



# Discussion on day-ahead market enhancements

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# ISO's current day-ahead market is limited due to sequential runs of the IFM and RUC

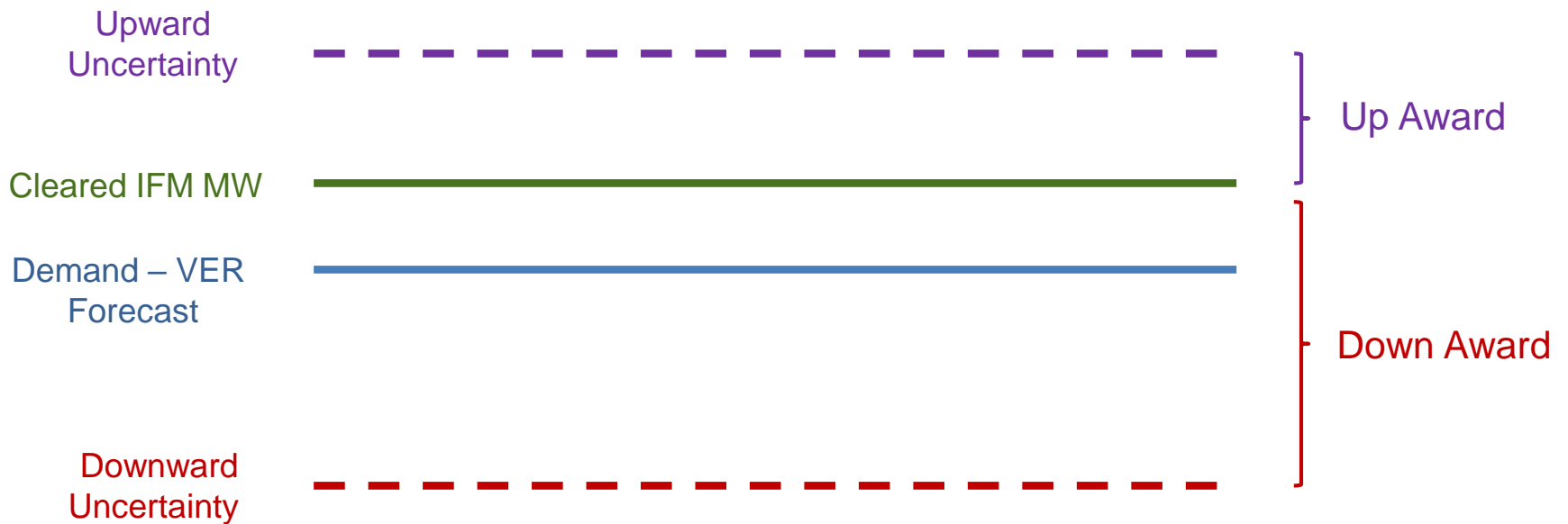
- The integrated forward market (IFM) runs based on bid-in demand to clear energy for the next trade day
- The residual unit commitment (RUC) procures incremental capacity to ensure additional resources will be available in real-time
- Resources with a RUC award have a must offer obligation (MOO) to submit economic bids into the real-time market

# Day-ahead market enhancements will address uncertainty previously left to real-time market

- 15 minute scheduling addresses granularity issues between day-ahead market and FMM
- DA imbalance reserves ensure sufficient real-time bids to meet imbalances that materialize in RTM
- Integrated IFM/RUC allows the DA imbalance reserve to be procured relative to ISO net load forecast, not bid in demand

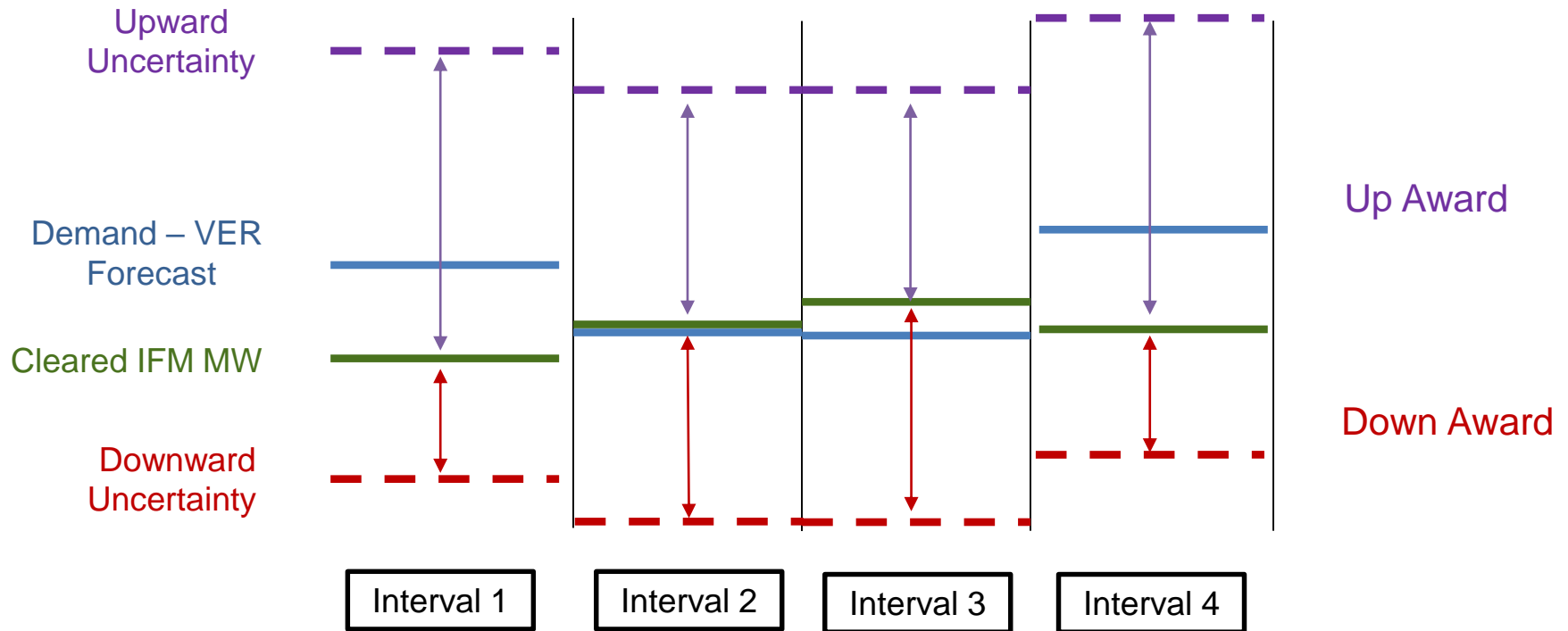
# Up and down awards can be used to address upward and downward uncertainty (1 of 2)

HE 12, Interval 1



# Up and down awards can be used to address upward and downward uncertainty (2 of 2)

## Proposed Design - HE 12, Intervals 1-4



# Proposed imbalance reserve key design parameters

- Capacity bid is allowed by all resources
- Awards are 15-minute ramp feasible
- If awarded, must offer obligation in RTM. If not, can elect not to bid into RTM

# Imbalance reserves can be used for all services in the real-time market

<b>Day-Ahead Market</b>	Bid-in Demand	ISO Net-Load Forecast	Contingency Reserves	Regulation	Corrective Capacity	<b>Imbalance Reserves</b>	
	Financial	Reliability	6.3% of the load forecast	Forecast error between RTD and Actual	System able to meet line limits after contingency	Forecast difference between IFM and RTM for all real-time market products	
<b>Real-Time Market</b>	Bid-in Demand	ISO Net - Load Forecast	Contingency Reserves	Regulation	Corrective Capacity	FRP Forecasted Movement	FRP Uncertainty Awards
	Not Applicable	Imbalance energy	Incremental	Incremental	Re-dispatch, if necessary	Ramp between market intervals in the same run	Forecast difference between binding and advisory intervals between runs

## ISO requests the MSC opine on the following topics:

- Requirement set to meet FMM imbalance energy and FRP requirement
- Regional and sub-regional requirements for imbalance reserves
- Bidding granularity: 15-minute or hourly?
- Penalty price(s) for imbalance reserve procurement
- Energy bidding flexibility between the DAM and RTM for must offer obligation
- Settlement of imbalance reserves if used in RTM