ENABLING POLICY FOR ENERGY PERFORMANCE CONTRACTING

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JOHNSON CONTROLS

130,000 Employees  Multi-industry  Founded 1885

Building Efficiency
Creating quality indoor environments that are comfortable, safe, energy efficient, and sustainable

Power Solutions
Providing the highest quality, lowest cost automotive batteries to power vehicles of today and tomorrow

Automotive Experience
Delivering world-class technologies that differentiate vehicle interiors and increase consumer demand

- >200 million vehicles
- 1/3 of world’s automotive batteries
- 1 million building efficiency customers
The Institute for Building Efficiency is an initiative of Johnson Controls to provide information and analysis of Technologies, Policies, and Practices for efficient, high performing buildings and smart energy systems around the world.

www.InstituteBE.com
ENERGY EFFICIENCY INDICATOR SURVEY
Global survey of energy management decision makers

North America: 1,692
Europe: 857
India: 428
China: 450
Australia: 155
Brazil: 103
South Africa: 77

North America (English only): 1,249
North America (English only): 1,146
North America India Brazil: 2,567
North America Europe India China: 2,882
North America Europe India China Australia Brazil South Africa: 3,868
DRIVERS FOR ENERGY EFFICIENCY INVESTMENTS

*Government Incentives Rise in Importance*

How significant are the following in your organization's energy efficiency decisions?

<table>
<thead>
<tr>
<th>2010 Global</th>
<th>2011 Global</th>
<th>Drivers of efficiency</th>
<th>Europe</th>
<th>India</th>
<th>China</th>
<th>US/CA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Energy cost savings</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>Gov’t/utility incentives/rebates</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Enhanced brand or public image</td>
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<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td>4</td>
<td>Increasing energy security</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>Greenhouse gas reduction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>Existing policy</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>
What is the top barrier to pursuing energy efficiency at your company/organization?

- **Awareness**
  - India: 17%
  - China: 12%
  - Europe: 8%
  - US/CA: 7%

- **Technical expertise**
  - India: 14%
  - China: 16%
  - Europe: 10%
  - US/CA: 6%

- **Certainty of savings**
  - India: 14%
  - China: 16%
  - Europe: 13%
  - US/CA: 10%

- **Financial criteria**
  - India: 16%
  - China: 17%
  - Europe: 19%
  - US/CA: 21%

- **Available capital**
  - India: 17%
  - China: 18%
  - Europe: 30%
  - US/CA: 38%

BARRIERS VARY BY REGION

Awareness & expertise more critical in India, China
1 – ENERGY PERFORMANCE CONTRACTING
2 – MARYLAND CASE AND ENABLING POLICY
3 – THAILAND CASE AND ENABLING POLICY
ENERGY PERFORMANCE CONTRACTING
A Proven Procurement Model for Building Retrofits

Process:
- Preliminary Audit
- Customer Commitment
- Detailed Investment Grade Audit
- Establish PC with Perf. Guarantee
- Arrange Financing
- Perform Improvements
- O&M, M&V Savings

Participants:
- Private Financier
- Building
- Energy Services Company

Savings:
- Guaranteed savings as investment volume
- New, reduced costs with performance contracting
- Customer savings

Guarantee period begins
Contract expires
Time
1 – ENERGY PERFORMANCE CONTRACTING
2 – MARYLAND CASE AND ENABLING POLICY
3 – THAILAND CASE AND ENABLING POLICY
MARYLAND STATE GOVERNMENT

Property Details
- Location: Maryland, USA
- Building type: State government buildings
- Size: 38 buildings

Energy and Sustainability Solutions
- Cooling system upgrades and modernization.
- Heating system upgrades and modernization.
- Upgrade air handling and air distribution systems – also air and water balancing, insulation improvements and replacement of failing steam traps.
- Lighting system upgrades.
- Automated energy management control systems.
- Building envelope infiltration reduction and window replacements.
- Performance Guarantee – guaranteed outcome for the project’s performance through an annual measurement and verification program

Expected Results
- US$1,948,736 guaranteed savings per year
- 7,721 tons of CO2 savings per year
- Project in progress
- 13.5 years financial payback
ENABLING POLICIES: MARYLAND

Goals:

- Reduce both per capita energy consumption and per capita peak demand by 15 percent by the end of 2015.
- All state agencies shall reduce their energy consumption by 5% by 2009 and 10% by 2010.

Master lease program finances energy efficiency improvements using the dollars saved from future utility bills.

Supportive policies:

- Rebate program from utilities
- Benchmarking available from EnergyStar
1 – ENERGY PERFORMANCE CONTRACTING

2 – MARYLAND CASE AND ENABLING POLICY

3 – THAILAND CASE AND ENABLING POLICY
INTERNATIONAL SCHOOL OF BANGKOK

Property Details
- Location: Bangkok, Thailand
- Building type: School
- Size: 14 hectares

Energy and Sustainability Solutions
- **Air-Conditioning Upgrade** – removal of existing units and installation of new energy efficient air conditioning units (split and packaged) for the entire campus
- **Lighting Retrofits** – installation of lighting retrofits in the library. Retrofits include replacing existing metal halide fixtures with new T5 fluorescent fixtures.
- **Performance Guarantee** – guaranteed outcome for the project’s performance through an annual measurement and verification program
- **LEED Consulting** – conducted a Gap Analysis assessment of the current building’s profile to identify the necessary steps needed to meet the LEED certification requirements. Developed a roadmap to help the school achieve this goal through future phases of work.

Results
- **US$122,111** savings per year
- **700 tons of CO₂ savings**
- **Completed July 2009**
- **8.5 years financial payback**
ENCON Fund

- Energy Conservation Promotion Fund (ENCON Fund) was financed by a levy of US$0.001/litre on petroleum products.
- Supports all EE/RE promotion activities – R&D, subsidies, soft loans, awareness campaign, capacity building, and the following programs:

Energy Efficiency Revolving Fund

- Provides capital at no cost to Thai banks, which then provide low interest loans to energy efficiency projects

Tax Incentives

- Exemption of import duties – for equipment related to RE/EE
- Exemption of corporate income tax for 8 years for EE/RE manufacturers or businesses
- Reduction of corporate income tax for business that improve their EE or utilize RE up to 70% of investment costs.
CONCLUSIONS

- Energy Performance Contracting is a proven procurement model for building retrofits.
  - No up front cost for customer.
  - Project loan repaid from the guaranteed energy savings

- Government can help support the financing of projects for both public and private buildings to undertake energy efficiency retrofits.

- Other policies that set energy efficiency targets, support awareness, build technical expertise and provide subsidies or tax incentives are also important.

- The Institute for Building Efficiency is writing a Toolkit for policy makers from emerging economies on how to develop a policy road map for energy efficient buildings.
  - We’d like your input!
QUESTIONS??

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