



Department  
of Energy &  
Climate Change

# Electricity demand reduction (EDR) pilot

6 February 2014



# Agenda

- Welcome, introduction and pilot overview [10 mins] 10.00 - 10.10
- Overview of MVA regime [40 mins] 10.10 - 10.50
- Deemed Savings [40 mins] 10.50 - 11.30
- Break [10 mins] 11.30 - 11.40
- Additionality [40 mins] 11.40 - 12.20
- Wrap up & close [5 mins] 12.20 - 12.25

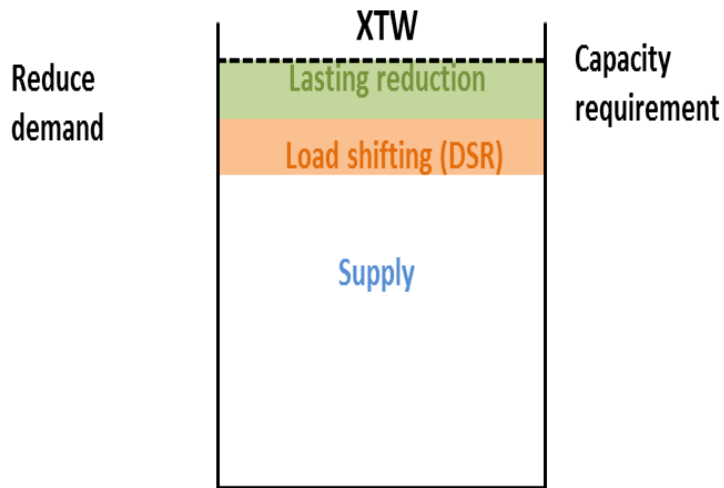


# EDR pilot overview



# Capacity Market Approach

## Capacity Market



Payment for demand reduction as an alternative to generation capacity

- Capacity Market pays capacity providers for capacity – such as generating plant, Demand Side Response and Storage.
- Capacity Market based on auction to meet capacity requirement
- EDR focussed on whether efficiency measures be included, not on load shifting

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# We are piloting...

## Aims

- To examine the viability of EDR in the Capacity Market including whether it provides an efficient and cost effective means of achieving EDR
- To learn lessons for Government and wider stakeholders on delivery of EDR schemes

*“Now there will be new incentives to cut electricity use a new 20 million pilot, the first ever in Britain... Companies being paid for saving energy, not wasting it.”*

**- Edward Davey, 15 September 2013**

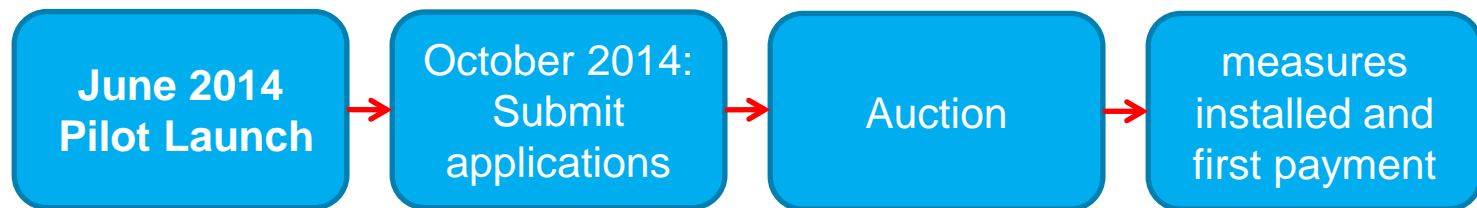
## Overview:

- Plan to pilot over 2 years from June 2014
- Subject to the outcome of the pilot, the Energy Act 2013 contains the provisions to implement EDR as part of the forthcoming Capacity Market

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# Pilot Design Overview

- Participants will bring together plans to reduce their electricity demand and then bid these savings into an auction
- Subsidy payable for lasting reductions in electricity from installation of efficient measures
- Pilot launch - final rules in June 2014, initial bidding deadline in Autumn
- Potential timeline ...



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# Auction rules

Projects will need to qualify....

- This will include submitting a project plan with estimated savings from the proposed EDR measure and a plan for measuring and verifying these.
- **minimum bid size.** This may be achieved by a single project or through several projects, aggregated into a single application.

Eligible projects will need to:

- **be based in Great Britain**
- **deliver savings relevant to peak**

Ineligible projects include:

- **Those that shift electricity demand** to other times of the day - *Covered by existing DSR proposals*
- Savings made by **switching to other energy sources** (e.g. onsite generation) – *Counter to efficiency goals*

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# Overview of MVA regime





# Measurement and verification

- Objective: sufficiently robust measurement and verification regime to have confidence in savings, however, if it is too onerous it may deter participation
- Seeking to accommodate a range of approaches to monitoring and verification:
  - Deemed: savings estimated but not actually measured
  - Engineering: combination of assumption + measurements
  - Full measurement approaches: metering before and after
- Build on approach provided by IPMVP – load removed is judged against a reasonable counterfactual
- Peak applicability: info provided by participant + evidence + audit.

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# M&V process

1. Identify project

2. Use MVA manual to: check eligibility (type of project, if meet additionality criteria, peak relevance), calculate estimated savings, choose M&V approach and put together M&V plan, decide bid price.

3. Submit project for pre-qualification

4. M&V plan checked by scheme operator

5. If pass then bid submitted and if clear....

6. Collect data and report as set out in M&V plan e.g. meter readings etc

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# Questions

## Peak savings

- Peak period = Nov – Feb 3-7 pm. How can participants demonstrate peak-relevance of projects? What evidence could they provide?
  - participant confirmation, operating hours, meter readings...?
- What implications does the winter peak have for collecting baseline and reporting data?

## Estimates and evidence

- Accuracy of estimates - what evidence should be provided that predicted savings are realistic?
- What is a reasonable time to spend on application and evidence collection?

## Submitting bids

- Are there issues with suppliers/ESCOs submitting projects on behalf of clients?
- Who would be submit an application e.g. technical, financial, energy manager?
- Assurance – is 3<sup>rd</sup> party involvement necessary?

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# Deemed savings



# Deemed savings

- Objective: test suitability for enduring regime e.g. participation levels, accuracy, fit with peak
- Lower burden for predictable, replicable savings
- Criteria: replicable, well understood, stand alone, independent of external factors
- Savings calculations will be laid out in a manual, supported by simple spreadsheet calculators
- Calculations to be based on kW rating of existing and replacement kit, and considering efficiency performance, and particular application

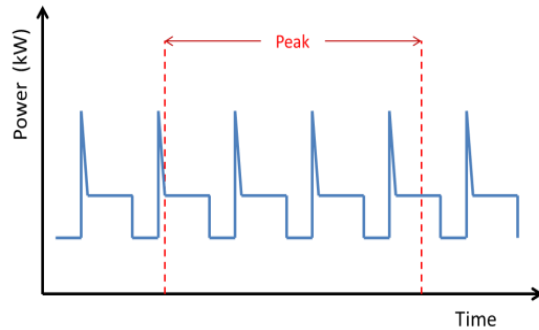
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# Factors affecting performance

## Cycle time

1.3a.1 – Single unit, regular cycle time, regular profile, on during peak

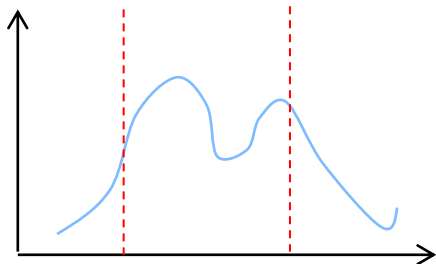


Efficiency  
e.g. IE2, IE3, or IE4 classification

kW rating  
e.g. max power output

## Load factor

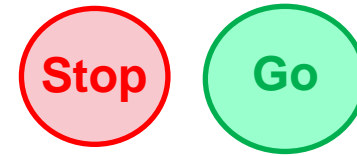
e.g. viscosity, vol pumped etc



Interaction with other components?



Use of controls?





# Input and deemed variables

## Existing



## Replacement



**kW rating**

**Efficiency**

**Cycle time**

**Load factor**

**Interactions**

**Controls**

**Input variables**

**kW rating**

**Efficiency**

**Cycle time**

**Load factor**

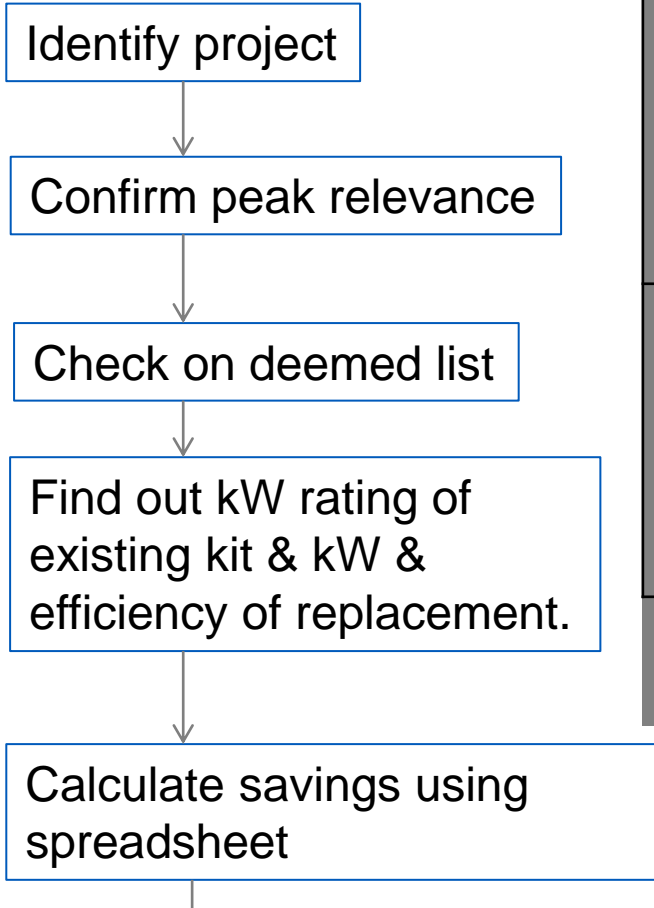
**Interactions**

**Controls**

**Deemed variables**



# Deeming process



Information Requirements: Lighting						
Existing	No. of Luminaires	Lamps per luminaire	Description	Lamp Rating (W)	Hours/day Operating During Peak	Presence Detection
Fluorescent - T8 - switch start	50	2	Phillips - 5 ft - twin tube	58	3	N
Proposed	No. of Luminaires	Lamps per luminaire	Description	Luminaire Rating (W)	Hours/day Operating During Peak	Presence Detection
Fluorescent - T5 - high frequency	35	2	Phillips - 5ft - twin tube	35	3	Y
Fluorescent - T5 - high frequency	10	2	Phillips - 5ft - twin tube	35	3	N

<b>TOTAL kW Saving</b>	4.2
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Some deemed projects will need to be monitored to evaluate accuracy





# Example technology list

Technology	Product type	Shortlist for Pilot?
Lighting	LED lighting units	Y
Lighting	High frequency fluorescent - T8/T5 lighting units	Y
Lighting	Efficient Discharge Lighting units	Y
Lighting	Lighting Occupancy Controls	Y
Motors	VSDs / Inverters	Y
Motors	High efficiency - Single speed	Y
Motors	High efficiency - permanent magnet (EC)	Y
Motors	High efficiency - integrated motor drives	Y
Refrigeration	Retail display cabinets	Y
Refrigeration	Commercial service cabinets	Y
Refrigeration	Cellar Cooling Systems	Y
Cooling	Packaged Chillers	Y
Cooling	Air blast coolers	Y
HVAC	Controls (thermostats etc.)	Y
Compressed Air	High Efficiency Compressors & controls	TBD
Pumps	High Efficiency Pumps	TBD
Fans	High Efficiency Fans	TBD



# Questions

- Are the right technologies included, are these appropriate? Which will have the biggest impact?
- How much information is practical for participants to provide? Is kW and efficiency (of new kit) reasonable?
- What are likely to be the key issues with deeming savings?
- Should there be minimum and/or maximum project size (eg kW) for deemed savings?

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# Additionality



# Additionality

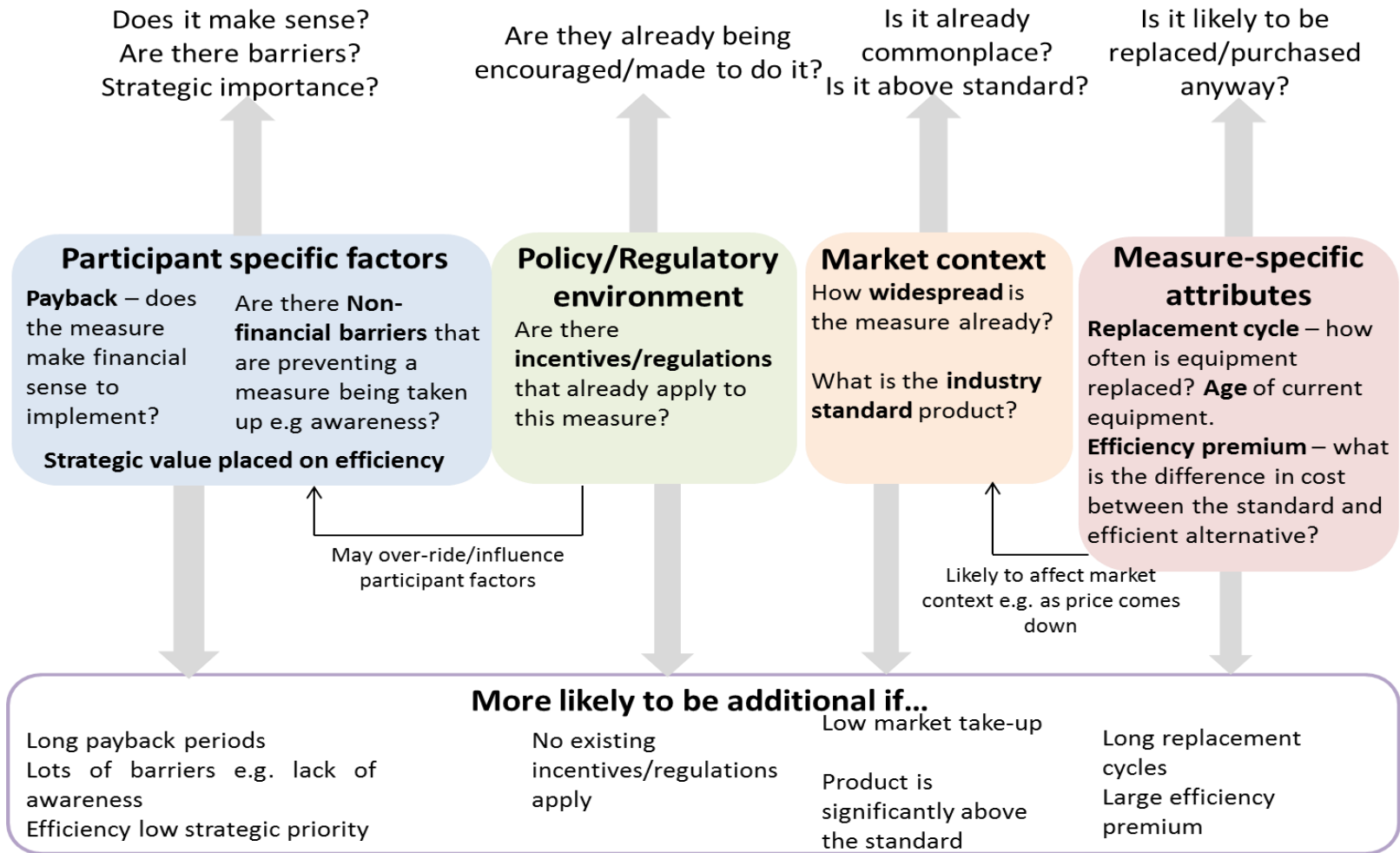
- Objective: DECC is seeking to target savings that would not have happened anyway.
- Additionality key to securing VFM– but do not want excessive complexity
- Tight timeline is recognised as a challenge for bringing forward additional projects.

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# Additionality is complex...

## Factors relevant to understanding additionality





# Simple approach preferred....

- Complex multi-factor approaches based on limited understanding are high risk – deter participation.
- Looked at range of simple filtering criteria:
  - exclude payback < 2yrs (possibly vary by size of organisation)
  - short replacement cycles
  - only recognise above-norm savings
- Payback considered only filter widely applicable and is implementable

## **Exclude projects with payback [<2yrs]?**

- Focus on learning about additionality as part of evaluation.

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# Calculating payback

- Simple in principle....

Project cost

Annual savings



- Need clear definition of costs and savings to be included
- Evidence will be submitted for project costs and savings
- Savings evidence from M&V  
Energy price evidence?
- Cost evidence...  
Quotations / invoices for equipment, delivery, installation  
Multiple quotations?

## Possible savings:

- Avoided energy consumption
- Avoided energy price inflation
- Avoided taxation costs?
- Avoided maintenance costs?

## Possible costs:

- Equipment
- Delivery
- Installation
- M&V  
(+ 3<sup>rd</sup> party verifier?)
- Site audit
- Design/planning
- Operating
- Finance
- Insurance
- Disruption



# Additionality

- How should payback be defined – simple vs complex definitions and how does this link to the risk of gaming?
- 2yr payback- is this reasonable. Should payback vary by organisation e.g. by size such as SMEs have lower hurdle?
- Are there any other approaches that could work?
- What data should we focus on collecting as part of the evaluation to understand additionality?

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# We need you...



...to help test MVA materials



# Next steps....

## Thank you

- Factsheet:
  - just about to be published. Copies available on the **gov.uk** website or on request.
  - More such factsheets will be issued before launch as design is tied down
  - June launch will see full rules published and bids invited.
- Running events on other aspects of EDR design
- Let us know if you are interested in getting involved in testing materials
- Please Register your interest for more information or ask any questions via [edr-project@decc.gsi.gov.uk](mailto:edr-project@decc.gsi.gov.uk)

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