SWEEP Multi-Family Summit
Energy and Water Conservation for Existing Portfolios
Chris Jedd – The Housing Authority of the City and County of Denver
Integrating Energy and Water Conservation Into Your Portfolio

Capital Planning

O&M

Energy Performance Contracting

Resident Engagement

Procurement
Energy Performance Contracting

EPC Financing Example

- Install a 92% efficient furnace
- Cost $1,000
- Annual energy savings $100/year

Financing Scenario # 1
- Loan amount: $1,000
- Loan term: 10 Years
- Yearly payment: $100

Financing Scenario # 2
- Loan amount: $1,500
- Loan term: 15 Years
- Yearly payment: $100
- Excess capital $500

July 2015
Energy Conservation Measures (ECMs)

- **High Savings Return** – Low-flow water equipment and high-efficiency lighting typically pay-back over a relatively short period. Although a PHA may not need to install low-flow toilets from a physical needs perspective, this type of ECM helps to fund slower payback items the PHA does need.

- **High Value / Capital** – Windows are normally a good example of something a PHA needs. Unfortunately, the energy cost to savings ratio associated with new windows is normally not adequate to cover their costs over a 12-20 year period. Excess savings produced by quicker payback ECMs can be used to bridge the shortfall.

*Generally speaking, the goal of an EPC is not just reducing utility consumption. It is a means by which additional funding can be secured to meet real capital needs.*
## EPC – Traditional ESCO Model

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
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<tr>
<td>- Turn key process</td>
<td>- ESCO takes a large fee</td>
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<tr>
<td>- No savings risk</td>
<td>- Less scope</td>
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<tr>
<td>- No out of pocket costs</td>
<td>- Less customization</td>
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<tr>
<td>- Energy savings</td>
<td>- Less staff input</td>
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<td>- Less resident engagement</td>
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## EPC – Self-Managed Model

<table>
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<tr>
<th>Pros</th>
<th>Cons</th>
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<tbody>
<tr>
<td>- Lower soft cost/less fees</td>
<td>- Staff time</td>
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<tr>
<td>- More scope &amp; capital improvements</td>
<td>- Savings risk</td>
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<td>- Staff involvement</td>
<td>- Pre-construction costs</td>
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<td>- Resident involvement</td>
<td>- Picking firms that don’t perform</td>
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<td>- Local talent</td>
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<td>- More control over the project</td>
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Project Development Timeline

- Execute IGA with DHA
- Investment Grade Energy Audit
- Develop Bid Documents
- HUD Submission & Approval
- Procure Architect
- Procure Contractor & Obtain Pricing
- Negotiate & Execute Financing
- Start Construction

One Month  Three Months  Six Months  Nine Months
Project Scope

Energy Conservation Measures

- 4 Central Plant Retrofits
- 1,300 Furnaces
- 170 Domestic Hot Water Heaters
- 4 new Irrigation Systems
- 800+ Refrigerators
- 1,300 Attics Insulated

Annual Energy Savings

- 19 million gallons of water
- 190,000 therms
- 2.2 million kWhs

Living Green
The Choice Is Yours
Project Savings

Distribution of Utility Savings ($) per ECM

- Central Plants Retrofits, $19,586, 4%
- Furnace Upgrades, $83,046, 17%
- DHW Heater Upgrades, $7,884, 2%
- Circulation Pumps & VFDs, $4,461, 1%
- MAU Fan VFDs, $11,717, 2%
- Space Heating / Thermostat Remediation, $119,668, 24%
- Refrigerator Replacement, $34,961, 7%
- In Unit Lighting, $20,104, 4%
- Common Area / Exterior Lighting, $24,918, 5%
- Roof & Attic Insulation, $49,487, 10%
- Window Replacement, $564, 0%
- Low Flow Equipment Remediation, $67,418, 14%
- Irrigation System Retrofit, $46,247, 10%

Total Savings: $349,610
2014 Measurement and Verification

Total 2014 Savings - $2.8 Million

- **Water & Sewer Savings**: $1.5 million, 45% reduction from baseline year
- **Natural Gas Savings**: $850,000, 35% reduction from baseline year
- **Electric Savings**: $501,000, 17% reduction from baseline year
EPC Benefit Overview

1. Utility Cost Reduction
2. Environmental Impact
3. Capital Improvements
4. Utility Bill Analysis
5. Resident Engagement
6. Enhanced Operations and Maintenance
On Going Energy Management

- Utility Analysis
- Training Programs for Staff
- Enhanced Operations and Maintenance Procedures
Resident Engagement Programs

Empowering DHA Residents to Conserve Energy
Questions?

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