Achieving Higher Savings Through Innovative ESPC Projects: City of Boulder

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City of Boulder: GOALS

- Reduce energy/water use and cost
- Leverage ARRA funding
- Upgrade aging infrastructure
- Reduce GHG emissions by 20%
- Improve comfort, aesthetics, productivity
- Improve building automation – maximize demand side management opportunities
- Add renewable energy
- Lead by example
Philosophy for a SUSTAINABLE FUTURE

Smart Buildings + Smart People

- CLEAN
- SMART
- EFFICIENT

Smart Teams
Smart Operators
Smart Occupants
CITY OF BOULDER EPC Measures

- Water conservation, lighting, building envelope
- Mechanical systems, VFDs, motors, pumps, etc.
- Building controls, optimization/re-commissioning
  Employee education/Behavioral change
- Solar PV at 13 locations = 1.1 MW of production
- Solar thermal pool heating
SMART BUILDINGS

- Building automation
- Smart Utility Meters at 21 highest EUI buildings

SMART PEOPLE

- People – Occupant Behavior
- Process – Operator Behavior
- Performance – FEEDBACK
WHY Focus on Behavior?
Employee Engagement - Important as ever

BOULDER’S REASONS:

✓ Increase productivity & morale
✓ Achieve deeper savings – 10%
✓ Protect your investments
✓ Employee training & education
✓ Leverage outreach & awareness
✓ Transparency

Despite the fact that:
- 86% of public sectors employees feel they can make a difference by working in government
- 98% are focused on serving the public with integrity
- 87% are proud to work in government

Only:
- 58% of employees are fully engaged in their job
- 31% strongly feel that they are valued
- 31% are very satisfied with their job/working conditions

Source: The Governing Institute

*** COMPANIES WITH ENGAGED EMPLOYEES OUTPERFORM THOSE WITHOUT BY UP TO 202% ☑
71% OF ALL EMPLOYEES ARE NOT FULLY ENGAGED

Sustainable engagement is an experience not an event.

Source: ForMomentum, Inc
Changing Behavior is Hard to Do...

- Old Habits die hard

D'oh, the donuts are wayy over there. Think I'll have fruit.

My cunning choice architecture will soon have Homer eating healthy.
Guiding Principles of Behavior Change

Social Science – Behavior Change in Practice

- Communications
- Commitment
- Prompts
- Competition
- Feedback
- Incentives
- Peer Influence
- Targeted Behaviors
- Visibility
- Convenience

Foundation for implementing strategies and developing behavior change “tools”
## CITY OF BOULDER
### Project Financials

<table>
<thead>
<tr>
<th>Item</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Project Value</td>
<td>$16,232,960</td>
</tr>
<tr>
<td>- Electric and Gas Utility Rebates – one time</td>
<td>($2,042,957)</td>
</tr>
<tr>
<td>- Energy Efficiency and Conservation Block Grant</td>
<td>($360,000)</td>
</tr>
<tr>
<td>- City Capital</td>
<td>($2,385,058)</td>
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<tr>
<td><strong>Financed Amount</strong></td>
<td><strong>$11,139,262</strong></td>
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</tbody>
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- Stimulus funding (EECBG) only 2% of funds
- 24 of 28 (86%) of contractors in Colorado, with 13 (54%) in Boulder area
- $11.5M to subcontractors
  - $6M for labor with **422 people** employed in 3-year timeframe
- ESCo (McKinstry) professional staff increased from 14 to 35 in 3 years
CITY OF BOULDER
Results

Smart Building Dashboard

Top 10 Facility Ranking

City of Boulder

63rd Water Treatment Facility
75th Wastewater Treatment Facility
Atrium
Betasso Water Treatment Facility
East Boulder Community Center
FAM Maintenance Building
Fire Station 1
Fire Station 2
Fire Station 3
Fire Station 4
Fire Station 5
Fire Station 6
Fire Station 7
Fleet Services Center
Iris Center
Main Library
Meadows Library

City of Boulder:

$1,063,718

Total Cost Avoidance

75th Wastewater Treatment Facility
63rd Water Treatment Facility
Municipal Service Center
North Boulder Recreation Center
Park Central
East Boulder Community Center
Main Library
Municipal Building
OSMP Foresberg
Public Safety Building

% TOTAL SAVINGS
26

COST AVOIDANCE
$1,063,718

HOMES POWERED
2,027

CARS OFF THE ROAD
3,188

ENERGY STAR
N/A

ENERGY USE INDEX
109

ENERGY COST INDEX
$1.79

Right-click graph to export or print data
DEEP SAVINGS ARE ACHIEVABLE
Smart People leverage investments in Smart Buildings

<table>
<thead>
<tr>
<th>FACILITY</th>
<th>ENERGY SAVINGS</th>
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<tbody>
<tr>
<td>OSMP Foresberg</td>
<td>69%</td>
</tr>
<tr>
<td>Park Central</td>
<td>54%</td>
</tr>
<tr>
<td>West Senior Center</td>
<td>53%</td>
</tr>
<tr>
<td>OSMP Cherryvale</td>
<td>45%</td>
</tr>
<tr>
<td>Municipal Service Center</td>
<td>42%</td>
</tr>
<tr>
<td>63rd Water Treatment Facility</td>
<td>41%</td>
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</table>
You Have The Power

Public buildings consume an astonishing amount of energy, and waste almost as much. Yet, efficiency upgrades alone are not enough to ensure that these buildings remain sustainable. McKinstry’s People.Power.Planet challenge helps raise awareness and effect the necessary behavioral changes to maintain energy efficiency gains.

PROGRAM-WIDE IMPACT
Cities, counties, and other public buildings across the country are engaging in the People.Power.Planet challenge. Check out their progress here.

ENERGY SAVINGS
80 million kBTUs saved by participating communities

CARBON SAVINGS
30,000 tons of carbon saved by participating communities

TOTAL PLEDGES
36 people pledged to cut energy and waste

YOU ARE NOT CHECKED IN TO A COMMUNITY
FIND A COMMUNITY
Community/City/State GO >
The Cornerstone of Sustainability is BEHAVIOR CHANGE

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