

EVSE AI Strategy for Smart EV Charging

Original text as published before the redesign of this article. Wording unchanged.

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Electric Vehicle Charging AI Strategy

User and Technician Guide · July 2026



Notice: AI EV Charging is currently in the beta testing phase, and not all EV chargers are fully supported. As a result, the vehicle may not always charge according to the configured target or schedule. We recommend monitoring the charging process and verifying the vehicle's state of charge before use.

Prerequisite: Please make sure the following version is installed on the Reduxi controller. This version is available in the Beta branch of the controller: 2026-07-15 or later.

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1. Introduction

The EVSE AI strategy minimises the cost of charging by considering energy prices and solar production to find the most suitable time slots to charge.

On average, savings of up to 50 % are achievable compared to fixed tariffs, even without accounting for self-produced solar energy. This analysis compared SPOT prices with MT/VT tariffs for the Slovenian market in 2025, assuming the user charges for 2 hours every day (approximately 22 kWh). The average energy cost was 49.40 EUR/MWh, compared to 98 EUR/MWh from the largest energy supplier in the same market.

While charging, Reduxi controls the EV charger and ensures that grid limits (or fuse limits) are never overloaded, provided the EVSE follows the requested power setpoints.

Video presentations

Activating EVSE AI strategy on the controller

Using mobile app

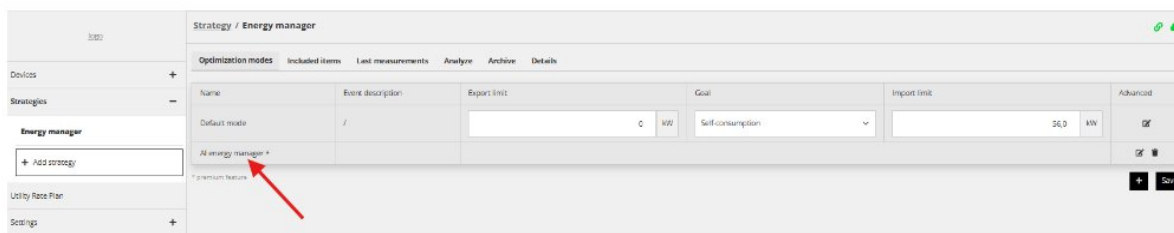
Terminology

Term	Definition
EV	Electric vehicle
EVSE	Electric Vehicle Supply Equipment (also called EV charger) — the device that provides electrical energy to the EV
SOC	State of charge of the EV battery
Capacity	Size of the battery in kWh
AC charger	Mostly used in residential environments. Charging power is usually lower than DC (typically 11 or 22 kW). AC chargers do not monitor about the SOC of the EV.
DC charger	Higher-power charger, typically used in commercial environments. Currently also requires manual SOC entry in Reduxi.

2. Activating the EVSE AI Strategy

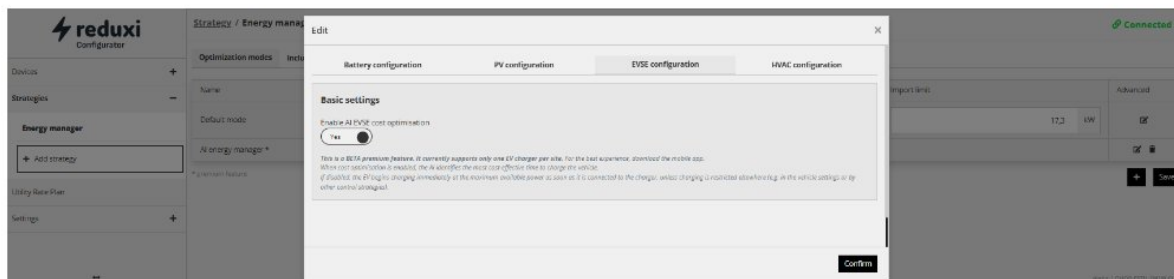
The following steps must be completed to activate AI-optimised EV charging:

1. The strategy for cost-optimal EV charging must be set on the Reduxi controller. Open the Reduxi Configurator (via the mobile app, web app or reduxi.local) and add the AI Energy Manager to the strategy if it is not already present.



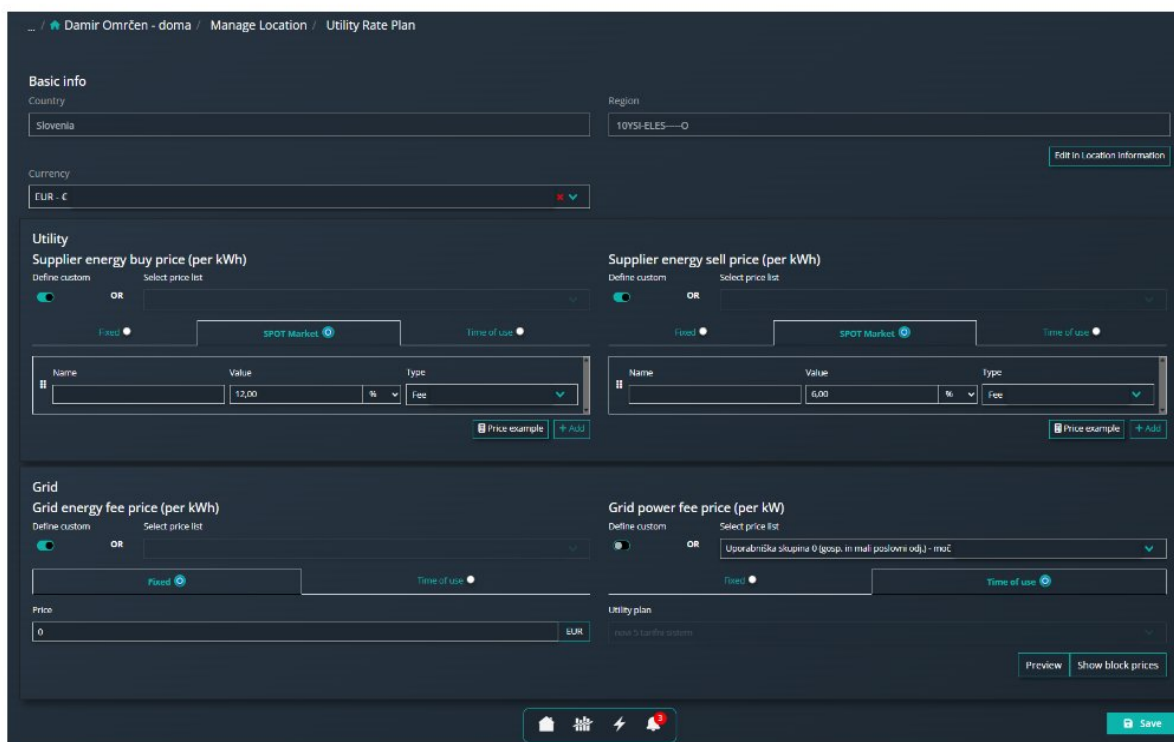
The Optimization modes table. Add the AI Energy Manager to enable AI-controlled charging.

2. Activate the **EVSE AI mode** inside the strategy configuration.



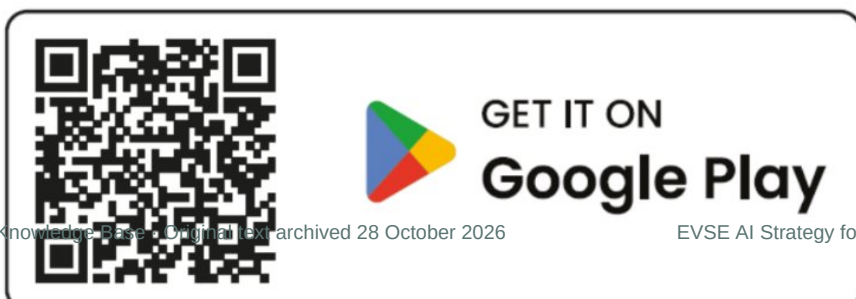
Enable AI EVSE cost optimisation toggle set to Yes.

3. On the cloud side of the application, configure the **pricing plan** (Utility Rate Plan). For detailed instructions, see the [How to set up electricity price lists in Reduxi Cloud](#) support article.



Utility Rate Plan configured for SPOT Market pricing.

4. Check all other requirements listed in the [AI Strategy Conditions Checklist \(4.2.1\)](#).
5. To view the charging status and adjust settings, download the **Reduxi mobile app**: <https://support.redux.eu/hc/en-us/articles/35244714095633-Reduxi-Mobile-App>



3. How It Works

Once a vehicle is plugged in and the AI strategy is active, the following sequence occurs automatically:

- When an EV is connected, Reduxi sends a push notification to the mobile phone of the location owner.
- The notification informs the user that a charging session has been planned.
- The charging schedule is displayed in the app.
- The user may specify the **Ready by** time — the deadline by which the vehicle must be charged.
- The user may also specify the current and target SOC and the battery capacity.
- If the user does not respond to the notification, charging begins automatically using the default settings and the most cost-optimal time slots.
- The charging status is visible at any time by tapping the **EV Charging** icon in the app.

The following figure shows the application interface:

**reduxi**

1 • Charging

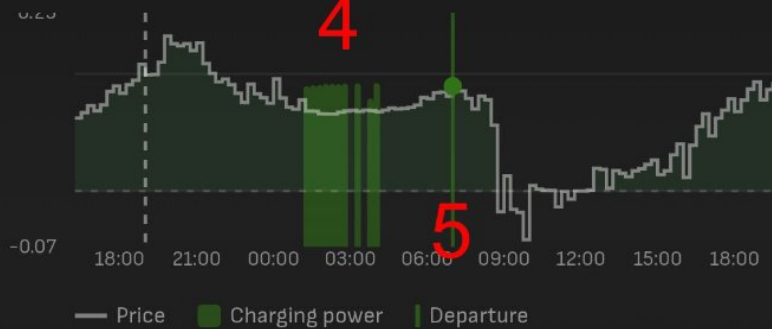
2 **14.1** kW
Power

0.40 EUR
Spent

3

CHARGING PLAN

Session parameters 7

**90% ready by 07:00**

~35.0 kWh to be added · estimated cost 118.29 EUR

CHARGING MODE 6

Optimized

Fast

Charges automatically during the cheapest time periods.



Dashboard



Diagnostics



EV Charging



Device control



Settings

Reduxi mobile app — active charging session detail screen.

Label	Element
0	EV Charging icon — tap to open the charging details screen
1	Current status of the EV charging station
2	Current charging power
3	Money spent during the current session
4	Charging Plan chart — the intervals during which charging is scheduled
5	Ready by time — when the EV will be fully charged
6	Charging mode: Optimized (AI cost optimisation) or Fast (immediate maximum power)
7	Session parameters — adjust the Ready by time and SOC values for the current session only

3.1 Configuration Parameters

The key parameter is the **Ready by** time, which specifies when the user wants the EV to be ready to drive.

EV chargers (especially AC chargers) do not report the vehicle's state of charge or maximum SOC to external systems. For maximum savings, the following settings should be correctly configured. Using the default settings will also bring savings, but accuracy is reduced if the starting SOC is not updated.

15:14



 Back



Vehicle parameters

Starting charge

30

%

Target charge

90

%

Ready by

09:00



Rounded to the nearest :00, :15, :30, or :45

Battery capacity

80

kWh

These defaults apply to all future charging sessions. Your EV charger cannot read battery data directly — these values help the system plan smarter charging schedules.

Save as default

Vehicle Parameters screen. Update the Starting charge value each time the vehicle is plugged in for the most accurate charging schedule.

4. Troubleshooting

4.1 Known Limitations

- **AC chargers do not report battery SOC.** This is a hardware limitation of the chargers. The user must enter the SOC manually for best accuracy.
- **DC chargers also require manual SOC entry** in the current version of Reduxi.
- **Poor OCPP compatibility.** Some chargers do not correctly report their status when an EV connects or disconnects.
- **Single charger per location.** The AI EVSE strategy currently supports only one EV charger installed at a location.
- **EV timeout behaviour.** Some EVs do not begin charging if power is not delivered within a few minutes of connection.
- **Supported chargers.** All fully OCPP-compliant charging stations are supported. Known incompatible device: **Tesla Wall Connector**.
- **Notifications go to the location owner only.** Other users assigned to the location do not receive push notifications.
- **Charging from battery is currently preferred.** In case this is not desired, disable charging from battery in the strategy settings in the controller.

4.2 Troubleshooting

For any issue, check the [AI Strategy Conditions Checklist](#) first.

4.2.1 AI Strategy Conditions Checklist

To enable the EVSE AI strategy, all of the following conditions must be met:

Reduxi Controller

- Energy manager strategy must be configured
- The strategy must use AI optimization mode
- **AI EVSE optimisation mode** must be enabled
- The EV charger must be added as a regulated device in the strategy
- The EV charger must have remote control enabled (OCPP or Modbus)
- The EV charger must be set to **Auto** mode
- Only one strategy may be active at the location

Cloud Web Application or Mobile Application

- A **price list** (Utility Rate Plan) must be configured
- The controller must be online and connected to the Reduxi cloud
- For PV optimisation: the location must have at least **two weeks of historical data** (PV, load, grid, etc.) so that reliable forecasts can be generated
- **Geolocation must be set**
- **Region, country, timezone, and currency must be defined**
- A valid **AI licence** must be active for the location
- After all parameters are set, **wait at least 15 minutes** for the AI strategy to appear in the app and begin controlling the device

EV Charging Module in the Mobile App

- The mobile app is mandatory to monitor and control EV charging
- If the location is configured for AI EVSE charging, an **EV Charging icon** is displayed at the bottom of the screen
- If the icon is not shown, check that the correct location is selected and that all conditions above are met
- **After all settings are applied, wait up to 15 minutes for the changes to appear.**

4.2.2 No Notification When EV Connects

- Only the **location owner** receives push notifications. Check the owner assignment under Manage Location > Location Info.
- The user does not allow push notifications from the mobile app. To fix this, go to "My profile" -> Edit -> Enable "Alarm push notifications"
- The AI EVSE strategy is not set or not active.
- The EV charger is not included in the strategy as a regulated device.
- The mobile app is out of date — the minimum required version is **4.3.0**. Please update the app.
- The EV charger is not fully OCPP-compatible. Test with an OCPP testing tool to verify it correctly reports connect and disconnect events.

4.2.3 The EV Does Not Start Charging

- The AI engine may have scheduled charging to start later, during a cheaper interval. Check the Charging Plan chart in the session detail screen.
- Try switching to **Fast** mode temporarily to verify the charger and cable are working.
- Some EVs do not begin charging if power is not delivered within a few minutes of connection. If this occurs, use Fast mode briefly, then switch back to Optimized. Consider updating the EV firmware if this happens consistently.
- Reduxi controller is configured not to charge in specific time periods or the import limit is not high enough (note, minimally 4.2 kW is often required to start charging).
- The EV's own software may be limiting charging (e.g. the vehicle may be set to start at 22:00). This overrides external signals.

4.2.4 The “EV Charging” Icon Is Not Available

- The location currently selected in the app does not have the AI EVSE feature active. Switch to the correct location or complete the controller setup described in [Section 2](#).

4.2.5 Charging Power Is Lower Than Expected

- The maximum charging power can be limited by the EV itself. This is set inside the vehicle and is not controllable by Reduxi.
- Grid limits must always be respected. If other devices (house loads, HVAC) are consuming energy, the available power for EV charging may be reduced to stay within the configured import limit.

4.2.6 The EV Charger Does Not Work

- Check whether the EV charger allows external control. Put the charger in **Manual** mode and attempt to set the charging current or power directly. If this does not work, the charger may not support remote control via OCPP or API.
- Put the EV charger to **Auto** mode.
- Check whether the charger is running in **read-only** mode. This mode must be disabled for Reduxi to send power setpoints.