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# Best Practices in Designing and Implementing Energy Efficiency Obligation Schemes

DSM University/Leonardo Energy Webinar

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**The Regulatory Assistance Project**

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- **David Crossley has 39 years experience in the energy sector, both in Australia and internationally, providing advice on sustainable energy policy and programs to governments, regulators, energy companies, industry associations and NGOs**
- **In 2003, David was a consultant on the establishment of an energy efficiency obligation scheme in the State of New South Wales, Australia**
- **Currently, David is a Senior Advisor with the global, non-profit expert group the Regulatory Assistance Project; he works mainly in China, managing the provision of technical assistance on demand-side management and energy efficiency to government, regulators and the electricity industry**

## About RAP

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts that focuses on the long-term economic and environmental sustainability of the power and natural gas sectors. RAP has deep expertise in regulatory and market policies that:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

Learn more about RAP at [www.raonline.org](http://www.raonline.org)

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# IEA DSM Programme



- The International Energy Agency DSM Programme is an international collaboration of 14 countries plus several international organisations working together to develop and promote opportunities for demand-side management (DSM)
- DSM offers solutions to problems such as load management, energy efficiency, strategic conservation and related activities
- The work of the IEA DSM Programme is organized through a series of research projects (known as Tasks) and reported in a number of publications
- The DSM University, supported by Leonardo Energy, provides access in a structured way to the knowledge developed during 20 years of experience in the IEA DSM Programme

# Agenda

- What are energy efficiency obligations (EEOs)?
- IEA DSM project on EEO schemes
- General features of EEO schemes
- Best practices in designing and implementing EEO schemes
- Conclusion

# What are energy efficiency obligations?

# Energy Efficiency Obligations

- An energy efficiency obligation (EEO) is a *regulatory mechanism* that requires *obligated parties* to meet *quantitative energy saving targets* by delivering or procuring *eligible energy savings* produced by implementing *approved end-use energy efficiency measures*
- The requirement to meet quantitative energy saving targets distinguishes EEOs from other similar mechanisms, such as a general requirement to acquire all cost-effective energy efficiency with no target specified

# EEO Schemes

- Governments have endeavoured to improve end-use energy efficiency, and in some cases also achieve other objectives, by designing and implementing schemes that place EEOs on particular parties
- There are now estimated to be up to 50 EEO schemes operating in a range of jurisdictions around the world, and the number is growing
- In 2012, the European Union Energy Efficiency Directive required all Member States to establish EEO schemes or alternative policies that place energy saving obligations on energy distributors or retail energy sales companies

# IEA DSM project on EEO schemes

# IEA DSM Project

- From 2010 to 2012, the IEA DSM Programme carried out a research project on EEO schemes and requested RAP to review a sample of existing schemes
- Several RAP researchers worked on this project over about a 12 month period and reviewed 19 EEO schemes from a range of jurisdictions around the world
- The RAP report *Best Practices in Designing and Implementing Energy Efficiency Obligation Schemes* was published in June 2012
- The report includes an extensive reference list of original documents that established the various EEO schemes

# General features of EEO schemes

# Key Elements of EEO Schemes

- All EEO schemes include three key elements:
  - a *quantitative target* for energy efficiency improvement;
  - *obligated parties* that must meet the target;
  - a system that: defines the *eligible energy efficiency activities* that can be implemented to meet the target; *measures, verifies and reports* the energy savings achieved through these activities; and *confirms* that the activities actually took place
- Some, but not all, EEO schemes include *trading of energy savings*
- Some schemes that include trading use *white certificates*; other schemes implement trading without certificates

# Types of EEO Schemes

- There are three broad types of EEO schemes:
  - schemes that have been **established relatively independently**, often with their own enabling legislation, and with energy saving targets specific to each scheme (eg schemes in Australia and Europe);
  - schemes that are **integral components of resource planning and acquisition** by obligated energy providers (eg schemes in North America);
  - schemes that have been established principally by governments as **integral components of government policies** (eg schemes in China and Korea)
- Each of the three types of schemes is the product of quite different ways of thinking about how to use an obligation mechanism to deliver energy efficiency

# Policy Objectives

- Determining and stating the policy objectives is the most important stage in designing an EEO scheme; these objectives define what the obligation is intended to achieve and significantly affect all the other parameters of the scheme
- Policy objectives for an EEO scheme may include:
  - acquiring cost-effective energy efficiency as a resource;
  - assisting disadvantaged households;
  - developing an energy services industry;
  - improving environmental outcomes
- The chosen policy objectives must be clearly stated because they will strongly influence how the EEO scheme is developed and implemented

# Energy Saving Target (1)

- Setting the energy saving target is the second most important stage in designing an EEO scheme; the target defines the path to achieving long-term energy saving goals
- There are six decisions to be made when setting the energy saving target
- First, the *level* of the target should be set in the light of the overall policy objectives for the EEO scheme; the aim is to strike a balance between making progress and judging what is practically possible based on an assessment of energy efficiency potential

## Energy Saving Target (2)

- Second, the target may be set in terms of *primary energy or final energy*; although final energy is familiar to end-users and energy providers, targets set in primary energy may be preferable for EEO schemes that cover a range of fuels
- Third, the *units* used for denominating the target should be chosen to demonstrate progress in achieving the main policy objective (eg reducing GHG emissions)
- Fourth, the *timeframe* over which the target will be in place is typically set over the medium to long term (eg 10 to 20 years); setting a relatively long timeframe provides assurance to the obligated parties that the costs involved in setting up systems and procedures to meet the target will be justified

# Energy Saving Target (3)

- Fifth, the *time period* over which eligible energy savings will be calculated may be set as first-year savings or as savings over a set period related to the lifetime of the particular energy efficiency measure; selecting first-year savings favours low-cost, short-lifetime measures over more costly measures that save more energy over a longer time period and that may be more cost-effective in the long run
- The sixth decision is whether to set *sub-targets and portfolio requirements* that address particular policy objectives, such as stimulating an energy services industry, assisting disadvantaged households, or reducing peak energy demand in addition to reducing energy consumption; if sub-targets are set, suitable metrics to measure progress in achieving the relevant policy objectives must be developed

# Energy Saving Targets in Selected Jurisdictions

Jurisdiction	Target	Jurisdiction	Target
Canada – Ontario	1,330 MW reduction in peak demand by 2014 and 6,000 GWh of energy savings by 2014	Poland	53,452 GWh by 2016
China	Savings of 0.3% of electricity sales and load reduction of 0.3% of max load in the previous year	United Kingdom	Lifetime savings of 293 MtCO <sub>2</sub> -e for 2008 to 2012 and 19.25 MtCO <sub>2</sub> -e for 2009 to 2012
Denmark	2.95 PJ for 2006-2009 (0.7% of consumption); 6.1 PJ for 2010-2012 (1.2% of consumption)	United States – California	6,965 GWh (0.9% of sales), 1537 MW, and 150 million therms in 2010-2012 for investor-owned utilities; 700,000 MWh for publicly owned utilities
France	54 TWh cumac for July 2006 to June 2009; 345 TWh cumac for January 2011 to December 2013	United States – Massachusetts	1.4% of retail electricity sales in 2010, 2% in 2011, 2.4% in 2012; 0.6% of retail gas sales in 2010, 0.9% in 2011, 1.15% in 2012
Italy	2.2 Mtoe cumulative in 2008; increasing to 6.0 Mtoe cumulative in 2012	United States – Texas	15% of load growth by 2008, 20% by 2009, 25% by 2012, and 30% by 2013

# Obligated Parties

- Typically, obligations in EEO schemes are placed on providers of networked energy (eg electricity and natural gas)
- Obligations can also be placed on providers of other fuels (eg LPG, heating oil, transport fuels, district heating)
- One EEO scheme, the PAT scheme in India, places an energy efficiency obligation on large end-users of energy

# Administration and Governance

- Administration and governance of EEO schemes vary enormously, but similar types of schemes tend to have comparable arrangements
- Schemes established **under their own enabling legislation** typically establish dedicated organisations (which may include private sector entities) to run the scheme, with oversight provided by government agencies or regulators
- Schemes that are **integrated into energy provider operations** are usually run by the energy providers with strong oversight by energy industry regulators; in some jurisdictions dedicated organisations are established to deliver energy savings
- Schemes established as **integral components of government policies** may be run by energy providers where they are the obligated parties, or by government agencies; oversight is provided by government agencies

# Best practices in designing and implementing EEO schemes

# Identifying Best Practices

- The RAP review prepared detailed case studies of the 19 different EEO schemes studied
- In all the schemes studied, the obligation was placed on energy providers
- The review completed a unique comparative analysis of the 19 schemes and, from this analysis, identified a set of best practices in designing and implementing an EEO scheme

# Best Practice Areas for EEO Schemes

1. Policy Objectives
2. Legal Authority
3. Fuel Coverage
4. Sector and Facility Coverage
5. Energy Saving Target
6. Obligated Parties
7. Compliance Regime
8. Performance Incentives
9. Eligible Energy Savings
10. Eligible Energy Efficiency Activities
11. Measurement, Verification and Reporting
12. Trading of Energy Savings
13. Funding

# Best Practices (1)

## Policy Objectives

- Keep the policy objectives of the EEO scheme simple and clear, and focussed on achieving energy savings
- If the scheme has multiple objectives, ensure that the achievement of any non-energy-related objectives does not hinder pursuit of the primary objective to achieve energy savings

## Legal Authority

- Use a carefully selected combination of legislation, regulation, and Ministerial and administrative processes to establish and operate the EEO scheme

# Best Practices (2)

## Fuel Coverage

- Decide the fuel coverage of the EEO scheme according to the overall policy objectives for the scheme and estimates of energy efficiency potentials for the different fuels
- Start by covering one or two fuels and then expand the scheme to other fuels as experience is gained

## Sector and Facility Coverage

- Decide the end-use sector and facility coverage of the EEO scheme according to the overall policy objectives for the scheme and estimates of energy efficiency potentials for the different sectors and facilities
- If it is intended to tightly restrict sector and facility coverage, consider whether assessing compliance will be too onerous

# Best Practices (3)

## Energy Saving Target (1)

- Set the level of the energy saving target for the EEO scheme according to the overall policy objectives for the scheme
- In setting the target, aim to strike a balance among making progress, the cost to consumers of meeting the target, and what is practically possible based on an assessment of energy efficiency potential
- Set the target in terms of final energy (ie the quantities of energy delivered to, and used by, consumers) unless the scheme covers several different fuels in which case use primary energy

# Best Practices (4)

## Energy Saving Target (2)

- Denominate the target in energy units unless the scheme has a policy objective that relates to GHG emissions reductions in which case consider using CO<sub>2</sub>-equivalent units
- Set a relatively long timeframe for the target, preferably between 10 and 20 years
- Calculate eligible energy savings over set periods related to the lifetimes of each energy efficiency measure
- Consider setting sub-targets and portfolio requirements where the scheme has policy objectives that are not solely related to achieving energy savings

# Best Practices (5)

## Obligated Parties

- Determine the obligated parties in the EEO scheme according to the fuel coverage of the scheme and focus on those parties that provide or use large proportions of the covered fuel types
- Where the obligated parties are energy providers, focus on those providers that have the infrastructure and capability to manage the delivery or procurement of eligible energy savings
- Allocate individual energy saving targets to each obligated party on the basis of that party's market share of energy sales or energy use
- Consider whether to implement carve-outs for energy-intensive, trade exposed industries and/or other specified groups of end-users

# Best Practices (6)

## Compliance Regime

- As an integral component of the EEO scheme, establish a procedure for obligated parties to report claimed eligible energy savings to an appropriate authority and a process for checking and verifying these savings
- Establish a penalty to be imposed on obligated parties that fail to meet their individual energy saving targets; set the level of the penalty high enough to mobilize energy providers to meet their targets

## Performance Incentives

- Consider whether to implement performance incentives in the EEO scheme to be awarded to obligated parties that exceed their energy saving targets

# Best Practices (7)

## Eligible Energy Savings

- Provided that the energy savings can be verified, do not place restrictions on the energy efficiency projects or measures that can be implemented to produce eligible energy savings
- If the EEO scheme includes trading, enable non-obligated parties in the EEO scheme to implement energy efficiency projects to produce eligible energy savings

## Eligible Energy Efficiency Activities

- Consider establishing in the EEO scheme a list of pre-approved energy efficiency measures with deemed energy saving values, but do not limit the measures that can be implemented to produce eligible energy savings to only those on the list

# Best Practices (8)

## **Measurement, Verification and Reporting**

- As an integral component of the EEO scheme, establish a robust system for measuring, verifying and reporting energy savings and other activities that contribute to scheme targets
- Consider whether to also establish procedures to verify whether energy savings are additional to what would have happened in the absence of the EEO scheme

# Best Practices (9)

## Trading of Energy Savings

- Consider enabling in the EEO scheme trading of energy savings among both obligated parties and third parties

## Funding

- Establish an appropriate mechanism in the EEO scheme to enable recovery of the costs incurred by obligated parties in meeting their individual energy saving targets

# Conclusion

# Conclusion

- All EEO schemes include a small number of similar key elements, but there are significant variations in how the different schemes are designed and implemented
- Accumulated experience in designing and implementing EEO schemes now enables the identification of several best practices
- Adopting these best practices in designing and implementing new schemes, and updating existing ones, should improve the effectiveness of the schemes in delivering cost-effective energy efficiency

# Resources

- David Crossley email: [dcrossley@raponline.org](mailto:dcrossley@raponline.org)
- RAP website: [www.raponline.org](http://www.raponline.org)
- IEA DSM Programme website: [www.ieadsm.org](http://www.ieadsm.org)
- DSM University website: [www.dsmu.org](http://www.dsmu.org)
- RAP report *Best Practices in Designing and Implementing Energy Efficiency Obligation Schemes* is available at: [www.raponline.org/document/download/id/5003](http://www.raponline.org/document/download/id/5003)