Frequency Contribution Factors Procedure Consultation

Briefing

1:30pm-3:00pm AEDT
15 Feb 2023

Agenda

#	Time	Topic	Presenter(s)
1	5 min	**Welcome & Introductions**	Hugh Ridgway
2	15 min	**Overview** - Objectives - Summary of Issues - Updates - Important dates	Hugh Ridgway
3	40 min	**Analysis – Market outcomes based on performance pre-incentive**	Sahand Karimi
4	15 min	**New Issues** - RCR cap - Aggregate Dispatch Conformance - Late publication of contribution factors	Hugh Ridgway
5	10 min	**Feedback and Questions**	
6	5 min	**Thanks and close**	Hugh Ridgway

Please note that this forum will be recorded for the purposes of assisting AEMO accurately capturing feedback.

Overview

Consultation Objectives (recap)

Develop a procedure that:

- Meets the requirements and is consistent with the principles of the NER as amended by the PFR incentives rule.
- Supports a system design that is practically implementable at a reasonable cost within the required timeframe and workable in conjunction with AEMO's broader NEM systems.
- As far as practicable, does not create unnecessary implementation complexity for established market participant systems.
- Reward participants that provide PFR.

Issues summary

No.	Issue	Change compared to initial consultation
1.	Measurement of power system frequency	No material change
2.	Determination of the frequency measure	Proposal to used exponential weighted moving average
3.	Formulation of performance and contribution factors	No material change
4.	Formulation of default contribution factors	Different formulations of DCFs depending on whether used for FPPs or Reg FCAS recovery. No longer proposing to use residual equivalent performance as a substitute.
5.	Application of default contribution factors	No material change
6.	Formulation of requirement for corrective response	New cap proposed
7.	Formulation of usage	No material change
8.	Impact of delays to dispatch instructions	No material change
9.	Determination of reference trajectories	No material change
10.	Formulation of the Residual	No material change
11.	Publication of data additional to rule requirement	No material change
12.	Aggregated dispatch conformance	New issue
13.	Where AEMO is unable to calculate and publish contribution factors within a ‘reasonable’ timeframe	New issue

Updates

- Frequency to be based on regional data and determined on a regional basis. Frequency Measures will also be regional.
- Frequency Measure based on an exponential weighted moving average; smoothed, but highly correlated with raw frequency. Units on AGC show good results in FPPs based on the proposal.
- Default contribution factors based on 28 day moving average. No special treatment for offline units. No minimum threshold requirement for historical performance. Units with no historical performance receive a zero default contribution factor (vs residual equivalent performance).
- Further work to be done in collaboration with participants on data provision/reporting.

Important dates

- Technical review of FCFP changes – 21 February 2023
- Forum to discuss what information AEMO will provide participants (and in what form) for information reporting related to the FPP project – 28 February 2023
- Submissions for second round due 15 March 2023

Analysis - based on performance pre-incentive arrangement from 20 Jul to 10 Oct 2021

Reminders

- Scaling factor of FPP amounts:

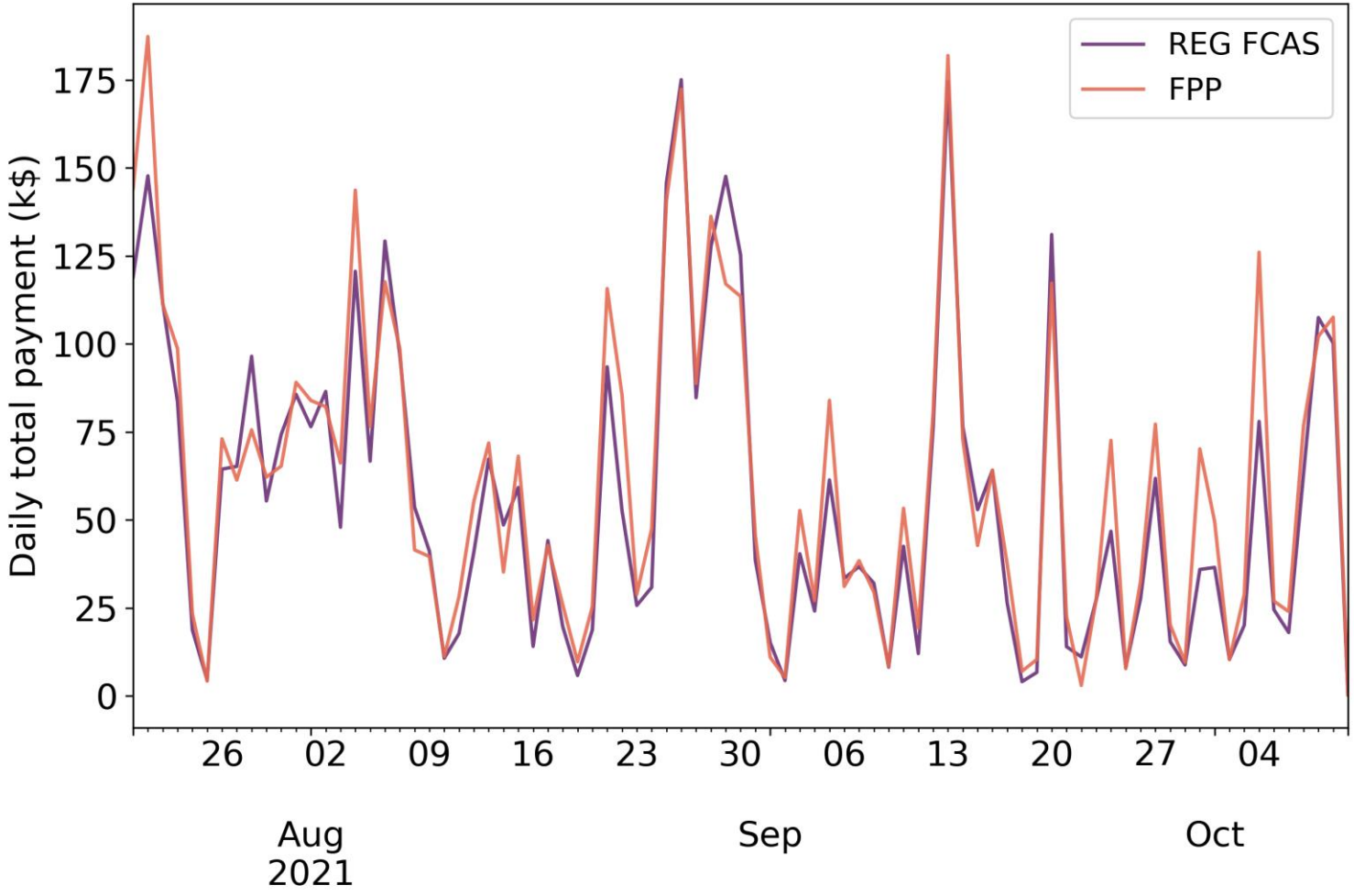
  Total $ = **RCR** (Volume MW) × **P**regulation (Price)

- Contribution Factors (CFs) in FPP:
  - Between -1 to 1
  - + means unit receives a payment (incentive) and – means unit incurs a cost (penalty)

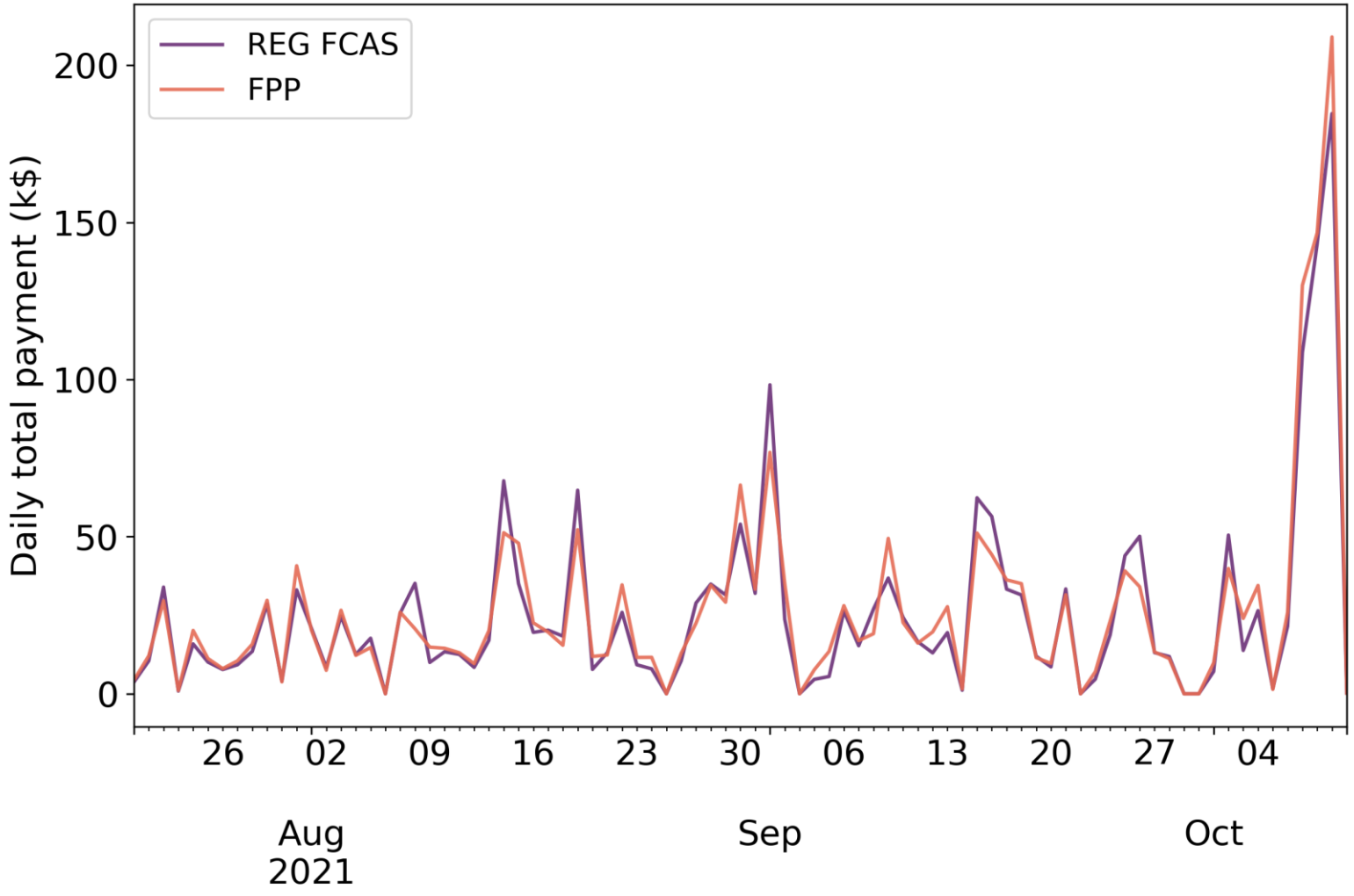
- Negative CFs (NCFs) ➡ **Used** REG FCAS cost
- Default CFs (DCFs) ➡ **Unused** REG FCAS cost

} Recover REG FCAS payments

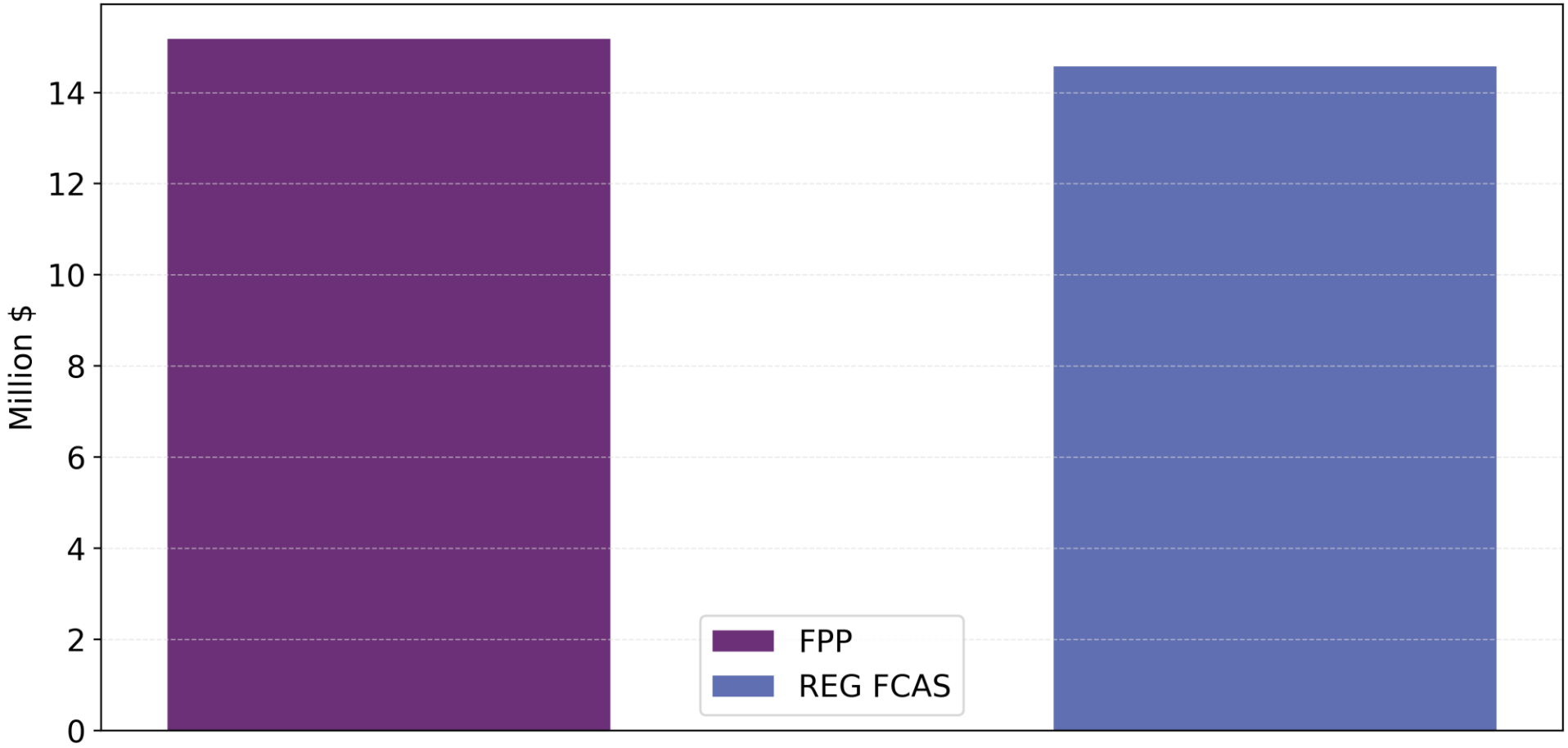
Daily total payment amount in REG vs FPP for Mainland Raise requirement



Daily total payment amount in REG vs FPP for Mainland Lower requirement

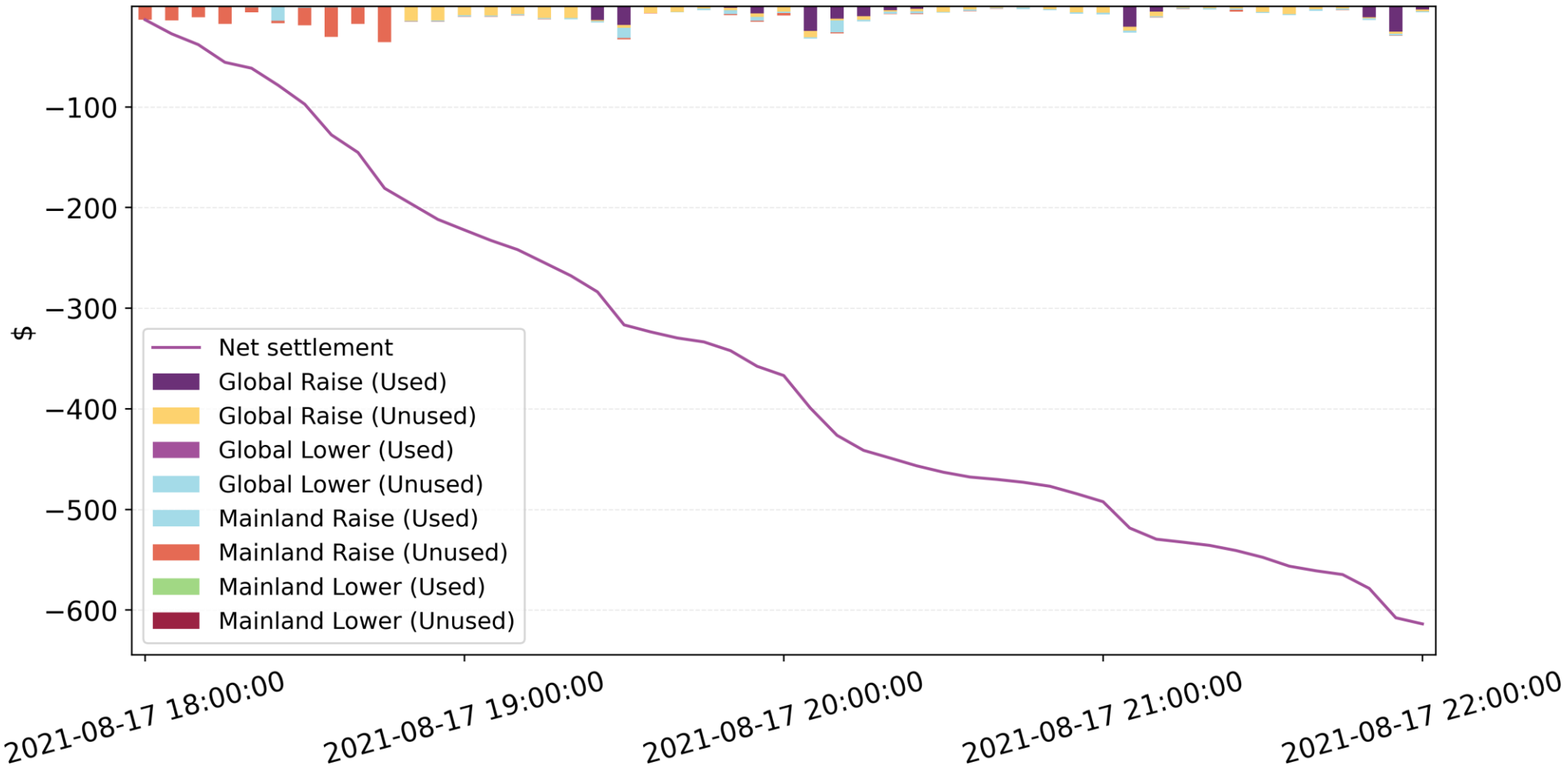


Total amount of payments in FPP vs REG
for Mainland and Global requirements



Period 20 Jul to 10 Oct 21

Net settlement in REG for a 400MW Wind farm



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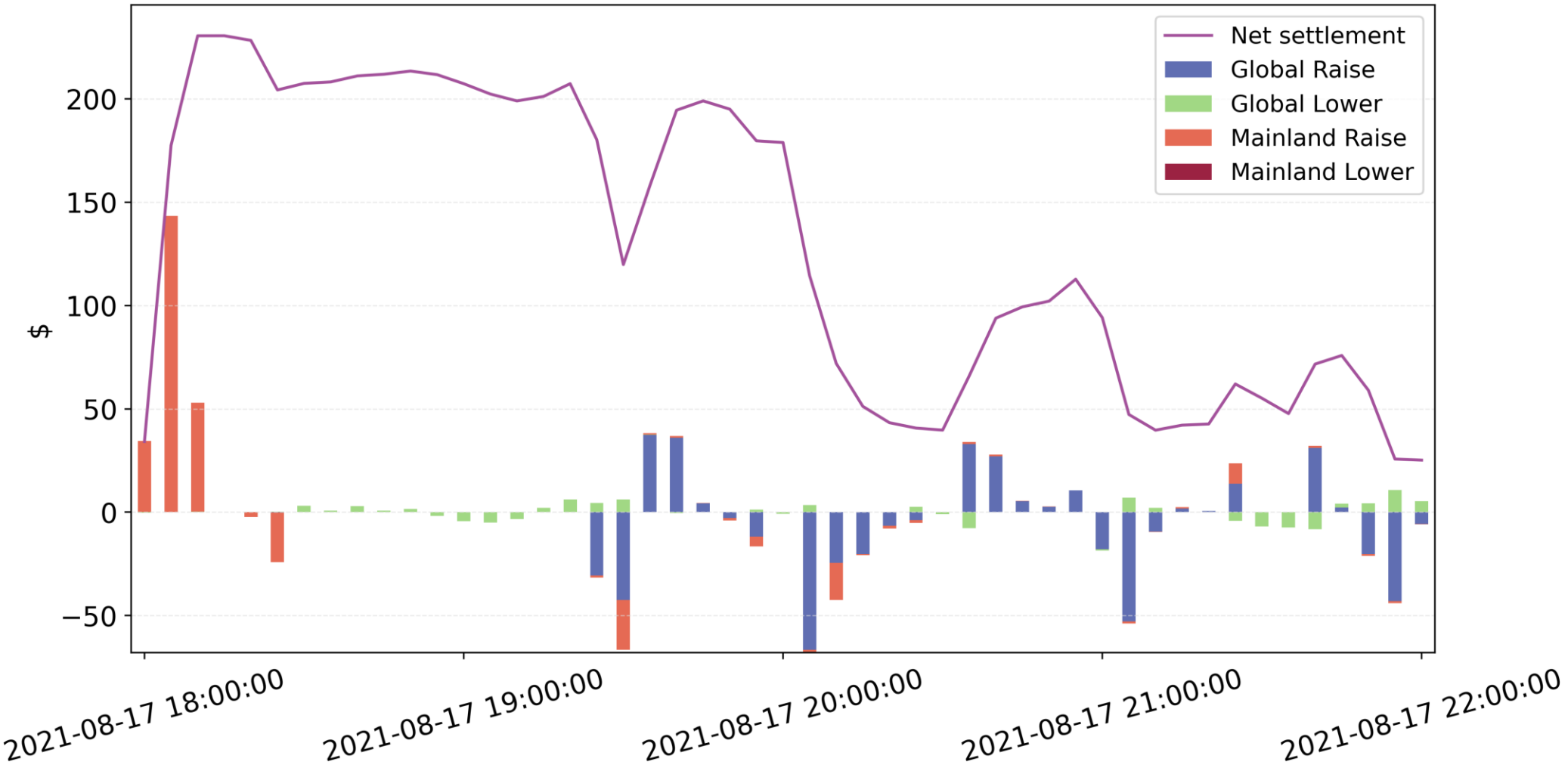
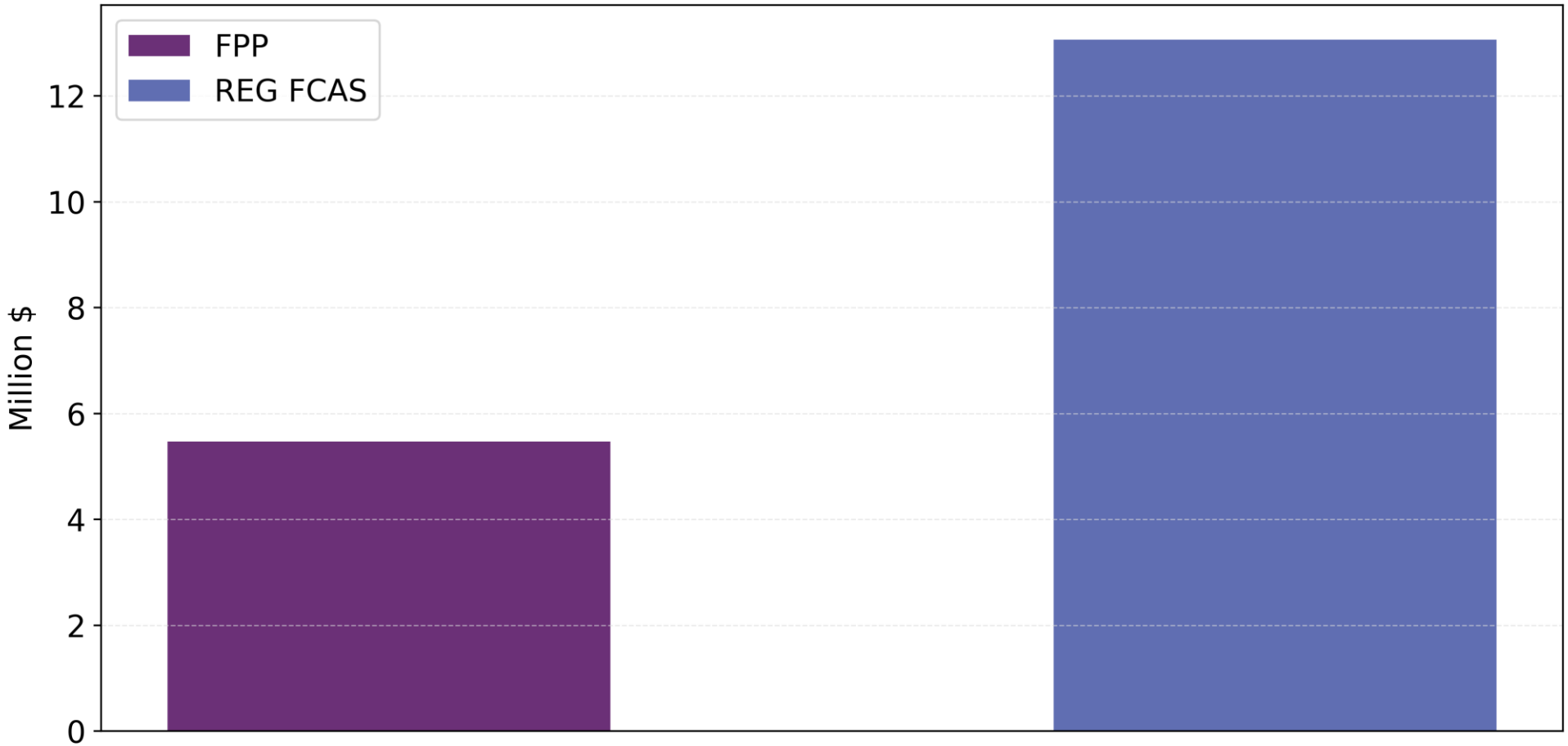
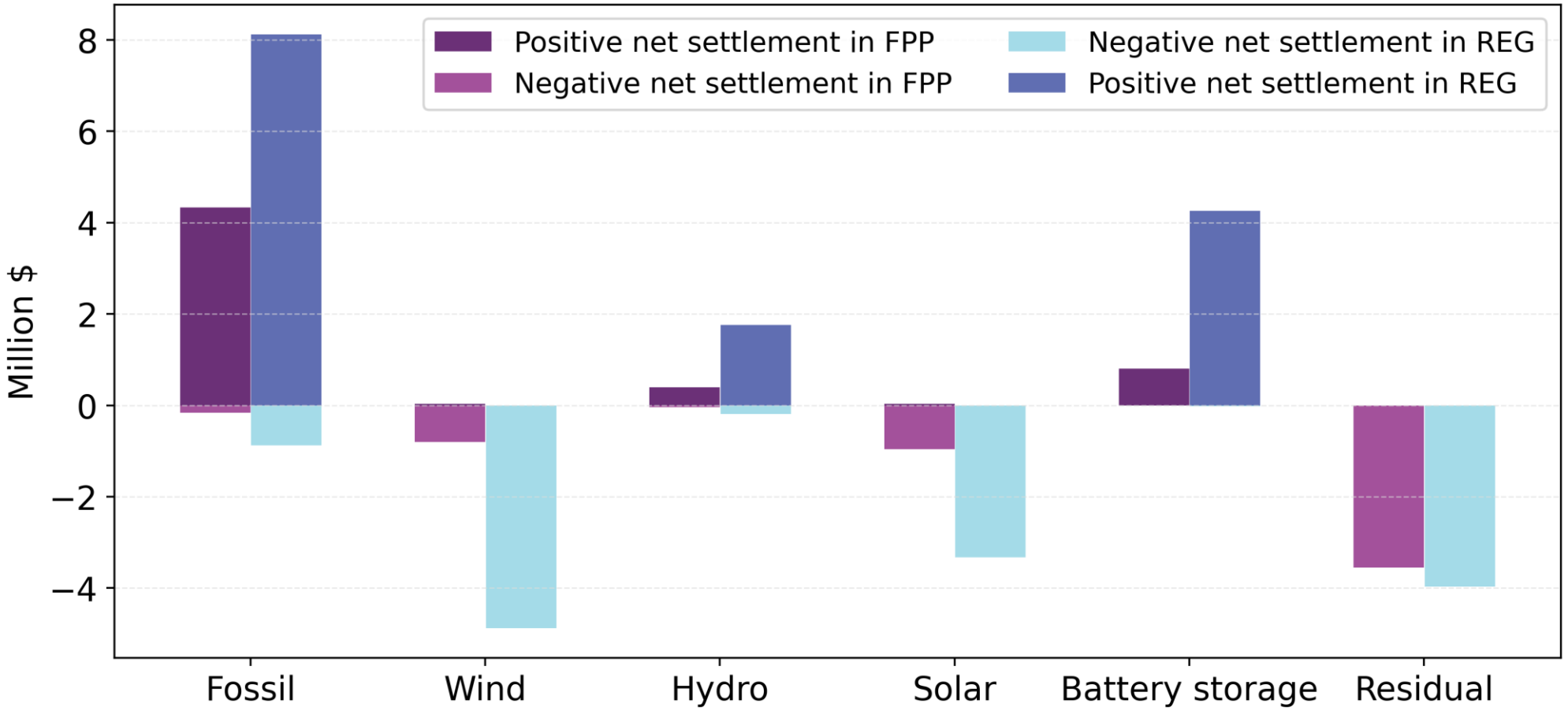


Total amount of positive net settlements in FPP vs REG



Period 20 Jul to 10 Oct 21

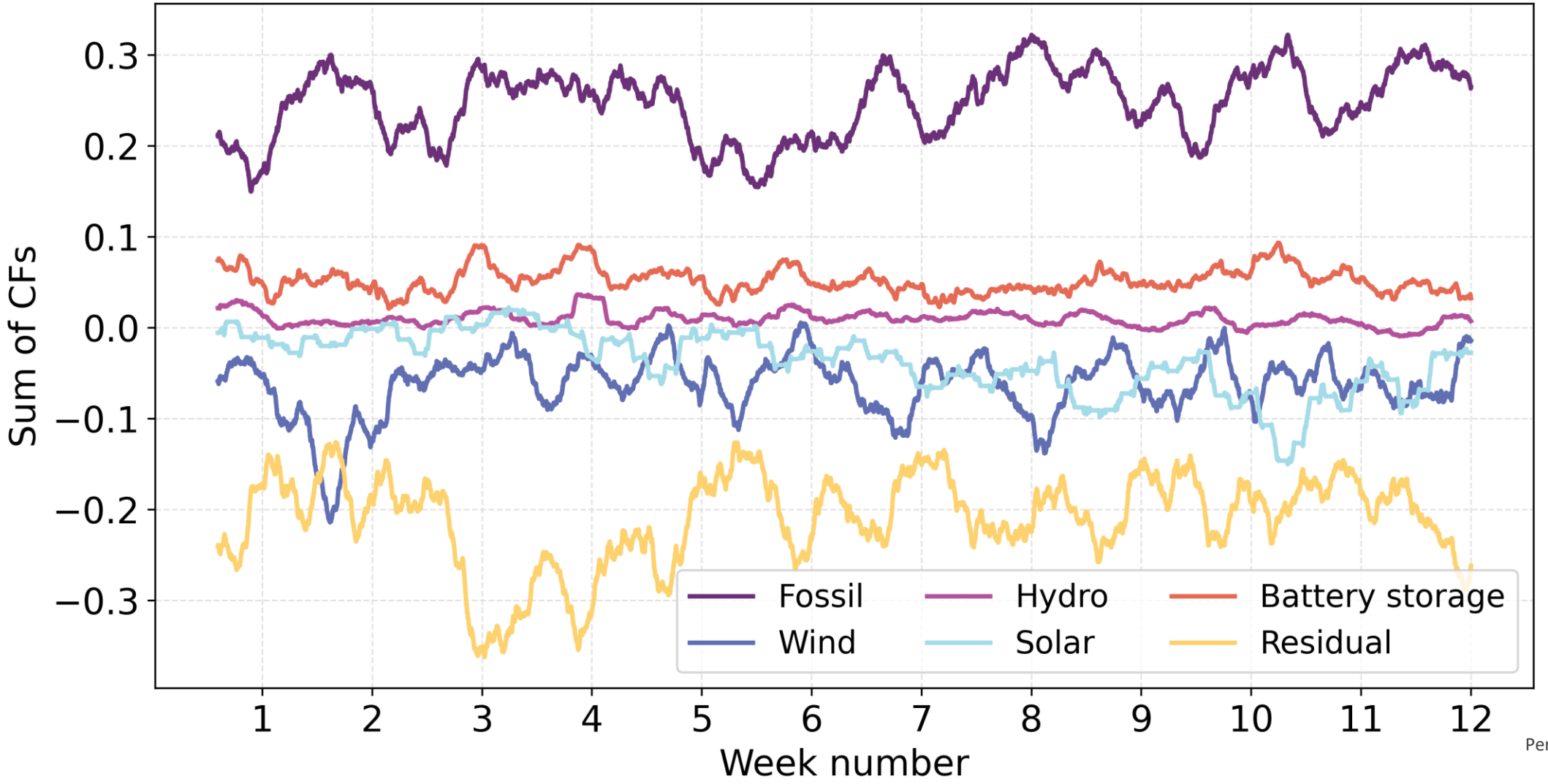
Net settlements in FPP and REG aggregated by type*



Period 20 Jul to 10 Oct 21

*Values based on total revenues across each sector, not normalised.

Aggregate of CFs by type



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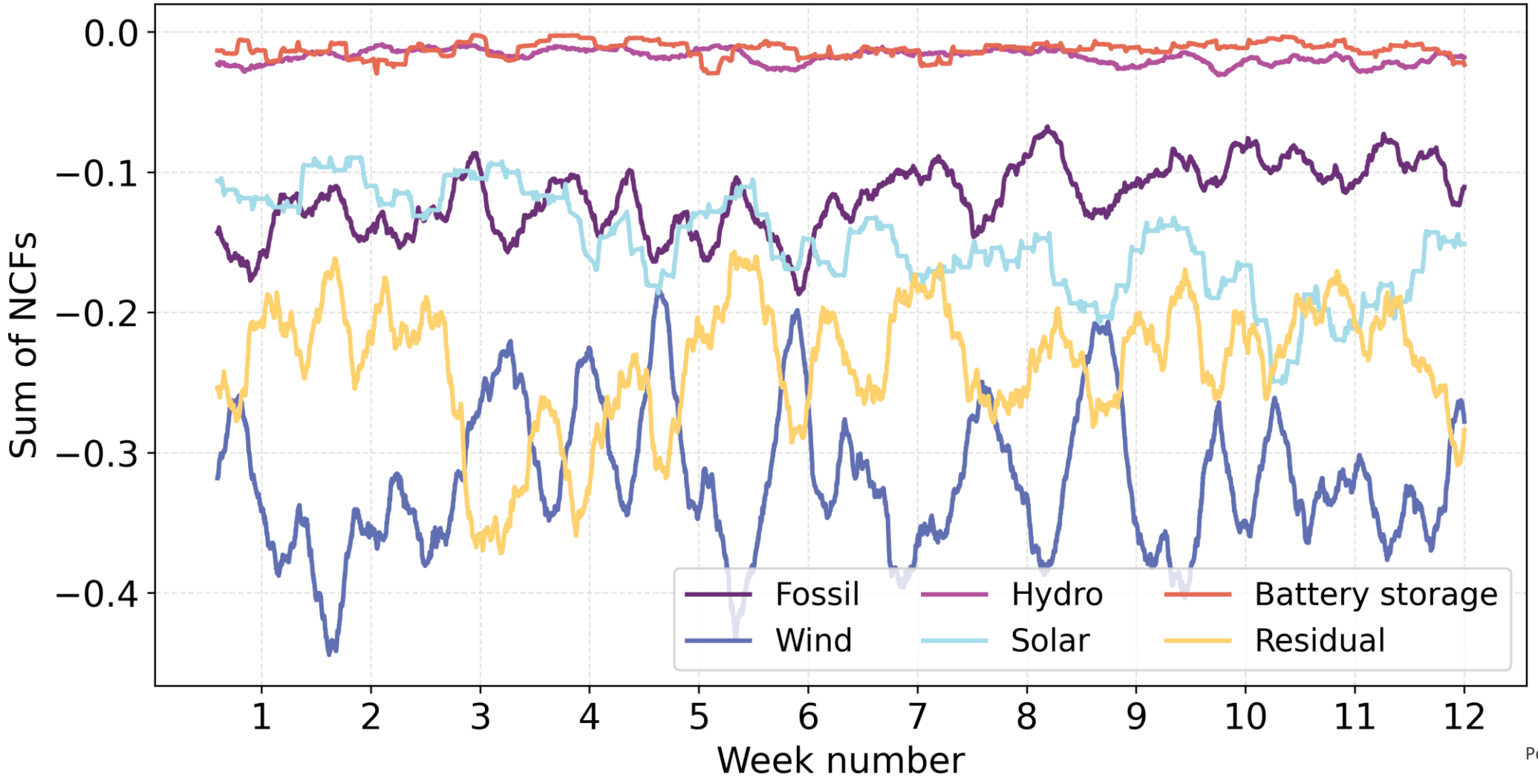
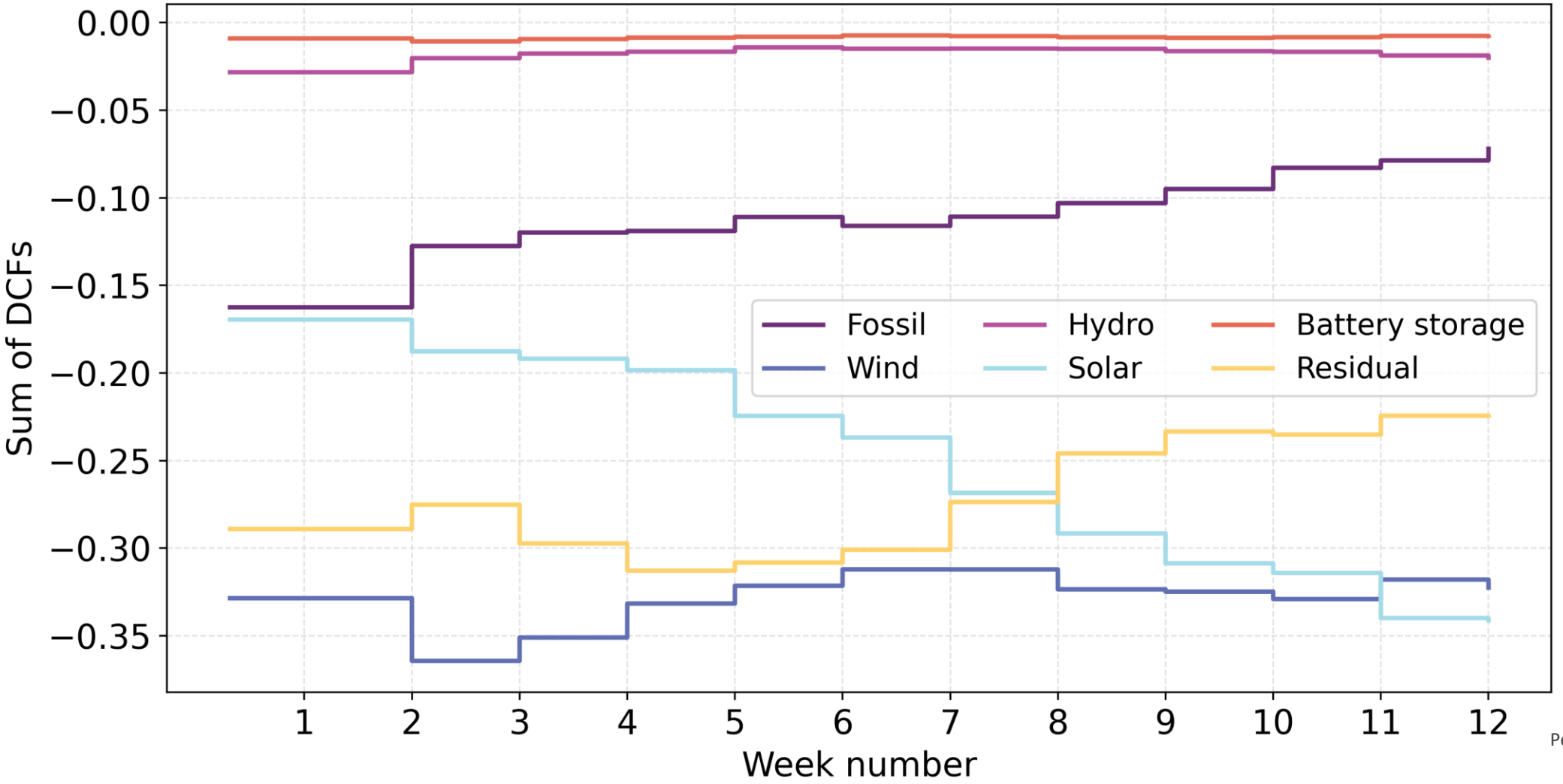
Aggregate of NCFs by type



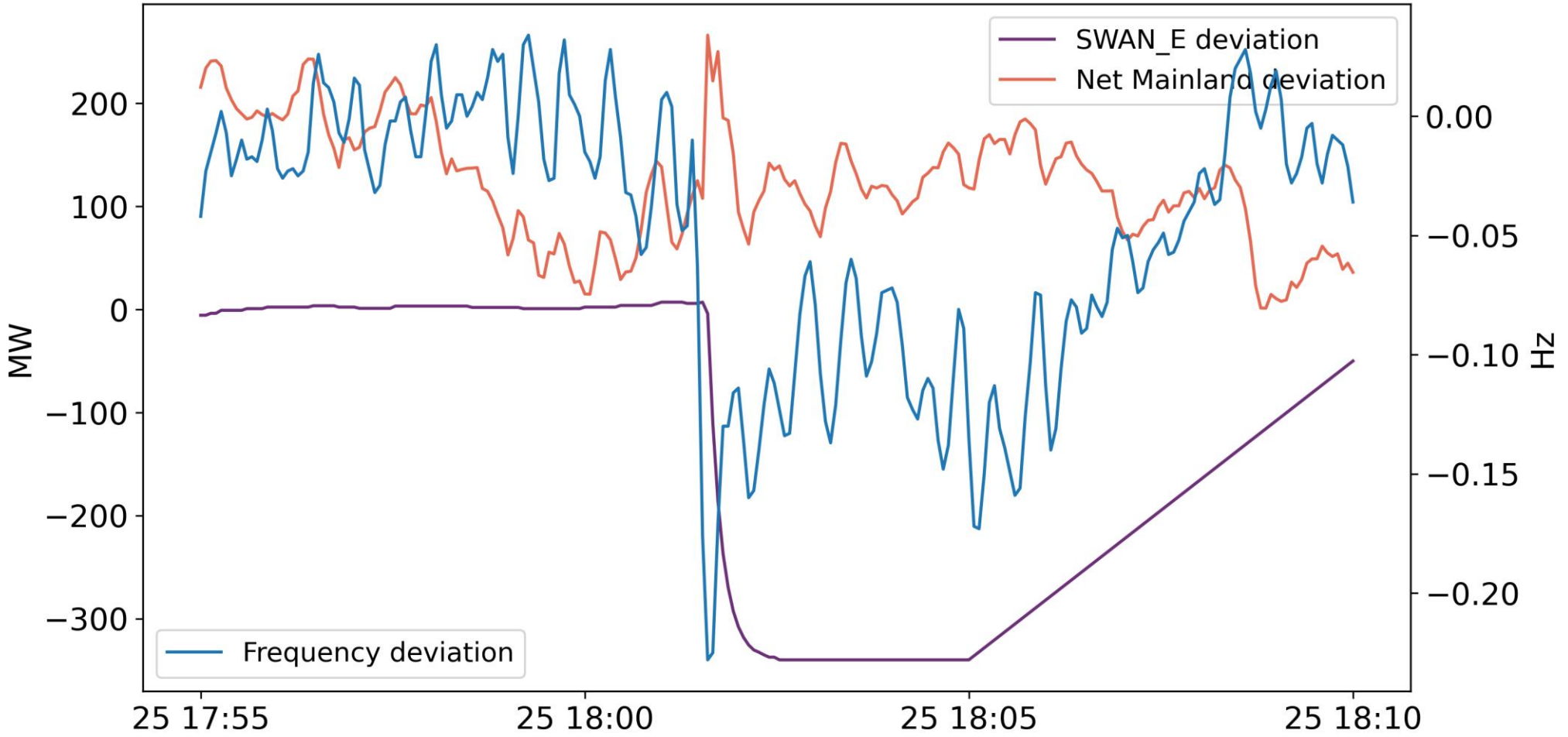
Period 20 Jul to 10 Oct 21

Aggregate of DCFs by type



Period 20 Jul to 10 Oct 21

Contingency event



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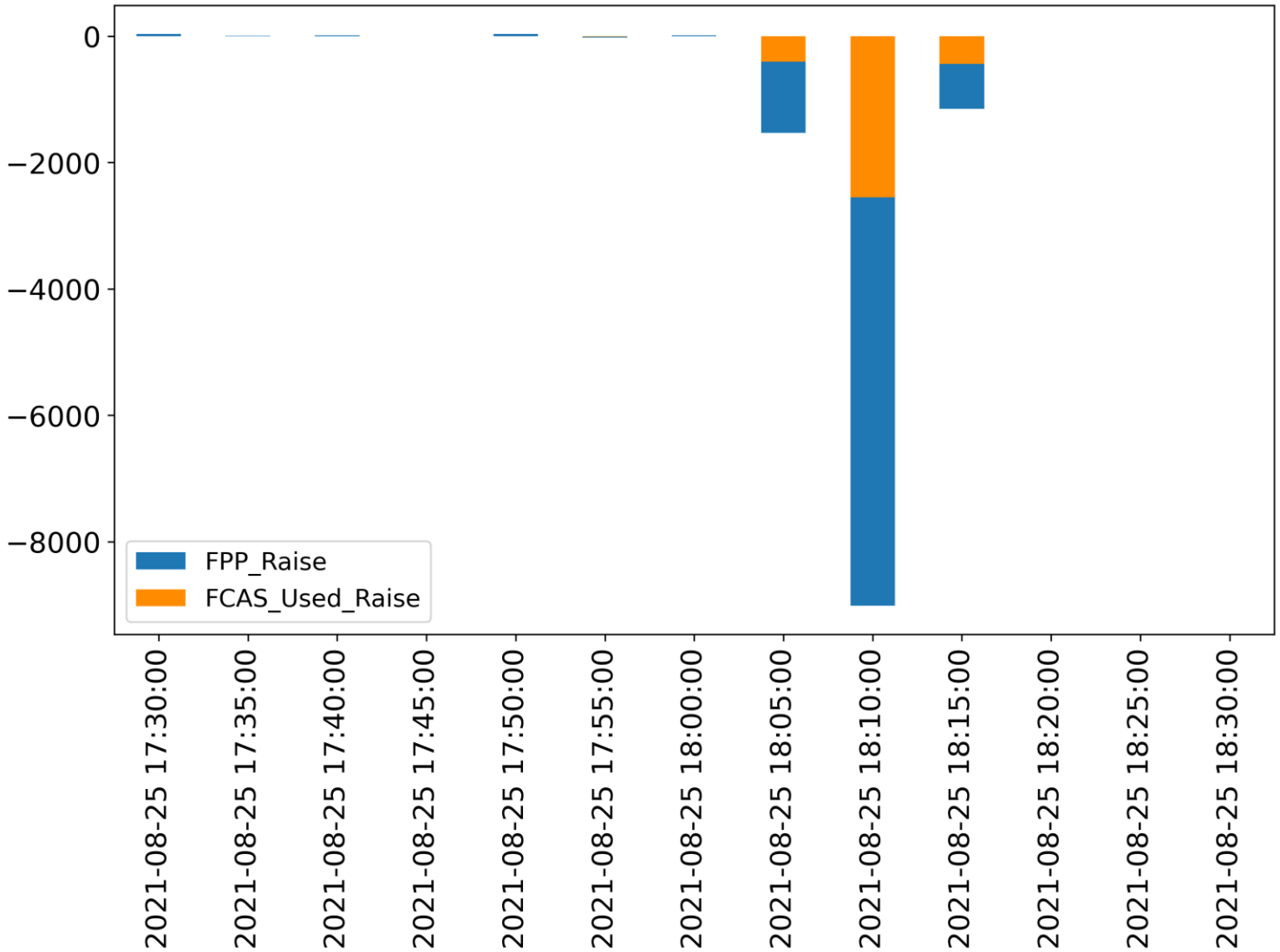
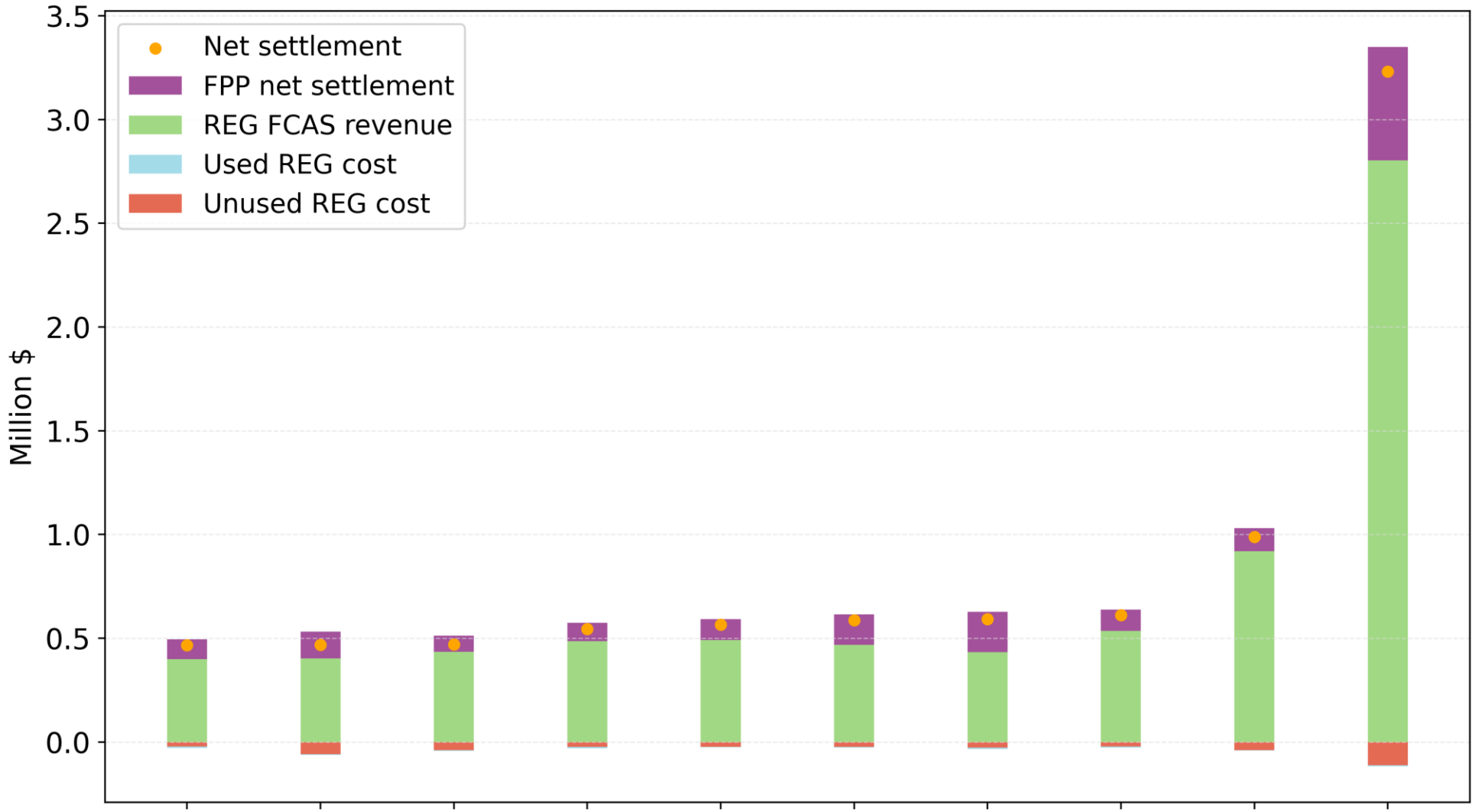
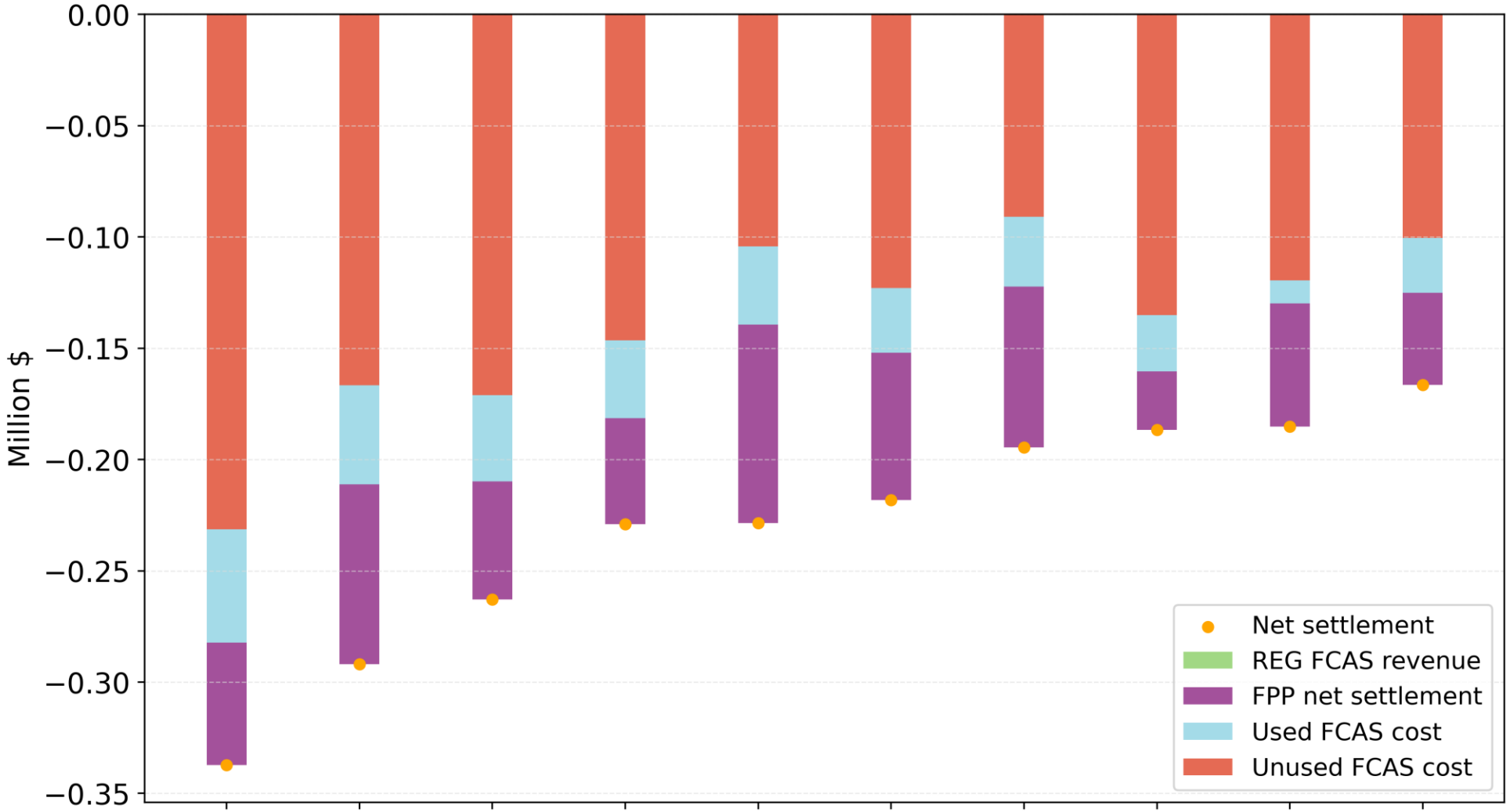


Top 10 performers



Period 20 Jul to 10 Oct 21

Bottom 10 performers (excluding Residual)



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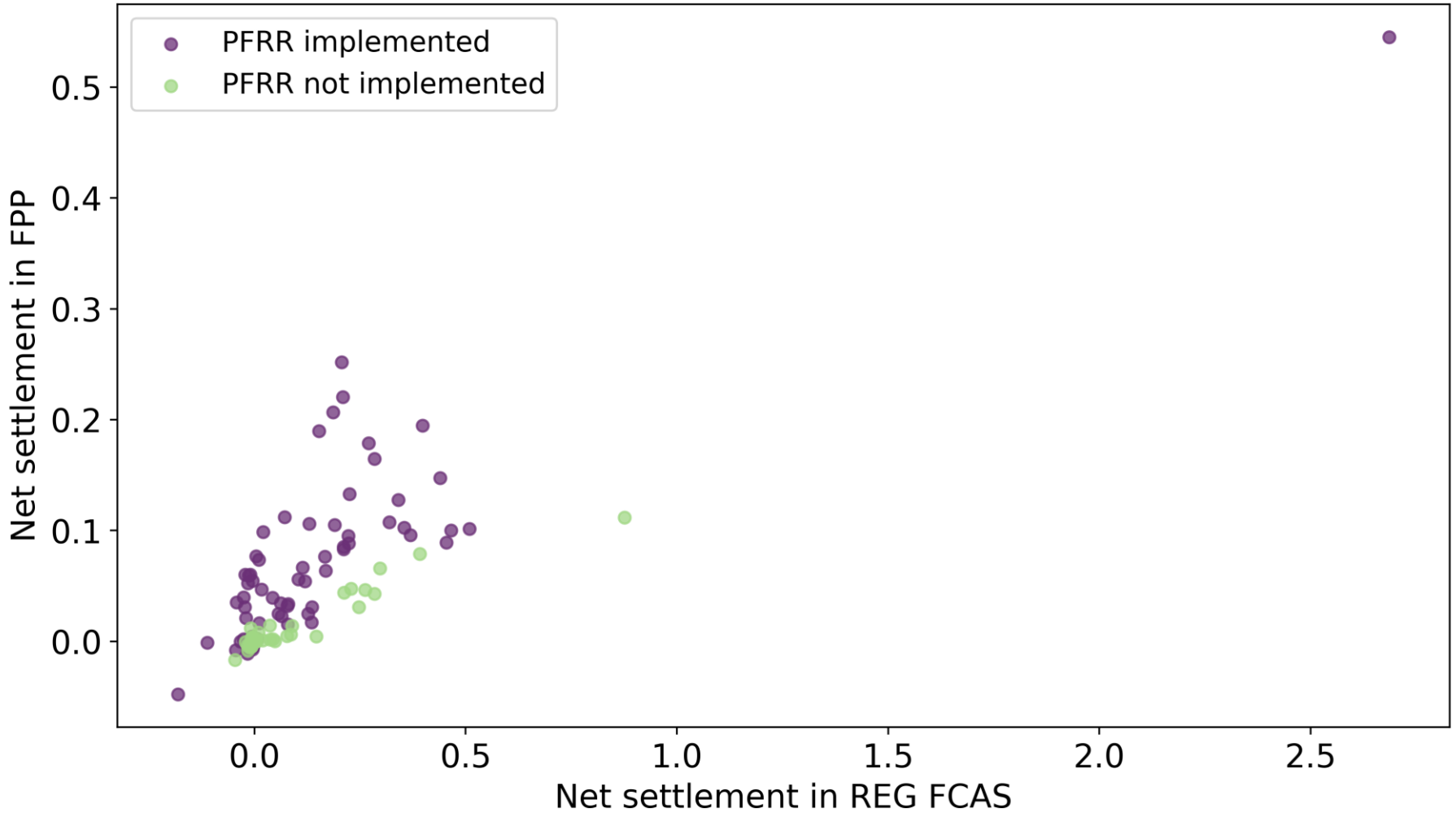
Correlation between the net settlements in FPP and REG



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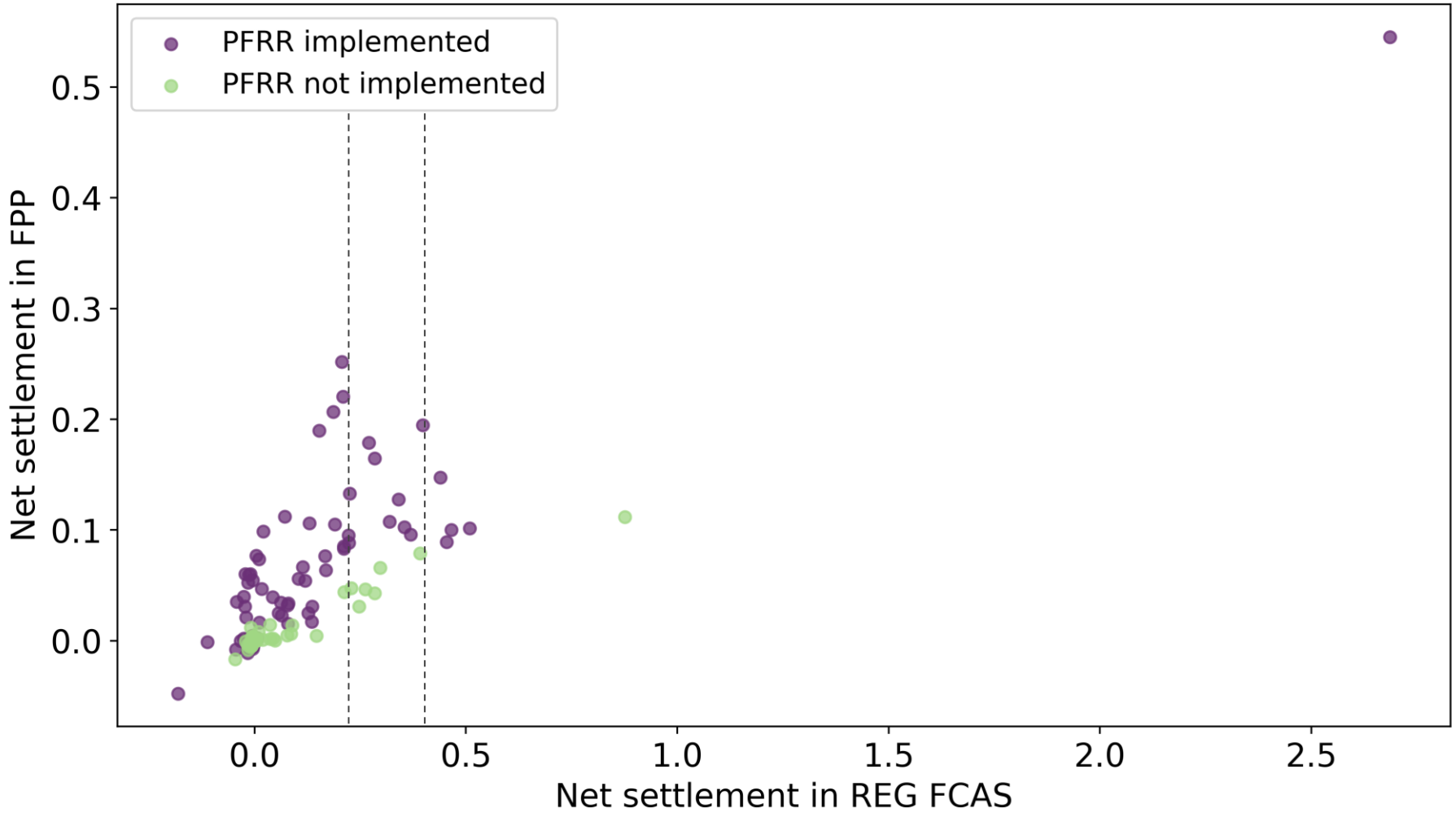


Period 20 Jul to 10 Oct 21

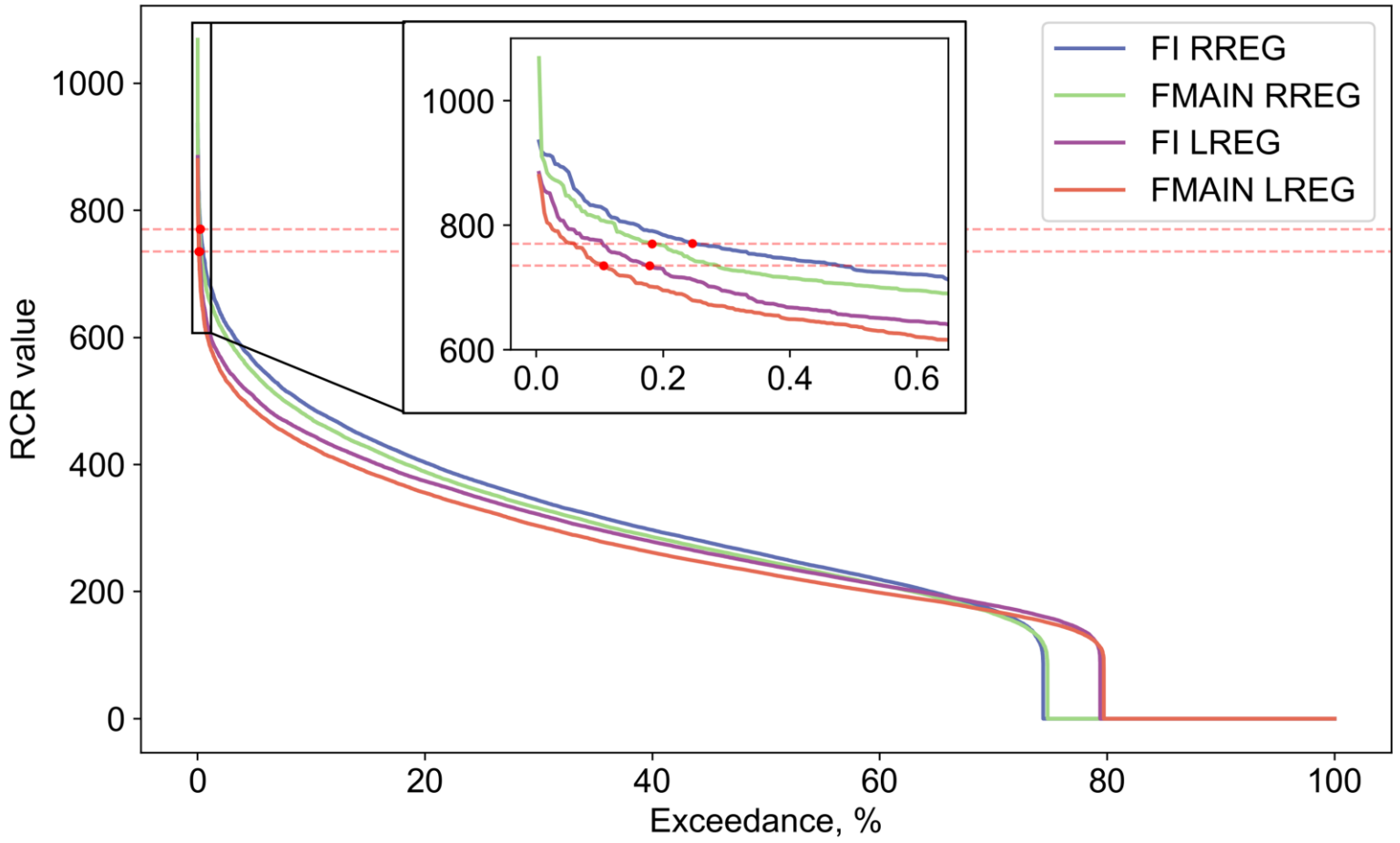
Particular issues - Seeking further feedback

RCR cap

- In the draft FCFP, AEMO proposed an RCR cap set at a high level such that the cap would be imposed in 0.1% to 0.4% of trading intervals.
- AEMO notes that this level is largely arbitrary, but it is hoped that the cap would give participants some certainty around FPP exposures while ensuring that there is generally a strong and proportional incentive to provide PFR.
- The purpose of the cap is not to limit FPPs when high levels of PFR are being provided – rather it is a protection against potential errors or unforeseen circumstances.

Proposed RCR cap

RCR cap for each requirement = sum of LHS terms × Coefficient



Aggregated Dispatch Conformance

- As part of the IESS reform, ADC allows eligible units in certain circumstances to aggregate for the purpose of dispatch conformance.
- AEMO considers it important that the FPP framework is aligned with dispatch conformance wherever practical, and consequently aggregated units are not penalised under FPP for utilising ADC.
- AEMO proposes that where two or more eligible units in an integrated resource system register to participate in aggregated dispatch conformance under NER 4.9, for the purposes of the FCFP, they will be assessed as a single eligible unit, regardless of the status of their compliance mode in dispatch for a specific trading interval

Failure to publish contribution factors

- A scenario in which AEMO is unable to publish contribution factors within the expected timeframe (anticipated to be within five minutes of the end of a trading interval) may occur as a result of technology system issues.
- AEMO proposes that where a delay of [X] minutes occurs, that it does not calculate contribution factors relating to the trading intervals that were the subject of delayed publication and calculates no FPPs for the period, with all regulation FCAS costs being recovered on the basis of default contribution factors.

Q&A

AEMO

AUSTRALIAN ENERGY MARKET OPERATOR

For more information visit

aemo.com.au

https://aemo.com.au/consultations/current-and-closed-consultations/frequency-contribution-factors-procedure