



California ISO

Flexible Ramping Product Refinements

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Stakeholder Call

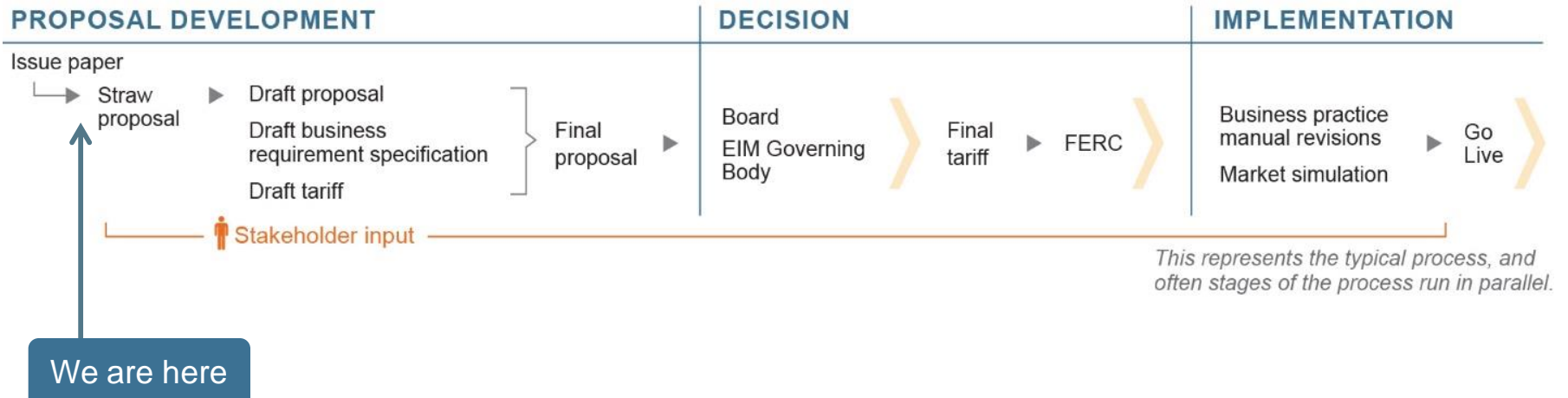
11/21/19

Public

Agenda

| Time | Topic | Presenter |
|---------------|------------------------------------|------------------|
| 10:00 – 10:10 | Welcome | Kristina Osborne |
| 10:10 – 11:50 | Discuss Issue Paper/Straw Proposal | Don Tretheway |
| 11:50 – 12:00 | Next Steps | Kristina Osborne |

ISO Policy Initiative Stakeholder Process



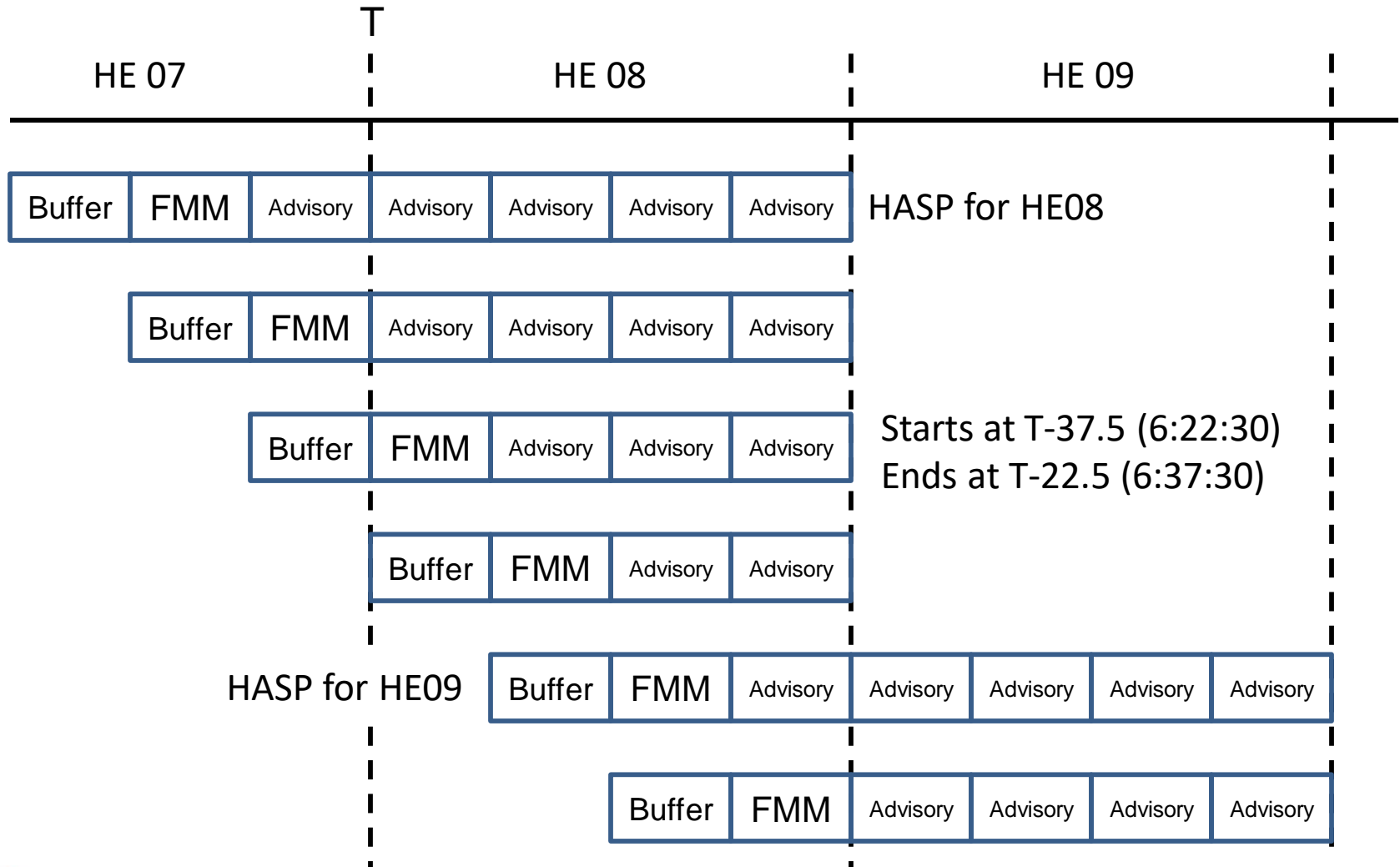
Price performance analysis report highlighted issues with FRP availability

- Eligibility
 - Awarding to non-5 minute dispatchable PDR
- Ramping management between FMM and RTD
 - Not enforcing in buffer interval
- Undeliverable due to EIM transfer constraint
 - BAA requirement is effectively zero
- Undeliverable due to internal BAA constraints
 - Zonal or nodal procurement

Proxy Demand Response (PDR) eligibility can be addressed now through BPM changes

- ESDER 3A implemented additional scheduling options for PDR
- In Master File, can elect 60-minute, 15-minute, or 5-minute dispatchable
- 60-minute and 15-minute options are ineligible to receive FRP award
- Develop business process to validate that PDR has selected correct option

Maintaining FRP awards in buffer interval for Fall 2020 implementation requires BPM changes (1 of 3)

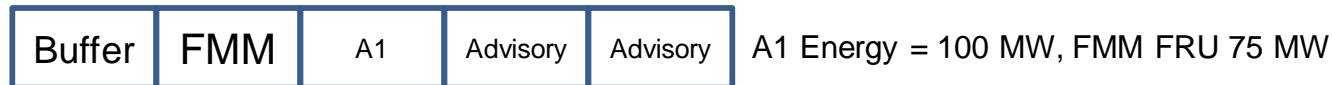


Maintaining FRP awards in buffer interval for Fall 2020 implementation requires BPM changes (2 of 3)

- FMM requirement is 1st advisory FMM interval to binding RTD intervals in same time period
- Not enforcing FRP requirement in buffer interval can release FRP intended for RTD
 - Ramp capability is used to meet FMM schedule
 - Ramp capability leads to different unit commitment
- Propose maintaining FRP awards in the buffer interval
 - Up to 100% of the award

Maintaining FRP awards in buffer interval for Fall 2020 implementation requires BPM changes (3 of 3)

- Resource
 - $P_{min} = 100$ MW, $P_{max} = 200$ MW, 5 MW/Min ramp rate
- Current implementation



- Assume maintain 100% of FRP up award in buffer



Minimum BAA requirement for CAISO for Fall 2020 implementation requires BPM changes (1 of 2)

- Import/export capabilities reduce a BAA's FRU/FRD requirement
 - Only considers transfer capability with adjacent BAAs
 - Therefore, cannot assume access to resources in non-adjacent BAAs
- Generally, all BAAs have import/export capability above their BAA FRP requirement
- Therefore, FRP procurement is driven by the system-wide requirement

Minimum BAA requirement for CAISO for Fall 2020 implementation requires BPM changes (2 of 2)

- CAISO is the largest driver of the FRP requirement
- Enforce a minimum requirement that results in more local awards than system-wide constraint provides
- Reduces amount of FRP potentially unavailable to CAISO
- Evaluate historical FRP procurement to adjust minimum requirement
 - Also, determine if other BAAs need minimum requirement

Improve deliverability by not awarding FRP to resources that have a zero opportunity cost because of congestion. Target implementation Fall 2021

- Flexible ramping up awarded to resource behind constraint
 - Next market run unable to dispatch higher than current output
- Flexible ramping down awarded to resource providing counterflow
 - Next market run unable to dispatch lower than current output

Similar issues will exist with day-ahead imbalance reserves

More granular procurements approaches – zonal

- Pros

- Less initial implementation effort and computational resources
- Consistent with existing approach for ancillary services

- Cons

- Zones must be free from internal congestion otherwise problem of awarding behind a constraint still exists
- Need method to distribute the system requirement to static zones
 - Maximum/minimum requirement that must be met in that zone that can lead to higher costs
 - May drive additional unit commitment to cover worst case scenario of static zones even though transfer capability available
- May need to develop blocking rules to address generation pockets

More granular procurements approaches – nodal

- **Pros**

- Addresses awarding FRP inconsistent with congestion and prices flexibility more accurately
- Long term solution to address operational concerns

- **Cons**

- High initial implementation effort and computational resources
- Does not guarantee deliverability because needed deployment may differ than modeled deployment
- In day-ahead, may need congestion hedge for capacity products

Next steps

| Item | Date |
|--|--------------------------------|
| Post Issue Paper/Straw Proposal | November 14, 2019 |
| Stakeholder Conference Call | November 21, 2019 |
| Stakeholder Comments Due | December 5, 2019 |
| BPM Language within a Proposed Revision Request - PDR | ASAP |
| BPM Language within a Proposed Revision Request – Buffer & Minimum Requirement | Aligned with Fall 2020 release |
| Deliverability Enhancements | TBD |

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