



# SAVING ENERGY IN THE GOVERNMENT SECTOR - AN INTERNATIONAL REVIEW

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## WHY THE GOVERNMENT SECTOR?

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- **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**

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- **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

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## 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**



## PROGRAM CATEGORIES (cont.)

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### 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



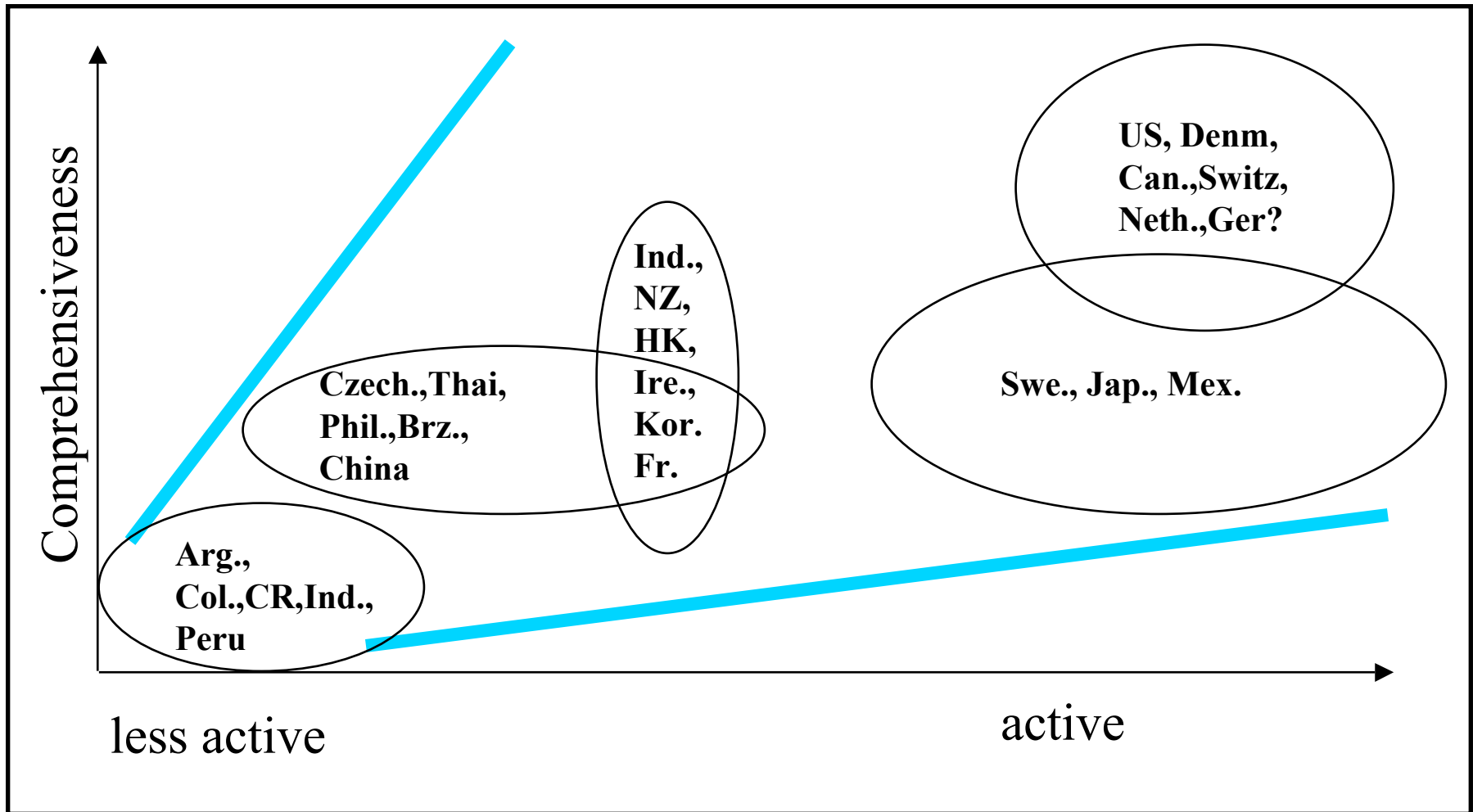
## FINDINGS

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- **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!**

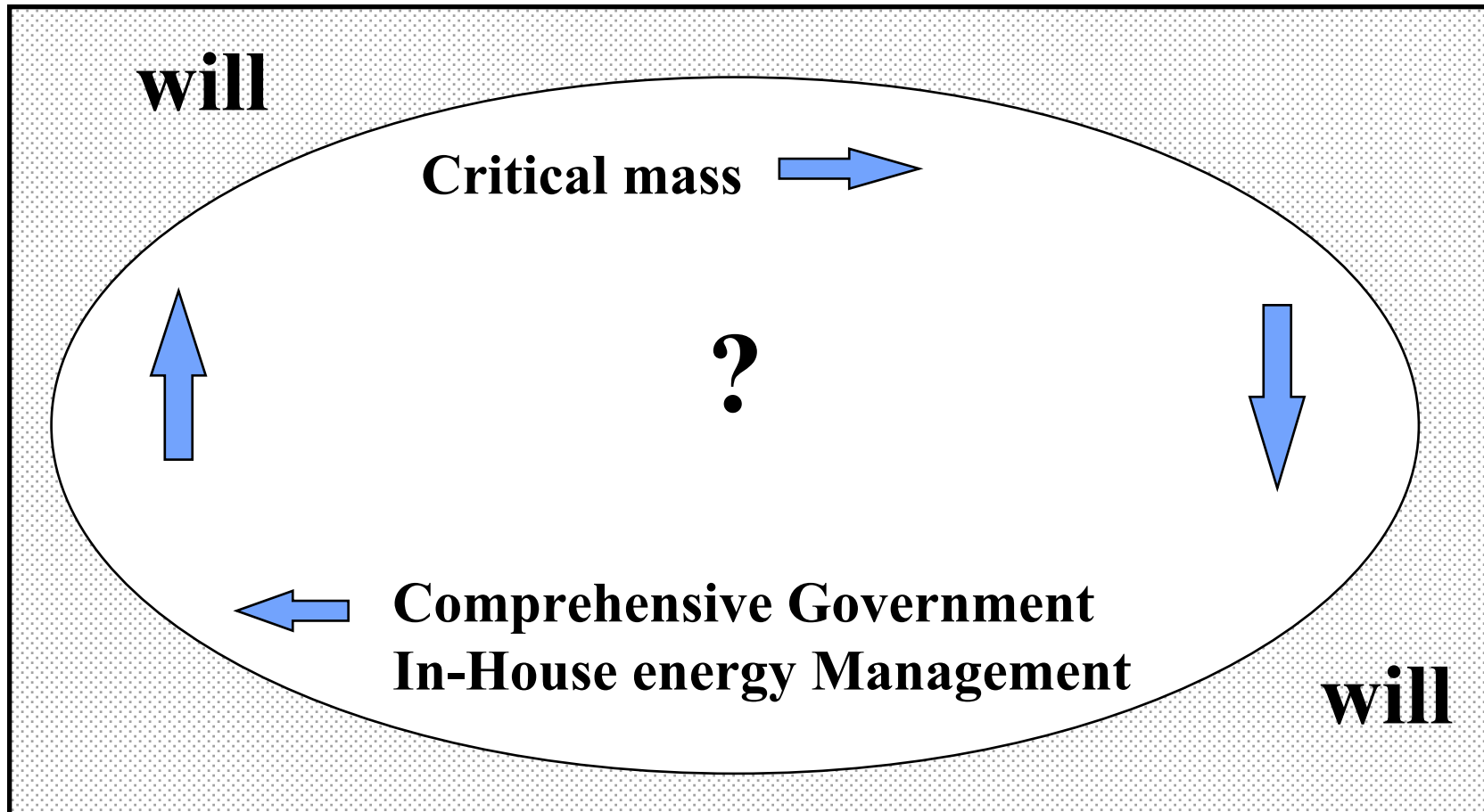


# SURVEY RESULTS





# Government Energy Management: Chicken or Egg?







## **US EXAMPLE: Federal Energy Management Program**

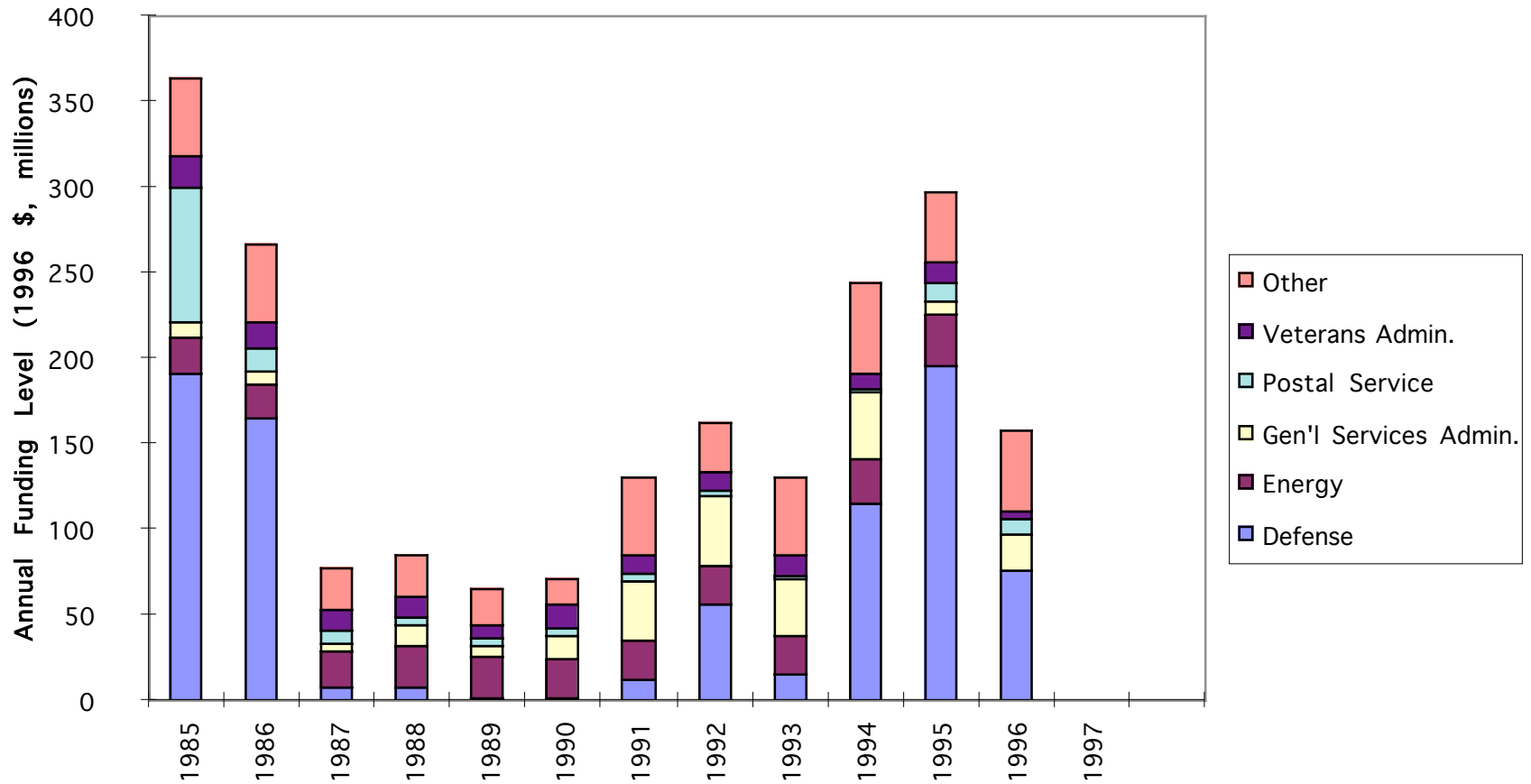
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- **Federal sector uses 2% of US energy (\$8 B/year)**
- **Target energy use in buildings:**
  - **1/3 of total energy**
  - **500,000 buildings (300 M m<sup>2</sup>)**
  - **target 35% less energy/floorspace, 1985-2010**
  - **1980-1994: invested \$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](http://www.eren.doe.gov/femp)**



# FEMP PROGRAM BUDGET HISTORY

U.S. Federal Buildings Energy Management Funding History





# CASE STUDY: Advanced lighting Controls Demonstration Project

## TESTBED

- San Francisco Federal Building, 20 stories, 150kM<sup>2</sup>
- 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?

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- **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

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- **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

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- **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