Gas Resource Management

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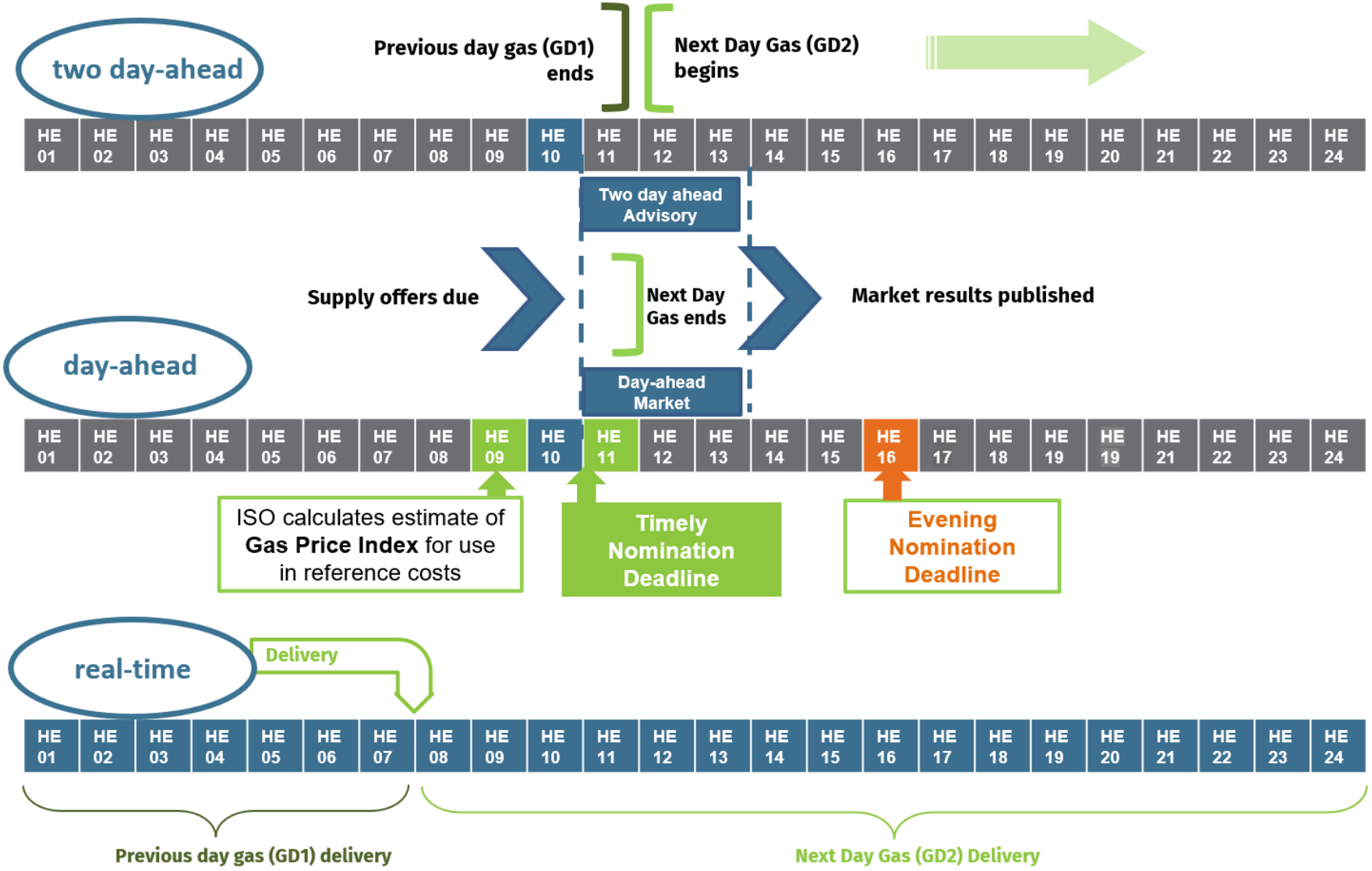
Gas resource management initiative background

- The initiative considers enhancements to existing tools for gas generators to ensure all regional entities can successfully participate in ISO administered markets
  - Market-wide unit commitment creates uncertainty for fuel procurement compared to a market participant procuring fuel to meet its own needs
  - Differences in gas providers and gas infrastructure in the regional market footprint introduce new challenges in accurately representing fuel costs


two day-ahead
Previous day gas (GD1) ends
Next Day Gas (GD2) begins
HE 01 HE 02 HE 03 HE 04 HE 05 HE 06 HE 07 HE 08 HE 09 HE 10 HE 11 HE 12 HE 13 HE 14 HE 15 HE 16 HE 17 HE 18 HE 19 HE 20 HE 21 HE 22 HE 23 HE 24
Two day ahead Advisory
Supply offers due
Next Day Gas ends
Market results published
day-ahead
Day-ahead Market
HE 01 HE 02 HE 03 HE 04 HE 05 HE 06 HE 07 HE 08 HE 09 HE 10 HE 11 HE 12 HE 13 HE 14 HE 15 HE 16 HE 17 HE 18 HE 19 HE 19 HE 21 HE 22 HE 23 HE 24
ISO calculates estimate of Gas Price Index for use in reference costs
Timely Nomination Deadline
Evening Nomination Deadline
real-time
Delivery
HE 01 HE 02 HE 03 HE 04 HE 05 HE 06 HE 07 HE 08 HE 09 HE 10 HE 11 HE 12 HE 13 HE 14 HE 15 HE 16 HE 17 HE 18 HE 19 HE 20 HE 21 HE 22 HE 23 HE 24
Previous day gas (GD1) delivery
Next Day Gas (GD2) Delivery

Informing fuel procurement

- Market participants need good information to inform fuel procurement during the timely gas nomination cycle
  - Over-reliance on intra-day gas exposes the market participant, and the market, to premiums and operational risk

- The straw proposal discussed a preliminary assessment of how well D+2 advisory information predicts day-ahead energy schedules for gas resources
  - *On average and in aggregate*, D+2 gas burn is generally within 5% of day-ahead gas burn
  - Daily variation is largely driven by changes in the bid set, outage information, and forecasts

Reference level thresholds should cover most volatility by default

	CAISO Calculated Gas Price Index (GPI)		Resource Requested Fuel Cost
	Default Calculations *safe harbor*	**Reasonableness Threshold** *fuel volatility*	Market participant submits a P,Q pair for review. The CAISO updates reference levels with the approved fuel cost but does not include the scalars.
Energy Bids	Variable cost calculation * **110% multiplier**	[Variable cost calculation includes **125% fuel volatility scalar**] * **110% multiplier**	
Commitment Costs	Proxy cost calculation * **125% multiplier**	[Proxy cost calculation includes - **110% fuel volatility scalar** on days with a published gas price index - **125% fuel volatility scalar** on days with out a published gas price index] ***125% multiplier**	
		Automated cost adjustment process	**Manual cost adjustment process**

Flexibility to accommodate changes from D+2 advisory results

- The ISO will be providing D+2 advisory results to support fuel procurement during the Timely gas nomination cycle

- If aggregate D+2 gas burn under-estimates DA significantly *and* market participants trust the advisory result, high demand for intra-day gas can increase premiums and illiquidity

- The ISO is proposing to give market participants more flexibility to request cost adjustments to reflect expected costs when D+2 under-estimates DA

The ISO is proposing two approaches that will require supporting data to inform magnitude of adjustments

- DA and RT adjustment
  - **Trigger:** change in demand and VER forecasts between D+2 and DA
  - Adjustment: increase in DA and RT reasonableness threshold
- RT only adjustment
  - **Trigger:** published DA schedules are higher than D+2 advisory
  - Adjustment: increase RT reasonableness threshold

Supporting data:

- Correlation between change in forecasts and change in market results
- Correlation between change in market results and gas market volatility
- Inform magnitude of adjustment

Fuel cost parameter enhancements to ensure equitable access to flexibility

- Reference levels should serve as a reasonable benchmark
  - Costs should generally correlate well with the index so that most costs are covered by default
  - Resources may rely on the cost adjustment process but infrequently
  - If the benchmark is too low, the flexibility offered through the automated process be more limited than intended

- The ISO proposes to adjust a resource's fuel cost parameter– applicable in both DEBs and commitment costs
  1. An initial screen will identify persistent conditions based on historic reference level change requests
  2. The ISO will assess resource specific fuel cost information to determine the appropriate fuel cost parameter adjustment