

Energy Security Safeguard


Office of Energy and Climate Change

Energy Savings Scheme

Water heaters
consultation

September 2023





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Reasons for consultation

Address the need for more accurate energy savings calculations

The Energy Savings Scheme (ESS) sets an annual energy savings target. Meeting these targets delivers benefits including placing downward pressure on both the wholesale electricity market and electricity infrastructure costs, reducing household electricity bills, and avoiding greenhouse gas emissions.

The annual energy savings target is translated into an annual certificate target, with 1 certificate representing 1 notional MWh of energy saved. The ESS Rule determines how many certificates an energy savings activity can create. Accurate energy savings calculations are key to ensure that the scheme benefits are realised.

The Office of Energy and Climate Change (OECC) has identified that the energy savings calculations for hot water system upgrades do not align with real-world savings. This paper advises stakeholders of the changes the government will make to ensure energy savings calculations for hot water system upgrades better reflect savings.

Increase customer engagement by updating co-payments

Co-payment requirements have been in the ESS Rule since 2014. They require customers to pay something for their upgrade project. If incentives are high enough for upgrades to be offered to consumers at little or no cost, co-payments can help ensure that consumers actively engage with the upgrade and receive a fit for purpose product.

An effective co-payment should account for the value of the product or installation. If the co-payment is too high, there may be limited incentive for the consumer to undertake the upgrade through the scheme. On the flipside, if the co-payment requirement is set at a small fraction of the product value, consumers may not ensure the upgrade is fit for purpose.

OECC has identified that current co-payments for hot water system upgrades do not ensure sufficient customer engagement or account for the high value of the products being installed through the scheme. This risks low engagement for customers and could also result in customers choosing cheaper upgrades that may not meet their needs. This paper advises stakeholders of the changes government will make to co-payments for hot water system upgrades.

Seek stakeholder feedback

These changes are the first part of the annual rule change process. They are brought forward to allow swifter mitigation of the risks they present. The proposals are also more set than those in the second part of this year's rule change process. For example, the combination of high incentives and low co-payments has led to widespread complaints of high-pressure sales tactics that could undermine trust in the Safeguard.

There is precedent for making a change to address an issue quickly. For example, in 2022 a rule change was made to address issues with refrigerated display cabinets.

However, OECC is aware that rule changes can be disruptive for businesses participating in the scheme. This consultation therefore seeks stakeholder feedback on how the changes are implemented.

Call for submissions

The release of this paper on 11 September 2023 starts the consultation period. The NSW Government invites submissions from all interested parties on the proposed changes outlined in this consultation paper. The closing date for written submissions is 5:00 pm AEDT on 29 September 2023.

There are two ways to make a submission: [follow this link to the use the online form](#), or email your submission to:

Terry Niemeier, Director - Program and Market Development - Safeguard
NSW Office of Energy and Climate Change
sustainability@environment.nsw.gov.au

Publication of submissions

The NSW Government is committed to an open and transparent process, and all consultation responses and submissions will be made available [on our website](#). All submissions will be converted to PDF documents and published on our website.

If you wish for your written submission to remain confidential, please clearly state this in your submission, and only your organisation's name will be published. We will remove personal details from submissions made by individuals.

Please be aware that even if you state that you do not wish certain information to be published, there may be legal circumstances that require the NSW Government to release that information (for example, under the [Government Information \(Public Access\) Act 2009](#)).

Updating energy savings calculations

Changes to the energy savings calculations

- Baselines for residential and small business hot water systems will be reduced. This includes all five Activity Definitions for hot water in Schedule D of the ESS Rule:
 - D17 Replace an existing electric water heater with an air source heat pump water heater
 - D18 Replace an existing electric water heater with a solar (electric boosted) water heater
 - D19 Replace an existing gas water heater with an air source heat pump water heater
 - D20 Replace an existing gas water heater with a solar (electric boosted) water heater
 - D21 Replace an existing gas water heater with a solar (gas boosted) water heater.
- Energy savings calculations in the ESS Rule reference water heater energy consumption from AS/NZS 4234:2021 to establish the baseline energy use (for replacement of electric and gas hot water systems). This approach was meant to be updated based on the results of a measurement and verification study on hot water energy use. That study is delayed, but interim analysis has identified AS/NZS 4234:2021 reference water heater energy consumption is not appropriate for continued use as the baseline.
- The updated baselines are based on those used for the public consultation in 2020. Public consultation on the ESS Rule in 2020 used modelling based on average water consumption of 45 litres per person per day (L/day) applied to inputs from AS/NZS 4234:2021 as the foundation of the energy savings calculation. A refinement of this approach is used for the amended baselines and energy savings calculations.
- Changes to other hot water heater methods, including Activity Definitions F16 and F17 of the ESS Rule and WH1 of the Peak Demand Reduction Scheme Rule, will be considered in later rule changes to align the methods.

Baselines used for residential heat pumps

The [consultation paper](#) and [rule change position paper](#) on the 2020-21 ESS Rule change thoroughly examined the introduction of heat pump hot water heaters to the Energy Savings Scheme (ESS). Stakeholder responses were overwhelmingly positive for the introduction of these activities. The consultation and position papers also stated that the NSW Government

was conducting a study into hot water usage to inform an appropriate value to use as a baseline in the long-term.

The 2020-21 consultation used inputs from AS/NZS 4234:2021 to model the NSW-specific outcomes for the heat pump climate zone HP3-Au. The model used ‘annual hot water delivered’ and heat loss for a representative household using 45L/day of hot water to create the baselines. It did not consider the NSW cold region climate zone (HP5-Au).

Stakeholder feedback at the time suggested use of an alternative baseline of 60L/day and use of the AS/NZS 4234:2021 ‘Annual purchased energy consumption of reference hot water heaters in Australia other than air-source heat pumps’ as the baseline. This approach was consistent with the Victorian Government’s Victorian Energy Upgrades (VEU) scheme and the Commonwealth Renewable Energy Target (RET).

In response to that feedback, to align with the VEU and RET, and taking account of the potential uncertainty around hot water usage and appropriate load profiles, the NSW Government introduced Activities D17-D21 to the ESS Rule with the baselines aligned to 60L/day usage and baseline energy use from Table A.10(A) of AS/NZS 4234:2021.

Information used to refine baselines

Given the delay to the hot water energy use study referred to in the rule change position paper, the Office of Energy and Climate Change (OECC) has analysed baseline energy use for existing residential resistance electric hot water heaters. The energy use of those existing hot water systems sets the counterfactual baseline used for the energy savings calculation.

OECC analysis in Table 1 compares AS/NZS 4234:2021 ‘Annual purchased energy consumption of reference hot water heaters in Australia other than air-source heat pumps’ used in the ESS Rule against baselines proposed during the rule consultation and those recently updated for use in the VEU. The Victorian Government’s [decision to reduce incentives](#) for hot water upgrades stepped down the reference values from standard to be more reflective of reductions in household hot water consumption. The table also highlights measured data from the Office of Environment and Heritage (OEH) Home Saver Rebate Program evaluation and recent data from Ausgrid. Both support that the baselines shared in the ESS Consultation 2020- 21 better reflect real-world energy savings.

Table 1 – Baseline energy use for existing hot water systems

Source of baseline energy use	Small (kWh/yr)	Medium (kWh/yr)
ESS Rule – AS/NZS 4234:2021 HP3-Au 60L/day reference	2,565	4,230
ESS Consultation 2020-21 HP3-Au 45L/day model	1,950	2,959
VEU – AS/NZS 4234:2021 HP4-Au reference (small for medium systems and very small for small systems)	2,070	2,840
OEH 2013 – Home Saver Rebate Program report – Off-peak electric baseline		3,166
Ausgrid 2021-2022 Local Council Community Electricity Report – controlled hot water load per customer (average for the Sutherland LGA)		2,580

Sources: Ausgrid average electricity consumption by LGA 2022 <https://www.ausgrid.com.au/Industry/Our-Research/Data-to-share/Average-electricity-use>, Fyfe, J., Mohr, S., Milne, G., Rickwood, P. 2013, [Quantitative analysis of electricity savings from the Home Saver Rebates Program](#), prepared for the NSW Office of Environment and Heritage by the Institute for Sustainable Futures, UTS

Table 2 provides more detail by comparing the baselines used for public consultation and published in the ESS Rule. The MWh baselines published in the ESS Rule include the lifetime savings awarded by the scheme – 12 years for heat pump hot water upgrades and 15 years for solar.

Table 2 – Comparison of current and previous baseline energy consumption values for standard hot water systems.

Activity Description (Existing)	2020-21 Public Consultation Baseline (MWh)	2020-2021 Published Rule Baseline (MWh)
D17 Replace an existing electric water heater with an air source heat pump water heater	Small system: 23.40 Medium system: 35.51	Small system: 30.78 Medium system: 50.76
D18 Replace an existing electric water heater with a solar (electric boosted) water heater	Small system: 29.25 Medium system: 44.39	Small system: 38.47 Medium system: 63.45
D19 Replace an existing gas water heater with an air source heat pump water heater (D20 in the 20-21 public consultation)*	Baseline A Small system: 0.58 Medium system: 0.58 Baseline B Small system: 28.38 Medium system: 47.93	Baseline A Small system: 0.58 Medium system: 0.58 Baseline B Small system: 48.68 Medium system: 69.05
D20 Replace an existing gas water heater with a solar (electric boosted) water heater (D21 in the 20-21 public consultation)*	Baseline A Small system: 0.73 Medium system: 0.73 Baseline B Small system: 35.48 Medium system: 59.92	Baseline A Small system: 0.58 Medium system: 0.58 Baseline B Small system: 60.85 Medium system: 86.32
D21 Replace an existing gas water heater with a solar (gas boosted) water heater (D22 in the 20-21 public consultation)*	Baseline A Small system: 0.73 Medium system: 0.73 Baseline B Small system: 35.48 Medium system: 59.92	Baseline A Small system: 0.73 Medium system: 0.73 Baseline B Small system: 60.85 Medium system: 86.32

Note: * The original proposal for activity ‘D19 Replace an existing electric hot water heater with a solar (gas boosted) water heater’ did not proceed as the ability to switch fuel source from electric to gas was removed in the ESS Rule.

Energy savings tailored to climate zones

NSW has two climate zones for heat pump hot water listed in AS/NZS 4234:2021:

- HP5-Au for alpine and cold areas
- HP3-Au for the rest of the state.

These two zones are used for product approvals. The calculation inputs for Bs and Be in Activity Definitions D17-D21 also utilise the energy use in those zones.

Revising the baselines to better suit a 45L/day usage pattern provides the opportunity to split the savings calculation across the two NSW climate zones for heat pumps and to remove the additional complexity of assigning a separate Building Code of Australia (BCA) climate zone. Aligning to the heat pump climate zone accounts for:

- better performance of heat pump hot water systems in warmer conditions
- increased heating needs and heat loss experienced in colder climates.

Solar hot water is similarly adjusted for usage, but the climate zones are unchanged.

The tables below show revised baselines and corresponding ‘adjustment coefficients’ for the five water heater replacement methods adjusted in this rule change. In determining the savings factors, modelling was updated to use 2021 census data, inputs from AS/NZS 4234: 2021 (updated from AS/NZS 4234:2018) and to update the baseline gas hot water heater to 4 stars. The updates result in reductions between 27 and 54% on the energy savings calculations.

Table 3 – Activity Definition D17 Replace an existing electric water heater with an air source heat pump water heater. Baseline energy consumption by system size:

System Size	AS/NZS 4234 climate zone HP3-AU		AS/NZS 4234 climate zone HP5-AU	
	Baseline A (MWh)	adjustment coefficient (a)	Baseline A (MWh)	adjustment coefficient (a)
Small	23.18	2.291	25.43	2.310
Medium	35.14	2.291	38.49	2.310

Table 4 – Activity Definition D18 Replace an existing electric water heater with a solar (electric boosted) water heater. Baseline energy consumption by system size:

System Size	AS/NZS 4234 solar water heater climate zone 3	
	Baseline A (MWh)	adjustment coefficient (a)
Small	28.98	2.310
Medium	43.93	2.310

Table 5 – Activity Definition D19 Replace an existing gas water heater with an air source heat pump water heater. Baseline energy consumption by system size:

System Size	AS/NZS 4234 climate zone HP3-AU			AS/NZS 4234 climate zone HP5-AU		
	Baseline A (MWh)	Baseline B (MWh)	adjustment coefficient (a)	Baseline A (MWh)	Baseline B (MWh)	adjustment coefficient (a)
Small	0.58	28.029	2.291	0.58	31.650	2.310
Medium	0.58	47.337	2.291	0.58	52.750	2.310

Table 6 – Activity Definition D20 Replace an existing gas water heater with a solar (electric boosted) water heater. Baseline energy consumption by system size:

System Size	AS/NZS 4234 solar water heater climate zone 3		
	Baseline A (MWh)	Baseline B (MWh)	adjustment coefficient (a)
Small	0.73	35.036	2.310
Medium	0.73	59.171	2.310

Table 7 – Activity Definition D21 Replace an existing gas water heater with a solar (gas boosted) water heater. Baseline energy consumption by system size:

System Size	AS/NZS 4234 solar water heater climate zone 3		
	Baseline A (MWh)	Baseline B (MWh)	adjustment coefficient (a)
Small	0.73	35.036	2.322
Medium	0.73	59.171	2.322

Adjustment coefficient b = 4.167 (unchanged)

No changes for registered products

For Activity Definitions D17-D21, the ESS Rule only allows certificate creation from products listed on the product registry maintained by the Independent Pricing and Regulatory Tribunal (IPART).

The existing product approval process for individual items of End-User Equipment is unaffected. Instead, the baseline changes impact certificate calculations in a way that allows continued use of existing product registrations following the IPART process.

Consultation question

What are your views on amending the baselines for calculating energy savings from residential and small business hot water upgrades? Where possible, please provide evidence to support your position.

Adjusting co-payments

Changes requiring co-payment

- Additional and increased co-payments will be added to the ESS Rule for hot water system installations and upgrades
- Clause 9.8.1(f) of the ESS Rule includes two co-payment requirements:
 - a new minimum \$200 (ex GST) co-payment for each water heater installed (in Activity Definitions D17-D21), and
 - the existing \$30 (ex GST) co-payment for the whole residential and small business lighting upgrade (in Schedule E).
- Clause 9.9.1(e) of the ESS Rule now includes:
 - a minimum \$200 (ex-GST) co-payment for each commercial heat pump hot water heater installed (in Activity Definitions F16 and F17).
- As with other co-payments under the ESS, the purchaser needs to provide the payment and must not be reimbursed. In-kind payments are not an acceptable form of payment.

Customer engagement is key

Choosing the right hot water system can be a complex choice for customers. There are many factors to consider and options available for consumers looking to upgrade their hot water systems. These include switching from fuel to electric, what technology and system type might best suit their need, and other considerations like the space, system size and noise levels.

A co-payment will ensure customer engagement

Consumers can currently receive a high value hot water system from as little as a \$30 (ex GST) co-payment for residential upgrades. Small businesses and commercial upgrades don't currently require a co-payment.

The existing \$30 (ex GST) co-payment under the Home Energy Efficiency Retrofits method is based on the minimum viable contribution to a small halogen lighting upgrade. In this case, the co-payment is for the whole implementation, allowing for the bundling of multiple lighting types and the calculation of ESCs from multiple Activity Descriptions. The bundling approach and \$30 contribution is too low for high-cost equipment upgrades, where equipment and installation costs often exceed \$1,000.

The attractiveness of this proposition risks low customer engagement with the specifics. The outcome consistently being lack of legitimacy and a high risk that consumers will pick a product that doesn't suits their needs. It has also led to widespread complaints of high-pressure sales tactics that diminish trust in the Safeguard.

The proposed co-payment requirements aim to support improved customer engagement and outcomes.

Proposed new co-payment

A co-payment of \$200 (ex GST) is proposed across all hot water activities. This includes residential, small business and commercial upgrades.

There is recent precedent for increasing co-payment levels in the ESS to better reflect product value. A \$200 (ex GST) co-payment was introduced in 2022 for Refrigerated Display Cabinets (RDCs) in the Installation of High Efficiency Appliances for Businesses method. All stakeholder submissions supported the introduction of co-payment requirements and suggested that it needed to be paid per refrigerated cabinet.

The co-payment is charged for each individual appliance/equipment from the list of accepted products maintained by IPART.

This distinction is important when comparing the approach to co-payment in Schedule E against that used in Schedule D and Schedule F. For lighting and other equipment upgrades in Schedule E, the whole Implementation is covered by the co-payment. For schedules D and F the co-payment is for each item of End-User Equipment listed on the product register.

This means that for hot water systems, a residence or small business with 2 existing hot water systems will need to pay the co-payment twice. In the case of manifold upgrades, where a combination of two or more hot water tanks (and for heat pumps multiple condensing units) replaces one existing system, those manifold systems must be listed on the product register before energy savings can be calculated. As a result, only one co-payment is required for registered manifold systems.

Consultation question

What are your views on the additional co-payments for hot water system installations and upgrades? Where possible, please provide evidence to support your position.

Activating the changes

Consultation on timing of the changes

- OECC welcomes feedback on the **on the proposed timing below for the baseline and co-payment changes**
- Draft proposals allow transitional arrangements for:
 - a limited period for the implementation of existing contracts, or
 - existing contracts at the time of rule commencement to be honoured.
- Different approaches to the transition arrangements may be implemented based on stakeholder responses.

Timing and rationale for the rule change

The NSW Government plans to amend the rule to add co-payments and change the energy savings calculations for hot water systems.

It is expected that a new rule will be published in the NSW Government gazette later in 2023 and commence shortly after. While the change may be immediate, transition arrangements will be considered as below.

Transition options need to balance risk

Feedback is sought on the transitional arrangements to support rule commencement, with two options presented below for consideration:

1. **Option 1:** the previous rule (meaning the current provisions) applies where an implementation date is within 3 months of the commencement date, or as agreed on a case-by-case basis with the Scheme Administrator, IPART.

Providing a 3-month transition for implementations, is administratively simplest as it sets a deadline for the completion of works that can be tracked in the scheme registry. It accounts for scheduling complexity and the completion of building works.

2. **Option 2:** the previous rule (meaning the current provisions) applies where a contract to supply a hot water heater is in place prior to the commencement of the rule, or as agreed on a case-by-case basis with the Scheme Administrator.

This option, based on existing contracts, provides more time to implement projects, but adds regulatory burden through the requirement to track and audit compliance on contracts for work, and the uploading of implementations across different versions of the rule. The arrangements will only apply to implementations where evidence can be supplied of a contract existing prior to the transition date.

Consultation question

What are your views on the two transition options? Where possible, please provide evidence to support your position.

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For more information

To learn more about the Energy Security Safeguard, please visit our website or contact:

www.energy.nsw.gov.au | sustainability@environment.nsw.gov.au