Modernising energy efficiency obligation programmes

Workshop report

Abstract

On 10 December 2019, the IEA and the Regulatory Assistance Project (RAP) jointly hosted a workshop on modernising energy efficiency obligation programmes.This report summarises the content of the workshop.

The purpose of this workshop was to share policy makers' and programme implementers' experiences with EEOs and examine emerging trends such as pay-for-performance programmes. Workshop participants were also asked to contribute ideas for the development of updated policy guidance on EEOs, slated for development in 2020 by RAP with possible involvement from the IEA.

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Session 1: Global experience with EEOs

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This session was designed to showcase different approaches to the design and delivery of EEOs around the world. Melanie Slade, from the IEA's Energy Efficiency Division opened the session by outlining the context for the meeting from an IEA perspective. Globally, energy efficiency progress has been slowing down so there is an urgent need for governments to rapidly scale-up policies for energy efficiency, including via energy efficiency obligations.

Marcos Vasconvelos from ANEEL presenting on Brazil's Programme for Energy Efficiency. The presentation provided an overview of the programme, which has been running since 1998. Although originally set at 0.5% of energy distributors' revenue, from 2015 to 2023 the programme's target has been reduced to 0.25% of revenue. In addition to the primary target, the programme includes a secondary requirement that 60% of investments should be targeted at low-income electricity consumers.

The audience heard that recently revenue raised via the programme (equating to around €360 million) had not been spent, indicating that demand for energy efficiency is not being taken, potentially due to existing tariff design: tariffs are volumetric, providing distributors an incentive to sell more electricity rather than help reduce demand.

David Pryor from the New South Wales Government in Australia, presented on another well established programme, the NSW Energy Savings Scheme and its transformation into an expanded Energy Security Safeguard for NSW. To date the scheme has delivered around 20% of NSW energy savings target of 16,000 GWh per year by 2020. Through the expanded Safeguard energy efficiency obligations are proposed to increase from 8.5% in 2020 to 13% of liable electricity sales by 2030. The Safeguard will also include a peak demand reduction scheme, with consultation on the scheme design taking place in 2020.

He explained that since the programme began, an overwhelming majority of energy efficiency actions had been related to commercial lighting upgrades. To diversify technologies used to meet the obligation in the next phase of the programme and ensure the "additionality" of savings, administrators were considering how to move beyond LED lamp-related activities. Administrators were also examining so-called "Measurement and Verification (M&V) 2.0" methods, using smart meter data and the Caltrack methods to make it easier to measure the actual energy saved from efficiency and encourage a move away from "deemed" savings. Introducing these new M&V methods was seen as a way to reduce risk, especially in the Project Impact Assessment with Measurement and Verification (PIAM&V) method, where poor M&V practices have resulted in increased tension between the Scheme Administrator and project proponents.

The session was rounded out by Josephine Maguire from SEAI, Ireland, presenting on Irelend's Energy Efficiency Obligation Scheme (EEOS). The EEOS is legislated to help meet Ireland's obligations under Article 7 of the European Energy Efficiency Directive,

which mandates that EU countries must set a target on energy distributors to achieve new savings each year of 1.5% of annual energy sales. The EEOS target began at 550GWh per year of energy savings but has now increased to 700GWh per year for the period 2018-2020. Lessons learned included:

- Being able to access data from utilities to assess the impact of the scheme had been more difficult than expected; it's important for government agencies to have the powers to do this
- Setting thresholds for the obligation is important, especially if you want to balance the administrative burden of bringing in very small players, while maintaining equity and fairness.
- Some energy suppliers are now innovating, delivering "one stop shop" service models, in which a deeper retrofit is provided to energy customers and the energy supplier or counterparties organises everything for the householder, including engagement, advice, works, quality assurance and grant administration, as well as access to low cost finance.

Session 2: Lessons from recent experience with EEOs

***Download** all presentations from session 2*

This session featured presentations on well-established programmes that have undergone significant change in recent years to discover lessons for policy makers and regulators.

Henry Adams from Common Capital began by speaking about experiences in the four Australian state-government level programmes, with a focus on lessons learned in trying to implement innovative M&V methods that go beyond deemed savings methods. In Australian several different M&V methodologies had been trialed in the state EEOs, including:

- Metered savings (PIAM&V) method: this IMPVP adapted method was developed to allow recognition of savings form the majority of potential commercial and residential upgrades opportunities, for which credible default savings factors cannot be developed. Uptake is still low due to (1) the market's preference for lighting projects which have higher savings/subsidy to capex ratios that almost all other upgrade opportunities. The current administrative approach to the method is also resulting in higher transaction costs and risks than the streamlined approach which was originally envisioned. There are opportunities to address these issues.
- An OPower-style randomised control trial "Aggregated Metered Baseline" method was also developed to allow proponents to use aggregated meter data to measure behaviour change. With sufficient sample sizes this can work with interval meters as well. However, it hasn't seen up take largely due to Opower's exit from Australia, the limited commercial use cases where RCT's will work, and the low incentives it provides - as certificates can only be claimed one year at a time, in arrears. Common Capital has identified a broader range of other non-RCT methods with higher (discounted) incentives to overcome these issues.

In relation to EEOs more generally, the following lessons had emerged from the Australian experience:

- There are trade-offs between accuracy and additionality but methods can have discounts built in to account for this. For example in the ESS PIAM&V method the "accuracy factor" allows proponents to conduct IMPVP style M&V to a level of precision which is commercially feasible, with automatic discounts applied to savings with lower model accuracy to ensure no over rewarding of savings. Similarly the "Effective Range" rules under the PIAM&V method, mean that shorter operational measurement periods result in proportionally less savings, if the measurement period does not cover the full range of measured baseline conditions. In the Victorian PGA method, proponents can create initial discounted certificates with a small amount of data for project cash flow, then top-up the difference after a full effective range has been measured.
- EEOs are not a silver bullet. To get further up the energy efficiency cost curve, complementary measures will be needed. These include integration with ratings,

building standards, financing, low income programs, recognition of peak demand benefits, incentives for electrification, and incentives for innovation. Major of the deepest energy savings opportunities exist at supply chain or industry levels and can't be recognised by EEOs. These require other industry policy tools like hubs and essential infrastructure provision.

- Policymakers have to be confident enough to let price signals work: Prices have to rise if the market is to focus on other activities.
- There are also fundamental limitations of single commodity energy efficiency markets. The activities that achieve scale first, drive to certificate prices and "crowd out" innovation in new activities until that activity has been exhausted. To drive sustained innovation and avoid boom-bust cycles, we need to think about building "on-ramps" (sub targets/ transitional premiums) for new energy efficiency activities, until they achieve scale and implementation efficiency that allows them to compete with the lowest marginal cost technology.
- Where scheme compliance has been allocated by retailers to their marketing departments, there appears to be a much more active involvement in delivery (such as ACTEWAGL in the ACT programme). Compelling offers to customers seem to drive more bundled activities with deeper upgrades and high customer co-contributions (similar to the Irish programme). In the other jurisdictions, retailers have generally been more at arm's length.

Dario Di Santo from the Federation for the Rational Use of Energy (FIRE), Italy, presented on Italy's EEO programme. The programme had delivered savings of around 27 Mtoe by 2018, however in recent years, the programme was delivering less energy savings, despite the rise of scheme targets. This happened for a confluence of factors:

- Additionality was being reduced over time, both because some solutions have become "business as usual" (e.g., CFLs and industrial sector heat recovery), and programme administrators changed programme rules, introducing more challenging criteria to identify the additional savings.
- With a higher target, certificate prices rose which encouraged fraudulent operators to enter the market with the intention of making money quickly by presenting counterfeit projects. This further lowered energy savings because fake energy savings had to be removed from the market (some 1.3 million certificates per year had to be removed only in 2017).
- Since 2017 only metered savings can be presented, with challenging requirements for the definition of the consumption baseline in line with IPMVP option B.

Lessons learned:

- Price control mechanisms might be useful for the white certificate market, both to avoid unexpected increases in the cost of the scheme and to ensure a minimum reward for proponents over time. About the first point, for example, when prices rise, it benefits also certificates generated from actions that took place when prices were lower, increasing the cost of the scheme due to an extra revenue for proponents and not to the implementation of new energy efficiency measures. Therefore, some sort of mechanism to control for that (similar to the EU's stability mechanism in the EU ETS) could be useful.
- Using measured savings methodologies over time has granted benefits like the assessment of real savings, the collection of useful information on the implemented energy efficiency measures and the qualification of ESCOs and energy managers. On the other hand it has made the supply of certificate inelastic, since it takes much more than one year to obtain the first certificates (time to implement the energy efficiency measure plus time to measure one year of ex-post energy consumption). Thus prices

continue to rise on the market for a long time. Therefore, changes are needed to reduce the time between an energy savings action and it being credited. However, some technologies are harder to credit in a shorter period of time than others.

- Screening of eligible companies (ESCOs) might have helped to prevent fraud more effectively rather than screening of the documentation they submitted, which turned out to be quite difficult.

Tadeusz Skoczkowski from the Warsaw University of Technology, Poland presented on Poland's Energy Efficiency Obligation. The second phase of the programme began in 2016 after an initial phase from 2013-16 (phase I). In phase I, savings were allocated as follows: 80% final consumers; 10% industry; 10% in networks (to reduce losses in transmission and distribution).

In phase I it was expected that the cheapest actions would be carried out, keeping the price of certificates fairly low. However, administrators found that certificate prices rose much faster than energy saving and 80% of savings could be traced to just 20% of the projects.

Phase II reduced complexity, for example, by replacing mandatory project audits with random checks.The target was also set in terms of final energy: 1.5% of *final* energy annually traded which reduced the use of renewables as a possible compliance activity.

However, obligated parties are still well below delivering on their targets. One reason that could be affecting this is that penalties for non-compliance are not strong enough. In addition, penalties are collected into a special fund which is supposed to be allocated to energy efficiency but this has not been spent on efficiency for some reason. Other issues include the impact of design decisions including banking (such that the value of relatively cheap energy savings from Phase I are increasing in price, increasing overall average scheme costs).

Lessons learned:

- Penalties are important to ensure obligated parties meet their targets.
- There is a balance to be struck between complexity (in terms of verifying additionality of savings) and scheme costs.
- Robust systems for ex-post monitoring and verification of energy savings are important. In comparison to the stringent M&V that is done for the EU ETS, most energy efficiency obligations in Europe lack sophisticated M&V systems.
- Transparency is very important for ensuring obligations are effective and data on scheme impacts is widely available.

Session 3: Testing the robustness of existing guidance

In this session, participants broke out into groups to discuss existing guidance developed by the Regulatory Assistance Project (RAP) and the Technology Collaboration Programme by IEA. Workshop participants were asked to provide ideas on whether existing guidance was fit for purpose as the energy system changes and suggest updates.

Jan Rosenow from RAP presented on the changing context within which EEOs are operating, highlighting the impacts of decarbonisation, decentralisation and digitalisation. Decarbonisation is affecting the value of energy efficiency at different times of the day and year, as the grid penetration of intermittent renewables leads to variation in energy production and the electrification of end-uses changes the size and shape of energy loads. The growing decentralisation of energy production and the ability of end-users to offer a variety of energy services back to the grid is increasing the value of energy efficiency and other distributed resources to network operators. Digitalisation is enabling these changing value streams to be accessed, through more timely and accurate meter data and low-cost settlement methods, e.g. through distributed ledgers.

Samuel Thomas from RAP presented the recommendations in the existing guidance, focusing on those elements where the guidance was most contestable, given the contextual changes set out earlier in the session and recent experience in designing and implementing EEOs. The room split into groups to discuss the following areas of the guidance, feeding back to the whole room at the end of the session:

(i) **policy objectives** - to what extent should these focus primarily on energy savings as the needs of energy systems evolve and a number of different "behind the meter" actions could meet system requirements?

- The group assessing this issue preferred to maintain the primacy of energy savings as the central objective of EEOs in the guidance, given the market failures affecting energy efficiency, as opposed to other means of providing services to the energy system.

(ii) **fuel coverage** - given the urgency implied by climate goals and the associated electrification of many end uses, does the strategy of starting with coverage of only one or two fuels and expanding later still hold?

- The group discussing this issue felt that the guidance should reflect differences in circumstances, such as the extent to which electricity grids are already decarbonised and end-uses electrified, as well as the overarching policy objectives.

(iii) **energy saving target** - with electrification being part of many energy efficiency strategies, does it make sense to focus on primary energy savings when more than one fuel is covered by the obligation?

- The group considering this area agreed that the guidance was still good. The choice between primary and final energy can affect the relative attractiveness of technologies, with potential detrimental impacts for electrification in situations

where the primary energy intensity of the grid is expected to improve but savings are calculated on the basis of the current situation. The group felt that this issue could be addressed through the use of adjustment coefficients to reflect the likely evolution of grid energy intensity.

(iv) **obligated parties** - is it right to be agnostic about which utilities are obligated, or should obligations increasingly be focused on district network operators facing many of the challenges presented by the energy transition? In the case where suppliers are obligated, what does experience tell us about the best strategy towards small suppliers?

- The group addressing this issue felt that it was right to be agnostic at this point, although they did recognise both the misalignment of incentives inherent in the obligation of energy suppliers and the greater focus on the temporal and geographical value of energy savings.

(v) **trading of energy savings** - is it right to be agnostic about the inclusion of the option of trading in an EEO given the recent events in Italy and France's White Certificate programmes?

- The group considering this issue felt that agnosticism was fine but that the guidance should focus on learning the lessons on tackling issues such as fraud and look at mechanisms for stabilising markets at times of stress, e.g. as seen in Italy in recent years.

(vi) **eligible energy efficiency activities** - do the advances in digitalisation and the changes in temporal value brought about by intermittent renewable generation make the case for a move away from deemed savings to metered savings, even for smaller residential actions?

- This topic brought about the most debate, both over the relative merits of metered and deemed savings approaches, and the extent to which metering is feasible, either because of the fuel coverage or because the policy objectives cover more aspects than simply energy consumption reductions. The debate over metered savings set up the final session of the day, focused on pay-for-performance programme pilots.

Session 4: Increasing value from EEOs in a decarbonising, digitalised energy system

***Download** all presentations from session 4*

This session looked at how EEOs might adapt to changes in our energy systems such as the growth of distributed energy resources, digitalisation and decarbonisation. In this context, some jurisdictions are moving to “pay-for-performance” (P4P) models for measuring and rewarding energy efficiency actions. Experience from leading P4P programmes in the US was presented to stimulate discussion as to whether pay-for-performance could be used in EEOs globally.

Carmen Best from Recurve opened the session by presenting the rationale for P4P programmes and recent experience in pilot programmes. She explained that P4P programmes can both improve outcomes, by aligning the incentives of the energy efficiency industry with policy objectives, and reduce administration costs by avoiding the need for extensive evaluation and on-site verification through reliance on meter-based performance metrics.

Programme administrators strike contracts with aggregators who get paid on the basis of the savings delivered by their portfolio of projects. Individual customers own the data with aggregators obligated to meet data privacy requirements.

Ben Brown and **Matt Braunwarth** from Pacific Gas and Electric (PG&E), a utility in the state of California in the United States, whose profits are not tied to revenue, presented on their P4P and Grid Resource Procurement programmes. In 2019, the average value of energy is less than 50 USD/MWh in the middle of the day and more than 300 USD in the early evening. By 20204, the average value of energy is expected to fall to close to zero while rising to 420 USD in early evening. The largest components of this difference in value are “capacity”and “distribution”. Faced with this differential in the value of energy efficiency and a series of legislative changes that favour the setting up of third party meter-based savings programmes, PG&E have introduced P4P programmes rewarding normalised metered energy savings and “energy efficiency as a grid resource” pilot programmes targeted at specific times and locations. The CalTRACK methodology and data management procedures are used in all cases to ensure consistency of approach to measurement in both the residential and commercial sectors.

The P4P programmes have been designed to demonstrate that P4P can be a sustainable model for future energy efficiency programmes and to create a supportive data ecosystem. In the next phase of pilots, more distributed energy resources will be incorporated into the programmes along with more dynamic pricing (these are used in two of the four current pilots). The “energy efficiency as a grid resource” programmes will eventually be expected to demonstrate that they are deferring distribution system investments.

Mei Poon from the Con Edison, a utility in the state of New York in the United States, presented on the P4P programme run with the public benefit corporation, theNew York State Energy Research and Development Authority (NYSERDA). The programme,which targets only energy efficiency measures, aims to go beyond simple, single measures, demanding bids of at least an average of 5% savings at the meter across a portfolio of projects.

The P4P programme aimed at small business customers encourages the development of long term customer relationships, as payment is made as savings are realised, as opposed to up front with the installation of measures, as in a traditional programme. It also aims to reduce utility administration costs and encourage market flexibility in discovering the most cost-effective energy efficiency resources.

Patti Boyd from the District of Columbia (DC) Sustainable Energy Utility (DCSEU) in the United States presented on their P4P programme model. The DCSEU is a bill-payer funded organisation obligated to deliver energy efficiency gains under contract to the District's Department of Energy and Environment (DOEE). Similar to the other programmes presented, the DCSEU benefits from recent cost reductions in data collection and digital analytics and seeks to help develop the energy efficiency industry's reach as they work with clients on the operation and installation of energy efficiency measures.

The P4P programme is incentivising multi-measure interventions where traditional savings estimations are unable to predict expected savings or extensive resources are required to perform the analysis. It also seeks to capitalize on recent innovation in the realm of data subscription services for businesses such as hotel chains that can use real time data to optimise their energy use.