RAP® Energy solutions for a changing world

# Energy Efficiency Obligations a Toolkit for Success

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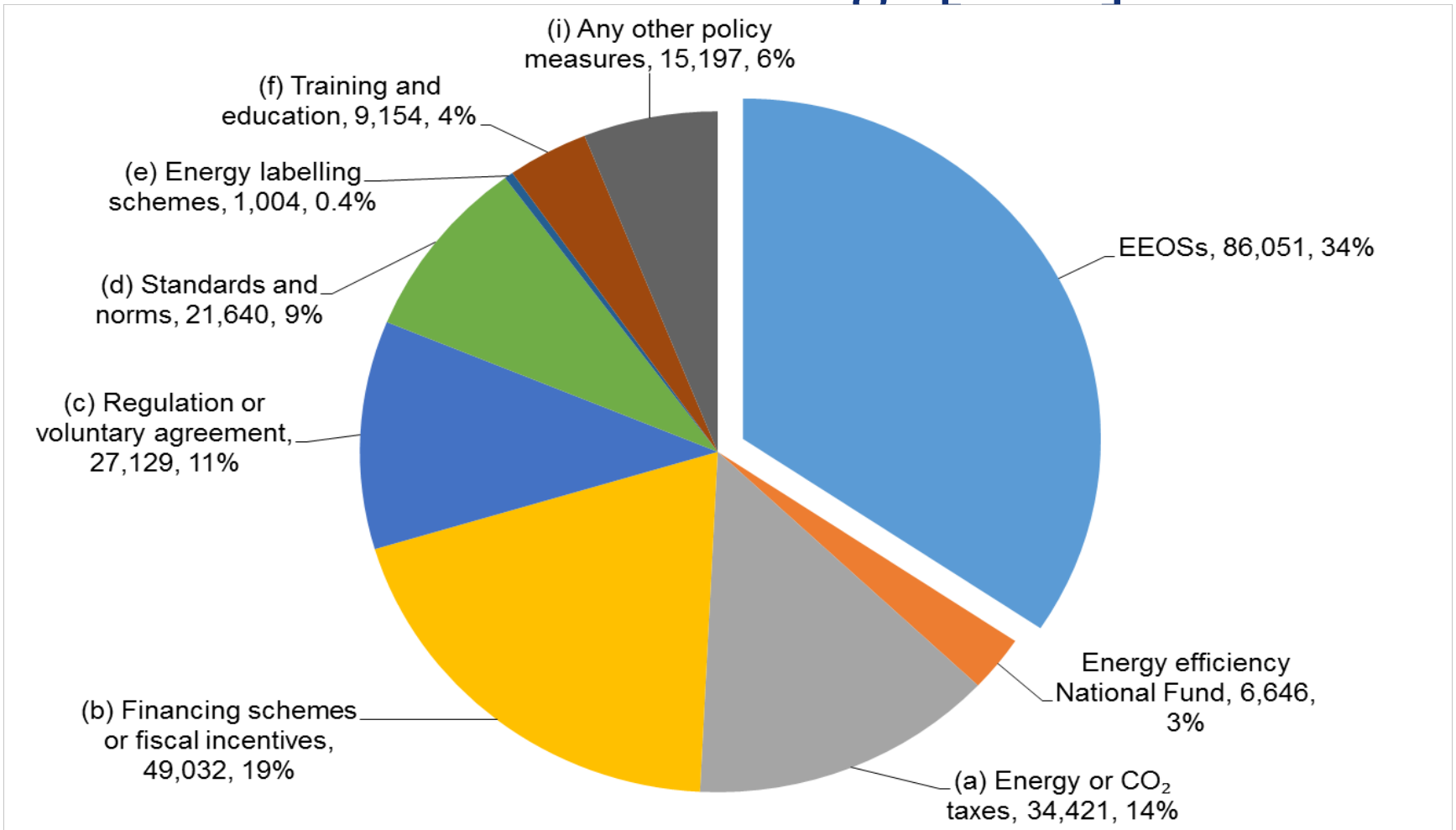
The Regulatory Assistance Project (RAP)®

# Overview

- Introduction
- Deciding on policy objectives
- Eligible end-use sectors
- Protection of low-income households
- Bill impact & cost recovery

# Introduction

# EEOs most important policy instrument in terms of EED savings [ktoe]




Source: Source: Ricardo AEA, et al, Slides from Energy Savings Summit of study evaluating progress of implementation of Article 7 of the Energy Efficiency Directive, May 2016

# What is an EEO?

- “Energy Efficiency Obligation”
- Some part of an energy company or legal entity has an obligation to save end-use energy through energy efficiency measures; often backed by penalties or financial incentives

# EEOs under EED Article 7

- Energy distributors and/or retail energy sales companies
- Cumulative end-use energy savings target (equivalent to 1.5% per year) by 31 December 2020
- Alternative measures
- Extension to 2030 under development

# Article 7 Implementation

**EEOs in place or planned:**

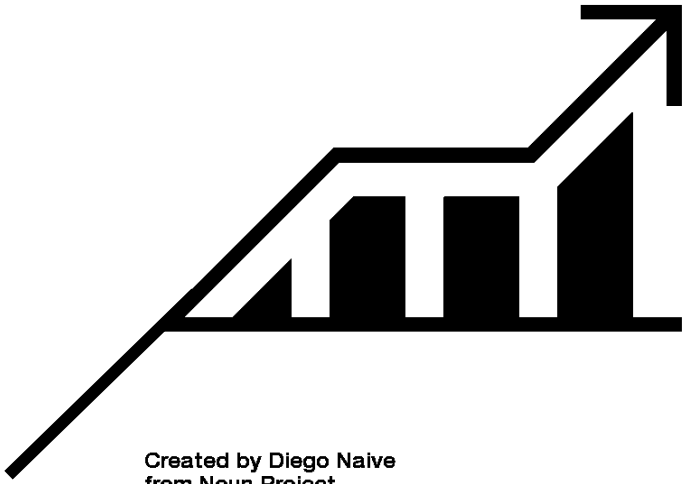
- **Existing/modified** (AT, UK, FR, IE, IT, DK, PL, BG, SI ~PT)
- **New** (HR, EE, LV, LT, MT, ES, LU)
- Many EEOs in early design stages
- Lessons learned from existing schemes can help

# Interaction with other EE instruments

**EEOs**

**EE Programmes**

**Incentive schemes**




**Building codes**

**Appliance standards**

**Labeling**

# Why *energy company* obligation?

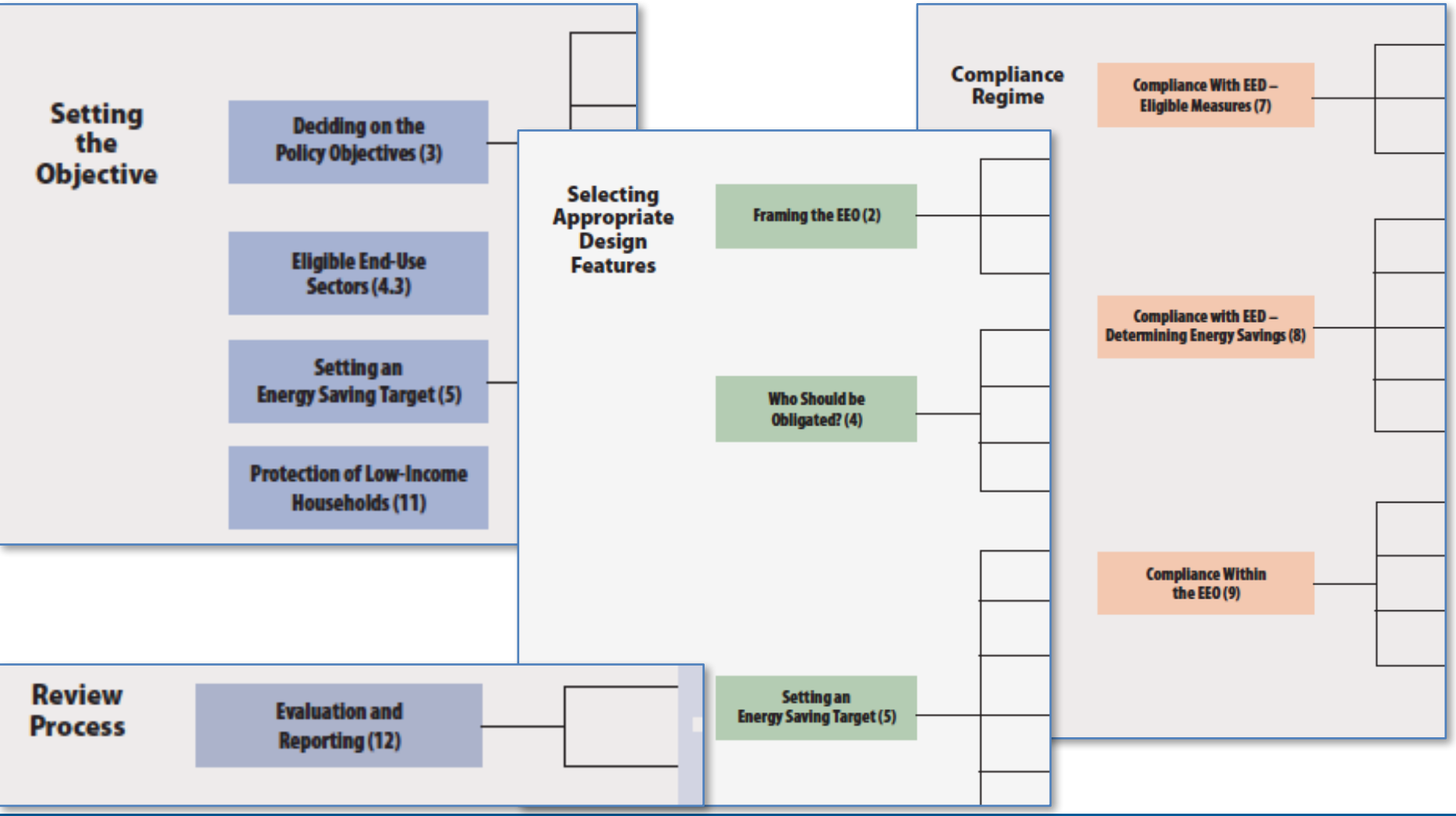
Energy Companies:

- Are directly connected to the provision of energy
- Can overcome many of the barriers to EE by working directly with consumers or supporting those who do (audits, advice, financing, incentives, etc.)
- Can provide a stable source of revenues: avoiding ups and downs of annual public funding
- Have key roles in other parts of an EE policy package –consumer education, smart metering, tariff reform, lowering peak demand & distribution planning.

# Is there a disincentive for Energy companies?

- Traditionally energy companies were focused on selling more of their product as this increased their profits
- If regulated – "decoupling" revenues from sales (removes disincentive)
- Shared savings or "bonuses" for meeting/ exceeding specified savings levels (adds incentive)
- Competitive supplier – cost of doing business (level playing field)
- End-use EE can be part of progressive business model for obligated companies

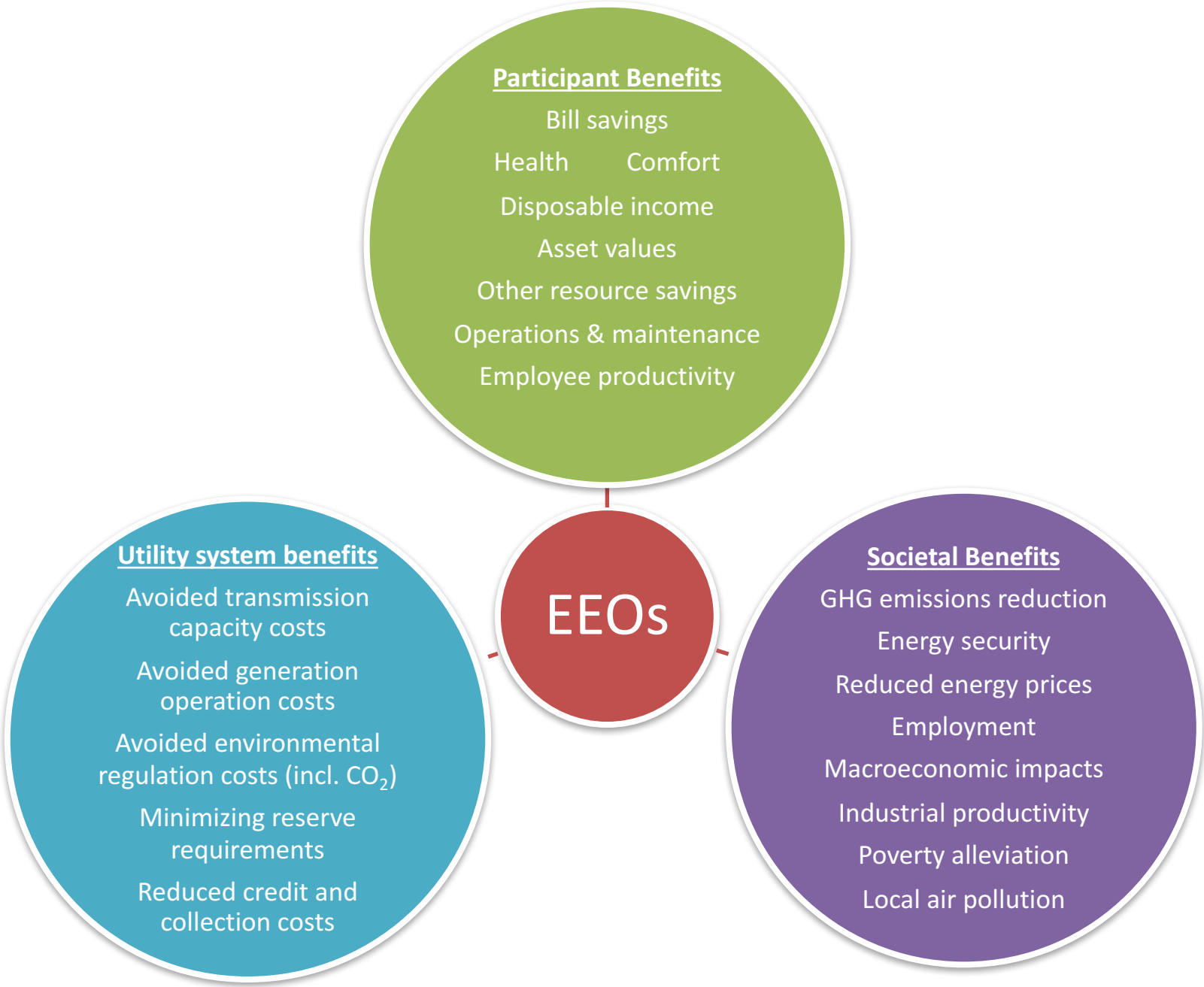
# The "Toolkit"


Setting the Objective
Deciding on the Policy Objectives (3)
Eligible End-Use Sectors (4.3)
Setting an Energy Saving Target (5)
Protection of Low-Income Households (11)
Selecting Appropriate Design Features
Framing the EEO (2)
Who Should be Obligated? (4)
Setting an Energy Saving Target (5)
Compliance Regime
Compliance With EED – Eligible Measures (7)
Compliance with EED – Determining Energy Savings (8)
Compliance Within the EEO (9)
Review Process
Evaluation and Reporting (12)

# Deciding on Policy Objectives

# Policy objectives will vary

- ***In addition to saving energy,*** EE can further a range of policy objectives including:
  - Reducing bills for households and businesses
  - Air quality, CO2, other environmental goals
  - Economic stimulus / job creation
  - Tackling energy poverty for vulnerable customers
  - And many others…


Participant Benefits
Bill savings
Health
Comfort
Disposable income
Asset values
Other resource savings
Operations & maintenance
Employee productivity
EEOs
Utility system benefits
Avoided transmission capacity costs
Avoided generation operation costs
Avoided environmental regulation costs (incl. $CO_2$)
Minimizing reserve requirements
Reduced credit and collection costs
Societal Benefits
GHG emissions reduction
Energy security
Reduced energy prices
Employment
Macroeconomic impacts
Industrial productivity
Poverty alleviation
Local air pollution

# Importance of clear objectives

- To steer the design of the obligation
  - Focus on which sectors (residential, commercial, industrial, agricultural)? Based on energy saving potential, ease of delivery, political considerations (e.g. low income, energy security, climate change?), etc.
  - Any particular measures/sectors that should be included or excluded (e.g. EU ETS, products with high free riders, etc.)?
- Central to evaluation of progress – are goals being achieved?

## Examples of EEO Policy Objectives for 11 Member States

| Policy Objective | AT | BG | DK | ES | FR | IE | IT | LT | PL | SI | UK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Deliver cost-effective energy savings/reduce energy bills | X | X | X | X | X | X | X | | X | X | |
| Environmental/$CO_2$ reduction | | | | | | | | X | | | X |
| Improve energy security by reducing imports | | | | | | | X | | | | |
| Assist low-income households to install efficiency measures | | | | | | X | | | | | X |
| Tackle fuel poverty* | | | | | X | X** | | | | | X |
| Stimulate energy services market | X | | | | | | X | X | | | |

* *Fuel poverty refers to that subset of low-income households that struggles the most to heat their homes affordably.*
** *Only five percent of the target is to be met by actions in fuel-poor households.*



Source: Toolkit for Energy Efficiency Obligations

# Eligible end-use sectors

# Which sectors to prioritize?

**Examples of Eligible End-Use Sectors in 11 Member States**

| Eligible End-Use Sector | AT | BG | DK | ES | FR | IE | IT | LT | PL | SI | UK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Residential | X | X | X | X | X | X | X | X | X | X | X |
| Commercial | X | X | X | X | X | X | X | X | X | X | |
| Public | X | X | X | X | X | X | X | X | X | X | |
| Industry | X | X | X | X | X | X | X | X | X | X | |
| Transport | X | X | X* | X | X | X | X | | | X | |
| Agriculture | X | X | X | X | X | X | | | | X | |

* *Restricted to four road vehicle measures*



Source: Toolkit for Energy Efficiency Obligations

# Transport savings

- Transport may be included within an EEO
- Several MS have included transport as an eligible sector for energy savings; only FR and IE have included it as an obligated sector
- Only 3% of all savings notified by MS are expected to come from transport
- Transport savings tend to be less attractive than savings in other sectors.

*See, e.g.,* ADEME. (2014). The French Energy Saving Certificate Scheme in the Transport sector. Retrieved from http://www.raponline.org/document/download/id/7159

# Protection of low-income households

# Two main goals

- Tackles the problem that **all customers** pay for the EEO but without protection of low income households, it would be logical for energy companies to invest in end use customers who could pay towards the cost of the EE measures
- EE is a solution to lowering bills and improving living conditions and family health

# Examples of EEOs addressing fuel poverty

- **Ireland**: Five percent of all savings have to be achieved in households classified as being in fuel poverty
- **United Kingdom**: A large share of the savings had to be achieved in low-income households from the start of the EEOS in 1994
- **France**: Obligated parties can support fuel poverty programmes as an alternative to delivering savings through the usual channels
- **Austria**: Obligated parties receive a 1.5 uplift factor for savings achieved in low-income households

# Bill impact & cost recovery

# Globally, EEOs are highly cost effective

- **USA state EEOs** save electricity for 3-4 US cents/kWh compared to 6-9 cents per kWh for generation cost alone
- **EU experience**: saving residential electricity or gas, costs less than 25% of the cost of that fuel to the consumer; costs of EE measures falls with economies of scale
- **PLUS: EE can save** on transmission and distribution upgrades, lower reserve margins and line losses, has no emissions, improves reliability, lowers peak loads
- **"Merit Order Effect":** In competitive power markets, lower demand also **lowers clearing prices for all consumers** – not just consumers who save energy
- In some USA cases, these non end-use benefits can justify the entire cost of the EE program

# How are these Costs Passed Through?

- If obligation on energy retailer in liberalised market, then EEOs are "a cost of business" like other environmental requirements and passed onto end customers; competitive incentive for low delivery costs
- If obligation on regulated part of energy company (e.g. distributor or if retail price is still regulated), then costs are in regulated tariff charged to end customers
- In effect, the "polluter pays" principle applies
- However, multiple energy saving benefits exceed the costs to consumers (typically 1 to 5% of energy bills)

# Why EEOs are more effective than a price rise

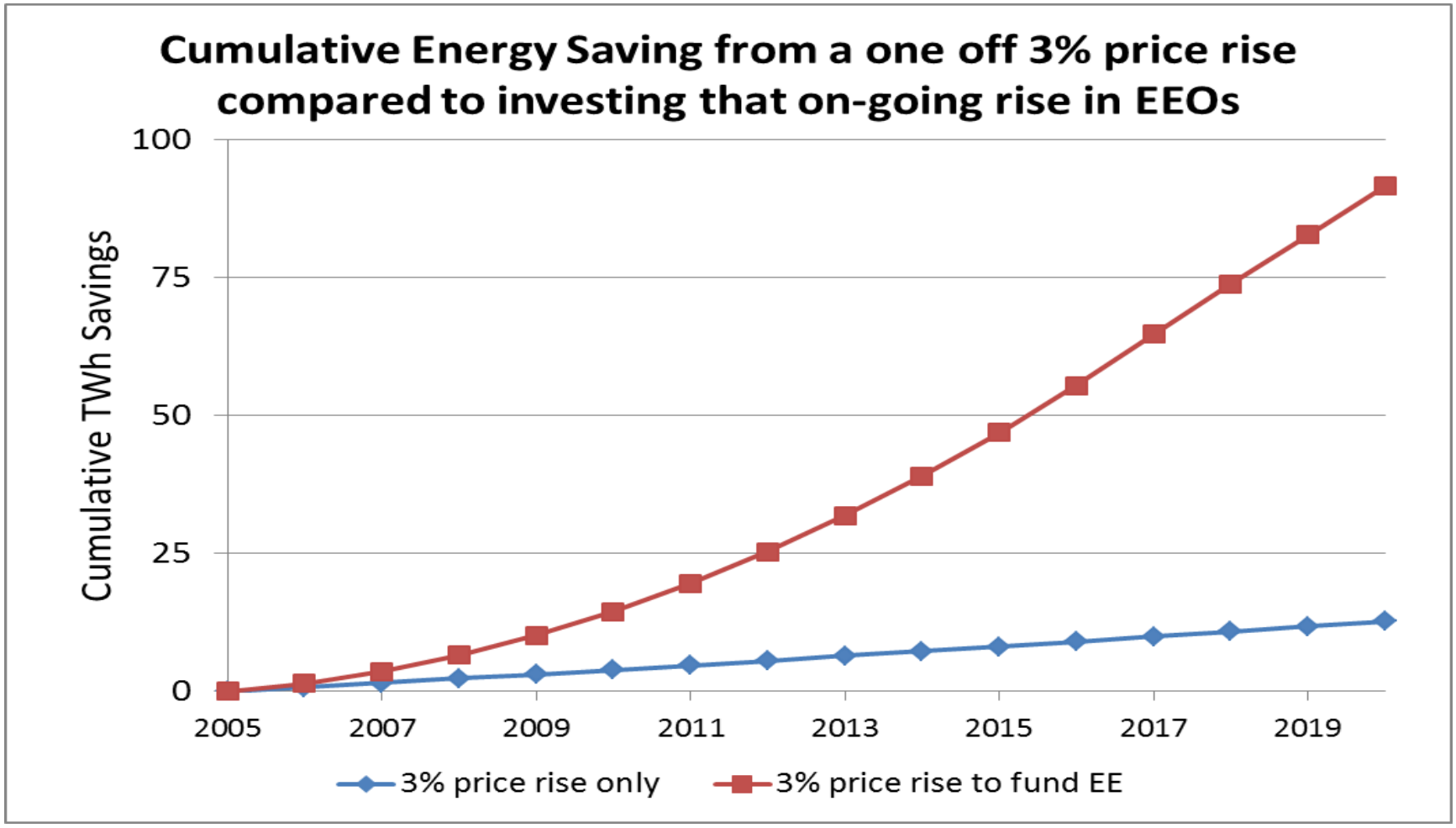
Used data on the levelised cost to electricity suppliers in the GB EEO for the period 2005-8 (€2 cents/kWh)

Used the actual electricity savings obtained by British energy suppliers in the period 2005-8; savings are primarily insulation (36%),lighting (34%) and appliances & ITC (29%)

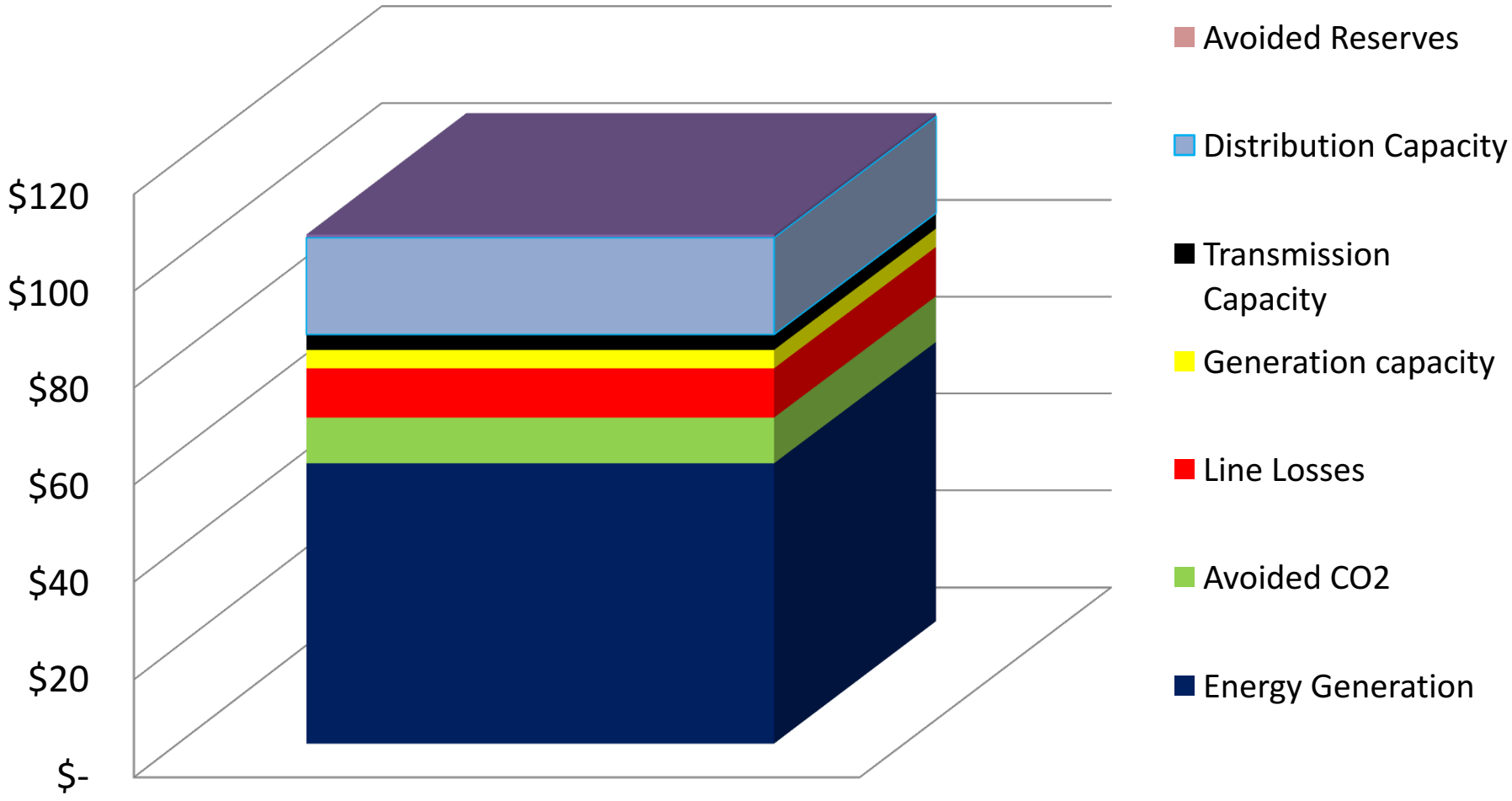
The calculation allows for the fall off over time of electricity savings from the shorter lived measures;

Using data derived from the GB EEO for the period 2005-8 illustrates that by 2020 EEOs are 7 times more effective in saving energy than a one off price rise

# Investing a price rise in EE saves 7 times more electricity than that from a price rise



# Multiple benefits expressed as levelised USD/MWh for Vermont EEO



# Multiple Benefits of Vermont EEO

## The levelised EEO cost on Vermont bills is USD 39/MWh

| Benefit to energy provision chain | Results USD/MWh | Benefit all customers |
|---|---|---|
| Avoided Generation Energy Costs | 57.5 | **No** |
| Avoided Existing Environmental Regulations Costs (not $CO_2$) | small | Yes |
| Avoided $CO_2$ emission costs at $20 (~€15) per ton | 9.4 | Yes |
| Avoided Line Losses | 10.2 | Yes |
| Avoided Generation Capacity Costs | 3.8 | Yes |
| Avoided Transmission Capacity Costs | 3.2 | Yes |
| Avoided Distribution Capacity Costs | 20.0 | Yes |
| Minimising Reserve Requirements | 0.7 | Yes |
| Reduced Cost of Renewable Resource Obligation | 0 (not % target) | Yes |
| Reduced credit and collection costs | Not studied | Yes |
| Improved corporate relations | Not studied | |
| Sub-total of all energy provider multiple benefits | >104.8 | 45% |

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# Toolkit for Energy Efficiency Obligations

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http://www.raponline.org/knowledge-center/toolkit-for-energy-efficiency-obligations/

# 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 sector. 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.raponline.org

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