ESIA Submission:

NSW Energy Savings Scheme (ESS) Program Rule Change 2020-21 Consultation

Including:

- **updates to existing air conditioner and refrigerated cabinet activity definitions; and**
- **the potential for new heat pump and solar water heater activities.**

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Submitted via sustainability@environment.nsw.gov.au to Department of Planning, Industry and Environment, NSW Government

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1. Introduction

The Energy Savings Industry Association (ESIA) welcomes the opportunity to provide this submission to the 2020-21 Energy Savings Scheme (ESS) Rule change public consultation which commenced on 25 June by the Department of Planning, Industry and Environment (DPIE), NSW Government.

The key change proposals include:

- updates to existing air conditioner and refrigerated cabinet activity definitions; and
- the potential for new heat pump and solar water heater activities.

We referred to:

- https://www.nsw.gov.au/have-your-say/ess-rule-change-public-consultation
- Consultation Paper
- Draft ESS Rule 2021
- Plenary session slides
- Targeted air conditioner slides

About ESIA

The Energy Savings Industry Association (ESIA) is the peak national, independent association representing and self-regulating businesses that are accredited to create and trade in energy efficiency certificates in market-based energy efficiency schemes in Australia. These activities underpin the energy savings schemes which facilitate the installation of energy efficient products and services to households and businesses. Members represent the majority of the energy efficiency certificate creation market in Australia. Schemes are established in Vic, NSW, SA and ACT. Members also include product and service suppliers to accredited providers under the schemes. As well, the ESIA represents member interests in national and state initiatives that include energy efficiency and demand reduction, such as the Federal Government's Climate Solutions Fund and the NSW Peak Demand Reduction Scheme (PDRS) yet to commence.

Further engagement

The ESIA acknowledges significant body of the work that has been applied to develop these proposed Rule changes 2020-21. We look forward to further engagement prior to the changes being finalised including a briefing regarding this submission as required.

Please contact the ESIA Executive Officer at comns@esia.asn.au.

2. Summary

Insufficient consultation period – don't delay implementation date

The timeframe provided for industry to respond to this long-awaited consultation has been too short. Several ESIA members chose not to provide a submission due to extra demands on businesses employees due to unprecedented COVID-19 outbreaks in Victoria and NSW, along with some staff numbers having contracted due to COVID and remaining employees taking on more workload.

This ESIA submission provides some in-depth and other broad-brush responses as very few individuals have yet taken a 'deep dive' into the materials provided, even though various additional sessions were provided such as the air conditioner plenary session. It was unfortunate that there could not be a deeper TRYNSYS session given this is a complex and highly technical tool which many prospective participants are unclear how they may be able to access (and that almost no ESIA accessed).

While the Victorian and NSW public consultations on heat pump hot water and refrigerated cabinets have run closely in time no representatives have had time to carefully compare the two. Therefore, we emphasise that the governments involved should *not* assume that industry has been able to consider both in parallel, nor the longer-term ramifications of differences in approaches including the overlay of differing scheme objectives and their changes to emissions factors and penalty rate levels etc in coming years.

It is suggested that each of the consultations in future be given more time, with overlap, and with a recommendation that industry consider the Victorian and NSW consultations in tandem. While logistically challenging, this would greatly enhance the objective of alignment of energy savings schemes across Australia (which is a federal government objective under the National Energy Productivity initiative).

ESS investment requires improvements to systems outside of ESS control

The NSW government is investing significant capital into the ESS including attracting and retaining highly competent staff in its management and regulation. There are, however, systems outside of ESS control which require investment in tandem to ensure the ESS operates optimally. This includes:

- **GEMS Register**: data accuracy and access issues need to be addressed. The register database is maintained by industry, and without highly effective oversight, continues to provide challenges regarding timely data quality and accuracy. For example, there can be a lag of three months from the time a compliant appliance is sold to the time it is added to the GEMS registry. Occasionally, the same brand model can be added to the registry more than once with differing data. In some answers below, the ESIA has made some suggestions to address these challenges.

- **Installer Register**: establish (with other jurisdictions) a national register of installers to mitigate fraudulent behaviour and better enable enforcement and publishing of operators who fail to act in the interests of energy customers and the industry that they work in.

Certificate price constraints in the near term

The current certificate price may constrain compelling energy efficiency upgrades. For example, air conditioning has benefits that aren't being valued currently. This may become more attractive with the PDRS. There is an interim case for government support to address this, for example with targeted grants of a size that will mobilise upgrades, early introduction of eligibility for the PDRS, down the track with the approach of a likely winddown of lighting in time the government could consider increasing the penalty rate.

Scheme incentive framework needs to be flexible enough to reward future innovation

The ESS Rule needs to be written to open the way to reward innovative solutions that have not yet reached the Australian market. For example, in areas such as Europe, combined 'hybrid' systems that provide air conditioning and water heating are far more common. The activities being developed by the ESS should enable these kinds of upgrades to be eligible and incentivised, which would require a simple template M&V approach.

E11 (HEER) Light bulbs

This activity is not considered in this Rule change. However, we note that it is far too complicated. A calculation to determine energy savings and therefore ESC incentives cannot be undertaken before doing the upgrade so a job cannot be quoted in advance. That is, the lamp generally needs to be removed to determine an appropriate replacement. This, combined with a very low incentive, results in very little uptake. It would be better supported by a reduction in the number of possible permutations, like three options instead of the current 50-odd upgrade options, that are possible across all the different technologies. This change would align with the VEU approach to Activity 21A.

3. Responses to consultation questions

3.1 General changes

Question 1. Do you agree with the proposed transitional arrangements? Please provide reasoning to support your response.

Yes

Question 2. Can you foresee any part of the new ESS Rule for which it will be difficult to get 'business-ready' within the proposed timeframes?

Potentially:

- Testing of equipment with TRNSYS modelling. For example, for C&I heat pumps, the amount of detail to fill in for method analysis to suit TRYNSYS will take time for industry.
- IPART activity accreditation approvals.
- There is no method guide yet for these activities, and these generally take considerable time after accreditations are provided. (Ideally draft Method Guides should be in advance of the Rule coming into play.)

3.2 Remove some RET exclusions

Question 3. Do you agree with the proposed changes to clause 5.4(g)? Please provide reasoning supporting your response.

Allowing STCs is good, as this aligns with the VEU and REPS by allowing for co-creation of STCs. Co-creation should be available across all activities.

ESIA seeks clarification as to whether STCs will or will not be eligible under the M&V method for commercial applications?

3.3 NABERS

Question 4 Do you agree with the proposed updates to the definitions of Electricity Savings and Gas Savings for the NABERS method? Please provide reasoning supporting your response.

Yes. Allowance of fuel switching is welcomed. This will enable negative savings to be accounted as positive savings when going from one type of fuel to another such as to

electricity. In the past, the displacement of one would be counted as negative and so impact certificate creation.

3.4 Review and replace Activity Definitions D3 & D4 with D16 (HEER)

Question 5. Do you agree with the updated calculation approaches and requirements proposed for Activity Definition D16?

(D16 – air conditioners)

Given that this is a considerable shift, it is unclear whether the proposed change will incentivise energy efficiency upgrades.

We support simplification of the calculation, but currently there is no material incentive to drive additionality. Notably, there is no additional incentive when comparing 3 to 7 star rated products, including from the perspective of the energy customers, as the lower rated products are much cheaper.

For example, it is proposed that a $4,000-5,000 split air-conditioning system will attract 10 ESCs @ $30 = $300. (More ESCS will be available in cooler areas, however, this still may not be enough.) This incentive will not cover the compliance costs of doing the upgrade under the ESS. An incentive around the $1,200 to $1,500 mark would start to make the activity move: roughly 50% of the price of a lower cost system.

To reduce industry engagement barriers, it will be crucial to align with the VEU in terms production registration.

Question 6. Do you agree with a single set of Implementation and other requirements set for all of the product classes eligible under Activity Definition D16?

No, we do not agree with a blanket 20% approach across all product classes. To have one set of requirements is not practical, for example, it is very difficult for larger systems to meet the requirements. (We do note that a high efficiency heat pump will deliver higher efficiency and therefore more ESCs.)

The cost of 'making good' an installation is prohibitive, for example, when wall systems are too costly to fully remove to 'make good'. Partial or no removal should be acceptable if another separate incentive for removal and recycling is not available.

We emphasise that leaving refrigerants in situ is an issue. Refrigerant removal should be a requirement as is the case, and for the work to be undertaken by a licenced refrigerant mechanic which is already a requirement.

Question 7. Do you agree with the proposed minimum AEER and ACOP (where relevant) eligibility threshold of 20% > baseline AEER applied to all product classes and capacities? If not, are you able to provide supporting evidence and data that would enable setting more targeted thresholds?

There are very few product classes that would meet this threshold. The baseline cooling and heating values published by DPIE appear acceptable. However, the 20% minimum improvement is not acceptable. Any system below 5kW is probably ok at 20% improvement, but for anything above 5kW, 10% improvement will likely be more reasonable. Therefore, the ESIA recommends that different thresholds for different product classes may be more workable.

It is likely a low risk that larger systems will be installed under D16 with less efficient outcomes, given the capital costs and level of expertise required for the installation which is governed by rigorous industry standards.

Question 8. Do you have any concerns that these activities could drive bad design or behaviour in the industry, for example, the installation of over- or undersized units?

Yes, bad design and behaviour is possible. There is the possibility of under-sizing or over-sizing, however, it is important that unnecessary constraints and evidence requirements are not placed on industry or upgrades simply will not occur.

Make the activity flexible enough to let appropriately qualified professionals and tradespeople determine suitable solutions.

Under-sizing: Equipment capacity is provided by manufacturers. Load requirements can be provided by the client or calculated based on estimations by the installer who needs to have appropriate air conditioning installation training and accreditation.

The challenge is that with air conditioning, it is often required to operate optimally during weather extremes (very hot or cold weather). But ultimately the trained installer will know how to balance meeting the peak reasonably (not significantly over or under requirements for the site and climate zone).

It should be acceptable to simply declare that the system size that is being provided should reasonably meet peak winter and summer cooling and heating requirements.

Over-sizing: Design solutions that are acceptable need to be flexible to ensure a designer is not encouraged to design the most energy efficient solution with marginal benefits.

A defined load requirement: Replaced systems should be required to meet the incumbent air conditioning delivery performance (if it is requested by the client), or more suitable if that system is not fit for purpose (eg due to original inappropriate sizing or changes to the site).

Question 9. One of the current Equipment Requirements under Activity Definition D3 is for replacement AC to have a cooling capacity the same as or smaller than the unit that it replaces. Are there alternative measures that could considered to ensure that the ESS incentive is not driving the installation of over-sized units?

It is very unlikely that the proposed ESS incentive will drive over-sized units.

It may be reassuring to note that an oversized air conditioner will only operate as much as it needs to, so unless the system is significantly oversized, this will not be an issue.

It should be acceptable to simply declare that the system size that is being provided should reasonably meet peak winter and summer cooling and heating requirements.

Question 10. Would you agree with Activity Definition D16 requiring the installed EndUser Equipment to have a demand response capability in order to provide complimentary benefits for the Peak Demand Reduction Scheme? If no, please explain why.

Demand response capability should be mandatory, including with the capability as an add on in the future so the additional can be rewarded in the future by the PDRS. It could even be an incentive provided retrospectively to systems installed from a set date before the PDRS commences.

Question 11. Do you agree with the proposed removal of the 5-year End-User Equipment warranty requirement?

Yes, agree to removal.

Question 12. Activity Definitions D16 and F4 cover air-to-air air conditioners. How big is the market opportunity for the water-to-air air conditioners?

Even though the opportunity may not be fully understood or large now, there is potential with innovation for significant growth.

So, there should be a water-to-air category in F4 and D16. This will encourage uptake of more efficient air conditioning.

Question 13. Would the proposed changes incentivise you to become accredited to undertake air conditioning upgrades using the HEER method?

Several ESIA members believe it is not attractive enough with the current NSW ESS ESC price, although they have indicated they are likely to engage in the VEU under the similar activity given the higher VEEC price.

It is agreed that the current proposed scenario is highly unlikely to attract industry which is not already involved in the ESS.

Question 14. Do you consider there to be any barriers to the uptake of this activity?

Insufficient incentive, considering significant engagement and compliance costs, and risk of relying on the GEMS registry given current data issues.

A key example is the current Victorian Government Solar Homes Heating and Cooling Program with an incentive of $1,000 which is not attractive to industry to engage, given all the associated costs and risks. Several ESIA members have looked to participate and will not engage in that program given limited commercial viability in participating, even though they have strong in-principle support for the initiative.

3.4.1 Update to Activity F4 (HEAB)

Question 15. Do you agree with the updated calculation approaches and requirements proposed for Activity Definition F4? Please be specific in your responses and provide evidence to support your answer where available.

For F4, allow this commercial activity to be used in the common areas of a Class 2 Building (ie a residential setting) which is currently proposed *not* to be allowed.

Clarity of this ESIA recommendation could be provided by editing Clause 9.9 to state that the activity can be done in commercial building types 3, 5-9 and the common areas of Class 2.

Question 16. Do you agree with the proposed minimum AEER and ACOP (where relevant) eligibility threshold of 20% > baseline AEER applied to all product classes and capacities? If not, are you able to provide supporting evidence and data that would enable setting more targeted thresholds?

(Refer to response to Q7 as for D16 activity.)

Question 17. Do you have any concerns that these activities could drive bad design or behaviour in the industry, for example, the installation of over- or undersized units?

(Same as for D16, especially in larger settings.)

Question 18. Would you agree with Activity Definition D16 requiring the installed EndUser Equipment to have a demand response capability in order to provide complimentary benefits for the Peak Demand Reduction Scheme? If no, please explain why.

(Same response at Q10)

Question 19. Would the proposed changes incentivise you to become accredited to undertake air conditioning upgrades using the HEAB method?

(Refer to response to Q13)

Question 20. Do you consider there to be any barriers to the uptake of this activity?

Yes: the incentive is too low, use of GEMS registry data is a risk, not many systems meet the 20% threshold requirement and the implications of TYNSYS are not clear. If these barriers are addressed, industry will be well placed to mobilise upgrades.

3.4.2 Update to Activity definition F1 (HEAB)

Question 21. Do you agree with the updated calculation approach and requirements we are proposing for these Activity Definitions F1.1-F1.5?

ESIA supports the updated calculation methodology. If the EEI baselines are not updated, the incentives for product classes 3, 4, 9, and 10 will not be viable.

We support the F1 alternative approach Option B provided in the Plenary Session (p39) in terms of usability as it is a simpler calculation method. Take up of the alternative calculation method, which has one less variable so it relies on less data from the GEMS registry, would be attractive. Ie keep the activities split up in their current format (p39).

Question 22. Do you agree that the baselines we are proposing are appropriate to incentivise the installation of the most efficient Refrigerated Cabinets available for sale in NSW?

ESIA's understanding from refrigerated cabinet manufacturers is that the proposed changes mean several refrigerated cabinets product classes receive no or minimal ESCs, and therefore it is not viable to invest in creating certificates.

The ESIA would support EEI baseline (and thresholds) so that the products that substantially outperform the GEMS 2020 standards would be recognised for a level of energy savings that would drive greater uptake. A 10-year lifetime may be more suitable for the higher performance products.

The GEMS registry doesn't yet contain many Refrigerated Cabinets products compliant under the GEMS (Refrigerated Cabinets) Determination 2020. The certificate value of those included is proposed to drop by about 50% making the opportunity very unattractive. Note that the three changes in 2012, 2021 and now proposed 2021 now sees a cabinet worth around $7,000 attracting an ESS incentive of perhaps $500.

The inclusion of new categories is very positive.

Question 23. Do you consider there to be any other barriers to the uptake of these activities?

In the past the administrator has interpreted a requirement for a refrigerant gas handling license holder to be involved in the installation of plug-based (integral) cabinets. These integral cabinets are self-contained, installation does not involve the transfer or removal of refrigerants and hence it is unreasonable to require signoff by a refrigerant gas handling licensee. Additional clarity on this issue would reduce uncertainty for ACPs.

The complication of working with the MEPS data to determine energy savings calculations is a barrier. For example, there are many product number variations which are different for colours, but when the product efficiency is updated, the model number is not changed.

It is a major issue that the descriptions in the Rule and the column headings in the MEPS database are not the same. It would greatly assist in accessibility if they were more aligned. Perhaps sufficient tabulated information in the Rule would help to enable the ACP to reliably interpret the MEPS database and the Australian Standards. (DPIE has probably already undertaken this kind of exercise.) This is especially an issue when considering climate zones such as when Local Government Areas change their boundaries periodically.

3.4.3 Update to the note in 9.8.1 (HEER)

Question 24. Do you agree with referencing the updated Clause in the Note? If not, please provide supporting evidence to justify your response.

Yes

3.4.4 Update to Activity Definitions E2, E3, E5 & E13 (HEER)

Question 25. Do you agree with referencing Table A9.4 in Activity Definitions E2, E3, E5 and E13? If not, please provide supporting evidence to justify your response.

Yes

3.4.5 Potential new Activity Definitions D17 – D22 Residential and Small Business Heat Pump and Solar Water Heaters (HEAB)

Question 26. Do you agree with the inclusion of new Activity Definitions to incentivise heat pump and solar water heaters in the ESS?

Yes

Question 27. Do you agree with the calculation approach and requirements we are proposing for Activity Definitions D17-D22?

The ESIA is concerned that the average baseload assumptions are not reflective of the reality of the household upgrade market and as such, will not drive heat pumps or solar over the standard choice which is electric hot water upgrades.

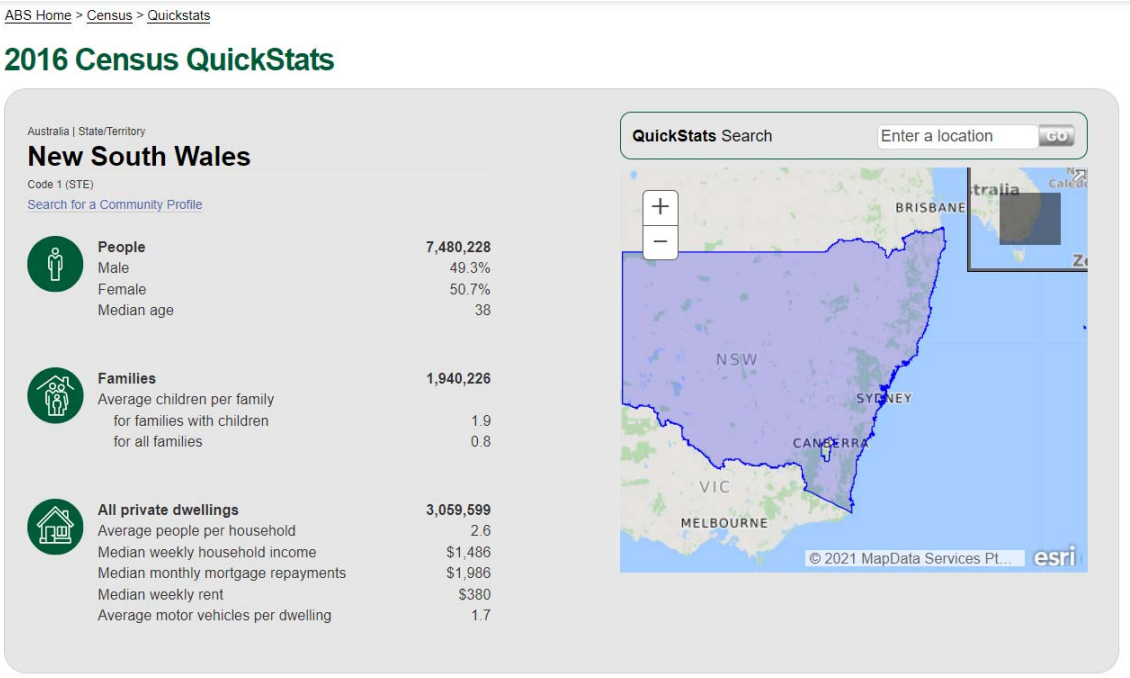
We suggest that households suited to upgrades (homes as opposed to apartments) generally have four people or more. This would see the average medium baseload be increased from 35.51MWh to 47.5MWh to reflective a more likely scenario.

We would like to see an increase in the base load to 47.5 MWh, because the daily load of a 4 people in a house kWh/day is: (4.18 * 180 * 52) / 3600 = 10.8 kWh (45*4=180)). And 47.5 MWh equates to the daily load of a 4-person household i.e. (47.5 MWh/12/365) * 1000 = 10.8 kWh/day (4 people).

Current annual medium baseload = 35.51 MWh or 8.1 kWh/day i.e. (35.51 MWh / 12 years / 365 days) * 1000 = 8.1 kWh

***(Assumptions Note:** the following formula is used to calculate the energy load of heating hot water: (4.18*volume of hot water*temperature rise) / 3600)*

Justification: Some ESIA members know from decades of experience that *HPWHs are sold to homes with families* typically with a minimum of four-person-per-dwelling homes, using more than 180 litres/day – *because they have the space in the garden to install a HPWH* and the higher load justifies the investment (ROI). The Census Data also confirms that even though the Average household with children: has 1.9 children, this includes apartments, terrace homes, etc (33.4%) and that separate houses are 66.6 % of all homes. So, considering this, 66.6 % of separate homes, we know that HPWH's medium loads will be 180 litres/day and above.



Dwelling structure *Occupied private dwellings*	New South Wales	%	2011	%	Australia	%
Separate house	1,729,820	66.4	1,717,700	69.5	6,041,788	72.9
Semi-detached, row or terrace house, townhouse etc	317,453	12.2	263,930	10.7	1,055,016	12.7
Flat or apartment	519,390	19.9	465,189	18.8	1,087,434	13.1
Other dwelling	23,580	0.9	21,143	0.9	64,425	0.8

(Source ABS website, downloaded 22 July 2021)

Concluding recommendation: Increase the medium base load from 35.51MWh to 47.5 MWh as HPWHs are sold to 4-person (or more) homes.

Question 28. Do you have any concerns that these activities could drive bad design or behaviour in the industry, for example, the installation of oversized systems?

Please refer to our response below as submitted to the VEU consultation. Note the marked difference that the attractiveness of the activity at the current NSW ESS ESC price is very unlikely to get uptake. (Whereas, in Victoria currently the rate of uptake is growing rapidly with thousands of units being installed weekly.)

In addition to the Victorian response below, it should be reasonable to install more than a one-for-one tank replacement, as depending on the site and load situation manifolding more than one unit is optimal. If it is more than previous load, then ESCs could just be created on the tank(s) that provide comparable load.

(As per Victorian response)

There is the possibility of under-sizing or over-sizing, however, it is important that unnecessary constraints and evidence requirements are not placed on industry or upgrades simply will not occur.

Make the activity flexible enough to let appropriately qualified professionals and tradespeople determine suitable solutions.

Under-sizing: Peak loads need to be identified and appropriately sized equipment provided. Equipment capacity is provided by manufacturers. Load requirements can be provided by the client or calculated based on estimations. This does not, in most cases, require hydraulic engineers.

However, installing a system that meets peak load may not be the most efficient solution, for example if it occurs only once a year. Instead, the systems should be designed to meet baseline load, with for example a gas booster installed to operate only during peak load periods.

It should be acceptable to simply declare that the load that is being achieved, for example, a 50kW baseload is what the system is designed around. (Notably, most systems are hybrids and they deliver the best return on investment.)

Over-sizing: Design solutions that are acceptable need to be flexible to ensure a designer is not encouraged to design the most energy efficient solution with marginal benefits.

A defined load requirement: Replaced systems should be required to meet the incumbent hot water delivery performance (if it is requested by the client) and a minimum of 60% energy savings of the design load, or the new design load criteria.

In the case of a hybrid gas or electric and HPWH system, the proportion of the load addressed by the HPWH should be clearly stated in solution design proposals and rebate applications.

Question 29 Do you think there are situations where a customer could face higher energy bills when switching from a controlled load or off-peak electricity tariff to a time of use or single rate tariff for the installation of a heat pump or solar water heater?

No. HPWH COP or efficiency based on current technology will deliver above 60% energy savings in weather conditions above -5 degrees Celsius. Given the huge efficiency in gains (60-80% efficiency gain), customers will still be saving money.

A variety of tariffs are now available, including time-of-use and flat tariffs, and the HPWH can be set to operate via touch screen LCD controllers at the optimum times to deliver the best savings.

A large % of HPWH applications also have low-cost solar power available during the day and the HPWH can operate during 10.00am and 4.00pm to align with this.

Some homes have lower cost off-peak 2 tariffs available and the HPWH can operate on that tariff very well.

Question 30. Some heat pump hot water systems include a resistive electric element to automatically operate when ambient temperatures are higher than the heat pump can operate in. What percentage of systems aimed at the residential and small business market do you think have this functionality?

Only a few manufacturers sell low energy efficiency HPWH with elements. And elements are very rarely needed in NSW climate zones, unlike for colder climates such as in Victoria and Tasmania. In low efficiency, HPWHs elements may turn on in high load conditions under 5 degrees Celsius in winter. However, this type of HPWH is set to run as required and as morning hot water loads make-up over 60% of hot water consumption, most of the heating occurs during warmer day time periods in NSW which is typically well above 5 degrees Celsius.

Question 31. Would the proposed changes incentivise you to become accredited to undertake these activities using the HEER method?

No, this is the view of ACPs already in the scheme, with resources and heavily invested. They would not become accredited just for that activity and not if not already accredited for HEER. The Victorian market is much more attractive with a higher VEEC price, and the NSW audit regime is very costly.

For new players that are not already ACPs, accreditation may be unlikely due to the hurdles, including that there are currently no upfront calculations in the public domain that may attract new players, even if the ESC price climbs considerably.

Question 32. Do you consider there to be any barriers to the uptake of these activities?

Barriers:

- Upfront costs - out-of-pockets gap will be a significant barrier to entry
- TRNSYS cost and use could be a barrier.(* As per Victorian response)
- Training, audit compliance regime (unknown at this point).
- Heat pumps under M&V means STCs cannot be created, and this may make the M&V or application-based methods not cost effective with the cost of compliance greater than the rebate benefits.
- SMEs will be precluded if costs of the scheme are prohibitive and the 25 ESCS may not be enough to justify the investment in the scheme, especially if engineering or technical staff are required to implement the incentives.
- The low base load makes the rebates less attractive - Increasing the base load of a medium user to 47.5 MWh will also make the scenario more attractive.
- Apartments – constraints of the physical setting of the apartment (i.e. the unit has to beoutside, not on balconies etc. – so the architecture of a site is likely also to be a barrier.

(*) Some ESIA members have accessed TRNSYS which is very technical and which may be a barrier for use by parts of industry, and therefore an activity uptake barrier.

- It would be helpful if DPIE could host another session on TRYNSYS.

Access to TRYNSYS software due to costs may also be a barrier.

- The ESIA requests clarity on how the TRNSYS software will be made publicly available to industry. (For example, to register a product the applicant would be required either to purchase a TRYNSYS subscription to conduct simulations, or engage another party that has a subscription?)

Currently there are six TRYNSYS templates.

- It is recommended that DPIE be prepared to produce further modelling templates after further discussion and/or as the activity commences and the need for variations may become apparent (which may or may not be TRYNSYS).

3.4.6 Potential new Activity Definitions F16 & F17 Commercial and Industrial Heat Pump Water Heaters (HEAB)

Question 33. Do you agree for your responses to questions 34 - 44 to be shared with the Department of Environment, Land, Water and Planning in Victoria?

Yes.

Question 34. Do you agree that a product-based approach would be appropriate for smaller systems and will provide certainty around energy savings when installing heat pumps in commercial and industrial premises?

A product-based approach would be preferable for smaller systems however the flexibility for both options needs to be available.

Question 35. Do you agree that the same range of heat pumps installed in commercial and industrial premises are also appropriate to be installed in residential apartment buildings?

Yes. The same HPWHs can be used in both scenarios – a 60-degree HPWH can be used for apartments and industrial applications, typically this would be a large centralised system. Residential apartment buildings should be included in C&I heat pumps.

However, if high temperature industrial scenarios apply, a different sort of HPWH is used. As they are more expensive, they would be used if temperature (i.e., 80 degrees Celsius) is the determining factor.

Question 36. Do you agree with the calculation approach and requirements proposed for these Activity Definitions?

If high temperature in industrial scenarios apply, a different sort of HPWH is used. As they are more expensive, they would not be used otherwise.

We would like more information on the seven profiles.

Question 37. Do you agree that these Activity Definitions adequately cover all of the different commercial and industrial hot water system configurations, e.g. systems with multiple water heaters? If not, what scenarios are not covered?

We need more information on the Definitions, or we can't answer this.

Question 38. Do you agree that the proposed 12-year lifetime deeming period is acceptable for heat pump water heaters installed in a commercial or industrial setting?

No, independent reports indicate a life span of 13 to 15 plus years.

(As per Victorian response) HPWH technology have improved significantly in recent years and a 15-year life cycle is now typical. Compressors can easily be replaced – their life depends on use, for example 10 years.

Vitreous enamel cylinders without a heating element do not suffer from the degradation effects caused by element heat spots. So, if used in a storage capacity at 60 degrees Celsius they will last longer than 15 years.

Stainless steel cylinders with a heating element will also last longer than 15 years, provided water quality meets the manufacturer's warranty conditions.

Another way of considering the benefit of HPHWs upgrades is that in commercial and industrial settings, a typical upgrade may occur only every 20 years. This may include a 15-year period and then major maintenance such as replacing a compressor which will see lifetime extended to 20 years. Therefore, a 15-year lifetime is, at least, very reasonable.

Question 39. Do you have any concerns that these activities could drive bad design or behaviour in the industry, for example, the installation of oversized systems? If yes, how can this be prevented?

No. Too many experts are involved, and capital approvals are required backed by rigour. There is no benefit in intentionally oversizing.

Question 40. Do you consider that an application-based method would result in significant uptake?

No. An application-based method would result in NICHE uptake potentially, but unlikely to be a significant pool of opportunity. However, this approach would still be useful.

For Clause 5.4g – M&V: this should allow both ESC and STC creation.

That is, whatever the approach, both ESCs and STCs should be claimable.

Question 41. Some heat pump hot water systems include a resistive electric element to automatically operate when ambient temperatures are higher than the heat pump can operate in. What percentage of systems aimed at the commercial and industrial market do you think have this functionality?

There are virtually no systems that include a resistive electric element to automatically operate when ambient temperatures are higher than the heat pump can operate in NSW.

C&I heat pumps are fully dedicated heat pumps without elements.

HPWH are sometimes used with gas boosters used to heat the ring main. If gas isn't available HPWH that operate at higher water temperatures (up to 80 degrees) will be used. Eclectic boosting would be used rarely.

High/Low Temperature sensors, that turn HPWH off in extreme situations, will re-activate the HPWH after a short period (manufacturing settings), so the HPWH will continue to make water as soon as peak events subside. We don't foresee these events effecting HPWH's in the NSW climate as HPWH are commonly designed to operate in temperature ranges -5 to 45 degree Celsius without boosters.

(Refer to Victorian response)

Question 42. Would the proposed changes incentivise you to become accredited to undertake these activities using the HEAB method?

Yes, if involved. Even the IHEAB is already very unattractive. For example, a $30,000 upgrade with $5,000 ESC incentive still demands major capital investment by the customer. The incentive is too small to drive non-additional upgrades because gas systems are significantly cheaper.

The proposed ESCs for air conditioning is about 8-19 ESCs which will not drive high volume.

For F4 and D16 – there is considerable concern with the calculations. For example, is there a significant difference in incentives for a 4- and 7-star system?

Question 43. If you have downloaded and tested the Commercial and Industrial air source HPWH Application Guide and TRNSYS Application Files which have been developed for the product registration process, please provide feedback here.

Time has not allowed for a deep dive into these resources.

Question 44. Do you consider there to be any barriers to the uptake of these activities?

Upfront costs associated with using TRNSYS.

3.4.7 ESS Product Requirements

Question 45. Do you agree the ESS should harmonise with the VEU and consider adopting or closely aligning with their modelling procedure, product approval process and product registry to calculate energy savings for residential and small business heat pump and solar water heaters under the HEER method of the ESS?

Highly likely: if it reduces compliance costs and results in a better rebate benefit for customers.

Question 46. Do you agree that the energy performance of products should be tested in climate zones 3 and 5 to represent energy savings more accurately for NSW?

Yes

Question 47. Do you agree the NSW Government should harmonise with the VEU to develop a joint modelling procedure, product approval process and product registry to calculate energy savings for commercial and industrial heat pump water heaters under the HEAB method of the ESS?

Highly likely: if it reduces compliance costs and results in a better rebate benefit for customers.

Question 48. Do you have any alternative solutions the NSW Government should consider?

Increase the base load to 47.5 MWh, because the daily load of a 4 people in a house kWh/day is: (4.18 * 180 * 52) / 3600 = 10.8 kWh (45*4=180)). And 47.5 MWh equates to the daily load of a 4-person household i.e. (47.5 MWh/12/365) * 1000 = 10.8 kWh/day (4 people). HPWH are sold to 4 people homes and above.

Question 49. Do you consider there to be any barriers the NSW Government should be aware of?

A lack of large-scale adoption activities. We believe a 50+ ESCs @$32 is needed to stimulate uptake at volume for higher price upgrades.

Lighting changes will impact the ability for businesses to transition and these are still unknown.

For example, for HPHWs, it is a big call to get someone to do a replacement of a fully operating system with a gap of $1500 while there is a cap on the ESC price. For example, until ESCs go to $60 and provide a high value for carbon abatement.

3.4.8 NABERS Baseline: clarification on forward creation

Question 50. Do you agree with clarifying the forward creation of ESCs calculation under the NABERS baseline method? Please provide reasoning supporting your response.

Yes, we support forward creation as it reduces the upfront barrier of access to capital, rather than waiting for 12 months or completion the reporting period.

3.4.9 NABERS: Inclusion of New Building Types

Question 51. Do you agree with the proposed Benchmark NABERS Ratings Indexes and Annual Rating Adjustments for the residential aged care and retirement living sectors? Please explain and provide evidence to support your response.

Yes. More sectors will benefit from this methodology.

For more information regarding this submission, please email ESIA Executive Officer, comns@esia.asn.au