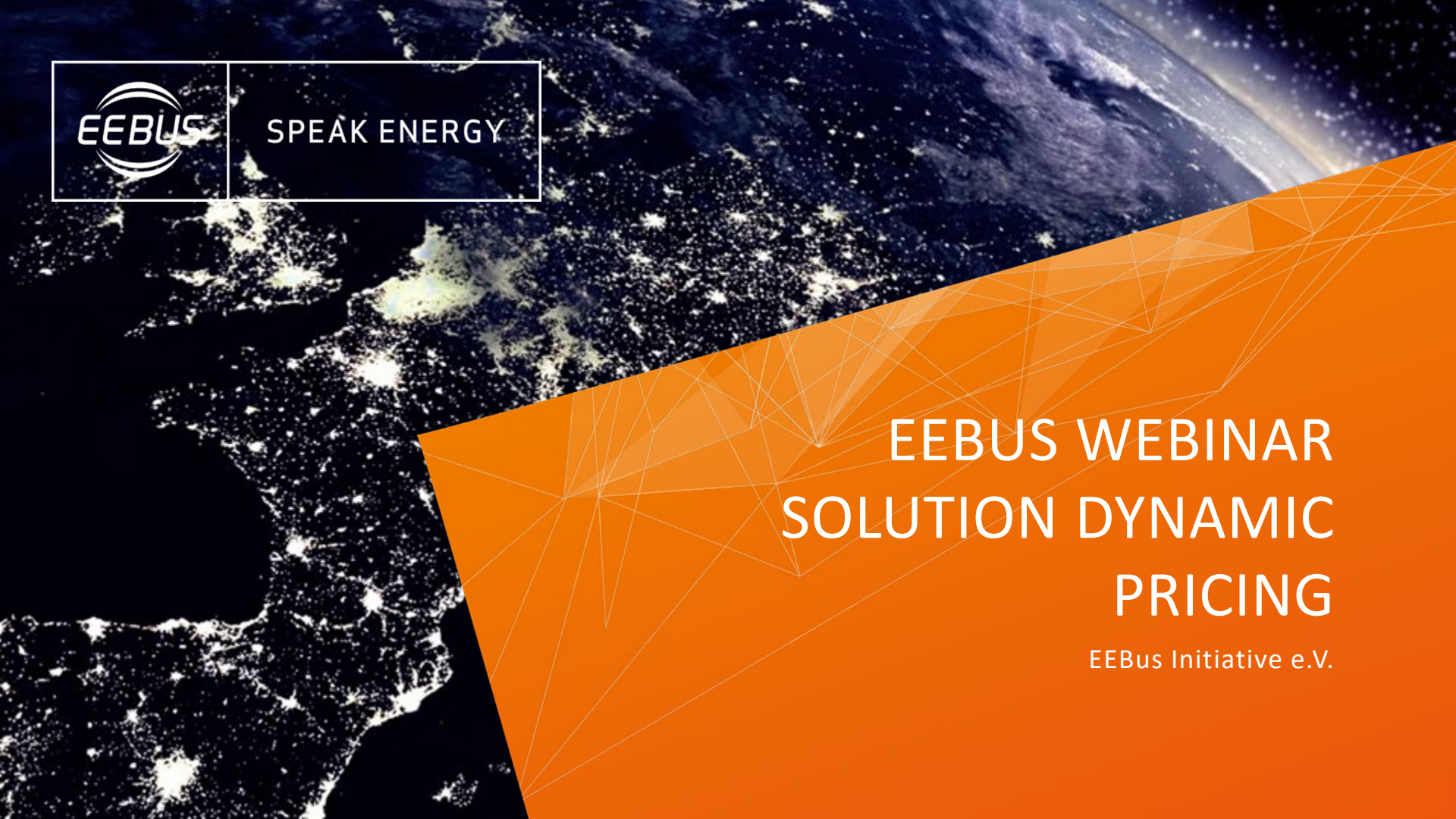
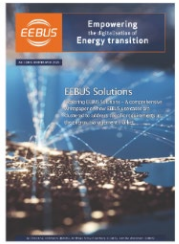


EEBUS WEBINAR SOLUTION DYNAMIC PRICING

EEBus Initiative e.V.

EEBUS WHITEPAPER WAS PUBLISHED IN JANUARY 2024.



EEBUS Whitepaper - Exploring EEBUS Solutions

English [PDF, 3,4MB]

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01 Dynamic Pricing Solution

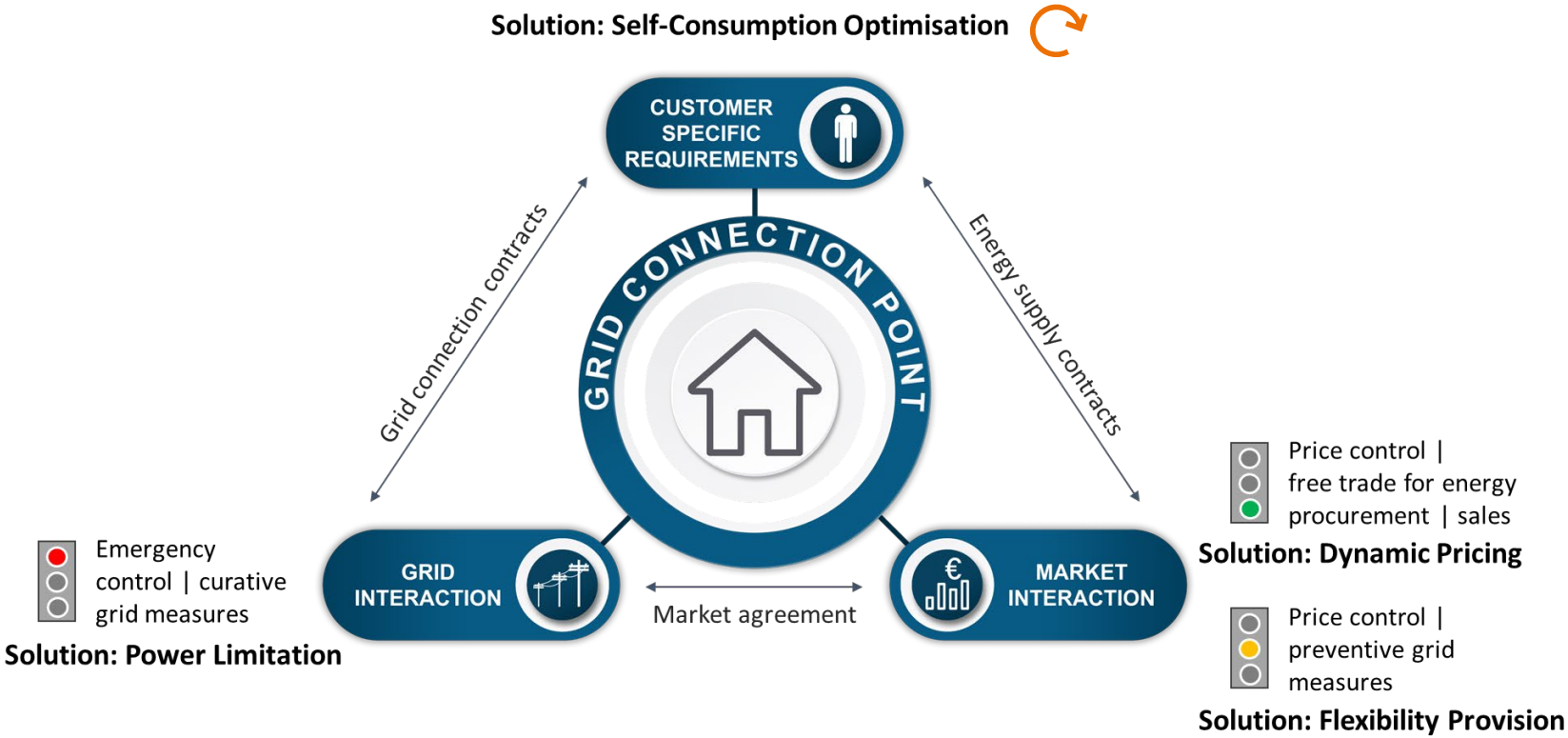
02 Use Case Time of Use Tariff

03 Use Case Coordinated EV Charging

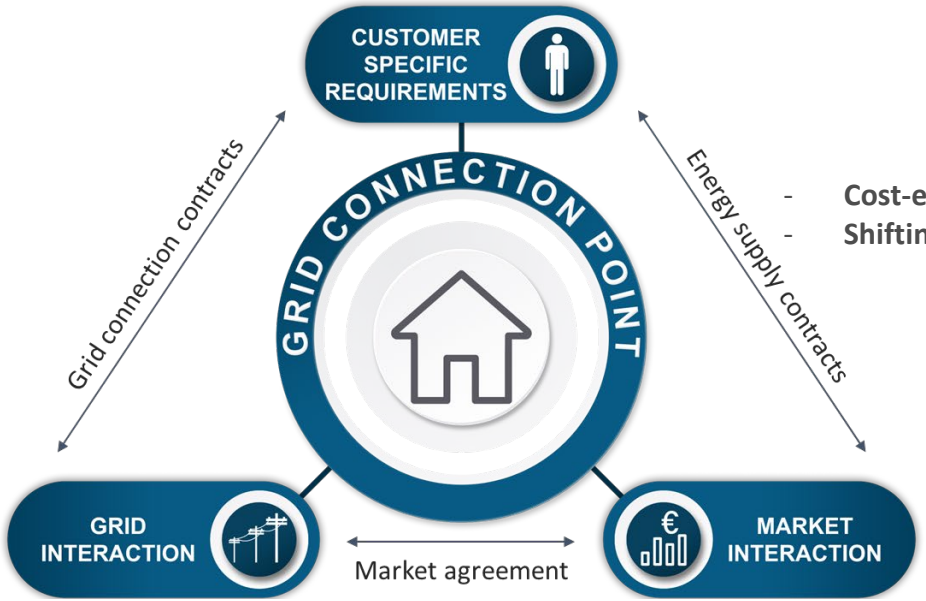
04 Use Case Incentive-Table Based Power Consumption Management

05 Use Case Flexible Start for White Goods

FOUR EEBUS SOLUTIONS TACKLE ENERGY MANAGEMENT RELEVANT CHALLENGES.



DYNAMIC PRICING – THE SOLUTION WHICH HAS DIRECT IMPACT ON THE INVOICE OF HOUSEHOLDS.

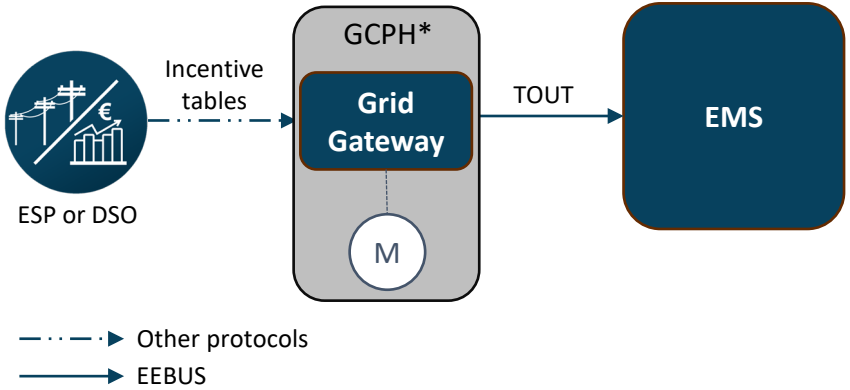


- Cost-efficient energy management
- Shifting loads to times with lower costs

Price control | free trade for energy procurement | sales

Solution: Dynamic Pricing

THE USE CASE TIME OF USE TARIFF IS RELEVANT FOR SENDING INCENTIVES BY A DSO OR ESP.



Incentives types:
- Time-variable energy prices
- CO_2 emissions
- Share of renewable energy

! At least absolute price must be provided !

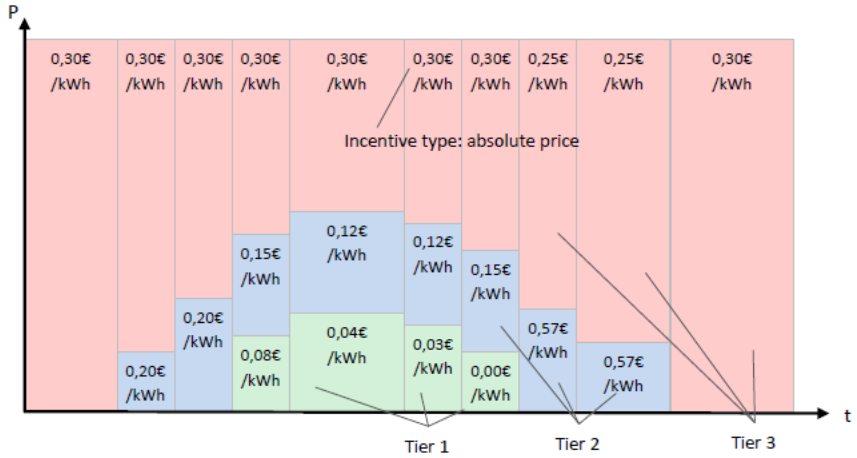
Abbreviations:
TOUT = Time of Use Tariff

*Grid Connection Point Hub: group of different devices like SMGW, control unit or smart meter depending on the infrastructure

INCENTIVE TABLES DESCRIBE INCENTIVES OVER TIME.

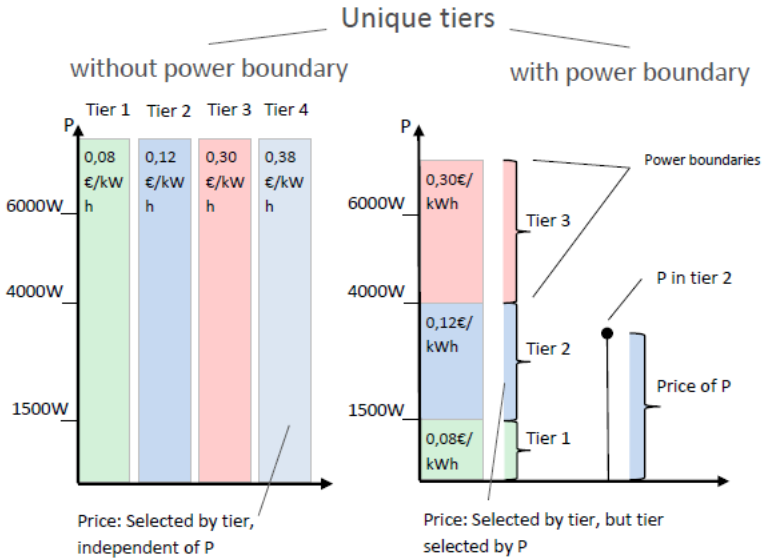
Incentive table = incentives over time
Tier = tariff level

This picture shows the tariff level for the time slots. An incentive table is structured by time slots and tiers. Per time slots, several tiers can be defined with power boundaries (which tier applies depends on the power consumed). Several incentives can be given per time slot and tier.



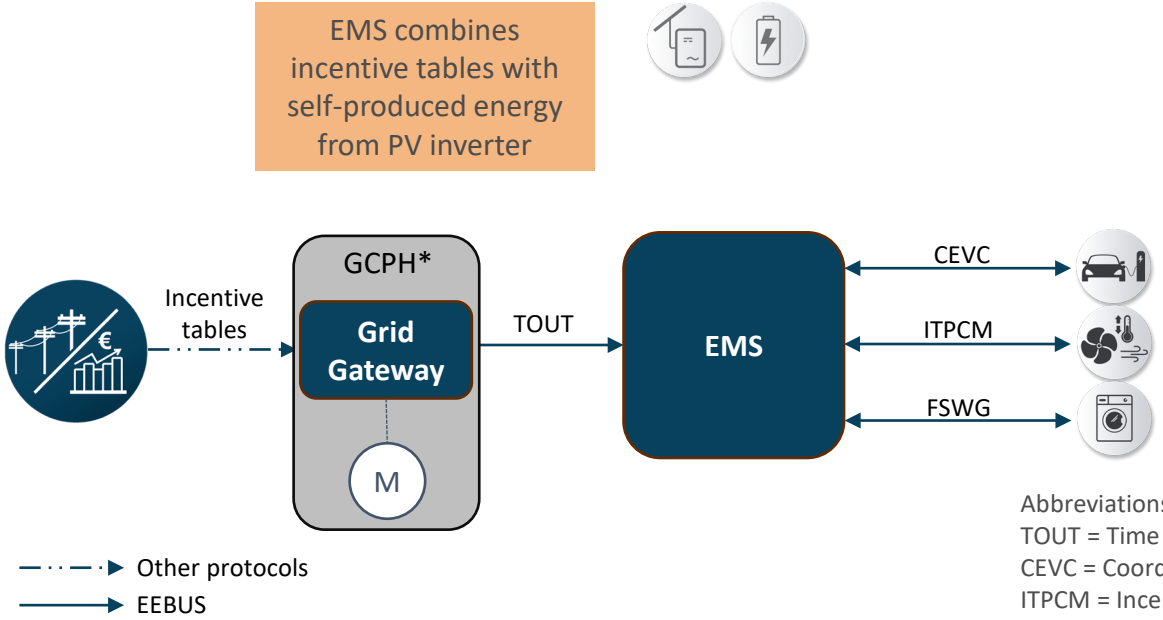
DIFFERENT TRIGGERS FOR TIERS/TARIFF LEVELS POSSIBLE.

There are different triggers for tiers/tariff levels:
- Time-based: At certain points in time the active tier switches to another one
- Power-based: When more (or less) power is used the active tier switches



THE EMS COORDINATES THE RECEIVED INCENTIVES AND SENDS THE INCENTIVES TO THE END DEVICES.

EMS combines incentive tables with self-produced energy from PV inverter

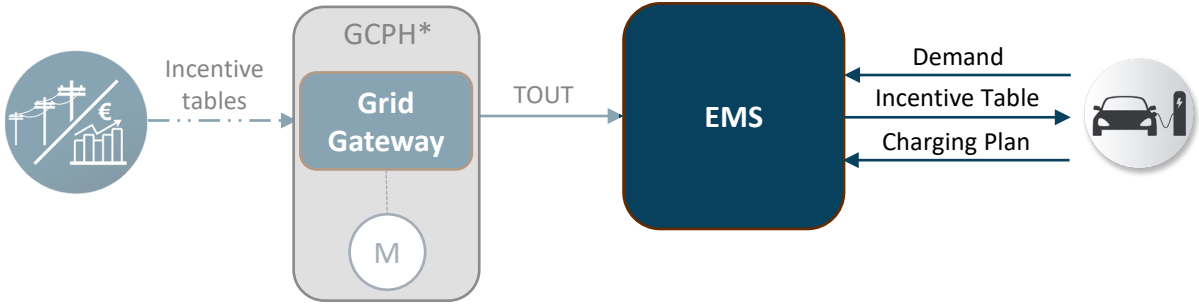


Abbreviations:
TOUT = Time of Use Tariff
CEVC = Coordinated EV Charging
ITPCM = Incentive Table Based Consumption Management
FSWG = Flexible Start for White Goods

*Grid Connection Point Hub: group of different devices like SMGW, control unit or smart meter depending on the infrastructure

COORDINATED EV CHARGING ENABLES COST EFFICIENT OPERATION OF THE CHARGING PLAN.

With CEVC the EV knows when cheap energy is available and can charge accordingly.



EV and charging station communicate with each other via ISO 15118.

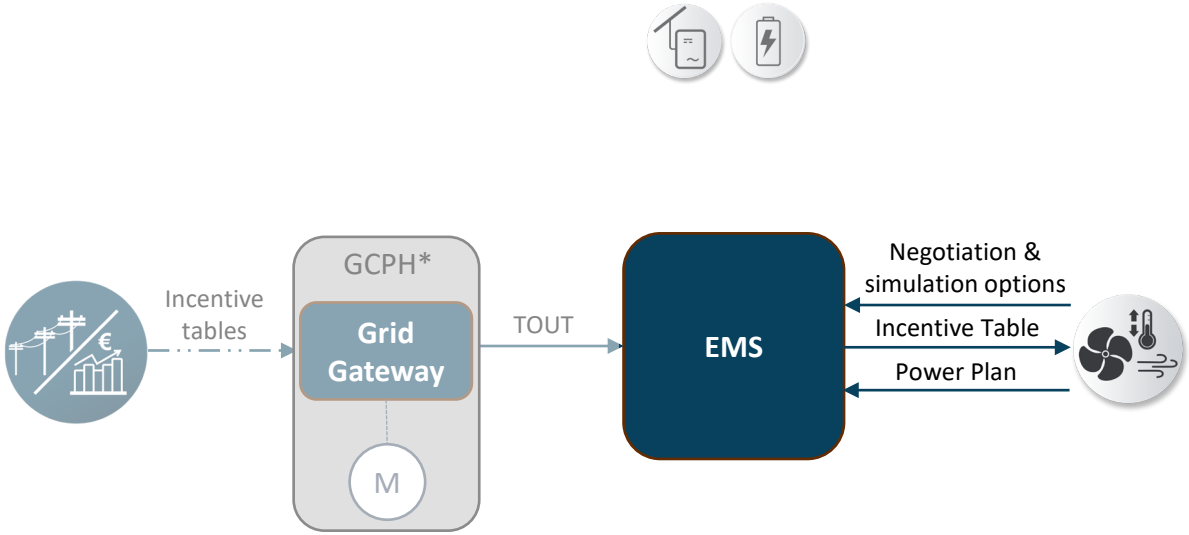
Based on the current charging demand and the received incentives, the EV sends back a power plan which communicates the planned charging power over time.

Triggers for a renegotiation by sending updates:

a) EV can send updates of its demand and trigger an update of the incentive table

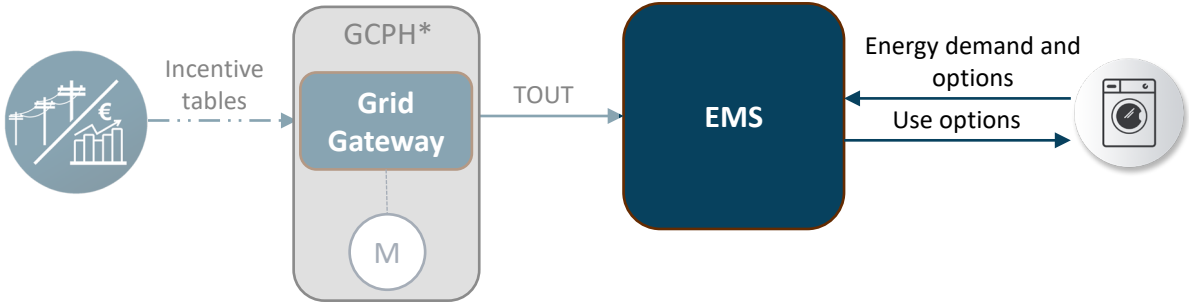
b) Incentive tables updates

INCENTIVE TABLE BASED POWER CONSUMPTION MANAGEMENT ENABLES HEAT PUMPS TO USE INCENTIVES.



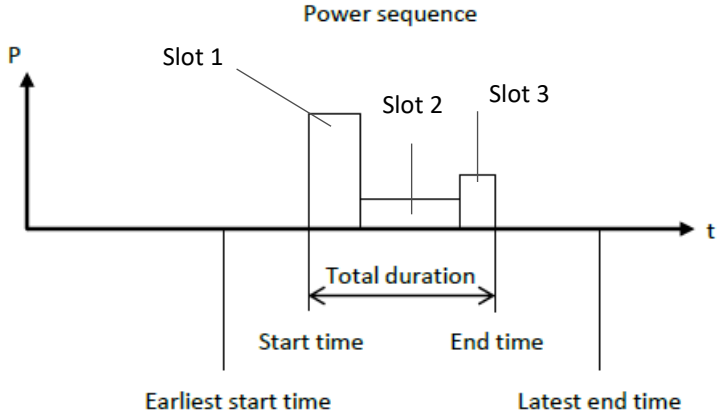
Based upon incentives received from the EMS, the heat pump provides a power plan to reduce its cost. The power plan describes power values over time. This use case permits iterative optimisation cycles between EMS and heat pump before making the final choice.

FLEXIBLE START OF WHITE GOODS PROVIDES OPTIONS TO THE EMS FOR OPERATION BASED ON INCENTIVES.

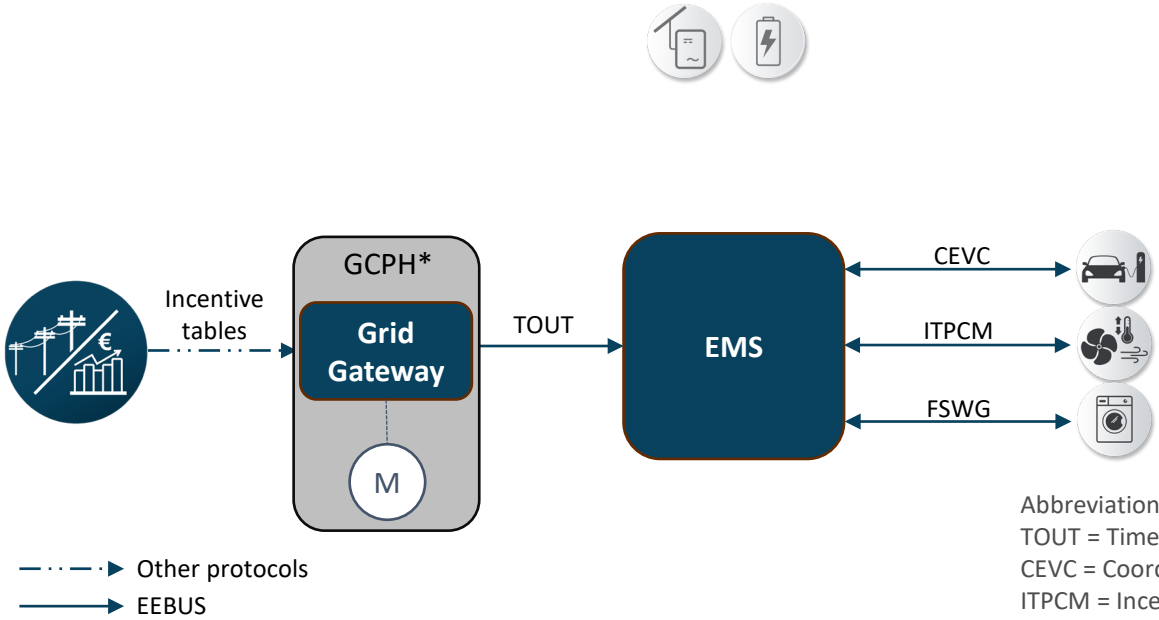


THE HOME APPLIANCE SHOULD RUN BETWEEN EARLIEST START TIME AND LATEST END TIME.

The device provides the information when the device‘s programme must be finished. Within this time range the EMS has the possibility to adjust the power sequence according to the incentive table by shifting, selecting, pausing power sequences to use the full potential of cost-efficient operation.



ALL USE CASES OF A SOLUTION INTERACT WITH EACH OTHER – DYNAMIC PRICING.



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