Green Revolving Funds and Dedicated Capital Pools: Best Practices in Financing Sustainability

Erin Richmond, JDM Associates
Jon Utech, Cleveland Clinic
Jim Prince, Ascension Health
Welcome & Introductions

Better Buildings Team Members:
Sultan Latif, DOE; Sam Stafford, JDM; Erin Richmond, JDM

Sultan Latif
DOE
Healthcare Lead

Sam Stafford
JDM
Healthcare Account Manager

Erin Richmond
JDM
Healthcare Subject Matter Expert
What is Better Buildings?

In February 2011, the White House announced the **Better Buildings Initiative** to:

- make buildings 20% more energy efficient over the next 10 years
- accelerate private sector investment in energy efficiency.
Join the Alliance; Step up to the Challenge

**STEP UP TO THE BETTER BUILDINGS CHALLENGE**
- Earn national recognition for energy efficiency leadership
- Join DOE in media events spotlighting your energy efficiency achievements
- Access technical assistance to analyze your portfolio energy use

**PARTicipate in the BETTER BUILDINGS ALLIANCE**
- Participate in peer-to-peer networking opportunities addressing sector specific energy topics
- Tap into expert-led technology and market solutions teams
- Access technology demonstration opportunities
- Develop public resources such as technical performance specifications and sample lease clauses
Why Join Better Buildings?

The Big 3

1. Access to experts, tools, and resources
2. Peer to peer learning
3. Public Recognition
How Green Revolving Funds Work

1. Identify energy waste

2. Finance efficiency project with Green Revolving Fund

3. Repay loan from energy savings, Reinvest new monetary savings

Source: Green Revolving Funds: A Guide to Implementation and Management (Sustainable Endowments Institute, 2013)
Who are the Better Buildings Financial Allies?

- **35** leading finance companies that have committed to providing innovative financial products for efficiency and renewables, sharing best practices, and growing the financing market.

- **100%** of sectors covered, including small and large projects in commercial & industrial, healthcare, state and local government, multifamily, industrial, residential, and secondary markets.

- **$3.2B** in financing provided by Financial Allies for energy efficiency and renewable energy projects in 2016 alone.
The Better Buildings Financing Navigator

The Navigator is an online tool developed by the DOE that helps public and private organizations find financing solutions for energy efficiency projects.

With the Navigator, you can...

1. **Explore**: Learn the basics of the efficiency financing market

2. **Find**: Answer a few simple questions to see which financing options might be a fit for your project

3. **Connect**: Speak to Better Buildings Financial Allies who may be able to finance your project

Now available at: https://betterbuildingssolutioncenter.energy.gov/financing-navigator
The Financing Navigator covers...

- Energy Efficiency Financing
  - Internal Funding
  - Traditional Financing
    - Lease
      - Capital Lease
      - Operating Lease
      - Tax-Exempt Lease
    - Loans
      - Commercial Loan
      - Below-Market Loan
  - Specialized Financing
    - On-Bill
      - On-Bill Financing (OBF)
      - On-Bill Repayment (OBR)
    - Property Assessed Clean Energy (PACE)
      - Commercial PACE
      - Residential PACE
    - Savings-Backed Arrangements
      - Energy Performance Contract (EPC)
      - Energy Services Agreement (ESA)
A useful resource for starting a GRF

Topics covered:

- What is a Green Revolving Fund?
- The Anatomy of a Green Revolving Fund
- 10 Steps to Establishing a Successful Green Revolving Fund
- Measurement and Verification of Project Savings
- Fund Analytics
- Common Obstacles to Implementation
- The Billion Dollar Green Challenge

Now available at: http://greenbillion.org/resources/
Cleveland Clinic Green Fund

2017
Jon Utech, MBA, MS OD, LEED AP
Sr. Director, OHE
CCHS Mission & Values

“Better care for the sick, investigation into their problems, and further education of those who serve”

- Quality
- Innovation
- Teamwork
- Service
- Integrity
- Compassion
Enterprise Stats

- 6.6m outpatient visits, 229,000 admissions, and 208,800 surgical cases annually
- 1,400 hospital beds and 100 operating rooms
- $7.2 Billion Operating Revenue

- 51,000 Caregivers
- 1,900 residents and fellows in training
- 1,800 allied health student rotations
- 1,700 participants in continuing med education

- $251m in total grant / research contracts
- 135 lab principle investigators
Strong Reputation for Quality and Innovation

Leader in US News & World Rankings:
- #2 hospital overall
- #1 in heart for 22 consecutive years
- 12 other specialties rank in top 10

Patients travel from 170 countries
75 spin off companies since 2000
Over 700 patents
Create Largest Healthcare Greenfund
Commitment: Reduce energy intensity 20% by 2020

Energy Use Intensity

Feb 17: -14%


Enterprise WN Source
Enterprise WN Source

Commitment: Reduce energy intensity 20% by 2020

[Graph showing energy use intensity from 2011 to 2016]

Showcase Projects:
- Hillcrest Hospital
- Tomsich Pathology Laboratories
- Twinsburg Family Health and Surgery Center

Implementation Model:
- Engaging Clinicians To Reduce Resource Use In Operating Rooms

Energy Performance:
- View details on Cleveland Clinic Foundation's progress to date

Challenge Commitment

20 Million Square Feet

Goals

20% Reduction in Energy Intensity

Progress

14% Cumulative (vs. Baseline)
Hillcrest Hospital Recognized by DOE for Achieving 20% Goal

CLEVELAND CLINIC
Showcase Project: Hillcrest Hospital

LOCATION
Mayfield Heights, Ohio

PROJECT SIZE
1,000,000 square feet

Annual Energy Use

<table>
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<tr>
<td>587 kBtu/sq. ft.</td>
<td>460 kBtu/sq. ft.</td>
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Energy Savings: 23%

Annual Energy Cost

<table>
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<td>$3,400,000</td>
<td>$2,870,500</td>
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Cost Savings: $529,500
$7.5 Million Green Fund

- OHE collaboration Sustainability, Operations and Finance to create “Greenfund”
  - Energy Efficiency Carve Out of Infrastructure Fund
  - Investments meet “capital” requirements of this source

- Fund “virtually” replenished from tracked energy savings

- Sector Focus
  - Bon Secours & Dartmouth have $1 million funds
  - Largest fund in country is $13 million, Harvard is $12 Million
How it Works: Indirect Reinvestment

1. **CAPITAL**
   - Infrastructure Fund
   - Funds Projects
   - Energy Efficiency Carve Out

2. **EXPENSE**
   - Projects Tracked
   - Estimates, Budgets
   - Lighting
   - BAS/ReTo
   - Equip.

3. **UTILITY**
   - Savings Generated from Reduction in Energy Use
   - kWh
   - Therms

4. **ANNUAL SAVINGS**
   - Set Carve Out Level
Tracking Model

- Projects are tracked for capital investments and savings achieved
- Savings achieved determine size of carve out for each calendar year
- Initial seed “capital” is paid back
  - No additional demands placed on model
Average Payback:
- LED Lighting Retfits: 4.4 Years
- BAS/Retro-Optimize: 3.8 Years
- Equipment Retro-Optimize: 4.6 Years
# LED Lighting Retrofits

<table>
<thead>
<tr>
<th>Project</th>
<th>Company</th>
<th>Qty.</th>
<th>Energy Payback (Years)</th>
<th>Total Payback (Years)</th>
<th>Maintenance Impact</th>
<th>Added Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parking Garage fixtures (JJ&amp;MM)</td>
<td>Cree</td>
<td>4,100</td>
<td>3.9</td>
<td>2.2</td>
<td>No Replacement</td>
<td>Diversity</td>
</tr>
<tr>
<td>Linear LED Lamps</td>
<td>Energy Focus</td>
<td>400,000 tubes</td>
<td>4.1</td>
<td>2.3</td>
<td>STOPPED replacing bulbs and ballasts</td>
<td>Health Impacts on Caregivers</td>
</tr>
<tr>
<td>Can Retrofits</td>
<td>Energy Focus</td>
<td>35,000 Fixtures</td>
<td>5.5</td>
<td>3.5</td>
<td>Reduced</td>
<td>Aesthetics</td>
</tr>
</tbody>
</table>
Green Fund Investments helped Drive Down EUI at Twinsburg FHC by 36%

Also - Chiller Optimization by Trane, JCI, Internal methods at various sites...
Cleveland Clinic

Every life deserves world class care.
Energy Conservation Capital Pool

Jim Prince
Manager, Energy Management
Ascension Health
St. Louis, MO
Ascension Health Case Study

- \( \approx 130 \) Acute Care Hospitals in 23 states and DC
- 1,900+ Total Care Sites
- Goal: 20% by 2018 = $29M annual savings (acute-care) at program maturity
Ascension Health Case Study

Program Funding

• $50M Capital Funding Available

• $50M/$29M = 1.7 yr SPB average project

= BIG CHALLENGE!
Ascension Health Case Study

Creative Program Funding
The “Hybrid” approach

Capital Projects (CAPEX)
- $14.5M Savings
- $50M Funding
- 3.4 yr SPB

Retro-commissioning (OPEX)
- $14.5M Savings
- < 1 yr SPB

$30M / yr Savings Target
Ascension Health Case Study

Program Plan

1. Establish Partnerships
   • Preferred Engineering Firms
   • Retro-commissioning Specialists
Program Plan

2. Retro-commissioning (<1 yr SPB, OPEX)
   - Repair failed system components, calibrate sensors, etc.
   - Schedule Unoccupied Setbacks
   - Implement Standard Control Sequences
   - Develop and Implement Room Ventilation Schedules
Ascension Health Case Study

Program Plan, cont’d

3. Capital Projects
   • BAS Upgrades
   • Heat Pump Chillers
   • Lighting Retrofits
   • Tower Free Cooling
   • Boiler Upgrades (burners, stack economizers)
Program Plan, cont’d

4. Supplemental Utility Incentives and Rebates
   • RCx Studies and Savings
   • Capital Project Savings
   • >$5 Million Received To-Date ($55M/14.5M = 3.4 3.8 yr SPB)
   • Contact Utility Account Rep
Ascension Health Case Study

Program Plan, cont’d

5. Alternative Funding Sources
   • Solar PPAs
   • CHP PPAs- Concession Model
Ascension Health Case Study

You can’t manage what you don’t measure...measure often, manage constantly!

The Daily Scorecard...
St. Vincents Medical - Usage Reports

**Gas**
- Weather Adjusted Baseline Natural Gas (MMBtu)
- Gas Total (MMBtu)

**Electric**
- Weather Adjusted Baseline Electric (kWh)
- Electric Total (kWh)
Ascension Health Case Study

Monthly Energy Savings

- Jul-13
- Sep-13
- Nov-13
- Jan-14
- Mar-14
- May-14
- Jul-14
- Sep-14
- Nov-14
- Jan-15
- Mar-15
- May-15
- Jul-15
- Sep-15
- Nov-15
- Jan-16
- Mar-16
- May-16
- Jul-16
- Sep-16
- Nov-16
- Jan-17
- Mar-17
- May-17

$0
$500,000
$1,000,000
$1,500,000
$2,000,000
$2,500,000

CleanMed 2017 - Hilton Minneapolis - Minneapolis Convention Center - Minneapolis, Minnesota - CleanMed.org
Ascension Health Case Study

Cumulative Energy Program Savings Since Inception (2014)
Ascension Health Case Study

Financial Results Forecast

**Energy Program, Phase I**

- Initial Investment = $50.5M *
- Savings Target= $28.8M / yr **
- Cumulative Savings= $93M (by FY18 end)
- Forecast NPV$_{5\%,15}$ = $213M
- Forecast IRR= 106%

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**EPR**

$872M / yr
Ascension Health Case Study

Getting Started

• Develop a Plan
• Enlist Trusted Partners (Staff, Consultants, etc.)
• Start with Quick Wins: RCx is a great place to start!
• Involve Your Local Utility Early: Free Money Helps Build Momentum
• Celebrate Loudly and Often!
Ascension Health Case Study

Questions?

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Thank You

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Discussion Questions

- **Why a revolving fund specifically?** What do you see as the benefits of creating a revolving mechanism, rather than making a direct capital investment with no repayment?

- **What was your biggest challenges in setting up your fund?** Who did you have to convince, and what did it take to get their buy-in?

- **How do you think about the long-term viability of your fund?** For example, how will it adapt if and when the low-hanging fruit is gone?

- **How important is measurement and verification of project savings in operating your fund?** How do you go about it?