MHA-HHI Webinar
Finance Opportunities for Energy Efficiency
November 17, 2014
Part 1 - Comprehensive Infrastructure Master Planning

Speaker:
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Director of HVAC Engineering
TRO Jung|Brannen
• Merriam Website Definition

facility  noun  \fæ-ˈsi-lə-tē\  
: something (such as a building or large piece of equipment) that is built for a specific purpose
: something that makes an action, operation, or activity easier
: skill and ease in doing something
• A Facility:
  • Must support the mission and business plan of the organization that uses it.
  • Will change it’s “purpose” over time.
Comprehensive Infrastructure Master Planning
Comprehensive Infrastructure Master Planning
• Comprehensive Infrastructure Master Planning Aligns Facility with:
  • Business Planning
  • Strategic Planning
  • Capital Planning
• Comprehensive Infrastructure Master Planning Process:
  • Step 1 - Find the right partner
• Comprehensive Infrastructure Master Planning Process:
  
  • Step 2 – Develop the Facts
    • Hold interviews with all levels in organization
    • Perform detailed site investigation (and measurement)
    • Benchmark Energy Usage
    • Determine where maintenance dollars are going
• Comprehensive Infrastructure Master Planning Process:
  • Step 3 – Determine Projects
    • Include accurate cost estimates.
    • Prioritize projects (this is interactive with all levels)
      • Health and Safety
      • Loss Prevention
      • Energy savings opportunities (study co-gen?)
      • General Upgrades/Replacements
Comprehensive Infrastructure Master Planning Process:

- Step 4 – Build Consensus
  - Develop a financial approach (look for creative means)
  - Coordinate with all levels interviewed at beginning
- Step 5 – Author Master Plan (Communicate)
- Step 6 - Execute
- Step 7 – Maintain/Improve the plan
### Comprehensive Infrastructure Master Planning

#### Case Studies - Example Project List

<table>
<thead>
<tr>
<th>YEAR</th>
<th>PROJECT</th>
<th>DESCRIPTION</th>
<th>LOCATION</th>
<th>CONSTRUCTION</th>
<th>ELEC. DESIGN</th>
<th>PLUMBING DESIGN</th>
<th>FIRE PROTECTION DESIGN</th>
<th>TOT. COST</th>
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<tbody>
<tr>
<td>2023</td>
<td>HVAC-10</td>
<td>Replacement Unit and 1st Floor Terminus &amp; Hatch All System</td>
<td>HQ/LS</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,808,280</td>
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<tr>
<td>2024</td>
<td>HVAC-10</td>
<td>Building 1A Roof Fan Replacement</td>
<td>HQ/LS</td>
<td>-</td>
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<td>-</td>
<td>260,263</td>
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<td>2025</td>
<td>HVAC-10</td>
<td>Building 1A Return Air Fan Replacement</td>
<td>HQ/LS</td>
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<td>-</td>
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<td>85,000</td>
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<td>2026</td>
<td>HVAC-10</td>
<td>New Ground Level Electrical Room HVAC</td>
<td>E2/E</td>
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<td>62,260</td>
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<td>2027</td>
<td>HVAC-10</td>
<td>New Ground Level Electrical Room HVAC</td>
<td>E2/E</td>
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<td>-</td>
<td>-</td>
<td>185,000</td>
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<td>2028</td>
<td>HVAC-10</td>
<td>Replacement Elevator &amp; Stair Pumps in Mach Rev. 2</td>
<td>H1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>517,750</td>
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<tr>
<td>2029</td>
<td>HVAC-10</td>
<td>System Assessment/Upgrade and Standby Upgrades</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,705,000</td>
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<tr>
<td>2030</td>
<td>HVAC-10</td>
<td>Substation NB</td>
<td>HYD/E</td>
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<td>2031</td>
<td>HVAC-10</td>
<td>Substation NB</td>
<td>HYD/E</td>
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<td>-</td>
<td>-</td>
<td>185,000</td>
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<td>2032</td>
<td>HVAC-10</td>
<td>Distribution to existing emergency paneling switchgear</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>2033</td>
<td>HVAC-10</td>
<td>Distribution to existing emergency paneling switchgear</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3,380,700</td>
</tr>
</tbody>
</table>

#### Engineering Categories
- HVAC/Heating
- Electrical/Power
- Plumbing/Plumbing
- Fire Protection
- Structural

#### Total Costs
- 2023: 1,808,280
- 2024: 260,263
- 2025: 85,000
- 2026: 62,260
- 2027: 185,000
- 2028: 517,750
- 2029: 1,705,000
- 2030: 921,770
- 2031: 185,000
- 2032: 3,380,700
- 2033: 3,380,700

#### Total Project Cost
- 10,150,599

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**TRO Jung Brannen Architecture Interior Design Engineering Master Planning**

**2014 Infrastructure Master Plan Regional Plan Review**

**Regional Plan Review**

**Energy / Utility Upgrades**

**General Upgrade Required**
### Case Studies - Example Project List

<table>
<thead>
<tr>
<th>ITEM</th>
<th>RECOMMENDATIONS</th>
<th>BUNDLE CATEGORY</th>
<th>HVAC Design</th>
<th>Project Total</th>
<th>ELECTRICAL Design</th>
<th>Project Total</th>
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<tbody>
<tr>
<td>HVAC-50</td>
<td>Roseview Grd and 1st Floor Terminals &amp; Return Air System</td>
<td>HHLS</td>
<td>1,762,000.00</td>
<td>176,200.00</td>
<td>1,938,200.00</td>
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<tr>
<td>HVAC-10</td>
<td>Isolation Room Exhaust Fan Replacement</td>
<td>HHLS</td>
<td>187,500.00</td>
<td>18,750.00</td>
<td>206,250.00</td>
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<td>HVAC-14a</td>
<td>Building 33 Roof Fan Replacement</td>
<td>HHLS</td>
<td>150,000.00</td>
<td>15,000.00</td>
<td>165,000.00</td>
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<tr>
<td>HVAC-15a</td>
<td>Building 12A Isolation Room Fan Replacement</td>
<td>HHLS</td>
<td>$75,000.00</td>
<td>7,500.00</td>
<td>82,500.00</td>
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<td>HVAC-18</td>
<td>New Ground Level Electrical Room AHU</td>
<td>E-3 GE</td>
<td>149,250.00</td>
<td>14,925.00</td>
<td>164,175.00</td>
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<td>HVAC-19</td>
<td>New Basement Level Electrical Room AHU</td>
<td>E-8 GE</td>
<td>111,325.00</td>
<td>11,132.50</td>
<td>122,457.50</td>
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<tr>
<td>P-3</td>
<td>Replace Sewage Ejectors and Sump Pumps in Mech Rm. 2</td>
<td>HH</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>PP-1</td>
<td>System Assessment-Sprinkler and Standpipe Upgrades</td>
<td>LS</td>
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<tr>
<td>E-3</td>
<td>Substation N2</td>
<td>HVAC-18 GE</td>
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<tr>
<td>E-4</td>
<td>Substation N3</td>
<td>GE</td>
<td>-</td>
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<td>-</td>
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<tr>
<td>E-7</td>
<td>Add cubicles to existing emergency paralleling switchgear</td>
<td>GE</td>
<td>-</td>
<td>-</td>
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<tr>
<td>E-8</td>
<td>Emergency Substation E1 (includes removing generators)</td>
<td>HVAC-10 GE</td>
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<td>P-9</td>
<td>Provide New VFD on Tahoe Vacuum Pump System</td>
<td>EN</td>
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<td>P-4</td>
<td>Replace Siera Vacuum Pump System w/VFD Controlled Unit</td>
<td>GE/EN</td>
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<td>E-12</td>
<td>Develop Lighting Standards</td>
<td>EN</td>
<td>-</td>
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<td>50.0</td>
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<td><strong>TRADE SUBTOTAL TOTAL</strong></td>
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<td><strong>22,506,550</strong></td>
<td><strong>2,250,555</strong></td>
<td><strong>24,757,105</strong></td>
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<td><strong>GRAND TOTAL</strong></td>
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**Categories:**
- HH: Health hazard
- LS: Life safety issue
- EN: Energy or Utility Savings Project
- GE: General Upgrade Required
• Case Studies – Results
  • St Joseph's Hospital, Marshfield, Wisconsin

Comprehensive Infrastructure Master Planning
Energy Efficiency Opportunities in Hospitals Israel Cuervo
NSTAR Energy Efficiency Programs

» Large Commercial and Industrial
  New Construction / Major Renovation
  Large Retrofit Program

» Small and Midsize Business
  Direct Install Program

» Engineering Services
Downtown Boston Hospital

- Thermostat and Unoccupied Setbacks
- Electric savings $109,066 per Year
- Measure Cost $583,943
- Incentive $207,943
- Customer out of pocket $376,000
- Payback with Incentive 3.5 Years
Northern Mass Medical Center

» LED Lighting Conversion

» Electric savings $93,897 per Year

» Measure Cost $198,290

» Electric Incentive $99,640

» Customer out of pocket $98,650

» Payback with Incentive 1.06 Years
Southeastern Mass Clinic

Direct Install Program

Smaller Facilities

- Electric savings $997 per Year
- Measure Cost $5,877
- Incentive $4,701
- Customer out of pocket $1,176
- Payback with Incentive 1.18 Years
Hospital Overview

Chuck Norden
Hospital Overview

- 280,000 sq. ft. five story hospital
- 245 licensed beds, and provides impatient and outpatient services
- The Hospital HVAC consists of 14 air handling units (AHU’s) with steam heating coils and chilled water (CHW) cooling coils
- Many of the AHU’s 100 % outside air
- HVAC heating is provided by 2 Cleaver Brooks fire tube natural-gas fired boilers. The boilers make low pressure steam serving heat exchangers for domestic and heating HW loops and steam coils in the AHU
- HVAC cooling is provided by a central CHW plant. The plant consists of 2 Carrier water-cooled electric screw chillers, each 350 tons each
- Pneumatic controls with limited control strategy
- Existing first generation T8 with limited sensor controls
Process

- Initial meeting
- Scoping Report: High level overview of the hospital’s operation and to identify potential EE measures. (No cost to Customer for Scoping Report)
- Report Review: Identify the measures that the customer would like to investigate further.
- TA Study: Detailed analysis of EE opportunities identifying savings and incentive levels (50/50 Co-Pay for TA Study)
- Executive Board Review
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<tbody>
<tr>
<td>1</td>
<td>Upgrade to Full DDC Control of AHUs &amp; Retrocommission</td>
<td>324,822</td>
<td>19,544</td>
<td>0</td>
<td>$51,520</td>
<td>$357,638</td>
<td>$78,906</td>
<td>$29,316</td>
<td>$249,416</td>
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<td>2</td>
<td>Remove Heat Wheel From AC-2 (AH-8)</td>
<td>58,291</td>
<td>0</td>
<td>0</td>
<td>$6,121</td>
<td>$18,480</td>
<td>$88,236</td>
<td>$51,539</td>
<td>$33,208</td>
<td>0.7</td>
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<td>3</td>
<td>Convert AC-2 (AH-8) to Return Air System</td>
<td>96,943</td>
<td>34,359</td>
<td>0</td>
<td>$40,793</td>
<td>$154,503</td>
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<td>4</td>
<td>Install VFDs on AHUs and Reduce Speeds During Unoccupied Periods</td>
<td>497,082</td>
<td>13,135</td>
<td>0</td>
<td>$63,897</td>
<td>$315,551</td>
<td>$137,985</td>
<td>$19,703</td>
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<tbody>
<tr>
<td>5</td>
<td>Combustion Controls &amp; Draft Fan VFD on Low-Pressure Heating Boilers</td>
<td>34,300</td>
<td>14,967</td>
<td>0</td>
<td>$16,937</td>
<td>$130,302</td>
<td>$13,244</td>
<td>$22,451</td>
<td>$94,607</td>
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<td>6</td>
<td>Static Pressure Reset</td>
<td>19,127</td>
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<td>0</td>
<td>$2,008</td>
<td>$8,040</td>
<td>$5,379</td>
<td>$0</td>
<td>$2,661</td>
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<td>7</td>
<td>Install VFDs on CHW Pumps</td>
<td>39,087</td>
<td>0</td>
<td>0</td>
<td>$4,104</td>
<td>$29,707</td>
<td>$11,406</td>
<td>$0</td>
<td>$18,301</td>
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<td>8</td>
<td>Install VFDs on CW Pumps</td>
<td>28,501</td>
<td>0</td>
<td>0</td>
<td>$2,993</td>
<td>$24,434</td>
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<td>9</td>
<td>Install Low Pressure Drop Filters</td>
<td>24,887</td>
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<td>$2,613</td>
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<td>$10,363</td>
<td>$0</td>
<td>$637</td>
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<td>10</td>
<td>Walk-in Cooler Equipment &amp; Controls Upgrades</td>
<td>64,896</td>
<td>0</td>
<td>0</td>
<td>$6,814</td>
<td>$39,600</td>
<td>$20,926</td>
<td>$0</td>
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<td>11</td>
<td>Kitchen Hood Controls</td>
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<td>6,117</td>
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<td>$6,904</td>
<td>$33,688</td>
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<td>12</td>
<td>Chilled Water Temperature Reset</td>
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<td>$4,410</td>
<td>$19,140</td>
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<td>$12,950</td>
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<td>Condenser Water Temperature Reset</td>
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<td>0</td>
<td>$8,820</td>
<td>$18,000</td>
<td>$12,380</td>
<td>$0</td>
<td>$6,200</td>
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<td>Totals for Phase 2 (FY2015-2016)</td>
<td>350,648</td>
<td>21,084</td>
<td>0</td>
<td>$55,604</td>
<td>$313,910</td>
<td>$93,603</td>
<td>$31,627</td>
<td>$188,680</td>
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<tr>
<td></td>
<td>Total</td>
<td>1,327,786</td>
<td>88,121</td>
<td>0</td>
<td>$217,933</td>
<td>$1,160,082</td>
<td>$398,730</td>
<td>$132,185</td>
<td>$629,167</td>
<td>2.9</td>
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</table>

% of Total: 14% 24% 0%
On Bill Financing (OBR)

- Available for large commercial and industrial customers in National Grid’s Electric service territory
- 0% interest for a 24 month period
- Financed amount will appear on your bill
- Financing is available for customers in good standing with good payment history
- Financing is subject to funding availability
Financials

- ON Bill Repayment / OBR: 24 months @ 0%

  Project Cost: $1,160,082
  Gas & Electric Incentive: $530,915
  Net Cost: $629,167 / 24 Months = $26,215 per month
  Savings: $217,933 / 12 = $18,161
  Net cost per month for 2 years = $8,054

- ROI

  Estimated Measure Life: 13 years
  Estimated Annual Savings: $217,933
  Projected Measure Life Savings: $2,833,129
  Less cost recovery -- 2.9 years: $629,167
  Net savings: $2,203,962
  Undiscounted Simple ROI: 350.30%
Third Party Investor Financing

John P. Harper
Birch Tree Capital

Charlotte J. Kim
Wilson Sonsini Goodrich & Rosati

Finance Opportunities for Energy Efficiency

Massachusetts Hospital Association
& Healthier Hospitals Initiative
Webinar – November 2014

Clean Energy Finance
Financial advisors in structuring financing for clean power and energy efficiency projects.

Over 25 years structuring debt and equity for power and other infrastructure projects in the U.S. and overseas.

Three principal client types:
• Institutional & Private Equity Investors
• Clean Power Project Developers
• Site Hosts

Current focus:
• Aggregation financing initiatives
Comprehensive Energy Project and Finance Expertise

Our ability to lead complex transactions is grounded in our deep experience with clean energy project development and our core corporate and finance skills.

**Project execution with a well-integrated and highly-regarded team**

**Experience across a variety of energy finance & development deals:**

- Energy efficiency, power purchase and other off-take agreements
- Engineering, procurement and construction agreements (EPCs)
- Equipment supply, and operations & maintenance agreements (O&M)
- State and federal regulatory approvals and incentives
- IP, processing and license agreements
- Debt and mezzanine finance and equity investments
- Bank, bond, and insurance company financing
- Tax advantaged financing mechanisms
- Intercreditor arrangements
- M&A and other exits
- Majority and minority investments

**Coupled with experience across various technology sectors:**

- Biomass & Biofuels
- Geothermal
- Wind
- Solar
- Energy Efficiency, Smart Grid, Energy Storage & Transmission
Gundersen Health System energy independence

Gundersen achieves energy goal with $30 million investment, $11 million in grants

Gundersen Health System invested $30 million of its own money and leveraged $11 million in state and federal grants to reach its goal of becoming energy independent, CEO Jeff Thompson said today.

The La Crosse-based health system, which set the goal in 2008, reached the milestone on Oct. 14, the first day it produced more energy than it used, Thompson said at a press conference. It has done so on 11 days since then, and expects an eight-year payback on all projects in the quest, he said.

The self-sufficiency comes from a combination of conservation measures that save more than $2 million a year; electricity and heat the system uses from power generated from biomass, biogas and wind energy projects, and money realized from selling energy to power plants, Thompson said.

When asked why Gundersen is involved in energy projects, Thompson said, “The why is we didn’t set out to become the greenest health-care system.

“We set out to make it easier for our patients to breathe. We set out to improve our local economy. We set out to lower the costs of health care,” he said.

“We took 450,000 pounds of particulates — air pollution — out of the air” with energy generation that uses sustainable sources rather than fossil fuel, Thompson said.

The economic boost results from using local power sources “instead of coal from a mountaintop in Montana and natural gas from Texas,” he said.

“We do it with local partners,” he said, citing the $800,000 the system spends with regional suppliers for wood chips to power the biomass boiler, its cooperative effort with La Crosse County that recovers methane gas from the county landfill, its Carlton wind farm with Organic Valley and its ability to sell electricity to power companies when it produces more energy than it needs.

Gundersen’s investment came from savings accounts and not the operating budget, bolstered

Workers install solar panels on Gundersen’s underground parking ramp on the La Crosse, Wis., campus in 2008

• CREDIT: Gundersen Envision
Multiple Influences on Project Financing Structure

- Technology Choice(s)
- Project Capital Cost
- Hospital Financial Strength
- Hospital Operating Control Preference
- Project’s Eligibility for Tax Incentives
- Hospital Ownership Preference
- Contractor Ownership Preference
- Hospital Capital Budget

Multiple Influences on Project Financing Structure
Financing Structure Options

Hospital wants Energy Efficiency/Renewable Power Generation Investments

- Tax Appetite? (*)
  - Yes
  - No
- Site Host is Credit-worthy?
  - Yes
  - No
- Will Accept Performance Risk?
  - Yes
  - No
  - Can Fund Capital Cost?
    - Yes
    - No
  - Will Accept Performance Risk?
    - Yes
    - No
  - Sizable Project?
    - Yes
    - No
  - 3rd Party Ownership
    - Yes
    - No
  - No Project

(*) Only relevant for renewable power generation projects

Source: Lawrence Berkeley National Laboratory
Principal Financing Structure Options

Contractor / 3rd Party Ownership financing:
- Energy Savings Performance Contracts
- Shared Savings / Efficiency Services Agreements
- Power Purchase Agreements

Debt Financing:
- Utility on-bill financing
- MassDevelopment bonds, leases, & loans
- USDA Loan Guarantees
Energy Savings Performance Contracts

Key Aspects:

- Host customer, e.g., the hospital, owns the energy efficiency equipment & improvements
- Equipment on the hospital’s balance sheet
- Performance contracting model = payments to the ESCO are based partly on the capital acquisition value and expenditure amount
- ESCO may consolidate multiple roles (developer, arranger of financing, installation, monitoring, etc.)
- ESCO may guarantee savings
- May be combined with a PPA for renewable generation owned by a third-party
ESPC Basic Structure:

- Develop, install, maintain, perform monitoring & verification;
- Provides savings guarantee

Customer

Utility

ESPC

Energy Service Company (ESCO)

Lender/Investor

Utility bill

Energy savings

Performance payments

Capital for project

Returns/Loan payments
ESPC Strengths:

- ESPC structure is a tested/accepted structure
- ESCOs have a long history of contracting experience and standardized processes
- ESCO performance guarantees reduce project risks, which is valuable in large, complex retrofits
- ESCO performance guarantee can enable lower cost financing, e.g., via a tax-exempt municipal lease
- Projects are maintained through rigorous monitoring and verification
ESPC Challenges:

- Contractor and financier incentives limit deployment of new technology
- High transaction costs
- Long negotiation periods
- Not a realistic framework for smaller projects
- Can limit participation by smaller ESCO firms
- Does not necessarily incentivize energy or cost savings
- On the hospital’s balance sheet
Shared Savings and Efficiency Services Agreements

Key Aspects:

- Third-party service provider owns and operates the energy efficiency measures and equipment
- Hospital pays for the energy efficiency savings and related services as a service or expense over time
- Generally requires no (or minimal) upfront cost by the hospital
- May be structured as off-balance sheet to the hospital
Sample ESA Structure:
Kuakini Medical Center Hospital, Hawai‘i

- Financier: Metrus Energy
- Contract: Efficiency Services Agreement
- ESCO: Energy Industries
- Energy Savings
  - Insurance Policy: Energi
- Efficiency Upgrades:
  - New chiller
  - Lighting upgrades
  - Energy mgmt. system
  - New steam boilers
  - Air-handling unit VFDs
  - New booster pumps
- Project Cost: $5.8M
- Annual Savings: $1.1M

Source: Metrus Energy
Kuakini – Metrus Financing Structure

**Project Installation**
Energy Industries installs the project and performs ongoing maintenance.

**Efficiency Services Agreement**
Metrus funds 100% of project costs. Kuakini repayment is based on avoided energy use and reduced operating expense.

**Efficiency Services Performance Contract**
Metrus and Energy Industries entered into a turn-key project installation & maintenance contract. Metrus pays for ongoing maintenance and the measurement of project savings.

*Source: Metrus Energy*
ESA Strengths:

- May enable hospital to finance energy efficiency improvements off-balance sheet
- Hospital pays only for actual savings realized
- Hospital does not bear O&M responsibilities or performance risk during the ESA contract term
- ESA provider incentivized to maximize energy savings or other performance metrics
Very flexible tool that can be adapted in many ways:
  • Pricing
  • Types of services and energy efficiency measures provided
  • Allocation of risks (O&M, construction, performance, customer credit, etc.) among parties involved

ESA provider may be able to obtain financing for groups of similar energy efficiency projects that meet certain criteria from a single investor, thereby lowering transaction costs

New investors using ESA format to finance pools of smaller projects to build economies of scale
ESA Challenges:

- Each host customer has to make its own determination of its accounting treatment of the ESA (customer-by-customer analysis)
- ESA provider must obtain or have access to upfront capital, e.g. debt and/or equity
Power & Net Metering Credit Purchase Agreements

Key Aspects:

- Third-party service provider owns and operates the power generation equipment
- Hospital pays for the electricity (or net metering credits) if and as generated over time
- Generally requires no (or minimal) upfront cost by the hospital
- May be structured as off-balance sheet to the hospital
Basic PPA/NMCPA Structure:

- **Customer**: Receives electricity and pays PPA/NMCPA SPE.
- **PPA/NMCPA SPE**: Receives payments, manages construction and O&M.
- ** Utility**: Receives actual power generation.
- **PPA Payments Based on Actual Power Generation**: Sent from SPE to EPC & O&M Contractors.
- **Construction & O&M fees**: Received by EPC & O&M Contractors.
- **Excess Electricity**: Sent from Utility to Customer.
- **Net Metering Credits or Residual Electricity**: Received by Customer.
- **Debt Repayment/Capital Returns & Tax Benefits**: Received by Lender/Investor.
- **Project Debt & Tax Equity**: Returned to PPA/NMCPA Project Developer.
- **Project Equity**: Returned to PPA/NMCPA Project Developer.
- **Install, Maintain**: Conducted by EPC & O&M Contractors.
- **Electricity (or Net Metering Credits)**: Sent from SPE to Customer.
PPA/NMCPA Strengths:

- PPA structure is a tested/accepted structure
- PPA provider takes all project risks, including technology, construction, operational risks
- Multiple PPA providers in the marketplace
- Aggregation programs to simplify procurement
- Increasingly standardized contract documentation
PPA/NMCPA Challenges:

- PPA providers tend to be technology-specific. Few contractors/developers able & willing to support projects with different technologies (solar, CHP, biogas, etc.) or to integrate with energy efficiency measures.

- PPA provider must obtain or have access to upfront capital, e.g. debt, equity and/or tax equity, which may complicate and delay closing.

- Some technologies may not fit needs or siting opportunities for some hospitals.
Debt Financing Options

Multiple sources & types:

- Utility on-bill financing
- MassDevelopment financing
  - GreenLoan Program
  - Tax-exempt Purchase Agreements (municipal leases)
  - Tax-Exempt 501(c)(3) Bonds
- USDA Loan Guarantees

Sources vary in their speed/simplicity, cost, rates, loan security, standardization, flexibility, & lender.
Emerging Financing Options

- State resiliency funding
  - ex. $2.79M grant for Baystate Health CHP plant
- PACE (Property Assessed Clean Energy)
- State & municipal green bonds
- Green banking credit enhancement tools
- Aggregation & securitizations, e.g., via the Investor Confidence Project
Choosing a financing option

- Comfort with performance risks
- Need for ownership / control
- Availability of internal cash flow
- Impact on hospital’s capital structure
- Coordination with other capital improvements
- Availability of internal staff to negotiate contracts
- Time constraints
- Need for tested/standardized contract structure with willing providers
Some service providers & other resources

- Energi  [http://www.energi.com](http://www.energi.com)
- Enlighted  [http://enlightedinc.com/](http://enlightedinc.com/)
- Investor Confidence Project  [www.eeperformance.org](http://www.eeperformance.org)
- Noesis Energy  [www.noesis.com](http://www.noesis.com)
- Renewable Funding  [https://renewfund.com/overview](https://renewfund.com/overview)
# Contacts

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