees</td>
<td>Residential &amp; nonprofit; efficiency &amp; renewables</td>
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<td>OH</td>
<td>Port of Greater Cincinnati Development Authority</td>
<td>Greater Cincinnati PACE</td>
<td>Local agency</td>
<td>Fees + county &amp; city allocation</td>
<td>Commercial; efficiency &amp; renewables</td>
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<tr>
<td>OR</td>
<td>Energy Trust of OR</td>
<td>General efficiency incentives</td>
<td>Nonprofit</td>
<td>System Benefits Charge</td>
<td>Residential &amp; commercial; efficiency</td>
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<td>OR</td>
<td>Enhabit</td>
<td>General efficiency incentives</td>
<td>Nonprofit</td>
<td>Fees + U.S. Dept. of Energy grant</td>
<td>Residential; renewables</td>
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<tr>
<td>OR</td>
<td>Craft3</td>
<td>Home Energy Efficiency Loan</td>
<td>Nonprofit, CDFI</td>
<td>Private investments + private contributions + grants</td>
<td>Residential; efficiency</td>
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EIP: What Is It & How to Get Started
February 23, 2016 | 1:00PM – 5:00PM (EST)
Surveying existing energy investment partnerships with a discussion about best practices and methodology for implementation.

EIP: Market Assessment & Product Offerings
March 22, 2016 | 1:00PM – 5:00PM (EDT)
Determining a region's renewable energy needs and identifying the unique financing programs and gaps an EIP could fill.

Access to Capital & Leveraging Existing Financing Tools
April 26, 2016 | 1:00PM – 5:00PM (EDT)
Understanding how to assemble an EIP and utilizing existing financing tools and programs.

Measuring Impact & Data Collection
May 19, 2016 | 1:00PM – 5:00PM (EDT)
Evaluating successful EIPs and understanding the necessary data to collect to demonstrate impact.
Engaging Private Capital to Drive Clean Energy Finance

Doug Sims
Director of Strategy and Finance
Natural Resources Defense Council’s Center for Market Innovation

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ENGAGING PRIVATE CAPITAL TO DRIVE CLEAN ENERGY FINANCE

Introducing the Global Green Bank Network

CDFA/DOE WEBINAR JANUARY 19, 2016

Doug Sims, Director of Strategy and Finance
Natural Resources Defense Council’s Center for Market Innovation
## What investment shifts are needed for a clean energy future?*

<table>
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<tr>
<th>Total energy supply investment stays at $40T to 2035 but dollars shift from fossil fuels to clean electricity and energy efficiency</th>
<th>Upfront capital costs are higher</th>
<th>More investment is required in emerging markets (e.g., India, China, Brazil) where markets are less mature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy resources are increasingly “distributed” at homes and businesses, where access to reasonably priced capital can be limited</td>
<td>Innovative large scale technologies must be deployed quickly and at low cost (e.g., offshore wind) but a limited # of firms and lenders have capital and experience</td>
<td></td>
</tr>
</tbody>
</table>

*IEA, 2014, World Energy Investment Outlook
What are Green Banks?

Green banks are publicly capitalized financial intermediaries created to partner with the private sector to increase investment in clean energy and bring clean energy financing into the mainstream.

Through targeted, innovative strategies, Green Banks “crowd-in” the private investment needed to meet the sizable capital demands required to build a global clean energy platform.
What role do Green Banks play?

- The clean energy transition depends on innovative technologies and infrastructure, redesigned markets and corrected incentives.
- These changes in the status quo disrupt business-as-usual finance and investment, and lenders and investors may be slow to gain confidence.
- Green Banks *accelerate the transition to a new BAU* by reducing real and perceived risk, increasing liquidity and driving the development of underwriting criteria, performance standards, financial products, standard contracts and aggregation vehicles.
- Green Banks fulfill this “market transformative” role because neither traditional government programs, with their limited engagement with markets, nor the private sector, with its competitive pressures and fiduciary constraints, can reliably achieve this outcome.
- Green Banks create value for (ratepayer and taxpayer) money.
What are the early indicators of Green Bank success?

CGB has increased clean energy investment nearly 4x in 3 years. Based on Connecticut’s market size, growth rate, and public-private leverage ratio, a Green Bank in every state in America would yield $200 billion annually within 5 years, with 90% of the funds coming from private sources and all taxpayer contributions returned over 10 to 20 years.

The UK Green Investment Bank is now the most active investor in the UK’s renewable energy and energy efficiency sectors and is leveraging private investment at a 3 to 1 ratio.
## Connecticut Green Bank results

<table>
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<tr>
<th>Model</th>
<th>FY 2000-FY 2011 (CCEF)</th>
<th>FY 2012-FY 2015 (CGB)</th>
<th>FY 2016 Targets (CGB)</th>
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<tr>
<td>Model</td>
<td>Subsidy</td>
<td>Financing</td>
<td>Financing</td>
</tr>
<tr>
<td>Years</td>
<td>11</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Energy (MW)</td>
<td>43.1</td>
<td>123.1</td>
<td>110</td>
</tr>
<tr>
<td>Investment ($MM)</td>
<td>349.2</td>
<td>608.3</td>
<td>670</td>
</tr>
<tr>
<td>Leverage Ratio</td>
<td>1:1</td>
<td>5:1</td>
<td>10:1</td>
</tr>
<tr>
<td>% as Loans</td>
<td>10</td>
<td>50</td>
<td>80</td>
</tr>
</tbody>
</table>

Deploying **more** clean energy at a **faster** pace while using ratepayer-taxpayer resources **efficiently**

### REFERENCES
2. Board approved targets for FY 2016
Why is the Green Bank Network needed?

- Green banks aim to accelerate scale up of clean energy markets by cutting down on the time it takes for best practices to proliferate in the market.
- They seek to work on an “open source banking” basis --
  - Information on investments is developed and shared with deal participants, among green banks and with the market generally
  - Standardization of contracts and structures reduces risk and facilitates aggregation and new market entrants
- But Green Banks need to collaborate more quickly and systematically to get rapid, system-wide results.
- Investing in a joint collaborative platform focuses attention and efforts, leverages existing investments and drives down costs.
- The Green Bank Network will create a platform for Green Banks.
What is the Green Bank Network?

- Now in its design phase, the Green Bank Network was announced in Paris at the OECD COP21 event to much enthusiasm and received positive press coverage.

- Six participating Green Banks - UK Green Investment Bank, Connecticut Green Bank, NY Green Bank, Green Fund (Japan), Malaysian Green Technology Corporation and Clean Energy Finance Corporation (Australia) - are working with the Coalition for Green Capital (“CGC”) and NRDC to design, staff and build the Network, with funding from ClimateWorks.

- Over the coming year, the Project Team will create the Network as a stand-alone, member-driven organization with ongoing funding and activities.

- Public updates will periodically be given in 2016, with full launch anticipated for late 2016 or early 2017.
What are the Network’s goals and structure?*

(1) Collaborate & Exchange among GBs

(2) Attract More Capital to Clean Energy

(3) Help Create New GBs

Green Banks
- UK Green Investment Bank
- Connecticut Green Bank
- NY Green Bank
- Green Fund (Japan)
- Malaysian Green Technology Corporation
- Clean Energy Finance Corporation (Australia)
- (others)

*As of January 2016.*
Goal 1: Collaborate and exchange information

The Network will collect and organize information that its Members deem relevant, such as:

• Financing strategies, tactics and deal structures
• Underwriting methods, metrics, M&V techniques, standards, etc.
• Case studies and qualitative information on deals (e.g., “lessons learned”)
• Aggregated cross-bank data
• Marketing and demand creation approaches
• Transaction documentation
Goal 2: Attract more capital to clean energy investment

GBN will work with its key outreach targets (commercial lenders, Development Finance Institutions (DFIs) and institutional investors) to:

• Capture, incorporate and share target know-how on clean energy financing in developed and emerging markets

• Identify markets, structures, policies and processes that will increase flow of investment and the deployment of clean energy
Goal 3: Help create new Green Banks

With an increasing number of Green Banks in operation, best practices are emerging in Green Bank creation. The Network will:

• Engage with policymakers and key stakeholders in target nations/regions to support Green Bank creation process

• Adapt and identify key steps necessary to systematically support new GB formation

• Provide technical assistance together with local partners

• Channel support from Network members to new Green Banks

• Connect new Green Banks to capital providers

• Invite new Green Banks to join the Green Bank Network
How can you track the Network’s development?

- Webinar series launches in February
- Web landing page planned for 2Q 2016
Thank You

For more information contact:
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Jeff Schub (jeff@coalitionforgreencapital.com)
Engaging Private Capital to Drive Clean Energy

Finance

Andrew McAllister

Commissioner
California Energy Commission

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Engaging Private Capital to Drive Clean Energy Finance

Commissioner Andrew McAllister
California Energy Commission

January 19, 2016
EE Finance in California - Overview

California Infrastructure and Economic Development Bank

California Public Utilities Commission

CALIFORNIA ENERGY COMMISSION

CALIFORNIA ALTERNATIVE ENERGY AND ADVANCED TRANSPORTATION FINANCING AUTHORITY
California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA)

The Office of the State Treasurer established CAEATFA to provide more affordable financing and to leverage private capital, both of which fall within the Treasury’s core functions.

CAEATFA has administered several clean energy-related programs, including Qualified Energy Conservation and Clean Renewable Energy Bonds; advanced transportation, and advanced manufacturing projects; and a loan loss reserve (LLR) program for residential energy efficiency retrofits.
CAEATFA in Collaboration with Partners

CAEATFA, housed in the State Treasurer’s Office, works with a variety of partners to support clean energy investments, including:

- local governments,
- public and investor-owned utilities (IOUs),
- the California Public Utilities Commission (CPUC) and California Energy Commission,
- private sector clean energy developers,
- commercial lenders,
- private financial institutions, and
- state bond-financing agencies.
Property Assessed Clean Energy (PACE) Loss Reserve Program- Finances renewable energy and energy efficiency projects. Focused on supporting the challenges faced by residential PACE programs.

California Hub for Energy Efficiency Financing (CHEEF)- Finances a diversity of credit enhancements, including on-bill repayment (OBR) and loss reserves (for IOU territory). Focused on residential and nonresidential energy efficiency projects.
CHEEF Residential

CHEEF Programs, administered by CAEATFA, directs 3 Residential pilot programs, with an emphasis low & moderate income (LMI) households.

Residential Pilots
1. Residential Energy Efficiency Assistance Program
2. Energy Financing Line Item Charge
3. Master-Metered MF Financing Program with OBR
CHEEF Nonresidential

CHEEF’s nonresidential pilots will assess OBR’s value to private lenders. Two of the nonresidential programs target small businesses, while the third is available to businesses of all sizes.

Nonresidential Pilots

1. OBR for Small Business with Credit Enhancement
2. Small Business Sector Lease Providers: Sub-Pilot with Credit Enhancement
3. Nonresidential OBR without Credit Enhancement
California Infrastructure and Economic Development Bank (IBank)

IBank’s mission is to finance public infrastructure and private economic development that promote economic growth, protect and sustain the environment, support clean energy and efficiency, revitalize communities, and enhance the quality of life for the citizens of California.

IBank has exercised its broad statutory authority to approve:

(1) direct financings to state and local governmental entities and public-benefit, tax-exempt, nonprofit entities for infrastructure projects; (2) conduit bond financings for manufacturing businesses, nonprofit entities, and public entities; and (3) other financing transactions important to the state of California.
IBank - CLEEN

California Lending for Energy and Environmental Needs (CLEEN) Center
Financing for various state agencies and local governments, for projects that reduce carbon/pollution. CLEEN enables the protection of the environment and helps the state achieve its GHG reduction goals.

Eligible CLEEN Center applicants include local and state government departments, agencies, commissions, cities, counties, nonprofit corporations; as well as schools and hospitals.

CLEEN Center funding is available in amounts ranging from $500,000 to $30 million.
IBank - SWEEP

Statewide Energy Efficiency Program (SWEEP) operates within the CLEEN Center.

- For municipal, university, school, and hospital borrowers
- Targets comprehensive clean energy improvements to new and existing facilities.

Examples include, City of Huntington Beach- Street light Acquisition and Light Emitting Diode (LED) Retrofit Project.

- Nearly $7.7 mil direct financing
- Retrofit w/new LED consumes 50% less energy
- Saves the City money, creates jobs and supports small businesses
California Energy Commission

PACE programs

The Energy Commission funded PACE programs during the ARRA period, which are now under the Local Government Commission (LGC):

- The City and County of San Francisco
- The City of Los Angeles
Submit your questions to the panel now by using the GoToWebinar control panel.

Energy Investment Partnerships Webinar Series
How State and Local Governments Are Engaging Private Capital to Drive Clean Energy Investment
February 23, March 22, April 26, May 19 | 1:00-5:00pm Eastern
CDFA Texas Webinar: State Financing Programs for Economic Development
January 20, 2016
2-3:30pm (CST)

Fundamentals of Economic Development Finance WebCourse
January 27-28, 2016
Daily: 12-5pm (EST)

Intro Bond Finance WebCourse
February 24-25, 2016
Daily: 12-5pm (EST)
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Tuesday, February 16 @ 1:00 pm EST
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