Office of Energy and Climate Change

Energy Savings Scheme

2022 Rule Change Consultation Paper

October 2022

NSW GOVERNMENT

Acknowledgment of Country

The Office of Energy and Climate Change acknowledges the Traditional Owners and Custodians of the land on which we live and work and pays respect to Elders past, present and future.

Published by NSW Office of Energy and Climate Change

energy.nsw.gov.au

Title Energy Savings Scheme 2022 Rule Change Consultation Paper

First Published October 2022

ISBN 978-1-76058-642-3

© State of New South Wales through Office of Energy and Climate Change 2022. You may copy, distribute, display, download and otherwise freely deal with this publication for any purpose provided you attribute the Office of Energy and Climate Change as the owner. However, you must obtain permission if you wish to charge others for access to the publication (other than at cost); include the publication in advertising or a product for sale; modify the publication; or republish the publication on a website. You may freely link to the publication on a departmental website.

Disclaimer The information contained in this publication is based on knowledge and understanding at the time of writing (October 2022) and may not be accurate, current or complete. The State of New South Wales (including NSW Treasury and Office of Energy and Climate Change), the author and the publisher take no responsibility, and will accept no liability, for the accuracy, currency, reliability or correctness of any information included in the document (including material provided by third parties). Readers should make their own inquiries and rely on their own advice when making decisions related to material contained in this publication.

Contents

Foreword

This consultation paper explains the policy intent and detail behind proposed changes to the NSW Energy Savings Scheme (ESS) Rule and seeks stakeholder feedback. The changes are part of the NSW Government's commitment to continuous improvement of the ESS.

The NSW Government is seeking input from stakeholders to ensure the proposed ESS Rule changes in this consultation paper are appropriate and reflect best practice industry standards.

The consultation paper assumes prior knowledge of the ESS, legislative and administrative instruments. More information about the operation and administration of the ESS can be found at the scheme administrator's website at https://www.energysustainabilityschemes.nsw.gov.au/. Information about previous amendments, including consultation papers and stakeholder responses are available on our website.

Call for submissions

The release of this paper starts the consultation period. The NSW Government invites submissions from all interested parties on changes set out in this consultation paper. The closing date for the written submissions is **5:00 pm AEDT** on **Friday, 4 November 2022**. Please send your submissions to:

Stephen Procter, A/Director - Program and Market Development, Program and Market Development - Safeguard

Energy, Climate Change and Sustainability

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 publicly available. Written submissions should be provided as documents that can be 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*).

Part 1: Introduction

The NSW Energy Savings Scheme (ESS) reduces energy consumption in NSW by creating financial incentives for investment in energy saving projects. Energy savings are achieved by installing, modifying, removing or replacing end user equipment.

The ESS mandates NSW energy retailers and other liable parties to purchase energy savings in the form of Energy Savings Certificates (ESCs) each year. Accredited Certificate Providers (ACPs) create ESCs when energy users undertake eligible energy saving activities.

The *Electricity Supply Act 1995* (the Act) allows the Minister for Energy to approve rules that set out how ESCs can be created, including the eligibility of participants and activities, and methods for calculating energy savings.

1.1. Why is the ESS Rule updated?

The *Energy Savings Scheme Rule of 2009* (ESS Rule) is updated annually to maintain its effectiveness and keep it up to date. This is done to complement changes to building and equipment standards, add new technologies, and make other enhancements to maintain its integrity and/or reduce transaction costs.

In this update we will continue to align the ESS Rule with the objectives and targets of the Energy Security Safeguard. The Safeguard includes 3 separate schemes:

- an Energy Savings Scheme (ESS) running until 2050, with an energy savings target gradually increasing to 13% by 2030 and an expanded set of eligible activities
- a Peak Demand Reduction Scheme (PDRS) to support activities that reduce demand at peak times, including flexible demand response
- a new Renewable Fuel Scheme (RFS) to incentivise the production of green hydrogen, with targets increasing to 67,000 tonnes (or 8 million gigajoules (GJ)) by 2030.

Changes to the ESS Rule, resulting from the ESS reforms published in the Energy Security Safeguard position paper, will be implemented as part of this Rule change.

The position paper announced the expansion of the ESS to a broader set of activities, including expansion to a broader range of fuels beyond electricity and gas. The ESS will be expanded to include fuel switching activities for both grid connected, and non-grid connected energy. The proposed fuels include Biomass, Biofuel, Biogas and on-site renewables. Please refer to Part 2 for a detailed discussion of fuel-switching related changes to the ESS Rule. The Project Impact Assessment Measurement and Verification (PIAM&V) and Metered Baseline Methods have been updated to include eligible fuels.

The PIAM&V method is proposed to be updated to include new and revised definitions as well as changes to interactive energy savings. The PIAM&V method will be amended with a process to allow for Non- Routine Events and Adjustments. The Project Impact Assessment Method (PIAM) is proposed to be updated to include a date for Energy Savings to have occurred. The proposed changes to the Metered Baseline Method (MBM) includes clarifications related to the normalised baseline calculation method, the baseline Measurement Periods and fuel

switching. Please refer to Parts 3, 4 and 6 for proposed changes to PIAM&V, MBM and PIAM respectively.

The NABERS sub method will be updated to include 2 new sectors: warehouses and cold storage.

1.2. Proposed ESS Rule change amendments 2022

This consultation paper discusses the proposed changes for the 2022 ESS Rule, including:

Rule Method	Proposed change
General	Transitional arrangement
	Changes to clauses 1-6 (simplified the Objects of the Rule, added, and removed terms)
	Inclusion of Fuel Switching
	Update to D5 pool pump determination requirements
Updates to Project Impact Assessment Method and Verification (PIAM&V)	Inclusion of Eligible Fuels
	Updated definitions
	Changes to Interactive Energy Savings
	Clarify the meter calibration requirements for utility grade meters
	Non-Routine Events and Adjustments
	Amending equations 7A.2 and 7A.4
	Minimum statistical requirements
	Facilitating the use of Short Energy Models Method to make NRAs
	Drafted/ future changes
Updates to Metered Baseline Method (MBM)	Update to Eligible Fuels
	Clarification of normalised baseline calculation method
	Clarification for determining subsequent baseline Measurement Periods
	Clarification for calculating Energy Savings from fuel switching
	Introduction of new NABERS building types
Updates to Project Impact Assessment Method (PIAM)	Deeming savings for PIAM

Rule Method	Proposed change
Updates to 10.Definitions	Definition changed for “gas”. Definitions added for: “Biogas”, “Natural gas”, “Liquefied petroleum gas” and “LPG”.

A draft version of the 2022 ESS Rule showing proposed changes is available for review and should be read in conjunction with this consultation paper. This can be found on our website.

The consultation draft shows all proposed changes as coloured additions or strikethroughs.

Minor changes made for clarity or consistency are shown coloured in the draft 2022 ESS Rule but are not considered in this consultation paper. Dates marked as ‘DD MM YY’ will be updated in the published rule.

1.3. Consultation for the ESS Rule change

The NSW Government is seeking input to ensure the proposed changes are appropriate and reflect industry best practice and Australian Standards. Initial consultation began in 2020 with the targeted industry stakeholder workshops on the rule changes proposed in Part 5.

Where possible, stakeholder recommendations from the targeted consultation are embedded in the proposed changes. Consultation questions provide an opportunity for input on the proposed changes. A full list of questions is available in Appendix A.

Next Rule change steps include:

1. Review and consideration of submissions to this consultation.
2. Publication of the amended rule in the NSW Government gazette, and publication of a position paper detailing the final changes.

Part 2: General changes

This part provides an overview of general changes to the draft 2022 ESS Rule. Please consider the questions below when providing feedback.

2.1. Transitional arrangement

Refer to the draft ESS Rule: 11.20

It is expected that changes proposed in this paper will be gazetted in December 2022 and will commence in February 2023.

Please provide feedback on the following questions: *Please be specific in your responses and provide evidence to support your answers where available.*

- Question 1: Can you foresee any part of the new ESS Rule for which it will be difficult to get 'business-ready' within the proposed timeframes?

2.2. Structural review of clauses 1- 6

Refer to the draft ESS Rule: 5.3B, 5.3B(a), 5.3B(a)(i)- (iii), Note under 6 Creation of Energy Savings Certificates, 6.5A, 6.5C

The NSW Government undertook a structural review of the clauses 1 – 6 of the ESS Rule. The aim was to improve the wording of the Rule; to ensure that the Rule is simple and clear, concise and consistent in the use of terms and does not contain ambiguities.

As a result of the review, several changes were made to the first 6 clauses of the Rule which are detailed in the following Table. Note that this excludes changes related to fuel switching which are discussed in Section 2.3.

Table 1: Changes to clauses 1- 6 excluding fuel switching

Clause	Proposed Change	Reasoning
2.1	Simplified the Objects of Rule	This aligns the objects of the Rule with Schedule 4A, clause 30 of the Electricity Supply Act. Note that the intent of the clause remains the same. The content of the previous wording is reflected in clause 5.3.
5.3B	Add the words "For the purposes of clauses 7A and 8,"	This makes it clear that this clause applies to the Project Impact Assessment with Measurement and Verification Method (PIAM&V) and Metered Baseline Method (MBM) only.
5.3B(a)	Add the word "average"	This makes it clear that the clause refers to the average energy efficiency of End-User Equipment.

Clause	Proposed Change	Reasoning
5.3B(a)(i)- (iii)	Remove the words “product class”	Product class is not a defined phrase and does not need to be included in these clauses.
Note under 6 Creation of Energy Savings Certificates	Remove this Note	This Note is redundant as this is already specified in clause 3.1 of the Energy Savings Scheme Rule and in clause 37 of Schedule 4A of the Electricity Supply Act 1995.
6.5A	Change wording of clause to: “An Accredited Certificate Provider may only create Energy Savings Certificates in respect of Energy Savings arising from a Recognised Energy Saving Activity if: (a) the Scheme Administrator has given the Accredited Certificate Provider approval to use a calculation method in clauses 7, 7A, 8 or 9; and (b) the Scheme Administrator is satisfied that the Accredited Certificate Provider’s application of the calculation method produced a result reasonably reflecting the Energy Savings arising from the Implementation of the Recognised Energy Saving Activity.”	The current drafting is vague. The proposed change makes the intention clearer.
6.5C	Change “the” to “those”	This makes it clear which requirements of the Rule the clause is referring to.

Please provide feedback on the following question: *Please be specific in your responses and provide evidence to support your answer where available.*

- Question 2: Do the proposed changes make the requirements of the Rule clearer?
- Question 3: Are there any other changes to clauses 1- 6 that would improve the clarity of the Rule?

2.3. Inclusion of Fuel Switching

2.3.1. Background

A key element of the NSW Electricity Strategy is the expansion of the Energy Savings Scheme to include a broader range of activities. In November 2019, the NSW Government announced the creation of the Energy Security Safeguard to incentivise the rollout of cost-effective energy savings and peak demand reduction measures.

The NSW Government released a consultation paper seeking stakeholder feedback on key issues for the design and implementation of the Safeguard in April 2020. This included consultation on whether the ESS should be expanded to include additional fuels beyond electricity and gas. The wider range of activities proposed will reduce demand on electricity and gas networks. It is proposed to expand the ESS to include fuel switching activities for both grid connected and non-grid connected energy. This includes:

- switching from grid connected gas or electricity to bioenergy, solar thermal or other alternatives. Bioenergy includes Biomass, Biofuel and Biogas.
- switching from non-grid connected energy, such as onsite, stationary use diesel, to an affordable alternative.

Expanding the scheme to include fuel switching activities will widen the opportunities and maximise consumer choice for energy efficiency solutions. It will enable the scheme to take advantage of the recognised opportunities to save 10,400 GWh of electricity and 20 PJ of gas each year in New South Wales[1]. These savings in energy demand provide the additional benefit of a reduced requirement for new energy infrastructure.

This paper identifies the detailed changes to the ESS Rule enabling energy savings calculations from this broader set of fuels.

2.3.2. Explanation of amendments

The most significant changes proposed for the ESS Rule will be the inclusion of a range of new fuels, the opportunity to create Energy Saving Certificates (ESCs) by switching between these fuels and by improving end use efficiency of these fuels. Fuel switching activities that reduce consumption of non-renewable primary energy are proposed to be eligible for the creation of ESCs. Non-renewable primary energy includes energy derived from sources that exist in limited quantities and cannot be replaced after they have all been used. This includes coal, oil, gas and nuclear fuels.

[1] (DPIE, 2020c) see references

To ensure consistency between the ESS Rule and the Electricity Supply Regulation and Act, the definition of "gas" has been changed. The term "gas" means natural gas or liquefied petroleum gas.

Please provide feedback on the following question: *Please be specific in your responses and provide evidence to support your answer where available.*

- Question 4: Will the change to the definition of gas have a material impact on the expected number of ESCs that will be created from a RESA.

2.3.3. Eligible Fuels

Refer to the draft ESS Rule: §10.1 and Equation 1

The Safeguard Position Paper[2] identified the government's intention to expand the ESS to include a range of fuel switching activities. It is proposed to expand the definition of RESA to include the following fuels:

Biofuel: This comprises liquid fuels derived or recovered from organic matter other than fossilised biomass. The types of Biofuel eligible under this Rule are biodiesel and ethanol.

Biogas: A gaseous fuel derived or recovered from biomass.[3]

Biomass: Organic matter other than fossilised biomass. Energy Crops and the biomass-based waste fuels listed in the NSW Environmental Protection Authority's *Eligible Waste Fuels Guidelines*[4] are eligible types of biomass under this Rule. Some of the eligible biomass types under the guidelines include biomass from agriculture, forestry and sawmilling residues, uncontaminated wood waste, organic residues from virgin paper pulp activities and source separated green waste.

On-site renewables: Energy generated on the site where an Implementation takes place, where generation only uses one or more of the following renewable energy sources: solar, wind, geothermal-aquifer, hot dry rock, hydro, wave, tide, or ocean.

Please provide feedback on the following questions: *Please be specific in your responses and provide evidence to support your answer where available.*

- Question 5: Do you agree with the proposed fuels?
- Question 6: Do you agree with the proposed fuel definitions?

The necessary changes to the Rule to facilitate the proposed introduction of the new fuels are described in the following sections.

[2] DPIE (2021) see references
[3] NGER Regulations (2008) see References
[4] EPA, 2016

2.3.4. Recognised Energy Saving Activity

Refer to the draft ESS Rule: §5.3

Substantial changes are proposed for this clause which defines what constitutes a Recognised Energy Saving Activity. The current Rule, with electricity and gas as the only energy sources, allows an activity to be a Recognised Energy Saving Activity (RESA) if it increases the efficiency of energy consumption via the modification, replacement, installation or removal of End-User Equipment.

With the proposed Rule, a fuel switch activity may result in a decrease in efficiency of energy consumption, but still be a RESA and create ESCs due to a reduction in non-renewable primary energy consumption.

The NSW Government proposes to amend clause 5.3 to allow activities that reduce the consumption of at least one eligible fuel, provided that there has also been a reduction in overall non-renewable primary energy use. This may be assessed using Equation 1 (described in section 2.3.7 below), which takes into account the change in consumption of all eligible fuels and the respective certificate Conversion Factors. The change in consumption of an eligible fuel may be positive or negative.

The current ability for an activity to be a RESA via the modification, replacement, installation or removal of End-User Equipment is proposed to be retained. Table 2 summarises proposed criteria for recognised energy saving activities.

Table 2 Criteria for recognised energy saving activities

Reduce consumption of an Eligible Fuel by:	Modifying End-User Equipment or usage of End-User Equipment	Replacing End-User Equipment with other End-User Equipment	Installing New End-User Equipment	Removing End-User Equipment
Increasing the efficiency of consuming an Eligible Fuel	✓	✓	✓	✓
Switching to another Eligible Fuel	✓	✓	✓	
Generating energy onsite provided there is a reduction in consumption of an Eligible Fuel	✓		✓	
Reducing consumption of Eligible Fuel per unit output	✓	✓	✓	

2.3.5. Ineligibility

Refer to the draft ESS Rule: §5.4; Table A27 of Schedule A

The activities which are not RESA are documented in clause 5.4. With the focus of the proposed fuel switch being reduced consumption of non-renewable energy, many of the changes to the clause relate to the sub-clauses which address energy consumption. A switch from a non-renewable fuel (such as natural gas) to a renewable fuel (such as biogas) may involve an increase in energy consumption (in megawatt hours (MWh)) due to reduced

conversion efficiency brought about by the lower quality fuel. This type of fuel switch is incentivised as it results in reduced consumption of non-renewable energy.

The changes to clause 5.4 include amendments to existing sub-clauses and the addition of new sub-clauses. These changes are summarised in Table 3.

Table 3 Proposed changes to sub-clauses under clause 5.4 – activities which are not RESA

Sub-clause	Description
5.4(f) (amended)	Proposed to be amended to exclude an activity that reduces energy consumption of an Eligible Fuel by increasing consumption of Non-renewable Fuels (other than gas or electricity) to provide equivalent goods or services.
5.4 (g) deleted)	Propose to allow projects that are eligible to create tradeable certificates under the *Renewable Energy (Electricity) Act 2000 (Cth).*
5.4(h) (amended)	Proposed to be expanded to also exclude activities which result in increased Biogas flaring.
5.4(j) (amended)	For the bioenergy fuel options, Scope 3 emissions are highly site dependent and values are not provided in the National Greenhouse Accounts Factors, which are referred to in existing Rule. Values for the Scope 3 emissions from ISO 52000-1 (ISO, 2017)[5] are proposed to be provided in Table A27 of Schedule A.
5.4 (m) (new)	Export of electricity or gas to a distribution network. Projects will not be rewarded for the energy exported to the grid.
5.4 (n) (new)	Purchase or supply of gaseous fuel from the Gas Network under the representation from the seller that there will be a reduction in greenhouse gas emissions due to particular properties of the fuel.
5.4 (o) (new)	The use of native forest bio-materials are specifically excluded.
(5.4 p) (new)	Solar PV systems are only categorized as RESA if they are used exclusively for irrigation pumping.

[5] ISO(2017) see references

Please provide feedback on the following questions: *Please be specific in your responses and provide evidence to support your answer where available.*

- Question 7: Do you agree with the proposed amendment to clause 5.4(f)?
- Question 8: Do you agree with the proposed deletion of clause 5.4(g)?
- Question 9: Do you agree with the proposed amendment to clause 5.4(h)?
- Question 10: Do you agree with the proposed amendment to clause 5.4(j)?
- Question 5: Do you agree with the inclusion of the proposed clause 5.4(m)?
- Question 6: Do you agree with the inclusion of the proposed clause 5.4(n)?
- Question 7 : Do you agree with the inclusion of the proposed clause 5.4(o)?
- Question 8 : Do you agree with the inclusion of the proposed clause 5.4(p)?

2.3.6. Possible fuel switches

Refer to the draft ESS Rule: §5.3, §5.4

The NSW Government proposes to incentivise fuel switching that results in a reduction in non-renewable fuel consumption, provided that all eligibility requirements are met. Table 4 summarises the types of eligible and ineligible fuel switch activities.

Table 4 Possible fuel switches (✓ eligible; X ineligible)

	Switched Fuel						
ORIGINAL FUEL	Electricity	Natural gas	Diesel	Biomass	Biogas	Liquid Biofuels	On-site renewables
Electricity		X	X	✓	✓	✓	✓
Natural gas	✓		X	✓	✓	✓	✓
Diesel	✓	✓		✓	✓	✓	✓
Biomass	X	X	X		✓	✓	✓
Biogas	X	X	X	✓		✓	✓
Liquid Biofuels	X	X	X	✓	✓		✓
On-site renewables	X	X	X	X	X	X	

Switching from electricity, natural gas or diesel to a bioenergy based fuel will be eligible, provided that there is a net reduction in non-renewable primary energy consumption. Switching to diesel fuel will not be eligible, as diesel fuel utilisation may contribute to local and regional air quality issues. As highlighted in the NSW Clean Air Strategy 2021 - 30, diesel fuel makes a significant contribution to state emissions of particles with a diameter of 2.5 micrometres or less ($PM_{2.5}$) and nitrogen oxides (NOx) and can therefore have negative impacts on human health.

The Energy Security Safeguard Position Paper stated that new fuel switching activities from electricity to non-renewable gas such as natural gas and liquified petroleum gas (LPG) will also be ineligible. This decision was made by the NSW Government to free up gas supply for use in manufacturing. This will require the following change to the Rule:

- The proposed Activity D19 (Replace an existing electric water heater with a solar (gas boosted) water heater) will not proceed.

Activity Definition F16 (the replacement of electric water heaters with heat pump water heaters that have gas boosting) will remain as this activity falls under Activity Definitions for Installation of High Efficiency Appliances for Businesses.

Please provide feedback on the following questions: *Please be specific in your responses and provide evidence to support your answer where available.*

- Question 15: Do you agree with the proposed removal of Activity Definition D19?

2.3.7. Creation of ESCs (clause 6)

(Refer to the draft ESS Rule: §6.5, Table 1)

The current ESS Rule uses certificate conversion factors to calculate the number of ESCs created by activities that reduce the consumption of electricity and gas. To provide an incentive for fuel switching activities, the Scheme now proposes unique conversion factors for each eligible fuel type. These conversion factors will be based on the relative quantities of renewable and non-renewable primary energy in the different fuels.

Primary energy factors can be broken down into a renewable and non-renewable component. These reflect the renewable and non-renewable energy required for extracting, processing, compressing and transporting energy to where it is consumed. The International Standard ISO 52000-1 (ISO, 2017)[5] sets out factors for primary and non-renewable primary energy. Using these values ensures that certificate conversion factors for different fuels are calculated on the same basis and, for example, will allow the switch from natural gas to Biogas to be incentivised. The current Rule, which does not differentiate between different types of gas, would not yield any ESC from this fuel switch.

On-site renewable technologies such as solar PV generally require little or no non-renewable energy to deliver the final energy to the end-use equipment. Therefore, these types of technologies will be assigned a non-renewable primary energy factor of zero.

Non-renewable energy such as electricity, diesel or petrol is often consumed to gather, process, store and transport biomaterials, and therefore biomass, biofuel and biogas have non-renewable primary energy factors greater than zero. The relevant certificate conversion factors proposed are provided in Table 5.

Table 5 Certificate conversion factors

Eligible Fuel	Certificate Conversion Factor
Electricity	1.06
Gas	0.47
Diesel	0.47
Biofuel	0.21
Biogas	0.17
Biomass	0.08
On-site Renewables	0

The proposed amendments to clause 6 (Creation of Energy Savings Certificates) to accommodate the new fuels will require a significant change to Equation 1, the prime equation used for the calculation of the number of ESCs. The equation contains a summation over all implementations of all savings in eligible fuel consumption multiplied by the respective Certificate Conversion Factor. The current equation only has terms for electricity and gas.

The proposed equation will include terms for electricity savings as well as the savings of gas, diesel, Biofuel, Biogas, Biomass and on-site renewables.

For fuel switching activities, either Electricity Savings, Gas Savings, Diesel Savings, Biofuel Savings, Biogas Savings, Biomass Savings and On-site Renewables Savings or Electricity Savings may be negative. Energy Savings Certificates may only be created where the result of Equation 1 is a positive number.

Certificate Conversion Factors for all eligible fuels, although specified in the Act, or as amended by regulation are proposed to be provided in Table 1. This acknowledges that the NSW Government may amend these factors in the future as the relative carbon intensity of grid electricity reduces compared to the other fuels.

Another proposed change to Equation 1 is the inclusion of the Regional Network Factor for electricity in the equation. This change is being proposed to simplify energy savings calculation equations, which have been expanded to cater for the new fuels. The current Equation 1 does not have this term, as it is accounted for in the electricity savings calculations in the PIAM&V and MBM Methods.

2.3.8. Definitions (clause 10)

Refer to the draft ESS Rule: §10.1

The only energy sources identified in the current rule are electricity and gas. Proposed changes to the Definitions include:

- New definitions for the proposed additional fuels. These include definitions of the new fuels (Diesel, Biofuel, Biogas, Biomass and On-site Renewables) and terms associated with the collective reference to the fuels (Eligible fuel). New definitions are also provided for

specific types of bio-materials including ethanol, native forest biomaterials, energy crops, organic residues from virgin paper pulp activities, forestry and sawmilling residues, recovered waste vegetable oil and uncontaminated wood waste., Meanings are also proposed for terms including Gas Network which is required for the definition of eligible and ineligible transfer of fuel between premises.

- Amendments to existing definitions to accommodate additional fuels or clarify meanings. A number of existing terms are proposed to be modified to include the new Eligible fuels. These terms include End-User Equipment, Decay Factor and Energy Savings. It is proposed to add the words 'savings may be negative' to the definition of 'Electricity Savings' so that Equation 1 is applied correctly.

- Amended and new Method specific terms. It is proposed to replace 'Interactive Energy Savings' with 'Interactive Energy Effects'.

Please provide feedback on the following questions.

- Question 16: What other concepts need defining/elaborating on? Please provide supporting evidence to justify your response.

2.4. Update to D5 pool pump determination requirements

Refer to the draft ESS Rule: §11.21 and Activity Definition D5

The new GEMS (Swimming Pool Pump-units) Determination commences on 1 October 2022. The ESS rule will be updated to require that pool pumps must be registered in the GEMS Registry as complying with the new Determination.

The ESS rule will still refer to the obsolete Voluntary Energy Rating Labelling Program for Swimming Pool Pumps until the next rule change comes into effect in early 2023. A transitional clause has been included to enable the installation of pool pumps that are registered under the new Determination to be eligible for certificate creation on and from 1 October 2022.

Part 3: Project Impact Assessment with Measurement and Verification (PIAM&V) Method

This part details changes to the PIAM&V Method. Please consider the questions below when providing feedback.

3.1. Inclusion of Eligible Fuels

> Refer to the draft ESS Rule: clauses 7A and clause 10.1

The PIAM&V method has been updated to include Eligible Fuels. All references to Electricity and Gas have been replaced by references to Eligible Fuels. Eligible Fuels are listed in Table 7A.1, which lists the relevant Energy Savings expression for that fuel. Eligible Fuel Savings should be calculated for each Eligible Fuel separately for projects that affect consumption of two or more Eligible Fuels. Fuels and Savings expressions are defined in clause 10.

3.2. Updated definitions

> Refer to the draft ESS Rule: clauses 7A.2, 7A.3, 7A.4, 7A.5, 7A.6, 10.1 and equations 7A.2, 7A.4, 7A.5

PIAM&V is a complex method that draws on the principles of the International Performance Measurement and Verification Protocol (IPMVP). IPMVP is a set of core concepts that define best-practice M&V. PIAM&V builds on IPMVP concepts and introduces constraints to define a minimum level of rigour around energy savings calculations. PIAM&V uses similar terms to IPMVP, but some terms have different names or slightly different definitions.

The NSW Government has consulted with stakeholders to understand how to improve the clarity of the PIAM&V method. Proposed changes are as follows:

Change	Term	Comments
Update	Measurement Boundary	Clarify which End-User equipment needs to have its energy consumption measured. The definition will also be moved to clause 10.1.
Update	Site Constant	Clarify that 'Site Constant' is not an Independent Variable or used to derive a dependent variable.
Add	Normal Operating Conditions	Explicitly defined in clause 10, inline with the IPMVP literature
Add	Implementation Period	Explicitly defined in clause 10, inline with the IPMVP literature
Add	Coefficient of Variation of the Root Mean Squared Error	This definition is added to explain one of the minimum statistical requirements in Table A22 of Schedule A
Add	Adjusted Coefficient of Determination	This definition is added to explain one of the minimum statistical requirements in Table A22 of Schedule A
Add	t-statistic of Independent Variable	This definition is added to explain one of the minimum statistical requirements in Table A22 of Schedule A
Add	Modelling Frequency	The frequency of recording measurements may differ from the frequency of the constructed energy model. For example, an ACP may gather data at 15 minute intervals and choose to aggregate it to an hourly average in an energy model. These new terms will clarify which time period is relevant when using the PIAM&V method.
Add	Measurement Frequency	
Update	Non-Routine Events	To update the ndefinition inline with the new NRE-A Requirements document
Add	Non-Routine Adjustments	This definition is added to improve the clarity and accessibility of the method
Add	"PIAM&V Method Application Requirements for Non-Routine Events and Adjustments"	To define the supplementary document, shortened as "NRE-A Requirements", that will supplement the new clauses 7A.5B and 7A.5B1
Add	"Other Implementations (OIMP) Estimate Method"	A Non-Routine Adjustment (NRA) method that is part of the NRE-A Requirements document
Add	"Data Exclusion Method"	An NRA method that is part of the NRE-A Requirements document
Add	"Short Energy Models Method"	An NRA method that is part of the NRE-A Requirements document

Change	Term	Comments
Add	“Sub-metering Method”	An NRA method that is part of the NRE-A Requirements document
Add	“Effective Range Adjustment Factor”	To define the adjustment factor that modifies Energy Savings calculations using equations 7A.2 and 7A.4

The proposed definitions have been developed by reviewing industry literature, guidance from other jurisdictions and existing method guidance, such as:

- the IPMVP Core Concepts (as well as other industry-specific M&V resources),
- IPART’s PIAM&V guidance: both the Method Requirements and Method Guide
- the VEU PBA method documentation.

Please provide feedback on the following questions.

- Question 17: Do these definitions make the terms easier to understand and apply? If not, please provide supporting evidence to justify your response.
- Question 18: What other concepts need defining/elaborating on? Please provide supporting evidence to justify your response.

3.3. Changes to Interactive Energy Savings

Refer to the draft ESS Rule: clauses 7A.9 and clause10.1

The NSW Government proposes changing the name and definition of Interactive Energy Savings to Interactive Energy Effects. Changes have also been made to account for the introduction of new fuels.

Interactive Energy Effects can be positive or negative, reflecting whether savings have been achieved or there has been an increase in energy consumption. Interactive Energy Effects will only apply outside the Measurement Boundary. Interactive Energy Effects can be estimated, and the estimate must be deemed appropriate by a Measurement and Verification Professional.

The absolute sum of Interactive Energy Effects resulting from an upgrade that is related to an Eligible Fuel, must not be greater than 10% of the calculated savings for that Eligible Fuel.

3.4. Clarify the meter calibration requirements for utility grade meters

Refer to the draft ESS Rule: clause 7A.5(f)

It is important that the instruments used for M&V are sufficiently accurate. The purpose of clause 7A.5(f) is to ensure such instruments are fit for purpose to accurately capture energy savings. The NSW Government proposes excluding utility electricity and gas meters from the calibration requirement in some circumstances: only utility meters accredited for use in trade will be excluded.

Please provide feedback on the following questions.

- Question 19: Does this change reduce the administrative burden of meter calibration requirements? If not, please provide supporting evidence to justify your response.

3.5. Non-Routine Events and Adjustments

Refer to the draft ESS Rule: clauses 7A.5(g), 7A.5B, and 7A.5B1

The unexpected arrival of the Covid-19 pandemic disrupted business-as-usual energy efficiency projects that use the PIAM&V Method. Changes due to Covid-19 can be vast, diverse, and unpredictable and likely to constitute Non-Routine Events (NREs) that require adjustments.

NREs are events causing changes in energy consumption that are not modelled by any of the Independent Variables or Site Constants of an Energy Model within the Measurement Boundary and during any of the Measurement Periods or the Implementation Period.

The current Rule has limited provisions to account for NREs under the PIAM&V Method beyond the 20% data exclusion which only applies to temporary NREs. This provision fails to address longer lasting, and more adverse NREs such as those caused by Covid-19. The current Rule also does not provide a clear method to adjust for Energy Savings from other Implementations, such as deemed savings, that occur within the Measurement Boundary of the current Implementation for which the PIAM&V Energy Model is established.

NSW Government proposes a Rule change to expand the current approach for addressing NREs. The new provision provides a complete framework to identify, record, and make Non-Routine Adjustments (NRAs) for NREs using clear and distinctive methods. The provision also introduces an approach to adjust for Energy Savings from Implementations such as deemed Energy Savings, other than the Current Implementation for which the PIAM&V Energy Model is established.

The NSW Government will also publish the PIAM&V Method Application Requirements for Non-Routine Events and Adjustments, the ("NRE-A Requirements") to supplement this Rule change that will see the replacement of clause 7A.5(g) by clauses 7A.5B and 7A.5B1.

Please provide feedback on the following questions.

- Question 20: Does this Rule change provide more flexibility to the method for addressing Non-Routine Events? If not, please provide supporting evidence to justify your response

3.6. Amending equations 7A.2 and 7A.4

Refer to the draft ESS Rule: Equations 7A.2 and 7A.4

The current text of equations 7A.2 and 7A.4 mandates the exclusion of any periods that correspond to any changes in Site Constants. According to the new NRE-A Requirements, these periods constitute Non-Routine Events (NREs).

Mandating the exclusion of NREs periods in equations 7A.2 and 7A4 therefore contradicts the main objective of the new 7A.5B1 Rule clause which seeks to provide for more options to make NRAs. Consequently, the current text in equations 7A.2 and 7A.4 is inconsistent with the provisions of the new rule clause 7A.5B1 and its supplementary NRE-A Requirements.

Moreover, the current text of equations 7A.2 and 7A.4 also mandates the exclusion of any periods where any of the Independent Variables' values are outside the Effective Range of either the Baseline Energy Model or Operating Energy Model.

This provision is limited in addressing the adverse impacts of COVID-19 pandemic which may cause values of Independent Variables to fall outside of the Effective Range for prolonged periods of time. This results in Energy Savings corresponding to those time periods being excluded from the overall energy savings calculations.

To eliminate this inconsistency and limitation, the NSW Government proposes to change the text in equations 7A.2 and 7A.4 in a manner that better aligns with the policy intent of the new 7A.5B1 Rule clause.

3.7. Minimum statistical requirements

Refer to the draft ESS Rule: clause 7A.2(a)(ii)

Energy models that are based on Regression Analysis adhere to minimum statistical requirements that are currently not mandatory under the ESS Rule. This requires the involvement of Measurement and Verification Professionals (M&VPs) to ensure the statistical validity of energy models.

The absence of mandatory minimum statistical requirements may create a disconnect in following the methods provided in the NRE-A Requirements document for making Non-Routine Adjustments (NRAs).

To eliminate this discontinuity and to minimize the involvement of M&VPs in verifying the statistical validity of energy models, the NSW Government proposes to make changes to clause 7A.2(a)(ii).

This change will mandate the use of the minimum statistical requirements as recommended by the IPMVP core concepts in the rule with a reduced lower limit for the Adjusted Coefficient of Determination R2.

Please provide feedback on the following questions.

- Question 21: Do you agree with the proposed introduction of the minimum statistical requirements into the ESS Rule? If no, please provide your reasons.
- Question 22: Does reducing the minimum threshold for the Coefficient of Determination improve the flexibility of the method? If no, please provide your explanation and examples.

3.8. Facilitating the use of Short Energy Models Method to make NRAs

Refer to the draft ESS Rule: clause 7A.2(a)(ii)

Currently, for energy models established using Regression Analysis the number of independent observations at the Measurement Frequency for each site must be at least 6 times the Number of Model Parameters.

However, according to the new clause 7A.5B1 and Requirement 6 in the NRE-A Requirements, the number of independent observations at the Measurement Frequency for each site must be at least 4 times the Number of Model Parameters to enable the use of the Short Energy Models Method to make an NRA.

This is seen as an inconsistency between the existing rule clause 7A.2(a)(ii) and the new rule clause 7A.5B1 alongside its supplementary NRE-A Requirements.

To eliminate this inconsistency, the NSW Government proposes changes to the existing clause 7A.2(a)(ii). This change will allow for an exception to the applicability of this clause when the Short Energy Models Method is used to make an NRA.

3.9. Drafted/future Rule changes

Drafted changes are still in progress and may be released during future public consultations. This space provides an opportunity for engagement to provide further feedback and recommendations on future rule changes.

The following changes are currently being considered:

3.9.1. Accuracy Factor

Refer to the draft ESS Rule: clause 7A.10 and table A23 in schedule A

The Accuracy Factor is a measure of the energy models uncertainty level and it is currently determined by the relative precision of the estimated Eligible Fuels Savings using table A23.

This table results in limited Accuracy Factor values for a wide range of relative precision levels, and therefore does not closely relate the Accuracy Factor with the model's uncertainty. This results in imprecise energy savings estimates. Accuracy Factor must be tightly related to the main statistical parameters of an energy model to be representative of the model's levels of uncertainty.

The NSW Government is investigating changes to the Accuracy Factor requirements based on feedback from stakeholders and the relevant guidance including IPMVP Core Concepts. Options may include, but are not limited to, updating Table A23 or replacing it with a mathematical formula.

Please provide feedback on the following questions.

- Question 23: What form of relationship would best relate the Accuracy Factor to the relative precision of the estimated Energy Savings? Please provide details and examples.

3.9.2. Persistence Model

Refer to the draft ESS Rule: clause 7A.13 and table A18 in schedule A

The current Persistence Model that forecasts Energy Savings for forward ESCs creation was created in 2015 and has not been updated since. The NSW Government is investigating creating a more simplified and up-to-date version of the Persistence Model.

Please provide feedback on the following questions.

- Question 24: What appropriate and easy to implement representation would best describe the decay of the estimated Energy Savings of an Implementation over the forward ESCs creation period?

Part 4: Metered Baseline Method

4.1. Update to Eligible Fuels

Refer to the draft ESS Rule: clauses 8 and clause10.1

The MBM have been updated to include Eligible Fuels. All references to Electricity and Gas have been replaced by references to Eligible Fuels.

4.2. Clarification of Normalised Baseline Calculation Method

Refer to the draft ESS Rule: clause 8.7 - Method 3

It is not clear in the existing Normalised Baseline MBM Method that the normalisation process of the baseline should occur after each measurement period. The NSW Government proposes a wording change to clarify the requirements of the method. The proposed wording does not change the calculation method or the evidence requirements.

Please provide feedback on the following questions.

- Question 25: Does the proposed change clarify the calculation of the normalisation method? If not, please provide supporting evidence to justify your response.

4.3. Clarification for determining subsequent baseline Measurement Periods

Refer to the draft ESS Rule: Note under clause 8.3

It is not clear in the Rule how to set new baseline Measurement Periods using Implementation Dates from new Implementations.

The NSW Government proposes an additional note to be added to the rule to clarify this existing mechanism. This note states that, for the purpose of clauses 8.5, 8.6, and 8.7, the Accredited Certificate Provider may calculate ongoing Energy Savings by nominating additional Implementations (according to clause 5.5(c)) with associated Implementation Dates for the purposes of determining subsequent baseline Measurement Periods.

This allows Energy Savings to continue to be claimed for any ongoing energy efficiency improvements that take place following the original Implementation Date.

Please provide feedback on the following questions.

- Question 26: Does the proposed change provide clarity that an ACP may set a new baseline Measurement Period based on a new implementation of the same RESA at the site? If not, please provide supporting evidence and suggestions to justify your response.

4.4. Clarification for calculating Energy Savings from Fuel Switching

Refer to the draft ESS Rule: Note under clause 8.5.1(e)

The MBM compares energy consumption before and after an energy savings project is implemented. Where energy savings are achieved through fuel-switching, changes in consumption to all fuels must be calculated to ensure that net energy savings are positive. The wording included in the method to describe this is imprecise.

The NSW Government proposes wording that makes the requirement about calculating energy savings from fuel switching clearer.

Please provide feedback on the following questions.

- Question 27: Does the proposed change clarify the requirement to calculate energy savings from all fuels? If not, please provide supporting evidence to justify your response.

4.5. Introduction of new NABERS building types

Refer to the draft ESS Rule: clause 8.8.1, table A20 and table A21 in schedule A

The NSW Government proposes to expand the NABERS baseline method, to allow energy savings to be calculated for NABERS-rated buildings in the warehousing and cold storage sectors.

The NABERS baseline method currently covers all NABERS energy performance rating methodologies, including offices, hotels, shopping centres, data centres, hospitals, apartment buildings and residential aged care and retirement living facilities.

In September 2022, the NABERS program will be launching rating tools to measure energy performance of 2 further sectors: warehouses and cold storage. With the introduction of these new tools, the NSW Government proposes to enable the ESS NABERS baseline method to be used to calculate energy savings for these building types.

This inclusion will provide more opportunities for warehouse and cold storage stakeholders to access the ESS.

The proposed Benchmark NABERS Rating Index for warehouse and cold storage building categories is 3 stars for buildings built prior to 1 November 2006. For warehouse categories, the NSW Government proposes to maintain the Benchmark NABERS Rating Index of 3 stars

for buildings built on or after 1 November 2006, reflecting that many warehouse buildings were built after 2006.

For cold storage building categories, the NSW Government proposes to increase the Benchmark NABERS Rating Index to 3.5 stars for buildings built on or after 1 November 2006, reflecting that a large proportion of cold storage buildings were built prior to 2006.

The Benchmark NABERS Rating Indexes are based on the median star rating values in the respective sectors.

The purpose of the Annual Rating Adjustment in the ESS NABERS method is to consider the average annual improvement of the building stock.

There is currently no evidence to suggest that the warehouses and cold storage sectors are improving at the same rate as, for example, commercial office building stock in Australia. Based on this, the annual rating adjustment for historical baseline NABERS ratings that are 2-7 years for warehouses and cold storage will be set at zero.

The NSW Government notes that following the introduction of the warehouses and cold storage NABERS tools, evidence to support the introduction of an Annual Rating Adjustment for warehouses and cold storage may be evaluated for subsequent rule changes.

Please provide feedback on the following questions.

- Question 28: Do you agree with the proposed Benchmark NABERS Rating Indexes and Annual Rating Adjustments for the warehousing and cold storage sectors? If not, please explain and provide evidence to support your response.

Part 5: Project Impact Assessment Method

5.1. Deeming Savings for PIAM

Refer to the draft ESS Rule: Clause 7.1(e)

Certificates can still be created under PIAM, despite the method being closed to new activities. The method does not specify when energy savings are deemed to have occurred, which means that they are taken to occur 'as they occur'. This can create issues with the vintage deadline.

The NSW Government proposes that energy savings are to be taken to occur on the last date of the period for which the energy savings are calculated. Following this date, ESCs can be created. Written record of this date will make providing evidence for this nominated date easier.

This change will clarify issues around certificate vintage and make certificate creation more straight-forward under PIAM.

This may be beneficial for ACPs with pre-registration audit regimes (1 audit, instead of 5) and significantly reduce their costs.

Please provide feedback on the following questions.

- Question 29: Does this change simplify the vintage certificates creation process by providing clarity on how an ACP may determine when Energy Savings are taken to occur? If not, provide supporting evidence and suggestions to justify your response.

Part 6: Glossary

Acronym	Definition
ACP	Accredited Certificate Provider
CLESF	Commercial Lighting Energy Savings Formula
Covid-19	Coronavirus Disease 2019
EPA	Environmental Protection Authority
ESC	Energy Savings Certificates
ESS	Energy Savings Scheme
EUE	End-User Equipment
GJ	Gigajoule
GWh	Gigawatt hours
HEER	Home Energy Efficiency Retrofits
IPART	Independent Pricing and Regulatory Tribunal
IPMVP	International Performance Measurement and Verification Protocol
ISO	International Organization for Standardisation
LED	Light-Emitting Diode
LMIE	Lighting Market Impact Evaluation
LPG	liquified petroleum gas
M&V	Measurement and Verification
MBM	Metered Baseline Methods
MWh	Megawatt hours
NABERS	National Australian Built Environment Rating System
NOx	Nitrogen oxides
NSW	New South Wales
NRA	Non-Routine Adjustment
NRE	Non-Routine Event
PIAM	Project Impact Assessment Method

Acronym	Definition
PIAM&V	Project Impact Assessment with Measurement & Verification
PJ	Petajoule
PLESF	Public Lighting Energy Savings Formula
$PM_{2.5}$	Particles with a diameter of 2.5 micrometres or less
PV	Photovoltaic
R^2	Adjusted Coefficient of Determination
CV_{RMSE}	Coefficient of Variation of the Root Mean Square Error
ERAF	Effective Range Adjustment Factor

Part 7: References

Department of Planning, Industry, Energy and Environment, *Energy Security Safeguard - Position paper*, September, 2021

ISO 52000-1:2017. *Energy performance of buildings –Overarching EPB assessment –Part 1: General framework and procedures*. Technical Committee: ISO/TC 163. Published 06-2017 .

National Greenhouse and Energy Reporting Regulations 2008 (Commonwealth), (Select Legislative Instrument No. 127, 2008) compilation No. 22 1 July 2022:

Office of Energy and Climate Change 2020c, *DPIE ESS Opportunity List Update report* Version 2.0 Office of Energy and Climate Change (NSW) 17 June 2020

Appendix A: Consultation questions

Please be specific in your responses and provide evidence where available

Transitional Arrangement	
Question 1	Can you foresee any part of the new ESS Rule for which it will be difficult to get 'business-ready' within the proposed timeframes?
Structural Review of clauses 1- 6	
Question 2	Do the proposed changes make the requirements of the Rule clearer?
Question 3	Are there any other changes to clauses 1- 6 that would improve the clarity of the Rule?
Question 4	Will the change to the definition of gas have a material impact on the expected number of ESCs that will be created?
Inclusion of Fuel Switching	
Question 5	Do you agree with the proposed fuels?
Question 5	Do you agree with the proposed fuel definitions?
Question 7	Do you agree with the proposed amendment to clause 5.4(f)?
Question 8	Do you agree with the proposed deletion of clause 5.4(g)?
Question 9	Do you agree with the proposed amendment to clause 5.4(h)?
Question 10	Do you agree with the proposed amendment to clause 5.4(j)?
Question 11	Do you agree with the inclusion of the proposed clause 5.4(m)?
Question 12	Do you agree with the inclusion of the proposed clause 5.4(n)?
Question 13	Do you agree with the inclusion of the proposed clause 5.4(o)?
Question 14	Do you agree with the inclusion of the proposed clause 5.4(p)?
Question 15	Do you agree with the proposed removal of Activity Definition D19?
Question 16	What other concepts need defining/elaborating on? Please provide supporting evidence to justify your response.
PIAM&V: Updated Definitions	
Question 17	Do these definitions make the terms easier to understand and apply? Please provide supporting evidence to justify your response.
Question 18	What other concepts need defining/elaborating on? Please provide supporting evidence to justify your response.

PIAM&V: Meter Calibration Requirements for Utility Grade Meters	
Question 19	Does this change reduce the administrative burden of meter calibration requirements? If not, please provide supporting evidence to justify your response.
PIAM&V: Non-Routine Events and Adjustments	
Question 20	Does this Rule change provide more flexibility to the method for addressing Non-Routine Events? If not, please provide supporting evidence to justify your response.
PIAM&V: Minimum Statistical Requirements	
Question 21	Do you agree with the proposed mandatory introduction of the minimum statistical requirements into the ESS Rule? If no, please provide your reasons.
Question 22	Does reducing the minimum threshold for the Coefficient of Determination improve the flexibility of the method? If no, please provide your explanation and examples.
PIAM&V: Drafted/ Future Changes	
Question 23	What form of relationship would best relate the Accuracy Factor to the relative precision of the estimated Energy Savings? Please provide details and examples.
Question 24	What appropriate and easy to implement representation that would best describe the decay of the estimated Energy Savings of an Implementation over the forward ESCs creation period?
MBM: Normalised Baseline Calculation Method	
Question 25	Does the proposed change clarify the calculation of the normalisation method? Please provide supporting evidence to justify your response.
MBM: Determining Subsequent Baseline Measurement Periods	
Question 26	Does the proposed change provide clarity that an ACP may set a new baseline Measurement Period based on a new implementation of the same RESA at the site? If not, please provide supporting evidence and suggestions to justify your response.
MBM: Clarification for Calculating Energy Savings from Fuel Switching	
Question 27	Does the proposed change clarify the requirement to calculate energy savings from all fuels? If not, please provide supporting evidence to justify your response
MBM: Introduction of New NABERS Building Types	
Question 28	Do you agree with the proposed Benchmark NABERS Rating Indexes and Annual Rating Adjustments for the warehousing and cold storage sectors? Please explain and provide evidence to support your response.

Deem Savings for PIAM	
Question 29	Does this change simplify the vintage certificates creation process by providing clarity on how an ACP may determine when Energy Savings are taken to occur? If not, provide supporting evidence and suggestions to justify your response.

Office of Energy and Climate Change

NSW GOVERNMENT

For more information

For more information about the Energy Savings Scheme, please visit **NSW Climate and Energy Action website** or contact us at **sustainability@environment.nsw.gov.au**