Combined Energy

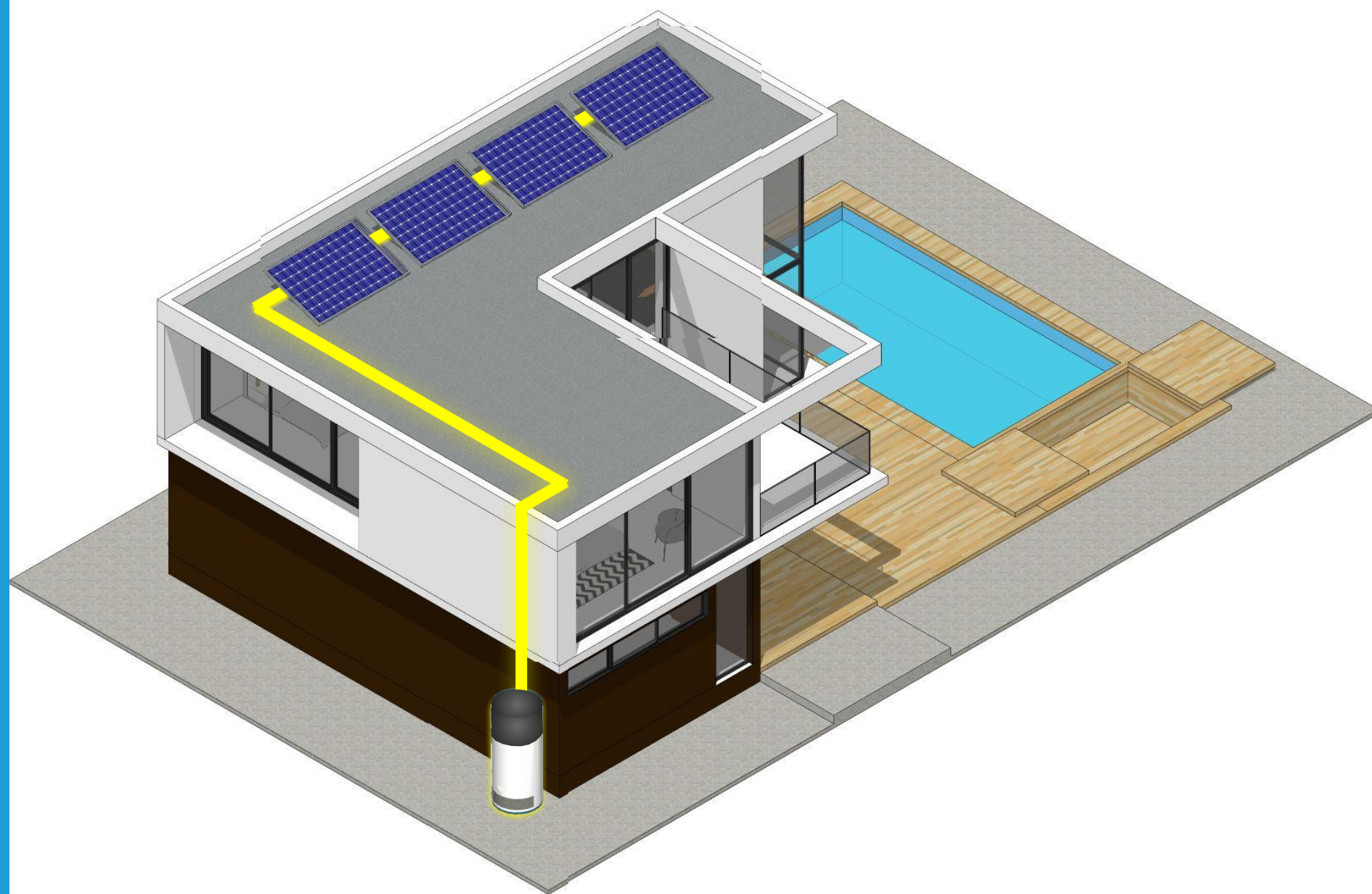# HEMS Compatible Heat Pump

Product Overview and Installation Guide

Atmos Frost Heat Pump Water Heater
HEMS Integration

Combined Energy

HEMS integration improves the effectiveness of the Atmos Frost heat pump water heater by:

- Diverting excess solar energy to the water heater

- Tracking water usage patterns to manage amenity

- If heating using grid power is required, using the cheapest energy possible

The high efficiency of the Atmos Frost water heater means it is better able to work within limited excess solar budgets in Winter and at sites with smaller PV systems.

Atmos Frost Heat Pump Water Heater
HEMS Compatible Model

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The Atmos Frost Heat Pump Water Heater model number is 270QDR

- This is the 270L heater with the new R513a refrigerant

Note: only water heaters with a note showing **FW V1.6+** (i.e. Firmware version V1.6 or higher) are HEMS Compatible

RHEEM SERVICE
Australia
131 031

New Zealand
0800 657 335
Distributed in New Zealand by
Rheem New Zealand Ltd.
P.O.Box 19011,
Auckland 1746

Solahart
Manufactured by
RHEEM AUSTRALIA
1 Alan Street Rydalmere NSW 2116

Certified Product
WaterMark

AIR SOURCED HEAT PUMP

Model Number	270HAV24	Electrical safety approval	NSW28478
Model Name	ATMOS FROST	Power Supply 1 ph ac 50Hz	220-240 Volts
Serial number	07286843	Rated Power Input (Heat Pump)	1300 Watts
Date of Manufacture	27 Feb 2023	Rate Power input (Elect Boost)	2400 Watts
Protection rating	IP24	Temperature set point	60 °C
Max Water Supply pressure	800 kPa	Water Outlet Temperature	60 °C
Max Working Pressure	1000 kPa	Refrigerant Type/Mass	R134a/950 gm
TPR Calve Capacity	10 kW	Refrigerant Circuit Pressure	2600 KPa max
Storage Capacity	270 Litres		FW V1.6

Approved for outdoor installation only

PATENTS
This water heater may be protected by one or more patents or registered designs.
This water heater has a fully welded bonded vitreous enamelled steel cylinder. This water heater has been designed to comply with AS/NZS 2712, AS 3498 and the relevant parts of AS/NZS 60335.

WARNING
Do not turn power on unless unit is full of water.
This water heater is fitted with:
1. Thermostat.
2. Over temperature energy cut out.
3. Combination temperature and pressure operated relief valve. Pressure 1000 kPa. Min. valve capacity 10kW.
These devices must not be tampered with or removed. The water heater must not be operated unless each of these devices is fitted and is in working order. The valve and valve drain pipe must not be sealed or blocked.

MAINTENANCE
The relief valve should be checked for adequate performance or replaced at intervals not exceeding 5 years, or more frequently in areas where there is a high incidence of water deposits.
The valve easing gear must be gently operated: AT LEAST ONCE EVERY SIX (6) MONTHS. If water does not discharge freely when the easing lever is operated, the valve should be checked by an authorised service person or plumber. Small amounts of water may discharge from this valve during a heating cycle (refer to Owner's Guide).

DANGER – Failure to operate easing gear may result in a dangerous situation.

SERVICE TECHNICIAN: the refrigerant must be recovered from the system. The refrigerant is...

PLUMBER
The temperature pressure relief valve, (supplied with water heater) must be fitted in accordance with the installation instructions. Do not apply heat to any of the fittings when making your connections.

An Expansion Control Valve (ECV) is required by some Water Authorities and is also recommended in areas of scaling or poor water chemistry. An ECV is not supplied with this water heater. An ECV may be necessary to comply with the terms of the warranty.

The water heater has an integral heat trap.

INLET OR OUTLET FITTING
DIPTUBE OR FITTING LINER
PLUMBER
THE DIPTUBE OR FITTING LINER MUST REMAIN IN PLACE. IT IS "PUSHED IN" TO THE CORRECT POSITION BY THE FITTING.

120643 AD

ture 60 °C
R134a/950 gm
sure 2600 KPa max
FW V1.6

...stallation only

Atmos Frost Heat Pump Water Heater
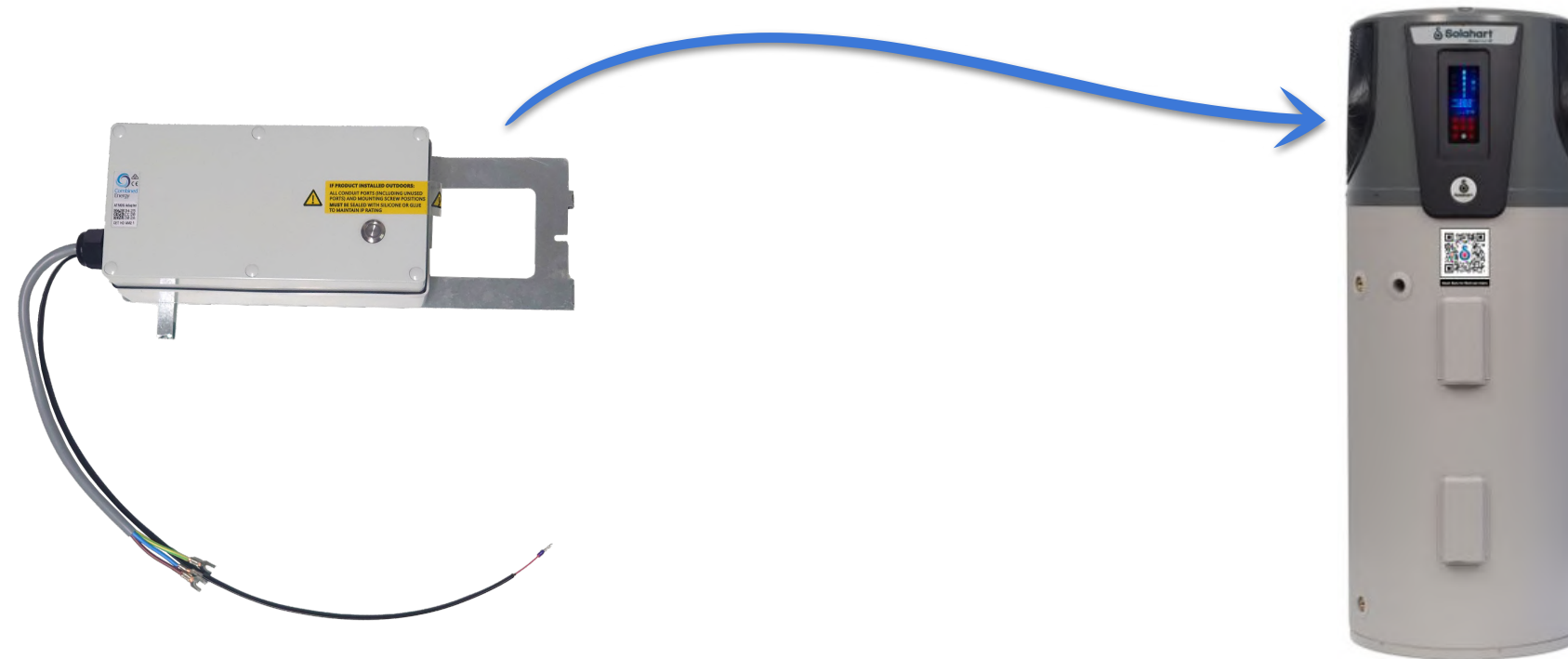## HEMS Compatible Model

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HEMS Compatible heaters are marked on the carton label with FW V1.5+:

Atmos Frost Heat Pump Water Heater
Upgrade for HEMS Integration

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Atmos Frost HEMS Adapter
PN: CET-HD-AM2-1

Atmos Frost Water Heater
PN: 270HAV or 270QDR

To connect a "HEMS compatible" Atmos Frost water heater to the HEMS, the water heater needs to be upgraded with an *CET-HD-AM2-1 Atmos Frost HEMS Adapter*.

This adapter adds control capabilities to the Atmos Frost for HEMS optimisation.

The power consumption of the water heater is monitored at the switchboard by the HEMS Power Meter using a CT.

Note: The Atmos Frost HEMS Adapter is only compatible with EMU HEMS systems (i.e. not compatible with Gateway One)

Atmos Frost Heat Pump Water Heater
Parts needed to connect to HEMS

Kit Atmos Connected Heat Pump
PN: 299403

Atmos Frost Water Heater
PN: 270HAV24 or 270QDR24

Scenario 1: The customer does not already have a HEMS system

The *Kit Atmos Connected Heat Pump* contains all of the standard materials required to install HEMS at the site and to upgrade the heat pump water heater

Atmos Frost HEMS Adapter
PN: CET-HD-AM2-1

Atmos Frost Water Heater
PN: 270HAV24 or 270QDR24

Scenario 2: Customer has an existing HEMS system

Once the Atmos Frost heat pump water heater has been installed, it is upgraded with a CET-HD-AM2-1 *Atmos Frost HEMS Adapter* to connect it to the HEMS

Atmos Frost Heat Pump Water Heater
Water Heater upgrade process

Combined Energy

1

Isolate power to the water heater before disassembly

2

Pop the Display Panel off its mount by pulling firmly on the bottom corner(s)

3

Disconnect the Display Panel Module cable

Atmos Frost Heat Pump Water Heater
Water Heater upgrade process
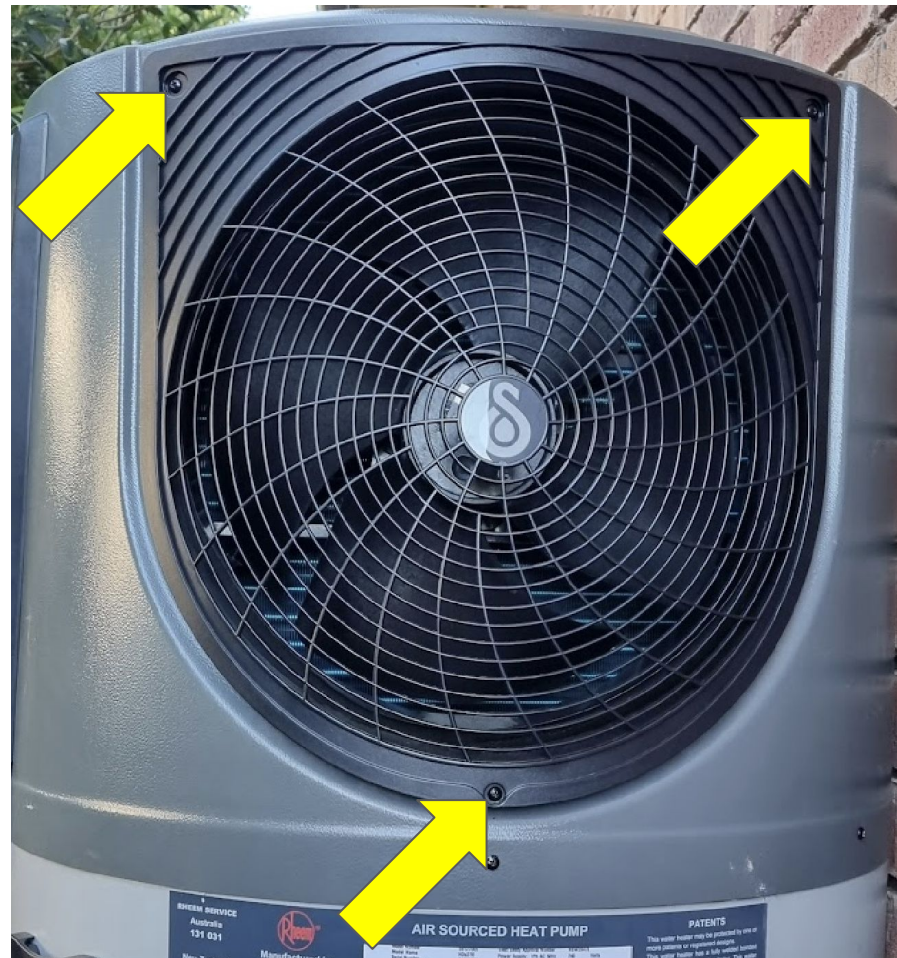
4

Remove both of the fan covers by removing these three screws and pulling away from the heater

5

Remove all screws securing the Top Cover onto the heater jacket

6

Remove the Top Cover from the water heater and locate the Heat Pump Controller module

Atmos Frost Heat Pump Water Heater
Water Heater upgrade process

Combined Energy

7

Remove the screws holding the Heat Pump Controller cover in place to expose the Controller board

8

Mount the *CET-HD-AM2-1 Atmos Frost HEMS Adapter* on the Controller frame by hanging it on the folded sheet metal hook indicated above
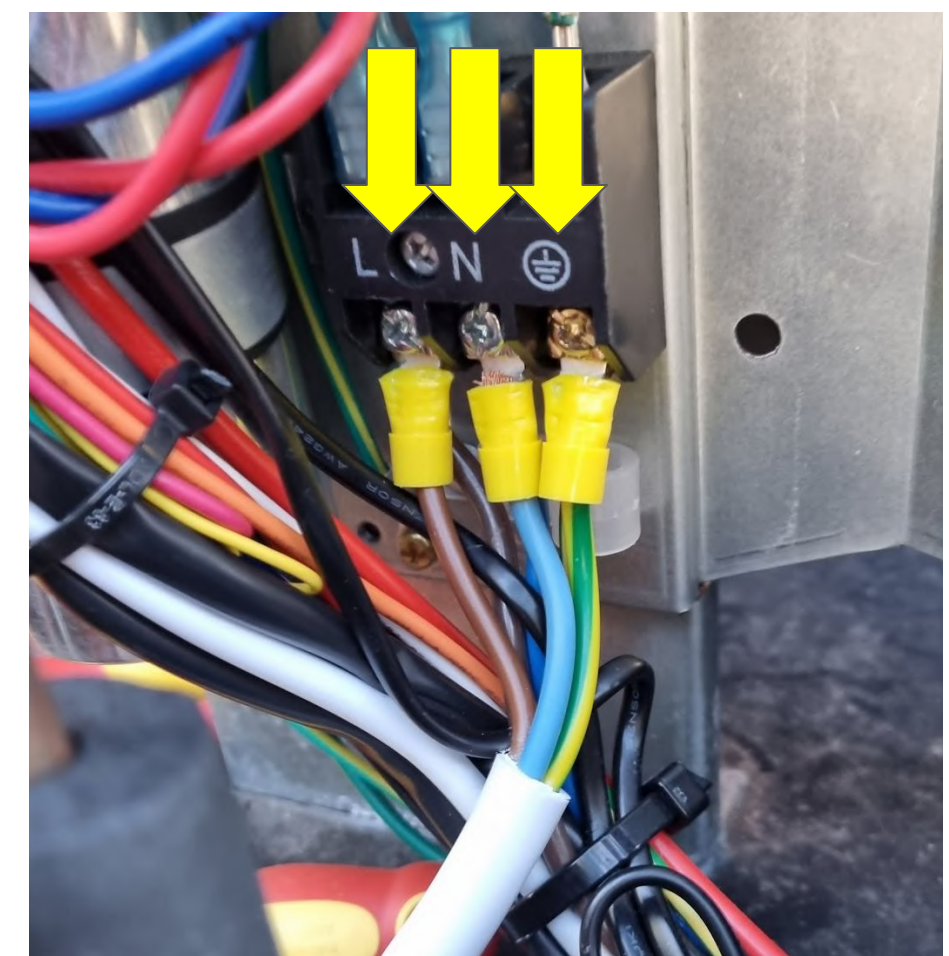
9

Connect the power harness from the Atmos Frost HEMS Adapter. The screws must be loosened, fork terminals from AM2 harness inserted, and then re-tightened
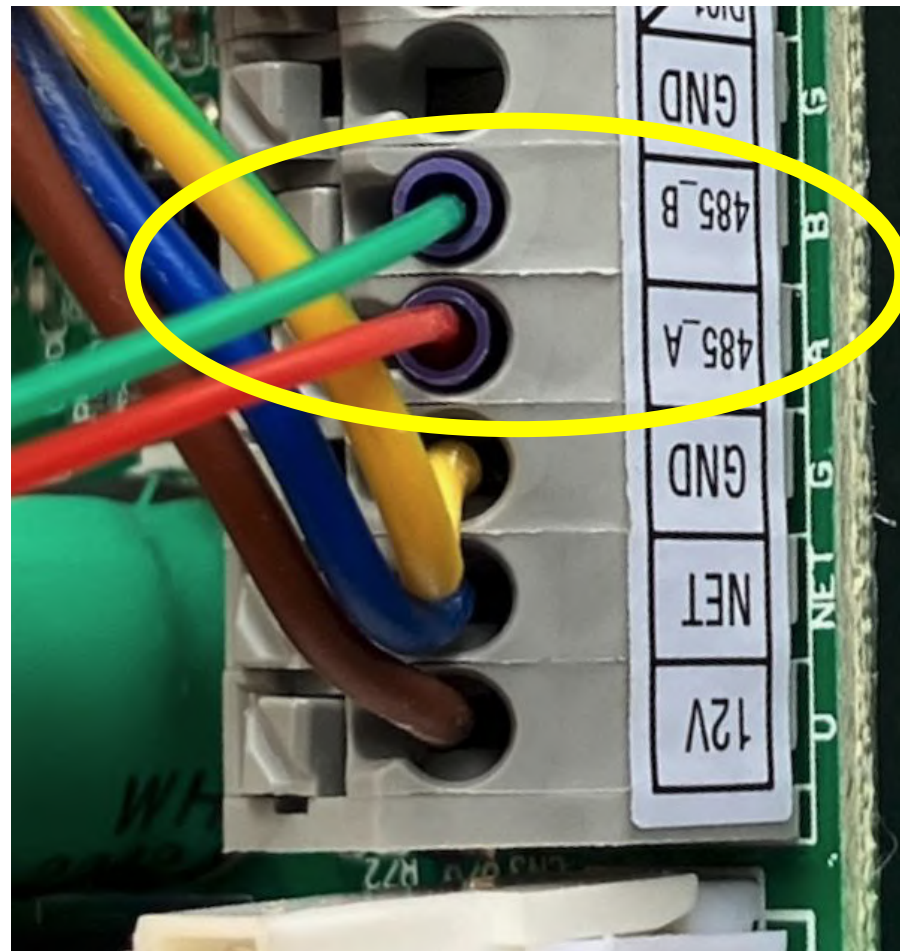
10

Connect the RS485 cable from the Atmos Frost HEMS Adapter to the Controller module

Use a flat blade screwdriver to push in the terminal spring 'buttons' when inserting the RS485 wires

11

At the switchboard, clip a CT onto the water heater supply wire for power monitoring (with the arrow pointing towards the water heater)
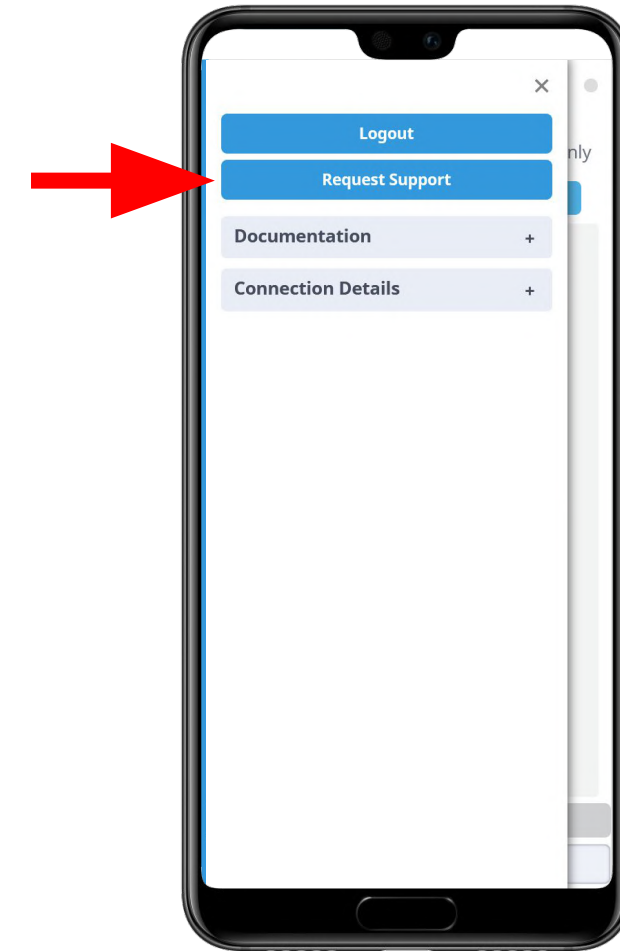
12

Before reassembling the water heater, contact CET Support using the *onSite* Installer web app to configure and test the water heater

https://onsite.combined.energy

Atmos Frost Heat Pump Water Heater
Water Heater upgrade process

Combined Energy

13

Re-mount the water heater Controller cover and screws

14

Re-mount the Top Cover and screws
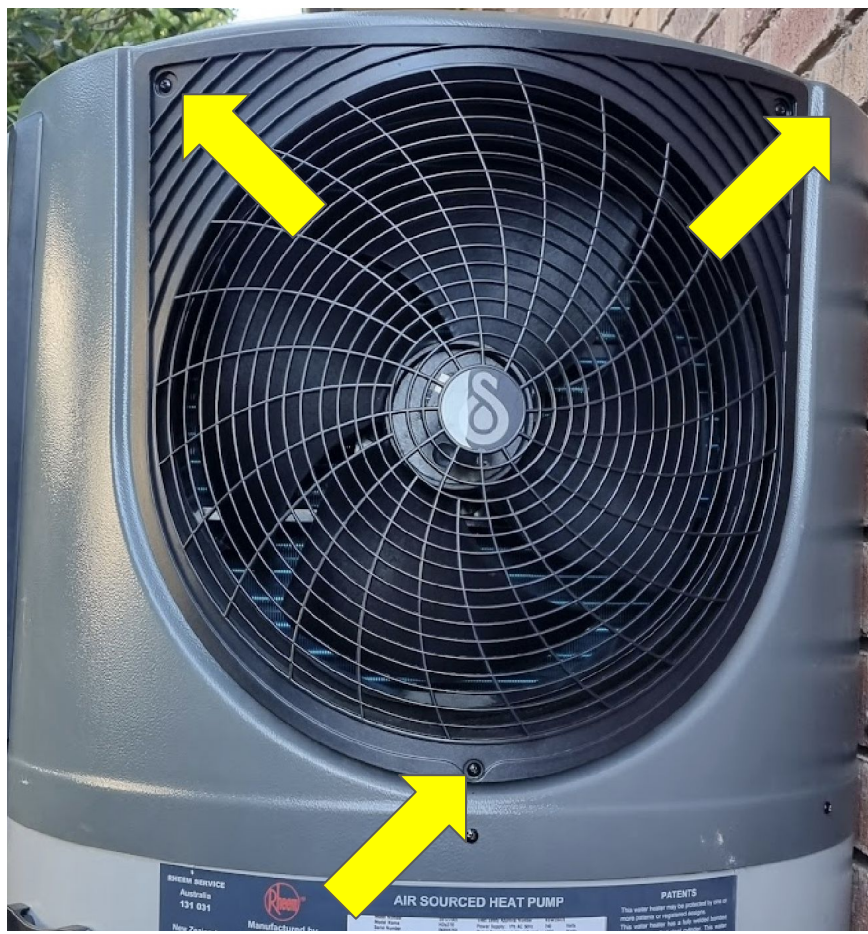
15

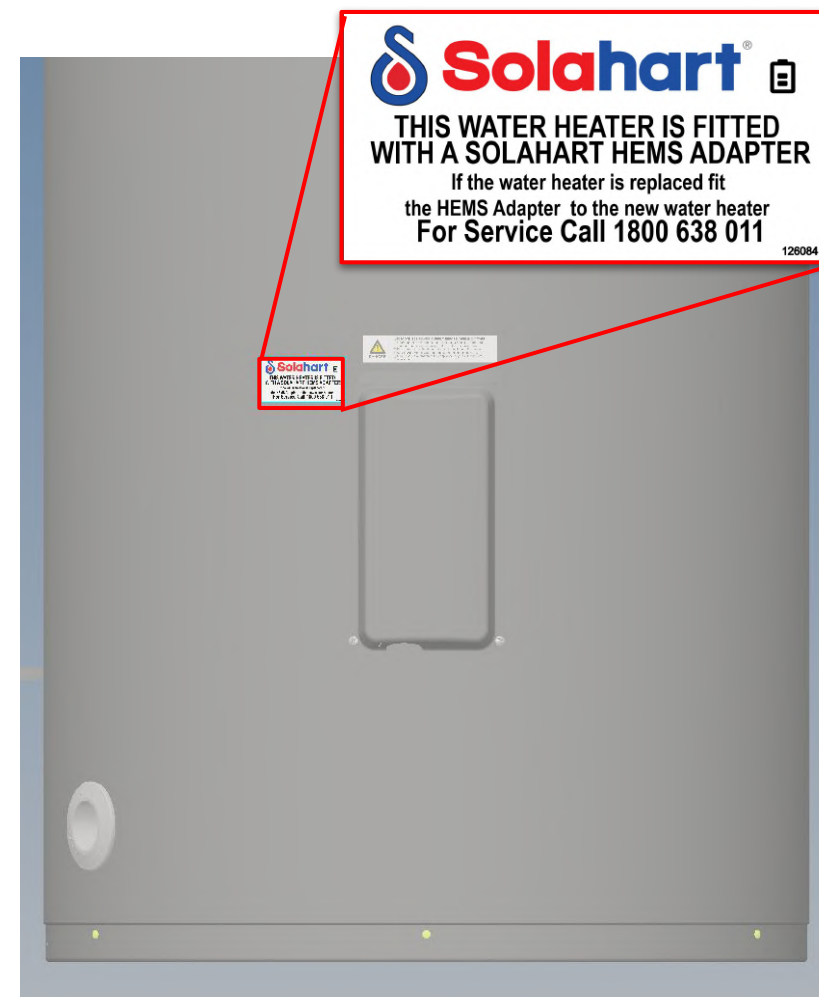Re-mount the fan covers and screws

Atmos Frost Heat Pump Water Heater
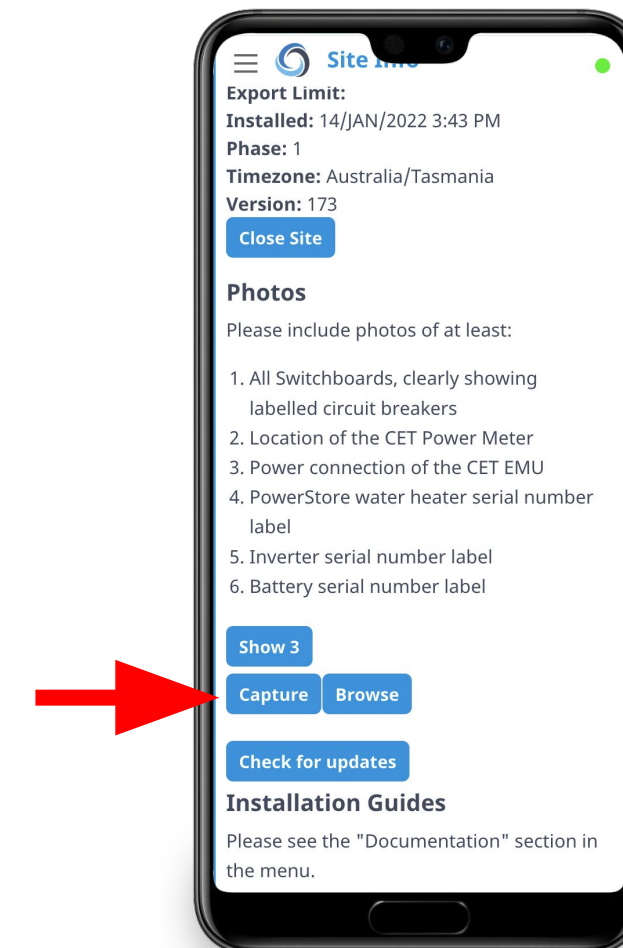## Water Heater upgrade process

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16

Fully insert **and latch** the Display Panel cable and re-mount the Module on the water heater.

Ensure the Display Module works correctly when the appliance is re-energised.

17

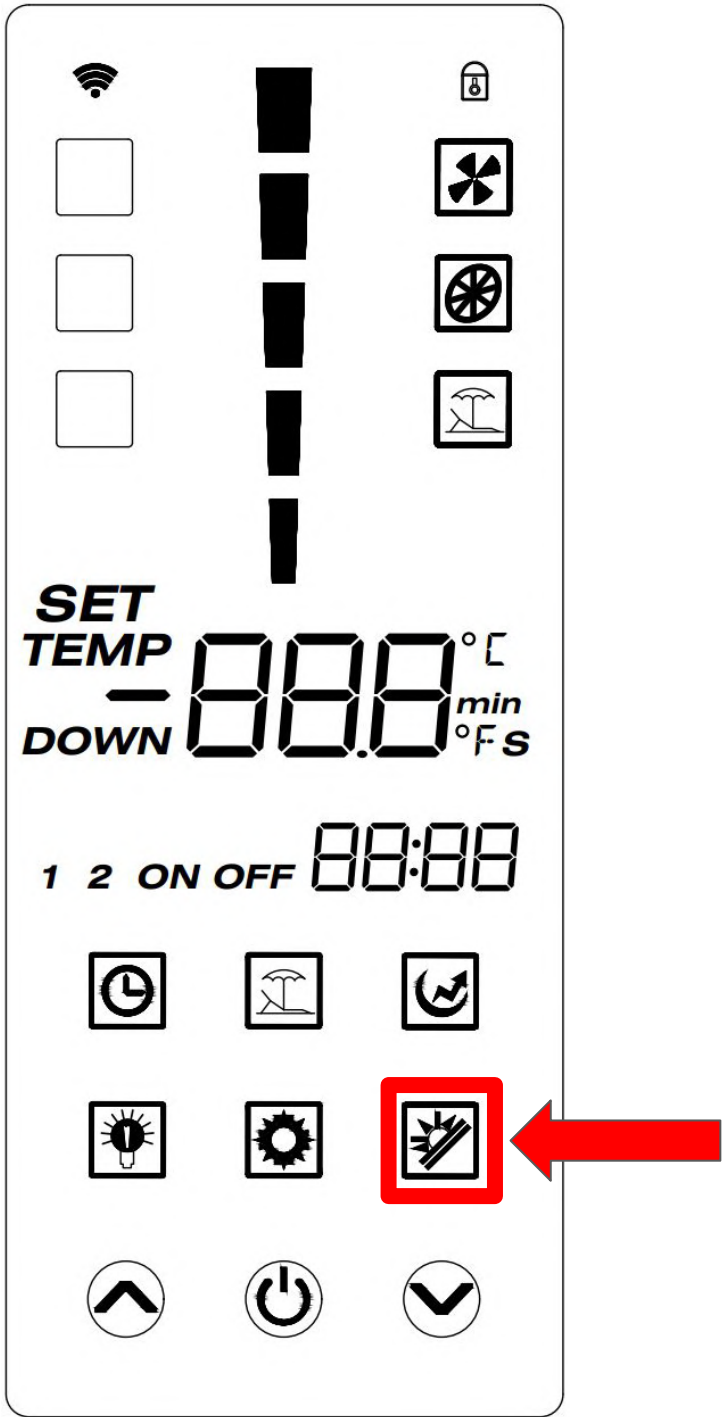Affix the "HEMS Adapter Fitted" label to the jacket next to the bottom element cover

18

Upload photos of the installed water heater **rating label** and **circuit breaker** to the *onSite* web app

https://onsite.combined.energy

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When under HEMS control, this icon will blink to indicate that the heat pump water heater is receiving instructions from the EMU.
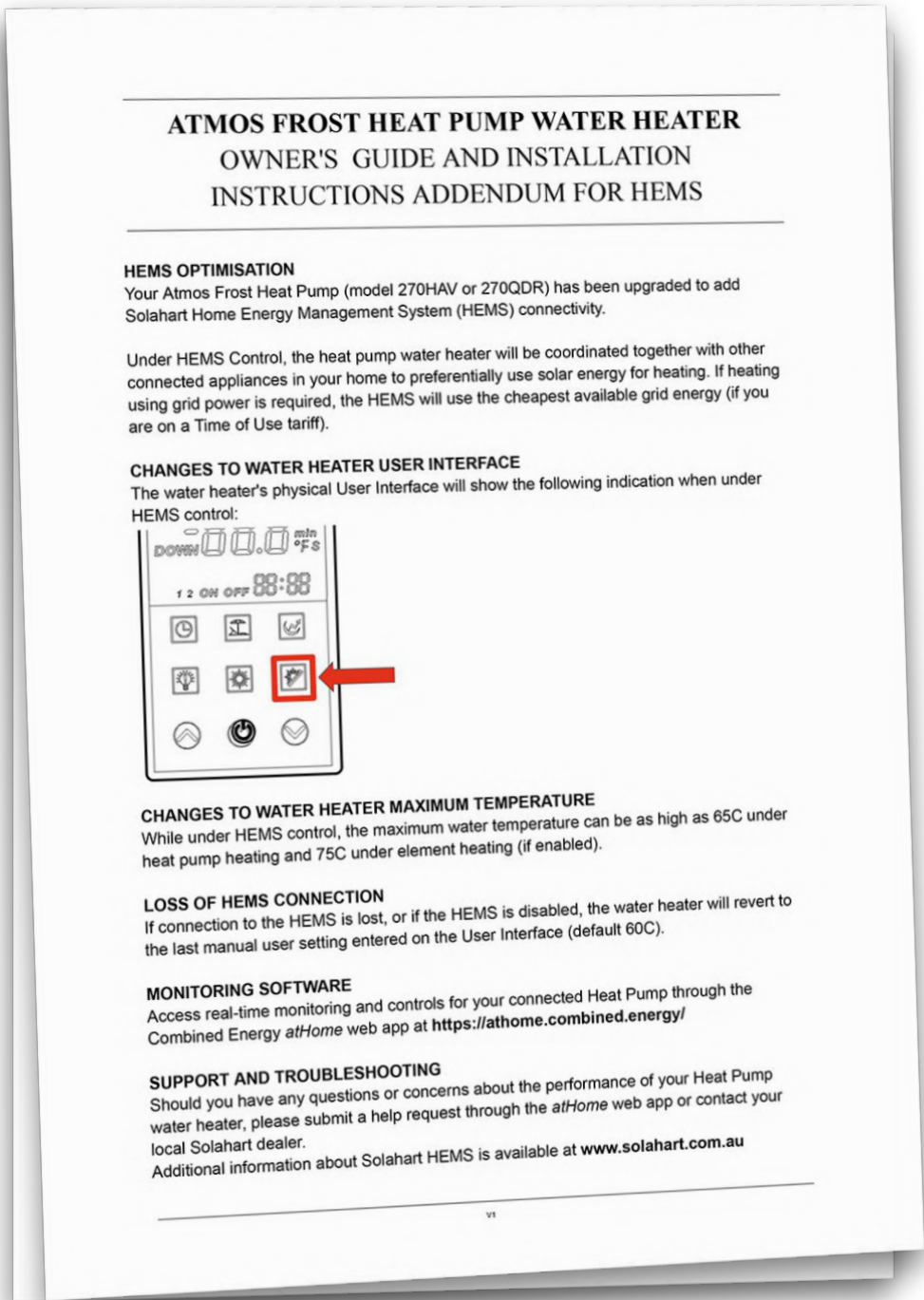
Atmos Frost Heat Pump Water Heater
Quick Install Guide

A Quick Install Guide is included in the *CET-HD-AM2-1 Atmos Frost HEMS Adapter* carton.

An addendum for the Owner's Guide and Installation Instructions is also included in the *CET-HD-AM2-1 Atmos Frost HEMS Adapter* carton.

This document **should be left with the customer** as it contains important information about how the heat pump works when connected to HEMS, changes to the maximum water temperature, and where the customer can go to get support.

Atmos Frost Heat Pump Water Heater
atHome User Interface
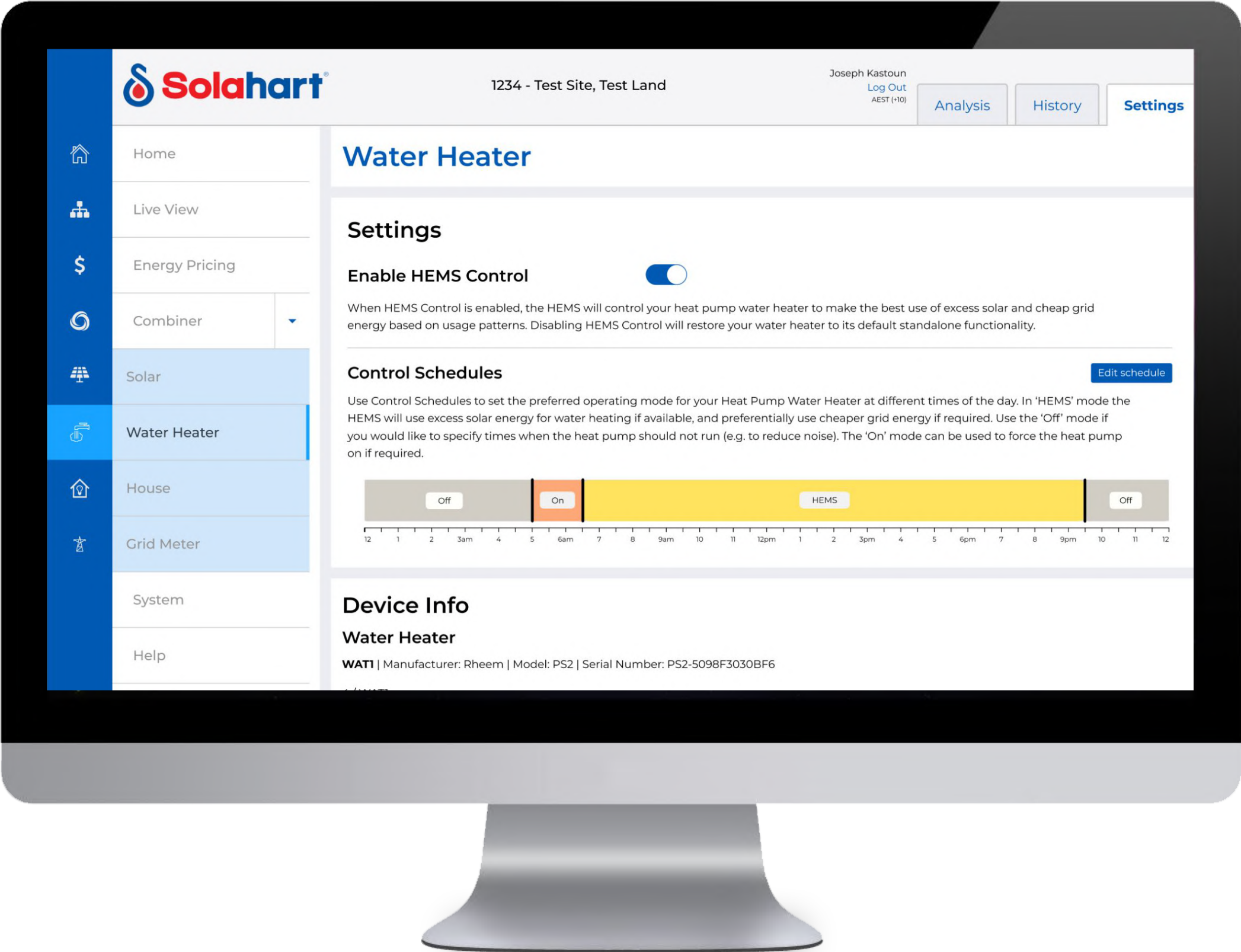
The *atHome* User Interface has been updated to add new controls specifically for the Connected Heat Pump, accessed via the Settings tab.

Customers can use these controls to enable/disable HEMS control, and to define custom Control Mode Schedules for the water heater.

Control Mode Schedules
In 'HEMS' mode the HEMS will use excess solar energy for water heating if available, and preferentially use cheaper grid energy if required.

'Off' mode can be used to specify times when the heat pump should not run (e.g. at night to reduce noise).

The 'On' mode can be used to force the heat pump on at specific times if required.

Atmos Frost Heat Pump Water Heater
Editing Control Mode Schedules

Control Schedules

Use Control Schedules to set the preferred operating mode for your Heat Pump Water Heater at different times of the day. In 'HEMS' mode the HEMS will use excess solar energy for water heating if available, and preferentially use cheaper grid energy if required. Use the 'Off' mode if you would like to specify times when the heat pump should not run (e.g. to reduce noise). The 'On' mode can be used to force the heat pump on if required.
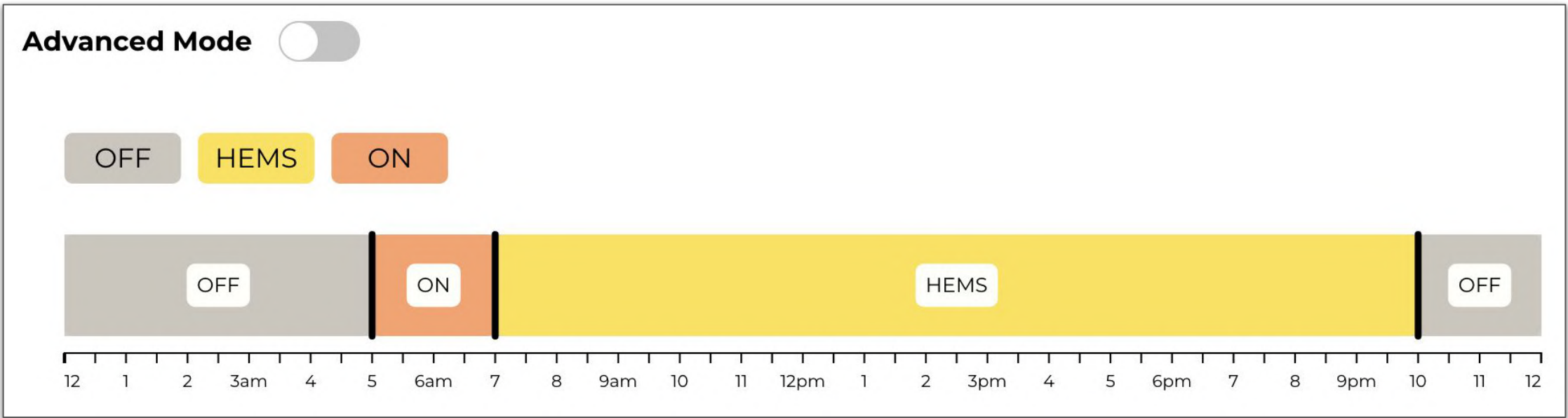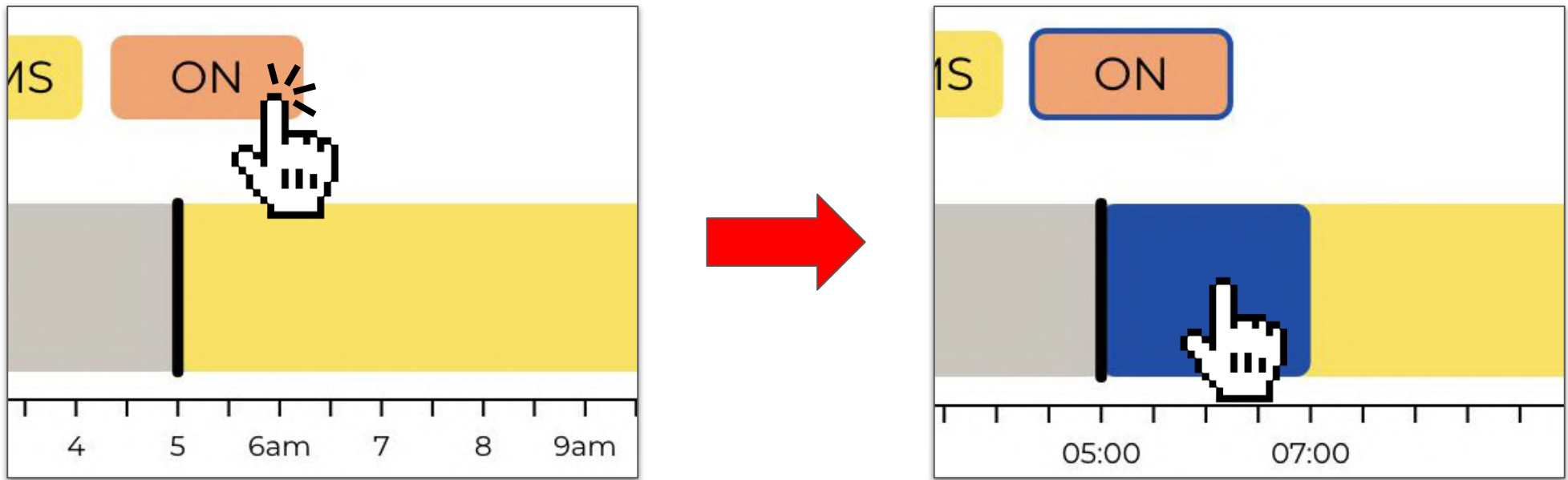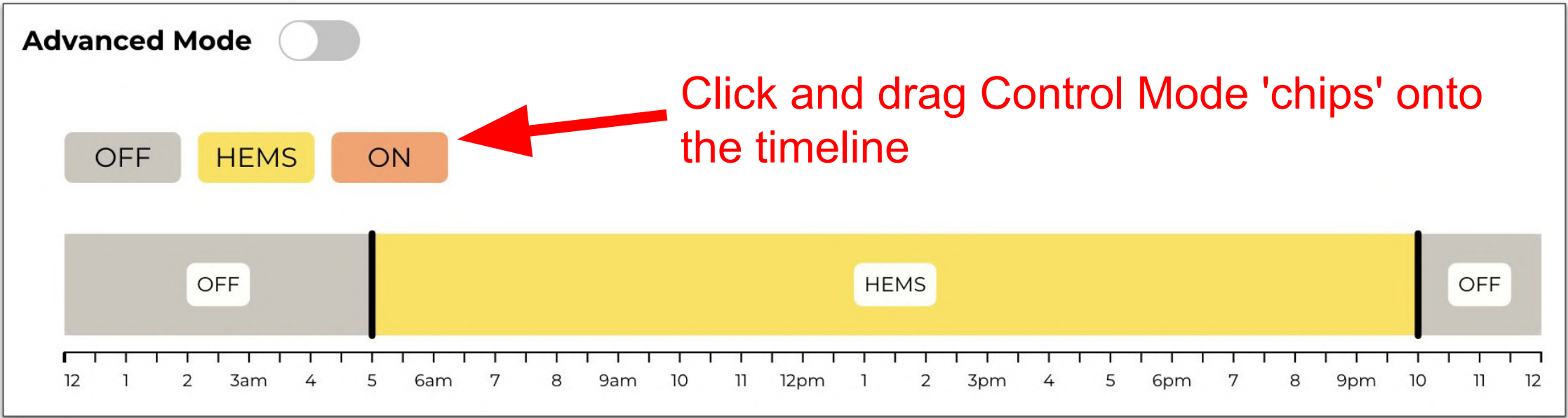
Edit Schedule

All week, Jan - Dec

OFF | HEMS | OFF

12am | 3am | 6am | 9am | 12pm | 3pm | 6pm | 9pm | 12am

To adjust the Control Mode schedule for the Connected Heat Pump, first click the Edit Schedule button

Atmos Frost Heat Pump Water Heater
Editing Control Mode Schedules

Combined Energy

Advanced Mode ⬤

| OFF | HEMS | ON |

Click and drag Control Mode 'chips' onto the timeline

| OFF | HEMS | OFF |

12 1 2 3am 4 5 6am 7 8 9am 10 11 12pm 1 2 3pm 4 5 6pm 7 8 9pm 10 11 12

MS | ON

4 5 6am 7 8 9am

MS | ON

05:00   07:00

Advanced Mode ⬤

| OFF | HEMS | ON |

| OFF | ON | HEMS | OFF |

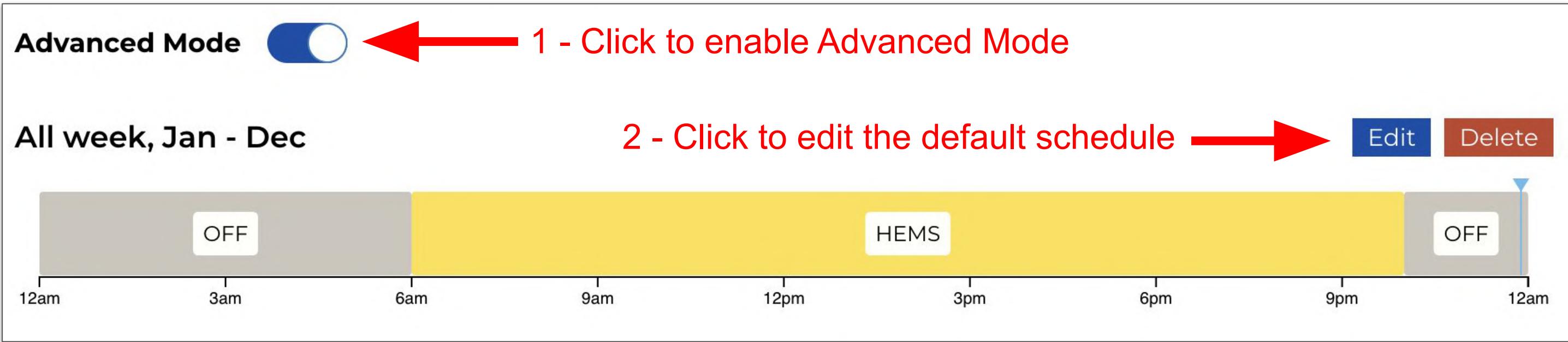12 1 2 3am 4 5 6am 7 8 9am 10 11 12pm 1 2 3pm 4 5 6pm 7 8 9pm 10 11 12

Atmos Frost Heat Pump Water Heater
Advanced Control Mode Schedules

Advanced Mode enables users to define different Control Mode Schedules for different times of the year, and for weekdays vs. weekends:

Atmos Frost Heat Pump Water Heater
Advanced Control Mode Schedules

Atmos Frost Heat Pump Water Heater
Advanced Control Mode Schedules

Atmos Frost Heat Pump Water Heater
Advanced Control Mode Schedules

Combined Energy

Advanced Mode ⬤

Weekdays, Apr - Sep

Edit | Delete

| OFF | HEMS | ON | OFF |

12am | 3am | 6am | 9am | 12pm | 3pm | 6pm | 9pm | 12am

Add Schedule

Weekdays, Jan-Mar, Oct-Dec ,
Weekends, Jan-Dec are unoccupied.

Cancel | Save

7 - If schedule information is missing for some months, or for some days of the week, continue adding schedules until all periods are covered

Atmos Frost Heat Pump Water Heater
Advanced Control Mode Schedules

Combined Energy

Advanced Mode ⬤

Weekdays, Apr - Sep   [Edit] [Delete]

| OFF | HEMS | ON | OFF |

12am — 3am — 6am — 9am — 12pm — 3pm — 6pm — 9pm — 12am

All week, Jan - Mar & Oct - Dec   [Edit] [Delete]

| OFF | HEMS | OFF |

12am — 3am — 6am — 9am — 12pm — 3pm — 6pm — 9pm — 12am

Weekends, Apr - Sep   [Edit] [Delete]

| OFF | ON | HEMS | OFF |

12am — 3am — 6am — 9am — 12pm — 3pm — 6pm — 9pm — 12am

[Cancel] [Save]

8 - When all periods have schedules specified, click Save to finish