Making Smart Investments: How Banks and Investors Think about Energy Efficiency

Thursday, August 23rd, 2018 from 2:00pm – 3:30pm
Panelists

Moderator

- **Johanna Zetterberg**, U.S. Department of Energy

Speakers

- **David Tine**, HSB/Munich RE
- **Jeff Milum**, Investor Confidence Project
- **Paul Bienstock**, Citi
Energy Services Agreements (ESA)
Financing Energy Efficiency Improvements for Corporate Clients
Executive Summary

Citi is a leader in energy efficiency finance to help improve the energy performance of corporate facilities, including through use of Energy Services Agreements.

Energy Services Agreements for Corporate Facilities

- Corporates, including a number with advanced programs that have already been pursuing energy efficiency opportunities, are signaling the need for alternative financing solutions to pursue deeper, untapped opportunities.
  - Cost saving and environmental goals are driving continuous, ongoing improvements
  - Global management systems are providing C-suite level understanding of energy use and prioritization of savings opportunities
- Energy Services Agreements (ESA) are an emerging financing structure increasingly utilized by corporates to pursue energy improvements that may fall outside the reach of internal, self-financed programs.
- No up-front capital usage, no capex expenditure, off-balance sheet, and guaranteed performance and savings are some of the key reasons why corporates are using ESAs.
- Citi is uniquely qualified to work with corporates interested in Energy Services Agreements:
  - Recently closed major ESA for a Fortune 100 client, with a follow-on transaction in process
  - Acted as lender under an ESA where a new Combined Cooling and Power (CCP) system was installed into a data center in London
  - Actively engaged with a number of corporates in various sectors seeking to utilize ESAs
  - Established relationships with equity providers, ESCOs
  - Understand and help integrate the various constituencies involved in a corporate ESA including Operations, Treasury and Corporate Environmental/Sustainability teams.
Market Overview

Corporates with advanced energy efficiency programs that have harvested most of the “low-hanging fruit” face three options: 1) curtail the program; 2) change internal hurdle rates; or, 3) pursue third party finance.

Corporate Energy Efficiency Programs

- Driven by energy and cost savings, and to help meet greenhouse gas and other environmental goals.
- Developed and led by operations and corporate sustainability teams.
- Typically self-financed with internal hurdle (ROI/payback) rates effectively mandating payback periods no greater than 24 to 36 months.
- Becoming increasingly sophisticated with global energy management systems that elevate to senior management energy use, costs, and improvement opportunities.
- Advanced programs, in place for 10+ years, have harvested most of the “low-hanging fruit” (the opportunities that meet internal hurdles).
- Programs in this position have three options going forward:
  1) Curtail the program (contrary to cost-saving and environmental goals)
  2) Change internal hurdle rates (challenging, given other competitive uses of capital)
  3) Obtain third party finance (the genesis for Citi pursuing some of its own energy efficiency improvements, through the Energy Services Agreement)

Challenge of Internal Hurdle Rates

Hurdle Rate
Energy Services Agreement (ESA) Structure

The ESA approach provides a service agreement (not a lease) to the corporate Host, under which a third party provides energy services, and Host pays amounts equal to a percentage of actual savings over time.

Overview

- A special purpose entity (ServiceCo) is established to (i) enter into an ESA with the Host and (ii) reimburse Energy Services Company (ESCO) for equipment expenditures related to energy efficiency retrofits
  - Outside equity investor will own ServiceCo
  - Lender (Citi) will provide ServiceCo with debt financing
  - ServiceCo debt nonrecourse to the Equity, Host and ESCO
- Under the ESA, ServiceCo covers 100% of retrofit costs, and is paid an amount over time by Host based on Host’s energy savings
- ServiceCo subcontracts with ESCO to construct and service energy assets
- If Host energy savings payments to ServiceCo are less than the pre-agreed minimum amount, then the ESCO will make payment to ServiceCo for the shortfall (up to pre-agreed minimum amount), such payments being assigned to the Lender
- ServiceCo and Lender (Citi) take Host and ESCO credit risk

Structure Diagram
Case Study: Fortune 100 Technology Customer

Citi Banking (AFG) funded groundbreaking multiple site energy-as-a-service project with no capital outlay from the customer.

Objectives & Approach

- Closed a $14 million LED lighting upgrade with a Fortune 100 technology customer that covers four non owner-occupied sites in four different states.
- Funded by Citi’s loan and an investment by our equity partner; the project will reduce total electricity use for lighting at these four customer sites by 65%.
- The customer will pay for realized energy savings as they are delivered during the 5 year agreement.
- The efficiency-as-a-service model allows the customer to continue to optimize resources and move quickly on a broad-based sustainability rollout.
- SmartWatt Energy, Inc., an energy system optimization company, is constructing and monitoring the ongoing energy savings performance.
- Two follow-on transactions to the above closing have now been completed.

Results

<table>
<thead>
<tr>
<th>Fortune 100 Technology Customer</th>
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<tbody>
<tr>
<td>Savings:</td>
</tr>
<tr>
<td>Reduced electricity use for lighting by 65%</td>
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<tr>
<td>Environmental benefit:</td>
</tr>
<tr>
<td>Eliminated 20,000 tons of annual CO₂ emissions. Over the life of the project, this is equivalent to taking 18,600 cars off the road.</td>
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Reduced electricity use for lighting by 65%
Environmental benefit:
Eliminated 20,000 tons of annual CO₂ emissions. Over the life of the project, this is equivalent to taking 18,600 cars off the road.
Multiple funding options exist for energy efficiency projects, however the ESA structure provides the most flexibility and benefits for retrofitting corporate facilities.

<table>
<thead>
<tr>
<th>Cash Purchase / Traditional Debt Financing</th>
<th>Leasing Structure</th>
<th>ESA Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Upfront Capital Cost</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 100% of project cost / Closing costs and fees</td>
<td>• Closing costs and fees</td>
<td>• None</td>
</tr>
<tr>
<td><strong>Net Income Impact</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Positive impact provided savings exceed interest expense liability</td>
<td>• Positive impact provided savings exceed interest expense liability</td>
<td>• Positive impact guaranteed given payment obligation via the ESA is based upon actual savings achieved</td>
</tr>
<tr>
<td><strong>Cash Flow Impact</strong></td>
<td></td>
<td></td>
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<tr>
<td>• Cash flow positive provided 100% of savings are realized</td>
<td>• Cash flow positive provided 100% of savings are realized</td>
<td>• Guaranteed to be cash flow positive given payment obligation is based upon actual savings achieved</td>
</tr>
<tr>
<td><strong>Balance Sheet Impact</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(subject to customer’s own accounting analysis)</td>
<td>• Total cost of energy efficiency equipment</td>
<td>• None</td>
</tr>
<tr>
<td>• Debt liability</td>
<td>• Debt liability</td>
<td></td>
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<tr>
<td><strong>Performance Guarantee</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• No</td>
<td>• No</td>
<td>• Yes (given payment obligation is savings based)</td>
</tr>
<tr>
<td><strong>Benefits of Environmental Incentives/Rebates</strong></td>
<td>• Customer responsible for securing any incentives or rebates</td>
<td>• Customer responsible for securing any incentives or rebates</td>
</tr>
<tr>
<td><strong>Periodic Payment Obligation</strong></td>
<td>• Fixed for loan term</td>
<td>• Fixed for lease term</td>
</tr>
</tbody>
</table>
Asset Finance Group (AFG)

AFG is a capital asset origination and advisory group within Citi’s Capital Markets Origination platform with a broad mandate to advise clients and fund asset based financings

**Business Overview**

- Monetize big ticket capital assets for bank clients through lease financings, portfolio purchases, partnership and other structures
- Investment and advisory focused on target asset classes in rail, power and energy, shipping, etc.
- Understand underlying asset values to structure solutions; comfortable with complex structures
- Flexible asset financing solutions to achieve required returns
- Leader in structured finance for over 50 years, starting as a lease equity advisor, packager, investor and underwriter
- AFG has a team of 11 professionals with comprehensive asset and investment expertise

**Energy Efficiency Financing**

- Assets/Equipment – AFG asset appetite is broad:
  - Distributed Power (Combined Cooling, Heating & Power or “CHP”)
  - Lighting
  - HVAC Systems
- Typical loan parameters for Energy Efficiency equipment:
  - AFG’s focus is on strong counterparties (Hosts and ESCOs), preferably bank clients
  - Commercial/Industrial clients
  - Proven technologies
  - Term up to 10 years, with minimum investment around $10MM
  - Facility/Asset can be in the U.S. or abroad
## Citi Energy Efficiency Credentials

Citi is a market leader in energy efficiency (EE) finance with numerous first-to-market transactions for public, private and single family properties; underwrote the first two ABS, helping to establish EE as a new asset class

### Landmark Transactions

- **Delaware Sustainable Energy Utility** - $70mm municipal bond for a public entity that aggregates EE projects across multiple state agencies, language and ESCO participation.
- **Green Campus Partners** - $50mm warehouse facility that provides dedicated capital to fund EE and renewable energy projects, eliminating the need to arrange project-by-project financing.
- **New York State Energy Research Development Authority (NYSERDA)** – underwrote for $24.3mm capital markets financing of EE loans to NY residents originated by NYSERDA on-bill repayment program.
- **Spruce Financial** - a $100mm (upsized to $225mm) lending facility to finance the accumulation for subsequent securitization of EE loans to consumers for boilers, replacement windows etc.
- **Renew Financial/WHEEL** - a $25mm (upsized to $50mm) facility to finance the accumulation of EE loans in a multi-state program that uses available American Recovery and Reinvestment Act (ARRA) state monies as first loss capital.
- **Unilever** - first-ever green sustainability bond, where the proceeds of the £250,000,000 issuance are being used for projects that reduce GHG emissions, water use and waste disposal in Unilever facilities in China, Russia, South Africa, Turkey and the United States.
- **Citi London** - AFG and Citi Operations & Technology pilot of an ESA for a Citi data center in London.
- **Renew Financial/WHEEL** – first-ever asset backed securitization (ABS) of EE loans; $12.58mm
- **Spruce Financial** – second ever ABS of EE loans; $83.78mm
- **Fortune 100 ESA** – $14mm programmatic ESA across multiple sites and properties

### Associations and Awards

<table>
<thead>
<tr>
<th><strong>Association/Award</strong></th>
<th><strong>Details</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>U.S. Department of Energy Better Buildings Challenge</strong></td>
<td>inaugural member starting in 2011</td>
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<tr>
<td><strong>State Energy Efficiency Action (SEE Action)</strong> – AAEEA Advisory Group</td>
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<tr>
<td><strong>New York City Energy Efficiency Corporation (NYCEEC)</strong></td>
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<tr>
<td><strong>U.S.-China Clean Energy Research Center Building Energy Efficiency Program (CERC-BEE)</strong> - industry advisory group</td>
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<tr>
<td><strong>C40 Cities Climate Leadership Group</strong> - partner</td>
<td></td>
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<tr>
<td><strong>Citi London</strong></td>
<td>AFG and Citi Operations &amp; Technology pilot of an ESA for a Citi data center in London</td>
</tr>
<tr>
<td><strong>Environmental Finance</strong> - 2015 Deal of the Year – WHEEL for energy efficiency</td>
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<tr>
<td><strong>Financial Times/IFC</strong> - 2015 Achievement in Transformational Finance for Citi EE finance program</td>
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</tbody>
</table>
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Citi believes that sustainability is good business practice. We work closely with our clients, peer financial institutions, NGOs and other partners to finance solutions to climate change, develop industry standards, reduce our own environmental footprint; and engage with stakeholders to advance shared learning and solutions. Citi’s Sustainable Progress strategy focuses on sustainability performance across three pillars: Environmental Finance; Environmental and Social Risk Management; and Operations and Supply Chain. Our cornerstone initiative is our $100 Billion Environmental Finance Goal – to lend, invest and facilitate $100 billion over 10 years to activities focused on environmental and climate solutions.
Jeff Milum
Investor Confidence Project
Energy Efficiency Market Barriers

- Lack of capital: 24%
- Uncertainty of savings: 16%
- Insufficient payback: 14%
More Energy Efficiency Market Barriers

01 Transaction costs too high vs. cost of project

02 Energy Price Sensitivity

03 Each building is unique and complex

04 Variance in audit and retrofit quality
Yet Another Energy Efficiency Market Barrier
Underwriting Today

- Benchmarking
- Asset Labeling
- Disclosure

- On-Bill Repayment
- Commercial PACE
- Green Banks
De-risking projects (and portfolios)

Project Finance
Long-term financing of projects based upon the projected cash flows of the project rather than the balance sheets of its sponsors.
New Approaches

• Third Party Ownership
• MESA/ESA
• PPA
• ????
Enter Investor Ready Energy Efficiency™

Consistency
+ Transparency
+ Reliability

= Confidence
Energy Efficiency Today
Lack of Standardization

- Unreliable performance
- Due diligence
- Transaction costs
- Secondary transactions
Investor Ready Energy Efficiency™

Standardized Development + Third-Party Verification = INVESTOR READY ENERGY EFFICIENCY

Protocols & Tools
Quality Assurance Provider

Energy Performance Protocol
TARGETED COMMERCIAL v2.0
ICP Protocols

Standardized:

• Procedures
• Documentation
• Plans
ICP Quality Assurance Assessor
ICP Providers

[Image of various company logos]
ICP Investor Network
Benefits: Investors

• IREE reduces due diligence costs and speeds underwriting.

• Increases confidence in project fundamentals and engineering.

• Standard projects and document packs with third party allows for the aggregation of projects across borders and programmes.
Benefits:
Building owners

- Increased confidence in project fundamentals and results
- Independent review and certification builds credibility
- Set underwriting criteria for building renovations to ensure ROI and streamline enterprise-wide efficiency procurement
• More awareness and reach
• Better resources
• Integration with LEED and more
Thank You!

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EEperformance.org
Intro: https://tinyurl.com/y6v2wqpp
David Tine
HSB/Munich RE
Making Smart Investments: How Banks and Investors Think About Energy Efficiency

Cleveland, Ohio
August 23, 2018
HSB Energy Performance Insurance Solutions

Energy Shortfall insurance
1.25 GW of insured performance
Across 12 US states and 1 Canadian province

Energy Efficiency Insurance
2.176 Million square feet total
- Residential: 220,000 ft²
- Small Commercial: 1,220,909 ft²
- Industrial: 735,992 ft²

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Energy Efficiency Insurance (EEI) Timeline

- ESPC
  - Larger ESCOs
  - MUSH Market

EEI (Single Project – ESCO)
- HVAC
- LED Lighting
- Building controls, etc.

EEI Portfolio
- Residential
- Small C&I
- Restaurant Chains

Pay For Performance (P4P)
- Utility program structure
- Portfolio risks
- Energy Efficiency at scale

Primarily Engineering Analysis

Engineering + Risk Modeling Analysis
Worthington Energy Innovations

Innovative energy services company solutions provider HQ in OH.

Sustain design intent, remote performance monitoring, mitigate risk guarantee performance enabling lifecycle of equipment

Established Industrial and Healthcare customer base including:
- Ford
- GM
- Goodyear
- Shearer’s Foods
- Memorial-Sloan Kettering

Juice Plant in Lehigh Valley, PA
- 300,000 sq.ft. facility
- $1.1 M in annual savings & service
- Technologies (ECMs)
  - Steam to Hot H20 system design
  - Chilled H20 System
  - Process Cooling Tower System
  - Process Bottle Cooler Heat Recovery
  - Cool Air Heating Positive pressurization
  - Zero carbon footprint winter
Sealed

Financial and energy technology company with HQ in NYC

Sealed’s HomeAdvance program pre-pays efficiency upgrades, with customer paying back only based on the energy they save

HSB Insuring Portfolio of Residential EE savings, giving banks more confidence

ECMs: Weatherization, Smart thermostats, HVAC, Lighting

Partnerships with several utilities including Con Edison and National Grid to convert more customers to deep retrofits

Statistical approach leveraging predictive analytics outperformed established EE models (e.g. DOE, HES, REM/Rate)
Joule Smart

- Financial and energy technology company with offices in NY, OR, and Europe
- ECMs: Lighting, Lighting Controls, and Building Controls.
- Building types: Grocery stores, bowling alleys, McDonalds, Fitness Clubs, etc.
- Portfolio level performance coverage
- eQuad platform- Energy Efficiency platform to scale and deploy projects in the European Union.
Eco Energy

Restaurant Chain Portfolio

- Managed Restaurant Energy Services Program
- Chain of 300 Fast Food locations in California
- ECMs:
  - RTU Management
  - LED lighting upgrade
  - Lighting Controls
- Energy savings as a way to increase the value of the restaurant chain.
  - Driven by Private Equity firm
New Frontiers

- Energy Storage
- Algorithms
- IOT
- Weather Effects/Parametric Coverage
Your contact at HSB

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Questions?