



Summary of eligible activities and abatement in the *Energy Efficiency (Cost of Living) Improvement (Eligible Activities) Determination 2016*

Activities and abatement applying from 23 December 2016

#	Activity	AAV
For all activities, <i>Abatement factor (tCO₂-e) = AAV</i>		
Schedule 1. Residential building envelope activities		
1.1 Building sealing activities		
1a	An unsealed door frame in an external wall other than external wall openings to underfloor enclosures.	0.1684
1b	An unsealed door frame in a part of an internal wall that divides a conditioned zone or zones from an unconditioned zone or zones.	0.1684
1c	Each unsealed edge of an external door.	0.1684
1d	Each unsealed edge of a door in a part of an internal wall that divides a conditioned zone or zones from an unconditioned zone or zones.	0.1684
1e	An unsealed window frame in an external wall.	0.0122
1f	Each unsealed edge of an openable window.	0.0122
1.2 Exhaust fan sealing activities		
1a	Replace an unsealed ceiling or wall exhaust fan with a self-sealing exhaust fan.	0.4171
1b	Sealing an existing exhaust fan.	0.4171
1.3 Ventilation opening sealing activities		
1a	Sealing ventilation openings in an external wall.	0.1054
1b	Installing damper or flap to chimney or flue of an open solid fuel burning appliance.	2.3451
1.4 Install a thermally efficient window		
For activities 1.4 and 1.5		
<ul style="list-style-type: none"> • U_w = the total U value for the window system (as certified under WERS) – maximum 4.0 • A = the area of the installed thermally efficient window 		
a	Install high performance glazing or glazed products.	$AAV = ((-0.074 * U_w) + 0.9028) * A$
1.5 Retrofit thermally efficient glazing		
a	A product that improves window thermal efficiency.	$AAV = ((-0.0452 * U_w) + 0.5517) * A$
1.6 Install thermally efficient window coverings		
	Installing window coverings to a window in an external wall of a conditioned zone.	0.1655
1.7 Install window pelmets		
	Installing a box pelmet to a window in an external wall of a conditioned zone.	0.1002

Schedule 2. Space heating and cooling activities

The following terms apply to all lighting activities:

2.1 Install a specified high efficiency central electric space heater

$$AAV = [AAV_{fixed} + H2 + AAV_{var} \times (ACOP - baseline)] \times Capacity$$

- AAV_{fixed} , AAV_{var} and *baseline* are from the following table.
- $ACOP$ is the Annual Coefficient of Performance recorded for the installed model in the Energy Rating database for condition H1. Minimum $ACOP$ of 3.7 at condition H1.
- $Capacity$ is the rated heating capacity of the installed model for condition H1 in **kW**. Where the Capacity is greater than **30kW**, the value of 30 is used in the equation for Abatement factor.
- $H2$ is a value of 0.04 if the installed model has been tested and registered for low temperature performance under condition H2 and meets the requirements of Clause 3.7 of AS/NZS3823.2 otherwise $H2$ is a value of 0.0 for all other products.



Code	Existing Heater Type	New product type	Baseline	AAV _{fixed}	AAV _{var}
HC1A	Qualifying electric resistance - fixed panel heaters	Ducted High Efficiency Central Heat Pump	3.6	1.02	0.15
HC1B	Qualifying electric resistance - fixed panel heaters	Non-ducted High Efficiency Central Heat Pump	3.6	1.12	0.13
HC1C	Qualifying electric resistance - slab or ducted	Ducted High Efficiency Central Heat Pump	3.6	1.44	0.15
HC1D	Qualifying electric resistance - slab or ducted	Non-ducted High Efficiency Central Heat Pump	3.6	1.55	0.13
HC2A	Qualifying gas ducted heater	Ducted High Efficiency Central Heat Pump	3.6	3.77	0.15
HC2B	Qualifying gas ducted heater	Non-ducted High Efficiency Central Heat Pump	3.6	3.88	0.13
HC3A	None, any, not specified	Ducted High Efficiency Central Heat Pump	3.6	0.00	0.15
HC3B	None, any, not specified	Non-ducted High Efficiency Central Heat Pump	3.6	0.10	0.13

2.2 Replace a ducted gas heater with a high efficiency ducted gas heater

$$AAV = [AAV_{fixed} + AAV_{var} \times (SRI - baseline)] \times Capacity$$

- AAV_{fixed}, AAV_{var} and *baseline* are in the following table.
- *Capacity* is the rated heating capacity for the installed model as listed in the register of products for the activity in **kW**.
- *SRI* is the decimal star rating of the installed model as listed in the register of products for the activity.

Code	Existing heater type	New product type	Baseline	AAV _{fixed}	AAV _{var}
HC4	Qualifying ducted gas heater	Gas Ducted Heater	3.5	0.00	0.57

2.3 Install a specified high efficiency electric room heater

$$Abatement\ factor\ (t\ CO_{2-e}) = [AAV_{fixed} + H2 + AAV_{var} \times (ACOP - baseline)] \times Capacity$$

- AAV_{fixed}, AAV_{var} and *baseline* are the relevant values prescribed the following table.
- *ACOP* is the Annual Coefficient of Performance recorded for the installed model in the Energy Rating database for condition H1. Minimum ACOP of 4.0 at condition H1.
- *Capacity* is the rated heating capacity of the installed model for condition H1 in **kW**.
- *H2* is a value of 0.04 if the installed model has been tested and registered for low temperature performance under condition H2 and meets the requirements of Clause 3.7 of AS/NZS3823.2 or H2 is a value of 0.0 for all other products.

Code	Existing Heater Type	Baseline	AAV _{fixed}	AAV _{var}
HR1	Any qualifying fixed electric resistance heater	3.7	1.22	0.13
HR2	Any qualifying fixed gas room heater	3.7	3.26	0.13
HR3	Any other heater type not specified above, no heater	3.7	0.00	0.13

2.4 Install insulated space conditioning ductwork

$$Abatement\ factor\ (tCO_{2-e}) = AAV \times Capacity$$

- AAV is the relevant activity abatement value prescribed in the following table.
- *Capacity* is the rated heating capacity for the installed model in **kW**.

Existing Heater Type	AAV Factor
Gas Ducted	0.7525
Electric ducted Heat pump	0.1200



Schedule 3. Hot water service activities

3.1 Decommission an electric resistance water heater and install a specified high efficiency water heater

$$AAV = AAV_{base} - (AAV_{Bs} \times Bs) - (AAV_{Be} \times Be)$$

- AAV_{base} , AAV_{Bs} and AAV_{Be} are the relevant values prescribed in the following table.
- Bs is the annual supplementary purchased energy consumption used by a high efficiency water heater to directly heat water in Gigajoules per year (**GJ/Yr**).
- Be is the annual electrical energy used by auxiliary equipment integral to the water heater other than resistive heating units in Gigajoules per year (**GJ/Yr**).
- For medium sized Heat Pump water heaters, the value of Bs and Be are given as follows:
 - $Be = 0$ (for medium size heat pump systems only).
 - $Bs = (1 - RECs \times 0.0214) \times 16.67$ (for medium size heat pump systems only) in **GJ**.
- $RECs$ is the number of certificates for an installation in Zone 5 for the specific model listed by the Clean Energy Regulator in the register of air source heat pumps with a volumetric capacity of no more than 425 L and where the number of $RECs$ is greater than or equal to 28 for Zone 5 (HP5-AU).

New system size and type	AAV_{base}	AAV_{Bs}	AAV_{Be}
Solar electric small (25.2 MJ/day or 120 litres per day)	4.07	0.396	0.396
Solar electric medium (42 MJ/day or 121 to 200 litres/day)	6.60	0.396	0.396
Electric heat pump medium (42 MJ/day or 200 litres/day)	6.60	0.396	0.396

3.2 Decommission a gas or liquefied petroleum gas water heater and install a specified high efficiency water heater

$$AAV = AAV_{base} - (AAV_{Bs} \times Bs) - (AAV_{Be} \times Be)$$

- AAV_{base} , AAV_{Bs} and AAV_{Be} are the relevant values prescribed in the following table.
- Bs is the annual supplementary purchased energy consumption used by a high efficiency water heater to directly heat water in megajoules per year (**MJ/Yr**) as determined in the performance evaluation process in AS/NZS 4234 and as recorded in the register of products for the activity; and
- Be is the annual electrical energy used by auxiliary equipment integral to the water heater other than resistive heating units in Gigajoules per year (**GJ/Yr**) as determined in the performance evaluation process in AS/NZS 4234 and as recorded in the register of product for the activity.
- For medium sized Heat Pump water heaters, the value of Bs and Be are given as follows:
 - $Be = 0$ (for medium size heat pump systems only).
 - $Bs = (1 - RECs \times 0.0214) \times 16.67$ (for medium size heat pump systems only) in **GJ**.
- Where $RECs$ is the number of certificates for an installation in Zone 5 for the specific model as listed by the Clean Energy Regulator in the register of air source heat pumps with a volumetric capacity of no more than 425 L and where the number of $RECs$ is greater than or equal to 28 for Zone 5 (HP5-AU).

New system size and type	AAV_{base}	AAV_{Bs}	AAV_{Be}
Solar electric small (25.2 MJ/day or 120 L/day)	9.64	0.396	0.396
Solar electric medium (42 MJ/day or 121 to 200 L/day)	14.11	0.396	0.396
Electric heat pump medium (42 MJ/day or 200 L/day)	14.11	0.396	0.396

3.3 Replace an existing shower fixture outlet with low flow shower fixture outlet

$$Abatement\ factor\ (tCO_2-e) = AAV \times N$$

- AAV is the relevant abatement value prescribed for the shower head in the following table.
- N is the number of shower fixtures installed with a maximum of 2.

Product WELS rated flow rate	AAV
Over 6.0 and not more than 9.0 litres/minute	0.359
Not more than 6.0 litres/minute	0.530



Schedule 4. Lighting activities

4.1 Residential lighting activities

Abatement factor (t CO_{2-e}) = AAV x N x PF

- PF is the power factor of the product, where if the power factor of the product is:
 - Less than 0.9, PF = 1.00
 - 0.9 or more, PF = 1.05

Table 4.1.1 Activity abatement values for installation of low energy general lighting services in place of mains voltage incandescent general lighting services

	Light Output Range (lm):	<350	350-649	650-849	850+	<350	350-649	650-849	850+	<350	350-649	650-849	850+	<350	350-649	650-849	850+
	Min Efficacy (lm/W):	40	45	52	55	48	54	62	66	58	65	75	79	69	78	90	95
Lamp Life (hours)	8000 to 9999	0.028				0.031				0.032				0.033			
	10000 to 11999	0.032				0.035				0.037				0.038			
	12000 to 14999	0.037				0.040				0.042				0.044			
	15000 to 19999	0.043				0.047				0.050				0.052			
	20000 to 24999	0.055				0.060				0.063				0.065			
	25000+	0.067				0.074				0.077				0.081			

Table 4.1.2 Activity abatement values for installation of a low energy reflector lamp in place of a mains voltage incandescent reflector lamp

Efficacy	Activity Abatement Value (tCO _{2-e})			
	Min 45 lumens/watt	Min 54 lumens/watt	Min 65 lumens/watt	Min 78 lumens/watt
12000 to 14999 hrs	0.049	0.050	0.051	0.052
15000 to 19999 hrs	0.058	0.059	0.061	0.061
20000 to 24999 hrs	0.073	0.075	0.076	0.078
25000 hrs +	0.090	0.092	0.094	0.095

Table 4.1.3 Activity abatement values for installation of low energy 12 volt lamp to replace 12 volt halogen

Efficacy	Activity Abatement Value (tCO _{2-e})			
	Min 52 l/W	Min 62 l/W	Min 75 l/W	Min 90 l/W
15,000 to 19,999 hrs	0.052	0.055	0.057	0.059
20,000 hrs to 24,999 hrs	0.065	0.069	0.072	0.075
25,000 hrs +	0.080	0.085	0.089	0.092

Table 4.1.4 , Activity abatement values for installation of mains voltage low energy downlight in place of existing 12 volt halogen downlight

Efficacy	Activity Abatement Value (tCO _{2-e})				
	Min 48 lumens/watt	Min 58 lumens/watt	Min 69 lumens/watt	Min 83 lumens/watt	Min 100 lumens/watt
15,000 to 19,999 hrs	0.053	0.056	0.058	0.060	0.061
20,000 hrs to 24,999 hrs	0.067	0.070	0.073	0.076	0.078
25,000 hrs +	0.082	0.086	0.090	0.093	0.095

Table 4.1.5 Activity abatement values for installation of low energy lamp with a GU10 base in place of existing mains voltage halogen lamp of at least 35 watts with a GU10 base

Efficacy	Activity Abatement Value (tCO _{2-e})				
	Min 48 lumens/watt	Min 58 lumens/watt	Min 69 lumens/watt	Min 83 lumens/watt	Min 100 lumens/watt
15,000 to 19,999 hrs	0.065	0.067	0.070	0.072	0.073
20,000 hrs to 24,999 hrs	0.082	0.085	0.088	0.090	0.092
25,000 hrs +	0.101	0.105	0.108	0.111	0.114



4.2 Commercial lighting activities

Upgrading building lighting equipment in a business premises and replacing with more efficient lighting equipment

$AAV = AAV \times \text{Energy Savings} \times \text{ACTAM}$

- AAV is a multiplier converting NSW Energy Savings Scheme (ESS) to EEIS = 0.153.
- Energy Savings is total energy savings from Clause 9.4 of the ESS rule in MWh.
- ACTAM is the air conditioning factor of 1.05 is applied where relevant.

Schedule 5. Appliance activities

5.1 Decommissioning and disposal of refrigerator or freezer

a	1-door refrigerator or freezer	0.5926
b	2-door refrigerator or freezer	1.0603

5.2 Purchase of high efficiency refrigerator or freezer

a	single door refrigerator	$AAV = (0.9126 \times [200 + 4.0 \times (V_{ff})^{0.67}] - CEC) \times 0.0019$
b	two door refrigerator	$AAV = (0.6954 \times [150 + 8.8 \times (V_{ff} + 1.60 \times V_{fr})^{0.67}] - CEC) \times 0.0019$
c	chest freezer	$AAV = (0.6329 \times [150 + 7.5 \times (1.6 \times V_{fr})^{0.67}] - CEC) \times 0.00224$
d	upright freezer	$AAV = (0.7700 \times [150 + 7.5 \times (1.60 \times V_{fr})^{0.67}] - CEC) \times 0.0024$

Where—

- (a) V_{ff} is the volume in litres of the fresh food compartment;
- (b) V_{fr} is the volume in litres of the freezer compartment; and
- (b) CEC is the comparative energy consumption on the energy rating label as defined by AS/NZS 4474.

5.3 Installation of high efficiency electric clothes dryer

$AAV = (48.08 \times \text{Rated Capacity} - CEC) \times 0.0026$

- Rated Capacity is measured in kilograms defined by AS/NZS 2442.2.
- CEC is comparative energy consumption in kilowatt hours per year (kWh/y) from AS/NZS 2442.2.

5.4 Install a standby power controller

$AAV \text{ for each standby power controller } (i) = (VAF) \times 0.16$

$AAV \text{ for premises} = \sum_{i=1}^n \text{Abatement} - \text{factor}_i$

- VAF is the relevant activity abatement value listed in the register of products for the standby power controller.
- Sum the abatement factor i for each standby power controller.
- n is the number of SPCs per premises, which is in the range 1 to 4 (maximum).

5.5 Purchase a high efficiency television

- For TVs with a registered screen area of not more than 7221cm²

$AAV = (0.32768 \times [SA \times 0.09344 + 65.408] - CEC) \times 0.0008415$

- For TVs with a registered screen area of greater than 7221cm².

$AAV = (270 - CEC) \times 0.0008415$

- SA is the area of the screen in square centimetres.
- CEC is the comparative energy consumption on the energy rating label as defined by AS/NZS 4474.

5.6 Install a high efficiency swimming pool pump

$AAV = (1622 - PAEC) \times 0.001228$

- PAEC is the projected annual energy consumption in kWh/y.
- Minimum star rating of 3.



5.7 High Efficiency Refrigerated Display Cabinet Activities

Installing a refrigerated display cabinet *Abatement factor (tCO₂-e) = AAV x TDA*

Where—

- (a) AAV is the relevant AAV prescribed in the following table for the particular refrigerated display cabinet type as defined in the AS 1731 series of standards; and
- (b) TDA is the Total Display Area of the Refrigerated Display Cabinet as defined in the AS 1731 series of standards.

Refrigerated display cabinet type and sub-class	AAV
Remote type refrigerated display cabinets	
RS 1 - Unlit shelves	1.622
RS 1 - Lit shelves	2.755
RS 2 - Unlit shelves	1.645
RS 2 - Lit shelves	2.196
RS 3 - Unlit shelves	1.754
RS 3 - Lit shelves	2.379
RS 4 - Glass door	1.149
RS 6 - Gravity coil	1.680
RS 6 - Fan coil	1.673
RS 7 - Fan coil	1.913
RS 8 - Gravity coil	1.447
RS 8 - Fan coil	1.560
RS 9 - Fan coil	1.564
RS 10 - Low	2.204
RS 11	4.505
RS 12	7.835
RS 13 - Solid sided	2.519
RS 13 - Glass sided	2.313
RS 14 - Solid sided	1.568
RS 14 - Glass sided	9.399
RS 15 - Glass door	3.753
RS 16 - Glass door	4.106
RS 18	3.427
RS 19	2.553
Self-contained type refrigerated display cabinets¹	
HC1	1.164
HC4	1.591
VC1	3.357
VC2	2.678
VC4 - solid door	3.861
VC4 - glass door	2.542
HF4	2.716
HF6	0.815
VF4 - solid door	4.249
VF4 - glass door	4.249

Note 1: This activity applies only to M-package temperature classes M1, M2, L1 and L2 (as applicable) as defined in the AS 1731 series of standards.