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ar son na hAeráide & Comhshaoil
Department of Communications,
Climate Action & Environment

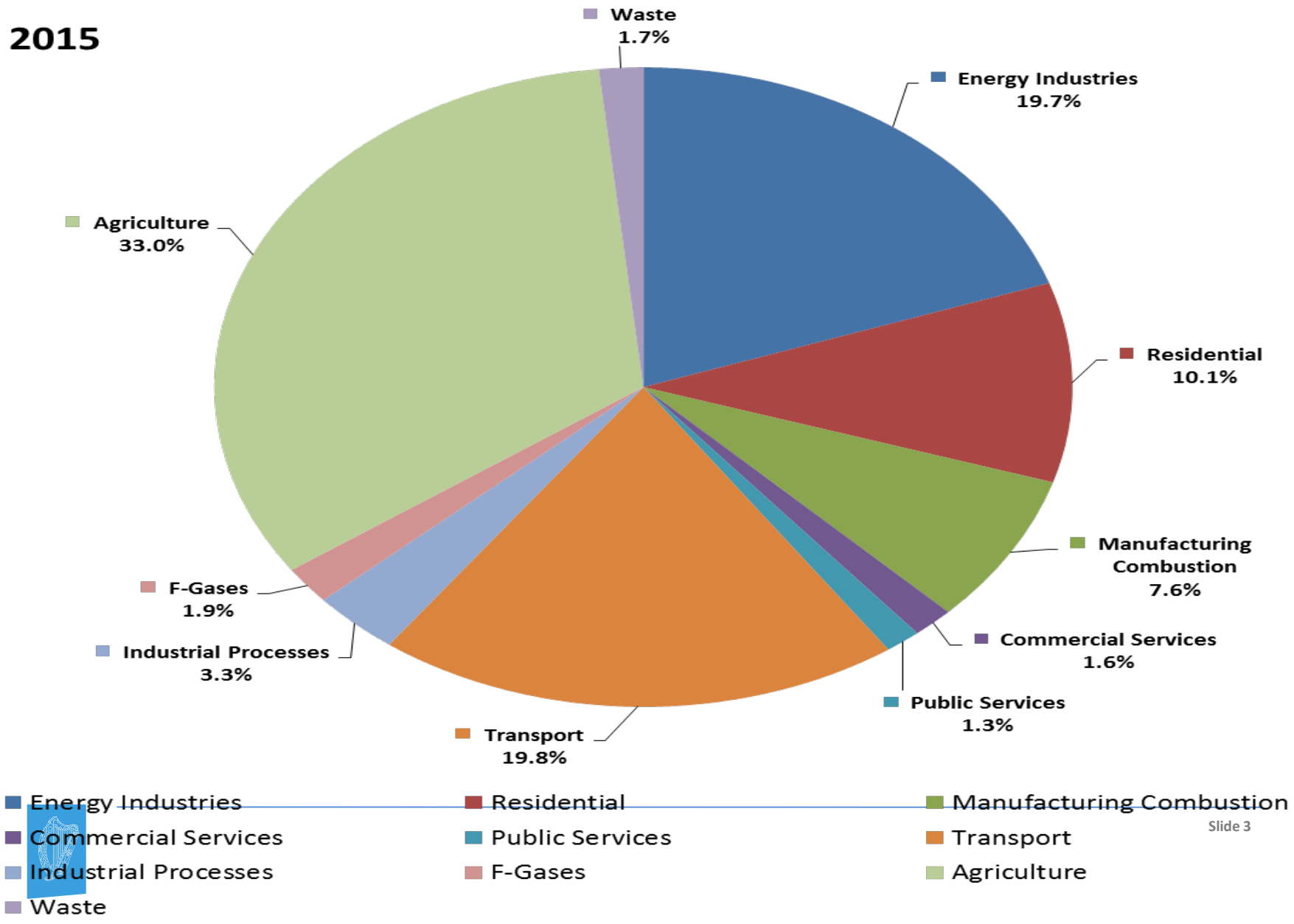
The Implementation of the 2012 Energy Efficiency Directive in Ireland

26 June 2017

Structure

- Background & Transposition
- Targets and Reporting
- Public Sector
- Residential Efficiency Programmes
- Article 7

Greenhouse Gas Emissions By Sector



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

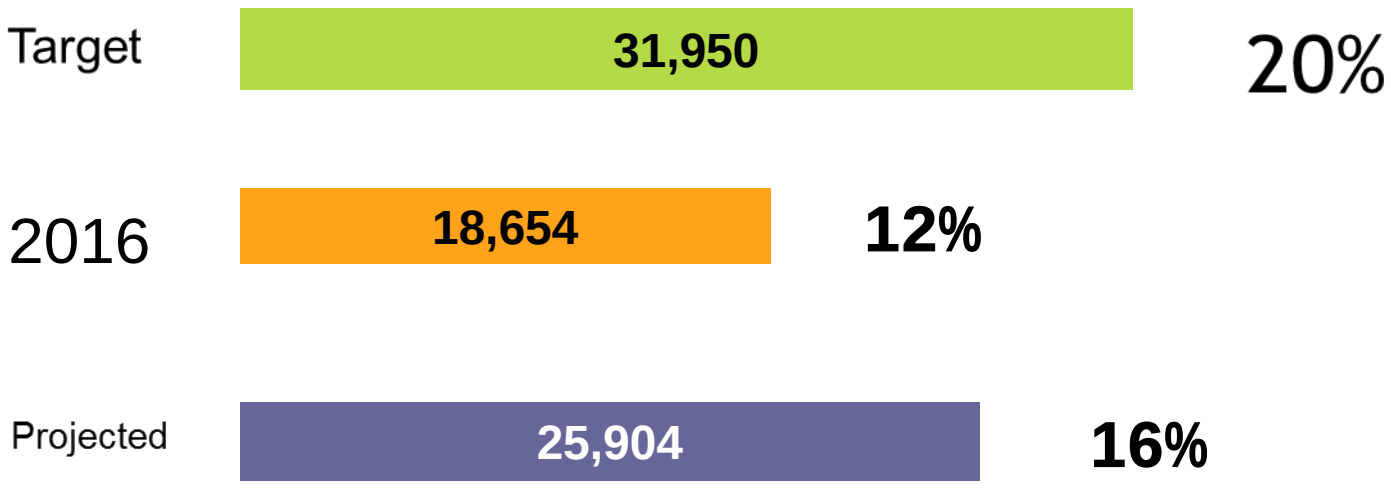
- No existing legislative framework for efficiency in Ireland
- EED added significant complexity with many new reporting requirements & activity
- Decided on two pieces of legislation – one on Article 7 – Energy Efficiency Obligation Scheme only, another on everything else
- Both transposed in 2014 –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



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

Figure 13 *ODYSSEE Decomposition of Ireland's Residential Final Energy Demand*

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)

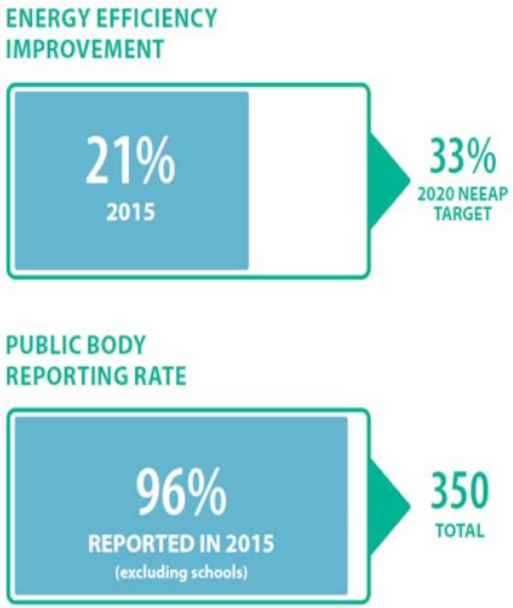
Case Study – Dublin Fire Brigade

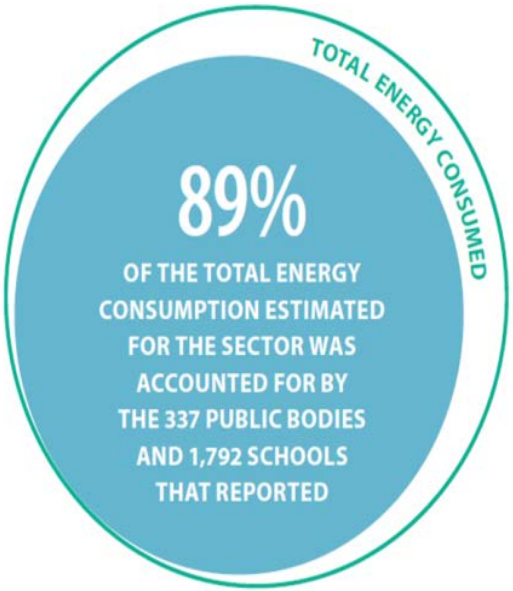
- Championed by staff at one station initially
- A combination of motivation, energy management, behavioural change, technology improvement and building fabric upgrade transformed one Dublin fire station
- Reduced energy consumption by 90%, water intake by 92% and gas consumption by 97%. Annual running 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

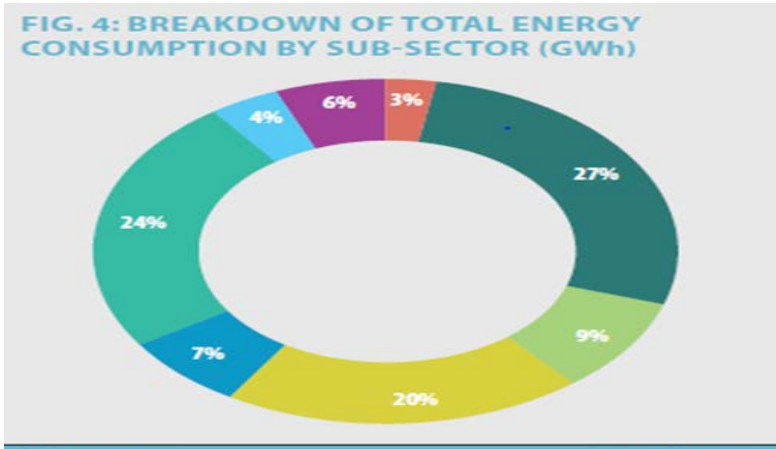
Progress to Date

- 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.





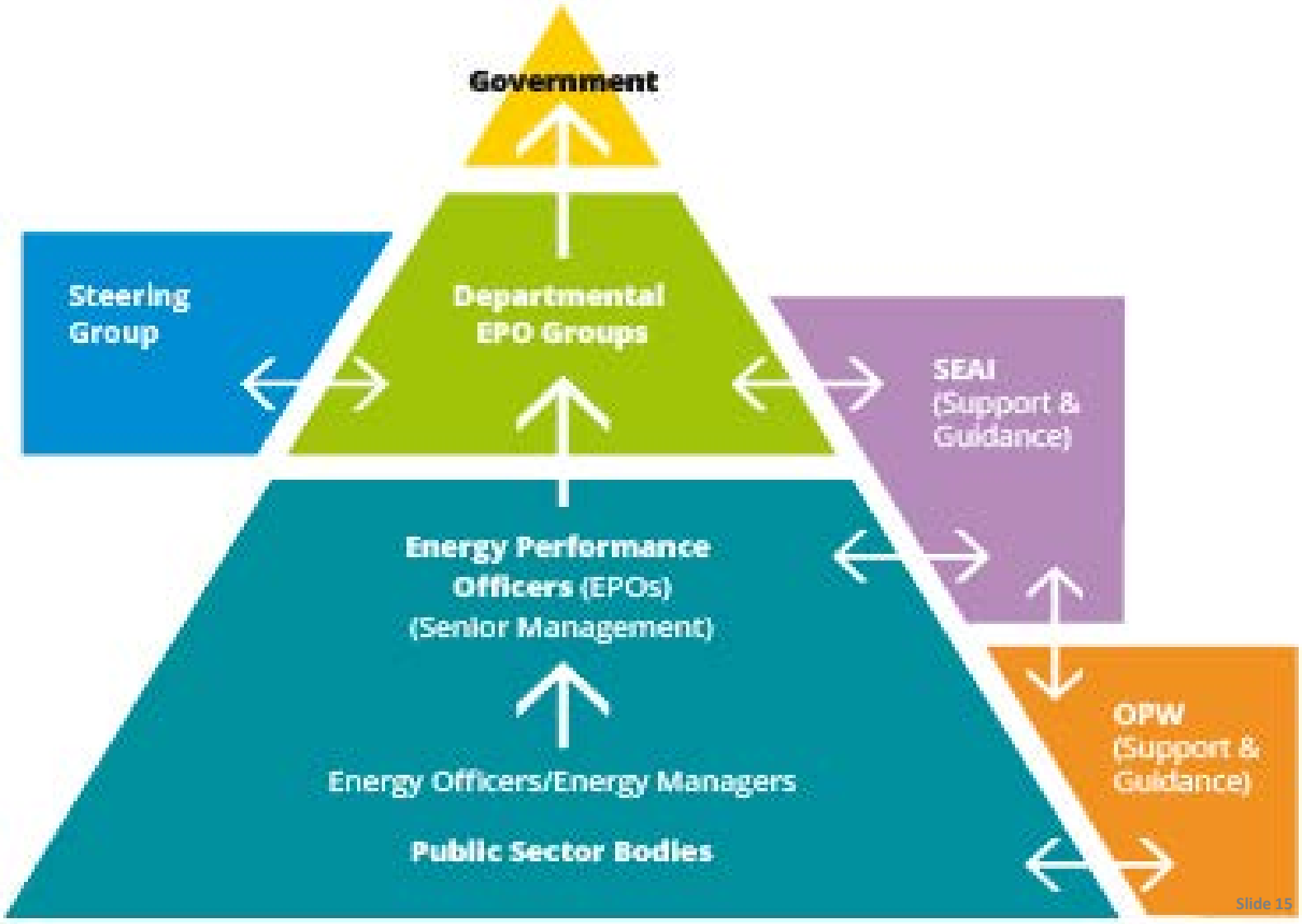


Sub-sector	2015 Energy Consumption (Primary)
	GWh
Civil Service	335
Commercial State Body	2,504
Education (excl. Schools & ETBs)	858
Health	1,840
Justice & Defence	621
Local Authorities & Water Services	2,260
Non-commercial State Body / State Agency	380
Schools & ETBs	546
Total	**9,343**

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

PS Reporting Structure



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

Year	2009	2010	2,011	2012	2013	2014	Total
Homes Completed	18,203	45,946	49,229	26,423	13,710	9,555	163,066
Grant amount paid	€16,254,779	€45,207,885	€57,596,324	€28,949,749	€13,158,770	€9,534,183	€170,701,689

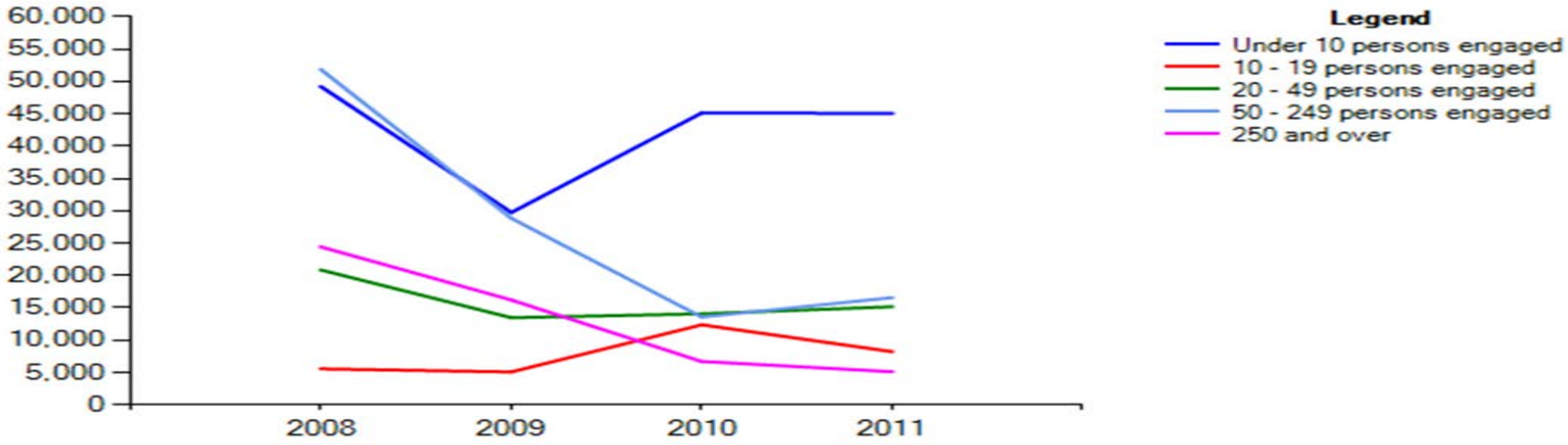
Warmer Homes

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

Year	2009	2010	2,011	2012	2013	2014	Total
Homes Completed	16,240	24,291	20,388	12,175	9,802	9,056	91,952
Grant amount paid	€12m	€30m	€24.40m	€20.5m	€17.5m	€20.70m	€125m

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

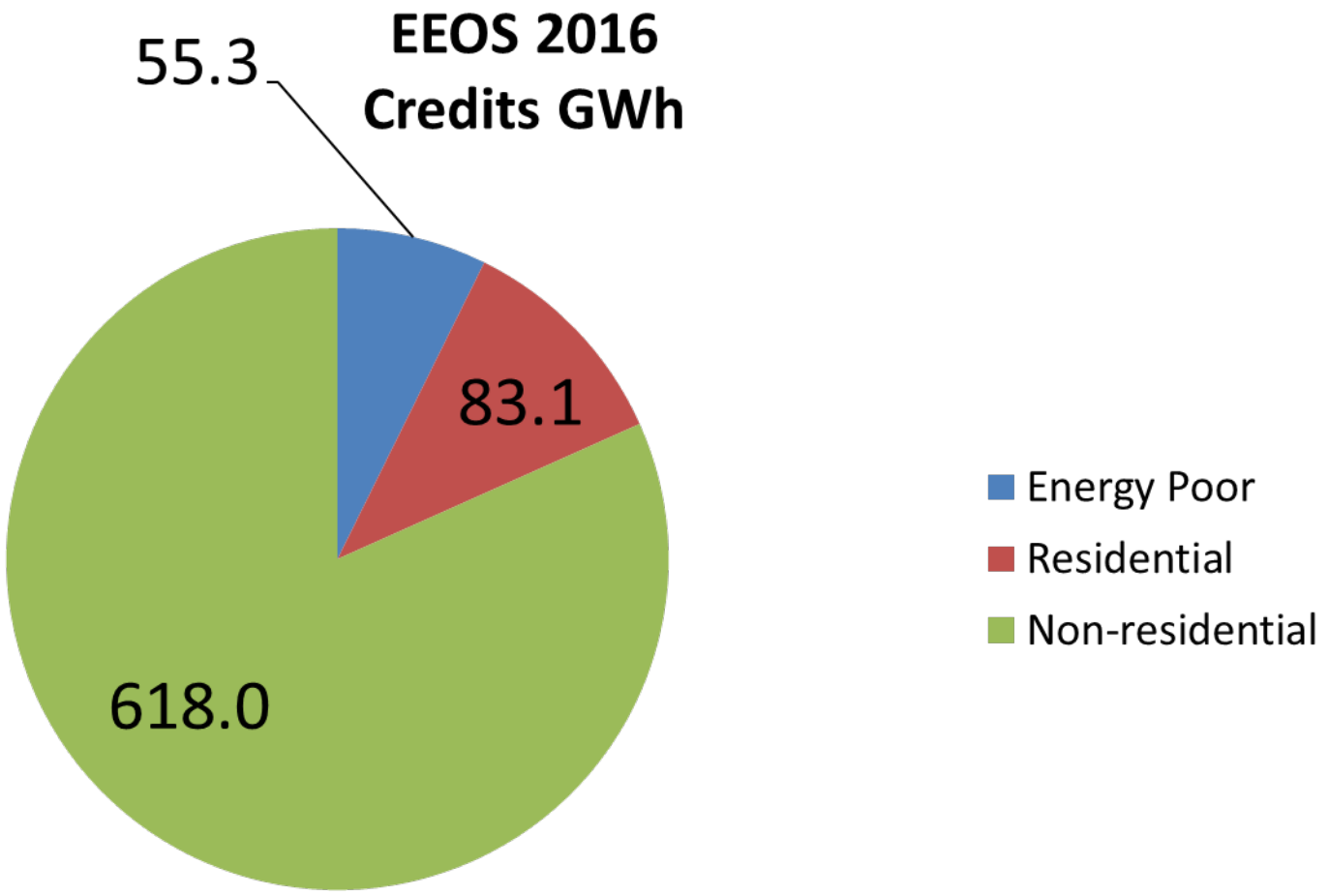
	Sub Sectors			
	Non-residential	Residential	Energy Poverty	Total
Target Split	75%	20%	5%	100%
GWH	412.5	110	27.5	550GWh

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

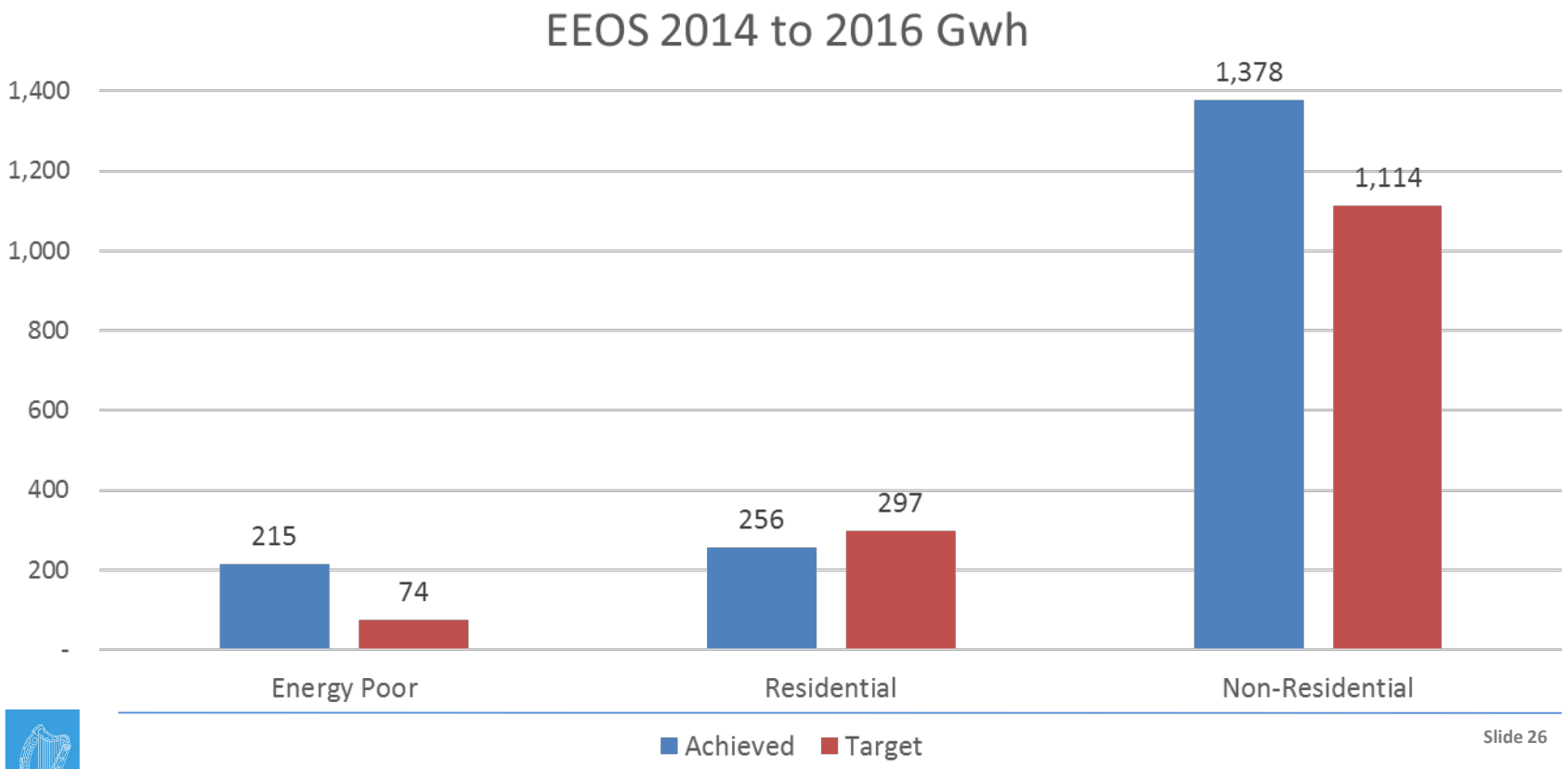
	Buyout / Penalty Prices (2014 – 2016)			
	Non-residential	Residential	Energy Poverty	Total
Target Split	75%	20%	5%	100%
GWH	412.5	110	27.5	550
Buyout Price	6.0c / KWh	20.4c / KWh	88.0c / KWh	13.0c
Penalty Price (buyout * 1.25)	7.5c / KWh	25.5c / KWh	110c / KWh	16.2c

EEOS savings, 2016 only

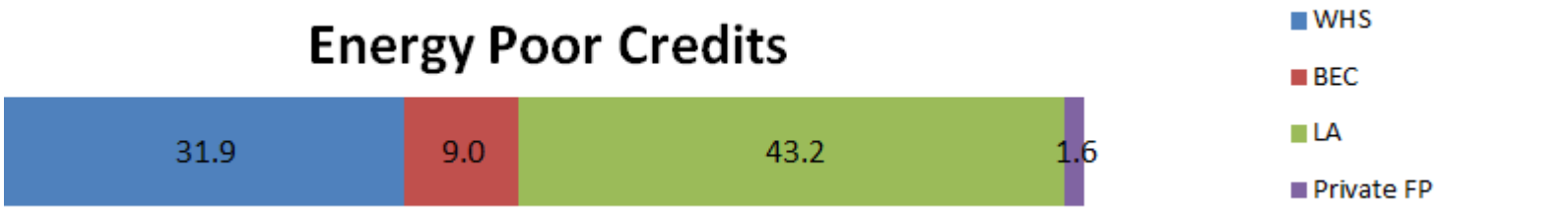


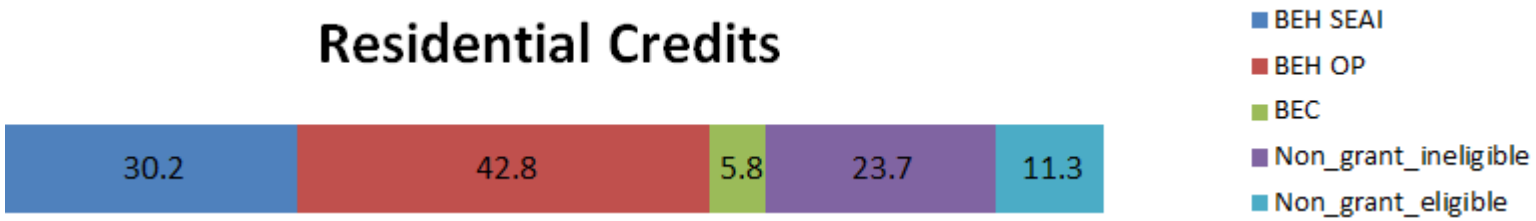
Energy Savings Delivered

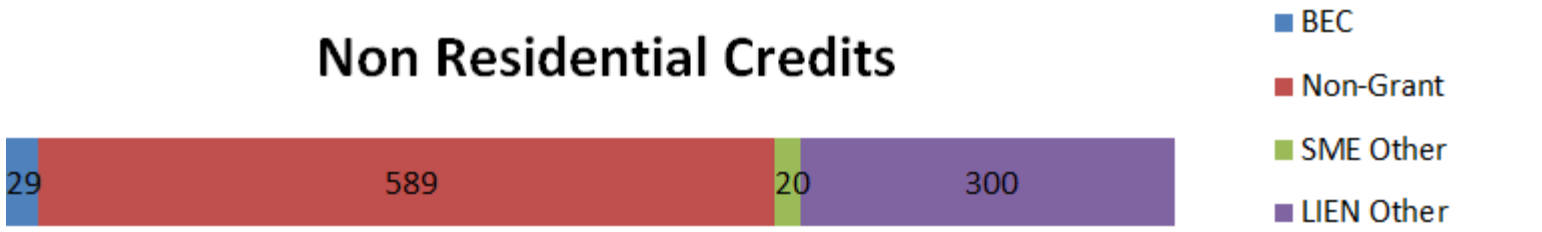
Accumulative target for 2014 to 2016 was 1,650 GWh.
(preliminary) Energy savings achieved 1,850GWh.



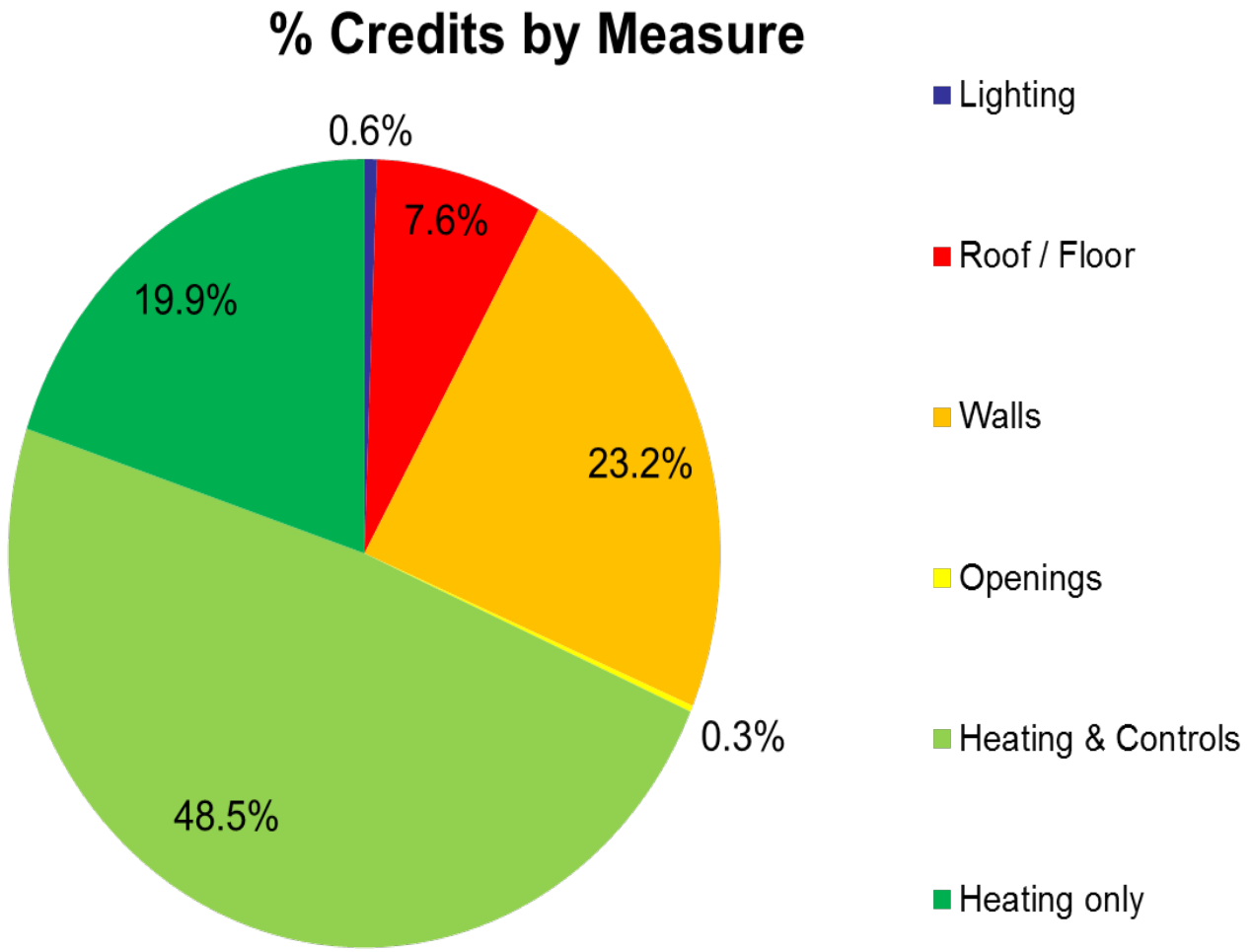
Source of Energy Savings 2016



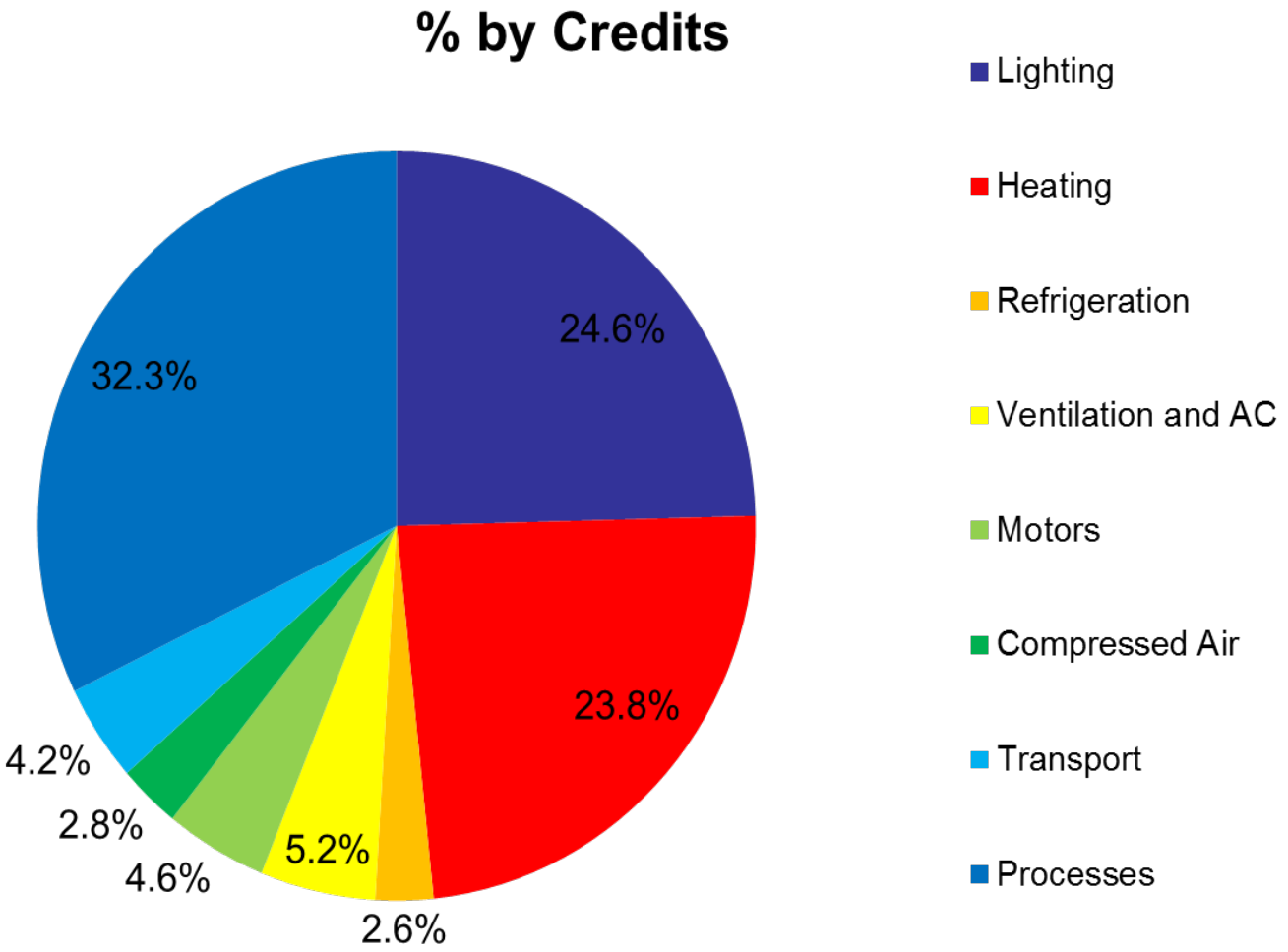




Typical Residential Energy Savings



Typical Non-Residential



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

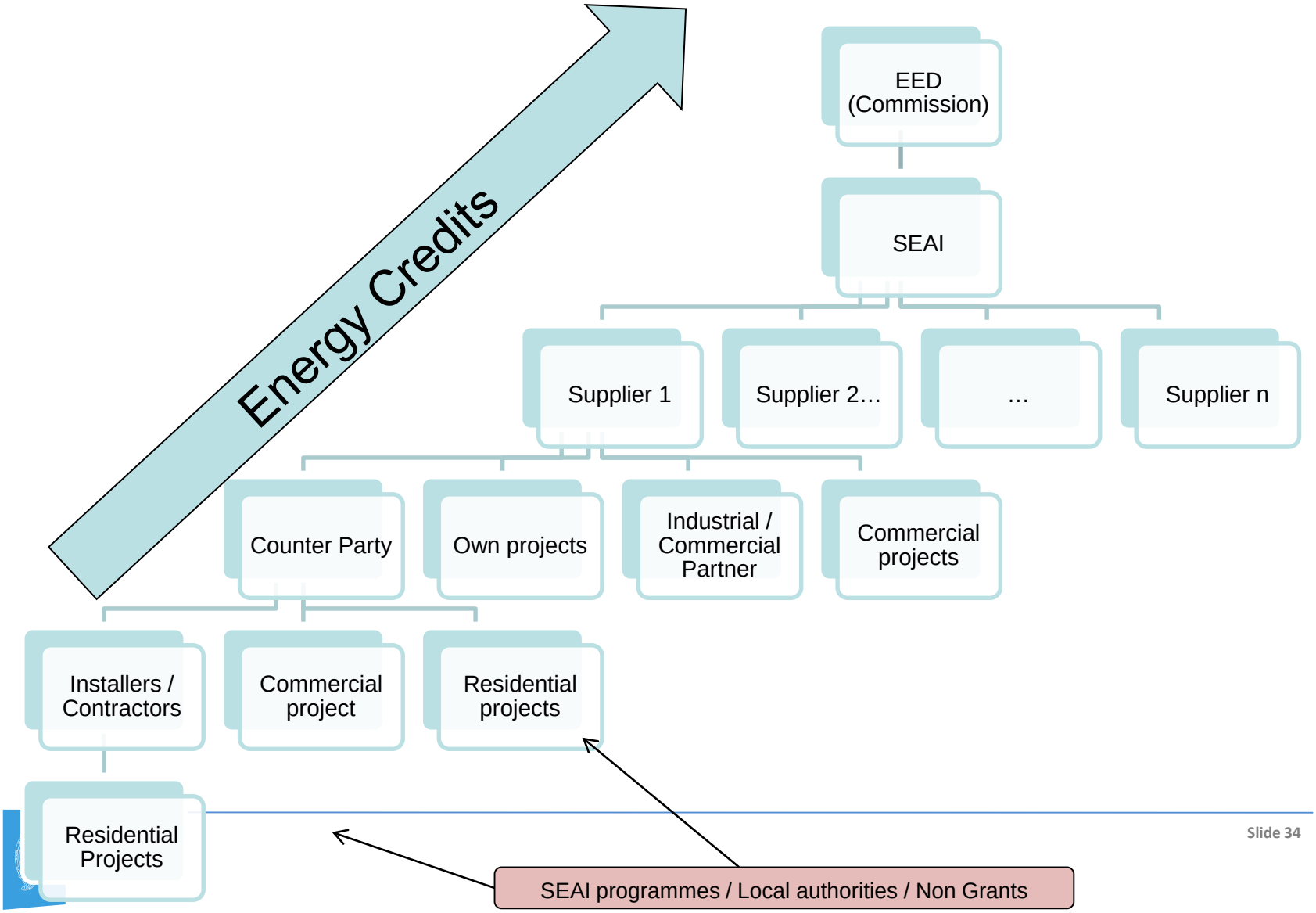
- No “white certificates” but obligated parties may trade
- Internally, excess credits may be reallocated from category to another category to meet sectoral targets but limits apply
- Residential credits can only be transferred to meet targets in the non-residential sector and energy poor credits can 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)

	Period	Inter Co. (kWh)	Inter Sector (kWh)
Number of Transactions	**2014**	11	0
	2015	8	6
Credits (kWh)	**2014**	10,241,161	0
	2015	19,781,947	31,459,825

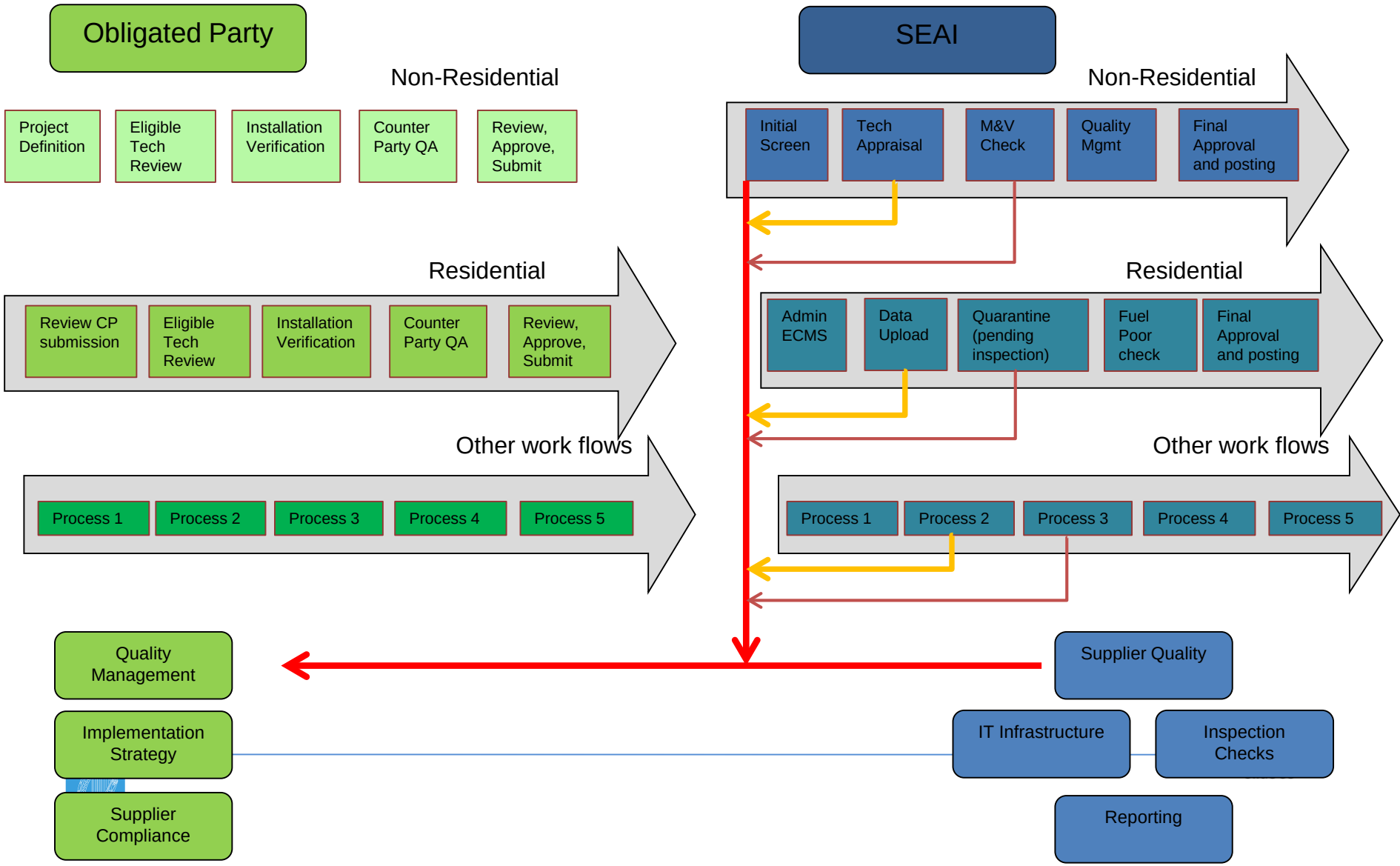
Monitoring & Verification

- 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



High Level Process Map



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

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

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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