



# Decision on flexible ramping product refinements proposal

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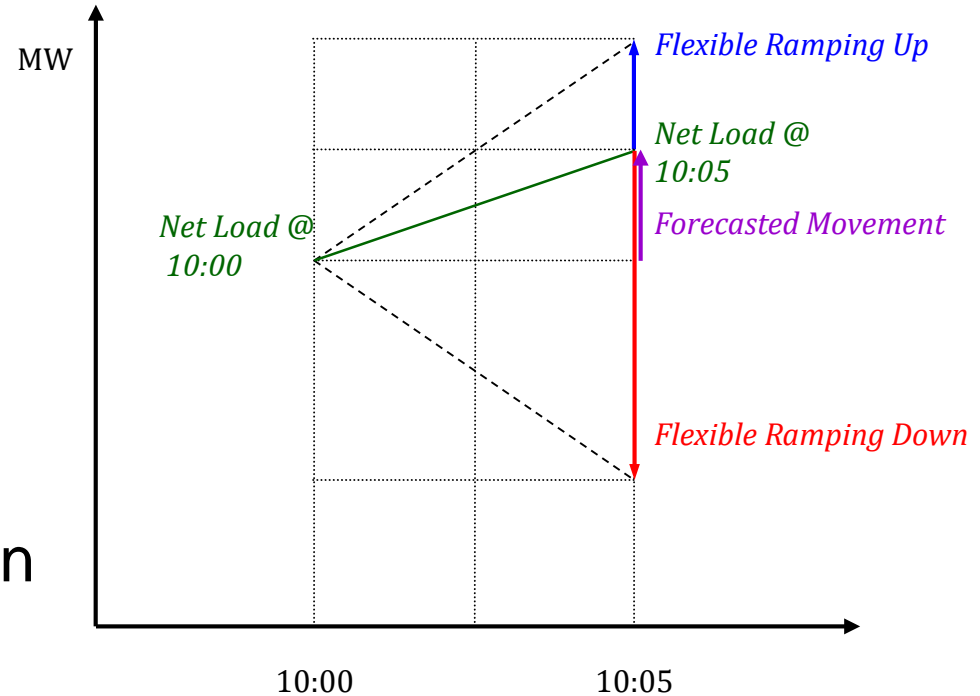
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General Session

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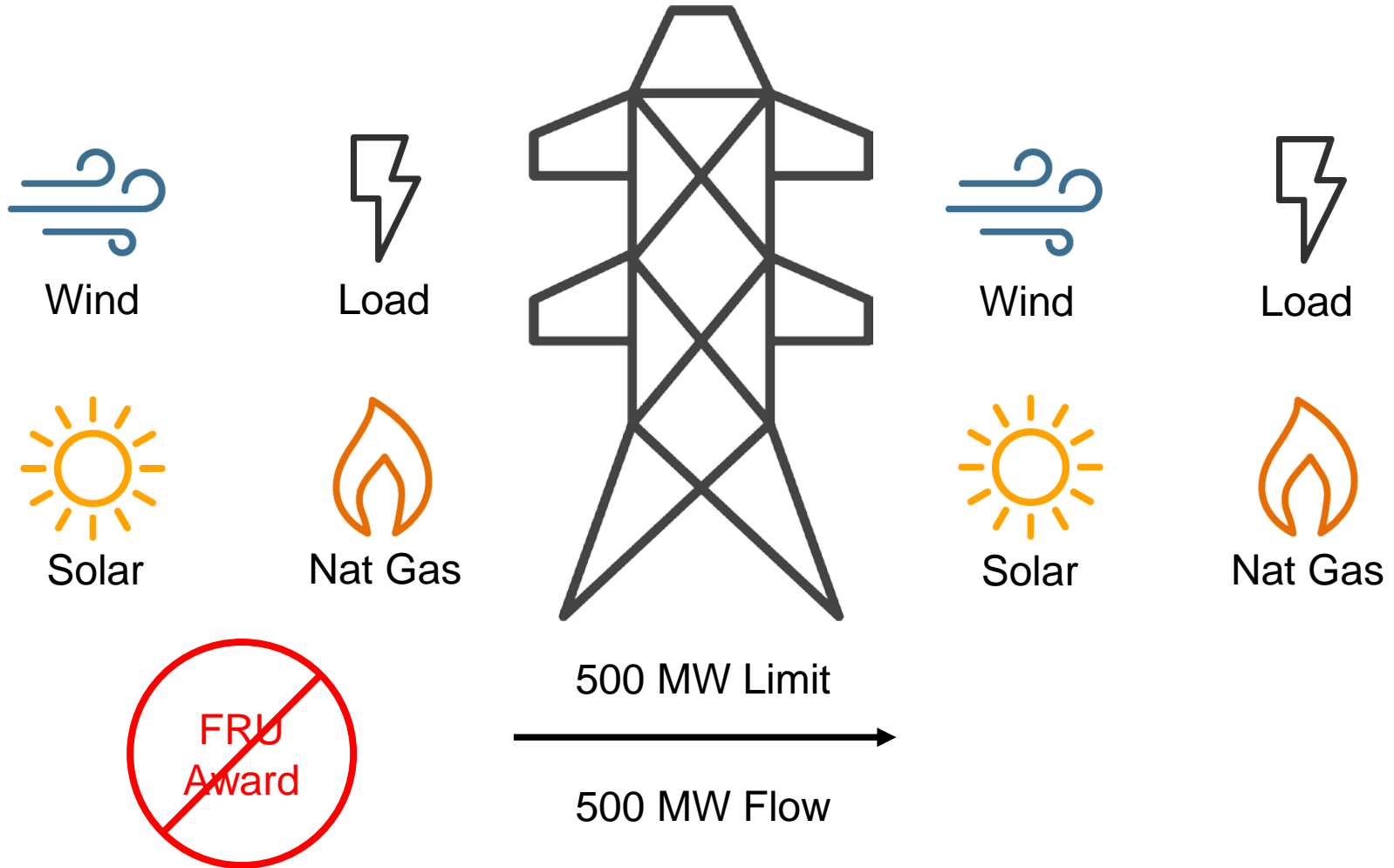
# Flexible ramping products position resources to meet a range of future net loads

- Forecasted Movement
  - Energy difference between market intervals
- Uncertainty Awards
  - Reserved ramp capability to cover net load uncertainty between market runs

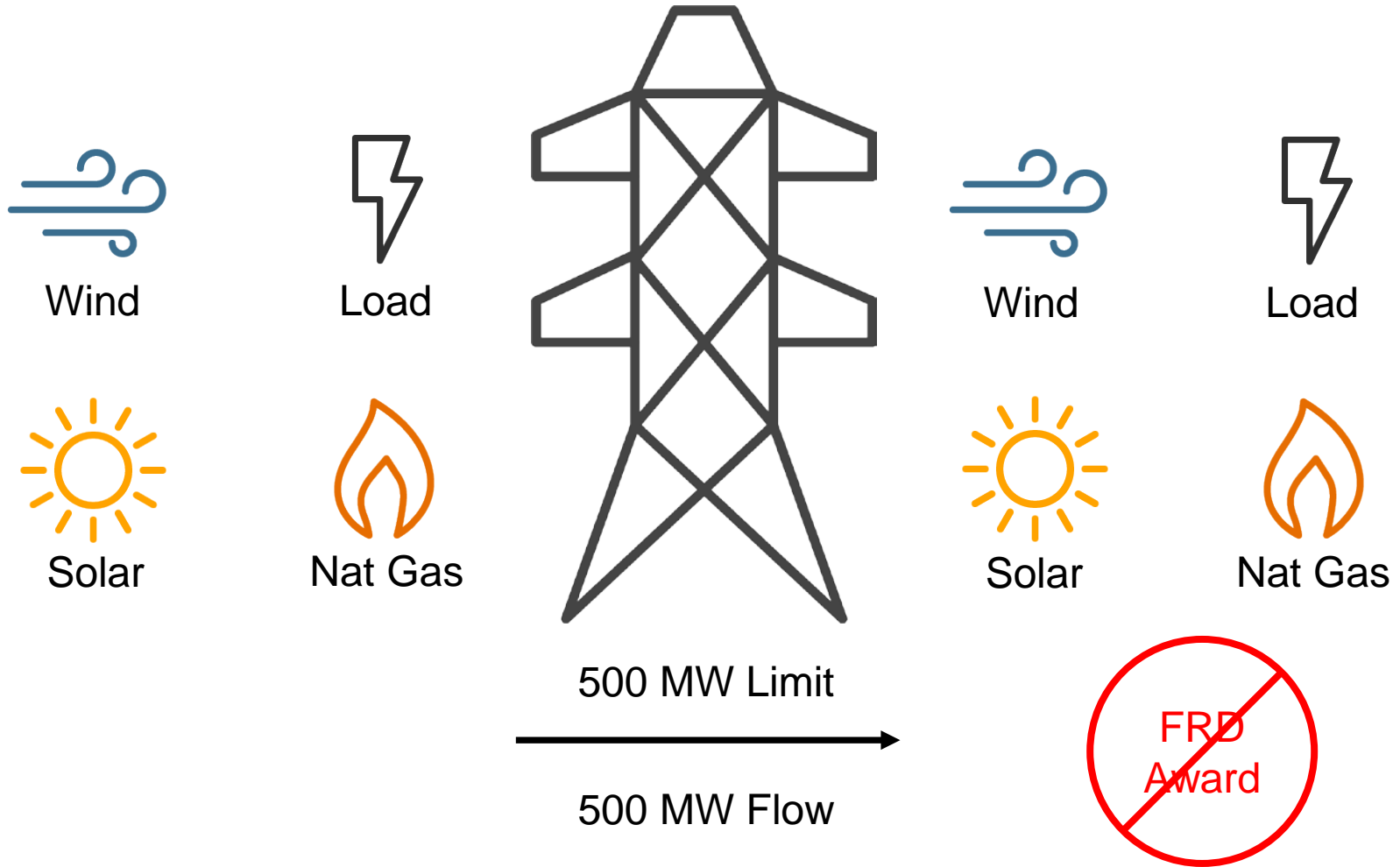


September 2019 Price Performance Report identified issues with deliverability of uncertainty awards

If flexible ramping up awarded to a resource behind a constraint, cannot increase dispatch in next market run



If flexible ramping down awarded to a resource relieving a constraint, cannot decrease dispatch in next market run



## Flexible ramping product is procured using a demand curve

- If cost to maintain ramp capability exceeds the expected value of avoiding a power balance constraint violation, FRP is not procured
- Provides a scarcity pricing signal by gradually increasing energy costs when ramp capability has an opportunity cost
- System demand curve will be distributed to load aggregation points

# Additional tariff clarification for proxy demand response resources included in proposal

- FRP uncertainty awards can only be made to resources that are 5-minute dispatchable
- In Fall 2019, additional bidding options were implemented for proxy demand response resources
  - 60-minute dispatchable
  - 15-minute dispatchable
- Proposal modifies the default election from 5-minute dispatchable to 60-minute dispatchable

## Stakeholders generally support the proposed improvements to the flexible ramping product

- Concerned with the implementation complexity and software performance impact of nodal FRP
- Proposal was improved in two areas identified by stakeholders
  - Deployment scenarios consider uncertainty also driven by VERs
  - Demand curve implementation modified to avoid excess relaxation
- DMM requests additional uncertainty horizons be considered as uncertainty increases farther out in time

## Management recommends the Board approve the proposed flexible ramping product refinements

- More efficient real-time unit commitment reducing the need for out-of-market actions to meet intra-hour ramp uncertainty
- Improved pricing of flexibility by no longer awarding product to undeliverable resources with no opportunity cost
- Deliverability of products that address uncertainty key to the success of the day-ahead market enhancements and extended day-ahead market