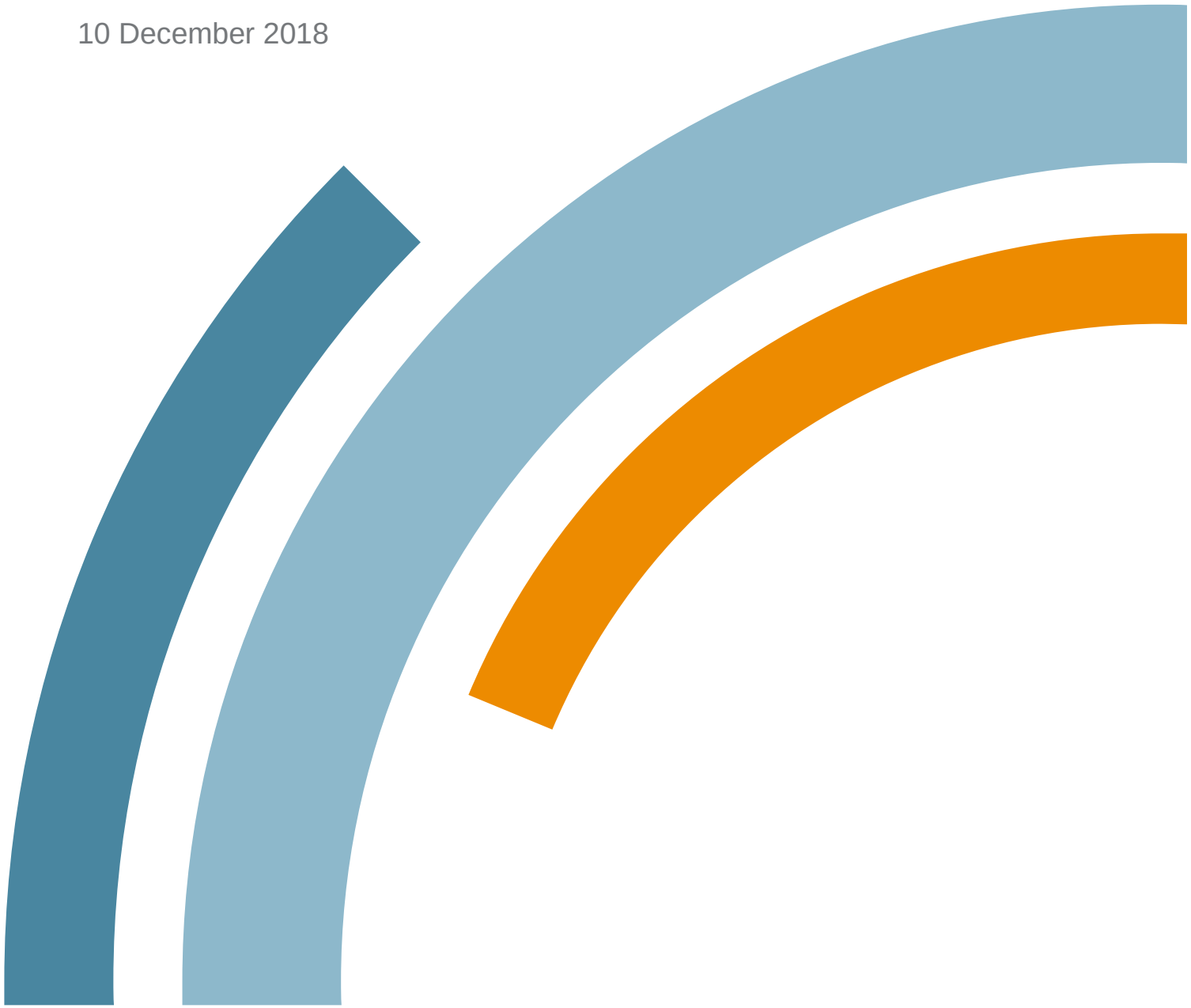
ESSENTIAL SERVICES COMMISSION

Victorian Energy Upgrades

Water Heating and Space Heating/Cooling Product Application Guide

10 December 2018



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Introduction

This guide provides product applicants with guidance on how to apply for water heating and space heating/cooling products to be listed on our Register of Products, so that they are eligible to be installed and create Victorian energy efficiency certificates (VEECs) under the Victorian Energy Upgrades (VEU) program.

About this guide

This guide provides instructions on how to apply for a water heating or space heating/cooling product to be listed on our Register of Products.

The products covered by this guide are:

- Water heating products:
  - Gas or LPG storage water heater (product category 1A)
  - Gas or LPG instantaneous water heater (product category 1B)
  - Electric boosted solar water heater (product category 1C)
  - Heat pump water heater (product category 1D)
  - Gas or LPG boosted solar water heater (product categories 1F and 3B)
- Space heating/cooling products:
  - High-efficiency ducted gas heater (product category 5A)
  - Ducted air to air heat pump (product category 7A)
  - Gas or LPG space heater (product category 9A)
  - Space air to air heat pump (product category 10A)
  - Ducted evaporative cooler (product category 23A)
  - Gas heating ductwork (product category 28)

This guide is divided into three sections:

- Section 1 provides general information on product applications.
- Section 2 provides further detail of the performance criteria and documentary evidence required for water heating products.
- Section 3 provides further detail of the performance criteria and documentary evidence required for space heating/cooling products.

You should also read our Application Guide for Product Applicants, which provides additional information on:

- Our Register of Products.
- Our product application and assessment process, including things to bear in mind throughout the process.
- Some product application functionality.

Who should use this guide

You should use this guide if you are

- applying for water heating and space heating/cooling products to be listed on our Register of Products under the Victorian Energy Upgrades program.
- interested in understanding the product application requirements for water heating and space heating/cooling products under the VEU program

You must hold a VEU account to apply for a product listing. Find out more about creating a VEU account at www.esc.vic.gov.au/become-veu-accredited

Seeking assistance

If you encounter difficulties with your application that cannot be answered using this guide contact us on (03) 9032 1310 or veu@esc.vic.gov.au

We appreciate the time and effort that businesses put into their applications and product officers will endeavour to work with you during the assessment process.

If you have submitted a product application, please use the designated 'notes' field in the online product assessment tool to communicate directly with the product officer responsible for assessing your application.

Legal context for this guide

We have prepared this guide as a general summary of relevant parts of:

- Victorian Energy Efficiency Target Act 2007 (the VEET Act)
- Victorian Energy Efficiency Target Regulations 2018 (the VEET Regulations)
- Victorian Energy Upgrades Specifications 2018 (the VEU specifications)
- Victorian Energy Efficiency Target Guidelines (the VEET guidelines)

View these documents at www.esc.vic.gov.au/veu-legislation

This guide should not be relied upon as substitute for legal advice and should be read in conjunction with the above source documents. In the event of inconsistency between this guide and the source documents, the content in the source documents apply.

1. Product requirements

1.1. Product criteria and documentation

Products must meet the specified requirements to be listed on the Register of Products and create VEECs. We do not accept deviations from the listed standards.

You must review and familiarise yourself with the product performance and documentation requirements for each type of product before testing products and submitting product applications.

If you are unable to provide sufficient evidence that a product is capable of meeting the minimum criteria, the product will not be approved.

For most of the product categories listed on the following pages, you must submit an independent third-party verification of the product performance against established safety and performance standards, such as a test report from an accredited laboratory.

Consult the relevant sections of the VEET Regulations and VEU specifications when preparing documentary evidence for your application.

1.2. GEMS products under the program

Some products listed on the Australian Greenhouse and Energy Minimum Standards (GEMS) Register can be used for VEU installation activities, even if not listed on our Register of Products.

However, for practical purposes a product must be listed in our Register of Products in order to create VEECs in our registry system. GEMs products include:

- Ducted air to air heat pump (product category 7A)
- Room air to air heat pump (product category 10A)

View the GEMS Register at reg.energyrating.gov.au/comparator/product_types/

The register is maintained by the Australian GEMS Regulator, which is also responsible for administering the GEMS Act, and monitoring and enforcing compliance with the GEMS Act.

Adding GEMS-listed products to our Register of Products

We populate the register on a periodic basis (at least annually) with eligible products from the GEMS Register.[1]

Usually, you will not need to apply to us to have a GEMS-listed product added to our register. However, in some cases the data available from the GEMS product registers is incomplete and in such cases these products may not be added to our register until additional data is provided. Likewise, if a product is added – or an update made – to the GEMS Register, that change may not be reflected in the Register of Products immediately.

In order to add GEMS products to our Register of Products:

- the brand and model of the product must comply with the relevant GEMS determination and be registered on the GEMS Register
- the product category must meet the product criteria specified in the VEET Regulations and the minimum energy efficiency requirements specified in the VEU specifications
- evidence of GEMS registration must be submitted in the form of a screenshot of the product listed in the GEMS Register demonstrating compliance with the product criteria (accessible via https://reg.energyrating.gov.au/comparator/product_types/).

Products that are removed from the GEMS Register cease to be eligible for VEU installation activities from the date of removal. If you are aware of your product being removed from the GEMS Register prior to its GEMS expiration date, please let us know immediately.

[1] Note that due to data quality issues we encounter when reviewing the GEMS Register, a product may not be added to our Register of Products as part of this periodic update.

2. Water heating product performance and documentation requirements

2.1. Product categories 1A and 1B: Gas water heaters

Product category number	Product category	Product criteria	Documentary evidence
1A	Gas or LPG storage water heater	Gas or liquefied petroleum gas storage water heater certified by an accredited body as achieving a minimum 5 star rating when tested in accordance with AS/NZS 5263.1.2.	AGA Certificate or listing on AGA directory demonstrating compliance with the product criteria.
1B	Gas/LPG instantaneous water heater	Gas or liquefied petroleum gas instantaneous water heater certified by an accredited body as achieving a minimum 5 star rating when tested in accordance with AS/NZS 5263.1.2.	AGA Certificate or listing on AGA directory demonstrating compliance with the product criteria.

2.2. Product categories 1C, 1D, 1F, and 3B: Solar and heat pump water heaters

We work with an external service provider to assess whether solar water heating products meet the minimum eligibility requirements of the VEET Regulations.

We also publish additional solar water heater specifications on our Register of Products, which are not relevant to the calculation of VEECs, but which assist licenced plumbers and builders to identify which solar water heater products are capable of complying with the Plumbing Regulations 2008 (Vic).

Product category number	Product	Product criteria
1C	Electric boosted solar water heater	• Certified to AS/NZS 2712. • Achieves 60% annual energy savings when determined in accordance with AS/NZS 4234 and the ESC guidance document on annual solar calculations, when modelled in climate zone 4 (Melbourne).

Product category number	Product	Product criteria
		• All certifications and test reports must show the exact brand and models proposed under the schedule. • The proposed products, components, brands and models must reconcile with the brand and the models shown on the supporting documents. – If a representative model had been tested, an independent organisation—such as an NATA accredited test laboratory, JAS-ANZ accredited approval provider or equivalent—must make a declaration that proposed models are the same as the product tested. – Alternatively, a suitability accredited laboratory can also make the declaration after inspecting the products.
1D	Heat pump water heater	• Certified to AS/NZS 2712 • Achieve 60% annual energy savings when determined in accordance with AS/NZS 4234 and the ESC guidance document on annual solar calculations, when modelled in climate zone 4 (Melbourne). • All certifications and test reports must show the exact brand and models proposed under the schedule. • The proposed products, components, brands and models must reconcile with the brand and the models shown on the supporting documents. – If a representative model had been tested, an independent organisation—such as an NATA accredited test laboratory, JAS-ANZ accredited approval provider or equivalent—must make a declaration that proposed models are the same as the product tested. – Alternatively, a suitability accredited laboratory can also make the declaration after inspecting the products.
1F & 3B	Gas or LPG boosted solar water heater	• Certified to AS/NZS 2712. • Achieves 60% annual energy savings when determined in accordance with AS/NZS 4234 and the ESC guidance on annual solar calculations, and when modelled in climate zone 4 (Melbourne). • All certifications and test reports must show the exact brand and models proposed under the schedule. • The proposed products, components, brands and models must reconcile with the brand and the models shown on the supporting documents.

Product category number	Product	Product criteria
		– If a representative model had been tested, an independent organisation—such as an NATA accredited test laboratory, JAS-ANZ accredited approval provider or equivalent—must make a declaration that proposed models are the same as the product tested. – Alternatively, a suitability accredited laboratory can also make the declaration after inspecting the products.

Product Category number	Product	Required template / guidance documents
1C/1D	Water heating – electric boosted solar or heat pump	• Template - application spreadsheet • Annual solar energy calculation method for domestic solar and heat pump water heaters
1F/ 3B	Water heating – gas / LPG boosted solar	• Template - application spreadsheet • Annual solar energy calculation method for domestic solar and heat pump water heaters

Supporting evidence and file naming conventions

The commission website provides various templates and guidance documents to assist manufacturers when modelling solar water heater products. Applicants must use these templates and apply the naming conventions shown in the following table.

All brands and models must reconcile precisely with the brands and the models on the supporting documents. Any supporting document with unexplained model variations will not be accepted.

Product Category	Requirement	Documentary evidence	Naming convention and upload format
Electric boosted solar (1C) Heat	Application spreadsheet	You can apply for multiple products under the one application. Please provide one completed application spreadsheet listing specifications for each model being applied for as part of the current application.	MS Excel document More than one product can be included in the excel spreadsheet, so the name needs to include the date and brand(s): BrandName_YYYYMMDD_commission.xls. e.g. for a solar water heater from Brand ABC

pump water heater (1D) Gas / LPG boosted solar (1F/3B)			provided on 2 January 2014 the filename would be ABC_20140102_ESC.xls
	TRNSYS model	TRNSYS model for the product, including decks and all input and output files.	Input (deck), output, and list files and, if appropriate, file describing incident angle modifier. Brandname_model number_ESC.lst, Brandname_model number_ESC.DCK, Brandname_model number_ESC.out and if appropriate Brandname_ModelNumber_IAM.txt
	TRNSYS modelling reports (If available)	AS/NZS 4234:2008 Reports produced by modellers that include simulations as specified by the commission (including the appropriate tables from AS/NZS 4234 Appendix C).	PDF document Brandname_model number.pdf
	Accreditation certificate	AS/NZS 2712	PDF document Brandname_ModelNo_2712.pdf
	Thermal performance of solar collector	Test report: AS/NZS 2535.1 or equivalent (only required for systems incorporating a solar collector).	PDF document Brandname_CollectorModelNo_2535.pdf
	Thermal performance of heat pump (COP and power correlations)	Test report: AS/NZS 5125.1 (only required for systems incorporating heat pumps).	PDF document Brandname_HeatPumpModelNo_5125.pdf
	Thermal performance of all tanks including electric heated tanks	Test report: AS/NZS 4692 or equivalent.	PDF document Brandname_TankModelNo_4692.pdf
	Test report for all storage	Test report: AS 4552 or equivalent Including as appropriate; start up	PDF document Brandname_ModelNo_4552.pdf

	and in-line gas heaters	capacity, maintenance rate, burner capacity and efficiency.	
	Pump specifications	Test report: AS/NZS 4234:2008 section 2.2.5 including test report for measured flow rate and power measured flow rate in standard configuration. For variable flow systems include a description of the flow rate control algorithm.	PDF document PumpBrandname_PumpModelNo.pdf
	Controller specifications	Description of the thermostat controller algorithm and the pump control set points or algorithm. Must include legionella control method.	PDF document ControllerBrandname_ControllerModelNo.pdf
	No load system operation test result	AS/NZS 2712:2007 No load system operation test report for the system or family of systems applied for (*solar systems only*).	PDF document Brandname_NoLoadModelNo_2712.pdf
	Schematic of the system and bill of materials	Parts list including insulation included or specified for piping etc. schematic diagram including all relevant control valves and flow meter if appropriate, solar or heat pump flow and return pipes and temperature sensor location/s.	PDF document Brandname_ModelNo_schematic.pdf
	Dimensioned diagram of the tank	Dimensioned inner tank drawing including cold inlet and hot outlet positions, element position (*if fitted*), flow and return positions for auxiliary heater (*if appropriate*), solar or heat pump flow and return ports and temperature sensor location/s.	PDF document Brandname_TankModelNo_dimension.pdf

3. Space heating/cooling product performance and documentation requirements

3.1. Product category 5: High efficiency ducted gas

Product criteria	Documentary evidence
A product that: • is certified by an accredited body to achieve a minimum 5 star rating when tested and rated in accordance with AS/NZS 5263.1.6 • has a minimum thermal output (or capacity) of 10 kW as determined in accordance with AS/NZS 5263.1.6	AGA certificate or listing on AGA directory demonstrating compliance with the product criteria.

3.2. Product category 7: Ducted air to air heat pump

Product criteria	Documentary evidence
A product that: • complies with the GEMS (Air Conditioners and Heat Pumps) Determination 2013 (Cth) has a minimum RTHC of 10kW at the H1 temperature condition • has a minimum ACOP of: – 3.7, if the RTHC is less than 19kW – 3.9 if the RTHC is 19kW or greater	Evidence of GEMS registration - downloadable product list (CSV file) from GEMS (www.energyrating.gov.au) .

3.3. Product category 9: Gas or LPG space heater

Product criteria	Documentary evidence
A product that: • is certified by an accredited body to achieve a minimum 4 star rating when tested and rated in accordance with AS/NZS 5263.1.3 • has a minimum thermal output (or capacity) of 2 kW as determined in accordance with AS/NZS 5263.1.3	AGA certificate or screen shot of listing on AGA directory demonstrating compliance with the product criteria.
• has a room sealed flue	Product specification sheet

3.4. Product category 10: Room air to air heat pump

Product criteria	Documentary evidence
A product that: • complies with the GEMS (Air Conditioners and Heat Pumps) Determination 2013 (Cth) • achieves minimum RTHC is of 2 kW at the H1 temperature condition • has a minimum ACOP of: – 4.2, if the RTHC is less than 3 kW – 4 if the RTHC is 3kW or greater	Evidence of GEMS registration - downloadable product list (CSV file) from GEMS (www.energyrating.gov.au) .

3.5. Product category 23: Ducted evaporative cooler replacing a refrigerative air conditioner

Product criteria	Documentary evidence
A product that: • complies with and is tested in accordance with AS 2913 • has a minimum 7 kW rated output • has a minimum effective energy efficiency ratio (EER) of 20 based on measurements of nominal rating (kW) and electricity consumption undertaken according to AS 2913, and calculated according to the formula: EER = 0.2 x EERFL + 0.3 x EER50% + 0.5 x EER20% Where: EERFL is the nominal rating (kW) ÷ electricity consumption (kW) at rated airflow EER50% is the nominal rating (kW) ÷ electricity consumption (kW) at 50% rated airflow EER20% is the nominal rating (kW) ÷ electricity consumption (kW) at 20% rated airflow.	Test report showing compliance with AS 2913-2000. Note that the test report must show all the performance variables (EERFL, EER50%, and EER20%).

3.6. Product Category 28: Gas heating ductwork

Product Category	Product criteria	Acceptable evidence
Flexible ductwork (28A)	Flexible ductwork that: • is certified by an approved laboratory as complying with AS 4254.1 and is labelled in accordance with that standard • is insulated using bulk insulation that is certified by an approved laboratory as complying with AS/NZS 4859.1 • is constructed and installed in accordance with AS 4254.1 and uses fittings that – if installed in a class 1 or 10 Building, achieves at least the R-value specified by Table 3.12.5.2 of Volume Two of the BCA – if installed in a class 2 to 9 Building, achieves the minimum total R value specified by Specification J5.2b of Volume One of the BCA • achieves a min R-value of R1.5 when measured in accordance with AS/NZS 4859.1.	Test report by a NATA accredited laboratory or equivalent body showing compliance with the product criteria.
Rigid ductwork (28A)	Rigid ductwork that: • is certified by an approved laboratory as complying with AS 4254.2 • is insulated using bulk insulation that is certified by an approved laboratory as complying with AS/NZS 4859.1 • is longitudinally labelled at intervals of no more than 1.5 meters in characters that are clearly legible and at least 18mm high and state the duct manufacturer's or assembler's name, the diameter of the duct core, the R-value of the bulk insulation and whether the ductwork complies with AS 4254.2 • is constructed and installed in accordance with AS 4254.2 and uses fittings that – if installed in a class 1 or 10 Building, achieves at least the R-value specified by Table 3.12.5.2 of Volume Two of the BCA – if installed in a class 2 to 9 Building, achieves the minimum total R value specified by Specification J5.2b of Volume One of the BCA • achieves a min R-value of R1.5 when measured in accordance with AS/NZS 4859.1.	

Glossary

Term	Definition
Accredited body	In relation to a product, this means a body accredited under the Joint Accreditation System of Australia and New Zealand to give product certification or component certification of a product.
ACOP	Annual coefficient of performance is the ratio of a product's rated heating capacity to its effective power input at its rated heating capacity.
AGA	Australian Gas Association
AGA product Directory	The AGA publishes a Directory of all type tested products that are currently certified by AGA. Available at: https://www.aga.asn.au/product_directory
AP	An accredited person is a business that has been accredited by the commission to operate within the VEU program. An AP is entitled to create VEECs through the undertaking of energy efficient activities which are prescribed under the Principal Regulations.
Business premises	Under the VEU program, business premises are defined as: (i) the premises that is not registered as a residential premises (see definition below), and (ii) the premises not registered as a 'scheduled activity premises' unless it has been 'opted in' to the VEU program pursuant to Regulation 10AA of the Principal Regulations.
ESC	Essential Services Commission
ESV	Energy Safe Victoria
GEMS	Greenhouse and Energy Minimum Standards
GEMS Act	Greenhouse and Energy Minimum Standards Act 2012 (Cth)
GEMS Register	Means the register kept by the Greenhouse and Energy Minimum Standards Regulator under the GEMS Act and made available to the public at http://reg.energyrating.gov.au/comparator/
NATA	National Association of Testing Authorities
Residential Premises	A building classified under part A3 of the Building Code of Australia as a class 1, 2, 3, or 4 building.

Term	Definition
RFI	Request for further information
RTHC	Rated total heating capacity
VEEC	Victorian energy efficiency certificate. Each VEEC represents one tonne of carbon dioxide equivalent (CO_2-e) abated by the prescribed activity.
VEET Act	Victorian Energy Efficiency Target Act 2007
VEET Regulations	The Victorian Energy Efficiency Target Regulations 2018
VEU	Victorian Energy Upgrades program
VEU specifications	Specifications published by the Secretary under regulation 35 of the VEET Regulations

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1.0	First release	10 December 2018