SAVING ENERGY IN THE GOVERNMENT SECTOR - AN INTERNATIONAL REVIEW

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WHY THE GOVERNMENT SECTOR?

- Government is often the largest energy user
- Building stock is older
- Government buying-power can lead the market
  — market transformation
  — open new markets (products, services)
- Set examples for others
- Lower the cost of government operations
- Slow energy demand growth:
  more capital and electricity system capacity
  available for economic development
SURVEY METHOD

• Collaboration: Berkeley Lab, NUTEK (Sweden)
• Fax/phone survey to 100+ countries (24 replies)
  - Latin America
  - North America
  - Asia
  - Europe
• Focus on national-level government facilities
  - ministries
  - public housing
  - government-owned corporations
  - government-owned utilities
PROGRAM CATEGORIES

Non-financial tools
- Targets and monitoring
- Information and training
- Purchase/lease energy-efficient products
- Technology procurement
- Standards (government buildings, equipment)
- Energy audits
- Demonstration projects
- Voluntary programs
- Software tools
Financial Tools

- Budget allocation to energy management
- Bonds, revolving funds, loans
- Budget reforms
  - retained cost savings
  - link capital + operating costs
  - extend payback times
- Off-budget finance
  - third-party funding (ESPC)
  - utility rebates
FINDINGS

• Individual projects but few comprehensive programs
• Many countries with no [reported] government sector energy efficiency program
• Best examples:
  - US, Canada, Netherlands, Switzerland
• Significant start:
  - Japan, Germany, Mexico, Sweden, New Zealand, France, Indonesia, Korea, Brazil (?)
• Little information on expenditures, savings
• Many more opportunities!
SURVEY RESULTS

- Comprehensiveness
  - US, Denm, Can., Switz, Neth., Ger?
  - Swe., Jap., Mex.
  - Arg., Col., CR, Ind., Peru
  - Czech., Thai, Phil., Brz., China
  - Ind., NZ, HK, Ire., Kor., Fr.

- More active countries:
  - US, Denm, Can., Switz, Neth., Ger?
  - Swe., Jap., Mex.

- Less active countries:
  - Arg., Col., CR, Ind., Peru
  - Czech., Thai, Phil., Brz., China
  - Ind., NZ, HK, Ire., Kor., Fr.
Government Energy Management: Chicken or Egg?

Critical mass

? Comprehensice Government In-House energy Management

will
US EXAMPLE:
Federal Energy Management Program

- Federal sector uses 2% of US energy ($8 B/year)
- Target energy use in buildings:
  - 1/3 of total energy
  - 500,000 buildings (300 M m²)
  - target 35% less energy/floorspace, 1985-2010
  - 1980-1994: invested $3.3 B; return = 25%/year
- Strategies:
  - Agency-specific goals
  - Energy audits, technical assistance
  - Energy-saving performance contracts ($450M)
  - Procurement of efficient products, new tech’s
- Details on Web site: www.eren.doe.gov/femp
CASE STUDY: Advanced lighting Controls Demonstration Project

TESTBED
- San Francisco Federal Building, 20 stories, 150kM²
- Offices for FBI, DEA, IRS, GSA, HUD, others

PROJECT
- Systematic, side-by-side testing of a range of lighting control approaches

RESULTS
- Significant savings; significant problems
CASE STUDY: US Postal Task-Lighting Redesign

- Focus is on “mail sorting stations”, where glare problems are combined with inefficiency
- Lighting energy costs reduced by 70%
  - TASK Light:
    - New fixture optics
    - 32mm lamps
    - Electronic ballasts
    - Occupancy sensors
  - AMBIENT Light:
    - Reduced levels
    - Dimming ballasts
WHY NOT MORE GOVERNMENT SECTOR LEADERSHIP?

• No funds available - or staff, infrastructure, efficient technologies (“domestic content”)
• Little awareness of government energy use or savings potential
• “Let others do it” (government directives)
• Ideology: trends to privatize/downsize government functions; utility deregulation
• Lack of coordinated policy, lead agency
• Split incentives
GETTING STARTED
Some Key Opportunities

• Set policy: targets, goals
• Life-cycle cost criteria (purchasing, construction)
• Change budgeting practices:
  - increase capital funds to save operating costs
• Outside funding:
  - off-budget financing
  - shared-savings contracts
  - government demand to stimulate ESCo industry
• Pick easy targets to start (low/no cost, quick payback):
  - building lighting, O&M
  - street lighting, traffic signals
  - water/wastewater systems
  - public transport (?)
• Build capacity for future programs
RESEARCH NEEDS

• Update program information
  — more countries (+ local gov’t)
  — program specifics
  — program results
• How does energy management get started?
• Understand successful and failed programs
• Support international cooperation
  — information-exchange
  — shared efforts
  — market aggregation