2022 Regional Transmission Plan Economic Assumptions Update

ERCOT Transmission Planning Assessment

April 12, 2022

Agenda

- Interfaces
- Natural Gas Forecast
- Large Flexible Loads

2022 RTP Stability Limit Summary – Valley

- The table below shows Valley-area stability constraints to be included in the 2022 RTP that are directly analogous to current GTCs.

GTC	Location	UPLAN Limit Type[1]	UPLAN Limit[2][3]	
			2024[4]	2027[5]
Nelson Sharpe – Rio Hondo	Valley	Static	792	9,999
North Edinburg – Lobo	Valley	Static	1,377	9,999
Valley Export	Valley	Static	635	9,999
Valley Import	Valley	Hourly profile[6]	1,678	9,999

[1] GTCs with real-time VSAT will have UPLAN hourly profiles using historical data.
[2] Limits used in economic analysis will be 90% of calculated stability limits to be consistent with the ERCOT Transmission and Security Operating Procedure.
[3] Limits are for no prior outages.
[4] 2024 limits are taken from MIS GTC Methodology.
[5] Lower Rio Grande Valley project included in case. Limits reflect the expectation that the constraints would not be binding in the planning timeframe based on recent planning studies. Future changes in generation and/or topology could change that expectation.
[6] Hourly multipliers developed from historical data will be applied to base rating.

2022 RTP Stability Limit Summary – Non-Valley

- The table below shows stability constraints outside of the Valley to be included in the 2022 RTP that are directly analogous to current GTCs.

GTC	Location	UPLAN Limit Type[1]	UPLAN Limit[2][3]	
			2024	2027
North to Houston	Houston	Hourly profile[4]	3,913	3,913
McCamey	West Texas	Static[5]	2,889	2,889
West Texas Export	West Texas	Static[6]	11,016	11,016

[1] GTCs with real-time VSAT will have UPLAN hourly profiles using historical data.
[2] Limits used in economic analysis will be 90% of calculated stability limits to be consistent with the ERCOT Transmission and Security Operating Procedure.
[3] Limits are for no prior outages.
[4] Hourly multipliers developed from historical data will be applied to base ratings from MIS GTC Methodology.
[5] Limits from MIS GTC Methodology.
[6] Limits from Long-Term West Texas Export Study – Study Year 2023

2022 RTP Stability Limit Summary

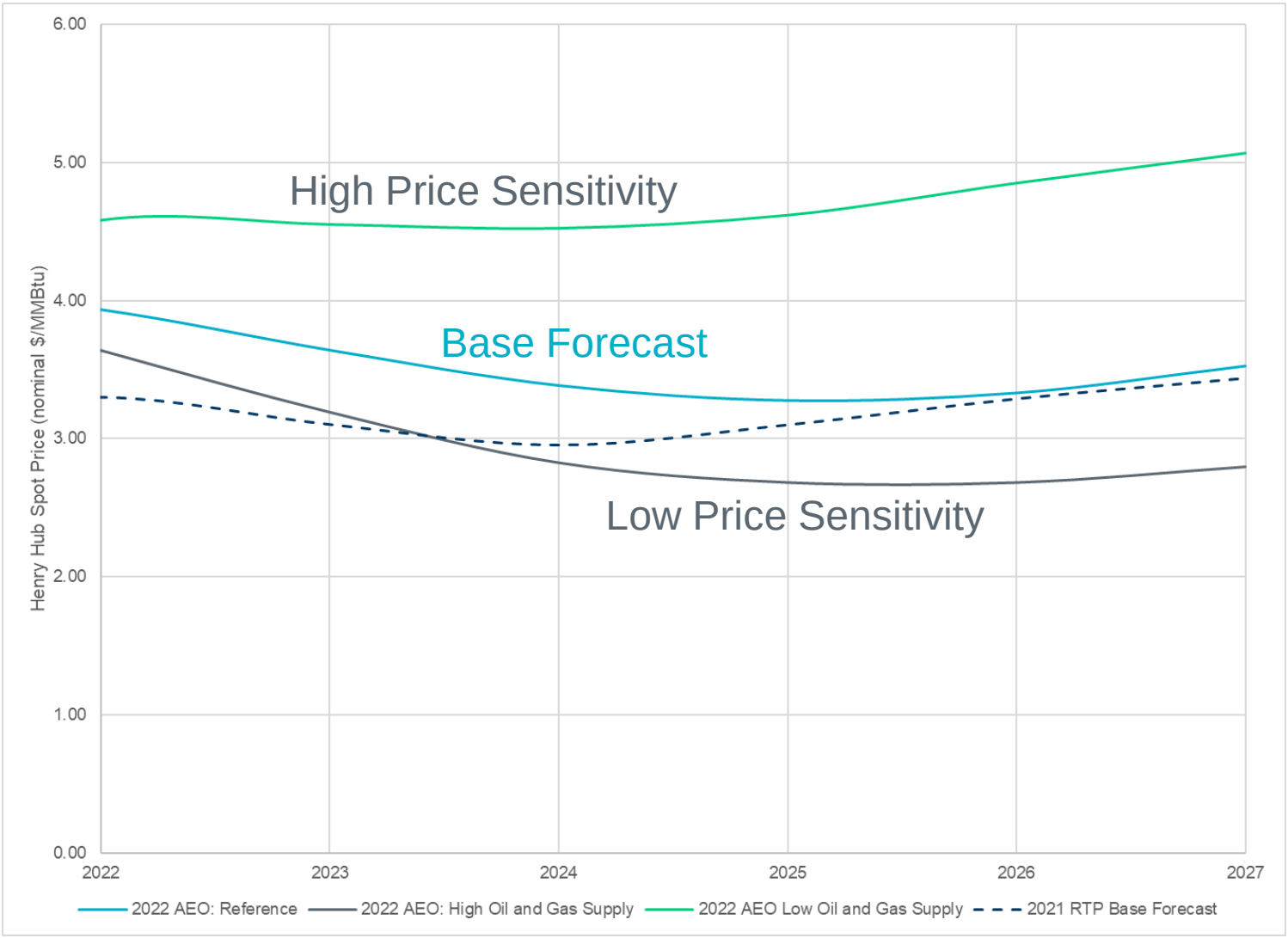
- The table below shows current GTCs that will not be included in 2022 RTP base analysis.
- Stability constraints related to these GTCs may be considered for outage sensitivity analysis.

GTC	Notes
Panhandle	No limit under N-1 conditions.
Red Tap	No limit under N-1 conditions.
East Texas	No limit under N-1 conditions.
Treadwell	No limit under N-1 conditions.
Raymondville – Rio Hondo	No limit under N-1 conditions.
Bearkat	No limit under N-1 conditions without the RAS in service.
Zapata Starr	No limit under N-1 conditions.
Williamson – Burnet	No limit under N-1 conditions.
Culberson	No limit under N-1 conditions.

Natural Gas Price Forecasts

- A base forecast and forecasts for high and low natural gas price sensitivities were selected.
- The base forecast will be used for economic analysis.
- High and low natural gas price sensitivities may be performed.
  - These sensitivities are intended for informational purposes.

Natural Gas Price Forecasts



Large Flexible Loads

- Loads added to Economic cases will be consistent with those added to Reliability cases and presented at March RPG[1]

Study Year	Total Approved Large Load Addition (MW)
2024	7,678
2027	8,071

- Large flexible loads, including cryptocurrency mining loads, will be modeled as price-responsive with a strike price of $100/MWh.

[1] https://www.ercot.com/files/docs/2022/03/11/2022_RTP_Load_Review_Update_March_2022_RPG.pdf

Questions

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Appendix

Generic Transmission Constraints – Background

- Generic Transmission Constraints (GTCs) and their associated Generic Transmission Limits (GTLs) are operational tools for managing non-thermal System Operating Limits (SOLs) using market-based dispatch*
- GTC studies consider existing resources and resources with planned Initial Synchronization dates ~3-6 months in the future
- Planning studies evaluate system needs 2-6 years in the future (or beyond), and include planned resources meeting the requirements of Planning Guide Section 6.9
  - i.e., Planning studies include more resources further out in the future than GTC studies
- Stability interfaces and limits considered in planning studies may necessarily differ from current operational GTCs/GTLs

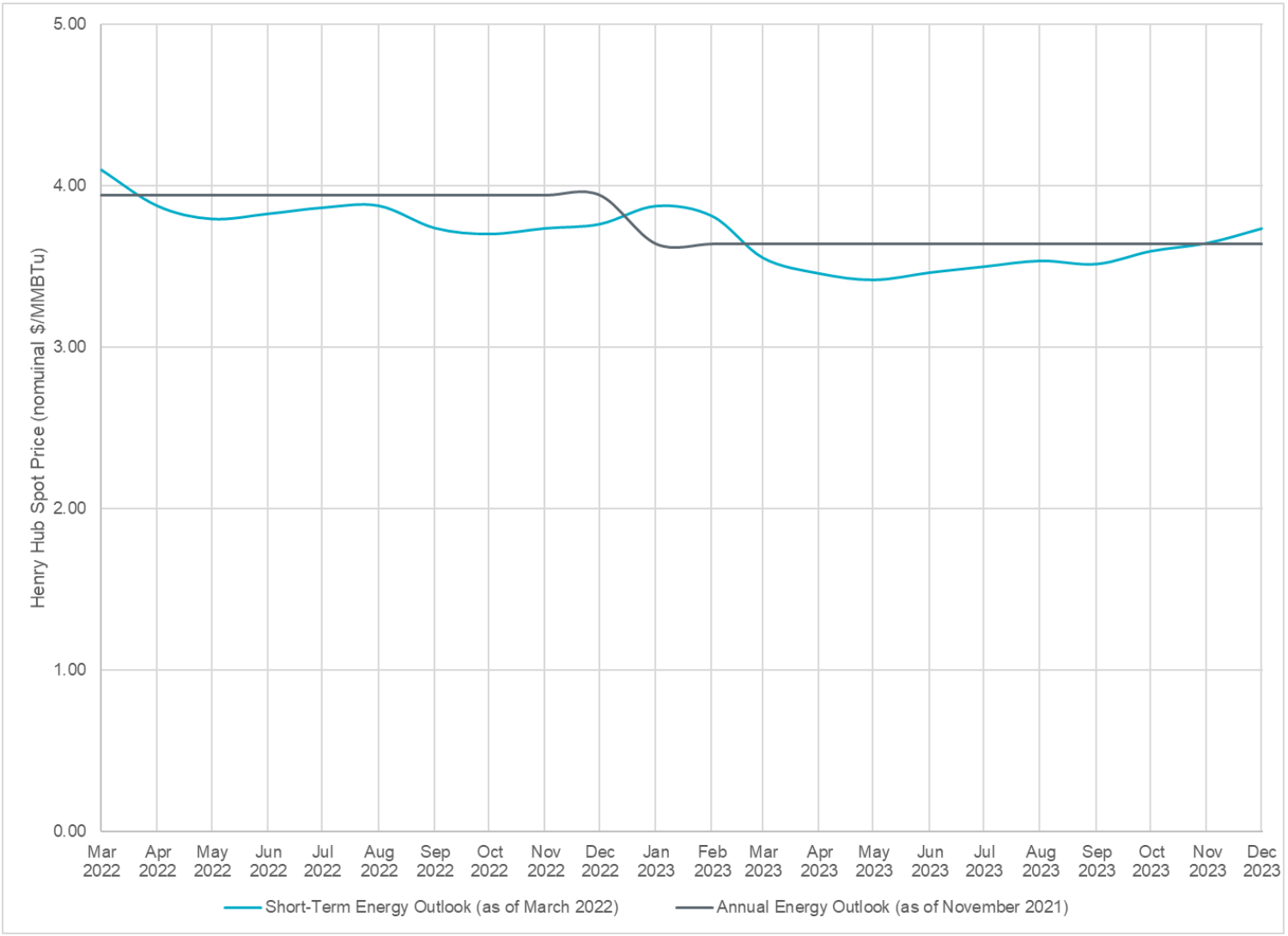
* For more information on GTCs and GTLs refer to the ERCOT white paper, *Use of Generic Transmission Constraints in ERCOT*, which can be found at http://www.ercot.com/content/wcm/key_documents_lists/209817/The_Use_of_GTCs_in_ERCOT_July_2020.pdf.

Current Generic Transmission Constraints

- ERCOT currently employs the following GTCs in the Operations Horizon*:
  - Bearkat (BEARKT)
  - Culberson (CULBSN)
  - East Texas (EASTEX)
  - McCamey (MCCAMY)
  - Nelson Sharpe – Rio Hondo (NELRIO)
  - North to Houston (N_TO_H)
  - North Edinburg – Lobo (NE_LOB)
  - Panhandle (PNHNDL)
  - Raymondville – Rio Hondo (RV_RH)
  - Red Tap (REDTAP)
  - Treadwell (TRDWEL)
  - Valley Export (VALEXP)
  - Valley Import (VALIMP)
  - West Texas Export (WESTEX)
  - Williamson – Burnet Import (WILBRN)
  - Zapata Starr (ZAPSTR)

*Generic Transmission Constraint Definitions posted to MIS Secure as of March 31, 2022

Natural Gas Price Forecasts – Short-Term v AEO



Natural Gas Price Historical Prices (2020-21)