Moving to Clean Energy Platform: Fast, Popular, Profitable and Global

OECD Green Bank Workshop
May 20, 2015
Situation

- The 4 A’s of Energy Supply: Abundant, Affordable, Available to All
- The 3 C’s for Energy Consumers: Clean, Cheap, Convenient
- Remove market barriers to investment in clean energy solutions
- Build political support for clean energy solutions
- Clean Energy Solutions Investment Increase Global GDP
- Public-Private Partnerships Necessary To Build Investment

*Green Bank Focus
Global Energy Demand Requires $2-3 Trillion Investment Per Year

Global Energy Investment Needs by 2035 - $44 Trillion
*Have to Redirect +$20 trillion from Dirty to Clean*
Progress

• Technology lowering cost of renewables
• Global savings available for productive investment
• Global awareness of climate change soaring
• Clean energy finance institutions being created
• $400B in annual global low-carbon investment
Zero Hour: New Principles

• Don’t wait for international treaty or cash grants
• Don’t wait for “better” technology
• Clean energy price is what matters to consumers
• Different countries will choose among regulation, taxation, subsidies to promote clean energy
• But everyone needs public-private investing
• Align private sector with public goals
Green Bank Paradigm

• Make clean energy solutions affordable

• Government financing at cost of capital; private sector financing to be profitable

• Maximize size, growth of clean energy solutions markets

• Maximize private/public investment ratio

• Clean energy solutions out-compete carbon
Clean Energy Finance Obstacles

- Global capital unfamiliar with clean energy solutions
- Clean energy finance institutions few in number
- P3 forms not broadly known
- Consumer demand unformed, disaggregated, blocked by bottlenecks
- Centralized vs. distributed unresolved tension
- Incumbents pricing downwards to thwart clean energy entry
Green Banks Re-invent Public Private Partnership Investing

- Define, Prioritize National Clean Energy Markets
- Invigorate Supply Chain
- Use Big Data, Social Media to Create Demand
- Aggregate projects to build scale
- Bring Private Sector Lending to Scale
Rapid growth in mobile

The world in 2020
By 2020 80% of the adults on earth will have a smartphone

Source: Evans, Benedict, “Mobile is Eating the World,” Andreessen Horowitz.
Efficiency+ Mobile

- Kansas City, MO: 62°
- Annapolis, MD: 60°
- Fort Worth, TX: 95°

- KATE'S HOUSE: 69°
- HALLWAY: 65°
- LIVING ROOM: 75°

UFER UNDER 10 MIN: 68°
Solar + Mobile
Green Bank Mission

- Create Institutions
- Enrich Ecosystem: E-Commerce, Social Networks, Green Bonds, Governance Improvement, Measurement
- Popular Opinion (Science Winning; Divestment; Corporate Responsibility; Green Funds)
- New capital suppliers: Corporate investments, local/state funds, pension funds, endowments, foundations, social impact investors
Tactics at Work: Use Green Banks to Transform Markets

Deploy public capital efficiently to maximize private investment

Implement new market structures and lower price to spark demand

Efficient Capital Markets

Expand Clean Energy Market

Grow Consumer Demand
Green Bank Model

Create New Public Institution to Channel Public & Private Investment

1. Public $’s capitalize green bank
2. P3 attracts private capital
3. Private investors fill market gaps

Government

Green Bank

Private Investors

Low Carbon Projects

Public Investment Payback

Private Investment Payback

Consumer Savings, Job Creation, Taxpayers Protected, GHG Reductions
## Green Banks Lower Price of Clean Energy

### Price of Solar Generated Electricity in Connecticut (cents/kwh)

<table>
<thead>
<tr>
<th>Solar Install Cost ($/Watt)</th>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
</tr>
</thead>
<tbody>
<tr>
<td>$4.5</td>
<td>21.0</td>
<td>18.7</td>
<td>16.3</td>
<td>14.0</td>
</tr>
<tr>
<td>$4.0</td>
<td>17.4</td>
<td>15.4</td>
<td>13.3</td>
<td>11.2</td>
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<tr>
<td>$3.5</td>
<td>13.9</td>
<td>12.1</td>
<td>10.3</td>
<td>8.5</td>
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<tr>
<td>$3.0</td>
<td>10.3</td>
<td>8.8</td>
<td>7.2</td>
<td>5.7</td>
</tr>
</tbody>
</table>

More Green Bank Capital Lowers Price!


Assumptions: Developer Equity Return is 15%, Tax Equity Return is 12%, total leverage is 40%, Commercial Debt is 6% for 6 years, Green Bank Debt is 2% for 15 years, 15-Year REC price of $0.03/kwh, 6-year state incentive of $0.225/kwh. Structure is 20% Green Bank Debt, 20% Commercial Debt, 48% Tax Equity and 12% Developer Equity.
Case Study: CT Green Bank

1. Bipartisan legislation in ‘11 to create new Institution
   - Quasi-state corporation; separate board
   - Goals linked to state energy plan
   - ~$40M in annual public capital (SBC & RGI) + borrowing authority

2. Uses P3 finance structures to pull in private investors
   - Loans, leases, credit enhancements, PACE, securitizations
   - Products can achieve $10:$1 private: public leverage ratio

3. Rapidly expanding distributed power & efficiency investing
   - Private capital already flooding into new markets (solar loan, commercial efficiency), CTGB can pull back
Case Study: Efficiency Investment

Centralized State-wide Green Bank Administration

Green Bank

Commercial Building

Tax Collector

Private Investors

1. Loan

2. PACE Assessment

3. Loan Payment

4. Portfolio Securitization + Credit Support

Cash Purchase

1234
**Successful P3 Investment**

*Green Bank Accelerated Annual Deployment 5X!*

<table>
<thead>
<tr>
<th></th>
<th>CT Grant Authority FY 2000 – 2011</th>
<th>CT Green Bank FY 2012 – 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years in Operation</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>Total Investment</td>
<td>$349 Million</td>
<td>$350 Million</td>
</tr>
<tr>
<td>Public/Private</td>
<td>$168/$181 Million</td>
<td>$100/$250 Million</td>
</tr>
<tr>
<td>Renewable Energy Installed</td>
<td>43.1 MW</td>
<td>65.3 MW</td>
</tr>
</tbody>
</table>
Green Banks Open to Partners

- Banks
  - Commercial banks*, local lenders*, investment bank project finance
- Specialized Capital
  - Private equity, hedge funds, high net-worth tax avoiders
- Institutional Capital
  - Pension funds*, asset managers*
- Mission-driven Capital
  - Social Impact Investors, Development Finance Institutions (GCF)
- Government; GCF
- Utilities

*Newly available sources
# New Markets, New Institutions

<table>
<thead>
<tr>
<th>State Green Banks</th>
<th>National Green Banks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecticut Green Bank</td>
<td>Australia Clean Energy Finance Corporation</td>
</tr>
<tr>
<td>New York Green Bank</td>
<td>UK Green Investment Bank</td>
</tr>
<tr>
<td>New Jersey Resilience Bank</td>
<td>Japan Green Fund</td>
</tr>
<tr>
<td></td>
<td>GreenTech Malaysia</td>
</tr>
<tr>
<td>NEW! California CLEEN Center</td>
<td></td>
</tr>
<tr>
<td>Hawaii Green Infrastructure Authority</td>
<td></td>
</tr>
<tr>
<td>Rhode Island Infrastructure Bank</td>
<td></td>
</tr>
</tbody>
</table>

**State Green Banks In Development:** MN, MD, DE, VT & NV  
**International Developments:** OECD leading global green bank initiative
Critical Roles for Finance Philanthropy

- Capability Building
- Institution Creation
- Social Networking; Information Exchange
- Seed Capital; Demonstration Projects
- Catalyst for Other Financing Sources
- State, Regional, Nation-State, International
Thank You

Reed Hundt, CGC, Chief Executive Officer
www.coalitionforgreencapital.com
Swiss Technology Fund
20.05.2015
Swiss climate policy

Target CO\textsubscript{2}-Act 2013-2020:
-20\% GHG-Emissions Reduction until 2020 compared to 1990

Reduction measures:

- Emissions trading especially for large CO\textsubscript{2}-intense companies
- CO\textsubscript{2} levy: incentive fee on fossil thermal fuels
- CO\textsubscript{2} emissions regulations for passenger cars
- CO\textsubscript{2} emissions compensation
Mission

• Considerable **reduction of greenhouse gas emissions** in the long run (directly or indirectly)

• Notable contribution to strengthen Switzerland as a center for **innovation in clean technologies**
  ➢ Mobilizing private investment with limited public funding

• Optimal **utilization of funds capital**
Why loan guarantees

- **Politicians**: Less state intervention
- **Start-Up Firms**: Corporate lending without track record
- **Established companies**: Lower lending costs
- **Investors**: Lower risk perception
- **Government**: leverage fund deposit (risk structure), capital flow to companies exceeds contribution to fund

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Innovation life cycle

<table>
<thead>
<tr>
<th>Research and Development</th>
<th>Applied research</th>
<th>Lab-scale prototype</th>
<th>Market-ready prototype</th>
<th>Certification and initial sales</th>
<th>Scale-up and export</th>
</tr>
</thead>
</table>

Existing public support programs

**Technology Fund for Commercialization Phase**
Conditions and Organisation

Conditions

- Joint guarantees: CHF 50’000 to CHF 3 million
- Maximum term: 10 years
- Fund size: CHF 150 million (can be increased to max. CHF 500 million)
- Coverage: max. 60% of project total financing

Organisation

- Investment Committee
  - public/private
- Steering Committee
  - FOEN/SFOE (public)
- External Management Agency
  - Private
- Specialist Service
  - FOEN
First Experiences

First guarantee issued in March 2015

- SMEs are interested in the offering
- Several lenders expressed willingness to work and co-invest
- Main challenge: make the Technology Fund well-known and well-used
Many thanks

Questions?

I DON'T BELIEVE IN GLOBAL WARMING

More detailed information on www.technologyfund.ch

Silvia Ruprecht, FOEN, Switzerland
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California Economy

• California is the largest, richest, and most diverse economy in the U.S.
• 7th largest economy in the world; GSP $2.2 trillion
• No. 1 state for Manufacturing and Technology
• Nation’s most Fortune 500 companies
• Global leader in agriculture output and export
California Economy by the Numbers

• 2014: added 498,000 jobs
• Economy has grown 4.1% annually since 2011
• July 2015 projected State budget surplus: $5 billion
• California-based technology companies have produced $692 billion in the past 12 months
• Manufacturing: $239 billion in revenue in 2013
• Agriculture produced $21 billion in revenue in 2013
California Energy Production and Efficiency Goals

- Aggressive but Achievable
- Multi Pronged Approach
  - State Treasurers Office
  - California Energy Commission
  - California Infrastructure Bank
  - California Water Resources Board
About IBank

- IBank was created in 1994 to finance public infrastructure and private development that creates good jobs, a strong economy, and a clean environment to improve the quality of life for the people of California.
- Infrastructure and Economic Development
IBank Programs

- Revolving Fund Loans
- California Lending for Energy and Environmental Needs Center (CLEEN)
- Bond Program
- Small Business Finance Center
Primary Infrastructure Focus

The Mush Market

M
Municipalities

U
Universities

S
Schools

H
Hospitals
Infrastructure State Revolving Fund (SRF)

- Provides financing to public agencies and non-profit corporations for a wide variety of infrastructure and economic development projects.
- ISRF Program funding is available in amounts ranging from $50,000 to $25,000,000 (or more with Board approval), with loan terms up to 30 years.
Infrastructure State Revolving Fund Program (SRF)

Types of eligible projects:

- Power
- Public transit
- Streets & highways
- Water
In 2014 IBank established:

- California Lending for Energy and Environmental Needs Center (CLEEN Center)
- Statewide Energy Efficiency Program (SWEEP)
**SWEEP**

**Generation**
- Solar, Wind, Biomass, Hydroelectric

**Conservation**
- EE Retrofits, LED lights, Building automation and controls

**Other**
- Energy storage, transmission, and distribution; EV charging stations
Variety of Financing Mechanisms:

- Direct Loans
- Tax Exempt Bonds
- Green Bonds
- Loan Guarantee
California Drought

Percentage of U.S. Produce that comes from CA:

- Artichokes 99%
- Almonds 99%
- Garlic 98%
- Tomatoes 96%
- Olives 96%
- Strawberries 92%
- Carrots 81%

Data courtesy of The Weather Channel
Actions Taken

Project funding for:

- Mandated Reductions
- Desalinization Plants
- Synthetic Turf

*This represents new projects which will require financing*
Water Savings

Variety of Financing Mechanisms:

- Natural grass lawns require 55 gallons of water per sf annually
- 50-70% of household water consumption is used for irrigation
- In 2013 synthetic lawns will save over 2.5 billion gallons of water
1. CREATION OF THE G20.IPEEC EEFTG

• The G20 Energy Efficiency Action Plan specifies that participating countries will work under IPEEC to create an Energy Efficiency Finance Task Group (EEFTG), to facilitate a high-level dialogue with representatives of the international finance community.

• With solicited support from: UNEP FI, the OECD, the Clean Energy Ministerial, the World Bank, EBRD, the Energy Efficiency Financial Institutions Group and others.
1. STRUCTURE OF THE G20.IPEEC EEFTG

EEFTG Country Representatives
France-Mexico co-chairs (11 members)

Energy Efficiency Finance Task Group
(Composed of c.40 Participants)

Co-conveners:
OECD
UNEP Finance Initiative
CLEAN ENERGY MINISTERIAL

Secretariat

Regional Participants
Private Financial Institutions
Public Financial Institutions
International Organizations
Collaborating Initiatives / Global Experts
2. EE FINANCE WHY? + ROLE OF EEFTG

- According to IEA studies, increasing energy efficiency finance by a factor of 8x is required for countries to remain on a 2 degree scenario.

- Concrete, short-term outcomes are important. The EEFTG can bring to the G20 meeting November in Turkey and to COP21 specific, tangible contributions to its “positive agenda”, in the form of policy and markets principles that can be endorsed and supported by G20 Leaders.

- These may include suggestions to explore possible sectorial actions, partnerships with large industries, sources of financing (both public and private) and proposals for financial tools.
3. ENERGY EFFICIENCY
MOBILIZING FINANCE

Strategic public finance:
Growing but constrained

Real economy signals:
market failures, weak regulation

Financial system:
emerging interest but fragmented

USD 7.3 TRILLION
per year environmental externality

4°
3-4 degrees warming by 2050

USD 40-90 BILLION
Annual shortfall in clean energy R&D

USD 693 TRILLION
Size of OTC derivatives market in 2013 - good for real economy?

USD 674 BILLION AND 27 TRILLION
Annual investment in fossil fuels and value at risk by stranding assets

CLEAN USD 1 TRILLION
Annual shortfall in incremental financing of green infrastructure

Graph Source: “Aligning the financial system with energy efficiency” Presentation by Nick Robbins – UNEP, March 2015
Energy Efficiency has been described as the EU’s largest energy source:

1. One of the most cost effective ways to enhance the security of its energy supply

2. One of the most cost effective ways decrease the emissions of greenhouse gases and other pollutants

3. EE investment is the most cost effective manner to reduce the EU’s reliance, and expenditure, on energy imports costing over €400 billion a year
4. INCREASING EE INVESTMENT FLOWS IN THE EU

Energy Efficiency Investments

Characterized by their MULTIPLE BENEFITS

Direct energy returns

Additional value streams to private owners and asset operators

Significant Public Benefits

- Increased employment
- Lower emissions
- Increased energy security and reduced dependence on foreign imports
- Improvements to a country’s fiscal balance
The Energy Efficiency Financial Institution Group ("EEFIG") was established to determine how to overcome the well documented challenges to obtaining long-term financing for energy efficiency.

EEFIG’s work has benefited

- Active input of some 120 expert participants (8,000 hours)
- 40% of the EEFIG participants either work for, or represent the views of, financial institutions. Participation from financial institutions, policy makers, finance users (buildings, industry or SME) and energy efficiency experts

EEFIG’s Mandate

1. What are the most imminent challenges that must be overcome?
2. Who would be the right party to address them?
3. What should the European Commission/ EU do?
6. EE INVESTMENTS IN EU BUILDINGS

- 75% of Standing EU Buildings Built with no, or minimal, energy-related building codes
- 75%-90% of today’s buildings still in use in 2050
- Low Demolition Rates
  - Low Renovation rates
  - Low Highly Energy Efficient New-build

Europe’s EE challenge in buildings mainly concerns the energy efficient renovation and investments in its existing buildings stock.

Buildings 40% share in final energy consumption in EU-28

Graph Source: Eurostat
7. EE INVESTMENTS IN EU BUILDINGS, EEFIG ASSESSMENT

EEFIG Participants Identified
16x EE Financial Instruments

7x “Mature” Instruments
- Widely used to fund energy efficiency investments directly or indirectly

9x “Emerging” Instruments
- Are newer but have a varying potential to increase energy efficiency investing in EU buildings

Highlights from EEFIG’s Survey, Working Group & Discussions

1. **Dedicated credit lines** have the widest applicability in all buildings segments

2. **Energy Performance Contracting** is growing in commercial and public buildings

3. **Risk-sharing facilities** are proving very useful

4. EE investing through **direct and equity investments in real estate and infrastructure** is important

5. **Subordinated loans and leasing** are presently “niche” instruments for buildings EE

6. Good potential for **on-bill repayment and on-tax finance (PACE)**

7. EE funds and Energy Service Agreements show good potential only in commercial and public buildings
8. EE INVESTMENTS IN EU BUILDINGS, EEFIG RECOMMENDATIONS

To Policy Makers

- Existing Buildings Regulations to be fully implemented, harmonised and consistently enforced across EU Member States
- Future Regulatory Pathways for EU Buildings should provide concerted and consistent regulatory pressure to improve the EE of buildings
- High quality decisions and low transaction costs can only be delivered by easily accessible data and standard procedures
- Reporting, accounting and procurement procedures must facilitate, and not hinder, appropriate energy efficiency investments in public buildings
- Reach “at-scale” energy efficiency upgrade of residential buildings by addressing specific investment demand & supply drivers of this segment plus the engagement and alignment of retail distribution channels
- To address of EE investment supply and technical assistance through the smart deployment of ESIFs 2014-2020 and Horizon 2020 into risk sharing mechanisms and project development assistance, working with partners with an successful track-record

To Market Participants

- Engage key decision makers with a clear business case that raises their awareness of the multiple benefits of buildings’ EE refurbishments with evidence
- Make it easy to get the right data to the right decision makers
- Improve the Processes and Standards for Buildings Labels, Energy Performance Certificates and Energy Codes
- Standards should be developed for each element in the energy efficiency investment process
- Leverage of private sector finance through appropriate use of ESIFs and Member States funds
Substantial savings are available.

**EU Industry:**
- Responsible for (26%) of European final energy consumption
- World leader in EE

**EU Industrial Energy Efficiency:**
- Improved on average by 1.3% per annum over the last 15 years
- Speed of progress has been reduced since the financial crisis

Yet potential additional savings with a 2030-2050 horizon are substantial.

Energy Efficiency Index (ODEX) in EU Manufacturing Industries calculated by ODYSSEE-MURE project and published November 2014, using industry data rebased from year 2000.
1. Wealth of mature financial instruments used by all sizes of company to finance energy efficiency investments
2. Energy performance contracting is widespread and adaptable instrument
3. Dedicated credit lines wide application particularly for SMEs
4. Risk-sharing facilities and subordinated loans can enhance public-private finance leverage and help transition markets
5. Leasing can support the incorporation and uptake of highly energy efficient equipment purchases for companies
6. Energy efficiency funds and Energy Service Agreements show strong potential
7. Green bonds have strong potential to support large corporate investments in energy efficiency
8. A factoring fund for energy performance contracts may alleviate the balance sheets of small Energy Performance Contract providers
To Policy Makers

- Policy framework should positively support strong corporate energy efficiency investment choices at key points in their investment cycle, using a “carrot and stick” approach

- Public resources and facilitation should be engaged to establish dynamic and effective systems for sharing information and technical experience

- Ensure EU and national policies and resources are working effectively together to drive R&D and optimal energy efficiency outcomes

- Support the clarification of the regulatory, fiscal and accounting treatment and standardisation of Energy Performance Contracts

- Energy efficiency opportunity identification and investible project pipelines should be supported with Project Development Assistance facilities for SMEs

To Market Participants

- Raise energy efficiency opportunities at board-level and implement appropriate strategic resource investments to capture their multiple benefits within the natural company investment cycle

- Financial institutions should more widely adopt existing “best practice” models to stimulate client energy efficiency investments

- Encourage and support collaborative processes and consider R&D whose objective is to reduce the cost of and improve the up-take of energy efficiency investments

- Standards should be developed for the legal terms in and process to negotiate energy performance contracts
12. EEFIG RECOMMENDATIONS TO THE EU COMMISSION

**Buildings**

- Ensure *effective transposition and local enforcement* of EU Directives and increase Commission’s buildings EE resources.
- **Regulatory stability** for EE investments via coherent, *long-term EE regulatory pathway* and *internally consistent* 2020, 2030 and 2050 targets.
- Address need for *high quality buildings performance data and standards*.
- Initiate review and *benchmarking process* on decision making frameworks for public buildings to *remove accounting, reporting and procurement hurdles* and create *standard procurement procedures*.
- Benchmark and compare the *relative successes of retail residential energy efficiency investment programmes* in the Member States.

**Companies**

- Ensure effective transposition of existing EU Directives ensuring *increased visibility and financial rigor of energy audits*.
- Support regulatory stability and visibility for long-term EE, eg. *negotiated voluntary industry agreements with cost effective fiscal and accounting incentives*.
- Address need for *information and experience sharing, substantiate corporate energy efficiency metrics and procedures* and consider role in process *energy intensity and EE investment performance databases*.
- Initiate review to better understand and develop the *energy performance contracting market*.
- Support *Project Development Assistance facilities to build SME capacity* and the networks which serve them.
Thank you
C-PACE Financing: Developments in Commercial PACE
CT Commercial PACE Program

April 30th, 2015
IMN Sunshine Backed Bonds
Agenda

1. Background
2. Drivers of Success in CT
3. Program Progress
4. Lessons Learned from 1st C-PACE portfolio sale
5. What’s Next for the Program?
   a. Origination
   b. Capital Raise (RFP)
Four Macro Energy Challenges
Connecticut

**High Energy Costs**
CT has **THE** highest cost for electricity in the "lower 48"

**Old, Energy Inefficient Building Stock**
CT has some of the oldest and most energy inefficient building stock

**Need for "Cleaner / Cheaper" Energy Sources**
Programs that will diversify our energy mix into renewable/clean power

**Grid Reliability**
5 major storms in 2 years with unacceptable outages
A Green Bank in Action

- **Bridgeport Fuel Cell Park**
  - $125 million 15-MW project
  - Created ~140 jobs – construction, manufacturing and O&M

- **C-PACE**
  - $40 million "warehouse" – $65 million across >80 deals (to date)
  - Saving between 30-50% energy consumption
  - Sold $30 million – first securitization of commercial PACE projects

- **CT Solar Loan** - Funding from "the Crowd"
  - Green Bank $10 million aggregation facility / 20% sub debt
  - First affordable solar loan product not tied to OEM or home equity

- **Smart-E Loans** - $30 Million Public-Private Partnership
  - "2nd Loss" LLR - Supported by $2.5 million ARRA funds
  - 9 Credit Unions & Community Banks
Connecticut Special Session
Public Act 12-2 (June 2012)

- Commercial, industrial & multi-family property
- Requires the consent of the existing mortgage lender
- Requires SIR>1; permanently affixed
- Single Statewide Program – municipalities “opt-in”
- Energy Efficiency / Renewables / Microgrids / Shared Energy Situations (District Energy)
CEFIA’s Role in C-PACE

**Design Program**
- Design guidelines, bring on technical team
- Onboard municipalities
- Market the program

**Determine Project & Building Eligibility**
- SIR > 1
- Financial due diligence
- Secure lender consent

**Attract Private Capital**
- Qualify Capital Providers
- Provide capital (as needed)
- Sell-down portfolio
Commercial PACE (C-PACE)
Progress to Date

- 105 cities and towns and opted into the program – over 85% of the market
- Over 100 companies trained – 34 with approved projects
- 30+ mortgage lenders have provided consent
- Over $70 million (#100+) in projects approved—including first fuel cell
- Deploying over 10 MW of renewable energy and saving between 30-40% of energy consumption
- First securitization of commercial energy efficiency projects (private placement / not rated)
- Raising $50-$100 million private warehouse through RFP
Commercial PACE (C-PACE)
Next Steps

CT C-PACE Approved/Closed

$- $5.0 $10.0 $15.0 $20.0 $25.0 $30.0 $35.0 $40.0
0-6 months 7-12 months 13-18 months 19-25 months
Commercial PACE (C-PACE) paceSETTERs

THIS YEAR C-PACE WILL HELP SAVE INSPORTS CENTER $91,678 IN ENERGY COSTS

With C-PACE financing of $1,001,298, Peter Corbett, CEO & President of InSports installed a 252 kW solar photovoltaic system along with energy efficient lighting. The upgrade is expected to save $91,678 annually in net operating costs (after payment of the C-PACE charge) and $1,833,569 over the financing term, allowing InSports to efficiently and sustainably serve its customers for years to come.
Connecticut Green Bank
C-PACE Warehouse ($40 MM)

- Class B Bonds (10%)
- Class C Bonds (10%)

$30 Million in Funding
Private Placements & Ultimately Public Markets

Class A Bonds (80%)

Clean Fund

Commercial PACE (C-PACE)
Catalyst for Private Investment
In a ‘Watershed’ Deal, Securitization Comes to Commercial Efficiency

Connecticut’s green bank executes the first securitization of commercial efficiency assets.

Nick Lombardi
May 19, 2014

Securitization, the holy grail of energy efficiency finance, has finally arrived in the commercial sector.
Commercial PACE (C-PACE)
Lessons Learned

▪ Private capital likes this asset class!
▪ Green Bank "crowds in" funds by taking early risk & aggregating
▪ Must think holistically and strategically to be successful
  – ORIGINATION function ("front end") more important than
    FUNDING ("back end") …
▪ Lots of moving parts / Lots of interdependencies
▪ Success is a balance between originating, underwriting, aggregating, securitizing & servicing \(\rightarrow\) SCALE MATTERS!
▪ The market is dynamic: more players becoming active (lenders, investors), ratings methodology is evolving (1\(^{st}\) rated deal coming…)
▪ Constant feedback loop – everyone is getting smarter / better
STANDARD OFFER AVAILABLE NOW!
Commercial PACE (C-PACE)

Next Steps / Standard Offer / Origination

Expanding access to private capital originators and financiers – an “Open Market” for C-PACE financing

Draft Term Sheet

• Outline key material terms of the originating and funding relationship between the Program Administrator (Connecticut Green Bank) and the Capital Provider

• Enable private capital providers to fund transactions through C-PACE mechanism

For more information, go to the “About Us” section at

www.cpace.com
Summary of Needs for Additional Private Capital

Volume
- The Green Bank able to finance $40M of C-PACE assessments on balance sheet
- Pre-sold $30M portfolio of projects in 2014
- $70M+ deals approved, currently rate $5M per month (50% <$400,000)

Market
- External lender of record / SPV structure
- Supporting private origination models / less Green Bank capital

Economic
- Recapture economics to fund Green Bank origination and administration activities

Partnership potential
- Ability to drive demand
- Ability to take on some Green Bank functions will be evaluated during RFP and taken into account
Commercial PACE (C-PACE)
Next Steps / Capital Raise

STATUS

▪ Received several proposals to fulfill our needs and objectives
▪ Proposals from the best financial services firms, including:
  – 4 Global banking/investment banking firms ($125 Bn to >$1 Tn)
  – 2 “broker dealers” with mortgage-backed / ABS experience
  – A Billion $ “Yieldco/REIT”
▪ $50M - $200M in facilities ($50M minimum per RFP)
▪ Structured from “whole loan” purchase to a “warehouse” / securitization option
▪ All offered an ability to scale
▪ Selection “soon”
▪ Facility in place mid-summer
Thank you!

Bert Hunter  
EVP & Chief Investment Officer  
Connecticut Green Bank  
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## Agenda

### Background
- Introduction
- New York’s Energy Landscape
- The Opportunity
- Market Gaps & Barriers

### About & Approach
- Mission
- Investment Criteria
- Product Offerings
- In Scope & Out of Scope

### Partnering with Us
- Open Solicitation
- Announced Transactions
Background
Reforming the Energy Vision (REV) is New York’s comprehensive strategy to create an efficient, reliable and affordable clean energy system.

Pillars of REV

Groundbreaking Regulatory Reform
REV Regulatory Proceeding

Leading by Example
Using the State’s Energy Assets
(Ex. NYPA Build Smart; NYSERDA NY-Sun)

Evolution of State Programs
Clean Energy Fund
NY Green Bank
The Opportunity

Enormous potential: Recent Booz & Co. study estimates market opportunities for New York-based clean energy projects over the next ten years ~ $85B

NYGB operates at the near-frontier of current commercial markets, facilitating the evolution and expansion of those markets. With greater private sector investments in one area, NYGB moves to the next near frontier.
New York’s clean energy marketplace is constrained by current market gaps & barriers

- Unfamiliar structures
- Multiple risk exposures
- Lack of sponsorship
- Lack of industry and product coverage clarity
- Uncertainty as to scale
- Minimal standardization
- New counterparty credits
- Small transaction sizes

Common clean energy transaction issues for private sector financiers
About & Approach
Mission

To accelerate clean energy deployment in New York State by working in partnership with the private sector to transform financing markets

Key Elements and Objectives

- $1 billion state-sponsored specialized finance entity (not a bank)
- Stimulate faster, more extensive deployment of clean energy assets
- Ultimately reduce need for government participation
**Investment Criteria**

Credit quality is paramount in the evaluation, structuring and negotiation of NY Green Bank’s investments

<table>
<thead>
<tr>
<th>Minimum Requirements</th>
<th>Additional Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>- NYGB capital will be repaid and will earn appropriate market rate</td>
<td>- Involve one or more private sector financial parties</td>
</tr>
<tr>
<td>- Transactions will lead to reduced greenhouse gas emissions</td>
<td>- Wholesale (not retail) markets</td>
</tr>
<tr>
<td>- Investments result in greater private sector capital deployed into the market</td>
<td>- Economically/technically feasible</td>
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<td>- Unique NYGB role</td>
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<td></td>
<td>- Financial returns comparable to market expectations</td>
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<td></td>
<td>- Involve sufficient client and partner “skin in the game”</td>
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# Product Offerings

## Broad Categories of Capital Solutions

- Credit Enhancement
- Warehousing/Aggregation
- Asset Loans & Investments
- Composite Products

## Product Pricing

- Rates reflect the following:
  - Risk positions in capital structure
  - Pricing for comparable transactions
  - Commercial expectations of rates when market is more liquid

- We balance various factors in pricing our products, serving as both prudent stewards of ratepayer funds and agent for greater private investment
## In Scope & Out of Scope

**NY Green Bank supports transactions that with scale and experience can ultimately be financed by the private sector**

<table>
<thead>
<tr>
<th>Priority Activities</th>
<th>Outside NY Green Bank Mandate</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Facilitate development of new asset classes and market liquidity</td>
<td>✗ Support transactions without private capital involvement</td>
</tr>
<tr>
<td>✓ Be creative in supporting technically and economically feasible/creditworthy</td>
<td>✗ Accept credit and/or project risks unacceptable to the private market</td>
</tr>
<tr>
<td>transactions</td>
<td>✗ Take unproven technology risk</td>
</tr>
<tr>
<td>✓ Develop and incubate new structures</td>
<td>✗ Provide grants or subsidized capital</td>
</tr>
<tr>
<td>✓ Support standardization and aggregation</td>
<td>✗ Pursue one-off transactions</td>
</tr>
</tbody>
</table>
Partnering With Us
Open Solicitation

Visit www.greenbank.ny.gov to view the open solicitation and instructions for online submission

- Open solicitation invites proposals for financing arrangements and/or transactions meeting our mandate and investment criteria
- Proposals are evaluated on a rolling basis as they are received
- NY Green Bank team is available to discuss potential investment ideas
## Announced Transactions

<table>
<thead>
<tr>
<th>Transaction Partners</th>
<th>Clean Energy Deployment</th>
<th>NYGB Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ameresco</td>
<td>Energy Service Company (ESCO) Project Deployment</td>
<td>Secured Line of Credit</td>
</tr>
<tr>
<td>Bank of America Merrill Lynch</td>
<td>Energy Equipment Financing for Energy Service Companies (ESCOs)</td>
<td>Lease Tenor Extension</td>
</tr>
<tr>
<td>Deutsche Bank</td>
<td>Using Energy Savings Agreements (ESAs) to Grow Commercial Property Efficiency Markets</td>
<td>Senior Debt</td>
</tr>
<tr>
<td>First Niagara Bank, M&amp;T Bank, BQ Energy</td>
<td>Template for Mid-Sized Commercial Solar Projects with New Sources of Capital</td>
<td>Construction / Tax Equity Guarantees</td>
</tr>
<tr>
<td>Renewable Funding, Citi</td>
<td>Scaling up Residential Energy Efficiency</td>
<td>Securitization Credit Enhancement</td>
</tr>
<tr>
<td>GreenCity Power, Tulum Management</td>
<td>Expanding Capital Availability for Scale Commercial Cogeneration Projects</td>
<td>Senior Debt Warehouse / Aggregation Facility</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Capital</th>
<th>Amount ($mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NYGB</td>
<td>200</td>
</tr>
<tr>
<td>Third Party</td>
<td>600</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>800</strong></td>
</tr>
<tr>
<td><strong>Private:Public Dollars</strong></td>
<td><strong>3:1</strong></td>
</tr>
</tbody>
</table>

3:1 private:public dollars does not fully take into account the recycling of capital.
Proposals Received

Diverse by geography, technology and end-use customer segments

**Geography Distribution**
- Capital District
- Central New York
- Mid Hudson
- New York City
- Southern Tier
- Statewide
- Finger Lakes
- Not Specified

**Technology Distribution**
- Energy Efficiency
- Solar
- Wind
- Biomass
- Biogas
- Other

**End-Use Customer Segment Distribution**
- Large Commercial & Industrial
- Mid-Sized Commercial
- Residential
- Utility-Scale
- Small Commercial & Industrial
- Multifamily
- MUSH
Appendix

Sample Transaction Structures (Illustrative Only)

- Senior Tenor Extension
- Tax Equity Guaranty
- Senior Aggregation Facility
- Project Subordinated Debt
- Securitization Credit Enhancement
Senior Tenor Extension

- $100 MM Senior Debt (10-Year Amort.)
- $50 MM Senior Debt (Amort. Years 11-15)

Finance Co.

- Project X
  - 100% Interest
  - EE / DG Asset

- Project Y
  - 100% Interest
  - EE / DG Asset

- Project Z
  - 100% Interest
  - EE / DG Asset

Global Bank

ESCOs, developers originate and manage projects

15-Year Leases, ESAs or PPAs entered into with Hosts/Offtakers
Tax Equity Guaranty (Small Scale Solar Project)

- **Tax Equity Investor**
  - On-going lease payments
  - $10 MM to buy Project

- **Developer**
  - Construction Financing

- **Construction Lender**
  - Partial Gty of Debt Service
  - Gty Fee

- **Project**
  - Take-out via Tax Equity funding
Senior Aggregation Facility (Storage Assets)

- Developer
  - Equity
  - $20 MM

- Finance Co.
  - Senior Debt
  - $50 MM
  - Refinancing

- Project X
  - Generation/EE/Storage Asset

- Project Y
  - Generation/EE/Storage Asset

- Project Z
  - Generation/EE/Storage Asset

- Private Fund
Project Subordinated Debt (Biomass Feedstock)

- Developer
  - Equity
  - $50 MM

- Project Co.
  - Generation Assets
  - $35 MM
  - $15 MM

- Investment Bank
  - Advisor
  - Placement Agent

- Institutional Investors
  - Senior Debt
  - $35 MM
  - Sub Debt

- Rating Agencies
  - $15 MM

- $50 MM
Securitization Credit Enhancement (Illustrative Only)

Specialty Finance Co.

- Retail Loan
  - Consumer X
  - Consumer Y
  - Consumer Z

Finance Co.

- Senior Warehouse Loan
  - Global Bank
  - $75 MM

Rating Agencies

- Term Securitization
  - Institutional Investors
  - $75 MM

Sub Debt

- $25 MM
- $75 MM
- $10,000
- $10,000
- $10,000
FINANCE FOR CLIMATE ACTION

http://www.eib.org/attachments/thematic/climate_action_en.pdf

INNOVATIVE CLIMATE FINANCE PRODUCTS