Price Formation Enhancements

Analysis on Fast Start Pricing

April 8, 2024

Housekeeping reminders

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- This collaborative working group are intended to stimulate open dialogue and engage different perspectives.
- Please keep comments professional and respectful.
- Please try and be brief and refrain from repeating what has already been said so that we can manage the time efficiently.
- If you need technical assistance during the meeting, please send a chat to the event producer

Instructions for raising your hand to ask a question

- If you are connected to audio through your computer or used the “call me” option, select the raise hand icon  located on the bottom of your screen.
  - **Note**: #2 only works if you dialed into the meeting.
  - Please remember to state your name and affiliation before making your comment.
- You may also send your question via chat to Brenda Corona or to all panelists.

Today's Working Group Agenda

Time	Topic	Presenter
10:00 – 10:05	Welcome, Today's Agenda, Stakeholder Process Overview	Brenda Corona
10:05 – 10:15	Today's Goals	Juan Buitrago
10:15 – 12:00	Second Stage of Analysis on Fast-Start Pricing	Guillermo Bautista-Alderete
12:00 – 1:00	**Lunch Break**	
1:00 – 2:00	Second Stage of Analysis on Fast Start Pricing cont'd	Guillermo Bautista-Alderete
2:00 – 2:30	Analysis on Impact of Fast-Start Pricing	Mike Cadwalader
2:30 – 2:55	Stakeholder Discussion : FSP Analysis	Juan Buitrago
2:55 – 3:00	Next Steps	Brenda Corona

ISO Policy Initiative Stakeholder Process

We are here

Stakeholder meetings, working groups and workshops may occur throughout the stakeholder process.

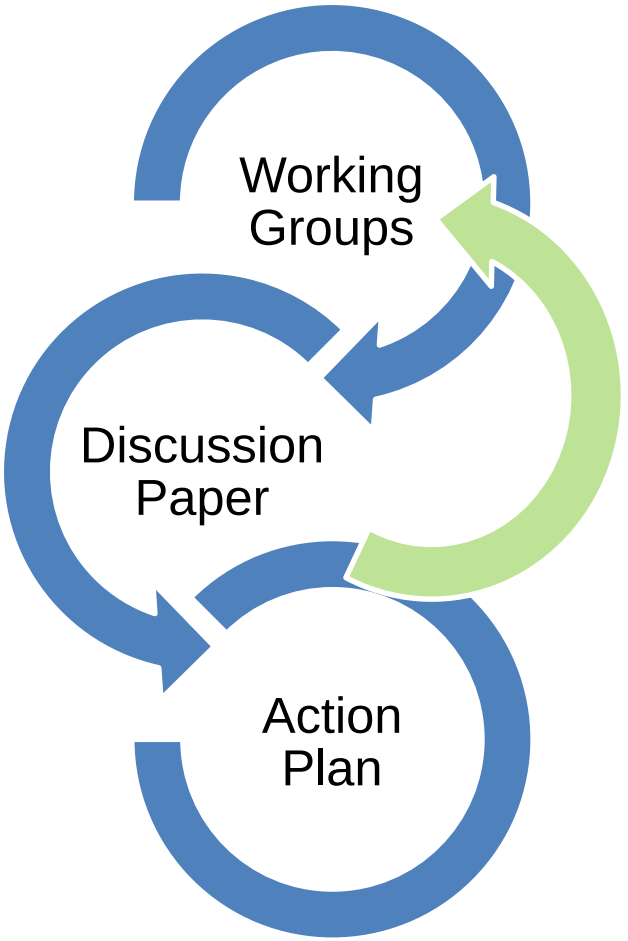
- Working groups will inform the Phase 1 straw proposal
- The ISO will take notes and produce reports of each of our working group meetings.

Working Group Deliverables

Fast Start Pricing Analysis: Sought Stakeholder feedback to develop a scope for analysis on Fast Start Pricing to allow for robust discussion in subsequent phases on its inclusion to the ISO markets

The FSP Analysis has taken an iterative approach, coming back to stakeholders for multiple rounds of feedback and fine tuning

You will have an opportunity to provide written comment and discuss the final FSP Analysis today and via comment.



Goals of Today's Working Group Session

The Working Group structure is meant to embrace flexibility to allow organic and robust conversation on the topics at hand – it is still key for us to drive towards solutions collaboratively

- **ISO Presentation of FSP Analysis**
  - Presentation of FSP analysis based off Stakeholder feedback from Working Group sessions #6 and #9
- **Stakeholder discussion on FSP Analysis**
  - Opportunity to discuss the FSP Analysis, in preparation for subsequent policy development discussions

Analysis on Fast Start Pricing

Kun Zhao, Ph.D.
Guillermo Bautista Alderete, Ph.D.

Market Performance and Advanced Analytics

Price Formation Working Group
April 8, 2024

The impact of fast start pricing on the Western Energy Imbalance Market (WEIM) results depends on design elements and generation mix, but was generally moderate

- **Defining which resources qualify for fast start has the most impact**
  - The fewer resources qualify, the lower the impact
  - All other ISO FSP models use definitions of 60 minutes or less for start-up and minimum run time;
    - e.g., SPP defines as 10 minute start and 60 minute run time
  - About 19% of WEIM gas capacity qualifies as fast start with 60 minute or less start up and run times.
    - Split evenly between California and the Southwest

- **Changing amortization methods for commitment costs has more moderate impacts**
  - Constant amortization results in the largest impact, about twice as much as averaged amortization

The impact of FSP ranged between $0/MWh and $8.70/MWh

- Price increases follow a seasonal trend, with higher price changes occurring during the summer months
- Prices tend to increase primarily during morning and evening peak hours when resources are typically started up or transitioned up
- Depending on the sensitivity scenario, there are no price impacts between 97% and 75 % of the time
- Depending on the sensitivity scenario, areas in the Southwest and CAISO observed the largest price changes, with up to a monthly average of $8.70/MWh during extreme summer and gas conditions, while areas in the Pacific Northwest experienced minimum changes of $0
- Cost impacts vary among areas, with larger costs observed in the Southwest. Overall, costs are low since they are based on supply changes from base or day-ahead schedules in real time only

CAISO committed to assess the impact of Fast Start Pricing on CAISO's market

- This effort is to explore potential impacts of FSP and help guiding subsequent FSP discussions

- First stage:
  - Start with some basic analysis of FSP implications
  - Consider participants feedback to shape its scope
  - Provide analysis and opportunity for discussion of the first stage of analysis. December 2023

We are here

- Second Stage:
  - Consider additional feedback from market participants
  - Define final scope of analysis
  - Expand analysis to all BAAs in the market
  - Provide an opportunity for discussion of final analysis

Scope of the analysis on FSP

- Characteristics of the WEIM generation fleet relative to the definitions of FSP
- Historical bid-cost recovery in CAISO's markets based on attributes applicable to FSP
- Historical analysis of unit commitments
- Impacts of FSP for all areas in WEIM real-time market
- Effect of flexible ramping product by capturing the economic displacement of capacity to set prices
- Assessment of FSP impacts with 12 sensitivity scenarios
  - Constant adder
  - Adjusted constant adder
  - Minimum averaged-cost adder
  - 30- and 60-minute FSP for each type of adder
- Application of FSP to transitions of multi-stage generators (MSGs)
- Consideration of base schedules for WEIM resources on FSP
- Inclusion of minimum-online constraints (MOC)

Basic Design Elements of Fast Start Pricing

Not all types of resources may naturally fit in the FSP definition due to their characteristics or type of participation

- Conventional (gas-fired)
- PDRs
- Storage
- Solar/Wind
- Hydro
- What about transitions for MSG?

- Economical participation
- Self- Schedules
- Base schedules
- Minimum online constraints
- Zero commitment costs

Fast start pricing is predicated on basic resource characteristics regarding discrete commitment costs

- Commitment costs include:
  - Minimum load cost
  - Startup costs
  - Transition costs for MSGs
- Resources are subject to temporal constraints, including:
  - Start-up time
  - Minimum-up time
  - Transition time for MSGs

There are several design considerations to implement Fast Start Pricing

- Markets:

  Day-ahead *vs.* Real time markets

- Commitment time

  Minimum Up Time *vs.* commitment time

- Eligible resources

  Based on resource attributes

- Type and extent of cost amortization

  Constant *vs.* average *vs.* relaxation

- Type of participation

  Economic *vs.* Self Schedules and base schedules

Other ISOs/RTOs have implemented different FSP definitions

ISO	Markets	Commitment Costs	FSP Definition
ISO_NE	RTM	STUC MLC	STUT≤ 30min MUT≤ 1hr
MISO	DAM RTM	STUC MLC	STUT≤ 1hr MUT≤ 1hr
NYISO	DAM, RTM	STUC MLC	STUT≤ 30min MUT≤ 1hr
PJM	DAM, RTM	STUC, MLC	STUT≤ 1hr MUT≤ 1hr
SPP	DAM, RTM	STUC MLC	STUT≤ 10 min MUT≤ 1hr

No ISO/RTO considers commitment times longer than an hour in its FSP design

DAM: Day-ahead market
RTM: Real-time market

STUC: Start-up cost
MLC: Minimum-load cost

STUT: Start-up time
MUT: Minimum up time

Fast Start Pricing at the CAISO markets

- CAISO's markets currently have a type FSP functionality as part of the original market redesign effort since 2009
  - Designed to deal with block-loaded resources known as constraint output generator (COG)

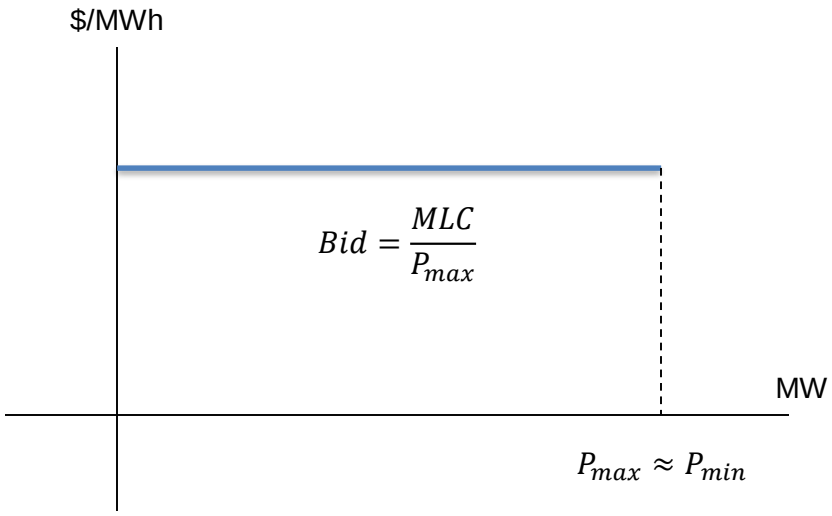
- A resource's Pmin and Pmax must be within certain tolerance to qualify for this functionality

- Very few resources have used this functionality since inception

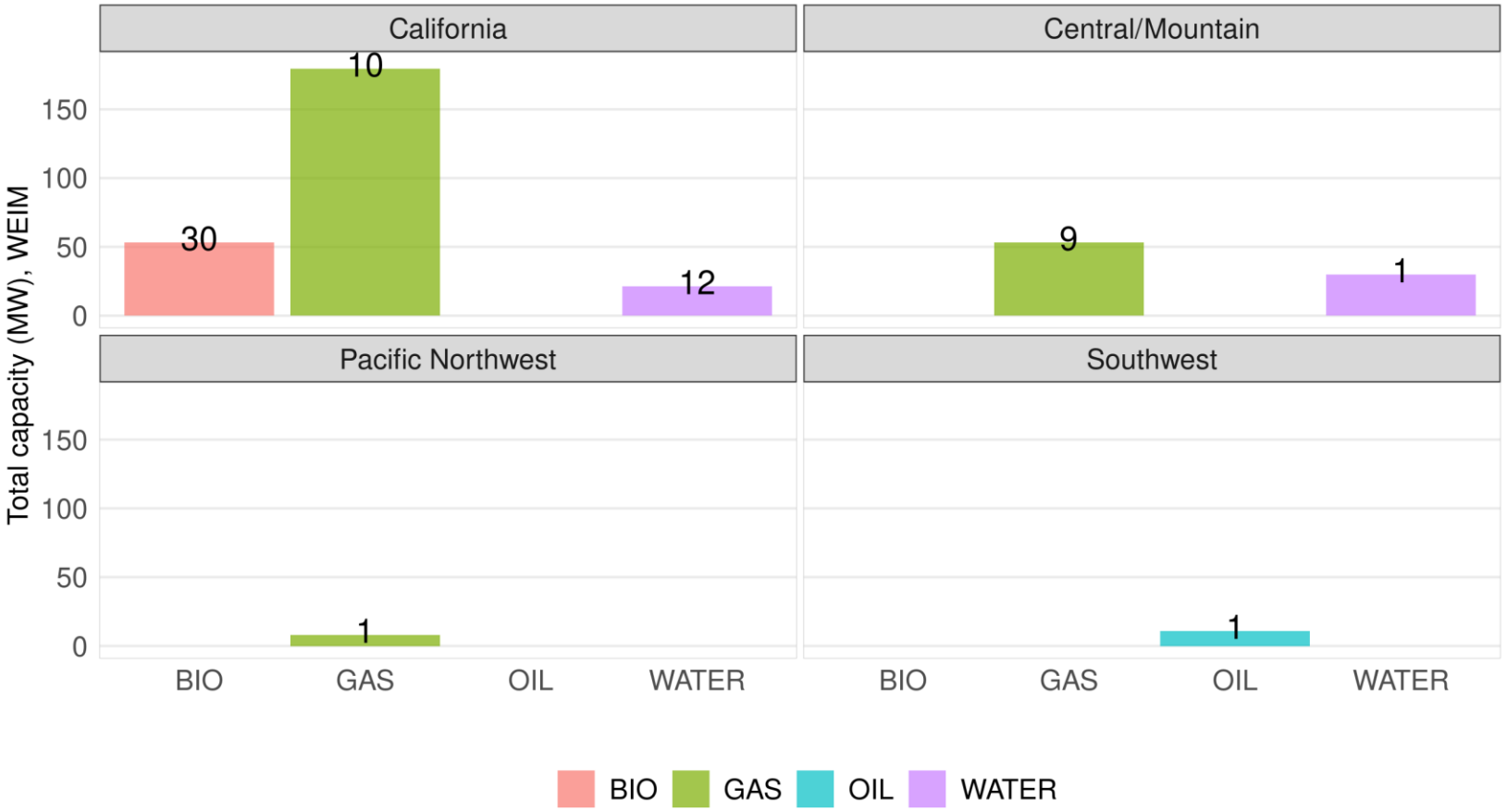
Constrained Output Generator (COG) Model

- Units with operational range (Pmax-Pmin) not greater than five percent of Pmax or 3MW can be eligible for COG model

- COGs can be scheduled continuously between 0 and their minimum operating limit
- Bid equals Average Pmin cost
- COG can set the price



Total capacity that meets the COG-model definition is relatively small in the WEIM footprint and mostly gas units



Fast Start Pricing scenarios used for analysis

What is Fast Start pricing?

- Incorporates commitment costs into the variable-range bids
- Higher clearing prices will reflect commitment costs
- Higher-cleared prices can reduce bid cost recovery for units dispatched uneconomically
- Standard approach relies on the market clearing engine consisting of two market passes:
  - scheduling run determines optimal commitment and dispatches used scheduling parameter to guide priorities
  - Pricing run estimates market prices reflecting economical signals
- Applies only in pricing run and does not change the optimal commitment and dispatches
- Implementation of FSP in CAISO market would require additional changes because it currently uses both dispatches and prices from pricing run.
  - With no changes, FSP will lead to imbalances in operations

What are the basic questions to consider fast start pricing in the CAISO market?

- How to amortize the commitment cost into the variable cost bids? This analysis explores three alternatives,
  - constant adder,
  - adjusted constant adder, and
  - averaged amortization

- How long the amortization should apply for? Only through the MUT?
  - Should MLC continue to be amortized beyond MUT for as long as the unit is online?
  - This analysis amortizes commitment costs only through the MUT

Alternative 1:Constant amortization derives a single adder that applies to each segment of the variable-cost bid

Given:

MUT: Minimum up time (minutes)

$STUC$: Startup cost in ($ per start)

MLC: Minimum load cost ($/MWh)

Δt: Market interval; FMM=15 min

All elements are parameters and therefore the adder δ is a constant

MUT is rounded up to # of intervals
If MUT=0 then STUC is amortized in 1 interval

The FSP adder is $$\delta = \frac{MLC}{P_{max}} + \frac{STUC}{\frac{\Delta t}{60} max\left\{1, \left\lceil \frac{MUT}{\Delta t} \right\rceil\right\} P_{max}}$$

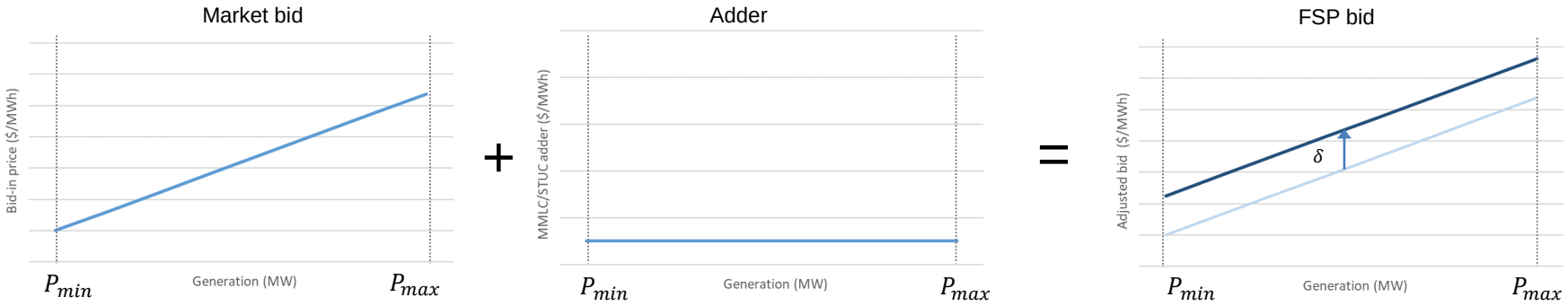


Illustration: Simplest amortization methodology is a constant adder through the variable range

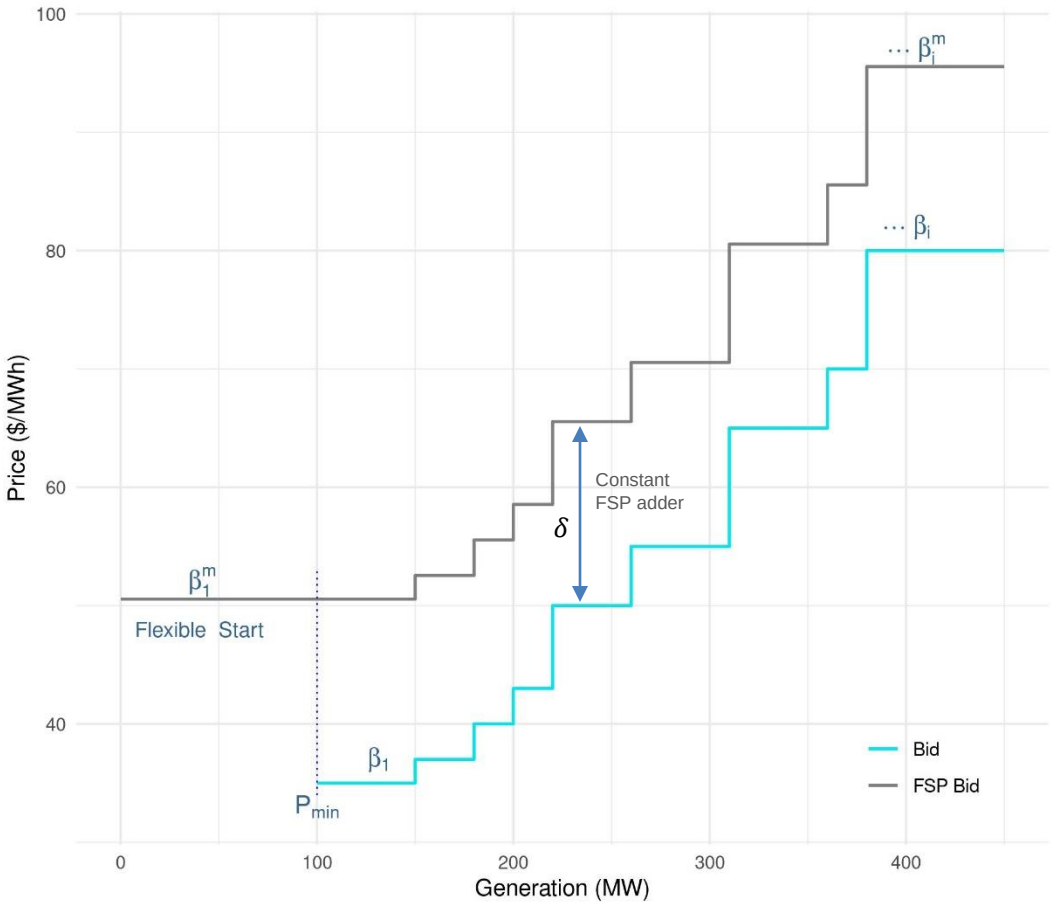
MLC=$5,000/hr
STUC=$2000 per start
MUT= 1 hr

A constant adder is estimated to reflect Both MLC and STUC

$$\delta^e = \frac{\$2000 + \$5000}{450\ MW} = \$15.55/MWh$$

This adder applies to each segment of the bid

First segment is extended to 0 MW to model a flexible start



Alternative 2: Constant amortization is adjusted down by the cost of first bid segment and that applies to each segment of the variable-cost bid

Given:

MUT: Minimum up time (minutes)

$STUC$: Startup cost in ($ per start)

MLC: Minimum load cost ($/MWh)

Δt: Market interval; FMM=15 min

All elements are parameters and therefore the adder δ is a constant

MUT is rounded up to # of intervals
If MUT=0 then STUC is amortized in 1 interval

The FSP adder is $$\delta = \frac{MLC - max\{0, \beta_1 P_{min}\}}{P_{max}} + \frac{STUC}{\frac{\Delta t}{60} max\left\{1, \left\lceil \frac{MUT}{\Delta t} \right\rceil\right\} P_{max}}$$

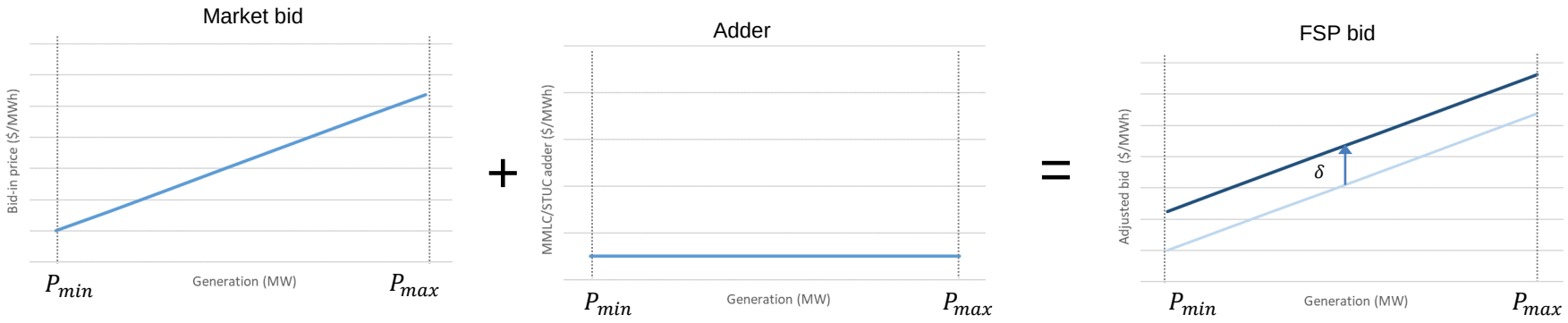


Illustration: Adjusted amortization methodology is also a constant adder through the variable range

MLC=$5,000/hr
STUC=$2000 per start
MUT= 1 hr

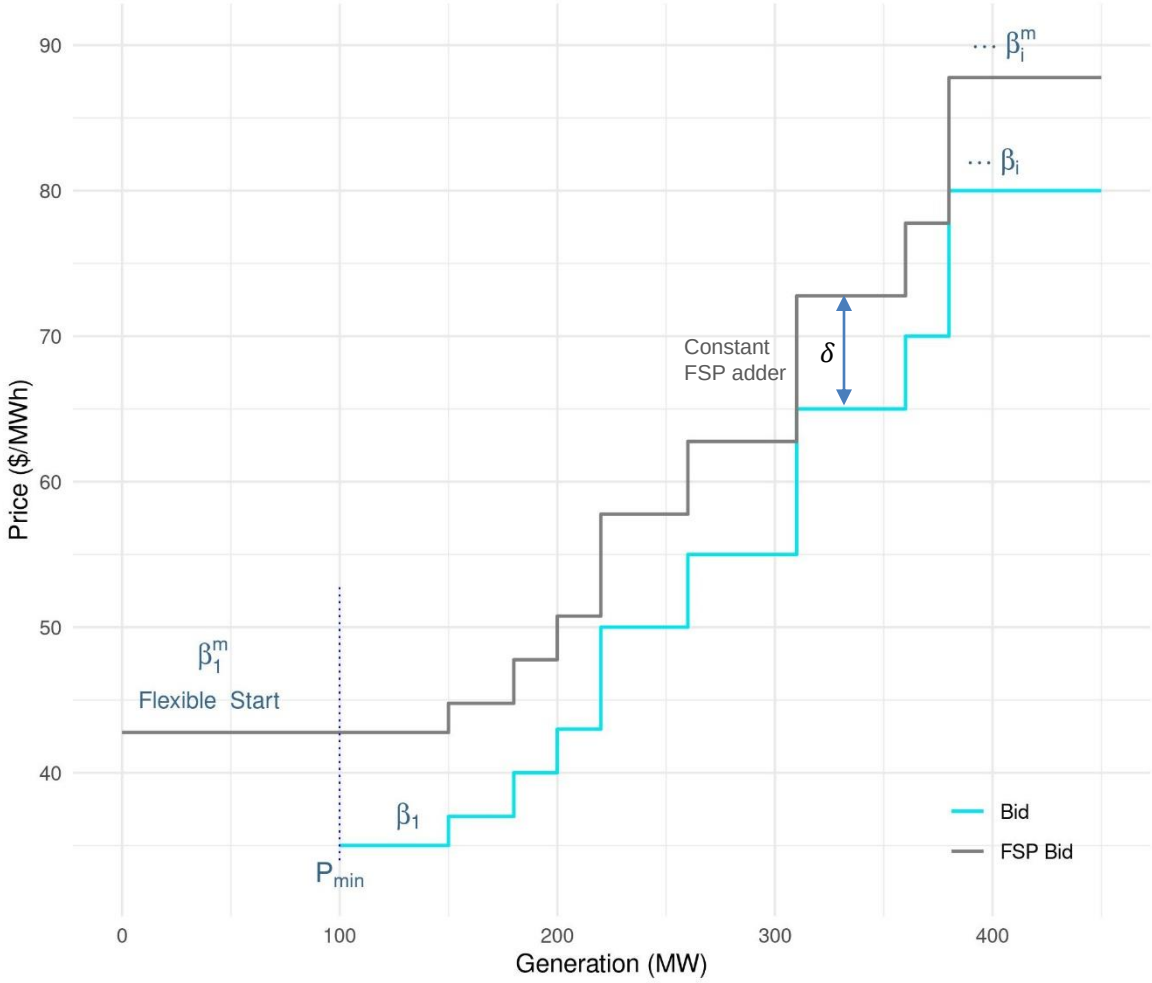
A constant adder is estimated to reflect both MLC and STUC

$$\delta^e = \frac{\$2000 + (\$5000 - 35 * 100)}{450\ MW}$$

$$= \frac{\$2000 + \$1500}{450\ MW} = \$7.77/MWh$$

This adder applies to each segment of the bid

First segment is extended to 0 MW to model a flexible start



Alternative 3: Average amortization relies on identifying the least-cost segment across the variable range

Total production cost at segment i

$$\psi_i = STUC + \frac{\Delta t}{60} max\left\{1, \left\lceil \frac{MUT}{\Delta t} \right\rceil\right\}\left\{MLC + \sum_{k=1}^{i}(p_k - p_{k-1})\beta_k\right\} \quad \forall\, i \in I$$

Where

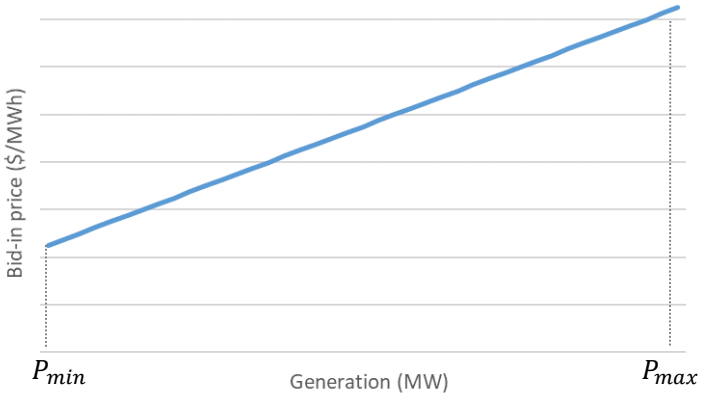
β_i is the bid-in price for segment i

p_i is the i-*th* generation break point of the step-wise bid

This yields the minimum average price as

$$\delta^m = \min_{p_i^*} \frac{\psi_i}{\frac{\Delta t}{60} max\left\{1, \left\lceil \frac{MUT}{\Delta t} \right\rceil\right\} p_i}$$

The minimum average price defines the breaking point for the adjusted bid to be used as the least-cost segment



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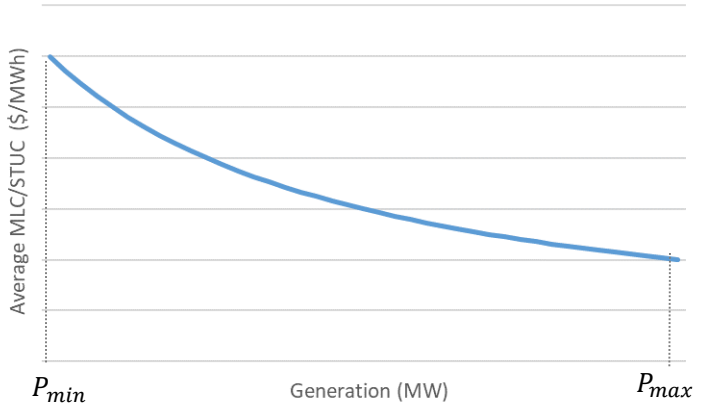

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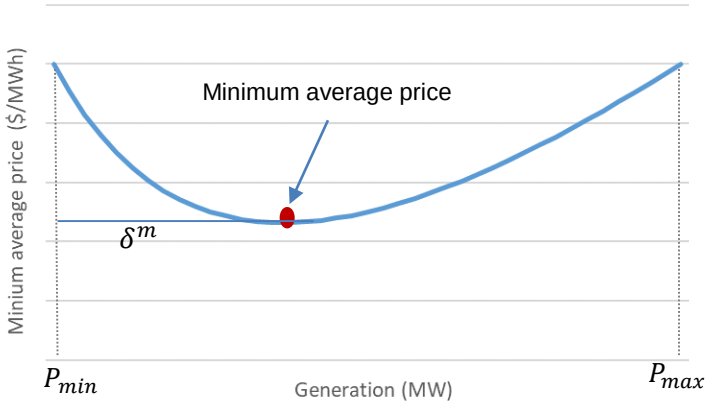


Illustration: minimum averaged-cost is a different method to amortize commitment costs

MLC=$5,000/*hr*
STUC=$2,000 per start
MUT= 1 *hr*

Between 0 and P_{min} , only MLC and STUC define the average cost at Pmin

$$\delta_0 = \frac{\$2000+\$5000}{100\ MW} = \frac{\$7000/hr}{100\ MW}$$

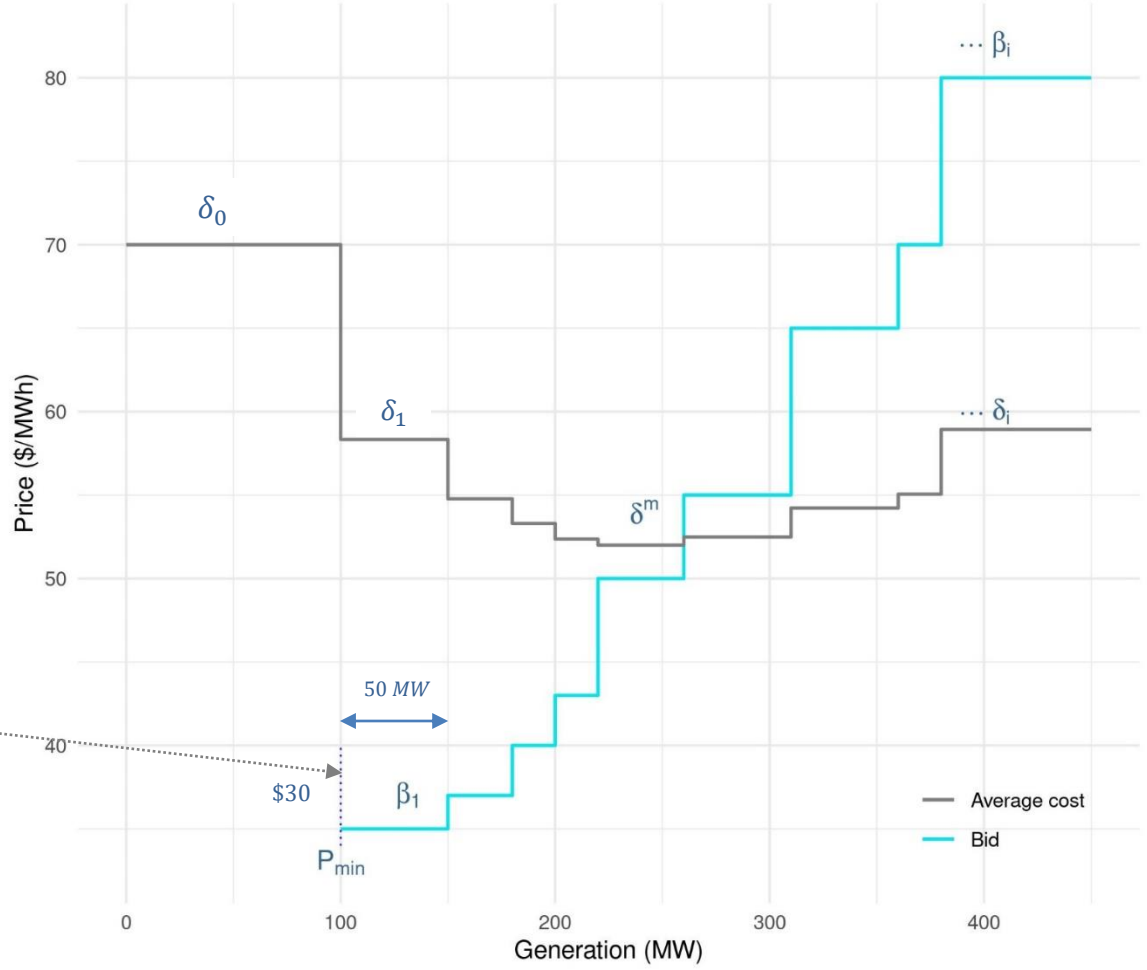
$$= \$70/MWh$$

First segment average cost appends variable cost of first segment

$$\delta_1 = \frac{\$7000 + 30 * 50}{100 + 50\ MW}$$

$$= \$56.6/MWh$$

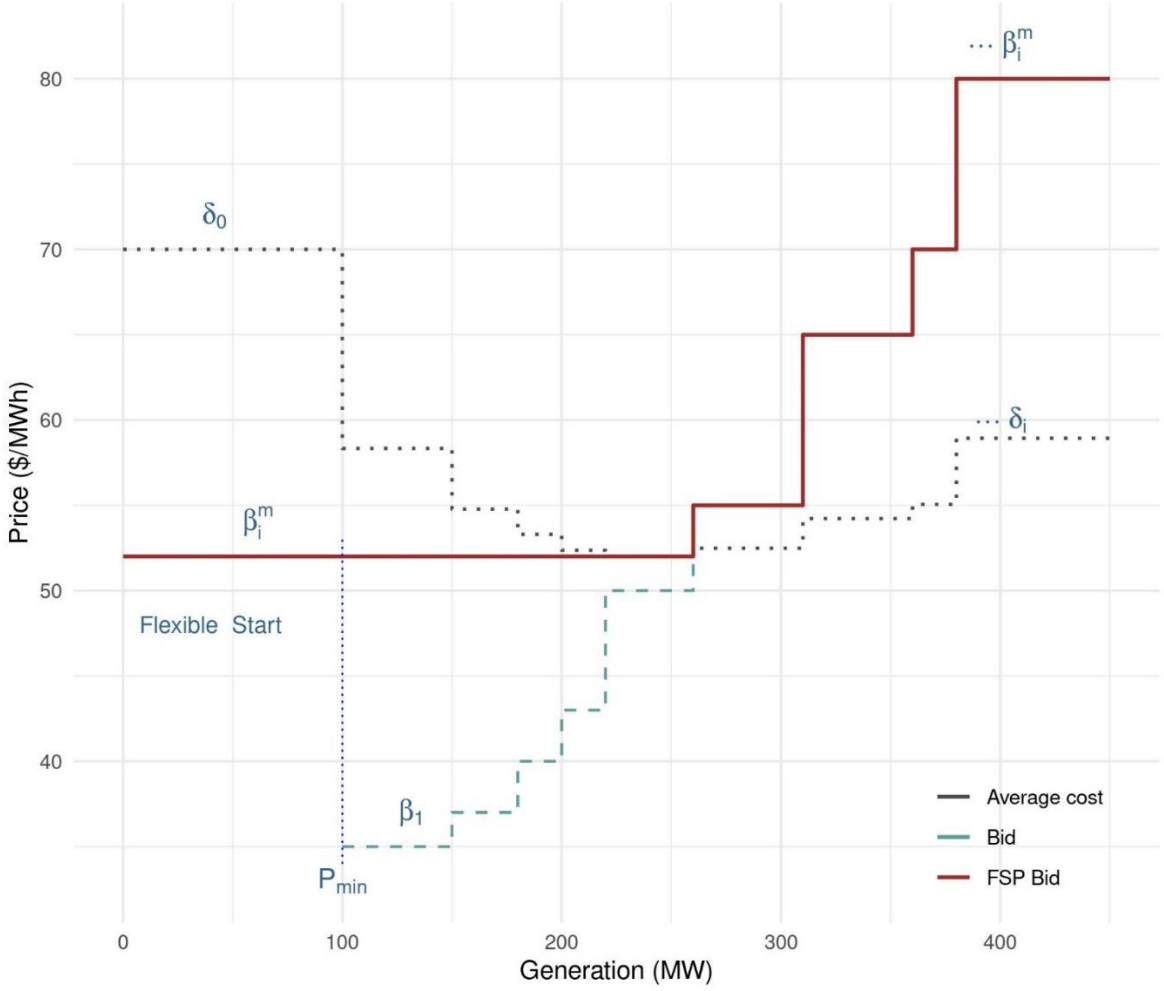
The resulting curve will attain a minimum average cost



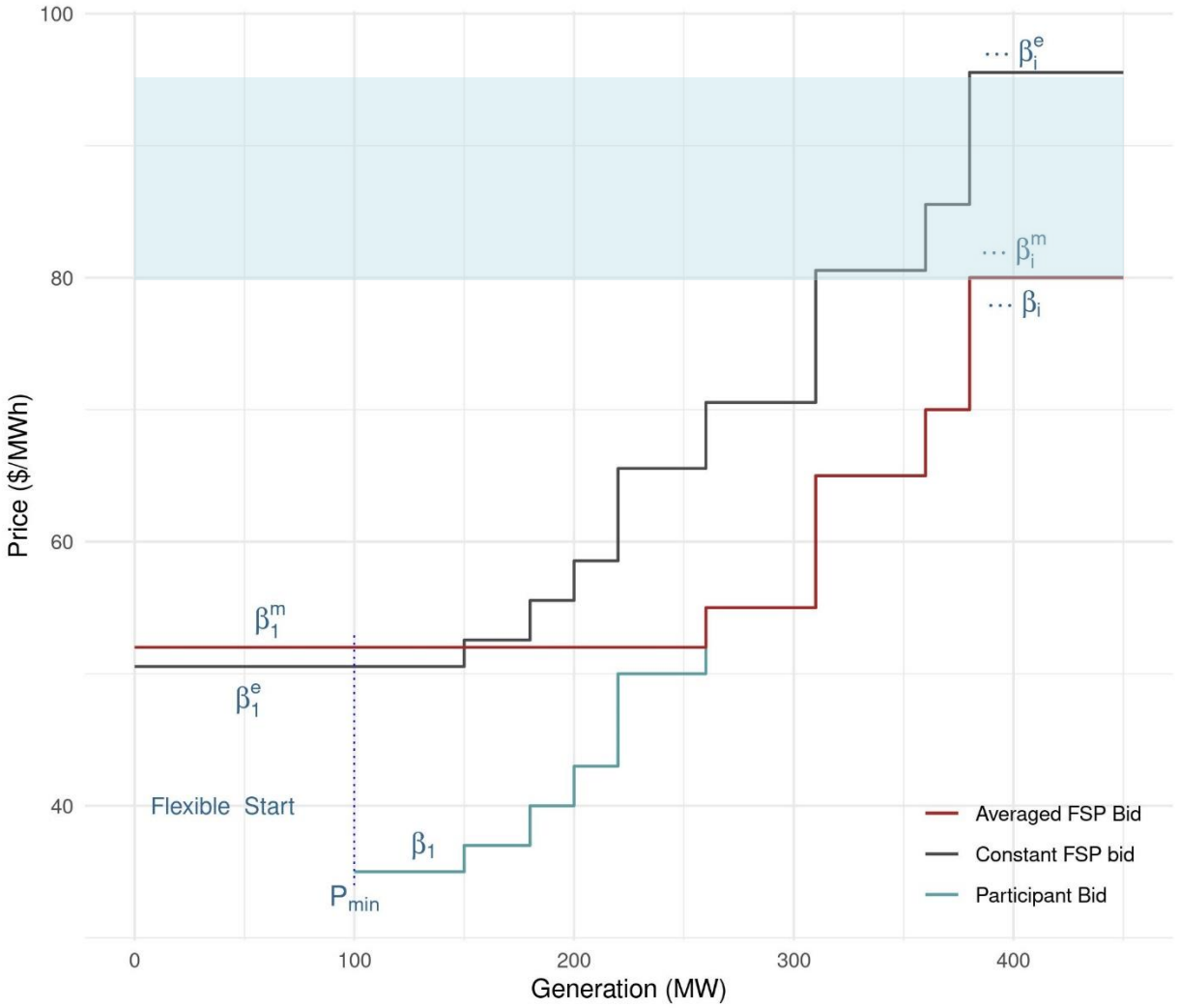
The minimum average cost defines the first segment of the adjusted bid curve

The minimum average cost extends to the left up to 0 MW and covers the flexible startup range up to Pmin

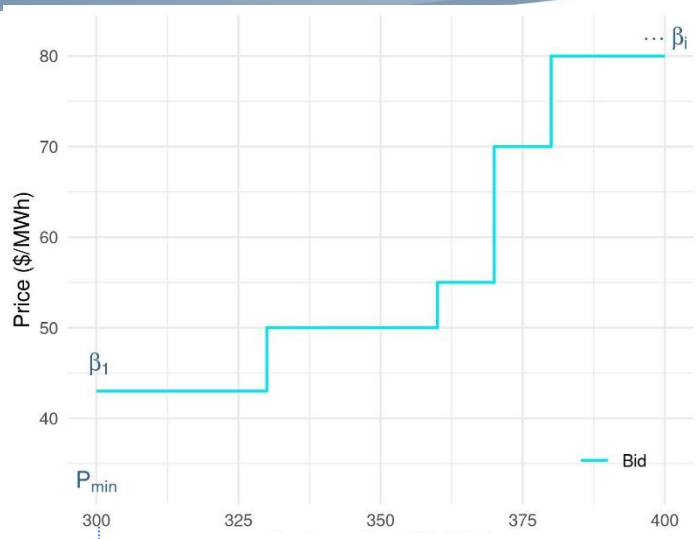
Segments to the right of the minimum-cost segment use the original bid curve

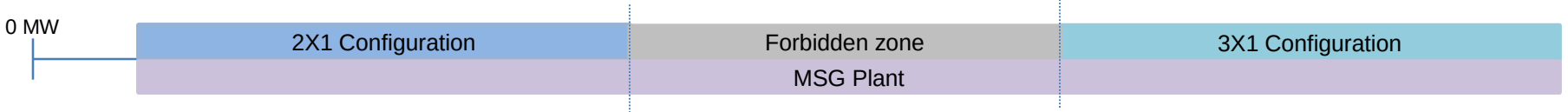


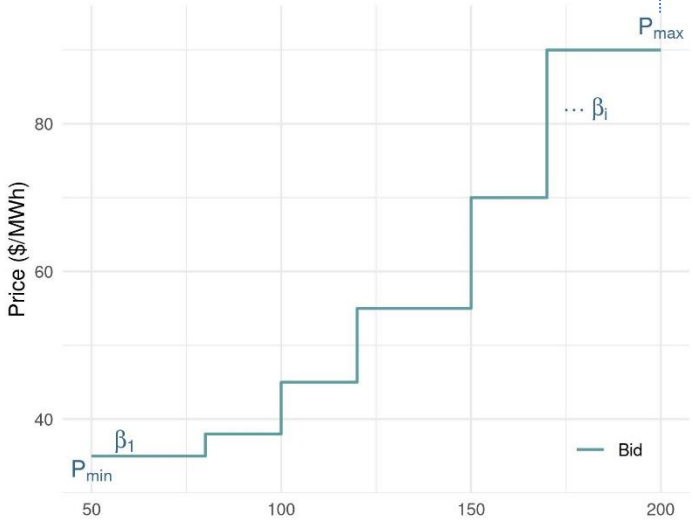
Constant amortization may tend to have higher-priced segments towards the end of the range than averaged-cost amortization



CAISO's market has sophisticated multi-stage generator model for combined cycle plants, which involves transitions between configurations





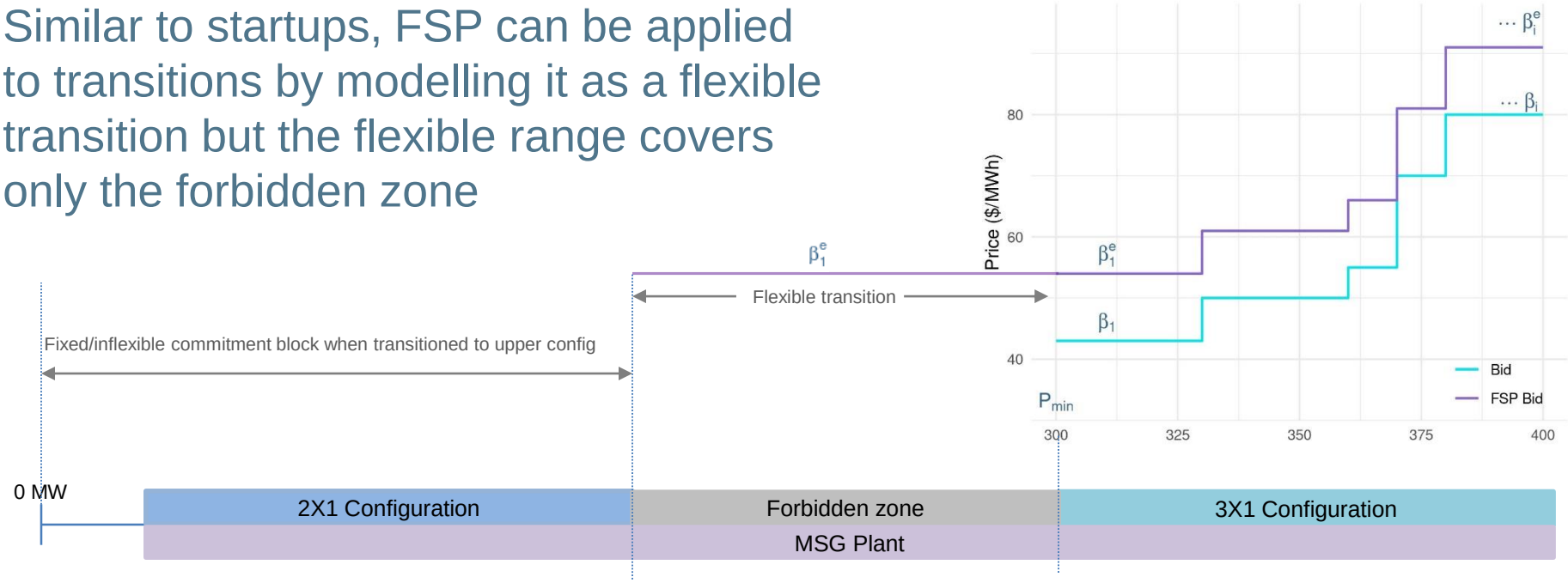


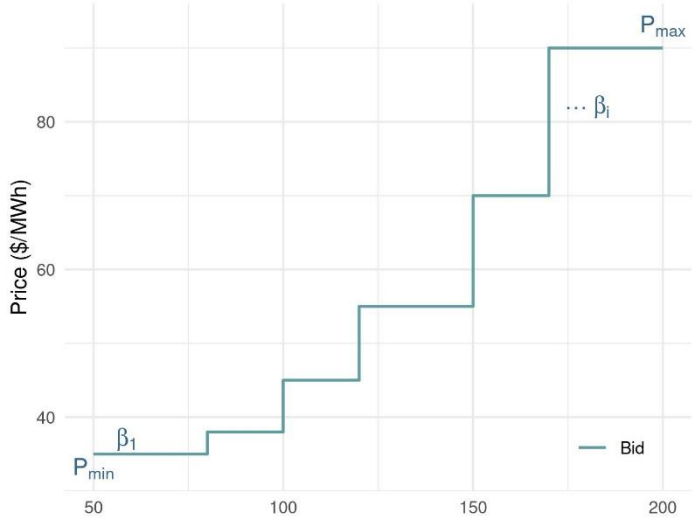
A transition involves the FROM and TO configurations

A transition involves discrete costs:
- transition costs
- change of MLC

Each configuration has its own MLC and MUT

Similar to startups, FSP can be applied to transitions by modelling it as a flexible transition but the flexible range covers only the forbidden zone





The natural extension of FSP is to bridge configurations between the forbidden zone to have a continuous bid range

This requires to extend the first segment of the TO config down to the Pmax of the FROM config

The range from 0 MW to Pmax of the FROM config is modelled as fixed as it is not dispatchable

There are more nuances when applying FSP to MSG units

- CAISO's model allows for overlapping configurations; in these scenarios, the analysis considers that there is no range for flexible transition
- Transition costs and MLC of the TO configuration are amortized in the variable-cost bid of the TO configuration
- The definition of fast transition unit can be based on both the transition time and MUT
- Upward transitions are the natural extensions of fast startups;
  - downward transitions are not an obvious natural extension of FSP
  - potentially, only MLC can be amortized to the TO configuration
  - this analysis does not apply any processing to downward transitions
- More scenarios to define when base schedules interact with transitions

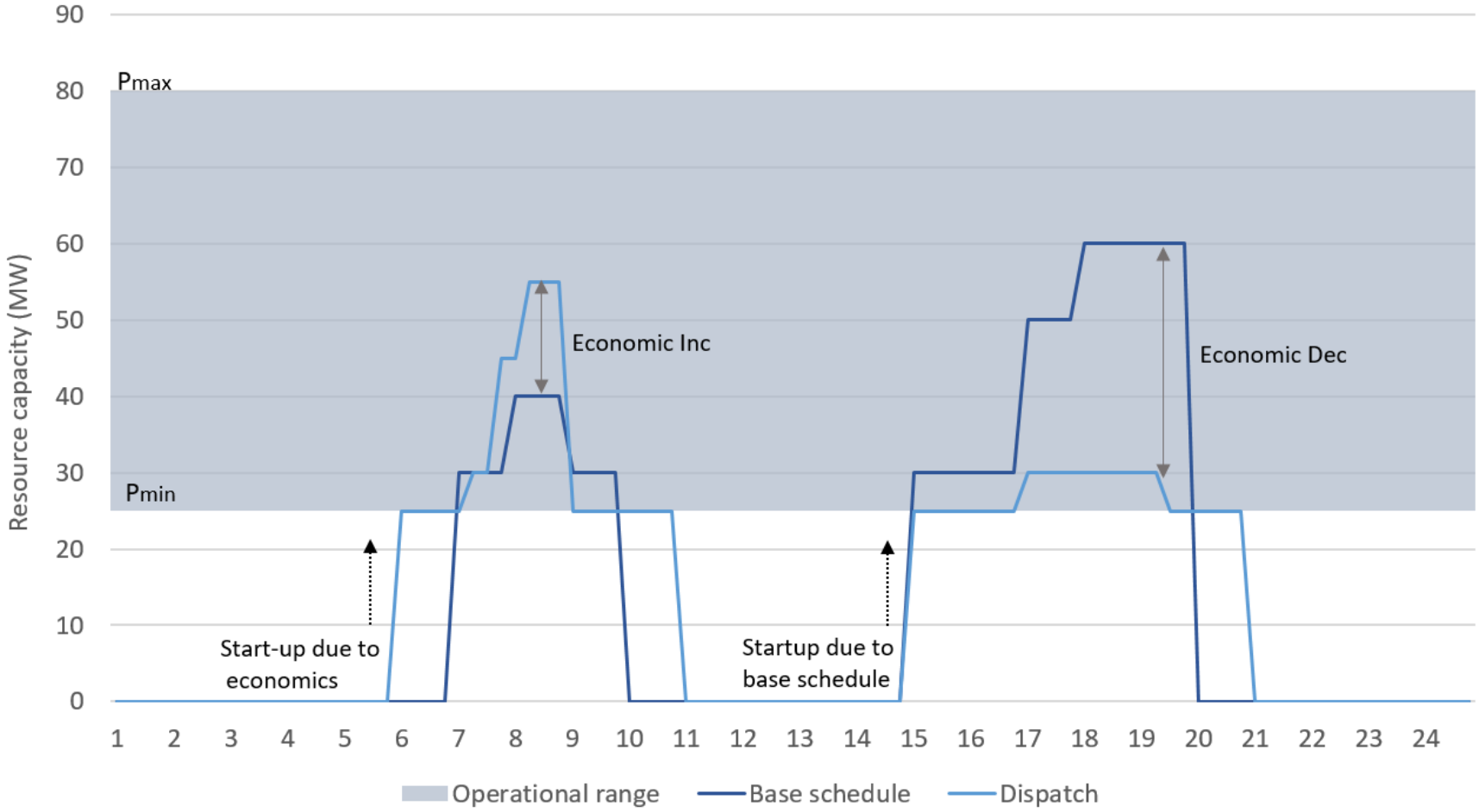
Consideration of Minimum Online Constraints

- Based on operating procedures, there may be requirements of minimum online capacity for a defined area
- In order to reduce manual exceptional dispatches, CAISO uses minimum online constraints
- These constraints are defined in terms of minimum online capacity based on the Pmax of resources
- MOCs are currently enforced as needed in the day-ahead market; they are not enforced in real-time
- Generally, non-fast-start resources are used to meet MOC needs
- Even if fast start resources were used in the day-ahead market constraint, they will be re-optimized in real-time
- Whether a unit is part of an MOC is not relevant in the real-time market and can therefore be considered as a regular resource for FSP

The WEIM model relies on the concept of base schedules

- Base schedules are the reference point for settlements of resource dispatches
- There are incremental and decremental dispatches relative to base schedules
- Base schedules are not self schedules
- In the presence of variable bids, base schedules are not relevant for economical dispatches
- Base schedules will enable commitment of units beyond economics
  - Induce unit to be On to meet its base schedule
  - Transition unit to be at the configuration with base schedules
- Commitment costs for units with base schedules are not factored in for the optimal solution (similar to self schedules)
- In this analysis, units with base schedules are not subject to FSP
- For CAISO BAA, there are no base schedules, but self schedules are considered

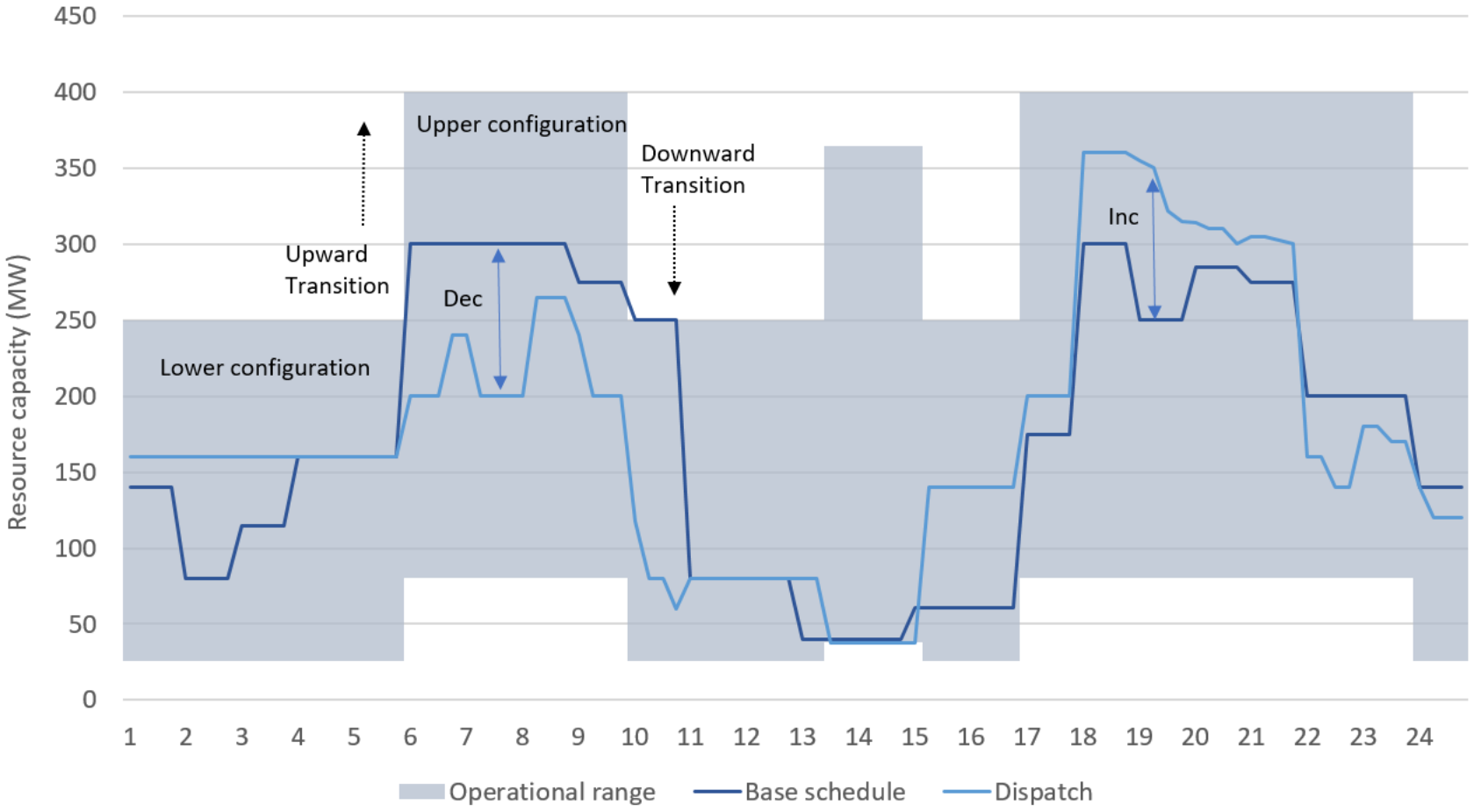
For units with base schedules, start ups will be driven largely by base schedules and not by commitment costs



Dec's and Inc's relative to base schedules are driven by real-time economics

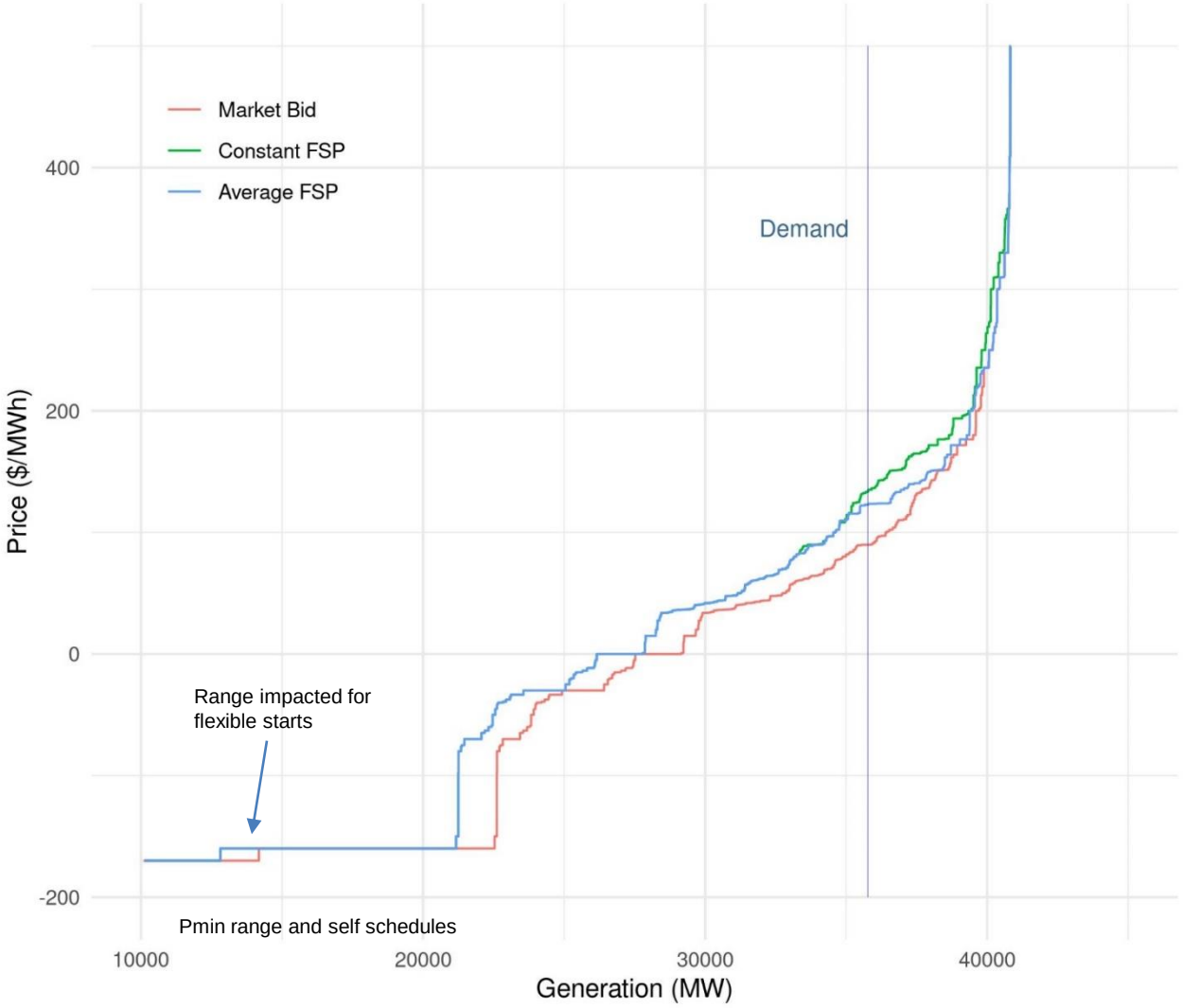
Start-ups due to economics are considered for FSP,
while those due to base schedules are not considered for FSP

For units with base schedules, transitions will be driven largely by base schedules and not by commitment costs



Dec's and Inc's relative to base schedules are driven by real-time economics

The FSP logic shifts the supply stack. Illustration of October 19, 2023. HE18



The intersect of the vertical demand curve with each of the supply bids define the market clearing price for each scenario

Supply and demand considerations

The FSP analysis uses the following power balance

$$G + I + X^I = D + E + PS + \zeta + X^E + \phi$$

Where:

- G Internal supply
- D Demand forecast
- I , E Imports and exports transactions
- X^I, X^E Transfers in and out of CAISO area
- PS Demand from pumps
- ζ Transmission losses
- ϕ Load conformance

Supply and demand considerations

The power balance used in FSP formulation in pricing run can be cast as follows:

$$G = D - (I - E) - (X^I - X^E) + PS + \zeta + \phi$$

Where:

G Internal supply that needs to be dispatched and priced to meet all demand

D BAA demand that needs to be met

$I - E$ Net interchange, which is fixed due to already priced and cleared in HASP

$X^I - X^E$ Net transfers import, which is considered fixed from scheduling run

PS Demand from pumps, which is considered fixed from scheduling run

ζ Transmission losses, which is known from scheduling run

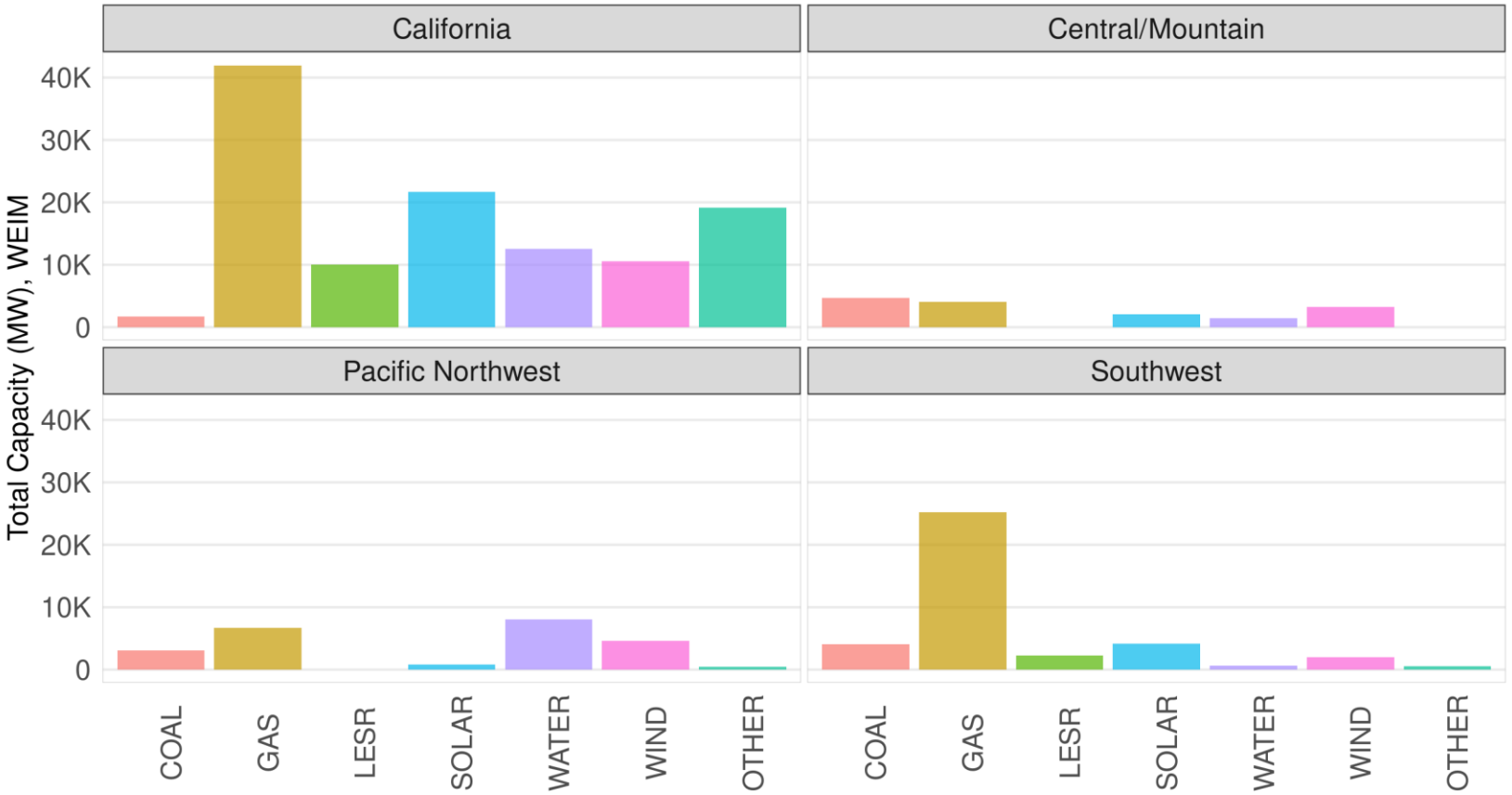
ϕ Load conformance, which is a fixed value

There are three dimensions considered for the FSP analysis

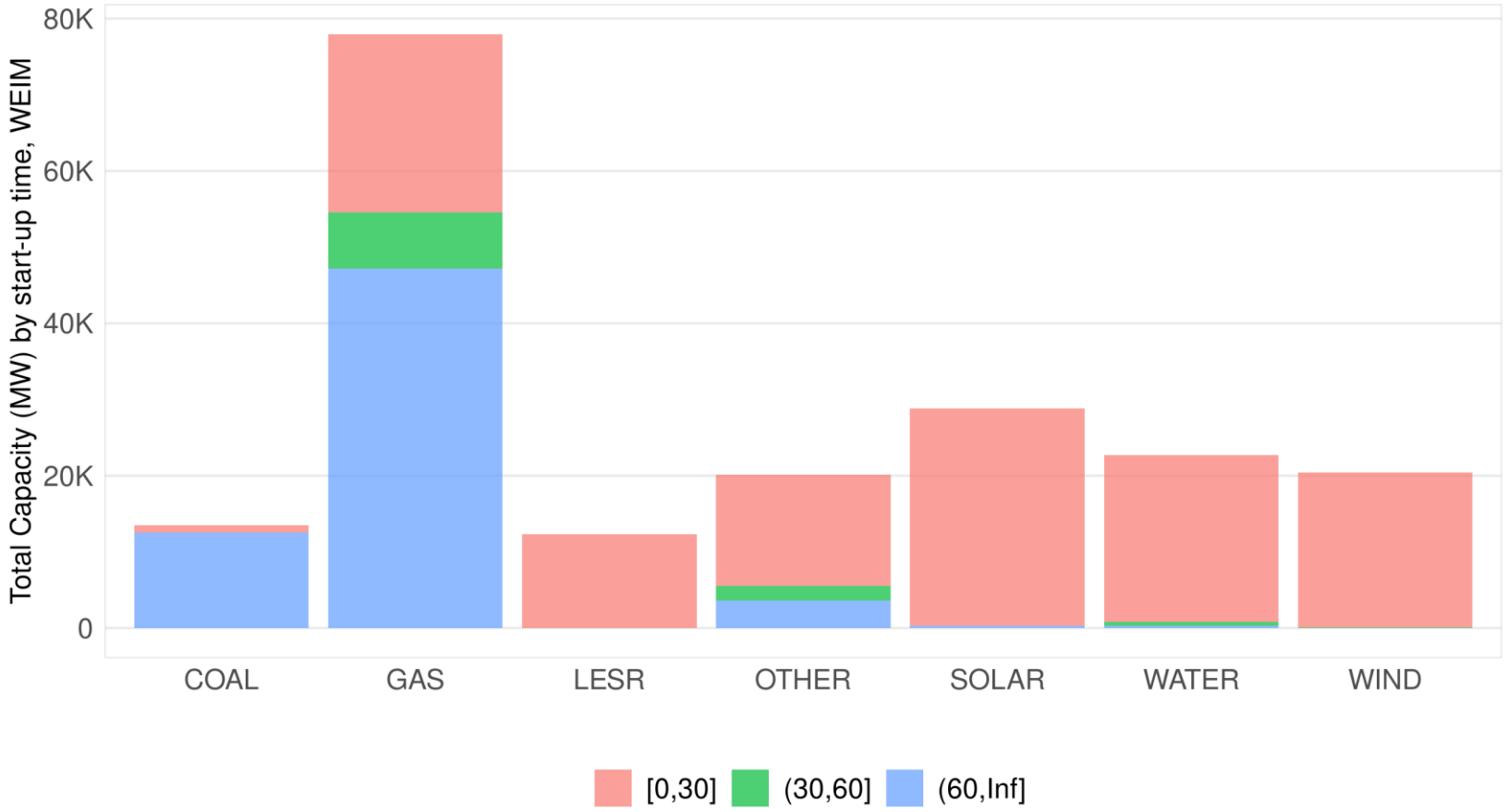
- Time definition
  - Defines the time thresholds to determine what units are considered in FSP logic
- Type of amortization
  - Defines the logic to spread the commitment costs
- Market configuration
  - This is only for analysis set up to determine if price setting is at each BAA individually or at a single system-wide area

Resource attributes in WEIM area

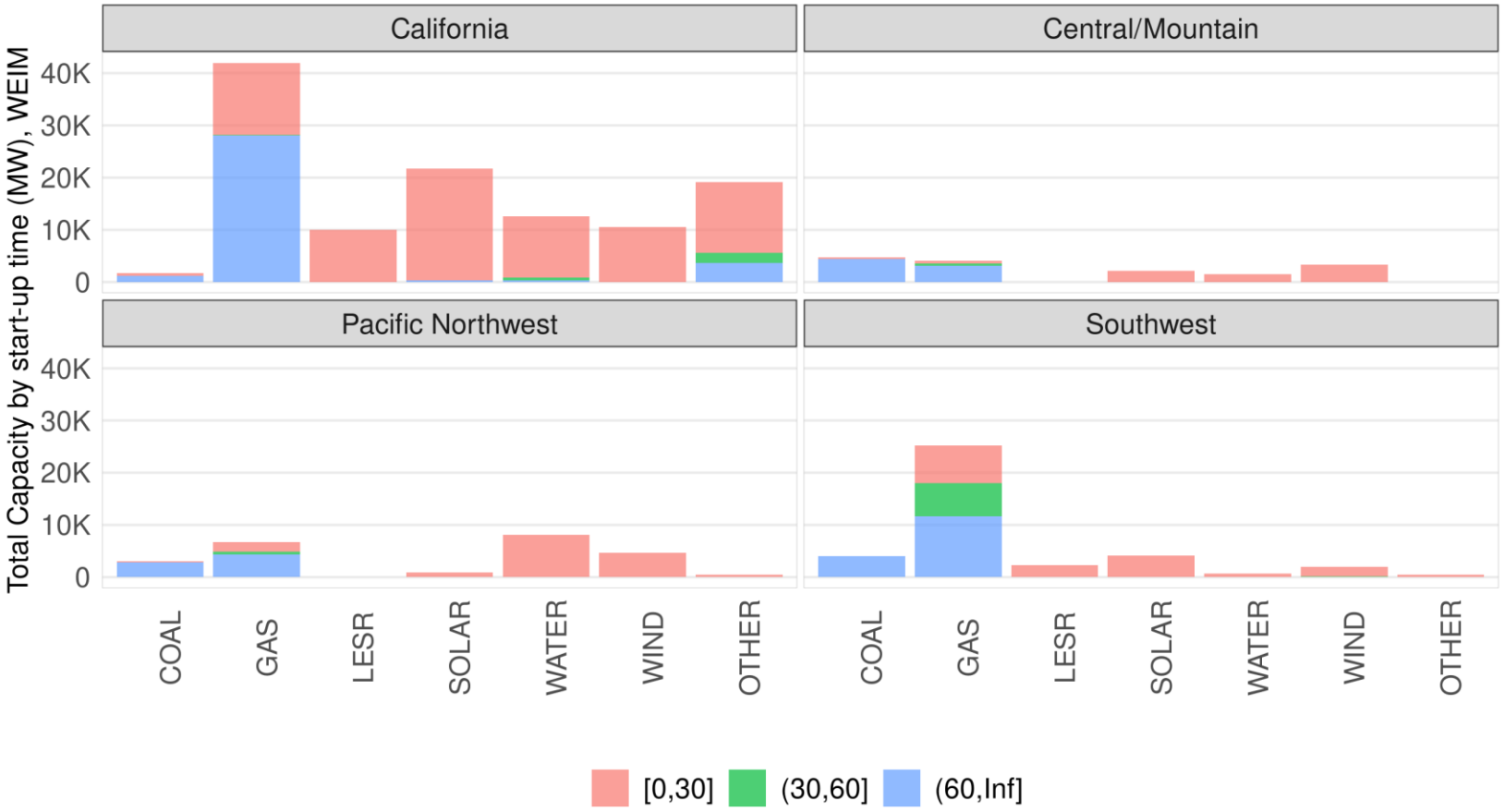
WEIM capacity shows diversity across different technologies and regions



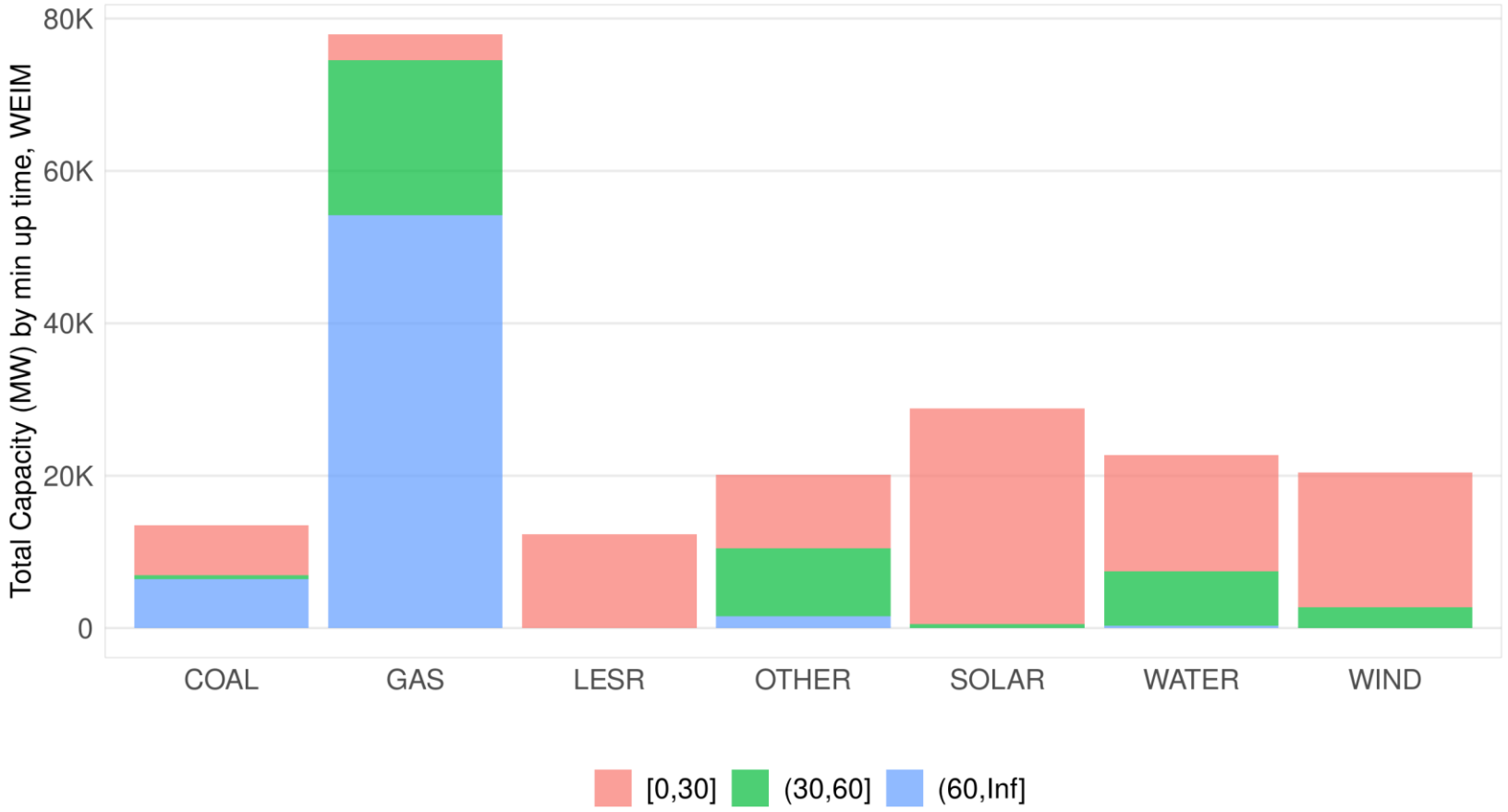
Units with fast-start times are spread across different technologies in the WEIM generation fleet



Units with fast-start times are spread across the WEIM regions

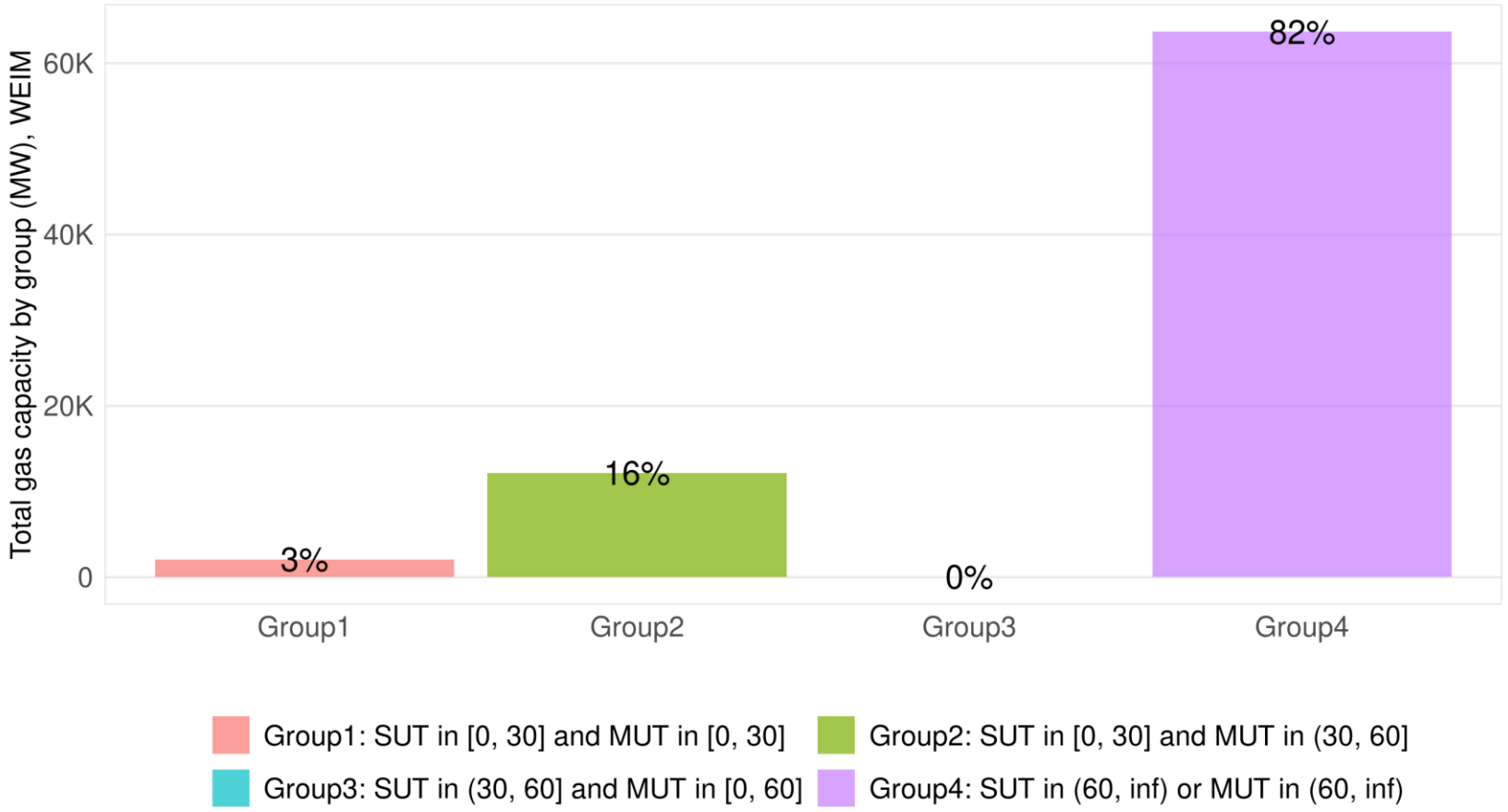


Units with fast minimum-up times are spread across different technologies in the WEIM generation fleet

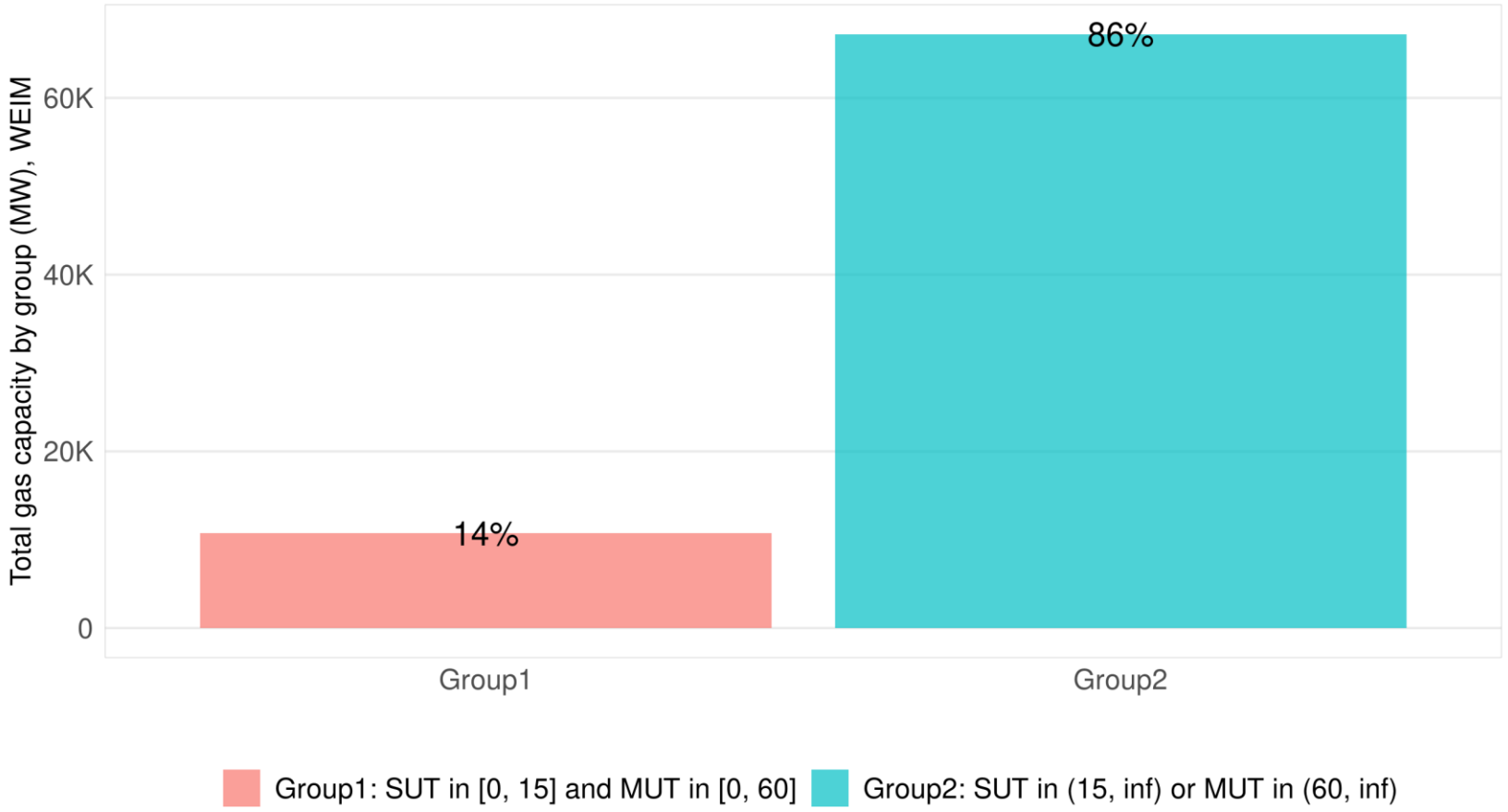


Units with fast minimum-up times are spread across the WEIM regions

About 19 % of gas resources meet the FSP definition considering start-up time and minimum up time

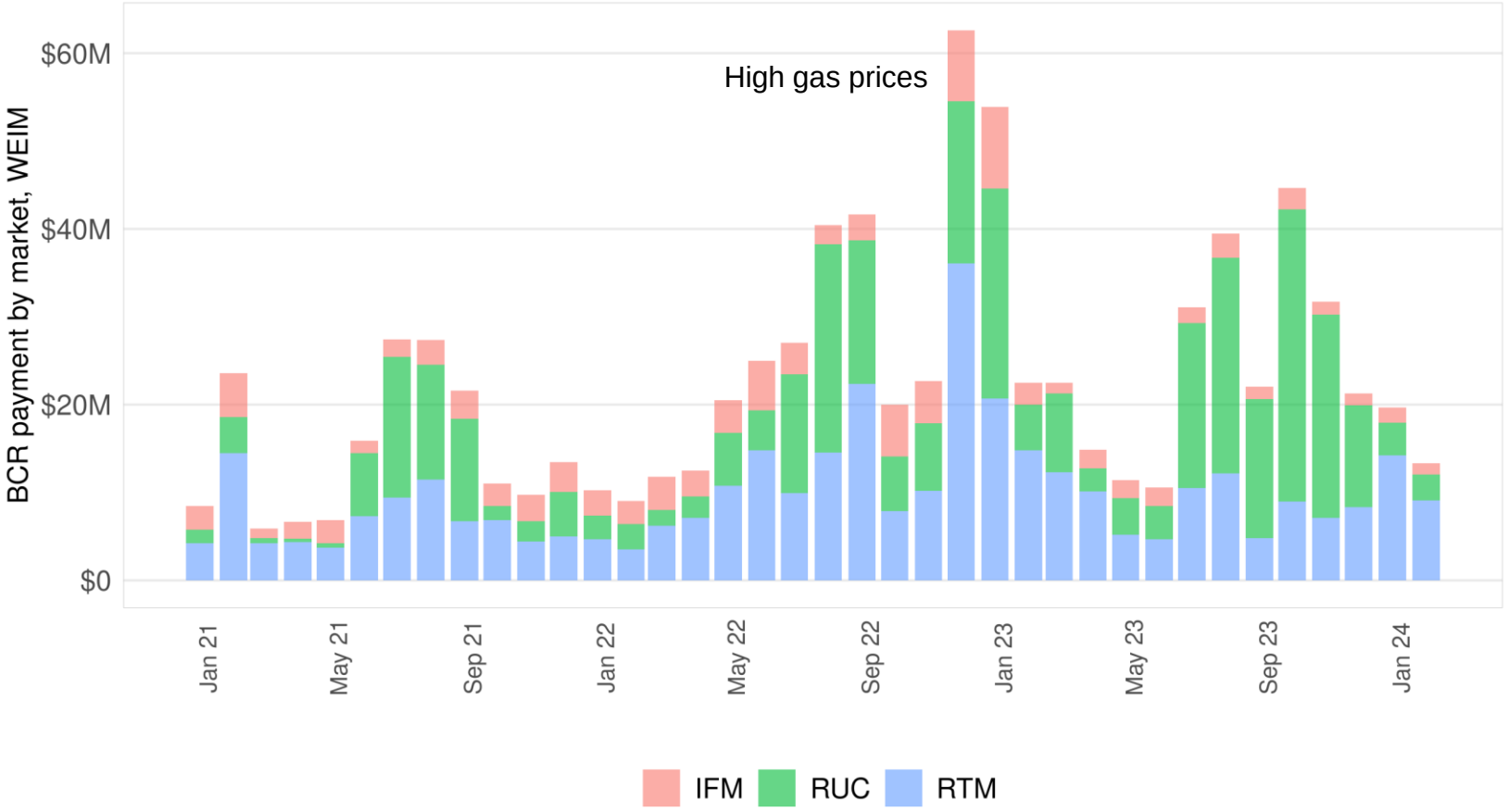


Gas resources by start-up time and minimum up time groups, variation 2



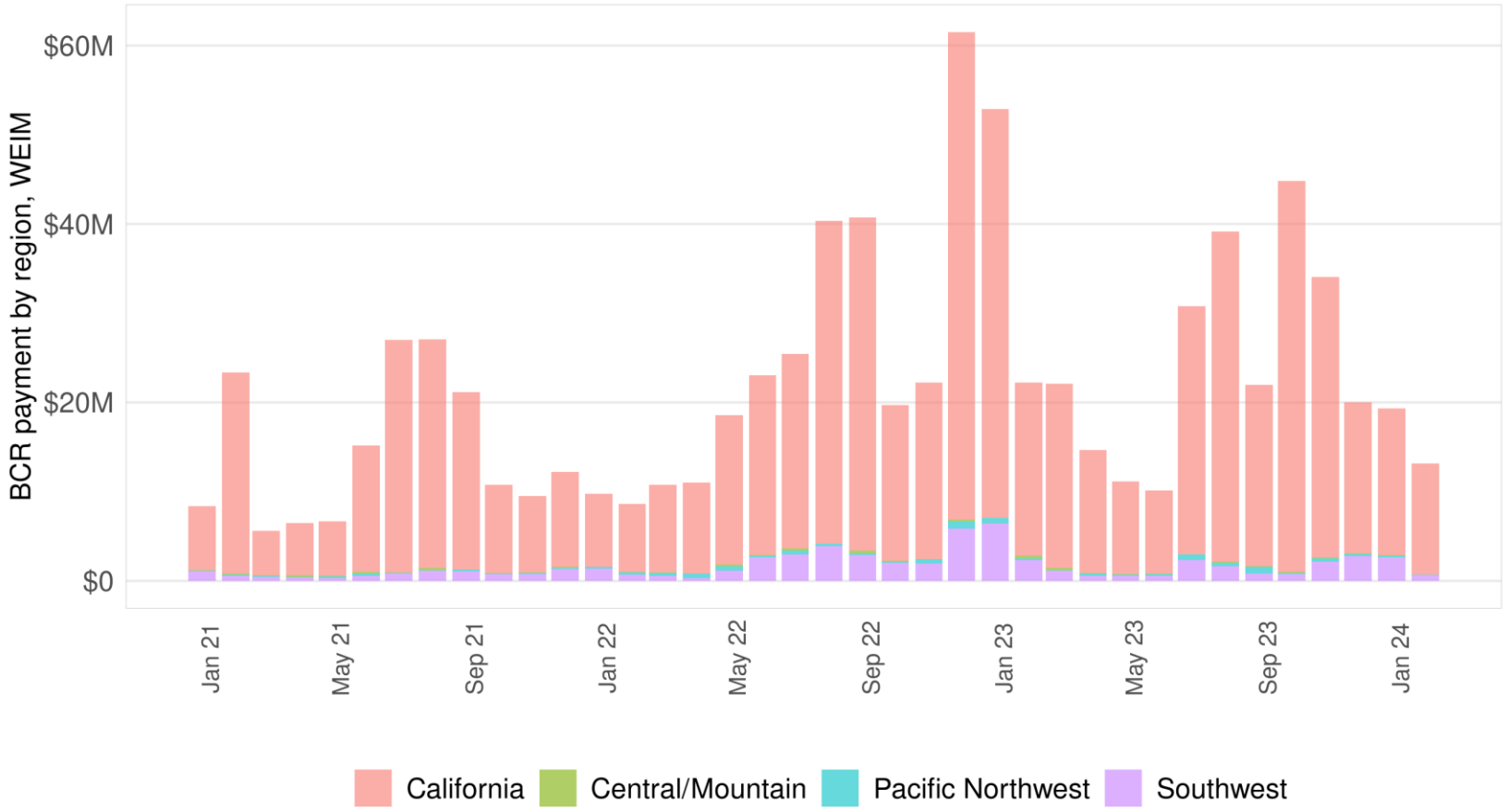
Bid Cost Recovery in the CAISO's markets

Bid-cost recovery is a mechanism to make whole units dispatched uneconomically in the WEIM markets

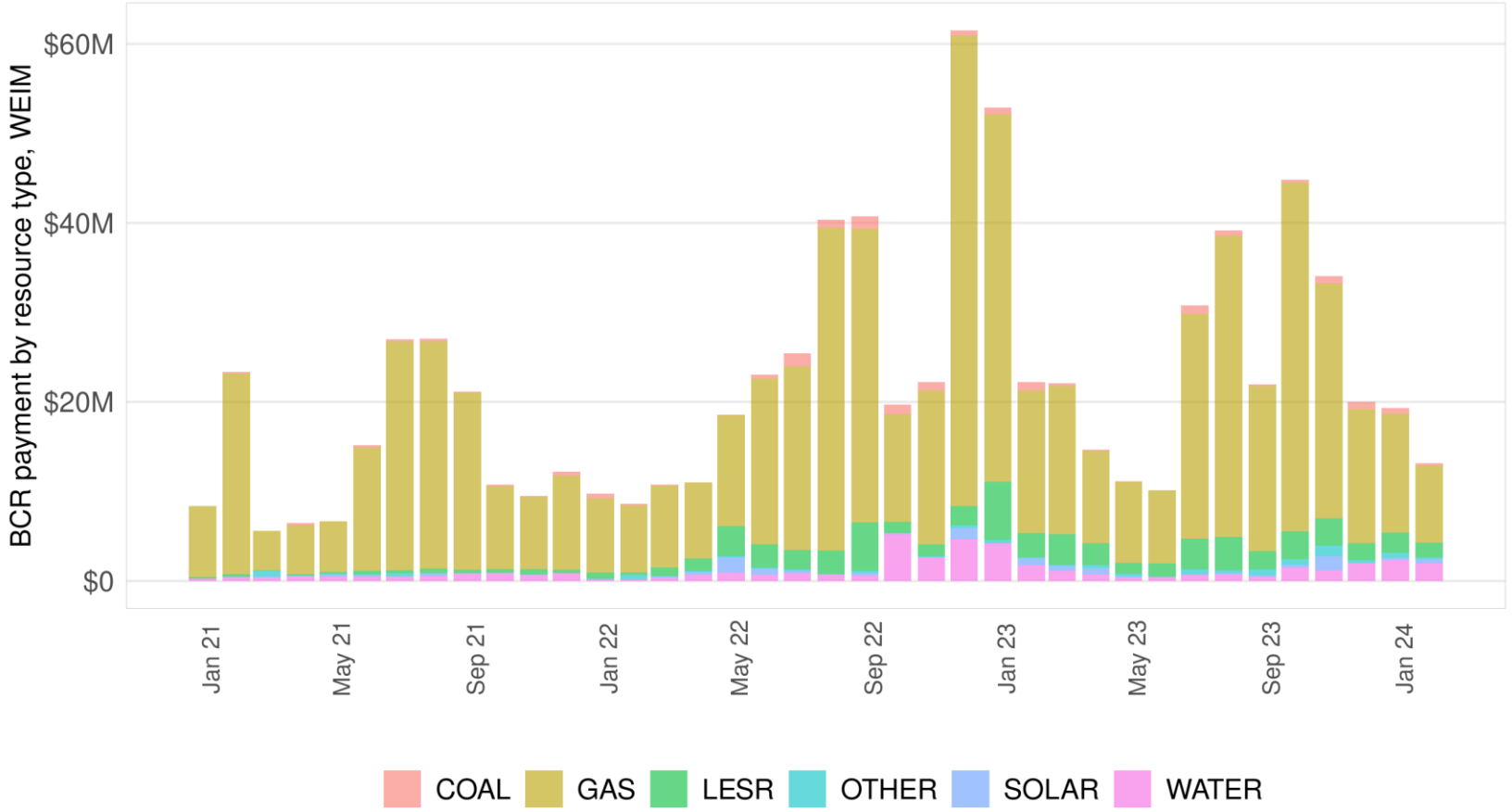


The largest volume of BCR is accrued in RUC and real-time

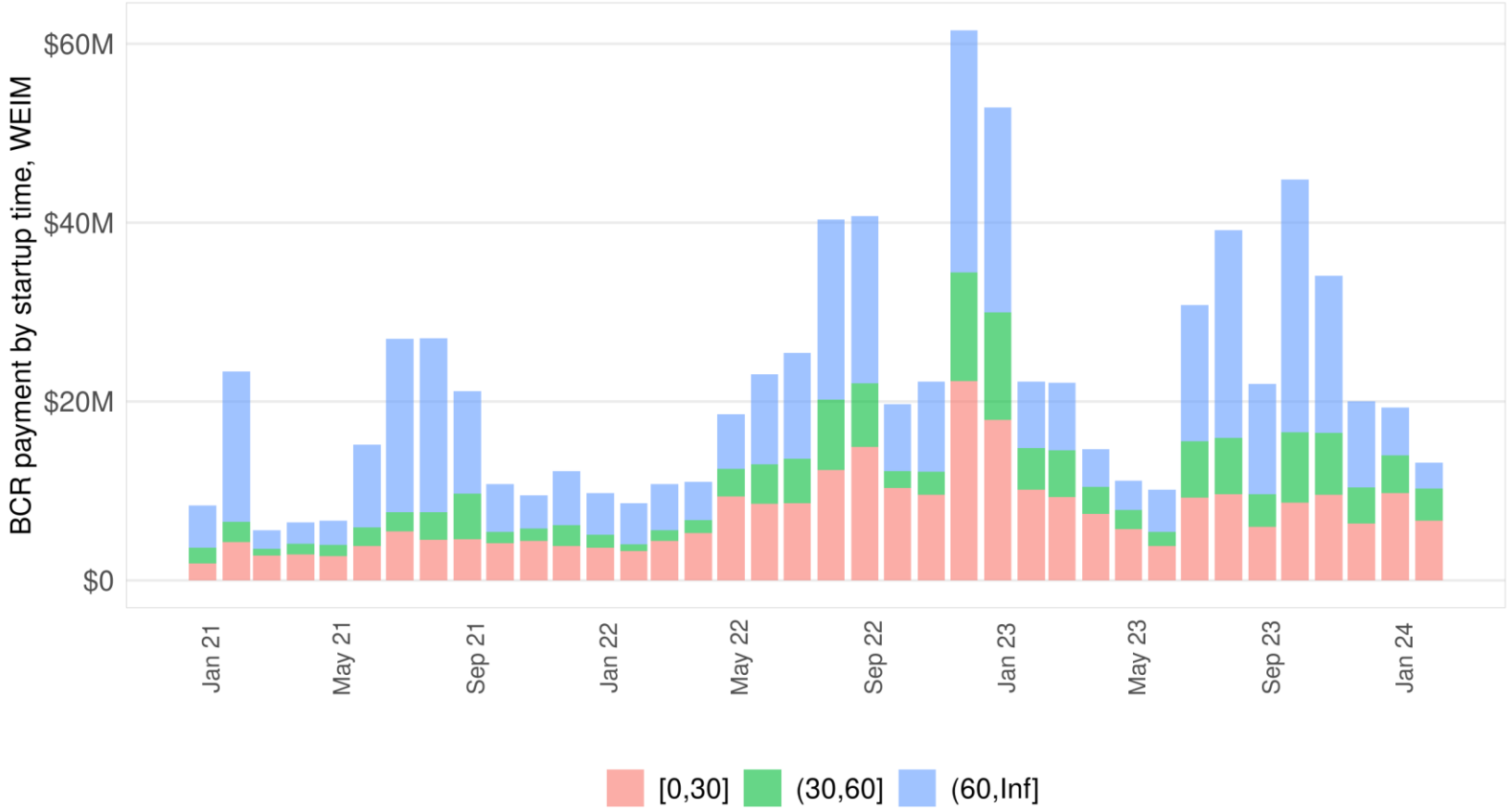
The main share of BCR is accrued in the CAISO area and largely driven by RUC component



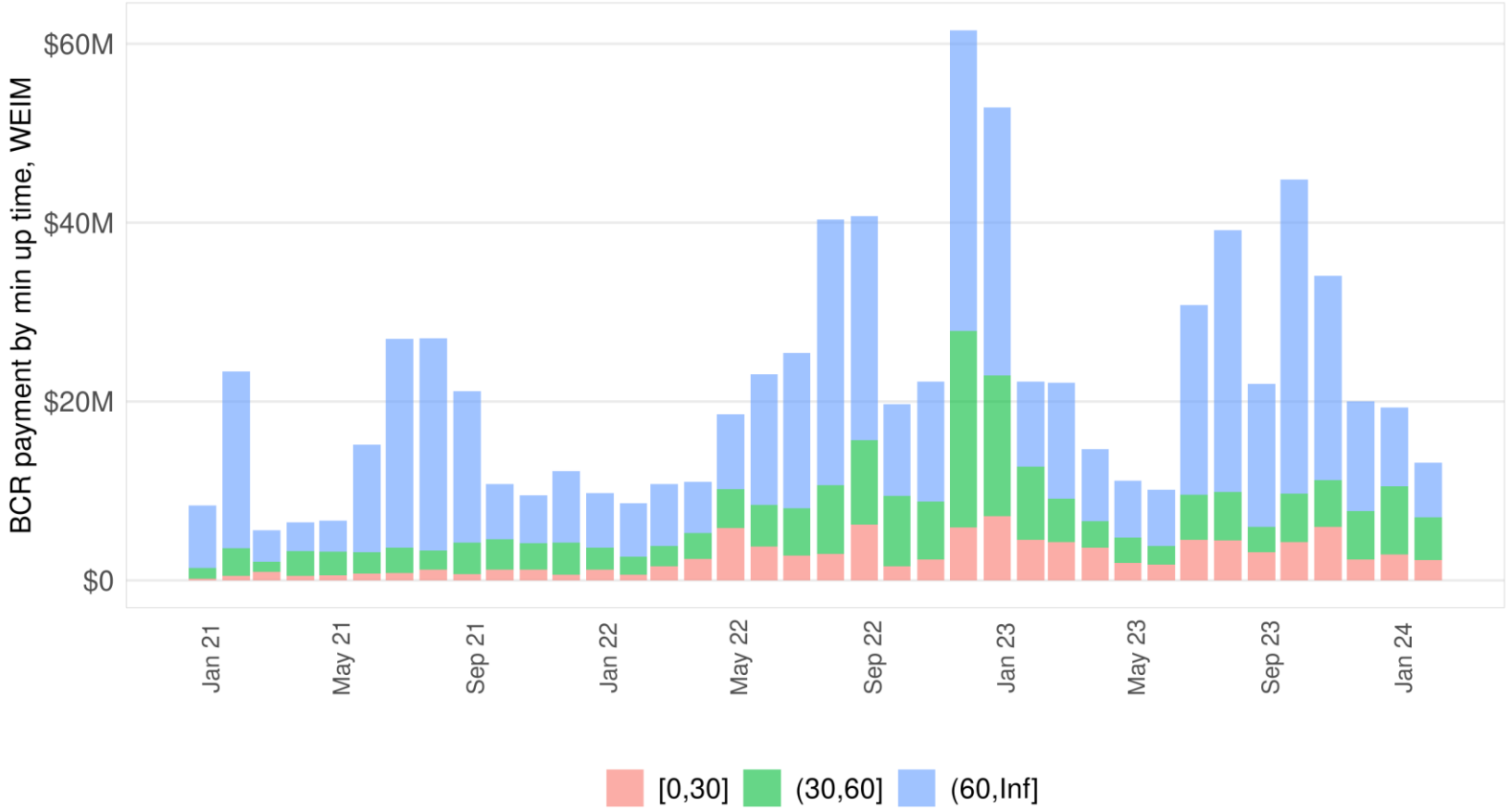
Gas-fired units are largely the main recipient of bid cost recovery



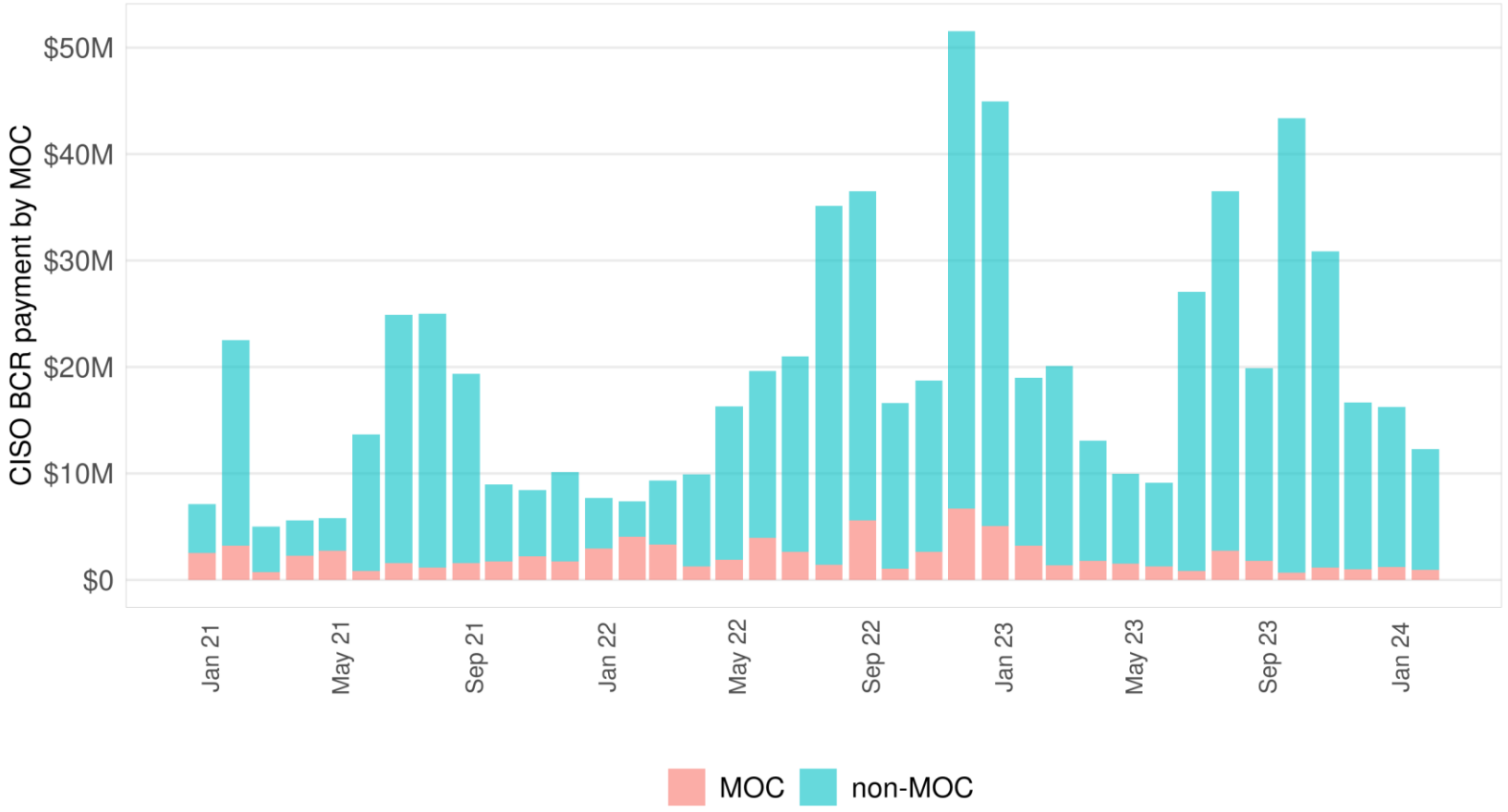
When organized by startup times, the bid cost recovery is more balanced across the different time ranges



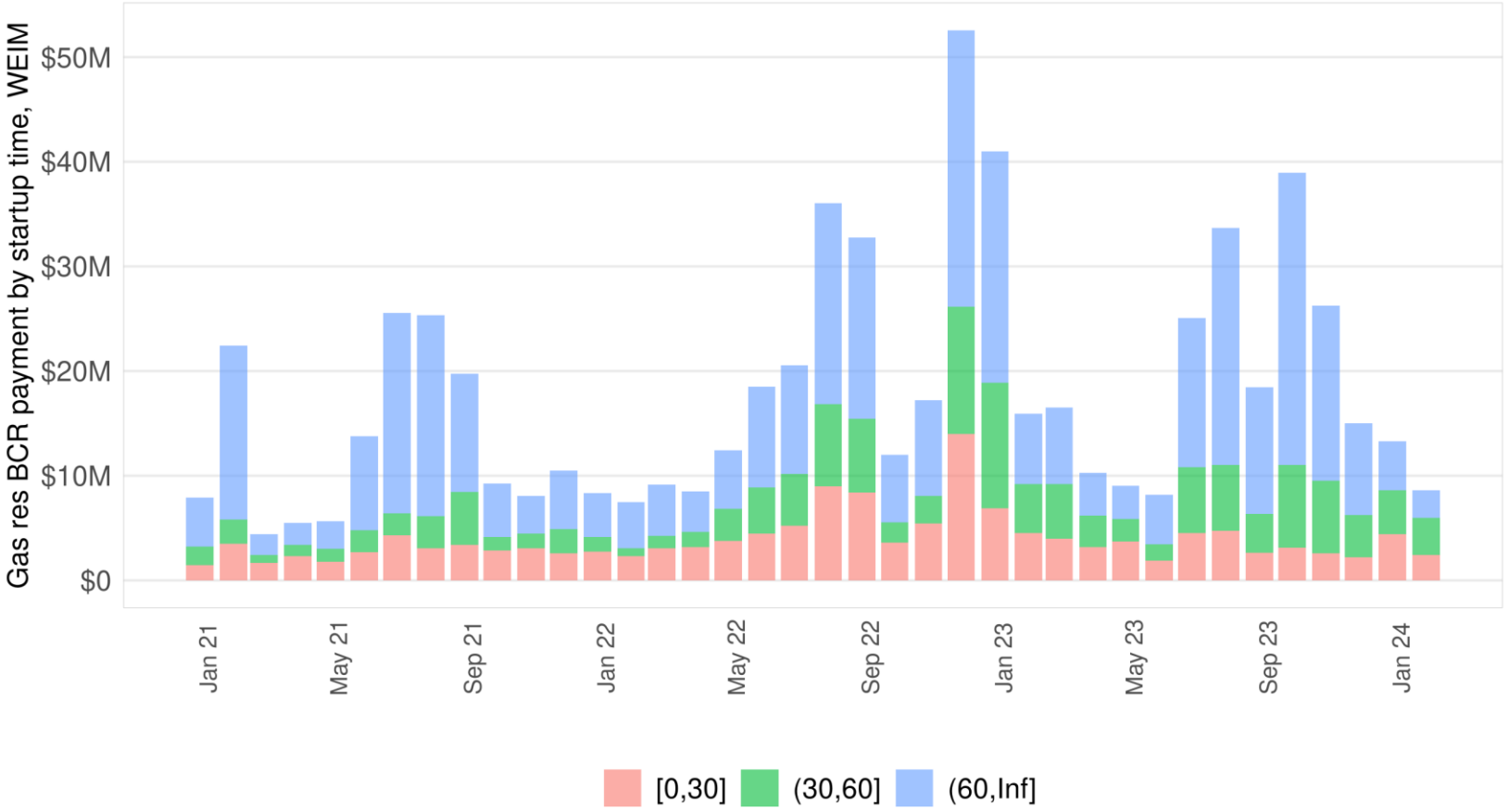
The largest share of bid cost recovery is paid to units with minimum up times longer than an hour



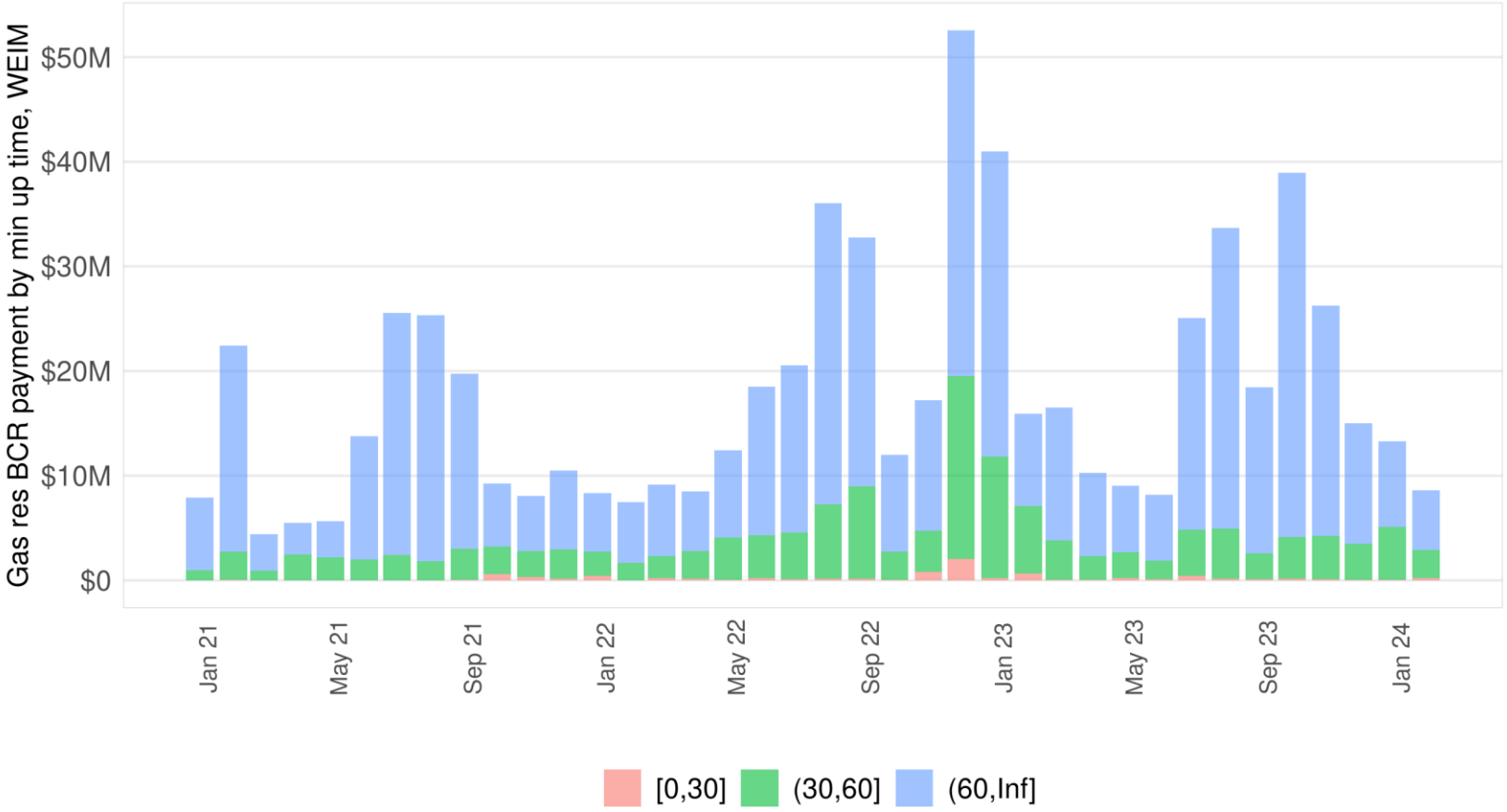
Units associated with minimum-online constraints represent a relatively small share of the whole bid cost recovery



BCR paid to gas units averages about $17.7 million per month in this reported period

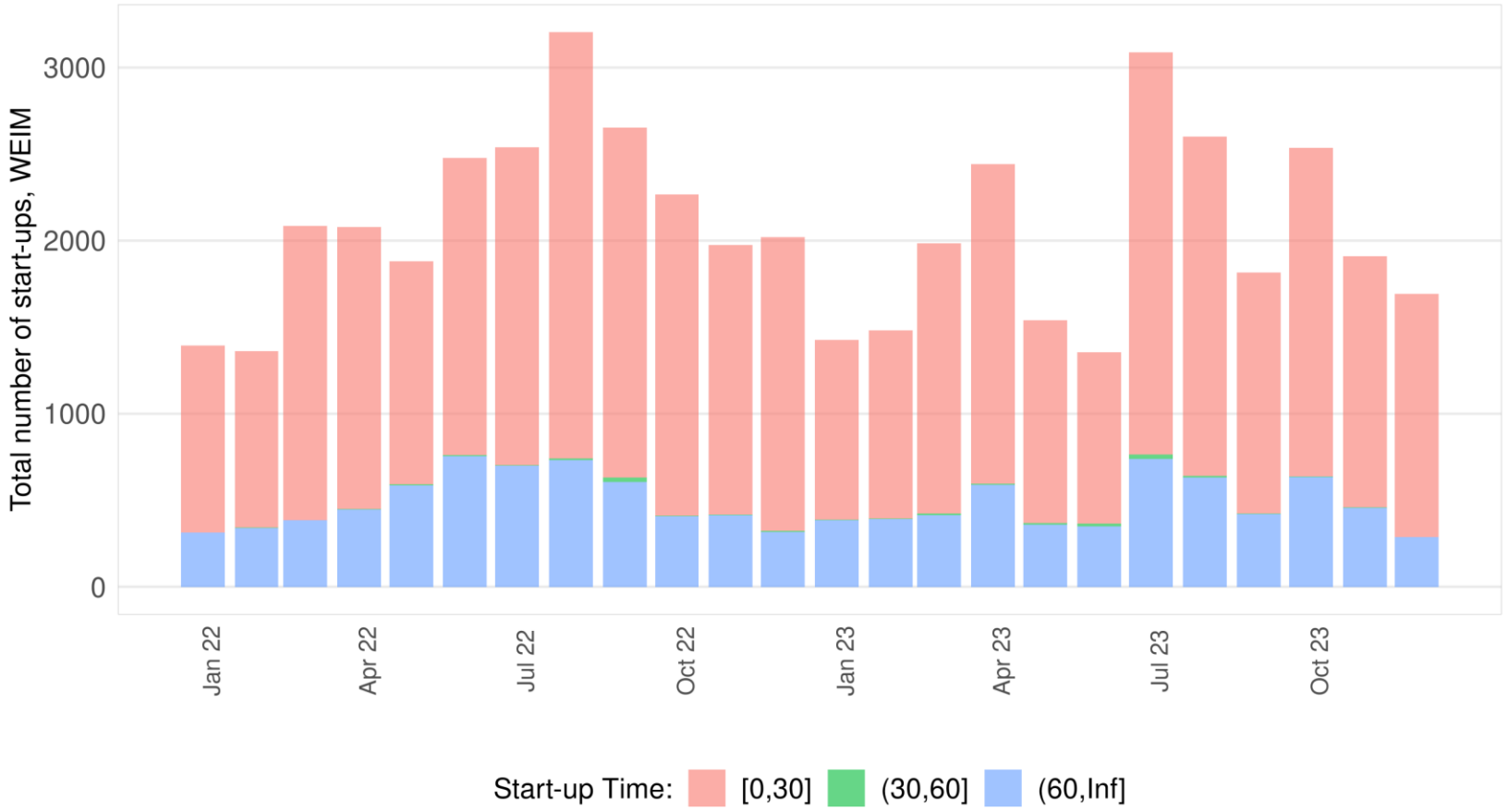


BCR paid to gas units are mostly paid to units with 60 minute or greater minimum up times

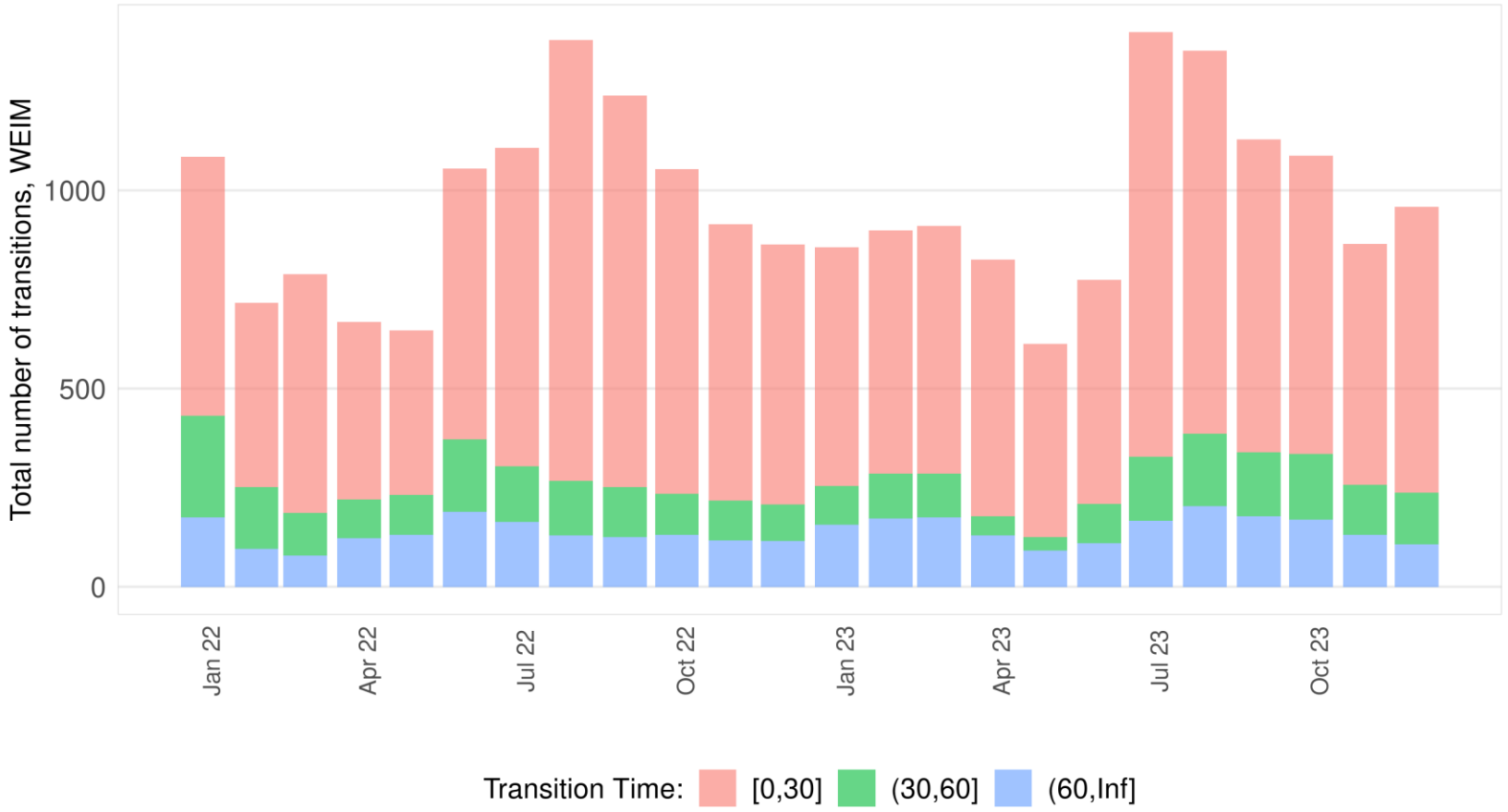


Commitments in CAISO’s real-time market

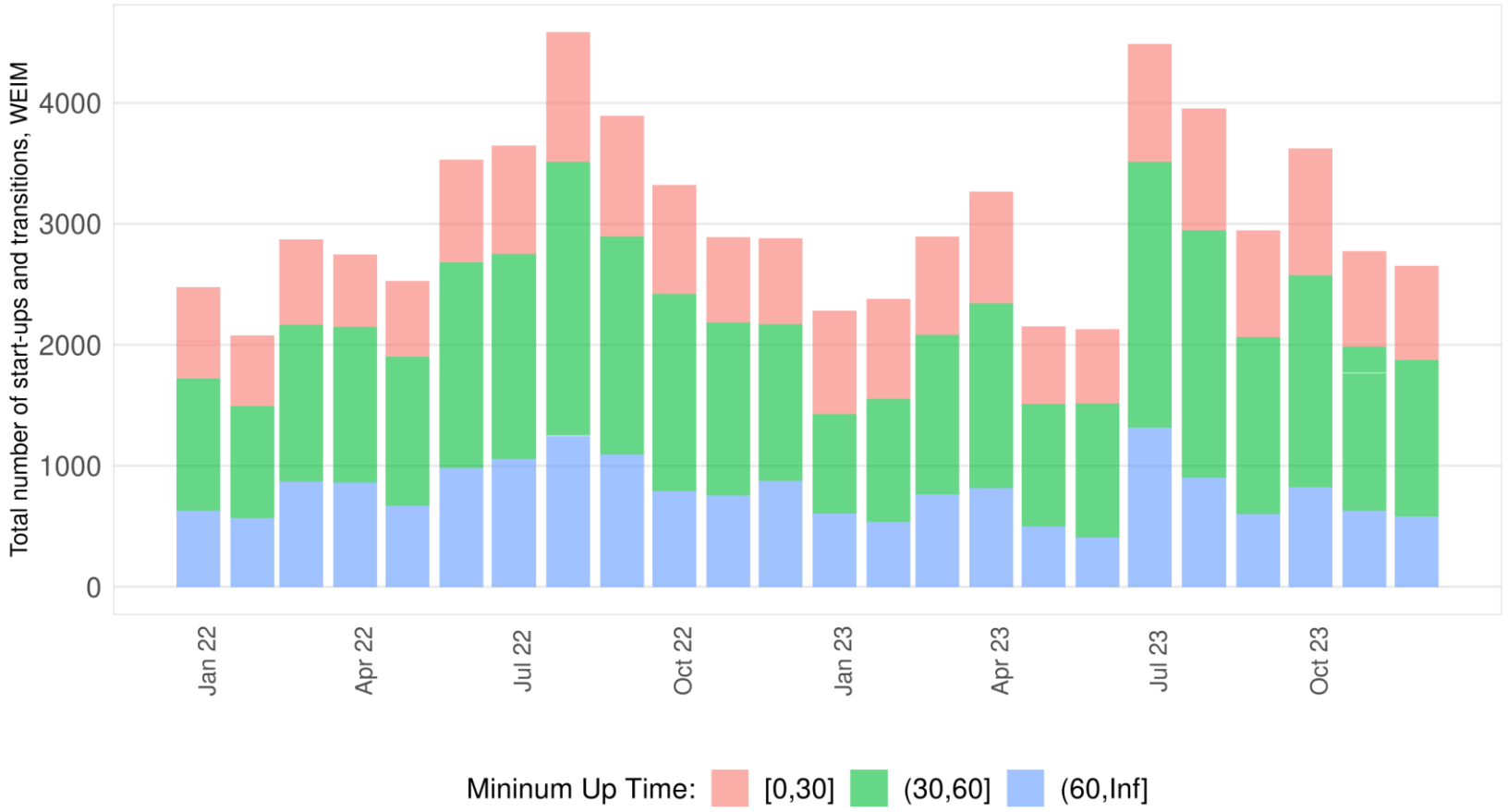
Total number of economic start-ups organized by start-up times



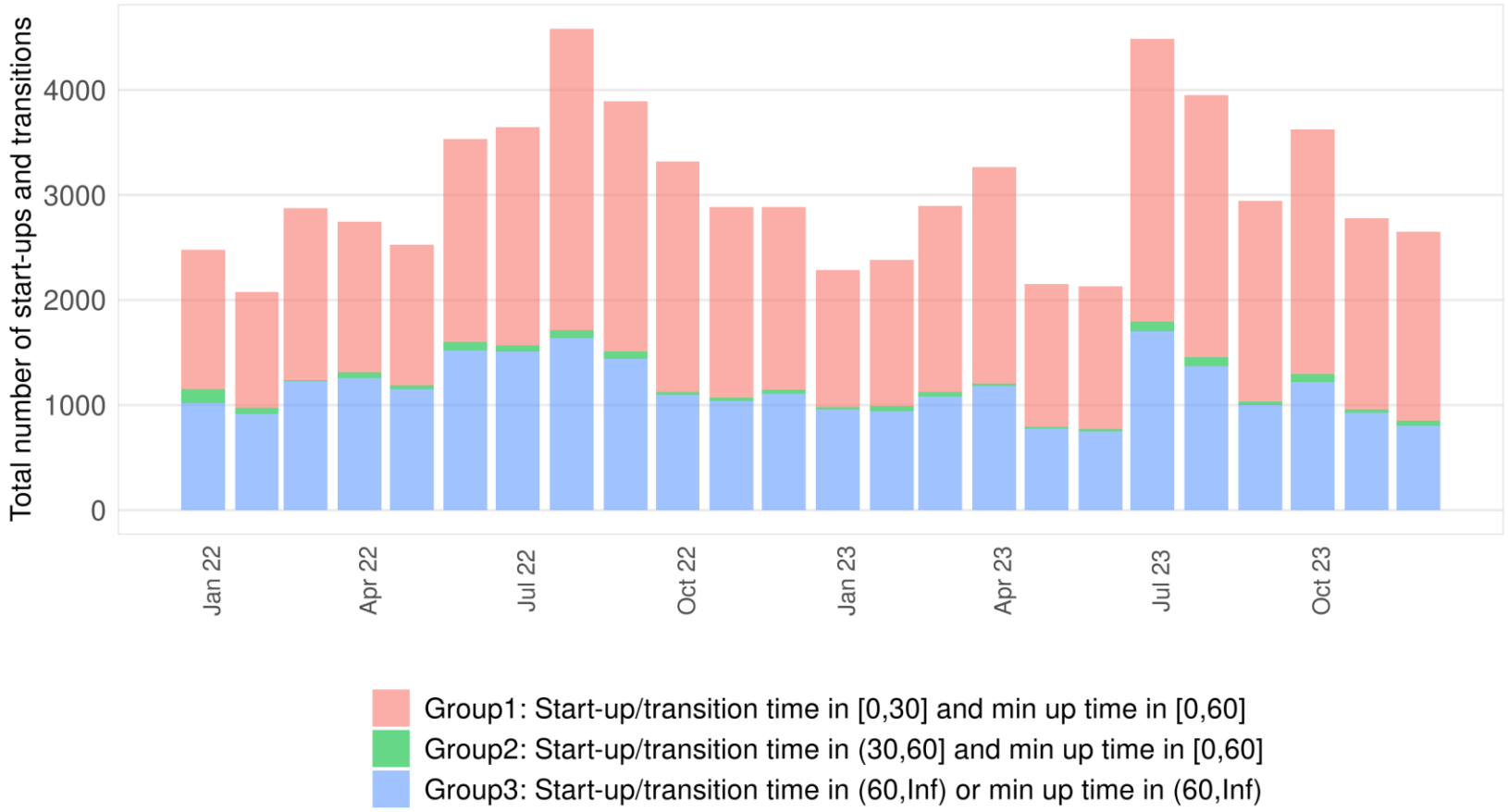
Total number of economic upward transitions by transition times



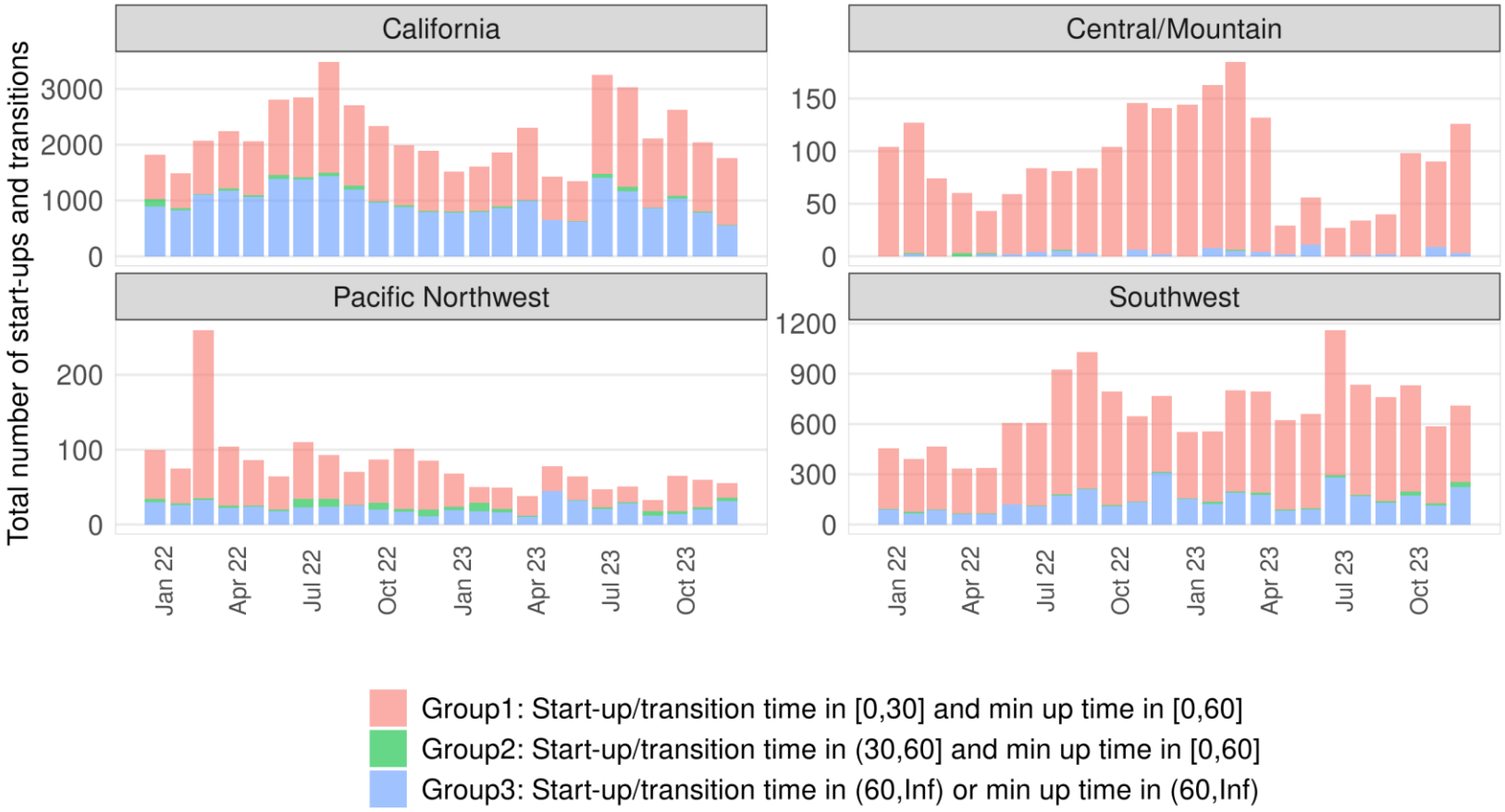
Total number of economic start-ups and transitions by minimum up time



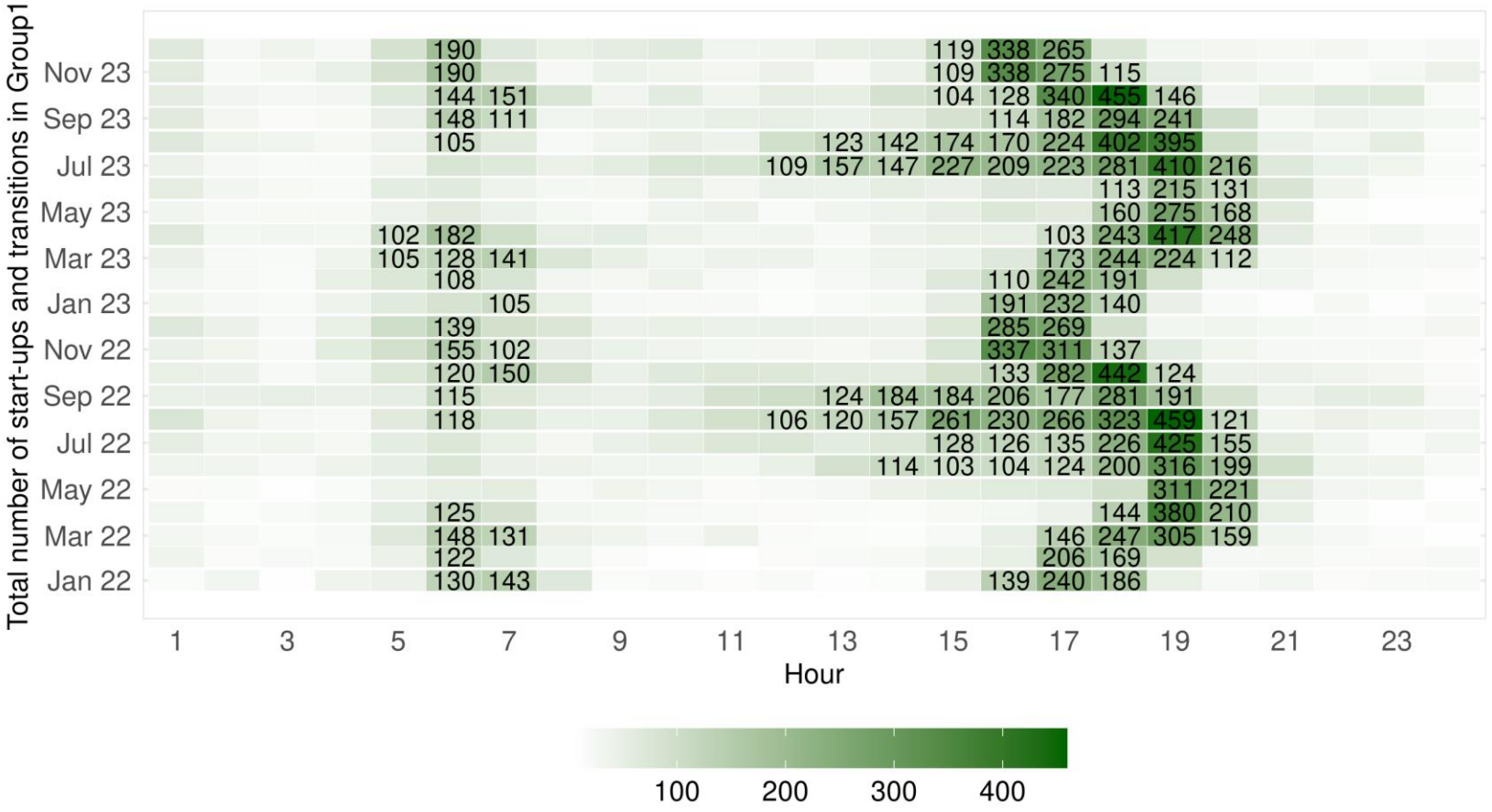
Total number of economic start-up and transitions by groups



Total number of economic start-up and transitions by groups for each region



Total number of economic start-ups and transitions of units in Group1; Startup/transition time ≤ 30 and Min up time ≤ 60



The majority of commitment are for peak hours

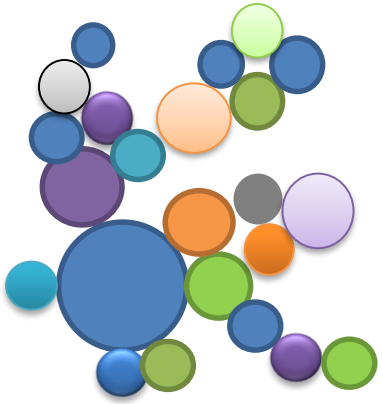
Sensitivity analysis of FSP

This sensitivity analysis for FSP assessed 12 different scenarios

MUT≤60min STUT ≤ 30min Constant amortization BAA level	MUT ≤ 60min STUT ≤ 30min Adjusted amortization BAA level	MUT ≤ 60min STUT ≤ 30min Average amortization BAA level
MUT ≤ 60min STUT ≤ 60min Constant amortization BAA level	MUT ≤ 60min STUT ≤ 60min Adjusted amortization BAA level	MUT ≤ 60min STUT ≤ 60min Average amortization BAA level
MUT ≤ 60min STUT ≤ 30min Constant amortization System level	MUT ≤ 60min STUT ≤ 30min Adjusted amortization System level	MUT ≤ 60min STUT ≤ 30min Average amortization System level
MUT ≤ 60min STUT ≤ 60min Constant amortization System level	MUT ≤ 60min STUT ≤ 60min Adjusted amortization System level	MUT ≤ 60min STUT ≤ 60min Average amortization System level

FSP sensitivity scenarios

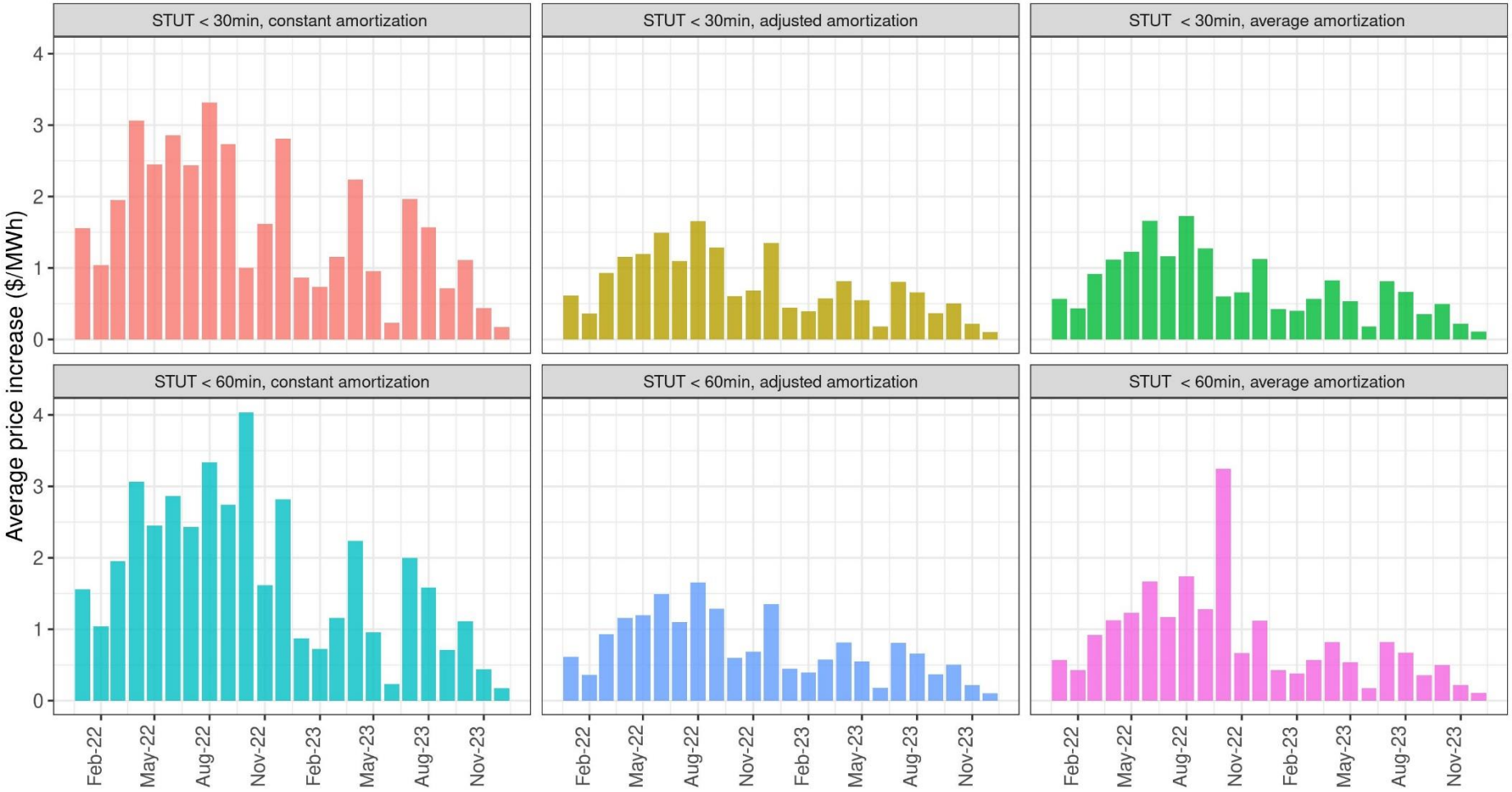
- Three amortization methods that result in different level of increases of variable bids
- Two time definitions of MUT and STUC combinations matching definitions used in other ISOs
- BAA- and system-level prices to capture the two bookends of impacts



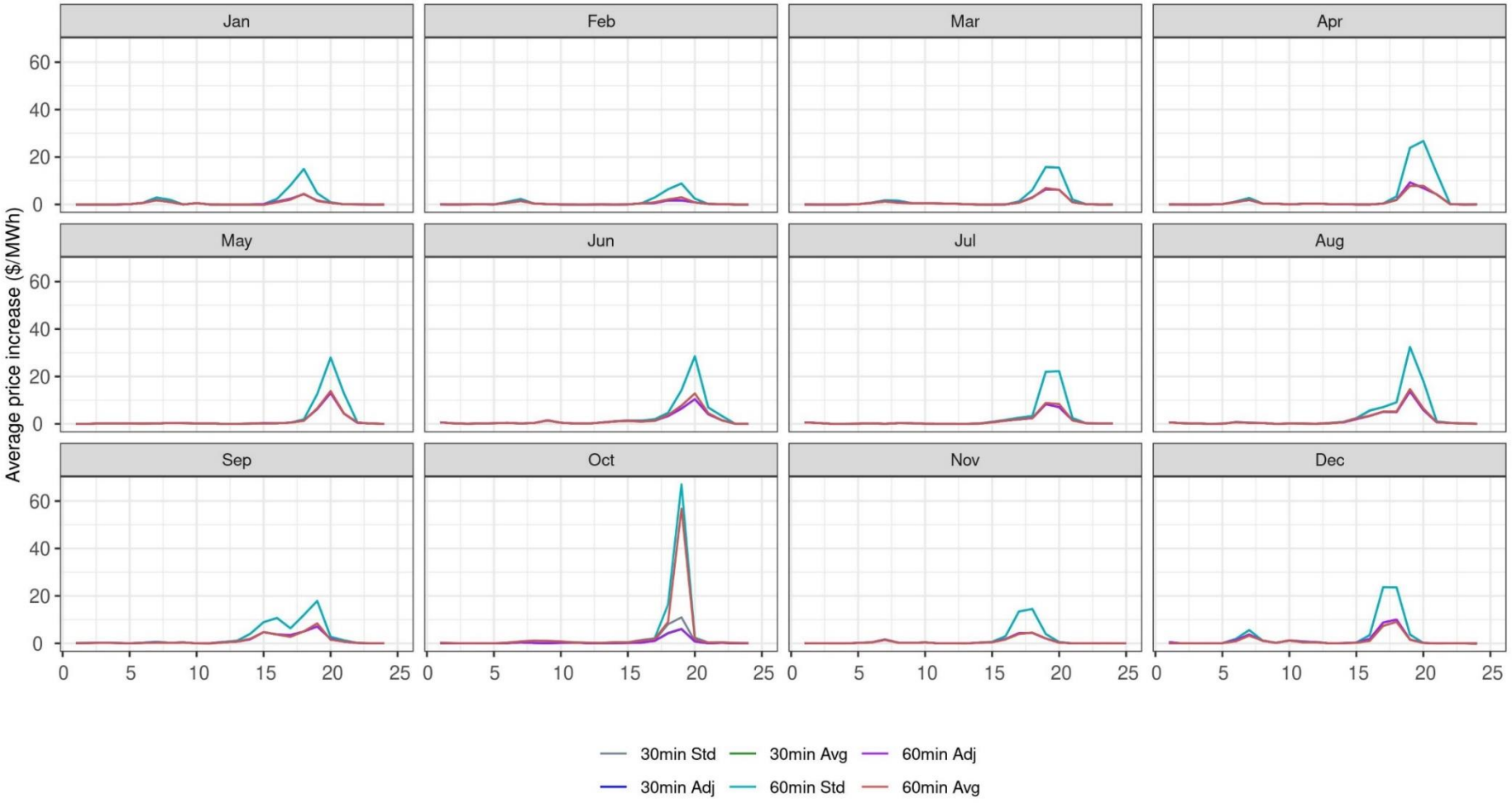
Each area is priced by its own resources to meet its own Demand plus Transfers. One price cleared by BAA

One system-wide price cleared with all resources to meet total system Demand

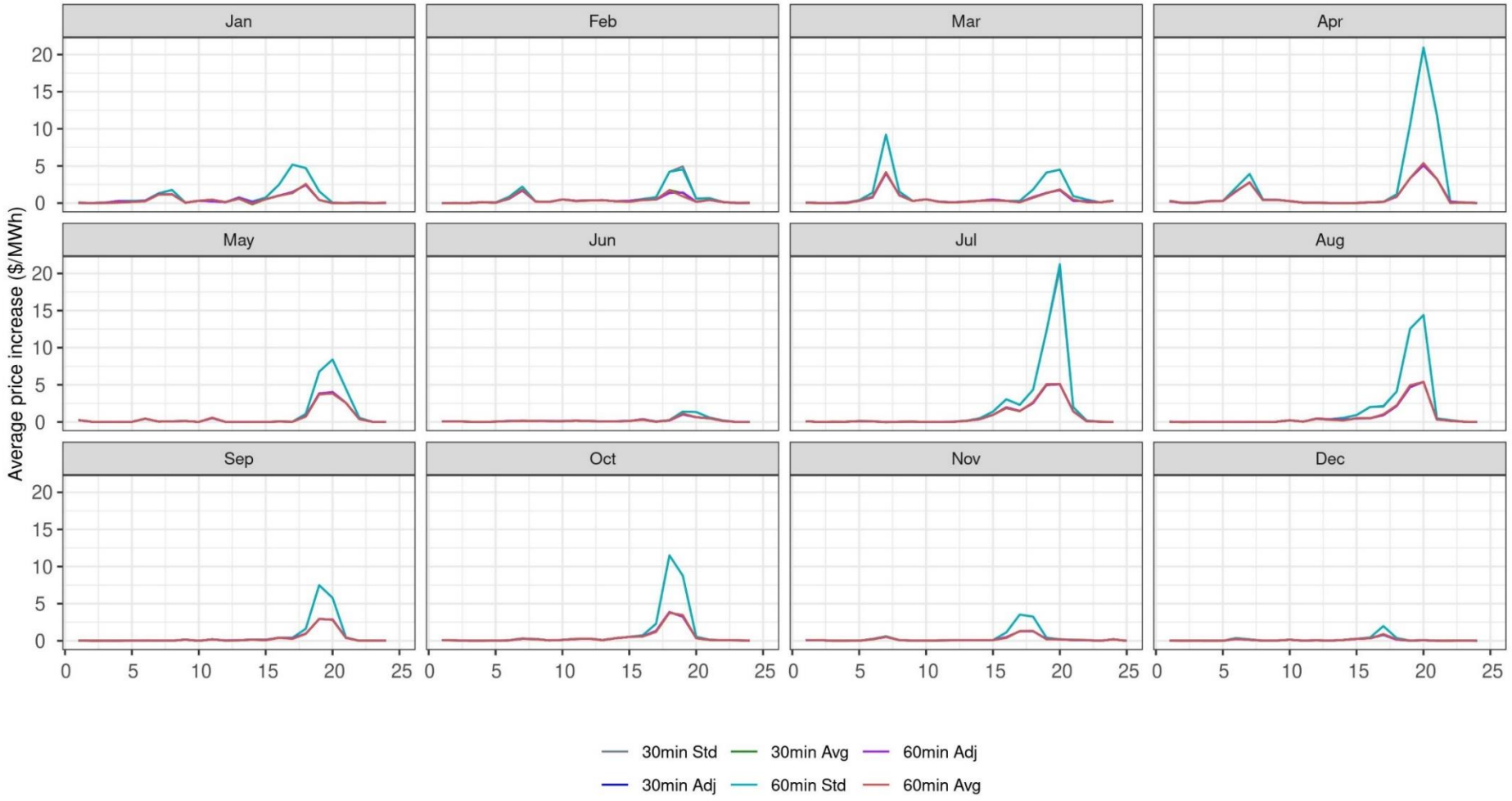
Price increases vary across the different FSP scenarios, with the adjusted amortization producing the lowest changes. CAISO area



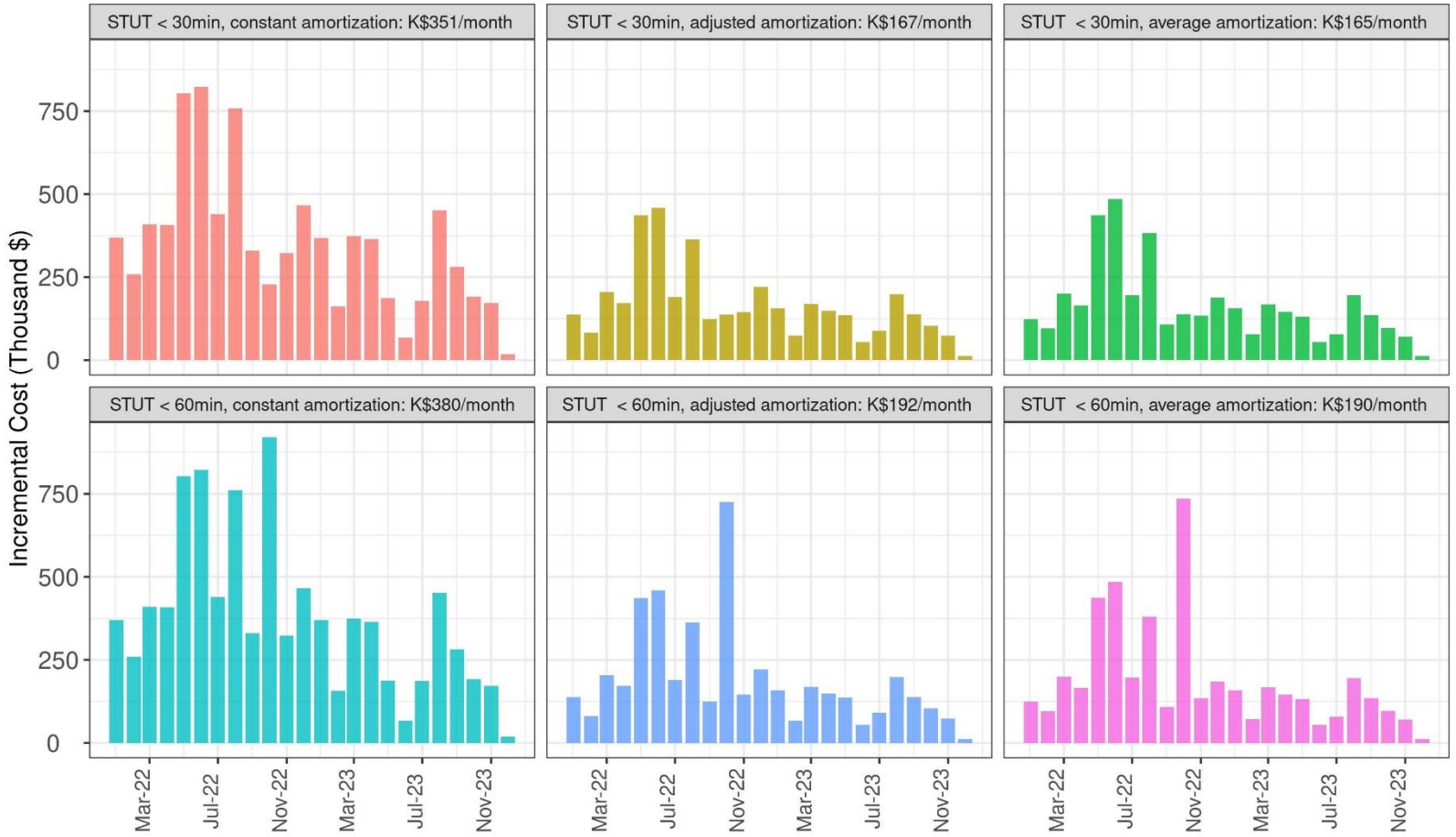
FSP prices tend to increase during peak hours when resources are typically started or transitioned up. Year 2022. CAISO area



FSP prices tend to increase during peak hours when resources are typically started or transitioned up. Year 2023. CAISO area



Incremental costs when using FSP varies widely based on system conditions and may be as high as $380,000 per month in CAISO area



This metric is based on incremental energy from real-time (FMM) relative to day-ahead schedules

Price impacts of the different FSP scenarios varies by area, with higher price changes in the southwest and minimum impacts in the northwest

MUT ≤60 min, STUT ≤30 min, constant amortization

	2022												2023											
BAA	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AVA			3.1	1.0	0.5	0.3	0.3	1.6	0.6	1.1	2.4	2.0	1.6	0.5	0.3	0	0.7	0.2	0.3	0.2	0.2	0.7	0.1	0
AVRN																0.6	0.0	0.0	0.1	0	0	0	0.4	0
AZPS	0.3	0.2	0.2	0	0	0.1	0.2	0.3	0.3	0	0.1	0.1	0.0	0.2	0.2	0.3	0.1	0.2	0.7	0.7	0.3	0.1	0.1	0.2
BANC	0.1	0.1	0.3	0.7	0.3	0.5	0.1	1.0	0.5	0.2	0.2	0.3	0.3	0.3	0.4	0.9	0.1	0.0	0.5	0.1	0.0	0.1	0.2	0.1
BCHA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BPAT					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CISO	1.6	1.0	2.0	3.1	2.5	2.9	2.4	3.3	2.7	1.0	1.6	2.8	0.9	0.7	1.2	2.2	1.0	0.2	2.0	1.6	0.7	1.1	0.4	0.2
EPE																0.4	0.2	0.2	0.6	0.8	0.5	1.2	0.5	0
IPCO	0.5	0.6	0.2	0.6	0.2	0.1	0.9	0.3	2.4	0.1	0.1	5.3	0	0.1	0.4	0.3	0.1	0.0	0.1	0.2	0	0	0.2	0
LADWP	0.2	0.2	0.1	0.5	0.2	0	0	0	0.5	0	0.1	4.1	0	0	0	0	0	0	0	0	0	0	0	0
NEVP	0.3	1.6	1.4	4.1	2.5	3.7	2.4	4.8	5.0	2.3	2.0	3.0	1.8	2.2	3.4	3.2	0.9	2.3	5.1	3.3	2.7	1.5	0.7	0.9
NWMT	0.9	1.0	0.5	0.4	0.1	0.6	0.1	0.4	1.0	0.5	0.2	0.8	1.9	1.2	0.8	1.5	0.2	0.3	0.3	0.4	0.2	0.6	0.4	0.5
PACE	0.5	0.6	0.4	0.5	0.2	0.2	0.2	0.2	0.1	0.3	0.2	0.2	0.1	0.3	0.3	0	0	0.1	0.1	0.0	0.1	0.1	0	0
PACW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PGE	0.1	0.1	0.2	0.1	0.2	0.6	0.3	0.1	0.3	0.1	0.2	0.3	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0	0	0	0.1	0
PNM	0.3	0.2	0.3	0.5	0.3	0.4	0.4	0.6	0.9	0.3	0.1	1.0	0.2	0.2	0.1	4.9	2.1	1.1	0.1	0.1	0.1	0.1	0.1	0.3
PSEI	0	0	0	0	0	0	0	0	0	0	0	0.6	0	0	0	0	0	0	0	0	0	0	0.2	0
SCL	0	0	0	0	0	0	0	0.3	0.1	0	0	0.2	0	0	0.1	0.1	0	0	0.1	0	0	0.1	0.0	0
SRP	3.1	2.3	2.7	2.8	2.7	3.8	3.2	6.3	4.6	4.4	4.2	8.6	2.8	1.9	3.1	2.1	1.4	1.4	2.8	1.3	0.6	1.6	1.7	0.9
TEPC					0.8	0.6	1.1	3.9	8.6	1.6	1.3	3.5	2.2	1.2	2.7	1.0	0.7	0.3	4.5	1.8	0.6	0.9	2.0	1.4
TIDC	1.9	1.2	2.5	3.1	1.5	2.2	2.0	3.9	0.5	2.1	3.6	0.1	2.3	2.1	5.0	3.4	0.5	0.4	0.9	0.8	0.8	1.1	2.0	1.3
TPWR			0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0
WALC																0	0	0	0	0	0.1	0.2	0	0
System	0.6	0.5	0.8	1.5	0.8	1.0	1.2	2.0	1.4	0.5	1.1	1.3	0.5	0.3	0.5	0.8	0.5	0.2	1.0	0.8	0.3	0.6	0.3	0.2

Values are average prices in $/MWh

Price increases due to the various scenario of FSP show a seasonal trend, with higher prices during summer months

MUT ≤60 min, STUT ≤30 min, adjusted amortization

	2022												2023											
BAA	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AVA			1.1	0.3	0.1	0.2	0.1	1.2	0.3	0.3	0.5	0.6	0.3	0.3	0.1	0	0.4	0	0.1	0.1	0	0.3	0	0
AVRN																0.6	0.0	0	0.1	0	0	0.0	0.4	0
AZPS	0	0	0	0	0	0	0	0.1	0	0	0.1	0	0	0	0	0	0	0	0.1	0.1	0	0.0	0.0	0
BANC	0.1	0.0	0.2	0.3	0.1	0.1	0.0	0.4	0.2	0.0	0.0	0.1	0.1	0.1	0.1	0.5	0.1	0	0.3	0.1	0	0.1	0.2	0.1
BCHA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BPAT					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CISO	0.6	0.4	0.9	1.2	1.2	1.5	1.1	1.7	1.3	0.6	0.7	1.4	0.4	0.4	0.6	0.8	0.5	0.2	0.8	0.7	0.4	0.5	0.2	0.1
EPE																0.4	0.2	0.2	0.5	0.7	0.4	1.0	0.4	0
IPCO	0.2	0.3	0.1	0.4	0.2	0.1	0.3	0.2	1.2	0.1	0.1	4.4	0	0.1	0.2	0.1	0	0	0	0.1	0	0	0.1	0
LADWP	0.1	0.1	0.0	0.1	0.1	0	0	0	0.1	0	0	2.8	0	0	0	0	0	0	0	0.0	0	0	0.0	0
NEVP	0.1	1.0	0.6	2.2	1.3	2.0	1.2	2.5	2.7	1.0	0.9	1.0	0.5	1.0	1.5	1.9	0.5	1.5	3.0	2.1	1.9	0.7	0.3	0.4
NWMT	0.6	0.6	0.3	0.4	0	0.3	0.1	0.2	0.7	0.4	0.2	0.6	1.4	1.0	0.6	1.2	0.2	0.2	0.3	0.3	0.1	0.5	0.3	0.4
PACE	0.2	0.3	0.2	0.2	0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.3	0.2	0	0	0	0	0	0	0	0	0
PACW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PGE	0.1	0.1	0.1	0.1	0.1	0.4	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0	0.2	0.0	0.2	0.1	0	0	0	0	0.1	0
PNM	0.2	0.1	0.2	0.3	0.2	0.2	0.2	0.3	0.5	0.1	0.1	0.7	0.2	0.1	0.0	4.1	1.9	0.9	0	0	0.1	0.1	0.1	0.1
PSEI	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0.2	0
SCL	0	0	0	0	0	0	0	0.3	0.1	0	0	0.2	0	0	0.1	0.1	0	0	0.1	0	0	0.1	0	0
SRP	1.4	1.1	1.4	1.2	1.1	1.5	1.3	2.5	2.0	2.3	2.0	4.0	1.3	1.0	2.0	1.3	0.9	0.9	1.5	0.7	0.3	0.9	0.9	0.4
TEPC					0.5	0.3	0.7	2.5	6.1	0.9	0.6	1.7	0.9	0.8	1.8	0.7	0.5	0.2	3.1	1.2	0.4	0.6	1.5	1.0
TIDC	1.3	0.8	1.7	2.0	1.0	1.4	1.3	2.6	0.4	1.4	2.3	0.0	1.5	1.4	3.1	2.2	0.4	0.3	0.6	0.5	0.6	0.7	1.3	0.9
TPWR			0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0
WALC																0	0	0	0	0	0.1	0.2	0	0
System	0.4	0.3	0.5	0.8	0.5	0.7	0.7	1.2	0.8	0.4	0.5	0.9	0.3	0.2	0.4	0.5	0.3	0.1	0.6	0.5	0.2	0.4	0.2	0.1

Values are average prices in $/MWh

Price increases with the different FSP scenarios track well the price dynamics of high gas prices, with higher price changes in December 2022

MUT ≤60 min, STUT ≤30 min, average amortization

	2022												2023											
BAA	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AVA			0.7	0.2	0.1	0.2	0.1	0.2	0.2	0.3	0.4	0.1	0.2	0.2	0.1	0	0.4	0	0.1	0.1	0	0.1	0	0
AVRN																0.5	0	0	0.1	0	0	0	0.4	0
AZPS	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0.0	0	0	0	0	0
BANC	0	0	0.1	0.2	0.1	0.1	0	0.4	0.2	0	0	0	0.1	0	0.1	0.4	0.1	0	0.3	0.1	0	0.1	0.1	0
BCHA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
BPAT					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CISO	0.6	0.4	0.9	1.1	1.2	1.7	1.2	1.7	1.3	0.6	0.7	1.1	0.4	0.4	0.6	0.8	0.5	0.2	0.8	0.7	0.4	0.5	0.2	0.1
EPE																0.4	0.2	0.2	0.4	0.6	0.3	0.9	0.4	0
IPCO	0.2	0.3	0	0.4	0.2	0.1	0.2	0.1	0.3	0.1	0	1.6	0	0	0.2	0.1	0	0	0	0.1	0	0	0.2	0
LADWP	0.1	0.1	0	0.1	0.1	0	0	0	0.1	0	0	0.2	0	0	0.0	0	0	0	0.0	0	0	0	0	0
NEVP	0.1	1.0	0.6	2.2	1.2	2.0	1.1	2.4	1.8	0.9	0.7	0.8	0.4	0.9	1.4	1.6	0.5	1.5	2.9	2.0	1.8	0.6	0.2	0.4
NWMT	0.6	0.7	0.3	0.3	0	0.3	0.1	0.2	0.7	0.3	0.2	0.6	1.4	1.0	0.6	1.2	0.2	0.3	0.3	0.3	0.1	0.5	0.3	0.4
PACE	0.3	0.3	0.2	0.3	0.0	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0	0.1	0.2	0	0	0	0	0	0	0	0	0
PACW	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0.0	0
PGE	0.1	0.1	0.1	0	0.1	0.4	0.2	0	0.1	0	0.1	0.1	0.1	0.0	0	0.0	0.2	0.1	0	0	0	0	0.1	0
PNM	0.2	0.1	0.2	0.3	0.2	0.2	0.1	0.2	0.4	0.1	0.1	0.1	0	0.1	0	2.2	1.4	0.2	0	0	0.1	0	0	0.1
PSEI	0	0	0	0	0	0	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0.2	0
SCL	0	0	0	0	0	0	0	0.1	0	0	0	0.0	0	0	0.1	0.1	0	0	0	0	0	0	0.0	0
SRP	1.4	1.1	1.4	1.2	1.1	1.5	1.3	2.4	2.0	2.2	2.0	3.8	1.2	1.0	1.8	1.2	0.9	0.9	1.5	0.6	0.3	0.8	0.9	0.4
TEPC					0.5	0.3	0.6	2.5	6.1	0.8	0.5	1.7	0.8	0.7	1.7	0.6	0.4	0.2	3.2	1.2	0.4	0.6	1.6	1.0
TIDC	1.1	0.7	1.5	1.7	0.8	1.2	1.1	2.1	0.3	1.2	1.9	0.0	1.2	1.2	2.6	1.8	0.4	0.3	0.6	0.5	0.5	0.6	1.1	0.8
TPWR			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WALC																0	0	0	0	0	0.1	0.2	0	0
System	0.5	0.4	0.5	0.9	0.6	0.9	1.0	1.5	1.4	0.5	0.6	1.2	0.5	0.3	0.5	0.8	0.4	0.2	0.9	0.8	0.3	0.5	0.3	0.2

Values are average prices in $/MWh

Price impacts of the different FSP scenarios varies by area, with higher price changes in the southwest and minimum impacts on area of the northwest

MUT ≤60 min, STUT ≤ 60 min, adjusted amortization

	2022												2023											
BAA	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AVA			3.1	1.0	0.5	0.3	0.3	1.6	0.6	1.4	2.4	2.0	1.6	0.5	0.3	0.0	0.7	0.2	0.3	0.2	0.2	0.7	0.1	0
AVRN																0.6	0	0	0.1	0	0	0	0.4	0
AZPS	0.3	0.2	0.2	0.0	0.0	0.1	0.2	0.3	0.3	0.2	0.1	0.1	0.0	0.2	0.2	0.3	0.1	0.2	0.7	0.7	0.3	0.1	0.1	0.2
BANC	0.1	0.1	0.3	0.7	0.3	0.5	0.1	1.0	0.5	0.9	0.2	0.3	0.3	0.3	0.4	0.9	0.1	0	0.5	0.1	0	0.1	0.2	0.1
BCHA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BPAT					0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CISO	1.6	1.0	2.0	3.1	2.5	2.9	2.4	3.3	2.7	4.0	1.6	2.8	0.9	0.7	1.2	2.2	1.0	0.2	2.0	1.6	0.7	1.1	0.4	0.2
EPE																0.4	0.2	0.2	0.6	0.8	0.5	1.2	0.6	0
IPCO	0.5	0.6	0.2	0.6	0.2	0.1	0.9	0.3	2.4	0.1	0.1	5.3	0	0.1	0.4	0.3	0.1	0	0.1	0.2	0	0	0.2	0
LADWP	0.2	0.2	0.1	0.5	0.2	0	0	0	0.5	0.1	0.1	4.1	0	0	0	0	0	0	0	0	0	0	0	0
NEVP	0.3	1.6	1.4	4.1	2.5	3.7	2.4	4.8	5.0	2.5	2.0	3.0	1.8	2.2	3.4	3.2	0.9	2.3	5.2	3.3	2.7	1.5	0.7	0.9
NWMT	0.9	1.0	0.5	0.4	0.1	0.6	0.1	0.4	1.0	0.7	0.2	0.8	1.9	1.2	0.8	1.5	0.2	0.3	0.3	0.4	0.2	0.6	0.4	0.5
PACE	0.5	0.6	0.4	0.5	0.2	0.2	0.2	0.2	0.1	0.8	0.2	0.2	0.1	0.3	0.3	0	0	0.1	0.1	0	0.1	0.1	0	0
PACW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PGE	0.1	0.1	0.2	0.1	0.2	0.6	0.3	0.1	0.3	0.2	0.2	0.4	0.3	0.1	0.2	0.1	0.2	0.1	0.1	0	0	0	0.1	0
PNM	0.3	0.2	0.3	0.5	0.3	0.4	0.4	0.6	0.9	0.6	0.1	1.0	0.2	0.2	0.1	4.9	2.1	1.1	0.1	0.1	0.1	0.1	0.1	0.3
PSEI	0	0	0	0	0	0	0	0.0	0	0.2	0	0.6	0	0	0	0	0	0	0	0	0	0.0	0.2	0
SCL	0	0	0	0	0	0	0	0.3	0.1	0.0	0	0.2	0	0	0.1	0.1	0	0	0.1	0	0	0.1	0	0
SRP	3.2	2.4	2.7	2.8	2.8	3.8	3.2	6.3	4.6	4.5	4.2	8.7	2.8	1.9	3.1	2.1	1.4	1.4	2.8	1.3	0.6	1.7	1.8	1.0
TEPC					0.8	0.6	1.1	3.9	8.6	1.7	1.3	3.5	2.2	1.2	2.7	1.0	0.7	0.3	4.5	1.8	0.6	0.9	2.0	1.4
TIDC	1.9	1.2	2.5	3.1	1.5	2.2	2.0	3.9	0.5	2.1	3.6	0.1	2.3	2.1	5.0	3.4	0.5	0.4	0.9	0.8	0.8	1.1	2.0	1.3
TPWR			0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0
WALC																0	0	0	0	0	0.1	0.2	0	0
System	0.6	0.5	0.8	1.5	0.8	1.0	1.2	2.1	1.4	1.5	1.1	1.3	0.5	0.3	0.5	0.8	0.5	0.2	1.0	0.8	0.3	0.6	0.3	0.2

Values are average prices in $/MWh

Price increases due to the various scenario of FSP show a seasonal trend, with higher prices during summer months

MUT ≤60 min, STUT ≤60 min, average amortization

	2022												2023											
BAA	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AVA			0.7	0.2	0.1	0.2	0.1	0.2	0.2	0.5	0.4	0.1	0.2	0.2	0.1	0.0	0.4	0	0.1	0.1	0.0	0.1	0	0
AVRN																0.5	0	0	0.1	0	0	0	0.4	0
AZPS	0	0	0	0	0	0	0	0	0	0.1	0.1	0	0	0	0	0	0	0	0.0	0	0	0	0	0
BANC	0	0	0.1	0.2	0.1	0.1	0.0	0.4	0.2	0.7	0	0	0.1	0	0.1	0.4	0.1	0	0.3	0.1	0.0	0.1	0.1	0
BCHA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BPAT					0.0	0.0	0.0	0.0	0.0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CISO	0.6	0.4	0.9	1.1	1.2	1.7	1.2	1.7	1.3	3.2	0.7	1.1	0.4	0.4	0.6	0.8	0.5	0.2	0.8	0.7	0.4	0.5	0.2	0.1
EPE																0.4	0.2	0.2	0.4	0.6	0.3	0.9	0.5	0
IPCO	0.2	0.3	0.0	0.4	0.2	0.1	0.2	0.1	0.3	0.1	0.0	1.6	0	0	0.2	0.1	0	0	0	0.1	0	0	0.2	0
LADWP	0.1	0.1	0.0	0.1	0.1	0	0	0	0.1	0.1	0.0	0.2	0	0	0	0	0	0	0	0	0	0	0	0
NEVP	0.1	1.0	0.6	2.2	1.2	2.0	1.1	2.4	1.8	1.0	0.7	0.7	0.4	0.9	1.4	1.6	0.5	1.5	2.9	2.0	1.8	0.6	0.2	0.4
NWMT	0.6	0.7	0.3	0.3	0.0	0.3	0.1	0.2	0.7	0.4	0.2	0.6	1.4	1.0	0.6	1.2	0.2	0.3	0.3	0.3	0.1	0.5	0.3	0.4
PACE	0.3	0.3	0.2	0.3	0.0	0.1	0.2	0.1	0.1	0.7	0.2	0.2	0.0	0.1	0.2	0	0	0	0	0	0	0	0	0
PACW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PGE	0.1	0.1	0.1	0.1	0.1	0.4	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0	0.2	0.1	0.1	0	0	0	0.1	0
PNM	0.2	0.1	0.2	0.3	0.2	0.2	0.1	0.2	0.4	0.3	0.1	0.1	0	0.1	0.0	2.1	1.4	0.2	0.0	0	0.1	0	0.0	0.1
PSEI	0	0	0	0	0	0	0	0	0	0.2	0	0.2	0	0	0	0	0	0	0	0	0	0	0.2	0
SCL	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0.1	0.1	0	0	0	0	0	0	0	0
SRP	1.4	1.1	1.4	1.2	1.1	1.5	1.3	2.4	2.0	2.2	2.1	3.9	1.2	1.0	1.8	1.2	0.9	0.9	1.5	0.6	0.3	0.8	0.9	0.4
TEPC					0.5	0.3	0.6	2.5	6.1	0.9	0.5	1.7	0.8	0.7	1.7	0.6	0.4	0.2	3.2	1.2	0.4	0.6	1.6	1.0
TIDC	1.1	0.7	1.5	1.7	0.8	1.2	1.1	2.1	0.3	1.2	1.9	0.0	1.2	1.2	2.6	1.8	0.4	0.3	0.6	0.5	0.5	0.6	1.1	0.8
TPWR			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WALC																0	0	0	0	0	0.1	0.2	0	0
System	0.5	0.4	0.5	0.9	0.6	0.9	1.0	1.5	1.4	1.0	0.7	1.2	0.5	0.3	0.5	0.8	0.4	0.2	0.9	0.8	0.3	0.5	0.3	0.2

Values are average prices in $/MWh

At the per-BAA bookend, over 90 percent of the time, there are no price changes due to FSP

Some areas do not see price changes for over 97 percent of the time

Because of this type of distribution of prices skewed to the high end of percentiles, distribution plots do not show a meaningful illustration

MUT<=60min, STUT<= 30min, constant amortization

Year	BAA	80th	90th	91th	92th	93th	94th	95th	96th	97th	98th	99th	Max
2022	AVA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	17.5	44.2	874.8
	AZPS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	234.6
	BANC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	291.2
	BCHA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	BPAT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CISO	0.0	2.1	2.9	3.9	5.2	7.4	10.0	14.3	21.4	33.4	55.6	343.6
	IPCO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	873.1
	LADWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	760.3
	NEVP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	45.8	118.0	894.3
	NWMT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	210.8
	PACE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	198.2
	PACW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.9
	PGE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	127.7
	PNM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.3	287.7
	PSEI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.1
	SCL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	414.0
	SRP	0.0	0.0	0.0	0.7	17.9	39.0	45.3	49.8	54.7	62.8	74.6	450.6
	TEPC	0.0	0.0	0.0	0.0	0.0	0.0	1.4	5.9	20.0	29.8	44.6	536.3
	TIDC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46.6	59.4	65.4	179.5
	TPWR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	81.5
2023	AVA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	198.4
	AVRN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	415.8
	AZPS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	76.4
	BANC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	253.0
	BCHA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	BPAT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CISO	0.0	0.7	1.1	1.6	2.1	2.9	3.9	5.4	7.8	12.2	26.6	173.8
	EPE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.8	13.9	17.9	160.8
	IPCO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	278.2
	LADWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0
	NEVP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2	21.6	43.1	86.4	274.2
	NWMT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	155.3
	PACE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	399.1
	PACW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.8
	PGE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	189.1
	PNM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8	510.4
	PSEI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	112.6
	SCL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	314.1
	SRP	0.0	0.0	0.0	0.0	0.0	0.5	13.2	24.0	31.3	34.2	41.6	223.5
	TEPC	0.0	0.0	0.0	0.0	0.0	0.5	5.8	14.0	17.3	19.5	25.6	964.6
	TIDC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	46.7	54.1	193.9
	TPWR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.6
	WALC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	157.2

Values are price increases with FSP (in $/MWh) for the top 10 percentiles of the distribution

At the per-BAA bookend, over 90 percent of the time, there are no price changes due to FSP

Some areas do not see price changes for over 97 percent of the time

		MUT<=60min, STUT<= 30min, adjusted constant amortization											
Year	BAA	80th	90th	91th	92th	93th	94th	95th	96th	97th	98th	99th	Max
2022	AVA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	11.1	874.8
	AZPS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	165.5
	BANC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	263.7
	BCHA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	BPAT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CISO	0.0	1.5	2.0	2.7	3.6	4.6	6.0	8.0	10.4	14.3	21.9	239.8
	IPCO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	873.1
	LADWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	636.3
	NEVP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	69.4	894.3
	NWMT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	170.1
	PACE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	108.7
	PACW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.9
	PGE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	89.7
	PNM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	220.0
	PSEI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	298.7
	SCL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	413.4
	SRP	0.0	0.0	0.0	0.0	1.1	7.7	20.7	24.5	27.3	30.7	36.6	277.2
	TEPC	0.0	0.0	0.0	0.0	0.0	0.0	0.8	3.1	6.7	11.6	19.2	397.0
	TIDC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.6	39.0	42.7	68.1
	TPWR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	81.5
2023	AVA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	113.7
	AVRN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	397.4
	AZPS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.8
	BANC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	237.6
	BCHA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	BPAT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CISO	0.0	0.4	0.6	0.9	1.3	1.8	2.4	3.2	4.5	6.8	11.0	96.4
	EPE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.8	11.4	14.7	160.8
	IPCO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	266.5
	LADWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5
	NEVP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.3	7.2	68.7	223.3
	NWMT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	115.6
	PACE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	399.1
	PACW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.8
	PGE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	159.3
	PNM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	483.1
	PSEI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	102.6
	SCL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	313.4
	SRP	0.0	0.0	0.0	0.0	0.0	0.0	2.0	9.3	18.7	23.3	25.7	223.5
	TEPC	0.0	0.0	0.0	0.0	0.0	0.1	1.9	6.5	9.8	11.8	17.2	964.6
	TIDC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.8	30.6	35.5	193.9
	TPWR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.6
	WALC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	157.2

Values are price increases with FSP (in $/MWh) for the top 10 percentiles of the distribution

At the per-BAA bookend, over 90 percent of the time, there are no price changes due to FSP

Some areas do not see price changes for over 97 percent of the time

MUT<=60min, STUT<= 30min, average constant amortization

Year	BAA	80th	90th	91th	92th	93th	94th	95th	96th	97th	98th	99th	Max
2022	AVA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	9.0	114.9
	AZPS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	165.3
	BANC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	263.7
	BCHA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	BPAT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CISO	0.0	1.4	1.9	2.6	3.4	4.5	6.1	8.1	10.7	14.8	23.6	135.2
	IPCO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	343.9
	LADWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	205.4
	NEVP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	69.2	890.3
	NWMT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	171.2
	PACE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	108.7
	PACW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9
	PGE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.9
	PNM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1	147.7
	PSEI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	110.0
	SCL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	166.7
	SRP	0.0	0.0	0.0	0.0	0.4	6.0	19.5	23.4	26.3	29.9	36.7	277.2
	TEPC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	5.7	10.8	18.6	389.2
	TIDC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.4	32.2	36.0	72.0
	TPWR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	51.1
2023	AVA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	102.1
	AVRN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	412.6
	AZPS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.8
	BANC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	237.6
	BCHA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	BPAT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CISO	0.0	0.3	0.5	0.8	1.2	1.7	2.4	3.3	4.6	6.9	11.6	96.4
	EPE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	11.1	12.7	160.8
	IPCO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	219.6
	LADWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0
	NEVP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	67.9	223.3
	NWMT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	115.6
	PACE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	51.3
	PACW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.8
	PGE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	150.0
	PNM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	482.0
	PSEI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	101.6
	SCL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	167.7
	SRP	0.0	0.0	0.0	0.0	0.0	0.0	1.3	8.3	18.0	22.7	25.2	223.5
	TEPC	0.0	0.0	0.0	0.0	0.0	0.0	1.2	5.4	9.0	11.4	17.2	964.6
	TIDC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.5	26.2	29.9	193.9
	TPWR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.4
	WALC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	157.2

Values are price increases with FSP (in $/MWh) for the top 10 percentiles of the distribution

At the per-BAA bookend, over 90 percent of the time, there are no price changes due to FSP

Some areas do not see price changes for over 97 percent of the time

MUT<=60min, STUT<= 60min, constant amortization

Year	BAA	80th	90th	91th	92th	93th	94th	95th	96th	97th	98th	99th	Max
2022	AVA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	18.0	44.8	874.8
	AZPS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	234.6
	BANC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	291.2
	BCHA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	BPAT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.0
	CISO	0.0	2.5	3.3	4.3	5.7	7.8	10.4	15.1	22.6	34.8	58.3	926.5
	IPCO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	873.1
	LADWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	760.3
	NEVP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	46.4	118.0	894.3
	NWMT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	210.8
	PACE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	3.2	351.1
	PACW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.9
	PGE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	127.7
	PNM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.9	371.8
	PSEI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.1
	SCL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	414.0
	SRP	0.0	0.0	0.0	1.3	20.7	39.2	45.3	49.8	54.8	62.8	74.6	450.6
	TEPC	0.0	0.0	0.0	0.0	0.0	0.0	1.5	6.1	20.0	29.8	45.1	536.3
	TIDC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46.6	59.4	65.4	179.5
	TPWR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	81.5
2023	AVA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	198.4
	AVRN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	415.8
	AZPS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	76.4
	BANC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	253.0
	BCHA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	BPAT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CISO	0.0	0.8	1.1	1.6	2.1	2.9	4.0	5.4	7.8	12.3	26.7	173.8
	EPE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.3	14.0	17.9	162.6
	IPCO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	278.2
	LADWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0
	NEVP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	21.7	43.7	86.4	274.2
	NWMT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	155.3
	PACE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	399.1
	PACW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.5
	PGE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	189.1
	PNM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8	510.4
	PSEI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	112.6
	SCL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	314.1
	SRP	0.0	0.0	0.0	0.0	0.0	1.1	14.2	24.4	31.3	34.2	41.6	223.5
	TEPC	0.0	0.0	0.0	0.0	0.0	0.5	5.8	14.0	17.3	19.5	25.6	964.6
	TIDC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	46.7	54.1	193.9
	TPWR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.6
	WALC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	157.2

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2022	AVA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	11.1	874.8
	AZPS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	165.5
	BANC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	263.7
	BCHA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	BPAT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CISO	0.0	1.5	2.0	2.7	3.6	4.6	6.0	8.0	10.4	14.3	21.9	239.8
	IPCO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	873.1
	LADWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	636.3
	NEVP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	69.4	894.3
	NWMT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	170.1
	PACE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	108.7
	PACW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.9
	PGE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	89.7
	PNM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	220.0
	PSEI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	298.7
	SCL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	413.4
	SRP	0.0	0.0	0.0	0.0	1.1	7.7	20.7	24.5	27.3	30.7	36.6	277.2
	TEPC	0.0	0.0	0.0	0.0	0.0	0.0	0.8	3.1	6.7	11.6	19.2	397.0
	TIDC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.6	39.0	42.7	68.1
	TPWR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	81.5
2023	AVA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	113.7
	AVRN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	397.4
	AZPS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.8
	BANC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	237.6
	BCHA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	BPAT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CISO	0.0	0.4	0.6	0.9	1.3	1.8	2.4	3.2	4.5	6.8	11.0	96.4
	EPE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.8	11.4	14.7	160.8
	IPCO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	266.5
	LADWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5
	NEVP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.3	7.2	68.7	223.3
	NWMT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	115.6
	PACE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	399.1
	PACW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.8
	PGE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	159.3
	PNM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	483.1
	PSEI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	102.6
	SCL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	313.4
	SRP	0.0	0.0	0.0	0.0	0.0	0.0	2.0	9.3	18.7	23.3	25.7	223.5
	TEPC	0.0	0.0	0.0	0.0	0.0	0.1	1.9	6.5	9.8	11.8	17.2	964.6
	TIDC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.8	30.6	35.5	193.9
	TPWR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.6
	WALC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	157.2

Values are price increases with FSP (in $/MWh) for the top 10 percentiles of the distribution

At the per-BAA bookend, over 90 percent of the time, there are no price changes due to FSP

Some areas do not see price changes for over 97 percent of the time

MUT<=60min, STUT<= 60min, averaged amortization

Year	BAA	80th	90th	91th	92th	93th	94th	95th	96th	97th	98th	99th	Max
2022	AVA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	10.0	114.9
	AZPS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	163.1
	BANC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	263.7
	BCHA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	BPAT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.0
	CISO	0.0	1.7	2.2	2.9	3.7	4.8	6.5	8.5	11.4	15.6	24.8	926.5
	IPCO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	343.9
	LADWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	205.4
	NEVP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	69.2	890.3
	NWMT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	171.2
	PACE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.8	351.1
	PACW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0
	PGE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.9
	PNM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6	371.8
	PSEI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	110.0
	SCL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	166.7
	SRP	0.0	0.0	0.0	0.0	0.9	7.0	19.7	23.4	26.4	29.9	36.9	277.2
	TEPC	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.5	5.7	10.8	18.8	389.2
	TIDC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.4	32.2	36.0	72.0
	TPWR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	51.1
2023	AVA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	102.1
	AVRN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	412.6
	AZPS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.8
	BANC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	237.6
	BCHA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	BPAT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CISO	0.0	0.3	0.5	0.8	1.2	1.7	2.4	3.3	4.6	7.0	11.6	96.4
	EPE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	11.1	12.7	162.6
	IPCO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	219.6
	LADWP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0
	NEVP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	67.9	223.3
	NWMT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	115.6
	PACE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	51.3
	PACW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.5
	PGE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	150.0
	PNM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	479.9
	PSEI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	101.6
	SCL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	167.7
	SRP	0.0	0.0	0.0	0.0	0.0	0.0	1.8	9.1	18.0	22.7	25.2	223.5
	TEPC	0.0	0.0	0.0	0.0	0.0	0.0	1.2	5.4	9.0	11.4	17.2	964.6
	TIDC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.5	26.2	29.9	193.9
	TPWR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.4
	WALC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	157.2

Values are price increases with FSP (in $/MWh) for the top 10 percentiles of the distribution

At the system-wide bookend, over 75 percent of the time, there are no price changes due to FSP

MUT<=60min, STUT<= 30min, constant amortization

Year	70th	80th	90th	91th	92th	93th	94th	95th	96th	97th	98th	99th	Max
2022	0.0	0.2	1.5	1.8	2.2	2.7	3.5	4.4	5.6	8.0	12.1	22.5	210.5
2023	0.0	0.1	1.0	1.1	1.4	1.7	2.0	2.5	3.0	4.0	5.4	9.7	87.5

MUT<=60min, STUT<= 30min, adjusted amortization

Year	70th	80th	90th	91th	92th	93th	94th	95th	96th	97th	98th	99th	Max
2022	0.0	0.1	1.2	1.4	1.8	2.2	2.7	3.4	4.3	5.7	8.1	12.9	106.4
2023	0.0	0.0	0.6	0.8	0.9	1.1	1.4	1.8	2.2	2.8	4.0	6.5	71.2

MUT<=60min, STUT<= 30min, average amortization

Year	70th	80th	90th	91th	92th	93th	94th	95th	96th	97th	98th	99th	Max
2022	0.0	0.2	1.4	1.7	2.0	2.5	3.1	3.9	5.0	6.7	10.0	16.3	210.5
2023	0.0	0.1	0.9	1.1	1.3	1.6	2.0	2.4	3.0	3.9	5.2	8.8	64.8

MUT<=60min, STUT<= 60min, constant amortization

Year	70th	80th	90th	91th	92th	93th	94th	95th	96th	97th	98th	99th	Max
2022	0.0	0.3	1.7	2.0	2.5	3.0	3.8	4.7	6.0	8.6	12.8	24.4	210.5
2023	0.0	0.1	1.0	1.1	1.4	1.7	2.0	2.5	3.0	4.0	5.5	9.7	87.5

MUT<=60min, STUT<= 60min, adjusted amortization

Year	70th	80th	90th	91th	92th	93th	94th	95th	96th	97th	98th	99th	Max
2022	0.0	0.1	1.2	1.4	1.8	2.2	2.7	3.4	4.3	5.7	8.1	12.9	106.4
2023	0.0	0.0	0.6	0.8	0.9	1.1	1.4	1.8	2.2	2.8	4.0	6.5	71.2

MUT<=60min, STUT<= 60min, average amortization

Year	70th	80th	90th	91th	92th	93th	94th	95th	96th	97th	98th	99th	Max
2022	0.0	0.3	1.6	1.9	2.2	2.7	3.3	4.1	5.1	6.9	10.1	16.8	210.5
2023	0.0	0.1	1.0	1.1	1.4	1.6	2.0	2.4	3.0	3.9	5.2	8.9	64.8

For WEIM areas, energy is settled based on differences between base schedules and dispatches, resulting in relatively moderate cost impacts with FSP

MUT ≤60 min, STUT ≤30 min, constant amortization. Per-BAA Bookend

	2022												2023												
BAA	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
AVA			0.352	0.090	0.056	0.023	0.005	0.097	0.035	0.121	0.354	0.196	0.313	0.053	0.040	-0.001	0.045	0.016	0.020	0.010	0.006	0.013	0.003	0	1.85
AVRN																0.005	0	0.003	0.019	0.002	0	0	0.078	0.009	0.12
AZPS	0.058	0.020	0.021	0	0	0.047	0.058	0.093	0.157	0.009	0.004	0.042	0.001	0.042	0.038	0.052	0.017	0.030	0.229	0.234	0.124	0.022	0.022	0.026	1.35
BANC	0.005	0	0.029	0.059	0.011	-0.004	-0.007	-0.025	0.019	-0.013	-0.031	-0.042	0.002	-0.024	0.015	0.061	0.004	-0.001	0.037	-0.006	0.000	-0.016	-0.018	-0.007	0.05
BCHA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
BPAT					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
CISO	0.4071	0.364	0.758	0.4516	0.4654	0.0187	0.2592	0.1622	0.3695	0.3677	0.4395	0.1784	0.8225	0.0673	0.4091	0.3742	0.8035	0.1877	0.3221	0.1717	0.2279	0.1921	0.3296	0.2815	8.43
EPE																0.028	0.014	0.021	0.077	0.103	0.064	0.199	0.036	0.001	0.54
IPCO	0.115	0.048	0.044	0.125	0.020	-0.001	0.273	0.017	0.413	0.022	0.005	0.739	-0.002	0.001	0.081	0.031	-0.010	-0.003	0.026	0.025	0	0.006	0.043	0	2.02
LADWP	0.009	-0.013	0.005	0.132	-0.035	-0.001	0.011	0	0.254	0	0.030	0.596	0	0	0	0	0	0	0	0	0	0	0	0	0.99
NEVP	0.007	0.021	0.092	0.064	0.270	0.327	0.623	1.421	2.083	0.460	0.245	0.068	0.220	0.310	0.644	0.485	0.200	0.582	1.613	1.069	0.524	0.294	0.081	0.243	11.94
NWMT	0.047	0.031	0.019	0.012	0.006	-0.004	0.006	0.023	0.031	0.051	0.020	0.061	0.152	0.102	0.046	0.085	0.007	0.003	0.012	0.025	0.007	0.047	0.039	0.039	0.87
PACE	0.110	0.123	0.075	0.134	0.047	0.079	0.078	0.081	0.041	0.078	0.060	0.042	-0.009	0.059	-0.067	-0.021	0	0.001	0.004	0.000	0.064	0.010	0.003	0.011	1.00
PACW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
PGE	0.009	0.003	-0.002	0.007	-0.004	-0.002	0.021	0.008	0.041	0.010	0.027	0.021	0.038	-0.008	0.020	0.001	-0.023	-0.002	0.003	0.002	0	-0.001	-0.003	0	0.17
PNM	0.001	0.013	0.019	0.029	0.023	0.037	0.061	0.072	0.131	0.042	0.004	0.169	0.040	0.021	0.009	0.566	0.193	0.104	0.012	0.009	0.009	0.010	0.003	0.022	1.60
PSEI	0	0	0	0	0	0.001	0	0	0	0	0	-0.026	-0.009	0	0.001	0	0.004	-0.001	-0.001	0.003	0	-0.001	-0.001	-0.003	-0.03
SCL	0	0	0	0.007	0.001	0.001	0.004	0.026	0.006	0	0.004	0.013	0	0.002	0.003	-0.001	0	0	0.003	0.002	0	0.002	0	0.003	0.08
SRP	0.284	0.107	0.366	0.392	0.256	0.043	0.254	0.921	0.713	1.271	0.956	1.447	0.440	0.504	0.772	0.512	0.173	0.258	0.685	0.177	0.203	0.411	0.526	0.284	11.96
TEPC					0.072	0.063	0.187	0.588	1.100	0.105	0.104	0.369	0.195	0.136	0.290	0.109	0.040	0.022	0.544	0.273	0.054	0.125	0.222	0.166	4.76
TIDC	0.135	0.088	0.225	0.250	0.126	0.172	0.178	0.324	0.035	0.185	0.313	0.003	0.218	0.206	0.423	0.219	0.032	0.034	0.048	0.047	0.063	0.054	0.131	0.091	3.60
TPWR			0	0.001	0	0	0.001	0.001	0	0	0.002	0.004	0	0	0	0	0	0	0	0	0	0	0	0.001	0.01
WALC																0	0	0	0	0	-0.001	-0.005	0	0	-0.01
Total	1.19	0.80	2.00	1.76	1.31	0.80	2.01	3.81	5.43	2.71	2.54	3.88	2.42	1.47	2.73	2.50	1.50	1.26	3.65	2.14	1.35	1.36	1.50	1.17	51.29

Values represent changes in costs (in $ Millions) of supply with FSP
Positive values reflect incremental payments to supply

For WEIM areas, energy is settled based on differences between base schedules and dispatches, resulting in relatively moderate cost impacts with FSP

MUT ≤60 min, STUT ≤30 min, adjusted amortization. Per-BAA Bookend

	2022												2023												
BAA	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
AVA			0.109	0.019	0.015	0.012	0.001	0.067	0.007	0.032	0.055	0.028	0.068	0.025	0.004	0	0.024	0.002	0.013	0.002	0.001	0.000	0.001	0	0.48
AVRN																0.003	0	0.002	0.017	0.002	0	0	0.075	0.009	0.11
AZPS	0.001	0	0.001	0	0	0.007	0.002	0.019	-0.018	0	0	0	0	0.001	0.001	0.003	0.001	0.002	0.017	0.022	0.005	0.002	0.001	0.001	0.07
BANC	-0.001	-0.003	0.014	0.025	-0.008	0.001	0	-0.025	0.009	-0.002	0.021	-0.010	-0.001	-0.008	-0.002	0.035	0.002	-0.001	0.022	-0.006	0.000	-0.010	-0.017	-0.007	0.02
BCHA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
BPAT					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
CISO	0.1722	0.1492	0.363	0.1988	0.2211	0.012	0.0824	0.0742	0.1374	0.1563	0.1893	0.0879	0.4593	0.0546	0.2046	0.1692	0.4364	0.1357	0.145	0.074	0.1374	0.1033	0.1245	0.1382	4.03
EPE																0.023	0.012	0.018	0.062	0.085	0.054	0.163	0.028	0.001	0.45
IPCO	0.043	0.018	0.016	0.061	0.017	-0.002	0.101	0.006	0.183	0.007	0.004	0.460	-0.003	0	0.034	0.007	-0.004	-0.003	0.003	0.021	0.000	0.005	0.030	0	1.00
LADWP	0.000	-0.007	0.001	0.027	-0.014	0	0	0	0.052	0	0.002	0.210	0	0	0	0	0	0	0	0	0	0	0	0	0.27
NEVP	-0.001	0.004	0.035	-0.011	0.087	0.119	0.282	0.721	1.145	0.168	0.089	-0.040	0.043	0.120	0.276	0.277	0.107	0.360	0.968	0.644	0.351	0.101	0.024	0.118	5.99
NWMT	0.031	0.018	0.011	0.010	0.003	-0.002	0.003	0.012	0.019	0.039	0.014	0.042	0.110	0.082	0.035	0.067	0.006	0.002	0.009	0.018	0.004	0.035	0.028	0.026	0.62
PACE	0.051	0.050	0.026	0.047	0.010	0.027	0.045	0.049	0.034	0.040	0.050	0.029	-0.008	0.053	-0.055	-0.015	0	0	0.001	0.000	0.023	0.003	0.005	0.008	0.47
PACW	0	0	0	0	0	0	0	0	0	0	0.001	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
PGE	0.005	0.002	-0.002	0.004	-0.007	-0.011	0.014	0.005	0.020	0.005	0.010	0.002	0.017	-0.004	0.014	0.000	-0.023	-0.002	0.001	0.001	0	-0.001	-0.003	0	0.05
PNM	0.001	0.006	0.012	0.020	0.013	0.020	0.021	0.035	0.076	0.012	0.002	0.120	0.035	0.014	0.004	0.464	0.172	0.082	0.006	0.004	0.006	0.004	0.003	0.010	1.14
PSEI	0	0	0	0	0	0.001	0	0	0	0	0	-0.025	-0.009	0	0	0	0.004	-0.001	-0.001	0.003	0	-0.001	0	-0.003	-0.03
SCL	0	0	0	0	0.001	0.001	0.004	0.026	0.006	0.000	0.004	0.013	0	0.002	0.003	-0.001	0	0	0.003	0.002	0.000	0.002	0	0.003	0.07
SRP	0.124	0.031	0.183	0.159	0.112	-0.057	0.076	0.349	0.296	0.667	0.437	0.654	0.190	0.281	0.496	0.328	0.103	0.146	0.394	0.078	0.098	0.213	0.273	0.127	5.76
TEPC					0.042	0.029	0.115	0.368	0.763	0.047	0.040	0.098	0.081	0.079	0.179	0.070	0.022	0.014	0.367	0.173	0.032	0.076	0.167	0.116	2.88
TIDC	0.090	0.060	0.153	0.165	0.083	0.113	0.117	0.212	0.023	0.122	0.204	0.001	0.141	0.134	0.264	0.142	0.021	0.023	0.032	0.031	0.042	0.035	0.087	0.061	2.36
TPWR			0.000	0.001	0	0	0.001	0.001	0	0	0.002	0.004	0	0	0	0	0	0	0	0	0	0	0	0.001	0.01
WALC																0.000	0.000	0.000	0.000	0.000	-0.001	-0.005	0	0	-0.01
Total	0.51	0.33	0.92	0.73	0.57	0.27	0.86	1.92	2.75	1.29	1.12	1.67	1.13	0.83	1.46	1.57	0.88	0.78	2.06	1.15	0.75	0.72	0.83	0.61	25.74

Values represent changes in costs (in $ Millions) of supply with FSP
Positive values reflect incremental payments to supply

For WEIM areas, energy is settled based on differences between base schedules and dispatches, resulting in relatively moderate cost impacts with FSP

MUT ≤60 min, STUT ≤30 min, average amortization. Per-BAA Bookend

	2022												2023												
BAA	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
AVA			0.062	0.011	0.015	0.012	0.001	0.007	-0.001	0.023	0.035	0.005	0.044	0.015	0.003	0	0.024	0.000	0.011	0.001	0.001	0.001	0.001	0	0.27
AVRN																0.003	0	0.002	0.017	0.002	0	0	0.078	0.009	0.11
AZPS	0.001	0	0.001	0	0	0.004	0.001	0.001	-0.031	0	0	0	0	0.001	0.001	0.003	0	0	0.010	0.012	-0.002	0	0.001	0.001	0.01
BANC	0	-0.003	0.021	0.032	-0.003	0	0	-0.022	0	0	0.031	0.023	-0.002	-0.004	-0.004	0.030	0.002	-0.001	0.020	-0.005	0	-0.008	-0.005	-0.002	0.11
BCHA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000	0	0	0.00
BPAT					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
CISO	0.165	0.1452	0.3817	0.1962	0.188	0.012	0.0965	0.0788	0.124	0.1561	0.196	0.0782	0.4849	0.0542	0.1997	0.1675	0.4371	0.1316	0.1337	0.0706	0.1392	0.0967	0.1082	0.135	3.98
EPE																0.024	0.011	0.015	0.053	0.073	0.044	0.148	0.028	0.001	0.40
IPCO	0.044	0.011	0.010	0.064	0.015	-0.002	0.035	0.005	0.040	0.008	0.005	0.221	-0.004	-0.001	0.025	0.005	-0.004	0	0.003	0.015	0.000	0.005	0.034	0	0.53
LADWP	0	-0.007	0	0.026	-0.014	-0.001	0	0	0.050	0	0.001	0.029	0	0	0	0	0	0	0	0	0.000	0	0.000	0	0.09
NEVP	-0.003	-0.001	0.032	-0.017	0.085	0.104	0.252	0.694	0.740	0.145	0.066	-0.073	0.028	0.105	0.252	0.256	0.102	0.341	0.920	0.614	0.335	0.087	0.019	0.108	5.19
NWMT	0.031	0.018	0.012	0.010	0.003	-0.002	0.003	0.012	0.019	0.023	0.014	0.042	0.110	0.082	0.035	0.067	0.006	0.002	0.009	0.018	0.004	0.035	0.028	0.026	0.61
PACE	0.058	0.051	0.026	0.052	0.010	0.028	0.056	0.049	0.034	0.039	0.050	0.029	-0.008	-0.003	-0.055	-0.015	0	0	0.001	0	0.023	0.003	0.005	0.008	0.44
PACW	0	0	0	0	0	0	0	0	0	0	-0.001	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
PGE	0.005	0.002	-0.003	0.003	-0.007	-0.019	0.014	0.004	0.020	0.005	0.006	0	0.014	-0.004	0.000	0.000	-0.023	-0.002	0.001	0.001	0	-0.001	-0.003	0	0.01
PNM	0	0.005	0.010	0.018	0.012	0.018	0.016	0.021	0.052	0.007	0.002	0.021	0.004	0.014	0.003	0.266	0.123	0.010	0.004	0.004	0.005	0.003	0	0	0.63
PSEI	0	0	0	0	0	0.001	0	0	0	0	0	-0.002	-0.008	0	0	0	0.004	-0.001	-0.001	0.003	0	-0.001	0	-0.003	-0.01
SCL	0	0	0	0.001	0	0.001	0.001	0.008	0	0	0	0	0	0	0.002	-0.002	0	0	0	0.001	0	-0.002	0	0.001	0.01
SRP	0.128	0.029	0.183	0.154	0.089	-0.054	0.064	0.295	0.310	0.635	0.459	0.620	0.176	0.268	0.469	0.295	0.090	0.137	0.381	0.071	0.096	0.201	0.265	0.120	5.48
TEPC					0.043	0.029	0.117	0.407	0.732	0.044	0.033	0.097	0.078	0.072	0.162	0.069	0.015	0.015	0.367	0.174	0.031	0.074	0.178	0.113	2.85
TIDC	0.074	0.050	0.130	0.137	0.068	0.094	0.097	0.176	0.019	0.101	0.168	0	0.116	0.110	0.212	0.117	0.025	0.021	0.028	0.026	0.038	0.029	0.075	0.051	1.96
TPWR			0	0.001	0	0	0.001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
WALC																0	0	0	0	0	-0.001	-0.005	0	-0.003	-0.01
Total	0.50	0.30	0.87	0.69	0.50	0.23	0.75	1.74	2.12	1.19	1.06	1.09	1.03	0.71	1.30	1.29	0.81	0.67	1.96	1.08	0.71	0.67	0.81	0.57	22.66

Values represent changes in costs (in $ Millions) of supply with FSP
Positive values reflect incremental payments to supply

For WEIM areas, energy is settled based on differences between base schedules and dispatches, resulting in relatively moderate cost impacts with FSP

MUT ≤60 min, STUT ≤60 min, constant amortization. Per-BAA Bookend

	2022												2023												
BAA	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
AVA			0.352	0.090	0.056	0.023	0.005	0.097	0.035	0.129	0.354	0.196	0.313	0.053	0.040	-0.001	0.045	0.016	0.020	0.010	0.006	0.013	0.003	0	1.86
AVRN																0.005	0	0.003	0.019	0.002	0.000	0	0.078	0.009	0.12
AZPS	0.058	0.020	0.021	0	0	0.047	0.058	0.094	0.157	0.012	0.004	0.042	0.001	0.042	0.038	0.052	0.017	0.030	0.229	0.233	0.124	0.022	0.022	0.026	1.35
BANC	0.005	0	0.029	0.059	0.011	-0.004	-0.007	-0.025	0.019	-0.133	-0.031	-0.042	0.002	-0.024	0.015	0.061	0.004	-0.001	0.037	-0.008	0.000	-0.016	-0.018	-0.007	-0.08
BCHA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
BPAT					0	0	0	0	0	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
CISO	0.408	0.364	0.76	0.452	0.466	0.019	0.26	0.157	0.37	0.37	0.439	0.186	0.823	0.067	0.409	0.374	0.804	0.188	0.322	0.172	0.92	0.193	0.33	0.281	9.13
EPE																0.028	0.014	0.021	0.079	0.105	0.064	0.199	0.035	0.001	0.55
IPCO	0.115	0.048	0.044	0.125	0.020	-0.001	0.273	0.017	0.413	0.021	0.005	0.739	-0.002	0.001	0.081	0.031	-0.010	-0.003	0.026	0.025	0	0.006	0.043	0	2.02
LADWP	0.009	-0.013	0.005	0.132	-0.035	-0.001	0.011	0	0.254	-0.003	0.030	0.596	0	0	0.000	0	0.000	0.000	0.000	0.000	0	0	0	0	0.99
NEVP	0.007	0.021	0.093	0.064	0.270	0.327	0.626	1.421	2.083	0.452	0.263	0.061	0.220	0.310	0.644	0.487	0.206	0.582	1.634	1.075	0.524	0.294	0.081	0.243	11.99
NWMT	0.047	0.031	0.019	0.012	0.006	-0.004	0.006	0.023	0.031	0.064	0.020	0.061	0.152	0.102	0.046	0.085	0.007	0.003	0.012	0.025	0.007	0.047	0.039	0.039	0.88
PACE	0.110	0.123	0.075	0.134	0.047	0.079	0.078	0.081	0.041	0.144	0.060	0.042	-0.009	0.059	-0.067	-0.021	0	0.001	0.004	0	0.064	0.010	0.003	0.011	1.07
PACW	0	0	0	0	0	0	0	0	0	0	0.001	0	0	0.000	0	0.001	0	0	0	0	0	0	0	0	0.00
PGE	0.009	0.005	-0.002	0.007	-0.003	-0.002	0.026	0.013	0.041	0.008	0.029	0.033	0.036	-0.001	0.020	0.001	-0.023	-0.002	0.003	0	0.001	0	-0.003	0.002	0.20
PNM	0.001	0.013	0.019	0.029	0.023	0.037	0.061	0.072	0.131	0.035	0.004	0.169	0.040	0.021	0.009	0.566	0.193	0.104	0.012	0.009	0.009	0.010	0.003	0.022	1.59
PSEI	0	0	0	0	0	0.001	0	0	0	-0.005	0	-0.026	-0.009	0	0.001	0	0.004	-0.001	-0.001	0.003	0	-0.001	-0.001	-0.003	-0.04
SCL	0	0	0	0.007	0.001	0.001	0.004	0.026	0.006	0.000	0.004	0.013	0	0.002	0.003	-0.001	0.000	0.000	0.003	0.002	0	0.002	0	0.003	0.08
SRP	0.287	0.109	0.366	0.392	0.252	0.043	0.255	0.925	0.717	1.278	0.958	1.455	0.440	0.517	0.775	0.509	0.176	0.260	0.685	0.177	0.203	0.425	0.539	0.295	12.04
TEPC					0.072	0.063	0.187	0.588	1.100	0.094	0.104	0.369	0.195	0.136	0.290	0.109	0.040	0.022	0.544	0.273	0.054	0.125	0.222	0.166	4.75
TIDC	0.135	0.088	0.225	0.250	0.126	0.172	0.178	0.324	0.035	0.185	0.313	0.003	0.218	0.206	0.423	0.219	0.032	0.034	0.048	0.047	0.063	0.054	0.131	0.091	3.60
TPWR			0	0.001	0	0	0.001	0.001	0	0	0.002	0.004	0	0	0	0	0	0	0	0	0	0	0	0.001	0.01
WALC																0	0	0	0	0	-0.001	-0.005	0	0	-0.01
Total	1.19	0.81	2.01	1.76	1.31	0.80	2.02	3.82	5.43	2.65	2.56	3.90	2.42	1.49	2.73	2.50	1.51	1.26	3.68	2.15	2.04	1.38	1.51	1.18	52.10

Values represent changes in costs (in $ Millions) of supply with FSP
Positive values reflect incremental payments to supply

For WEIM areas, energy is settled based on differences between base schedules and dispatches, resulting in relatively moderate cost impacts with FSP

MUT ≤60 min, STUT ≤60 min, adjusted amortization. Per-BAA Bookend

	2022												2023												
BAA	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
AVA			0.109	0.019	0.015	0.012	0.001	0.067	0.007	0.032	0.055	0.028	0.068	0.025	0.004	0.000	0.024	0.002	0.013	0.002	0.001	0	0.001	0	0.48
AVRN																0.003	0	0.002	0.017	0.002	0	0	0.075	0.009	0.11
AZPS	0.001	0	0.001	0	0	0.007	0.002	0.019	-0.018	0	0	0	0	0.001	0.001	0.003	0.001	0.002	0.017	0.022	0.005	0.002	0.001	0.001	0.07
BANC	-0.001	-0.003	0.014	0.025	-0.008	0.001	0.000	-0.025	0.009	-0.002	0.021	-0.010	-0.001	-0.008	-0.002	0.035	0.002	-0.001	0.022	-0.006	0	-0.010	-0.017	-0.007	0.02
BCHA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
BPAT					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
CISO	0.172	0.149	0.363	0.198	0.221	0.012	0.081	0.068	0.137	0.158	0.189	0.09	0.459	0.055	0.205	0.169	0.436	0.136	0.145	0.074	0.725	0.104	0.125	0.138	4.61
EPE																0.023	0.012	0.018	0.062	0.085	0.054	0.163	0.028	0.001	0.45
IPCO	0.043	0.018	0.016	0.061	0.017	-0.002	0.101	0.006	0.183	0.007	0.004	0.460	-0.003	0	0.034	0.007	-0.004	-0.003	0.003	0.021	0	0.005	0.030	0	1.00
LADWP	0.000	-0.007	0.001	0.027	-0.014	0	0	0	0.052	0	0.002	0.210	0	0	0	0	0	0	0	0.000	0	0	0	0	0.27
NEVP	-0.001	0.004	0.035	-0.011	0.087	0.119	0.282	0.721	1.145	0.168	0.089	-0.040	0.043	0.120	0.276	0.277	0.107	0.360	0.968	0.644	0.351	0.101	0.024	0.118	5.99
NWMT	0.031	0.018	0.011	0.010	0.003	-0.002	0.003	0.012	0.019	0.039	0.014	0.042	0.110	0.082	0.035	0.067	0.006	0.002	0.009	0.018	0.004	0.035	0.028	0.026	0.62
PACE	0.051	0.050	0.026	0.047	0.010	0.027	0.045	0.049	0.034	0.040	0.050	0.029	-0.008	0.053	-0.055	-0.015	0.000	0	0.001	0	0.023	0.003	0.005	0.008	0.47
PACW	0	0	0	0	0	0	0	0	0	0	0.001	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
PGE	0.005	0.002	-0.002	0.004	-0.007	-0.011	0.014	0.005	0.020	0.005	0.010	0.002	0.017	-0.004	0.014	0.000	-0.023	-0.002	0.001	0.001	0	-0.001	-0.003	0	0.05
PNM	0.001	0.006	0.012	0.020	0.013	0.020	0.021	0.035	0.076	0.012	0.002	0.120	0.035	0.014	0.004	0.464	0.172	0.082	0.006	0.004	0.006	0.004	0.003	0.010	1.14
PSEI	0	0	0	0	0	0.001	0	0	0	0	0	-0.025	-0.009	0	0	0	0.004	-0.001	-0.001	0.003	0	-0.001	0	-0.003	-0.03
SCL	0	0	0	0.003	0.001	0.001	0.004	0.026	0.006	0.000	0.004	0.013	0	0.002	0.003	-0.001	0	0	0.003	0.002	0	0.002	0	0.003	0.07
SRP	0.124	0.031	0.183	0.159	0.112	-0.057	0.076	0.349	0.296	0.667	0.437	0.654	0.190	0.281	0.496	0.328	0.103	0.146	0.394	0.078	0.098	0.213	0.273	0.127	5.76
TEPC					0.042	0.029	0.115	0.368	0.763	0.047	0.040	0.098	0.081	0.079	0.179	0.070	0.022	0.014	0.367	0.173	0.032	0.076	0.167	0.116	2.88
TIDC	0.090	0.060	0.153	0.165	0.083	0.113	0.117	0.212	0.023	0.122	0.204	0.001	0.141	0.134	0.264	0.142	0.021	0.023	0.032	0.031	0.042	0.035	0.087	0.061	2.36
TPWR			0	0.001	0	0	0.001	0.001	0	0	0.002	0.004	0	0	0	0	0	0	0	0	0	0	0	0.001	0.01
WALC																0	0	0	0	0	-0.001	-0.005	0	0	-0.01
Total	0.52	0.33	0.92	0.73	0.57	0.27	0.86	1.91	2.75	1.29	1.12	1.68	1.13	0.83	1.46	1.57	0.88	0.78	2.06	1.15	1.34	0.72	0.83	0.61	26.33

Values represent changes in costs (in $ Millions) of supply with FSP
Positive values reflect incremental payments to supply

For WEIM areas, energy is settled based on differences between base schedules and dispatches, resulting in relatively moderate cost impacts with FSP

MUT ≤60 min, STUT ≤ 60 min, average amortization. Per-BAA Bookend

	2022												2023												
BAA	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
AVA			0.062	0.011	0.015	0.012	0.001	0.007	-0.001	0.023	0.035	0.005	0.044	0.015	0.003	0.000	0.024	0	0.011	0.001	0.001	0.001	0.001	0	0.27
AVRN																0.003	0	0.002	0.017	0.002	0	0	0.078	0.009	0.11
AZPS	0.001	0	0.001	0	0	0.002	0.001	0.015	-0.031	0.004	0	0	0	0.001	0.001	0.001	0	0.001	0.008	0.009	-0.001	0	0.001	0	0.02
BANC	0.000	-0.003	0.021	0.032	-0.003	0	0	-0.022	0.010	-0.120	0.031	0.024	-0.002	-0.003	-0.004	0.030	0.002	-0.001	0.020	-0.006	0	-0.008	-0.005	-0.002	-0.01
BCHA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000	0.000	0	0.00
BPAT					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
CISO	0.1655	0.1452	0.381	0.1957	0.1855	0.0121	0.0954	0.0716	0.1241	0.1584	0.1961	0.0794	0.4851	0.0542	0.1997	0.1672	0.4373	0.1321	0.1344	0.0705	0.7358	0.0972	0.1081	0.1351	4.57
EPE																0.024	0.011	0.015	0.053	0.073	0.044	0.148	0.027	0.001	0.40
IPCO	0.044	0.011	0.010	0.064	0.015	-0.002	0.035	0.005	0.040	0.007	0.005	0.221	-0.004	-0.001	0.025	0.005	-0.004	0	0.003	0.015	0	0.005	0.034	0	0.53
LADWP	0.000	-0.007	0	0.026	-0.014	-0.001	0	0	0.050	-0.003	0.001	0.029	0	0	0	0	0	0	0.000	0.000	0	0	0	0	0.08
NEVP	-0.003	0.002	0.033	-0.017	0.084	0.104	0.257	0.693	0.713	0.135	0.083	-0.076	0.029	0.104	0.251	0.257	0.106	0.344	0.931	0.609	0.334	0.089	0.018	0.108	5.19
NWMT	0.031	0.018	0.012	0.010	0.003	-0.002	0.003	0.012	0.019	0.028	0.014	0.042	0.110	0.082	0.035	0.067	0.006	0.002	0.009	0.018	0.004	0.035	0.028	0.026	0.61
PACE	0.058	0.051	0.026	0.052	0.010	0.028	0.056	0.049	0.034	0.104	0.050	0.029	-0.008	-0.003	-0.055	-0.015	0	0	0.001	0	0.023	0.003	0.005	0.008	0.51
PACW	0	0	0	0	0	0	0	0	0	0	-0.001	0	0	0	0	0.001	0	0	0	0	0	0	0	0	0.00
PGE	0.005	0.003	-0.003	0.003	-0.007	-0.019	0.017	0.006	0.020	0.002	0.007	0.006	0.011	0.001	0.000	0	-0.023	-0.002	0.002	0.000	0.001	-0.001	-0.003	0.001	0.03
PNM	0.000	0.005	0.010	0.018	0.012	0.018	0.016	0.021	0.052	-0.002	0.002	0.021	0.003	0.014	0.003	0.265	0.116	0.032	0.004	0.004	0.005	0.003	0	0.009	0.63
PSEI	0	0	0	0	0	0.001	0	0	0	-0.006	0	-0.002	-0.008	0	0	0	0.004	-0.001	-0.001	0.003	0	-0.001	0	-0.003	-0.01
SCL	0	0	0	0.001	0	0.001	0.001	0.008	0	0	0	0	0	0	0.002	-0.002	0	0	0	0.001	0	-0.002	0	0.001	0.01
SRP	0.130	0.029	0.183	0.155	0.089	-0.054	0.065	0.294	0.310	0.635	0.463	0.630	0.176	0.276	0.470	0.289	0.093	0.137	0.381	0.071	0.099	0.204	0.269	0.123	5.52
TEPC					0.043	0.029	0.117	0.407	0.732	0.036	0.033	0.097	0.078	0.072	0.162	0.069	0.015	0.015	0.367	0.174	0.031	0.074	0.178	0.113	2.84
TIDC	0.074	0.050	0.130	0.137	0.068	0.094	0.097	0.176	0.019	0.101	0.168	0	0.116	0.110	0.212	0.117	0.025	0.021	0.028	0.026	0.038	0.029	0.075	0.051	1.96
TPWR			0	0.001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
WALC																0	0	0	0	0	-0.001	-0.005	0	-0.003	-0.01
Total	0.51	0.31	0.87	0.69	0.50	0.22	0.76	1.74	2.09	1.10	1.08	1.11	1.03	0.72	1.31	1.28	0.81	0.70	1.97	1.07	1.31	0.67	0.81	0.58	23.24

Values represent changes in costs (in $ Millions) of supply with FSP
Positive values reflect incremental payments to supply

For WEIM areas, energy is settled based on differences between base schedules and dispatches, resulting in relatively moderate cost impacts with FSP

MUT ≤60 min, STUT ≤30 min, constant amortization. System-wide Bookend

	2022												2023												
BAA	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
AVA			0.072	0.049	-0.032	-0.018	-0.016	-0.023	-0.053	0.014	0.100	0.035	0.057	0.018	0.039	0.036	0.036	-0.005	-0.011	-0.066	-0.027	-0.042	-0.003	-0.001	0.16
AVRN																0.054	0.057	0.021	0.152	0.079	0.025	0.038	0.012	0.008	0.45
AZPS	0.091	0.041	0.079	0.130	0.045	0.170	0.195	0.404	0.546	0.038	0.104	0.368	0.070	0.059	0.065	0.154	0.057	0.020	0.216	0.138	0.042	0.072	0.049	0.018	3.17
BANC	-0.013	-0.002	0.014	0.048	-0.004	-0.162	-0.105	-0.033	-0.005	-0.062	-0.160	-0.209	-0.021	-0.031	0.022	-0.015	0.012	-0.006	-0.036	-0.096	-0.035	-0.064	-0.037	-0.024	-1.02
BCHA	0.030	0.036	0.045	0.054	0.003	0.012	0.020	0.093	0.020	0.012	0.060	0.062	0.034	0.014	0.018	0.022	0.004	0	0.008	0	0	0.002	0.003	0	0.55
BPAT					0.033	0.072	0.108	0.156	0.014	0.050	0.082	0.114	0.034	0.025	0.034	0.080	0.068	0.008	0.042	0.012	0.006	-0.001	0.011	0.001	0.95
CISO	0.130	0.122	0.150	0.182	0.275	0.231	0.202	0.474	0.188	0.116	0.157	0.182	0.179	0.061	0.140	0.122	0.079	0.061	0.089	0.179	0.113	0.102	0.109	0.018	3.66
EPE																0.038	0.032	0.014	0.097	0.067	0.025	0.055	0.010	-0.002	0.34
IPCO	0.053	0.038	0.087	0.158	0.036	-0.060	0.022	0.114	0.067	-0.041	0.029	0.114	0.003	0.008	0.041	0.037	-0.069	-0.022	0.107	-0.028	-0.005	0.001	-0.009	0.003	0.68
LADWP	0.013	-0.021	0.008	0.190	0.051	-0.007	0.162	0.255	0.335	0.001	0.174	0.283	-0.004	-0.016	0.025	0.068	0.016	-0.007	0.022	-0.098	-0.049	-0.072	-0.029	-0.007	1.29
NEVP	-0.001	0.012	0.044	0.045	0.054	0.142	0.225	0.514	0.603	0.072	0.104	-0.009	0.011	0.021	0.047	0.052	0.083	0.042	0.245	0.212	0.034	0.065	0.021	0.017	2.66
NWMT	0.020	0.011	0.026	0.017	-0.005	-0.016	0.011	0.069	0.056	0.036	0.032	0.056	0.032	0.017	0.025	0.051	0.007	0.001	0.019	0.004	0.010	0.018	0.016	0.006	0.52
PACE	0.175	0.131	0.247	0.559	0.299	0.320	0.570	0.777	0.645	0.152	0.330	0.070	0.045	0.003	-0.129	-0.112	-0.059	-0.022	0.183	0.208	0.076	0.134	0.040	0.006	4.65
PACW	0.036	0.027	0.059	0.067	0.036	0.025	-0.008	0.111	0.008	0.040	0.137	0.120	0.007	0.012	0.024	0.039	0.056	0.017	0.035	0.034	0.011	0.027	0.027	0.024	0.97
PGE	0.028	0.030	0.015	0.101	-0.058	-0.089	0.011	0.000	-0.080	-0.003	0.068	0.065	0.012	0.013	0.002	-0.034	-0.052	-0.016	-0.066	-0.019	-0.035	-0.034	-0.002	-0.003	-0.14
PNM	0.007	0.021	0.030	0.075	0.039	0.057	0.104	0.261	0.247	0.051	0.054	0.112	0.057	0.045	0.068	0.089	0.034	0.009	0.149	0.083	0.021	0.028	0.019	0.011	1.67
PSEI	0.026	0.015	0.014	0.008	0.010	-0.014	0.032	0.048	0.026	-0.010	0.003	-0.061	-0.016	0.004	0.020	0.065	-0.003	-0.008	0.002	0.041	-0.015	-0.016	0	0.006	0.18
SCL	0.015	0.004	0.014	0.036	-0.001	-0.015	0.003	-0.031	-0.007	-0.001	0.004	-0.003	-0.003	-0.004	-0.003	-0.031	-0.007	-0.011	-0.043	-0.023	-0.005	-0.005	-0.007	-0.002	-0.13
SRP	0.046	0.022	0.111	0.201	0.066	0.130	0.190	0.365	0.236	0.082	0.205	0.138	0.053	0.068	0.076	0.106	0.085	0.025	0.152	0.051	0.045	0.072	0.046	0.039	2.61
TEPC					-0.007	0.028	0.084	0.096	0.217	0.021	0.046	0.131	0.029	0.025	0.031	0.054	0.032	-0.004	0.084	0.074	0.002	0.031	0.015	0.011	1.00
TIDC	0.026	0.019	0.058	0.092	0.042	0.042	0.070	0.133	0.051	0.024	0.087	0.023	0.027	0.018	0.026	0.039	0.023	0.004	0.022	0.015	0.009	0.015	0.010	0.005	0.88
TPWR			0.009	0.025	-0.004	-0.001	-0.003	0.014	0.016	0.006	0.010	0.026	0.016	0.002	0.002	0	0	-0.002	-0.003	-0.017	-0.003	-0.007	-0.001	-0.001	0.08
WALC																0.007	0.002	0.001	-0.001	-0.002	-0.006	-0.019	0.001	0.002	-0.02
Total	0.68	0.50	1.08	2.04	0.88	0.85	1.88	3.80	3.13	0.60	1.63	1.62	0.62	0.36	0.58	0.92	0.49	0.12	1.46	0.85	0.24	0.40	0.30	0.14	25.16

Values represent changes in costs (in $ Millions) of supply with FSP
Positive values reflect incremental payments to supply

For WEIM areas, energy is settled based on differences between base schedules and dispatches, resulting in relatively moderate cost impacts with FSP

MUT ≤60 min, STUT ≤30 min, adjusted amortization. System-wide Bookend

	2022												2023												
BAA	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
AVA			0.040	0.016	-0.022	-0.020	-0.017	-0.030	-0.050	0.009	0.031	0.015	0.031	0.009	0.026	0.022	0.020	-0.005	-0.015	-0.050	-0.022	-0.029	-0.003	-0.002	-0.05
AVRN																0.029	0.034	0.014	0.087	0.055	0.020	0.025	0.010	0.005	0.28
AZPS	0.055	0.021	0.046	0.053	0.029	0.120	0.111	0.217	0.287	0.022	0.039	0.243	0.038	0.036	0.041	0.094	0.029	0.012	0.130	0.088	0.031	0.046	0.033	0.011	1.83
BANC	-0.012	-0.006	0.002	0.012	-0.008	-0.127	-0.090	-0.052	-0.025	-0.044	-0.090	-0.164	-0.014	-0.023	0.015	-0.005	0.005	-0.004	-0.041	-0.073	-0.025	-0.044	-0.027	-0.016	-0.86
BCHA	0.017	0.017	0.026	0.024	0.002	0.007	0.011	0.048	0.007	0.008	0.023	0.035	0.013	0.010	0.012	0.014	0.002	0	0.003	0	0	0.001	0.001	0	0.28
BPAT					0.018	0.047	0.060	0.081	0.011	0.034	0.028	0.068	0.014	0.015	0.023	0.040	0.034	0.005	0.025	0.006	0.005	-0.001	0.006	0	0.52
CISO	0.087	0.075	0.097	0.110	0.171	0.181	0.126	0.279	0.095	0.081	0.076	0.131	0.097	0.039	0.098	0.074	0.063	0.044	0.067	0.137	0.085	0.067	0.072	0.011	2.36
EPE																0.021	0.019	0.009	0.057	0.047	0.018	0.035	0.006	-0.001	0.21
IPCO	0.029	0.019	0.044	0.064	0.016	-0.046	0.011	0.051	0.017	-0.030	0.003	0.059	-0.001	0.005	0.027	0.018	-0.044	-0.016	0.063	-0.020	-0.008	-0.002	-0.008	-0.001	0.25
LADWP	0.005	-0.015	-0.006	0.079	0.027	-0.017	0.088	0.125	0.177	0.002	0.061	0.180	0.001	-0.012	0.016	0.051	0.005	-0.004	-0.003	-0.082	-0.038	-0.050	-0.019	-0.006	0.56
NEVP	-0.004	0.008	0.027	0.030	0.038	0.084	0.131	0.301	0.337	0.047	0.039	-0.008	0.010	0.017	0.032	0.036	0.048	0.029	0.164	0.139	0.029	0.051	0.012	0.013	1.61
NWMT	0.012	0.006	0.013	0.008	-0.004	-0.013	0.003	0.036	0.029	0.024	0.012	0.040	0.018	0.011	0.017	0.031	0.003	0	0.012	0.001	0.007	0.012	0.011	0.004	0.29
PACE	0.115	0.084	0.148	0.292	0.196	0.216	0.343	0.496	0.400	0.106	0.140	0.040	0.031	0.005	-0.087	-0.074	-0.044	-0.016	0.121	0.140	0.054	0.091	0.026	-0.001	2.82
PACW	0.018	0.017	0.035	0.024	0.021	0.006	-0.001	0.062	0.013	0.026	0.057	0.072	0.007	0.009	0.014	0.021	0.032	0.010	0.014	0.020	0.008	0.017	0.017	0.014	0.53
PGE	0.016	0.016	0.002	0.042	-0.039	-0.062	-0.006	-0.010	-0.058	-0.003	0.027	0.042	0.003	0.008	0	-0.020	-0.031	-0.012	-0.041	-0.018	-0.027	-0.026	-0.004	-0.004	-0.20
PNM	0.000	0.011	0.016	0.038	0.022	0.039	0.055	0.150	0.130	0.034	0.027	0.065	0.033	0.031	0.046	0.049	0.020	0.006	0.083	0.056	0.015	0.018	0.013	0.007	0.96
PSEI	0.017	0.009	0.008	-0.007	0.006	-0.008	0.020	0.021	0.010	-0.007	-0.005	-0.035	-0.011	0.003	0.013	0.034	-0.001	-0.006	-0.004	0.021	-0.011	-0.012	0.001	0.004	0.06
SCL	0.008	0	0.007	0.015	-0.001	-0.011	0.001	-0.021	-0.006	-0.001	-0.001	-0.005	-0.003	-0.003	-0.003	-0.020	-0.004	-0.008	-0.029	-0.016	-0.004	-0.003	-0.005	-0.002	-0.12
SRP	0.027	0.011	0.061	0.082	0.025	0.071	0.108	0.207	0.139	0.050	0.084	0.081	0.028	0.044	0.050	0.066	0.050	0.012	0.081	0.028	0.029	0.041	0.027	0.019	1.42
TEPC					-0.006	0.013	0.038	0.054	0.110	0.012	0.016	0.077	0.017	0.018	0.019	0.032	0.015	-0.004	0.055	0.055	-0.001	0.018	0.011	0.006	0.55
TIDC	0.017	0.011	0.033	0.043	0.025	0.026	0.037	0.073	0.029	0.016	0.036	0.015	0.016	0.012	0.020	0.022	0.012	0.002	0.012	0.010	0.007	0.009	0.007	0.003	0.49
TPWR			0.005	0.012	-0.003	-0.003	-0.003	0.002	0.009	0.004	0.003	0.018	0.009	0.001	0.002	-0.001	0	-0.002	-0.003	-0.010	-0.002	-0.005	-0.001	0	0.03
WALC																0.002	0	0.001	-0.001	-0.002	-0.005	-0.015	0	0	-0.02
Total	0.40	0.28	0.60	0.94	0.51	0.50	1.03	2.09	1.66	0.39	0.61	0.97	0.34	0.24	0.38	0.54	0.27	0.07	0.84	0.53	0.16	0.25	0.18	0.07	13.84

Values represent changes in costs (in $ Millions) of supply with FSP
Positive values reflect incremental payments to supply

For WEIM areas, energy is settled based on differences between base schedules and dispatches, resulting in relatively moderate cost impacts with FSP

MUT ≤60 min, STUT ≤30 min, average amortization. System-wide Bookend

	2022												2023												
BAA	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
AVA			0.043	0.029	-0.021	-0.020	-0.017	-0.038	-0.053	0.014	0.029	0.025	0.057	0.018	0.039	0.032	0.026	-0.005	-0.016	-0.065	-0.027	-0.040	-0.003	-0.001	0.00
AVRN																0.052	0.041	0.021	0.128	0.074	0.025	0.035	0.012	0.008	0.40
AZPS	0.076	0.033	0.044	0.052	0.032	0.152	0.170	0.275	0.542	0.038	0.051	0.328	0.069	0.059	0.065	0.145	0.039	0.020	0.179	0.136	0.042	0.069	0.049	0.018	2.68
BANC	-0.015	-0.004	0.002	0.001	-0.017	-0.159	-0.100	-0.067	-0.002	-0.062	-0.122	-0.201	-0.021	-0.031	0.022	-0.012	0.009	-0.006	-0.049	-0.095	-0.035	-0.063	-0.037	-0.024	-1.09
BCHA	0.025	0.028	0.020	0.026	0.003	0.012	0.019	0.048	0.016	0.012	0.026	0.049	0.033	0.014	0.018	0.020	0.003	0	0.001	0	0	0.001	0.003	0	0.38
BPAT					0.026	0.063	0.094	0.094	0.012	0.050	0.036	0.100	0.033	0.025	0.034	0.074	0.049	0.008	0.039	0.012	0.006	-0.001	0.011	0.001	0.77
CISO	0.113	0.102	0.101	0.142	0.190	0.209	0.181	0.372	0.193	0.116	0.100	0.162	0.177	0.061	0.140	0.108	0.063	0.047	0.102	0.167	0.113	0.101	0.109	0.018	3.19
EPE																0.035	0.022	0.014	0.082	0.064	0.025	0.052	0.010	-0.002	0.30
IPCO	0.042	0.035	0.032	0.069	0.026	-0.055	0.017	0.064	0.067	-0.041	0.000	0.087	0.003	0.008	0.041	0.035	-0.054	-0.022	0.085	-0.034	-0.005	0.001	-0.009	0.003	0.39
LADWP	0.011	-0.014	-0.021	0.089	0.037	-0.013	0.131	0.172	0.335	0.001	0.063	0.269	-0.004	-0.016	0.025	0.066	0.005	-0.008	0	-0.098	-0.049	-0.070	-0.029	-0.007	0.88
NEVP	-0.003	0.012	0.030	0.023	0.044	0.100	0.210	0.348	0.613	0.072	0.041	0	0.011	0.021	0.047	0.054	0.060	0.040	0.210	0.210	0.034	0.069	0.021	0.017	2.28
NWMT	0.016	0.009	0.009	0.006	-0.008	-0.014	0.006	0.043	0.053	0.036	0.013	0.051	0.032	0.017	0.025	0.048	0.005	0.001	0.015	0.004	0.010	0.017	0.016	0.006	0.42
PACE	0.152	0.116	0.149	0.316	0.219	0.272	0.497	0.623	0.641	0.152	0.167	0.051	0.044	0.003	-0.129	-0.112	-0.049	-0.022	0.154	0.203	0.076	0.125	0.040	0.006	3.70
PACW	0.026	0.024	0.033	0.032	0.032	0.015	-0.004	0.080	0.005	0.040	0.065	0.113	0.007	0.012	0.024	0.037	0.040	0.017	0.022	0.032	0.011	0.026	0.027	0.024	0.74
PGE	0.024	0.027	0	0.041	-0.039	-0.078	0.008	-0.014	-0.081	-0.003	0.033	0.051	0.012	0.013	0.002	-0.028	-0.034	-0.015	-0.059	-0.022	-0.035	-0.032	-0.002	-0.003	-0.23
PNM	0.004	0.018	0.020	0.041	0.028	0.050	0.079	0.192	0.242	0.051	0.033	0.107	0.057	0.045	0.068	0.082	0.029	0.010	0.121	0.081	0.021	0.026	0.019	0.011	1.44
PSEI	0.024	0.015	0.014	0.001	0.004	-0.009	0.029	0.029	0.025	-0.010	-0.008	-0.053	-0.016	0.004	0.020	0.061	0.001	-0.008	-0.005	0.038	-0.015	-0.016	0	0.006	0.13
SCL	0.012	0.001	0.006	0.014	-0.001	-0.014	0.003	-0.026	-0.007	-0.001	-0.002	-0.006	-0.003	-0.004	-0.003	-0.028	-0.004	-0.011	-0.040	-0.022	-0.005	-0.004	-0.007	-0.002	-0.15
SRP	0.039	0.023	0.070	0.087	0.055	0.106	0.158	0.262	0.237	0.082	0.102	0.118	0.053	0.068	0.076	0.108	0.063	0.030	0.119	0.052	0.045	0.066	0.046	0.039	2.10
TEPC					-0.005	0.024	0.067	0.063	0.223	0.021	0.021	0.116	0.029	0.025	0.031	0.052	0.023	-0.004	0.077	0.072	0.002	0.030	0.015	0.011	0.89
TIDC	0.023	0.015	0.030	0.043	0.026	0.035	0.057	0.093	0.050	0.024	0.041	0.022	0.027	0.018	0.026	0.036	0.012	0.004	0.019	0.013	0.009	0.013	0.010	0.005	0.65
TPWR			0.004	0.013	-0.004	-0.002	-0.002	0.002	0.015	0.006	0.001	0.024	0.016	0.002	0.002	0	0.001	-0.002	-0.006	-0.018	-0.003	-0.008	-0.001	-0.001	0.04
WALC																0.004	0	0.001	-0.001	-0.002	-0.006	-0.019	0.001	0.002	-0.02
Total	0.57	0.44	0.59	1.03	0.63	0.68	1.60	2.61	3.13	0.60	0.69	1.41	0.62	0.36	0.58	0.87	0.35	0.11	1.18	0.80	0.24	0.38	0.30	0.14	19.89

Values represent changes in costs (in $ Millions) of supply with FSP
Positive values reflect incremental payments to supply

For WEIM areas, energy is settled based on differences between base schedules and dispatches, resulting in relatively moderate cost impacts with FSP

MUT ≤60 min, STUT ≤60 min, constant amortization. System-wide Bookend

	2022												2023												
BAA	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
AVA			0.072	0.049	-0.032	-0.018	-0.016	-0.024	-0.053	0.042	0.100	0.034	0.057	0.018	0.039	0.036	0.036	-0.005	-0.011	-0.066	-0.027	-0.042	-0.003	-0.001	0.18
AVRN																0.054	0.057	0.021	0.153	0.079	0.025	0.038	0.012	0.008	0.45
AZPS	0.091	0.041	0.079	0.130	0.045	0.171	0.195	0.404	0.551	0.105	0.104	0.369	0.070	0.060	0.065	0.154	0.057	0.020	0.218	0.138	0.042	0.073	0.049	0.018	3.25
BANC	-0.013	-0.002	0.014	0.048	-0.004	-0.163	-0.107	-0.036	-0.007	-0.172	-0.160	-0.210	-0.021	-0.031	0.022	-0.015	0.012	-0.006	-0.037	-0.097	-0.035	-0.065	-0.037	-0.024	-1.15
BCHA	0.030	0.035	0.045	0.054	0.003	0.012	0.020	0.094	0.021	0.041	0.061	0.062	0.034	0.014	0.018	0.022	0.004	0	0.008	0	0	0.002	0.003	0	0.58
BPAT					0.033	0.072	0.108	0.157	0.014	0.142	0.082	0.114	0.034	0.025	0.034	0.080	0.068	0.008	0.042	0.012	0.006	-0.001	0.011	0.001	1.04
CISO	0.130	0.122	0.150	0.182	0.275	0.231	0.203	0.475	0.190	0.330	0.157	0.182	0.179	0.062	0.140	0.122	0.079	0.061	0.091	0.179	0.113	0.103	0.110	0.019	3.89
EPE																0.038	0.032	0.014	0.098	0.067	0.026	0.055	0.010	-0.002	0.34
IPCO	0.054	0.038	0.087	0.158	0.036	-0.060	0.021	0.113	0.067	-0.096	0.029	0.116	0.003	0.008	0.041	0.037	-0.070	-0.022	0.108	-0.028	-0.005	0.001	-0.009	0.003	0.63
LADWP	0.013	-0.020	0.008	0.190	0.051	-0.007	0.162	0.255	0.336	0.042	0.174	0.283	-0.004	-0.016	0.025	0.068	0.016	-0.007	0.022	-0.099	-0.050	-0.073	-0.029	-0.007	1.33
NEVP	-0.001	0.013	0.043	0.045	0.054	0.144	0.225	0.516	0.610	0.195	0.104	-0.009	0.012	0.021	0.048	0.053	0.083	0.042	0.248	0.213	0.034	0.066	0.021	0.018	2.80
NWMT	0.020	0.011	0.026	0.017	-0.005	-0.015	0.011	0.069	0.057	0.103	0.032	0.056	0.033	0.017	0.025	0.051	0.007	0.001	0.020	0.004	0.010	0.018	0.016	0.006	0.59
PACE	0.176	0.131	0.247	0.559	0.299	0.323	0.572	0.782	0.654	0.418	0.330	0.070	0.045	0.004	-0.129	-0.112	-0.060	-0.023	0.185	0.210	0.076	0.136	0.040	0.007	4.94
PACW	0.037	0.027	0.058	0.067	0.036	0.026	-0.008	0.111	0.008	0.117	0.137	0.121	0.007	0.013	0.024	0.039	0.056	0.017	0.035	0.034	0.011	0.027	0.027	0.024	1.05
PGE	0.028	0.030	0.015	0.101	-0.058	-0.090	0.010	-0.001	-0.082	-0.001	0.068	0.066	0.012	0.013	0.002	-0.034	-0.052	-0.016	-0.067	-0.020	-0.035	-0.034	-0.002	-0.003	-0.15
PNM	0.007	0.022	0.030	0.075	0.039	0.057	0.104	0.262	0.248	0.136	0.054	0.112	0.057	0.046	0.068	0.089	0.034	0.009	0.150	0.084	0.021	0.028	0.019	0.011	1.76
PSEI	0.026	0.015	0.014	0.008	0.010	-0.014	0.032	0.048	0.026	-0.024	0.003	-0.062	-0.017	0.004	0.020	0.065	-0.003	-0.008	0.001	0.041	-0.015	-0.016	0	0.006	0.16
SCL	0.015	0.004	0.014	0.036	-0.001	-0.015	0.004	-0.031	-0.007	-0.001	0.004	-0.003	-0.003	-0.004	-0.003	-0.031	-0.007	-0.011	-0.044	-0.023	-0.006	-0.005	-0.007	-0.002	-0.13
SRP	0.046	0.022	0.111	0.200	0.066	0.130	0.190	0.366	0.237	0.230	0.205	0.139	0.053	0.068	0.076	0.106	0.085	0.025	0.154	0.052	0.045	0.073	0.047	0.039	2.76
TEPC					-0.007	0.028	0.084	0.096	0.220	0.060	0.046	0.133	0.030	0.025	0.031	0.054	0.032	-0.004	0.085	0.074	0.002	0.032	0.015	0.011	1.05
TIDC	0.026	0.019	0.058	0.092	0.042	0.043	0.070	0.134	0.052	0.065	0.087	0.023	0.027	0.018	0.026	0.039	0.023	0.004	0.022	0.015	0.009	0.015	0.010	0.005	0.92
TPWR			0.009	0.025	-0.004	-0.001	-0.003	0.014	0.016	0.019	0.009	0.026	0.016	0.002	0.002	0	0	-0.002	-0.003	-0.018	-0.003	-0.007	-0.001	-0.001	0.09
WALC																0.007	0.002	0.001	-0.001	-0.002	-0.006	-0.019	0.001	0.002	-0.02
Total	0.68	0.51	1.08	2.04	0.88	0.85	1.88	3.80	3.16	1.75	1.63	1.62	0.62	0.37	0.58	0.92	0.49	0.12	1.48	0.85	0.24	0.40	0.30	0.14	26.39

Values represent changes in costs (in $ Millions) of supply with FSP
Positive values reflect incremental payments to supply

For WEIM areas, energy is settled based on differences between base schedules and dispatches, resulting in relatively moderate cost impacts with FSP

MUT ≤60 min, STUT ≤60 min, adjusted amortization. System-wide Bookend

	2022												2023												
BAA	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
AVA			0.040	0.016	-0.022	-0.020	-0.017	-0.030	-0.050	0.009	0.031	0.015	0.031	0.009	0.026	0.022	0.020	-0.005	-0.015	-0.050	-0.022	-0.029	-0.003	-0.002	-0.05
AVRN																0.029	0.034	0.014	0.087	0.055	0.020	0.025	0.010	0.005	0.28
AZPS	0.055	0.021	0.046	0.053	0.029	0.120	0.111	0.217	0.287	0.022	0.039	0.243	0.038	0.036	0.041	0.094	0.029	0.012	0.130	0.088	0.031	0.046	0.033	0.011	1.83
BANC	-0.012	-0.006	0.002	0.012	-0.008	-0.127	-0.090	-0.052	-0.025	-0.044	-0.090	-0.164	-0.014	-0.023	0.015	-0.005	0.005	-0.004	-0.041	-0.073	-0.025	-0.044	-0.027	-0.016	-0.86
BCHA	0.017	0.017	0.026	0.024	0.002	0.007	0.011	0.048	0.007	0.008	0.023	0.035	0.013	0.010	0.012	0.014	0.002	0	0.003	0	0	0.001	0.001	0	0.28
BPAT					0.018	0.047	0.060	0.081	0.011	0.034	0.028	0.068	0.014	0.015	0.023	0.040	0.034	0.005	0.025	0.006	0.005	-0.001	0.006	0	0.52
CISO	0.087	0.074	0.098	0.110	0.171	0.181	0.126	0.280	0.095	0.226	0.076	0.132	0.098	0.040	0.098	0.074	0.063	0.045	0.068	0.137	0.086	0.067	0.071	0.011	2.51
EPE																0.021	0.019	0.009	0.057	0.047	0.018	0.035	0.006	-0.001	0.21
IPCO	0.029	0.019	0.044	0.064	0.016	-0.046	0.011	0.051	0.017	-0.030	0.003	0.059	-0.001	0.005	0.027	0.018	-0.044	-0.016	0.063	-0.020	-0.008	-0.002	-0.008	-0.001	0.25
LADWP	0.005	-0.015	-0.006	0.079	0.027	-0.017	0.088	0.125	0.177	0.002	0.061	0.180	0.001	-0.012	0.016	0.051	0.005	-0.004	-0.003	-0.082	-0.038	-0.050	-0.019	-0.006	0.56
NEVP	-0.004	0.008	0.027	0.030	0.038	0.084	0.131	0.301	0.337	0.047	0.039	-0.008	0.010	0.017	0.032	0.036	0.048	0.029	0.164	0.139	0.029	0.051	0.012	0.013	1.61
NWMT	0.012	0.006	0.013	0.008	-0.004	-0.013	0.003	0.036	0.029	0.024	0.012	0.040	0.018	0.011	0.017	0.031	0.003	0	0.012	0.001	0.007	0.012	0.011	0.004	0.29
PACE	0.115	0.084	0.148	0.292	0.196	0.216	0.343	0.496	0.400	0.106	0.140	0.040	0.031	0.005	-0.087	-0.074	-0.044	-0.016	0.121	0.140	0.054	0.091	0.026	-0.001	2.82
PACW	0.018	0.017	0.035	0.024	0.021	0.006	-0.001	0.062	0.013	0.026	0.057	0.072	0.007	0.009	0.014	0.021	0.032	0.010	0.014	0.020	0.008	0.017	0.017	0.014	0.53
PGE	0.016	0.016	0.002	0.042	-0.039	-0.062	-0.006	-0.010	-0.058	-0.003	0.027	0.042	0.003	0.008	0	-0.020	-0.031	-0.012	-0.041	-0.018	-0.027	-0.026	-0.004	-0.004	-0.20
PNM	0.000	0.011	0.016	0.038	0.022	0.039	0.055	0.150	0.130	0.034	0.027	0.065	0.033	0.031	0.046	0.049	0.020	0.006	0.083	0.056	0.015	0.018	0.013	0.007	0.96
PSEI	0.017	0.009	0.008	-0.007	0.006	-0.008	0.020	0.021	0.010	-0.007	-0.005	-0.035	-0.011	0.003	0.013	0.034	-0.001	-0.006	-0.004	0.021	-0.011	-0.012	0.001	0.004	0.06
SCL	0.008	0.000	0.007	0.015	-0.001	-0.011	0.001	-0.021	-0.006	-0.001	-0.001	-0.005	-0.003	-0.003	-0.003	-0.020	-0.004	-0.008	-0.029	-0.016	-0.004	-0.003	-0.005	-0.002	-0.12
SRP	0.027	0.011	0.061	0.082	0.025	0.071	0.108	0.207	0.139	0.050	0.084	0.081	0.028	0.044	0.050	0.066	0.050	0.012	0.081	0.028	0.029	0.041	0.027	0.019	1.42
TEPC					-0.006	0.013	0.038	0.054	0.110	0.012	0.016	0.077	0.017	0.018	0.019	0.032	0.015	-0.004	0.055	0.055	-0.001	0.018	0.011	0.006	0.55
TIDC	0.017	0.011	0.033	0.043	0.025	0.026	0.037	0.073	0.029	0.016	0.036	0.015	0.016	0.012	0.020	0.022	0.012	0.002	0.012	0.010	0.007	0.009	0.007	0.003	0.49
TPWR			0.005	0.012	-0.003	-0.003	-0.003	0.002	0.009	0.004	0.003	0.018	0.009	0.001	0.002	-0.001	0	-0.002	-0.003	-0.010	-0.002	-0.005	-0.001	0	0.03
WALC																0.002	0	0.001	-0.001	-0.002	-0.005	-0.015	0	0	-0.02
Total	0.40	0.28	0.60	0.94	0.51	0.50	1.03	2.09	1.66	0.53	0.61	0.97	0.34	0.24	0.38	0.54	0.27	0.07	0.84	0.53	0.16	0.25	0.18	0.07	13.99

Values represent changes in costs (in $ Millions) of supply with FSP
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For WEIM areas, energy is settled based on differences between base schedules and dispatches, resulting in relatively moderate cost impacts with FSP

MUT ≤60 min, STUT ≤ 60 min, average amortization. System-wide Bookend

	2022												2023												
BAA	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
AVA			0.043	0.027	-0.021	-0.020	-0.017	-0.038	-0.053	0.024	0.029	0.024	0.056	0.018	0.039	0.032	0.026	-0.005	-0.016	-0.065	-0.027	-0.040	-0.003	-0.001	0.01
AVRN																0.052	0.039	0.021	0.129	0.074	0.025	0.036	0.012	0.008	0.40
AZPS	0.076	0.033	0.044	0.052	0.032	0.152	0.171	0.272	0.547	0.104	0.051	0.330	0.070	0.060	0.065	0.145	0.037	0.020	0.181	0.136	0.042	0.070	0.049	0.018	2.76
BANC	-0.015	-0.004	0.002	0.001	-0.017	-0.160	-0.101	-0.069	-0.003	-0.149	-0.122	-0.203	-0.021	-0.031	0.022	-0.011	0.008	-0.006	-0.050	-0.096	-0.035	-0.063	-0.037	-0.024	-1.19
BCHA	0.024	0.027	0.020	0.026	0.003	0.013	0.019	0.048	0.017	0.021	0.026	0.049	0.033	0.014	0.018	0.020	0.003	0	0.001	0	0	0.001	0.003	0	0.39
BPAT					0.026	0.064	0.095	0.095	0.012	0.074	0.036	0.100	0.033	0.025	0.034	0.074	0.047	0.008	0.039	0.012	0.006	-0.001	0.011	0.001	0.79
CISO	0.112	0.102	0.101	0.141	0.190	0.209	0.181	0.367	0.195	0.220	0.100	0.163	0.177	0.062	0.140	0.108	0.066	0.047	0.104	0.167	0.113	0.101	0.110	0.019	3.30
EPE																0.035	0.022	0.014	0.083	0.065	0.026	0.052	0.010	-0.002	0.30
IPCO	0.042	0.035	0.032	0.069	0.026	-0.055	0.017	0.061	0.067	-0.092	0.000	0.088	0.003	0.008	0.041	0.035	-0.055	-0.022	0.085	-0.034	-0.005	0.001	-0.009	0.003	0.34
LADWP	0.012	-0.013	-0.021	0.087	0.037	-0.013	0.131	0.171	0.336	0.014	0.063	0.269	-0.004	-0.016	0.025	0.066	0.005	-0.008	0.000	-0.099	-0.050	-0.071	-0.029	-0.007	0.88
NEVP	-0.003	0.013	0.030	0.023	0.044	0.102	0.210	0.351	0.621	0.130	0.041	0.000	0.012	0.021	0.048	0.054	0.059	0.040	0.212	0.211	0.034	0.071	0.021	0.018	2.36
NWMT	0.016	0.009	0.009	0.006	-0.008	-0.014	0.006	0.043	0.054	0.064	0.014	0.051	0.032	0.017	0.025	0.048	0.005	0.001	0.015	0.004	0.010	0.017	0.016	0.006	0.45
PACE	0.149	0.116	0.149	0.313	0.219	0.274	0.499	0.622	0.650	0.276	0.167	0.051	0.045	0.004	-0.129	-0.112	-0.051	-0.022	0.157	0.205	0.076	0.126	0.040	0.007	3.83
PACW	0.026	0.024	0.033	0.034	0.032	0.015	-0.004	0.080	0.004	0.074	0.066	0.114	0.007	0.013	0.024	0.037	0.039	0.017	0.023	0.032	0.011	0.026	0.027	0.024	0.78
PGE	0.024	0.027	0	0.040	-0.039	-0.078	0.008	-0.011	-0.083	-0.011	0.033	0.052	0.011	0.013	0.002	-0.028	-0.033	-0.015	-0.060	-0.022	-0.035	-0.032	-0.002	-0.003	-0.24
PNM	0.004	0.018	0.020	0.042	0.028	0.050	0.080	0.192	0.244	0.079	0.033	0.107	0.057	0.046	0.068	0.082	0.028	0.010	0.122	0.081	0.021	0.027	0.019	0.011	1.47
PSEI	0.024	0.015	0.014	0.001	0.004	-0.010	0.029	0.027	0.025	-0.021	-0.008	-0.054	-0.016	0.004	0.020	0.061	0.002	-0.008	-0.006	0.037	-0.015	-0.016	0.000	0.006	0.12
SCL	0.012	0.001	0.006	0.013	-0.001	-0.014	0.003	-0.026	-0.008	-0.003	-0.002	-0.006	-0.003	-0.004	-0.003	-0.029	-0.003	-0.011	-0.041	-0.022	-0.006	-0.004	-0.007	-0.002	-0.16
SRP	0.039	0.023	0.070	0.087	0.055	0.107	0.158	0.259	0.239	0.178	0.103	0.118	0.053	0.068	0.076	0.108	0.062	0.030	0.121	0.052	0.045	0.067	0.047	0.039	2.20
TEPC					-0.005	0.024	0.067	0.063	0.225	0.016	0.021	0.117	0.030	0.025	0.031	0.052	0.022	-0.004	0.078	0.072	0.002	0.030	0.015	0.011	0.89
TIDC	0.023	0.016	0.030	0.043	0.026	0.036	0.057	0.091	0.051	0.033	0.041	0.022	0.027	0.018	0.026	0.036	0.012	0.004	0.019	0.013	0.009	0.013	0.010	0.005	0.66
TPWR			0.004	0.013	-0.004	-0.002	-0.002	0.001	0.016	0.010	0.001	0.024	0.016	0.002	0.002	0.000	0.001	-0.002	-0.006	-0.018	-0.003	-0.008	-0.001	-0.001	0.04
WALC																0.004	0	0.001	-0.001	-0.002	-0.006	-0.020	0.001	0.002	-0.02
Total	0.56	0.44	0.59	1.02	0.63	0.68	1.61	2.60	3.15	1.04	0.69	1.42	0.62	0.37	0.58	0.87	0.34	0.11	1.19	0.80	0.24	0.38	0.30	0.14	20.36

Values represent changes in costs (in $ Millions) of supply with FSP
Positive values reflect incremental payments to supply

Participants comments and suggestions

Participants' feedback and how analysis addresses their comments

- More granular differentiation of BCR across markets
  - Analysis shows BCR organized by market and by area
- Analysis on alignment between FRP binding prices and FSP price changes
  - Because FRP is still a work in progress and CAISO is currently assessing the activation of contingencies, which may change the pricing of FRP substantially, this is not included at this stage
- Given the moderate impact of FSP pricing, provide analysis on the frequency of intervals impacted
  - The analysis has been expanded to include these metrics
- Provide analysis on the reliability aspects of FSP
  - There is not a simple metric that can directly quantify the impact on reliability due to FSP

Participants' feedback and how analysis addresses their comments

- Provide analysis of the effects of binding versus advisory intervals to assess impact on storage
  - This analysis would required a more involved simulation of all the market dynamics including advisory runs and management of state of charge. This is not feasible within the scope of this analysis

- Include a third approach for amortization by subtracting the cost component related to Pmin
  - This is a new scenario now included in the analysis

- Evaluate the impacts of FSP on the lost opportunity cost incurred by resources with dispatchable capacity
  - The level of effort implied to assess this aspect could not be achieved within the scope of current analysis

California ISO

Analysis of the Impact of Fast-Start Pricing

Prepared by
Michael Cadwalader

April 8, 2024

ATLANTIC
ECONOMICS

Topics

The CAISO asked me to prepare a few slides containing:

- My preliminary reactions to today's presentation.
- My thoughts on a presentation on fast-start pricing by Susan Pope at the WEIM Governing Body meeting on March 19.

WEIM Presentation

I agree with the main points that Susan Pope made in her presentation:

- Fast-start pricing is intended to produce price signals that more accurately reflect the marginal cost of meeting load, which could improve efficiency.
- FSP, FRP and shortage pricing address different situations and have different effects.
  - They aren't duplicative, as any combination of the three might apply at any point in time.
  - It is important to ensure that these mechanisms don't interfere with each other.
  - The alternative FSP proposal described in the March 20, 2023, presentation was developed in response to concerns that ordinary FSP would undermine FRP.

WEIM Presentation (cont'd)

- Implementation of FSP can benefit from the experience of other ISOs/RTOs.
  - But it is unlikely to be a plug-and-play solution, due to differences in the market structures.
  - Differences in the needs in each market may also be relevant.
    - For example, should resources that are committed to provide operating reserve be eligible for FSP?
- While the analysis presented today addresses some of the proposed areas for further analysis, others remain.
  - For example, transmission congestion might limit the impact of FSP in many hours.
  - But evaluation of the duration of price changes caused by FSP might be premature.
    - Changes in the time period over which commitment costs are amortized might affect these results.

CAISO Presentation

The general approach that the CAISO used to assess which units would be eligible for FSP seems reasonable to me. In particular:

- The application of FSP to upward transitions for MSG units makes sense. They are very similar to starts.
- It makes sense for MOC units to be eligible for FSP, but for units with base schedules to be ineligible, since they effectively self-commit.

The results of the analysis are also generally consistent with expectations.

- Most of the impact of FSP occurs when there is a need for upward or downward ramping, which may require the dispatch of FSGs.
- Differences in locational impact are also intuitively reasonable, as areas with more hydro are less likely to dispatch FSGs.
- Similarly, there is a bigger impact in seasons when demand is higher and FSGs are more likely to operate, and the impact is larger when gas prices are higher.

CAISO Presentation (cont'd)

The comparison on page 71 indicates that using constant amortization to determine FSP bids has a much larger effect on prices than either adjusted or average amortization.

- Constant amortization makes the unit appear more expensive in the pricing pass than it is in the dispatch pass. The other two approaches do not do this.

That slide also indicated that average amortization had a slightly larger impact on prices than adjusted amortization.

- While the prices calculated under these two approaches are about the same on average, that doesn't mean that they are always the same.
- Average amortization may produce higher prices when only part of an FSG is dispatched, but lower prices when the full FSG is dispatched.
- Reports indicating how often prices calculated using these two approaches differ, and by how much, would be useful.

CAISO Presentation (cont'd)

The criteria used to compare these methods shouldn't be limited to assessing the prices that each produces.

- While the CAISO was not able to assess the impact that different approaches would have on lost opportunity costs in this study, that should be considered.
- Similarly, it would be beneficial to assess the frequency with which different approaches to FSP permit FSGs to recover their costs without the need for BCR.
- Finally, it is important to minimize susceptibility to gaming.

Stakeholder Discussion on FSP Analysis

For reference

- Visit Price Formation Enhancements Working Group initiative webpage for more information: https://stakeholdercenter.caiso.com/StakeholderInitiatives/Price-formation-enhancements

- Price Formation Working Group Schedule http://www.caiso.com/InitiativeDocuments/Price-Formation-Enhancements-Working-Group-Schedule-2024.pdf

- If you have any questions, please contact Brenda Corona at bcorona@caiso.com or isostakeholderaffairs@caiso.com

Save the Date - California New Resource Implementation

We will host a hybrid California New Resource Implementation (NRI) stakeholder meeting on May 1, 2024.

We aim to bolster collaboration with our stakeholder community in preparation for the upcoming summer operations. Our objective is to improve transparency surrounding the NRI process and outline expectations.

If you plan to attend the working group in person, please **register** by end of day April 26, 2024.

The final agenda and a presentation will be available prior to the meeting on the **public forums webpage**.

Stakeholder-led prioritization working group meeting for 2024 annual discretionary policy initiatives catalog

The California ISO will host a virtual stakeholder-led prioritization working group for the 2024 annual discretionary policy initiatives catalog on April 22, 2024. Stakeholders will present on their discretionary initiative proposals, and attendees will have the opportunity to discuss prioritization of these proposals for inclusion in the discretionary initiatives catalog.

- Summary of comment here
- information on this process here.

Any questions or concerns email us at ISOStakeholderaffairs@caiso.com

The California ISO Stakeholder Symposium will be held on Oct. 30, 2024 at the Safe Credit Union Convention Center in Sacramento, California.

A welcome reception for all attendees will be held the evening of Oct. 29.

Additional information, including event registration and sponsorship opportunities, will be provided in a future notice and on the ISO's website.

Please contact Symposium Registration at **symposiumreg@caiso.com** with any questions.

Appendix -Additional metrics

FRP prices are estimated as opportunity costs between scenario with no FRP capacity and FRP capacity

Startup time ≤ 30 minutes, adjusted amortization

	2022							2023						
	MEAN	MEDIAN	80th	90th	95th	99th	MAX	MEAN	MEDIAN	80th	90th	95th	99th	MAX
AVA	0.393	0	0	0	0	8.562	803.7	0.623	0	0	0.05	1.55	18.62	181.88
AVRN								0.081	0	0	0	0	0	207.54
AZPS	0.176	0	0	0	0	4.374	277.7	0.063	0	0	0	0	1.03	64.88
BANC	1.629	0	0	0	0.58	25	807.29	0.503	0	0	0	0	7.145	779
BCHA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BPAT	0.288	0	0	0	0	10	90	0.377	0	0	0	0	12.259	95
CISO	1.657	0	0.63	2.96	6.58	21.987	864.948	0.909	0	0	0.91	3	14.218	906.28
EPE								0.084	0	0	0	0	2.21	91.5
IPCO	0.146	0	0	0	0	0.03	408.57	0.414	0	0	0	0	0.9	248.12
LADWP	0.205	0	0	0	0	2.284	593.27	0.213	0	0	0	0	1.073	808.24
NEVP	0.315	0	0	0	0	3.794	930.4	0.212	0	0	0	0	2.209	300
NWMT	0.343	0	0	0	0	6.33	650	0.203	0	0	0	0	0	866.51
PACE	0.741	0	0	0.44	2	20.129	824.37	0.388	0	0	0.09	0.87	5.71	585.14
PACW	0.352	0	0	0	0	12.662	420	0.708	0	0	0	0	0	454.97
PGE	0.212	0	0	0	0	5.039	160	0.245	0	0	0	0	5.257	275
PNM	1.029	0	0	0	0	10.068	842	0.264	0	0	0	0	1.822	483.636
PSEI	0.232	0	0	0	0	6.241	273.662	0.359	0	0	0	0	1.985	385
SCL	0.093	0	0	0	0	0	200	0.24	0	0	0	0	0	400
SRP	0.112	0	0	0	0	2.265	196.35	0.024	0	0	0	0	0.27	47.354
TEPC	0.935	0	0	0	0	10.222	921.53	0.171	0	0	0	0	3.444	208.829
TIDC	0.008	0	0	0	0	0	65.96	0.004	0	0	0	0	0	9.8
TPWR	0.113	0	0	0	0	0	160	0.096	0	0	0	0	0	224.15
WALC								0.432	0	0	0	0	0	974.5

FRP prices are estimated as opportunity costs between scenario with no FRP capacity and FRP capacity

Startup time ≤ 30 minutes, constant amortization

	2022							2023						
	MEAN	MEDIAN	80th	90th	95th	99th	MAX	MEAN	MEDIAN	80th	90th	95th	99th	MAX
AVA	0.475	0	0	0	0.01	9.958	803.7	0.641	0	0	0.05	1.57	18.981	181.88
AVRN								0.081	0	0	0	0	0	207.54
AZPS	0.182	0	0	0	0	4.394	277.7	0.066	0	0	0	0	1.045	64.88
BANC	1.645	0	0	0	0.615	26.011	807.29	0.522	0	0	0	0	7.642	779
BCHA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BPAT	0.288	0	0	0	0	10	90	0.377	0	0	0	0	12.259	95
CISO	2.159	0	0.73	3.28	8.338	39.599	837.754	1.14	0	0	1.01	3.5	22.349	899
EPE								0.084	0	0	0	0	2.21	91.5
IPCO	0.164	0	0	0	0	0.03	408.57	0.416	0	0	0	0	0.901	248.12
LADWP	0.208	0	0	0	0	2.404	593.27	0.213	0	0	0	0	1.073	808.24
NEVP	0.359	0	0	0	0	3.868	930.4	0.223	0	0	0	0	2.362	300
NWMT	0.377	0	0	0	0	6.36	650	0.21	0	0	0	0	0	866.51
PACE	0.758	0	0	0.44	2	20.14	824.37	0.388	0	0	0.09	0.87	5.71	585.14
PACW	0.352	0	0	0	0	12.662	420	0.708	0	0	0	0	0	454.97
PGE	0.218	0	0	0	0	5.11	160	0.248	0	0	0	0	5.335	275
PNM	1.033	0	0	0	0	10.108	842	0.27	0	0	0	0	1.822	504.106
PSEI	0.232	0	0	0	0	6.241	278.061	0.359	0	0	0	0	1.985	385
SCL	0.093	0	0	0	0	0	200	0.24	0	0	0	0	0	400
SRP	0.162	0	0	0	0	2.29	255.239	0.027	0	0	0	0	0.277	61.08
TEPC	0.987	0	0	0	0	11.776	921.53	0.186	0	0	0	0	3.537	274.723
TIDC	0.008	0	0	0	0	0	65.96	0.004	0	0	0	0	0	9.8
TPWR	0.113	0	0	0	0	0	160	0.096	0	0	0	0	0	224.15
WALC								0.432	0	0	0	0	0	974.5

FRP prices are estimated as opportunity costs between scenario with no FRP capacity and FRP capacity

Startup time ≤ 30 minutes, average amortization

	2022							2023						
	MEAN	MEDIAN	80th	90th	95th	99th	MAX	MEAN	MEDIAN	80th	90th	95th	99th	MAX
AVA	0.316	0	0	0	0	7.916	267.03	0.62	0	0	0.05	1.54	18.616	181.88
AVRN								0.089	0	0	0	0	0	207.54
AZPS	0.176	0	0	0	0	4.374	277.7	0.064	0	0	0	0	1.125	64.88
BANC	1.612	0	0	0	0.6	25	807.29	0.498	0	0	0	0	7.145	779
BCHA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BPAT	0.288	0	0	0	0	10	90	0.377	0	0	0	0	12.259	95
CISO	1.679	0	0.62	2.935	6.67	24.148	863.46	0.913	0	0	0.89	2.98	14.796	906.28
EPE								0.084	0	0	0	0	2.2	91.5
IPCO	0.106	0	0	0	0	0.03	345.116	0.434	0	0	0	0	0.903	362.238
LADWP	0.19	0	0	0	0	2.376	517.33	0.213	0	0	0	0	1.073	808.24
NEVP	0.344	0	0	0	0	3.9	930.4	0.213	0	0	0	0	2.334	300
NWMT	0.369	0	0	0	0	6.36	650	0.203	0	0	0	0	0	866.51
PACE	0.745	0	0	0.45	2.014	20.129	824.37	0.388	0	0	0.09	0.87	5.71	585.14
PACW	0.352	0	0	0	0	12.662	420	0.708	0	0	0	0	0	454.97
PGE	0.217	0	0	0	0	5.039	160	0.242	0	0	0	0	5.257	275
PNM	1.019	0	0	0	0	10.068	842	0.289	0	0	0	0	1.835	482.51
PSEI	0.226	0	0	0	0	6.241	150	0.367	0	0	0	0	1.985	439.388
SCL	0.093	0	0	0	0	0	200	0.24	0	0	0	0	0	400
SRP	0.127	0	0	0	0	2.49	196.39	0.031	0	0	0	0	0.31	47.213
TEPC	0.982	0	0	0	0	10.222	921.53	0.198	0	0	0	0	3.427	347.176
TIDC	0.008	0	0	0	0	0	65.96	0.006	0	0	0	0	0	67.237
TPWR	0.113	0	0	0	0	0	160	0.096	0	0	0	0	0	224.15
WALC								0.432	0	0	0	0	0	974.5

FRP prices are estimated as opportunity costs between scenario with no FRP capacity and FRP capacity

Startup time ≤ 60 minutes, adjusted amortization

	2022							2023						
	MEAN	MEDIAN	80th	90th	95th	99th	MAX	MEAN	MEDIAN	80th	90th	95th	99th	MAX
AVA	0.413	0	0	0	0.05	9	803.7	0.623	0	0	0.05	1.55	18.62	181.88
AVRN								0.081	0	0	0	0	0	207.54
AZPS	0.185	0	0	0	0	4.56	277.7	0.063	0	0	0	0	1.03	64.88
BANC	1.686	0	0	0	1	27.167	807.29	0.503	0	0	0	0	7.145	779
BCHA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BPAT	0.299	0	0	0	0	10	90	0.377	0	0	0	0	12.259	95
CISO	1.881	0	0.86	3.16	6.87	23.48	925.65	0.908	0	0	0.91	2.998	14.218	906.28
EPE								0.084	0	0	0	0	2.21	91.5
IPCO	0.146	0	0	0	0	0.03	408.57	0.414	0	0	0	0	0.9	248.12
LADWP	0.211	0	0	0	0	2.75	593.27	0.213	0	0	0	0	1.073	808.24
NEVP	0.33	0	0	0	0	4.245	930.4	0.212	0	0	0	0	2.208	300
NWMT	0.355	0	0	0	0	6.36	650	0.203	0	0	0	0	0	866.51
PACE	0.784	0	0	0.52	2.05	20.23	824.37	0.388	0	0	0.09	0.87	5.71	585.14
PACW	0.354	0	0	0	0	12.867	420	0.708	0	0	0	0	0	454.97
PGE	0.221	0	0	0	0	5.34	160	0.246	0	0	0	0	5.335	275
PNM	1.051	0	0	0	0	10.568	842	0.264	0	0	0	0	1.822	483.636
PSEI	0.248	0	0	0	0	7.823	273.662	0.359	0	0	0	0	1.985	385
SCL	0.096	0	0	0	0	0	200	0.24	0	0	0	0	0	400
SRP	0.115	0	0	0	0	2.45	196.35	0.024	0	0	0	0	0.27	47.354
TEPC	0.946	0	0	0	0	10.514	921.53	0.171	0	0	0	0	3.444	208.829
TIDC	0.009	0	0	0	0	0	65.96	0.004	0	0	0	0	0	9.8
TPWR	0.113	0	0	0	0	0	160	0.096	0	0	0	0	0	224.15
WALC								0.432	0	0	0	0	0	974.5

FRP prices are estimated as opportunity costs between scenario with no FRP capacity and FRP capacity

Startup time ≤ 60 minutes, constant amortization

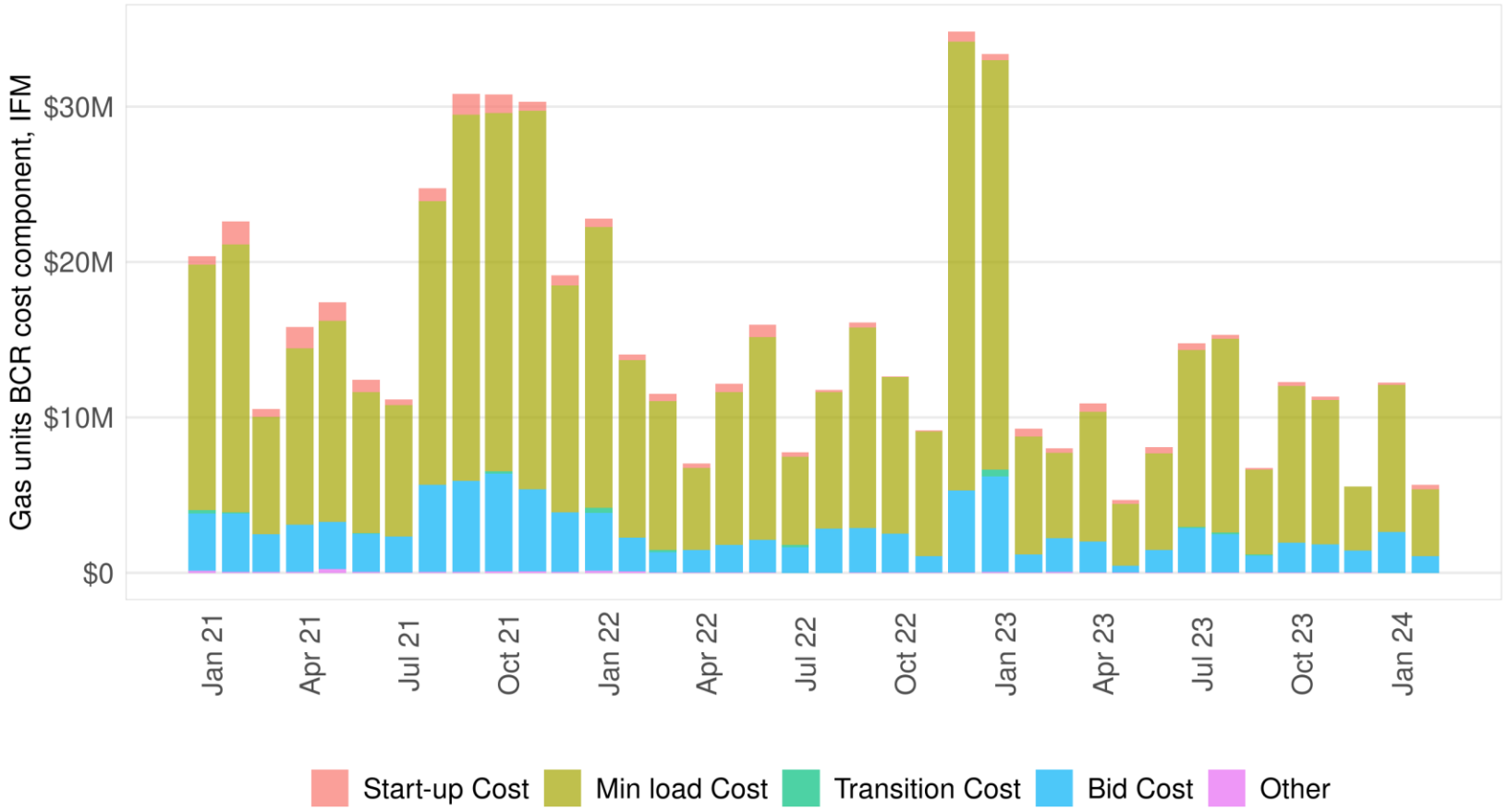
	2022							2023						
	MEAN	MEDIAN	80th	90th	95th	99th	MAX	MEAN	MEDIAN	80th	90th	95th	99th	MAX
AVA	0.507	0	0	0	0.08	10.519	803.7	0.641	0	0	0.05	1.57	18.981	181.88
AVRN								0.081	0	0	0	0	0	207.54
AZPS	0.191	0	0	0	0	4.579	277.7	0.066	0	0	0	0	1.045	64.88
BANC	1.703	0	0	0	1.01	29.132	807.29	0.522	0	0	0	0	7.642	779
BCHA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BPAT	0.299	0	0	0	0	10	90	0.377	0	0	0	0	12.259	95
CISO	2.422	0	0.95	3.6	8.83	42.807	925.65	1.141	0	0	1.01	3.5	22.323	899
EPE								0.084	0	0	0	0	2.21	91.5
IPCO	0.164	0	0	0	0	0.03	408.57	0.416	0	0	0	0	0.901	248.12
LADWP	0.214	0	0	0	0	2.954	593.27	0.213	0	0	0	0	1.073	808.24
NEVP	0.375	0	0	0	0	4.632	930.4	0.223	0	0	0	0	2.361	300
NWMT	0.394	0	0	0	0	6.377	650	0.21	0	0	0	0	0	866.51
PACE	0.803	0	0	0.52	2.05	20.253	824.37	0.388	0	0	0.09	0.87	5.71	585.14
PACW	0.354	0	0	0	0	12.867	420	0.708	0	0	0	0	0	454.97
PGE	0.229	0	0	0	0	5.42	160	0.249	0	0	0	0	5.446	275
PNM	1.056	0	0	0	0	10.618	842	0.27	0	0	0	0	1.822	504.106
PSEI	0.249	0	0	0	0	7.823	278.061	0.359	0	0	0	0	1.985	385
SCL	0.096	0	0	0	0	0	200	0.24	0	0	0	0	0	400
SRP	0.167	0	0	0	0	2.493	255.239	0.027	0	0	0	0	0.28	61.08
TEPC	1.001	0	0	0	0	11.96	921.53	0.186	0	0	0	0	3.537	274.723
TIDC	0.009	0	0	0	0	0	65.96	0.004	0	0	0	0	0	9.8
TPWR	0.113	0	0	0	0	0	160	0.096	0	0	0	0	0	224.15
WALC								0.432	0	0	0	0	0	974.5

FRP prices are estimated as opportunity costs between scenario with no FRP capacity and FRP capacity

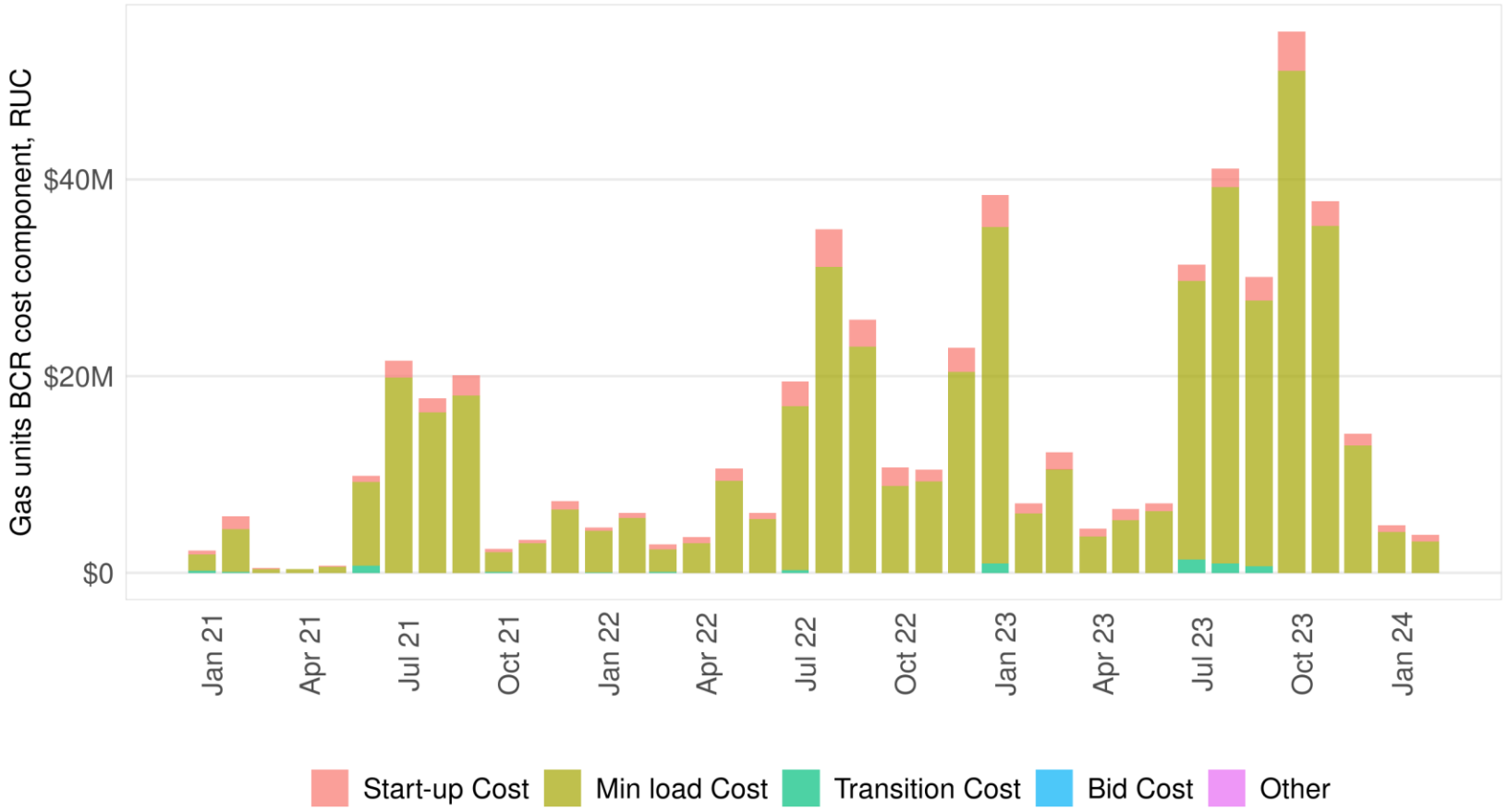
Startup time ≤ 60 minutes, average amortization

	2022							2023						
	MEAN	MEDIAN	80th	90th	95th	99th	MAX	MEAN	MEDIAN	80th	90th	95th	99th	MAX
AVA	0.336	0	0	0	0.05	8.84	267.03	0.62	0	0	0.05	1.54	18.616	181.88
AVRN								0.089	0	0	0	0	0	207.54
AZPS	0.184	0	0	0	0	4.579	277.7	0.063	0	0	0	0	1.125	64.88
BANC	1.668	0	0	0	1	26.768	807.29	0.497	0	0	0	0	7.132	779
BCHA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BPAT	0.299	0	0	0	0	10	90	0.377	0	0	0	0	12.259	95
CISO	1.907	0	0.84	3.14	6.998	25.015	925.65	0.912	0	0	0.89	2.976	14.749	906.28
EPE								0.084	0	0	0	0	2.2	91.5
IPCO	0.106	0	0	0	0	0.03	345.116	0.434	0	0	0	0	0.903	362.238
LADWP	0.196	0	0	0	0	2.876	517.33	0.213	0	0	0	0	1.073	808.24
NEVP	0.351	0	0	0	0	4.622	930.4	0.216	0	0	0	0	2.317	300
NWMT	0.375	0	0	0	0	6.36	650	0.203	0	0	0	0	0	866.51
PACE	0.789	0	0	0.525	2.05	20.23	824.37	0.388	0	0	0.09	0.87	5.71	585.14
PACW	0.354	0	0	0	0	12.867	420	0.708	0	0	0	0	0	454.97
PGE	0.227	0	0	0	0	5.3	160	0.244	0	0	0	0	5.427	275
PNM	1.043	0	0	0	0	10.57	842	0.249	0	0	0	0	1.81	476.224
PSEI	0.242	0	0	0	0	7.823	150	0.366	0	0	0	0	1.985	439.388
SCL	0.096	0	0	0	0	0	200	0.24	0	0	0	0	0	400
SRP	0.13	0	0	0	0	2.685	196.35	0.031	0	0	0	0	0.31	47.213
TEPC	0.998	0	0	0	0	10.514	921.53	0.198	0	0	0	0	3.427	347.176
TIDC	0.009	0	0	0	0	0	65.96	0.006	0	0	0	0	0	67.237
TPWR	0.113	0	0	0	0	0	160	0.096	0	0	0	0	0	224.15
WALC								0.432	0	0	0	0	0	974.5

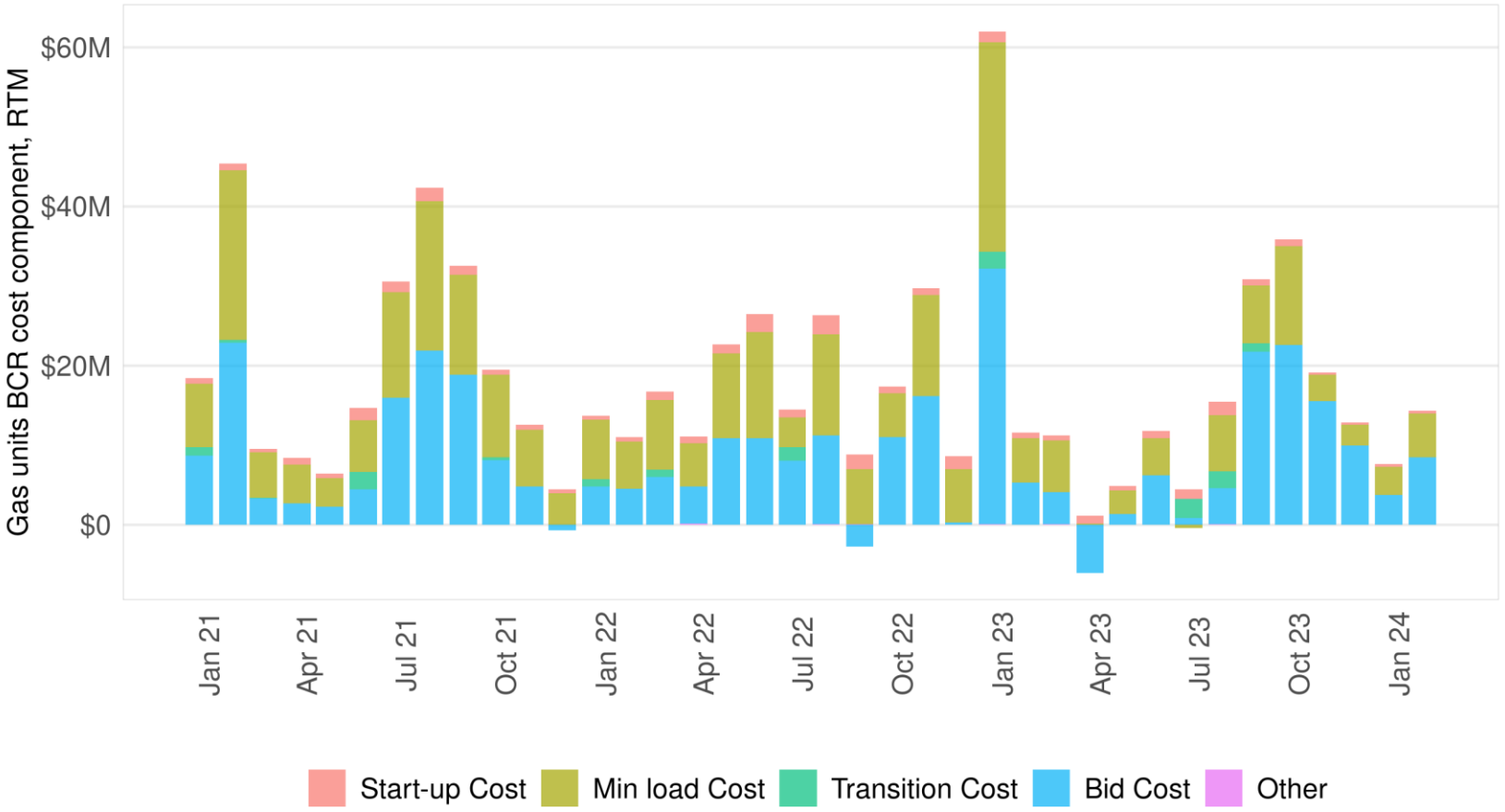
Gas resource BCR cost component breakdown in IFM



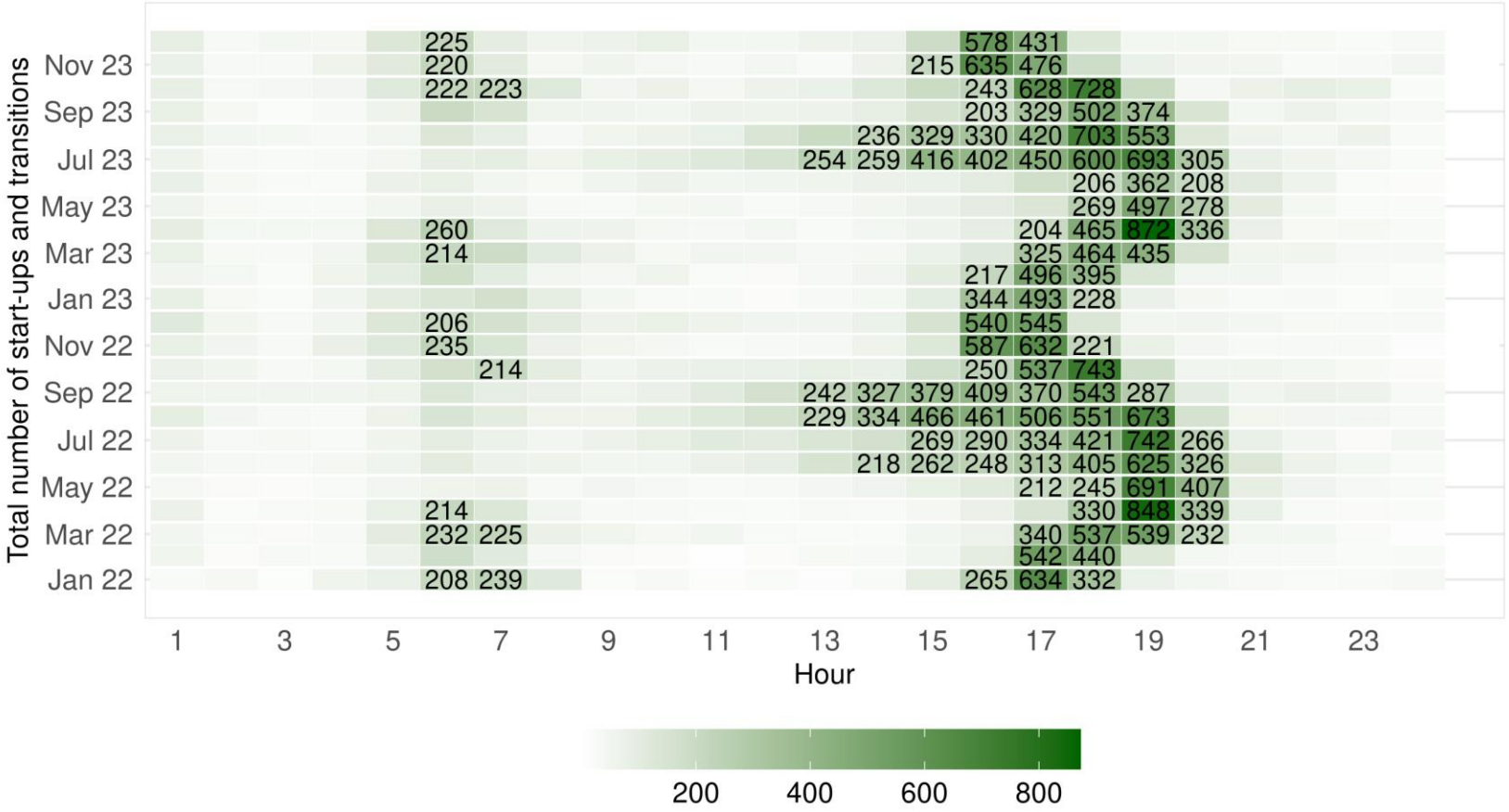
Gas resource BCR cost component breakdown in RUC



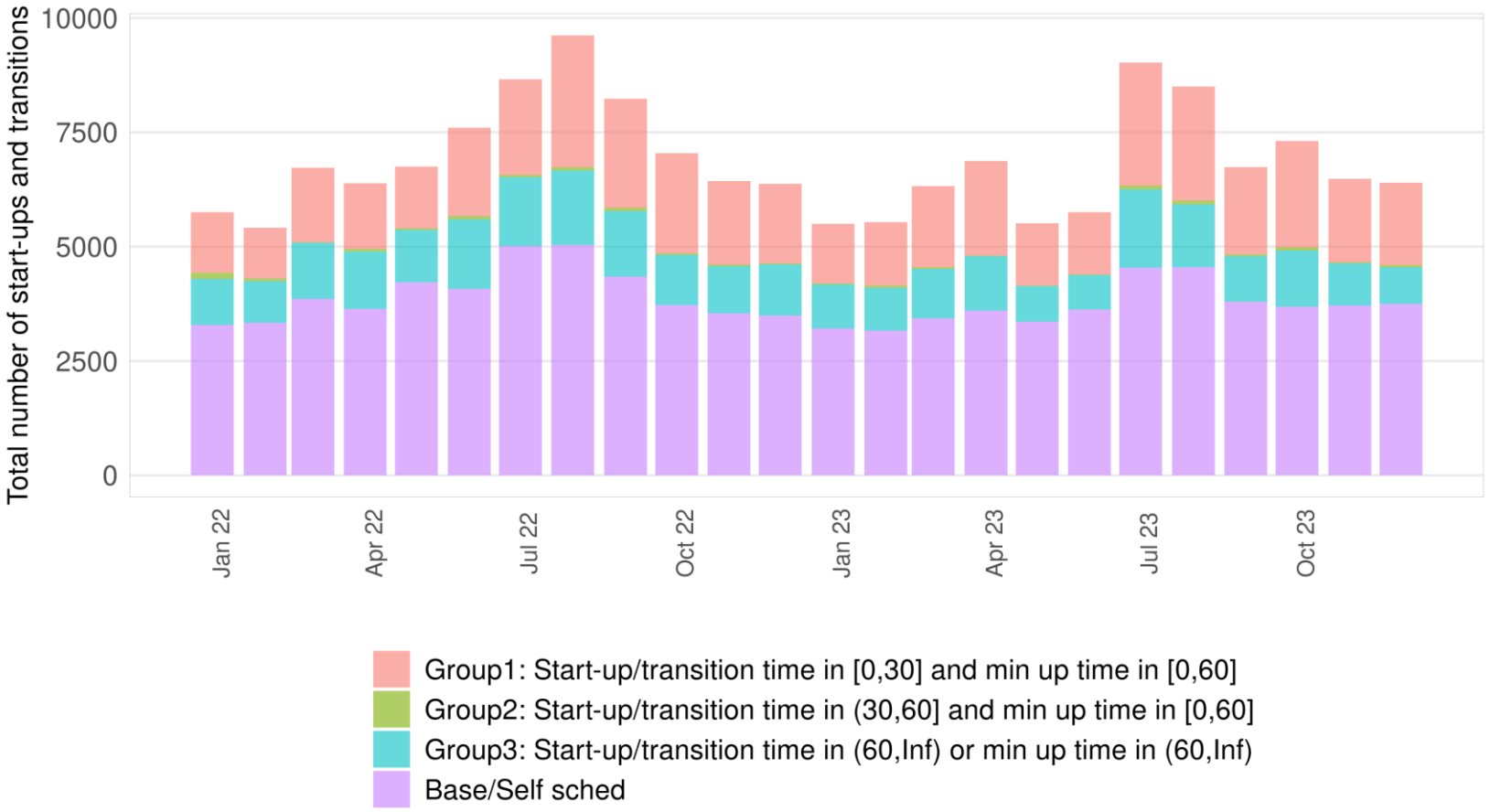
Gas resource BCR cost component breakdown in RTM



Total number of start-ups and transition ups



Total number of start-ups and transition ups



Total number of start-ups and transition ups