FlexMeasures Technical Steering Committee

November 07, 2024

Agenda

- Welcome & Short introduction to FlexMeasures
- What’s new in v0.24?
- Roadmap for v0.25 and 1.0
- Q&A

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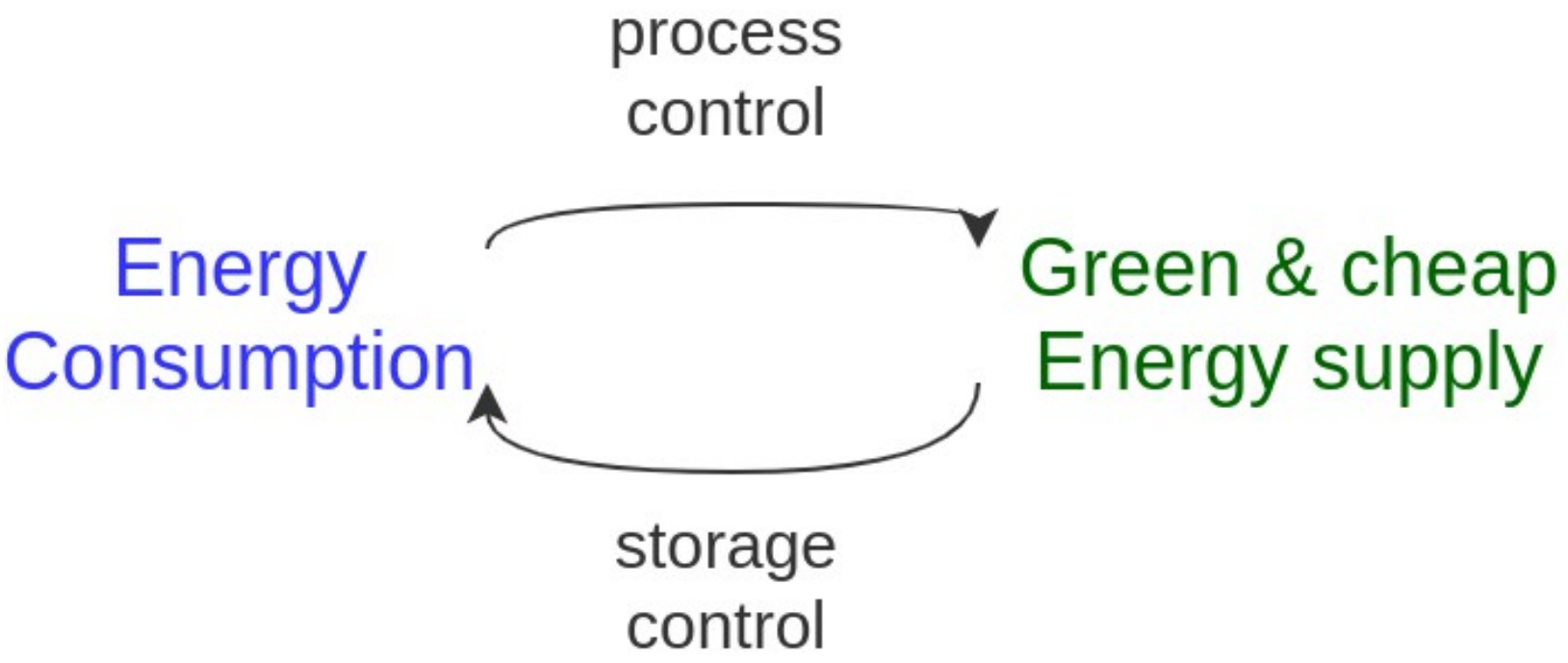
The matching challenge



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FlexMeasures is the intelligent & developer-friendly EMS to support real-time energy flexibility apps.

Go green in daily operations, stay in control.

- Smart industry
- Smart city

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FlexMeasures - simple

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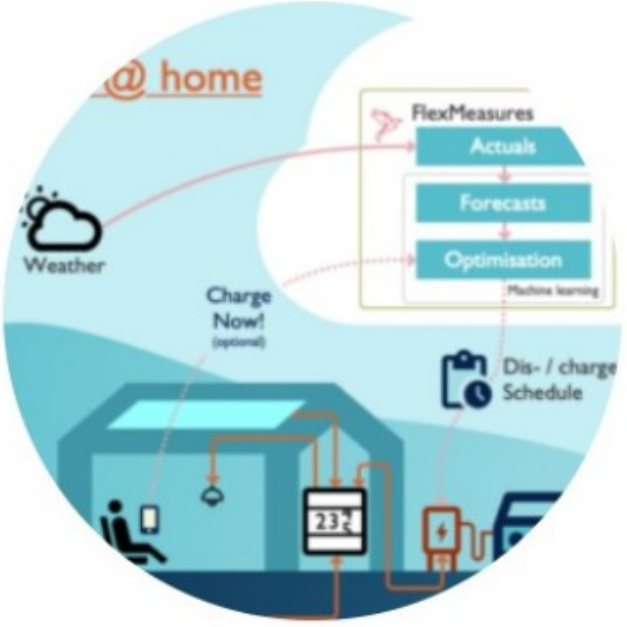
Use case: SteerOnCO_2 at Rijnland Water Board

We help water board Rijnland to only run their centrifuges for sludge dehydration when the CO_2 footprint in the grid is low.

Use case: SteerOnPrice & SteerOnSolar at V2G@Home

We optimize (dis)charging of Nissan Leaf cars with Wallbox chargers to save costs and use solar power, with zero user interaction needed.



Version 0.24 is not out yet

- Editing of dashboard graphs
- Multiple commitments in scheduler
- Separate legends per-graph
- Faster account overview & editing page
- Small fixes (see link below)

https://github.com/FlexMeasures/flexmeasures/milestone/50

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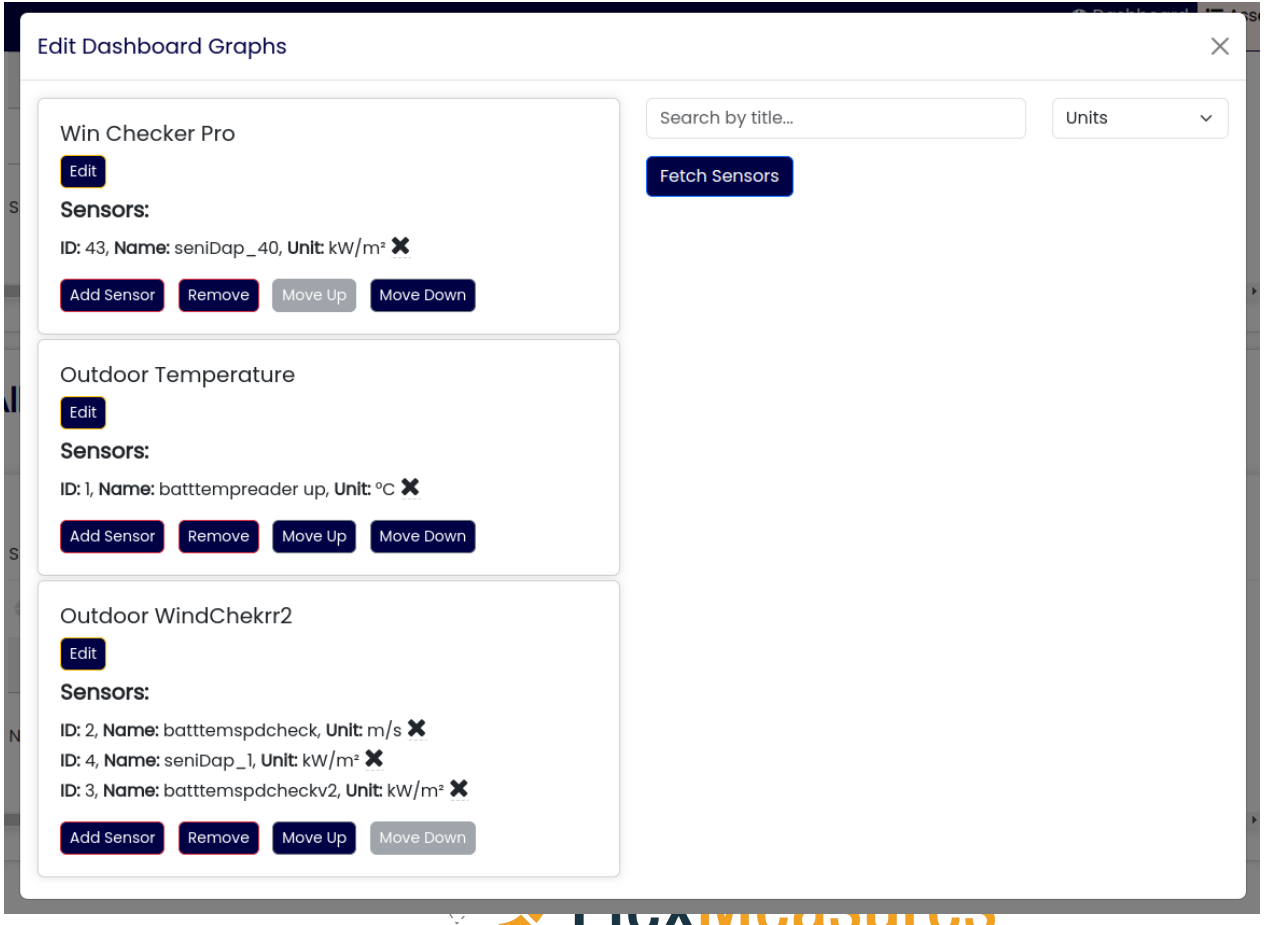
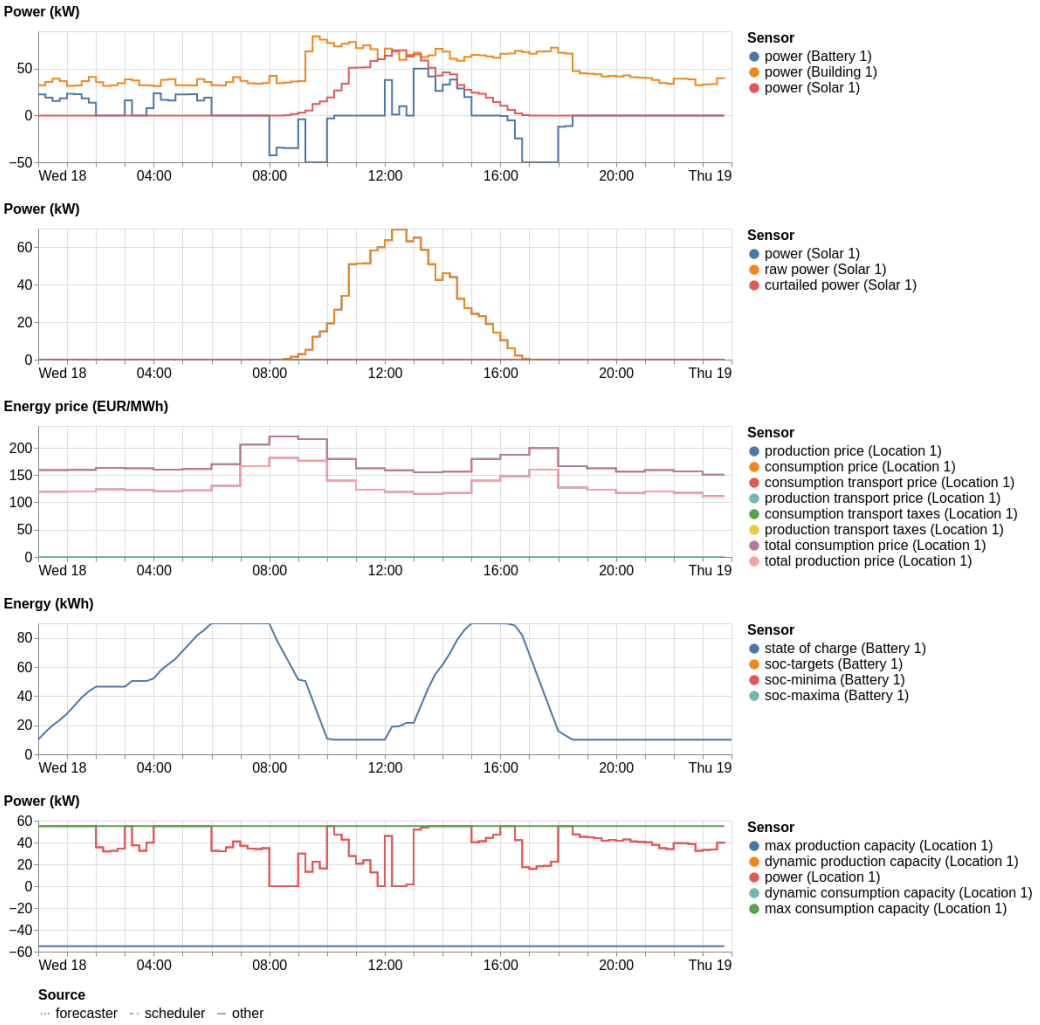
Dashboard graph editing



Separate legends per-graph



Multiple commitments in scheduler

Challenge addressed:

There exist more reasons to adjust power flow, next to hard constraints (e.g. grid capacity) and optimization goal (e.g. price).

Three use cases:

1) A second market / contract / incentivation scheme
2) Penalty for breaching capacities (useful so the scheduler tries its best)
3) One-time costs for peaks (a pricing feature DSOs use, on a monthly basis)

This PR (#1444) revised the commitments framework used in our linear problem formulation, so multiple commitments (in addition to one optimization signal) are possible.

New fields:

- site-consumption-breach-price: if set, site-consumption-capacity becomes a soft constraint. Also: site-production-breach-price
- Site-peak-consumption, site-peak-production: record the highest peak
- Site-peak-consumption-price and site-peak-production-price: A one-time price for the highest recorded peak.

Scheduling: State of the art

Done

- Storage: Battery
- Storage: Heat
- Processes

Next

- Sites (start: PR#855, #1065)
- Imbalance
- Sector coupling
- Grid services
- VPP

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Ideas for version 0.25

Focus (currently):

- Relaxed storage scheduler
- Editing flex-context & flex-model

(see also https://github.com/FlexMeasures/flexmeasures/milestone/51)

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Ideas for milestone v1.0

- **Site optimization (multi-asset).** Why? Fulfill crucial milestone of mission. Current solution? Optimize flexible assets in sequence. Progress? Good, needs projects/testing.
- **Editable flex-model and context.** Why? Ease of use & maintenance for non-developers. Current solution? Send all info in API. Progress? PoC for flex-context (prices) but big design question remains - store on data model (use API & SQL features) or JSON (more flexible in usage and extension, needs own schemas)?
- **Support all energy units in the API** Why? Diversity in data per project/site. Current solution? Might be fixed now, recently still needed MW in some places, needs work on docs. Progress? #1007 & #386 are done now. #483 worth doing?

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Q&A

- What are you working on?
- What is unclear?

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Roadmap – Big goals

- [2022 - mature] Model & pilot e-mobility optimization (price-based, V2G)
- [2023 - started] Model & pilot heating optimization (price-based, also with heat buffers)
- [2024] Multi-asset scheduling
- [2024] Imbalance market support
- [2025] Sector coupling (optimize e-mobility and heating in one site)
- [2025] Congestion support (e.g. for DSOs in GOPACS)

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https://flexmeasures.io/roadmap/

Resources – do get in touch!

- https://github.com/FlexMeasures/flexmeasures/
- https://www.flexmeasures.io
- https://lists.lfenergy.org/g/flexmeasures
- https://fosstodon.org/@flexmeasures
- LF Energy Slack: #flexmeasures

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FlexMeasures - integration