



# CNP Southwest Houston 345-kV Reliability Project – ERCOT Independent Review Scope

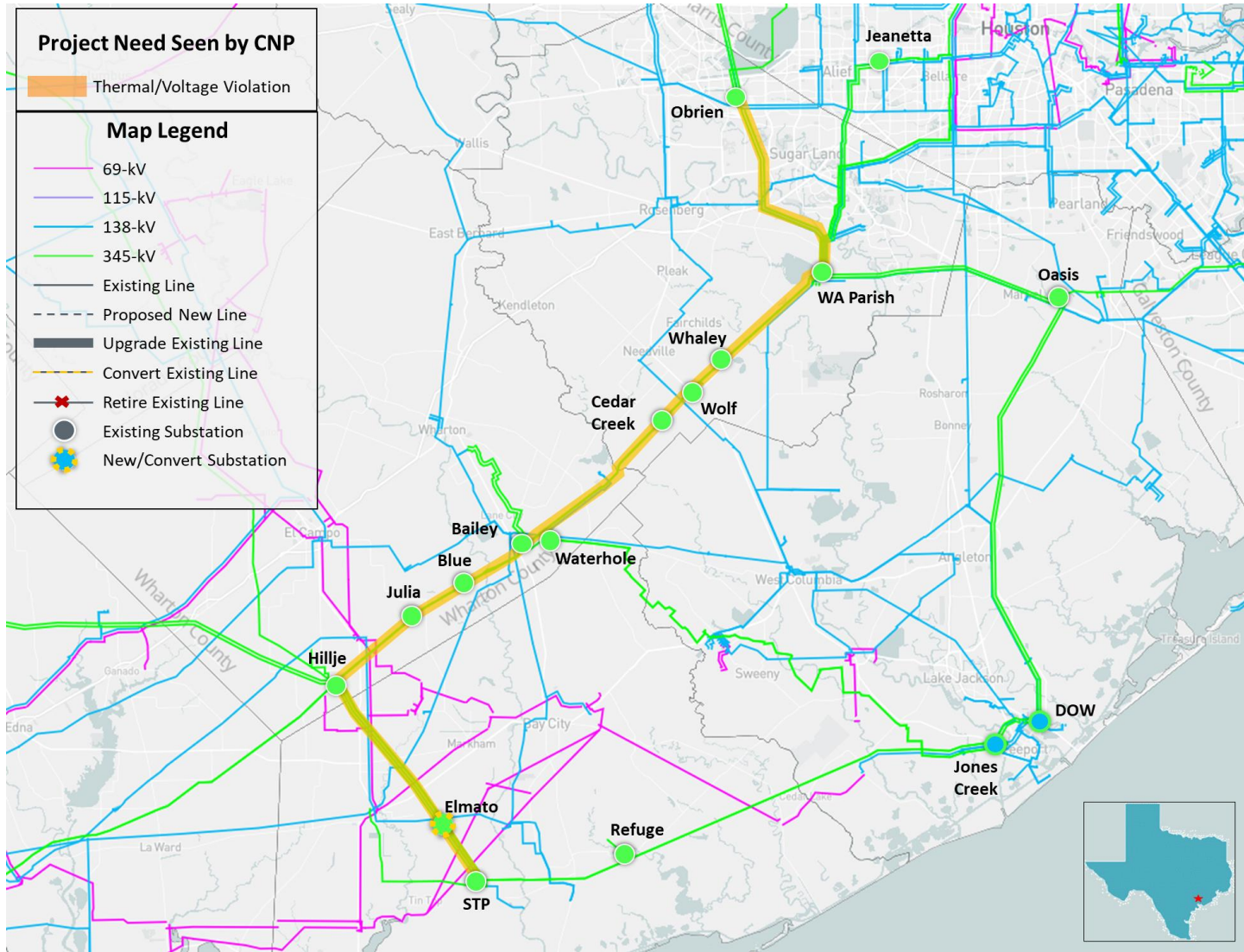
Abishek Penti

RPG Meeting  
December 16, 2024

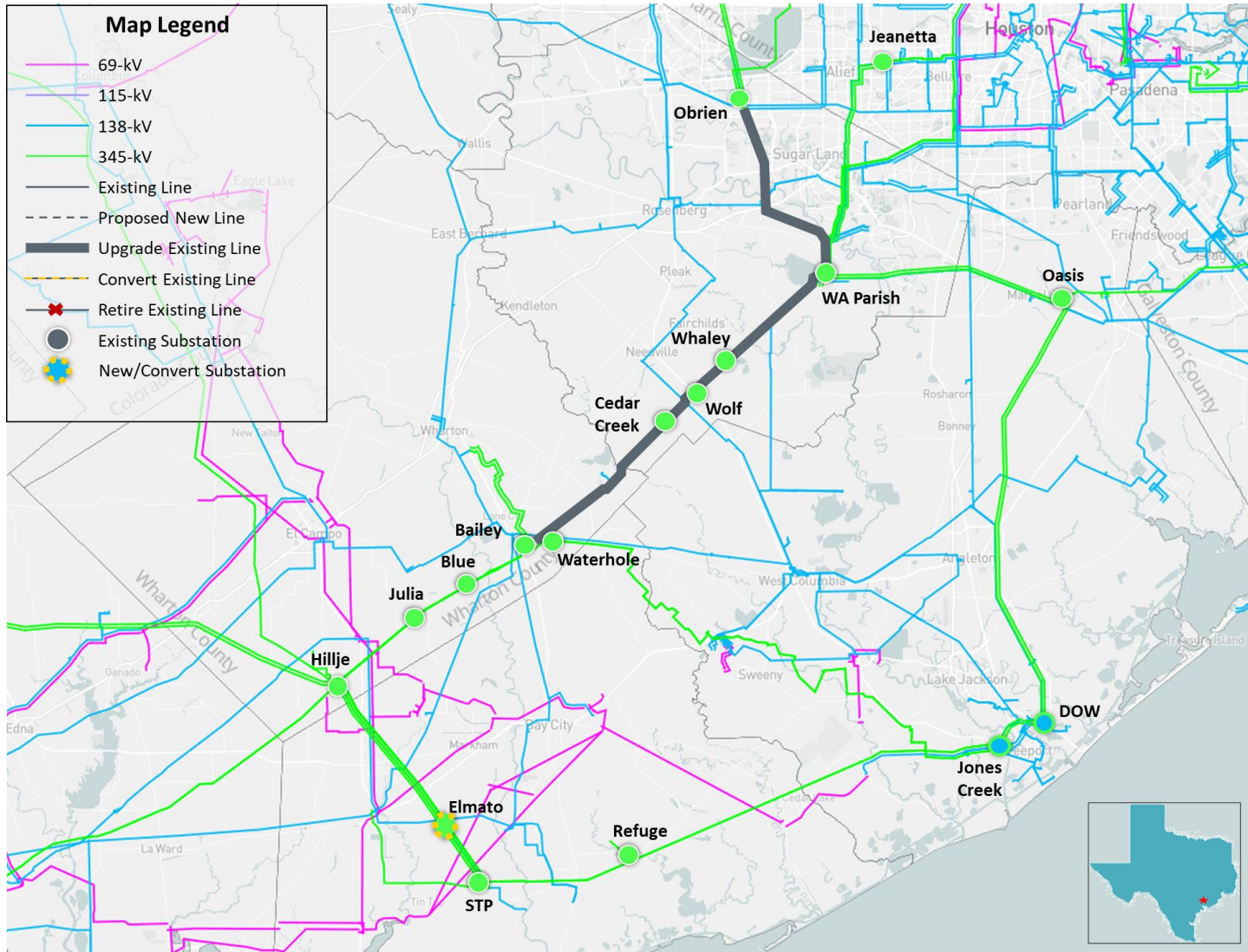
# Introduction

- CNP submitted the Southwest Houston 345-kV Reliability Project for Regional Planning Group (RPG) review in October 2024
  - This Tier 1 project is estimated to cost \$569.3 million and will not require a Certificate of Convenience and Necessity (CCN)
  - Estimated In-Service Date (ISD) is Summer 2028
  - Addresses thermal overloads seen by CNP and 2023 RTP
- This project is currently under ERCOT Independent Review (EIR)

# Study Area Map



# Project Proposed by CNP



# Project Proposed by CNP

- Loop 345-kV Elmaton to W.A.Parish circuit 39 into 345-kV Bailey substation;
- Install 20 Ohm line reactor at Bailey on 345-kV Elmaton to Bailey circuit 39;
- Reconductor/rebuild approximately 31 miles of 345-kV Bailey to W.A.Parish circuit 39 with 3-959 ACSS including substation jumpers and spans using the latest standard double-circuit-capable steel structures to minimum Normal/Emergency ratings of 2987/3147 MVA;
- Reconductor/rebuild approximately 17 miles of 345-kV W.A.Parish to Obrien circuit 98 and circuit 99 with 3-959 ACSS including substation jumpers and spans using the latest standard double-circuit-capable structures to minimum Normal/Emergency ratings of 2987/3147 MVA;
- Relocate 345-kV W.A.Parish to Wolf circuit 64 from 345-kV W.A.Parish North bus to 345-kV W.A.Parish South bus;
- Relocate 345-kV W.A.Parish to Obrien circuit 98 from 345-kV W.A.Parish North bus to 345-kV W.A.Parish South bus;
- Upgrade substation equipment on 345-kV W.A.Parish to Jeanetta circuit 72 to minimum Normal/Emergency ratings of 2038/2645 MVA;
- Upgrade substation equipment on 345 kV W.A.Parish to Whaley circuit 72 to minimum Normal/Emergency ratings of 2710/2812 MVA;
- Upgrade substation equipment at 345 kV Bailey substation to a 63-kA fault interrupting capability; and
- Upgrade substation equipment at 345 kV Obrien substation to a 63-kA fault interrupting capability.



# Study Assumptions Base Case

- Study Region
  - Coast Weather Zone, focusing on the transmission elements near the Wharton, Fort Bend and Matagorda Counties.
  - Monitor surrounding counties that are electrically close to the area
- Steady-State Base Case
  - Final 2023 Regional Transmission Planning (RTP) 2029 summer peak case for East and Coast (EC) Weather Zones, posted in Market Information System (MIS), will be updated to construct the summer peak load study base case
    - Case: 2023RTP\_2029\_SUM\_EC\_12222023
    - Link: <https://mis.ercot.com/secure/data-products/grid/regional-planning>

# Study Assumptions – Transmission

- Based on the October 2024 Transmission Project and Information Tracking (TPIT) posted on MIS, projects with in-service dates before June 1, 2028, within the study area will be added to the study base case if not already modeled in the case
  - TPIT Link: <https://www.ercot.com/gridinfo/planning>
  - See Appendix A for a list of transmission projects added
- Transmission projects identified in the 2023 RTP as placeholder projects within the study area will be removed to develop the study base case
  - See Appendix B for a list of placeholder projects removed

# Study Assumptions – Generation

- New generation that met Planning Guide Section 6.9(1) condition with Commercial Operation Date (COD) before the end of June 1, 2028 in the study area at the time of the study, but not already modeled in the RTP cases, will be added to the case based on the November 2024 Generator Interconnection Status (GIS) report posted in MIS in December 2024
  - GIS Link: <https://www.ercot.com/gridinfo/resource>
  - See Appendix C for a list of generation projects added
- Generation will be dispatched consistent with the 2024 RTP methodology
- All recent retired/indefinitely mothballed units will be reviewed and opened (turned off), if not already reflected in the 2023 RTP final case



# Study Assumptions – Load & Reserve

- Load in study area
  - Loads in the EC Weather Zones will be maintained to be consistent with the 2023 RTP
  - Newly approved loads in the study area will be added to the study base case
- Reserve
  - Load outside of study Weather Zone(s) will be adjusted to maintain the reserve consistent with the 2023 RTP

# Contingencies & Criteria

- Contingencies for Study Region
  - NERC TPL-001-5.1 and ERCOT Planning Criteria
  - Link: <http://www.ercot.com/mktrules/guides/planning/current>
    - P0 (System Intact)
    - P1, P2-1, P7 (N-1 conditions)
    - P2-2, P2-3, P4, and P5 (345-kV only)
    - P3: G-1+N-1 (G-1: WA Parish Unit 6, WA Parish Unit 8 and Cedar Bayou Unit 2)
    - P6: X-1+N-1 (X-1: Meadow, Obrien, Zenith, Wharton, Addicks, North Belt, Rothwood, Tomball, White Oak, Bellaire, Jeanetta, Shamburger Switch, Blessing, Baytown Energy Center, Oak Grove, Dow, Jones Creek and PH Robinson 345/138-kV transformers)
- Criteria
  - Monitor all 69-kV and above busses, transmission lines, and transformers in the study region (excluding generator step-up transformers)
    - Thermal
      - Use Rate A for normal conditions
      - Use Rate B for emergency conditions
    - Voltage
      - Voltages exceeding their pre-contingency and post-contingency limits
      - Voltage deviations exceeding 8% on non-radial load buses

# Study Procedure

- Need Analysis
  - The reliability analysis will be performed to identify the need to serve the Houston and surrounding area load using the study base case
- Project Evaluation
  - Project alternatives will be tested to satisfy the NERC and ERCOT reliability requirements
  - ERCOT may also perform the following studies:
    - Planned maintenance outage
    - Long-Term Load-Serving Capability Assessment
  - The TSP will provide the Cost Estimate and Feasibility Assessment
- Generation and Load Scaling Sensitivity Analyses
  - Planning Guide Section 3.1.3(4)
- Subsynchronous Resonance (SSR) Assessment
  - Nodal Protocol Section 3.22.1.3(2)
- Congestion Analysis
  - Congestion analysis may be performed based on the recommended transmission upgrades to ensure that the identified transmission upgrades do not result in new congestion within the study area

# Deliverables

- Tentative Timelines
  - Status updates at future RPG meetings
  - Final recommendation – Q2 2025

*Thank you!*



Stakeholder comments also welcomed through:

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# Appendix A – Transmission Projects

- List of RPG projects added to study base case

| RPG/TPIT No | Project Name  | Tier   | Project ISD                | County              |
|-------------|---|--------|----------------------------|---------------------|
| 22RPG037    | West Columbia to Burke 138 kV ckt 02 Rebuild Project                      | Tier 4 | Summer 2023                | Brazoria, Fort Bend |
| 22RPG038    | Clute Substation Addition Project   | Tier 3 | Summer 2025                | Brazoria            |
| 23RPG012    | Stone Lake Area Upgrades Project  | Tier 3 | Summer 2024<br>Summer 2025 | Harris              |
| 23RPG021    | West Columbia to Big Creek ckt 89 Reconductor Project                     | Tier 4 | Summer 2026                | Fort Bend, Brazoria |
| 23RPG025    | Britmoore to Bellaire Ckt 24 Upgrade Project                              | Tier 3 | Summer 2025                | Harris              |
| 23RPG031    | 345 kV Jeanetta Autotransformer Upgrades Project                          | Tier 3 | Summer 2025                | Harris              |
| 24RPG012    | Clute to Velasco ckt 26 Upgrades Project                                  | Tier 3 | Summer 2026                | Brazoria            |
| 24RPG026    | Jordan/Mont Belvieu Area Improvement Project                              | Tier 3 | Summer 2027                | Chambers            |
| 24RPG030    | Partial Rebuild of 138-kV Ckt.05A Sienna Tap to Missouri City Tap Project | Tier 4 | 12/1/2025                  | Fort Bend           |



# Appendix A – Transmission Projects

- List of transmission projects added to study base case

| RPG/TPIT No     | Project Name   | Tier   | Project ISD | County    |
|-----------------|--|--------|-------------|-----------|
| 50890           | Port Lavaca: Station Rebuild (Cangrejo)                                      | Tier 1 | May-26      | Calhoun   |
| 81548/<br>81553 | Haber: Construct New 345 kV Station/<br>Haber: Construct New 345 kV Terminal | Tier 3 | May-27      | Victoria  |
| 58542B          | CATTAIL_SUBSTATION   | Tier 2 | Mar-23      | Galveston |
| 66221           | Galena Park Area Conversion Project  | Tier 3 | May-25      | Harris    |
| 72044           | Clute 138kV Switching Station  | Tier 3 | May-26      | Brazoria  |
| 75835           | Upgrade Ckt.66B Stone Lake to Tomball to increase thermal limits             | Tier 3 | Oct-26      | Harris    |
| 78473           | Odin (ODI) 138kV CEHE Substation   | Tier 3 | Jan-26      | Brazoria  |
| 78485           | Britmoore to Bellaire Ckt.24B Upgrades                                       | Tier 3 | May-26      | Harris    |
| 78490           | Jeanetta Auto Upgrades   | Tier 3 | May-25      | Harris    |
| 85987           | Upgrade Ckt.26 Clute to SINTEK to increase thermal limits                    | Tier 3 | May-26      | Brazoria  |

# Appendix B – Transmission Projects

- List of transmission projects removed from the study base case

| TPIT No   | Project Name   | County                        |
|-----------|--|-------------------------------|
| 2023-C1   | North Rosenberg (944070) 345-kV Substation Addition and 345-kV Double-Circuit Line Additions from Whaley (44070) to North Rosenberg (944070) to Obrien (44500) | Fort Bend                     |
| 2023-C4   | South Texas Project (5915) to WA Parish (44000) 345-kV Line Upgrade  | Matagorda, Wharton, Fort Bend |
| 2023-SC18 | El Campo Sub to Nada 69-kV Line Upgrade  | Colorado, Wharton             |

# Appendix C – New Generation Projects to Add

| GINR      | Project Name                   | Fuel | Projected COD | Capacity (~MW) | County    |
|-----------|--------------------------------|------|---------------|----------------|-----------|
| 19INR0134 | Cottonwood Bayou Solar         | SOL  | 12/31/2024    | 351.4          | Brazoria  |
| 20INR0155 | Peyton Creek Wind II           | WIN  | 02/14/2025    | 241.2          | Matagorda |
| 20INR0248 | DAMAZO (Second Division) SOLAR | SOL  | 12/20/2024    | 100.2          | Brazoria  |
| 21INR0012 | Air Products GCA               | GAS  | 08/30/2024    | 14             | Galveston |
| 21INR0220 | Maleza Solar                   | SOL  | 11/01/2025    | 254.94         | Wharton   |
| 21INR0442 | Myrtle Storage                 | BAT  | 12/31/2024    | 151.2          | Brazoria  |
| 21INR0443 | Cottonwood Bayou Storage       | BAT  | 06/12/2025    | 153.03         | Brazoria  |
| 21INR0450 | Danish Fields Storage          | BAT  | 12/31/2024    | 152.43         | Wharton   |
| 21INR0505 | Ramsey Storage                 | BAT  | 12/31/2027    | 510.4          | Wharton   |
| 22INR0354 | XE Murat [Adlong] Solar        | SOL  | 01/03/2025    | 60.36          | Harris    |
| 22INR0517 | Lane City Wind                 | WIN  | 06/30/2025    | 199.5          | Wharton   |
| 22INR0546 | Enchanted Rock NEWPP           | GAS  | 06/06/2025    | 30             | Harris    |
| 23INR0044 | Parliament Solar               | SOL  | 05/12/2025    | 484.56         | Waller    |
| 23INR0054 | Tanglewood Solar               | SOL  | 09/08/2025    | 250.96         | Brazoria  |
| 23INR0091 | Cascade Solar                  | SOL  | 01/16/2026    | 254.2          | Brazoria  |
| 23INR0336 | Bypass Battery Storage         | BAT  | 12/15/2025    | 207.89         | Fort Bend |
| 23INR0358 | Castor BESS                    | BAT  | 06/01/2025    | 205.39         | Brazoria  |
| 23INR0419 | SOHO BESS                      | BAT  | 06/28/2025    | 206.32         | Brazoria  |
| 23INR0425 | Coneflower Storage Project     | BAT  | 02/03/2027    | 178.92         | Chambers  |
| 23INR0460 | PHOTON BESS1                   | BAT  | 12/20/2024    | 152.74         | Wharton   |
| 24INR0093 | Oriana Solar                   | SOL  | 04/06/2025    | 181            | Victoria  |

## Appendix C – New Generation Projects to Add (cont.)

| GINR      | Project Name                             | Fuel | Projected COD | Capacity (~MW) | County    |
|-----------|--|------|---------------|----------------|-----------|
| 24INR0109 | Oriana BESS                              | BAT  | 06/15/2026    | 60.3           | Victoria  |
| 24INR0128 | Desna BESS                               | BAT  | 06/01/2025    | 205.46         | Brazoria  |
| 24INR0147 | Holy ESS                                 | BAT  | 10/26/2024    | 209.32         | Harris    |
| 24INR0265 | Jarvis BESS                              | BAT  | 12/23/2024    | 308.4          | Brazoria  |
| 24INR0281 | Red Egret BESS                           | BAT  | 08/01/2025    | 310.58         | Galveston |
| 24INR0329 | XE Murat Storage                         | BAT  | 03/01/2025    | 60.14          | Harris    |
| 24INR0337 | Eldora Solar                             | SOL  | 06/30/2026    | 200.94         | Matagorda |
| 24INR0338 | Eldora BESS                              | BAT  | 06/30/2026    | 201.31         | Matagorda |
| 24INR0395 | Berkman Storage                          | BAT  | 04/30/2027    | 150.86         | Galveston |
| 24INR0397 | Destiny Storage                          | BAT  | 01/31/2026    | 205.57         | Harris    |
| 24INR0405 | Crowned Heron BESS                       | BAT  | 07/31/2025    | 154.2          | Fort Bend |
| 24INR0456 | FRIENDSWOOD ENERGY GENCO                 | GAS  | 07/01/2025    | 143.7          | Harris    |
| 24INR0460 | Evelyn Battery Energy Storage System     | BAT  | 05/06/2025    | 221.3          | Galveston |
| 24INR0605 | TEXAS GULF SULPHUR REPOWER               | GAS  | 06/25/2024    | 16.1           | Wharton   |
| 24INR0736 | Remy Jade II Unit 7 Unit 8 Power Station | GAS  | 09/12/2024    | 102            | Harris    |
| 25INR0162 | SOHO II BESS                             | BAT  | 03/02/2026    | 206.32         | Brazoria  |
| 25INR0232 | Isaac Solar                              | SOL  | 03/31/2026    | 51.6           | Matagorda |
| 25INR0271 | City Breeze BESS                         | BAT  | 07/15/2026    | 140.6          | Matagorda |

## Appendix C – New Generation Projects to Add (cont.)

| GINR      | Project Name    | Fuel | Projected COD | Capacity (~MW) | County    |
|-----------|-----------------|------|---------------|----------------|-----------|
| 25INR0300 | Wizard BESS     | BAT  | 05/01/2025    | 150.82         | Galveston |
| 25INR0328 | Longbow BESS    | BAT  | 11/09/2024    | 180.8          | Brazoria  |
| 25INR0421 | Aldrin 138 BESS | BAT  | 03/01/2026    | 207            | Brazoria  |
| 25INR0691 | PHOTON BESS2    | BAT  | 11/28/2025    | 152.74         | Wharton   |
| 26INR0042 | Valhalla Solar  | SOL  | 05/31/2026    | 306.8          | Brazoria  |