

# DAI – Actual Demand 16–22 Tariff Switcher v1.2 – Detailed Design

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**Issue Date:** 02 November 2025

**Design Reference:** DAI + RBC High-Level Design v1.0 (live)

**Governance:** Protected Architecture Mode v5.9 • Two-Phase Code-Change Gate v2.2 • Visual-Editor-safe YAML

## 1. Functional Overview

This automation controls the Utility Meter tariff selector for the Actual Demand 16–22 kWh meter. It switches the selector to 'active\_16\_22' at 16:00, and back to 'off' at 22:00. On Home Assistant start, it self-heals by setting the correct state based on the current time window. No inverter writes are performed; this is a metering/tariff control utility with logbook audit entries.

## 2. Entity Map

Entity ID	Purpose / Description	Direction
select.dai_actual_demand_16_22_kwh	Utility Meter tariff selector for Actual Demand 16–22 window	Write
logbook.log	Structured log for audit trail	Write

## 3. Trigger Matrix

Trigger ID	Type / Time	Purpose
t_1600	time – "16:00:00"	Enter the 16–22 window; set selector to active_16_22
t_2200	time – "22:00:00"	Exit the window; set selector to off
t_ha_start	homeassistant.start	Self-heal selector state after restart

## 4. Logic Flow

- At 16:00 → call select.select\_option to set option=active\_16\_22; write a logbook entry.
- At 22:00 → call select.select\_option to set option=off; write a logbook entry.

3. On HA start → if current time is within 16:00–22:00, set active\_16\_22; otherwise set off; log the self-heal action.

4. Default branch → write a 'no change' log if no specific branch matched (defensive logging).

## 5. Guards & Safety

- No inverter writes; scope limited to Utility Meter tariff selector.
- Explicit trigger IDs for traceability; choose has a default fallback.
- Visual-Editor-safe structure (service, target, data).
- Idempotent selections — re-selecting same option is safe.

## 6. Acceptance Test Matrix

Test ID	Scenario	Expected Result
T1	16:00 event	Selector = active_16_22; logbook entry confirms switch.
T2	22:00 event	Selector = off; logbook entry confirms switch.
T3	HA start at 17:30	Selector = active_16_22; logbook self-heal message.
T4	HA start at 22:15	Selector = off; logbook self-heal message.
T5	No matching branch	Default logbook entry 'no change' written.

## 7. Compliance Checklist

- ✓ Entity ↔ ID alignment verified (select.dai\_actual\_demand\_16\_22\_kwh).
- ✓ Trigger IDs present; choose includes default branch.
- ✓ Visual-Editor-safe YAML (service, target, data).
- ✓ No inverter writes; Master-only rule unaffected.

## 8. Change History

Version	Date	Summary
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v1.2	2025-10-31	Updated selector entity to select.dai_actual_demand_16_22_kwh.
v1.1	2025-10-01	Added inline comments and HA start self-heal.
v1.0	2025-09-15	Initial release.