

The NSW Energy Savings Scheme

How researchers can provide evidence to drive residential energy efficiency

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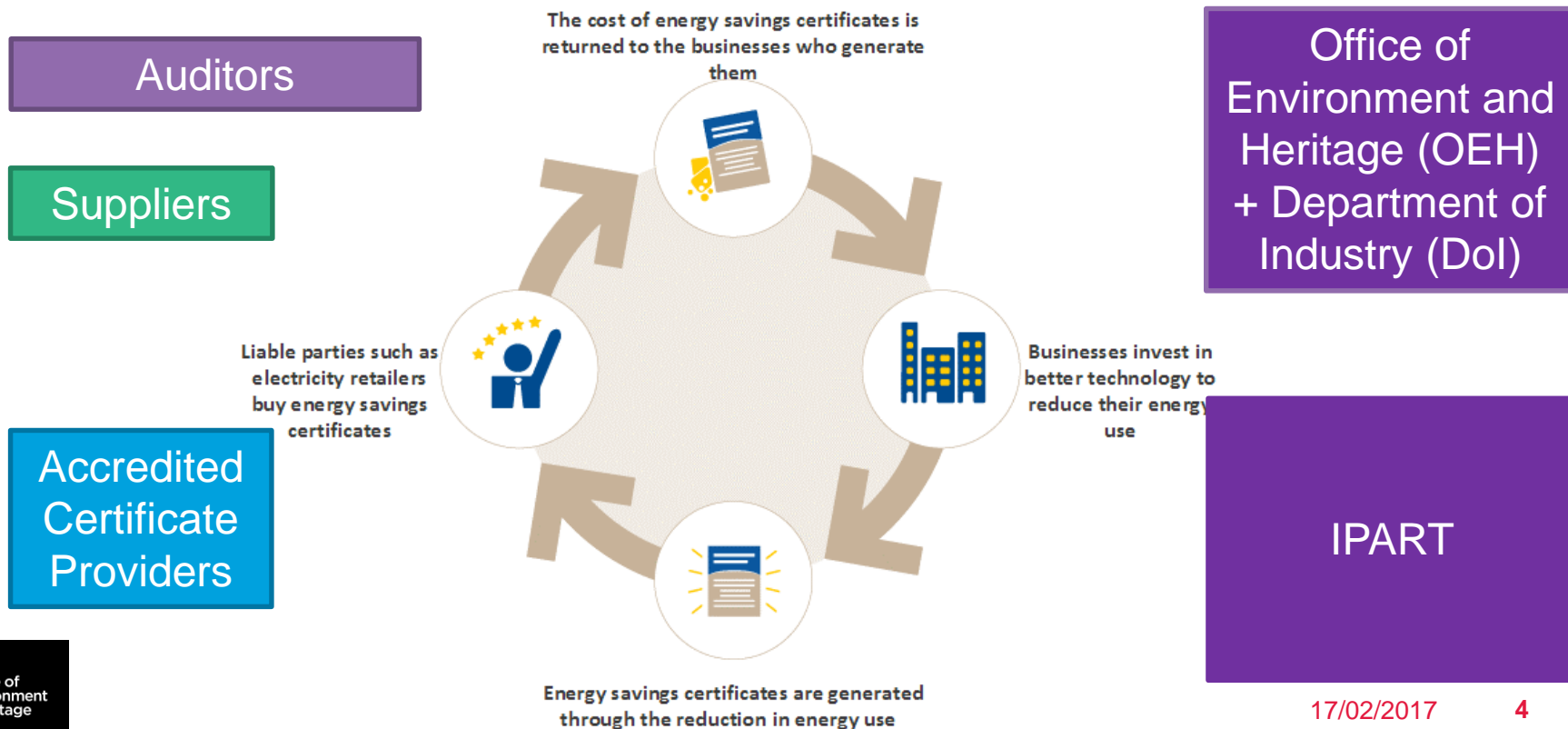
Overview

- Section 1: Introduction to the ESS
- Section 2: History of the residential sector in the ESS
- Section 3: Evidence base required to develop residential energy efficiency incentives
- Section 4: Opportunities for researchers with the ESS.

Section 1: Introduction to the NSW Energy Savings Scheme (ESS)

- NSW has provided national and global leadership
 - Greenhouse Gas Reduction Scheme, GGAS
 - Climate Change Policy Framework (2016):
 - achieve net-zero emissions
 - be more resilient to a changing climate
- ESS
 - Commenced in 2009, covers commercial, industrial, residential sectors
 - Creates investments in demand-side energy efficiency projects
- Schemes around Australia: also Vic, SA, ACT.

Section 1: Participants in flow of Energy Savings Certificates (ESCs)



Section 1: Market activity and 2015 Review of ESS

- Project-based and deemed methods
- 2015 ESS Review
 - ESS extended until 2025
 - existing technologies will be updated; new technologies included.
 - Gas savings included (E.g. natural gas and LPG)
 - Fuel switching between electricity and gas allowed in some cases
 - ESS is main NSW policy to achieve energy savings
 - Estimated 12,000 GWh savings worth ~\$1.7 billion in bill savings to 2025
 - 43 million ESCs expected to be created to 2025

Section 2: Residential activities in ESS, 2009-2013

- Residential sector activities since ESS commenced
 - 0.7 M ESCs or 701 GWh = 8% of ESCs in 2009-2013
 - 9 times more in commercial, double in industrial
- Household Retrofits: 90% of sector in 2009-2013
 - Predominantly shower rose replacement, adjusted in 2011
- Other Methods
 - Removal of old appliances (ROOA)
 - Sale of new appliances (SONA)
- Additional to minimum legislated requirements 17/02/2017

Section 2: Home Energy Efficiency Retrofit (HEER) Method activities in ESS

- HEER Method introduced in 2014
 - 20 deemed electricity savings activities: lighting, pool pumps, space conditioning, building fabric and showerhead technologies.
- Updates to HEER Method in 2016 and 2017
 - 2016 ESS Rule change introduced Gas savings
 - 11 updated activities, 3 new hot water and space heating activities
 - Proposed 2017 ESS Rule change simplifies further
- Market status: residential sector share could double?
 - ROOA and SONA are 9% of ESS; HEER-registered ACPs

Section 2: Home Energy Efficiency Retrofit (HEER) Method incentives

Eg 1 High efficiency hot water system
*replace electric resistance with 6 star
gas instantaneous*

= 21 ESCs, ~\$420

Eg 2 High efficiency pool pumps
install an 8 star pool pump

= 4.9 ESCs, ~\$100

Eg 3 High efficiency lighting
*replace 20 halogen downlights with
9W LEDs*

= 7.2 ESCs, ~\$150

Eg 4 High efficiency air conditioners
*replace existing A/C unit in
Jindabyne with a reverse cycle 3.5
star heating and cooling system*

= 13 ESCs, ~\$260

- Incentives using \$20/ESC, copayment

Section 3: Evidence base for energy efficiency incentives in HEER Method

- Calculation approach for building fabric activities
 - ‘passive’ technologies that save electricity and gas:
 - Glazing or film for windows/doors; ceiling, under-floor and wall insulation; draught proofing.
- Context:
 - Housing stock from 19th century to BASIX.
 - No data source for average BCA star rating
 - Housing typologies – construction material vs architectural style
 - Modelling required – determine base case and impact of retrofits

Section 3: Evidence base/assumptions in modelling building fabric retrofits

- What heating/cooling demand, how meet/represent?
- Factors and interactions to be understood, to answer:
 1. Location and Climate zone
 2. Housing type and stock
 3. Building fabric retrofits
 4. Orientation
 5. Occupancy
 6. Zoning
 7. Technologies
 8. Model

Section 3: Priority data needs in modelling building fabric retrofits

- There are many research gaps for these 8 factors:
 1. **Location and Climate zone:** How NatHERS climate zone files change with extreme weather events, and under various emissions scenarios
 2. **Housing type and stock:** proportion of typology in climate zone region
 3. **Building fabric retrofits:** existing insulation levels
 4. **Orientation:** GIS/big data possibilities to provide data
 5. **Occupancy:** typology and proportions due to changing demographics
 6. **Zoning:** usage profiles in open plan living
 7. **Technologies:** rebound factor, difference between technologies?
 8. **Model:** multiple options available, how impact incentives?

Section 4: Data development and access for residential incentives in ESS

- From data needs to databases
 - Current:
 - Utilities, product suppliers and market researchers develop private data
 - Government (Federal and State)
 - Future:
 - Open data? Universities develop and update databases?
- Research, collaboration and commercial possibilities
 - Research required, suitable for undergraduate to researcher levels
 - Potential for industry and government collaboration partnerships
 - Significant commercial opportunities from data

Section 4: Goal to link research to policy

- What we want from you!
 - Accurate data for existing technologies in the ESS
 - ESS Methods that are easy to calculate and use for priority technologies
 - Engagement with ESS policy intent and other government policies
- What's in it for you?
 - Significant collaboration and research grant opportunities
 - Potential to be market participants as, or with, ACPs
 - Greater understanding and connection to your communities

Contact and further information

- Contact us: ess.info@environment.nsw.gov.au
- Energy Savings Scheme Website:
<http://www.ess.nsw.gov.au/Home>
- Accredited Certificate Provider (ACP) Directory
<http://acpdirectory.environment.nsw.gov.au/>
- Office of Environment & Heritage and ESS
<http://www.environment.nsw.gov.au/energyefficiencyindustry/home-retrofits.htm>