The Implementation of the 2012 Energy Efficiency Directive in Ireland

26 June 2017
Structure

• Background & Transposition

• Targets and Reporting

• Public Sector

• Residential Efficiency Programmes

• Article 7
Ireland’s Building Sector

• 1.7 million domestic, 109k commercial, 5k public sector
• Residential - energy consumption per dwelling is among the highest in Europe due to proliferation of “one-off” houses
• Average consumption: 20,000kwh, ¾ heat, ¼ electricity
• Over half use oil or solid fuel as primary heating source
Transposition of 2012 EED

- No existing legislative framework for efficiency in Ireland
- EED added significant complexity with many new reporting requirements & activity
- Decided on two pieces of legislation – one on Article 7 – Energy Efficiency Obligation Scheme only, another on everything else
- Both transposed in 2014 – Article 7 first, Rest of Directive later
Setting A Target

- National efficiency target set in first NEEAP
- Politically determined target of 20%
- With 33% target for public sector
Progress to Date on Efficiency

• Good progress made to date but projected to fall some way short of national target

<table>
<thead>
<tr>
<th>Target</th>
<th>31,950</th>
<th>20%</th>
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<tbody>
<tr>
<td>2016</td>
<td>18,654</td>
<td>12%</td>
</tr>
<tr>
<td>Projected</td>
<td>25,904</td>
<td>16%</td>
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</table>
Measuring Progress

• Dedicated statistics unit established within Energy Agency to measure progress towards climate and energy targets
• Legal authority to require data from energy industry
• Provides input to NEEAP, Annual Reports and policy development
Public Sector

- National Target of 33% by 2020 set in 2009
- Intention was for Public Sector to play demonstrative role
- Easy to transpose ambition, hard to deliver progress!
- Energy efficiency requires diverse skillset – legal, accounting, technical – not always easy for PS
Overcoming the Challenges

• Established IT-based, monitoring and verification system
• Annual reports to Government on Progress
• Developed a clear five step process applicable at all levels:
  – Commit (Appoint senior manager, aim at certification)
  – Identify (Work with energy agency to measure demand and look at opportunities to reduce)
  – Plan (Set energy savings targets, start building team with responsibility for energy management)
  – Take Action (Avail of project supports, commit to projects)
  – Review (Measure results, continually improve processes)
Case Study – Dublin Fire Brigade

• Championed by staff at one station initially
• A combination of motivation, energy management, behavioural change, technology improvement and building fabric upgrade transformed one Dublin fire station
• Reduced energy consumption by 90%, water intake by 92% and gas consumption by 97%. Annual running costs were reduced by €48,000 and carbon emissions cut by 145 tonnes a year.
• Developed into a “GreenPlan” for all Dublin Fire Stations
• So far has saved over €11m in operating costs and reduced its energy spend by 44%.
• The GreenPlan approach has won numerous awards. It is being successfully applied in other local authority premises across Dublin, including libraries, swimming pools, leisure centres and The Mansion House.
• This approach is now being made freely accessible as a short online learning course available on DCCAE website
Progress to Date

- Reporting PS bodies (96%) achieved 21% efficiency.
- Total of avoided energy spend of €619m.
- Total emissions savings of 548,000 tonnes for 2015 alone.
- Gap to target:–
  - As of end 2015 saved 2,442 GWh of 3,910 GWh 2020 target.
Critical Success Factors

- Making the case for energy efficiency
- Getting central Government commitment and buy-in
- Starting through measurement and verification of energy use
- Developing good examples and case studies
- Developmental assistance
- Clarity on savings associated with efficiency
Residential Energy Efficiency

• In 2006 the construction industry accounted for 25% of GNP. By 2011 - 7%.
• From 380k employed to 150k
• 5% unemployment to 15%
• €9.1 billion spending cuts (15% of budget) between 2009 and 2014
• Multiple Benefits of energy efficiency became extremely attractive!
Better Energy Homes

- Better Energy Homes
- Piloted in 2009, Launched in 2010
- Open to all homeowners
- Application led
- 30% Grant Support
- Homeowners choose from list of approved measures
- Works must be delivered by an approved installer

<table>
<thead>
<tr>
<th>Year</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completed</td>
<td>18,203</td>
<td>45,946</td>
<td>49,229</td>
<td>26,423</td>
<td>13,710</td>
<td>9,555</td>
<td>163,066</td>
</tr>
<tr>
<td>Grant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>amount</td>
<td>€16,254,779</td>
<td>€45,207,885</td>
<td>€57,596,324</td>
<td>€28,949,749</td>
<td>€13,158,770</td>
<td>€9,534,183</td>
<td>€170,701,689</td>
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</table>
Warmer Homes

• Aimed at those in energy poverty
• Works delivered free of charge
• Basic package (Average Cost €3k)

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<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homes Completed</td>
<td>16,240</td>
<td>24,291</td>
<td>20,388</td>
<td>12,175</td>
<td>9,802</td>
<td>9,056</td>
<td>91,952</td>
</tr>
<tr>
<td>Grant amount paid</td>
<td>€12m</td>
<td>€30m</td>
<td>€24.40m</td>
<td>€20.5m</td>
<td>€17.5m</td>
<td>€20.70m</td>
<td>€125m</td>
</tr>
</tbody>
</table>
Outcomes

- Government spend leverages an additional private investment, generating lifetime societal net benefits
- Money saved by householders tends to be spent predominantly in the local economy.
- Approx 300kt CO2 savings, €70m energy savings
Moving on from Basic Schemes

- Upgraded one fifth of homes in the country but demand slackening – Need to convince more people to invest, ideally with higher investment levels!
- Community based scheme to encourage local partnerships – mixed results
- Warmth & Wellbeing scheme to look at efficiency as a health intervention - €20m
- Specific pilot programme aimed at encouraging deep retrofit
- Established behavioural economics unit to support delivery
Background to EEOS in Ireland

- Ireland is meeting Directive through combination of obligation scheme and alternative measures
- Obligation Scheme designed to deliver half of Directive mandated 1.5% energy savings target – 550GWh annual energy savings target for obligated parties
- Minister issues individual targets to obligated parties but scheme administered by agency – Sustainable Energy Authority of Ireland
Why an Obligation Scheme?

• Already extensive Govt schemes for efficiency
• Share the burden with energy industry
• Firm belief that combination of public and private can be complementary:  
  – increase reach of existing Govt schemes;  
  – energy industry may find innovative new ways of promoting energy efficiency  
  – may result in lower overall cost
Key Characteristics of Irish Scheme

- Obligation placed on all energy sectors – Final suppliers in electricity, gas & solid fuel. Energy distributors in oil sector
- Applies to all companies with sales above 600GWh per annum
- Enforced sectoral split – 75% non-domestic, 20% domestic, 5% energy poverty
- Individual company targets based on market share

<table>
<thead>
<tr>
<th>Sub Sectors</th>
<th>Non-residential</th>
<th>Residential</th>
<th>Energy Poverty</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target Split</strong></td>
<td>75%</td>
<td>20%</td>
<td>5%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>GWH</strong></td>
<td>412.5</td>
<td>110</td>
<td>27.5</td>
<td>550GWh</td>
</tr>
</tbody>
</table>
Key Characteristics of Irish Scheme

- Obligated parties have flexibility to meet targets - direct, through counter-parties, trade among obligated parties etc.
- Each obligated party may “buyout” a portion of their target from Government
- Any failure to meet target and penalties apply

<table>
<thead>
<tr>
<th></th>
<th>Buyout / Penalty Prices (2014 – 2016)</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Non-residential</td>
</tr>
<tr>
<td>Target Split</td>
<td>75%</td>
</tr>
<tr>
<td>GWH</td>
<td>412.5</td>
</tr>
<tr>
<td>Buyout Price</td>
<td>6.0c / KWh</td>
</tr>
<tr>
<td>Penalty Price (buyout * 1.25)</td>
<td>7.5c / KWh</td>
</tr>
</tbody>
</table>
EEOS savings, 2016 only

EEOS 2016 Credits GWh

55.3

83.1

618.0

- Energy Poor
- Residential
- Non-residential
Energy Savings Delivered

Accumulative target for 2014 to 2016 was 1,650 GWh. (preliminary) Energy savings achieved 1,850 GWh.

EEOS 2014 to 2016 Gwh

- Energy Poor: Achieved 215, Target 74
- Residential: Achieved 256, Target 297
- Non-Residential: Achieved 1,378, Target 1,114
Source of Energy Savings 2016

Energy Poor Credits

- WHS: 31.9
- BEC: 9.0
- LA: 43.2
- Private FP: 1.6

Residential Credits

- BEH SEAI: 30.2
- BEH OP: 42.8
- BEC: 5.8
- Non_grant_ineligible: 23.7
- Non_grant_eligible: 11.3

Non Residential Credits

- BEC: 29
- Non-Grant: 589
- SME Other: 20
- LIEN Other: 300
Typical Residential Energy Savings

% Credits by Measure

- Heating only: 48.5%
- Heating & Controls: 23.2%
- Walls: 19.9%
- Roof / Floor: 7.6%
- Openings: 0.6%
- Lighting: 0.3%
Typical Non-Residential

% by Credits

- Lighting: 24.6%
- Heating: 23.8%
- Refrigeration: 4.6%
- Ventilation and AC: 5.2%
- Motors: 4.6%
- Compressed Air: 2.8%
- Transport: 2.6%
- Processes: 32.3%
New measures since implementation

Residential

• Pilots looking at smart energy metering coupled with smart controls and behavioural stimuli
• Pilots looking at “white goods” appliances
• “Whole dwelling” approach to deep retrofit including fabric, air tightness, ventilation and heating systems upgrades

Non-Residential

• Pilots promoting Obligated Parties working with SMEs to attain ISO 50001 certification
• Encouraging Energy Efficiency through design (EXEED programme)
Trading

- No “white certificates” but obligated parties may trade
- Internally, excess credits may be reallocated from category to another category to meet sectoral targets but limits apply
- Residential credits can only be transferred to meet targets in the non-residential sector and energy poor credits can only be transferred to meet targets in either the residential or non-residential sector
- In addition obligated parties are permitted to exchange achieved credits with other obligated parties as long as they are within the same sector (e.g. residential to residential)

<table>
<thead>
<tr>
<th></th>
<th>Period</th>
<th>Inter Co. (kWh)</th>
<th>Inter Sector (kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of Transactions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2014</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td><strong>Credits (kWh)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2014</td>
<td>10,241,161</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>19,781,947</td>
<td>31,459,825</td>
</tr>
</tbody>
</table>
Monitoring & Verification

• Provisions around monitoring and verification set out in legislation with detail in guidance document for scheme

• In summary, all obligated parties are required to:
  • Establish a Quality Assurance Scheme;
  • Audit a statistically significant proportion of energy efficiency improvements;
  • Audit at least 20% of energy savings and include representative sample of projects types, size, sub-sector, location;
  • Ensure that all audits are conducted by an auditor or competent person who is independent of the works done;
  • Ensure that all issues discovered by an energy supplier or class of energy suppliers during an audit of the supplier’s quality assurance regime shall be addressed and rectified;
  • Report any endemic failure or major issue discovered to the Sustainable Energy Authority of Ireland to agree on a remediation plan and any other actions that need to be taken.

• In addition, the Sustainable Energy Authority of Ireland is required to:
  • monitor, validate and audit a statistically significant proportion of the reported energy efficiency improvement measures carried out by an energy supplier or class of energy suppliers.
Chain of Responsibility

- EED (Commission)
- SEAI
- Supplier 1
- Supplier 2...
- ...
- Supplier n

Energy Credits

- Counter Party
- Own projects
- Industrial / Commercial Partner
- Commercial projects

Installers / Contractors

- Commercial project
- Residential projects

Residential Projects

SEAI programmes / Local authorities / Non Grants
Auditing in Practice

- Individual targets based on market share 100% checks on PEP (document review, eligibility criteria etc.)
- Up to 30% sent to external panel for evaluation: desk based, document and calculation checks, M&V report reviews and site visits.
- On-site audits of Supplier QS, focusing on document control and chain of custody, contractor audits, site visits, corrective and preventative action records
- Statistically significant (as determined by per ISO 9001 or equivalent) percentage of independent site inspections to ensure quality control.
Embedding Auditing

- SEAI host periodic workshops for obligated parties
- Encourage each to adopt a framework based on Demmings cycle of continuous improvement the Plan - Do - Check - Act (PDCA) Cycle - And aligned with ISO 50001 and ISO 9001
- Plan: establish the objectives of the system and plan the associated processes and resources required.
- Do: implement the process.
- Check: monitor the process and associated results and compare these to the planned objectives.
- Act: Take corrective action to improve the process.
## Typical Records

<table>
<thead>
<tr>
<th>Record</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>List of Obligated Party Stakeholders</td>
<td>Identify roles and responsibilities for each stakeholder</td>
</tr>
<tr>
<td>Record of evaluation of legal compliance</td>
<td>Evidence of review of legal requirements and evaluation of compliance</td>
</tr>
<tr>
<td>Training Records</td>
<td>Training records of personnel completing an M&amp;V plan or M&amp;V report</td>
</tr>
<tr>
<td>Competency assessment</td>
<td>Demonstration of competency of suppliers and authors of M&amp;V plans and M&amp;V reports</td>
</tr>
<tr>
<td>Communications Plan</td>
<td>Evidence of planned communication activities</td>
</tr>
<tr>
<td>Client Communications</td>
<td>Evidence of communication of scheme activities with pertinent stakeholders</td>
</tr>
<tr>
<td>M&amp;V Plan</td>
<td>Demonstration of planned savings method</td>
</tr>
<tr>
<td>M&amp;V Report</td>
<td>Demonstration of savings achieved</td>
</tr>
<tr>
<td>Raw M&amp;V supporting Data</td>
<td>Data obtained to support the M&amp;V plans and reports</td>
</tr>
<tr>
<td>Engineering Calculations</td>
<td>Demonstration of Engineering Calculations completed to support the claim</td>
</tr>
<tr>
<td>Sustainability of savings assessment</td>
<td>Demonstration of assessment of risks associated with the credits</td>
</tr>
<tr>
<td>Internal Audit reports of the quality system</td>
<td>Evidence of internal checking of the quality framework</td>
</tr>
<tr>
<td>Management Review</td>
<td>Evidence of senior review of the quality scheme in order to ensure suitability of the scheme</td>
</tr>
<tr>
<td>Non conformance records</td>
<td>Demonstration of improvements to the quality management system</td>
</tr>
</tbody>
</table>
Review of Obligation Scheme

• Conducted public consultation on future of scheme in mid-2016
• Responses received from a mix of obligated parties (OPs), NGOs, commercial entities, representative bodies
• Common Themes:
  – Certainty for obligated parties
  – Carbon abated instead of GWh saved
  – Do/Don’t use energy system for social policy
  – Clarity on the cost of the EEOS – past, present and future
  – Credit for EVs, fuel switching
  – Access to other Government programmes
  – Public knowledge of scheme
Changes to next phase of scheme

- Increasing obligation scheme target to 700GWh (27% increase)
- Lowering sales threshold for participation (240GWh annual energy sales)
- Lengthening obligation period to four years (2017-2020)
- Commissioning independent study to look at cost and transparency
- Introducing flexibility system to incentivise early action
What’s Worked and What Hasn’t

- Has brought energy companies to the table on energy efficiency
- Extremely effective at leveraging existing programmes
- Appears to be more cost effective than direct Government action only
- Less effective at delivering innovation
- Has not raised profile of energy efficiency
• Any further questions

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