



Permian Basin Reliability Plan Study – Updated Study Scope

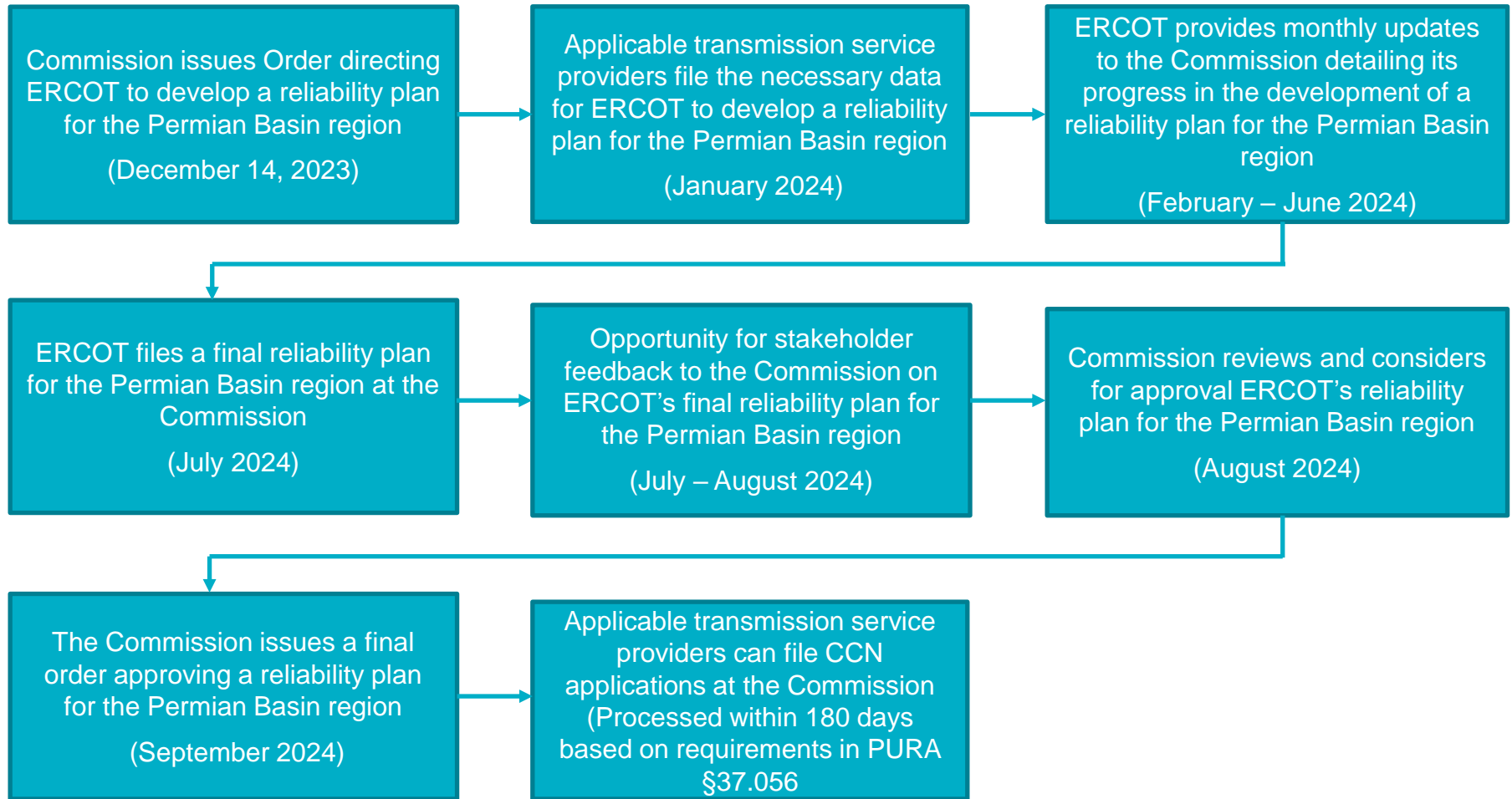
Ying Li

RPG Meeting
February 12, 2024

Recap: Introduction

- Significant progress has been made to address the high demand growth in the Permian Basin area
 - Delaware Basin Load Integration Study in 2019
 - Permian Basin Load Interconnection Study in 2021
- In part, H.B. 5066 (May 2023) requires the PUCT to direct ERCOT to develop a Reliability Plan for the Permian Basin region and that the plan must:
 - Address extending transmission service to areas where mineral resources have been found
 - Address increasing available capacity to meet forecasted load for the next decade
 - Provide available infrastructure to reduce interconnection times in areas without access to transmission service
- PUCT Order Project No. 55718 (December 2023)
 - Procedural Process and Timeline
 - Not later than July 2024, ERCOT must file a final reliability plan at the Commission in this project, and after opportunity for stakeholder feedback, and Commission will review and approve a reliability plan for the Permian Basin region
 - The applicable transmission service providers (TSPs) responsible for constructing the transmission infrastructure in the Commission-approved reliability plan can then move forward with filing the necessary applications for certificate of convenience and necessity (CCN) at the Commission

Recap: Procedural Process and Timeline per PUCT Order Project No. 55718



Status Update

- ERCOT presented the draft study scope at January RPG meeting
 - <https://www.ercot.com/calendar/01172024-RPG-Meeting>
- Oncor provided bus level S&P Global Permian Basin Load Forecast
- AEP, LCRA, Oncor, and TNMP provided additional loads to be included in the Permian Basin Reliability Plan Study
- ERCOT reviewed all the load forecast data, and worked with TSPs to finalize the load data
- ERCOT will present the updated study assumptions
 - Load forecast
 - Updated renewable generation dispatch (using the 2024 RTP assumptions and methodology)
 - Transmission

Study Assumptions and Methodology

- Steady-state reliability analysis to identify
 - Transmission upgrades that may be necessary to connect and reliably serve the local oil and gas loads in the Permian Basin region
 - Transmission import to meet the forecasted load
- Study region
 - The Permian Basin region within ERCOT system, which include the Far West Weather Zone plus ten counties in West Weather Zone and two counties in North Weather Zone
- Study cases
 - 2030 and 2038 cases based on 2023 RTP 2029 WFW summer peak preliminary case
- Load forecast
 - The bus level load from TSPs based on the 2023 S&P Global study (presented in March 2023 RPG meeting) will be used for this study
 - Additional load provided by TSPs
- Generation
- Transmission
- Reserve

Study Assumptions – Load Forecast

Permian Basin Region Load Comparison (MW)

	2019 Delaware Basin Study	2021 Permian Basin Study 2030 Case	2023 RTP Study 2029 Case	Permian Basin Reliability Plan 2030 Case	Permian Basin Reliability Plan 2038 Case
Permian Basin Total Load	9,771	10,527	16,577	23,958	26,700
Permian Basin Oil & Gas Load*	9,771	10,527	12,341	11,964	14,705
Additional Load**	0	0	4,236	11,995	11,995

Delaware Basin Area Load Comparison (MW)***

	2019 Delaware Basin Study	2021 Permian Basin Study 2030 Case	2023 RTP Study 2029 Case	Permian Basin Reliability Plan 2030 Case	Permian Basin Reliability Plan 2038 Case
Delaware Basin Total Load	5,260	4,960	7,933	11,230	13,483
Delaware Basin Oil & Gas Load*	5,260	4,960	4,884	6,439	8,692
Additional Load**	0	0	3,049	4,791	4,791

*Including residential/commercial load

**Mainly datacenter/crypto load

***The Delaware Basin load is a subset of the Permian Basin load and is included as part of the Permian Basin Reliability Plan Study

Load Forecast – Observations and Challenges

- The total load in the Permian Basin region is extremely high, even for 2030. The total load level is comparable to that of ERCOT Coast Weather Zone and North Central Weather Zone

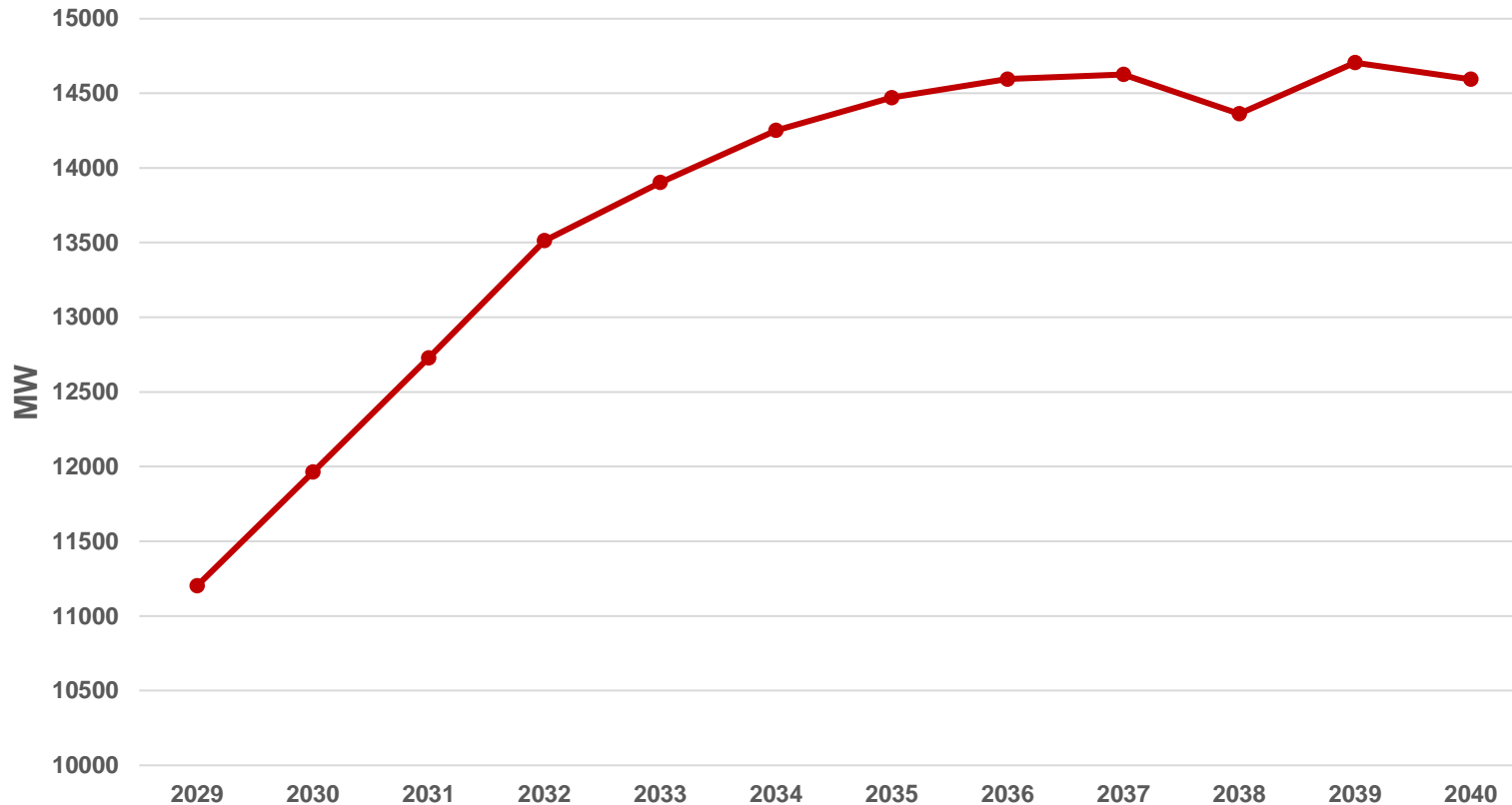
	2023 RTP 2029 Non-Coincident Peak Load (MW)	Load in the Starting Case of This Permian Basin Reliability Plan Study (MW)	Conventional Gen Capacity (MW)
North Central WZ	32,458	28,173	~ 28,400*
Coast WZ	29,848	26,967	~ 25,900
Permian Basin Region	16,577	26,700	~ 2,800

* This includes the conventional generation in the East Weather Zone

- The total Load in West & Far West Weather Zones in this Permian Basin Reliability Plan Study is 28,669 in 2038 case which is even higher than the load in North Central Weather Zone
- The total amount of additional non-oil & gas load is almost the same as the oil & gas load
- Within the Permian Basin, oil & gas load is shifting to the Delaware Basin area where transmission is relatively sparse. Especially for 2038, the load in the Delaware Basin area (8,692 MW) is significantly higher than what we have previously studied (5,260 MW)
- Permian Basin lacks local conventional generation compared to the North Central and Coast Weather Zones
- Considering the high level of load growth to be evaluated, identifying a reliability plan to meet this extremely high load level will require extraordinary effort to complete on the directed timeline and will be much more complex compared to previous special studies ERCOT has conducted

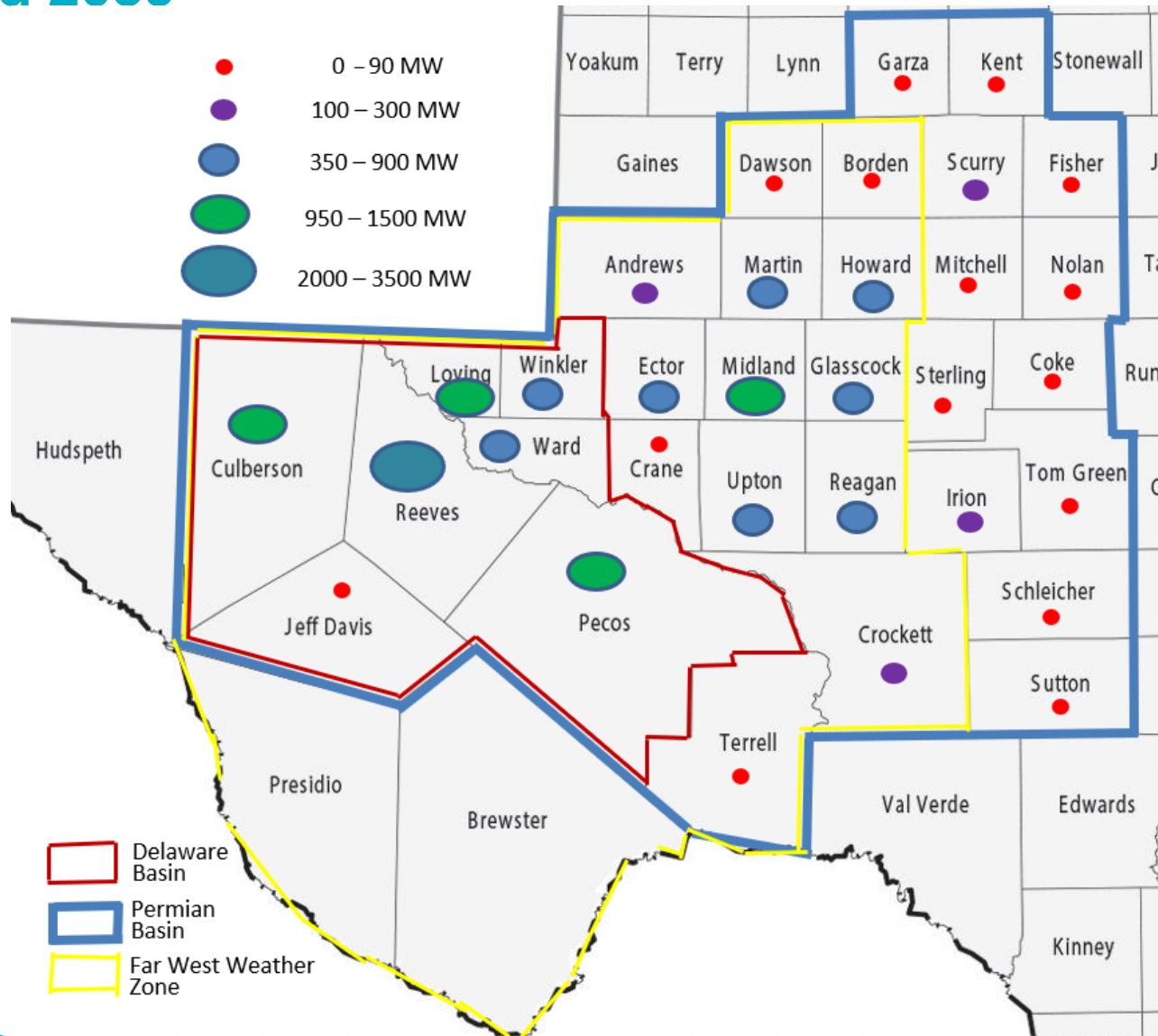
S&P Global Permian Basin Load Forecast by Year

S&P Global Permian Basin Peak Demand



The S&P Global Permian Basin load is peaked in 2039 with 14,705 MW. The 2030 (11,964 MW) and 2039 (14,705 MW) load level will be studied in this Permian Basin Evaluation

County-Level S&P Global Permian Basin Load Forecast in 2030 and 2039



Study Assumptions – Generation

- New generation that met Planning Guide Section 6.9(1) condition with Commercial Operation Date (COD) before June 2030 and 2038 at the time of the study, but not already modeled in the starting case, will be added to the study base case based on the January 2024 Generator Interconnection Status (GIS) report posted on February 1, 2024
 - GIS Link: <https://www.ercot.com/gridinfo/resource>
- Renewable generation dispatch will be consistent with the 2024 RTP methodology
 - Solar generation in the study area will remain online (dispatched at 76% of their installed capacity)
 - Wind generation inside the study region will use the CDR dispatch (same as the wind generation outside the study region) (22% for wind generation in WFW)
 - All battery units including the distribution connected batteries will be dispatched up to 20.3% of their installed capacity

Study Assumption - Transmission

- Based on the October 2023 Transmission Project and Information Tracking (TPIT) posted on ERCOT website, RPG approved Tier 1, Tier 2, and Tier 3 projects as well as Tier 4 projects with in-service dates on or before summer 2030 and 2038 within the study area will be added to the study base case if not already modeled in the starting case
 - TPIT Link: <https://www.ercot.com/gridinfo/planning>
- Additional projects identified in the previous special studies will be added
 - Oncor West Texas 345-kV Infrastructure Rebuild Project (currently under EIR review)
 - Stage 3, Stage 4, and Stage 5 upgrades in the Delaware Basin Load Integration Study (Stage 1 and Stage 2 upgrades were already approved and modelled in the study)
 - New 138-kV lines to connect the future new loads into the system as proposed by the Permian Basin Load Interconnection Study

Study Assumptions – Reserve

- Reserve
 - Load outside WFW weather zones may be adjusted to maintain the reserve consistent with the RTP study

Deliverables and Timeline

- The study is expected to be completed in June 2024 and the final report is ready in July 2024
- Status updates at future RPG meetings
- Tentative Timelines

Deliverables	Tentative Timeline
Load Update by TSPs	January 2024
Review the Data Provided by TSPs	January 2024
Develop Study Base Case and Conduct Reliability Analysis	February 2024
Study Potential Transmission Solutions and Propose Final Reliability Plan	March – June 2024
Final Report	July 2024

Thank you!



Stakeholder comments also welcomed through:

Ying.Li@ercot.com

Robert.Golen@ercot.com