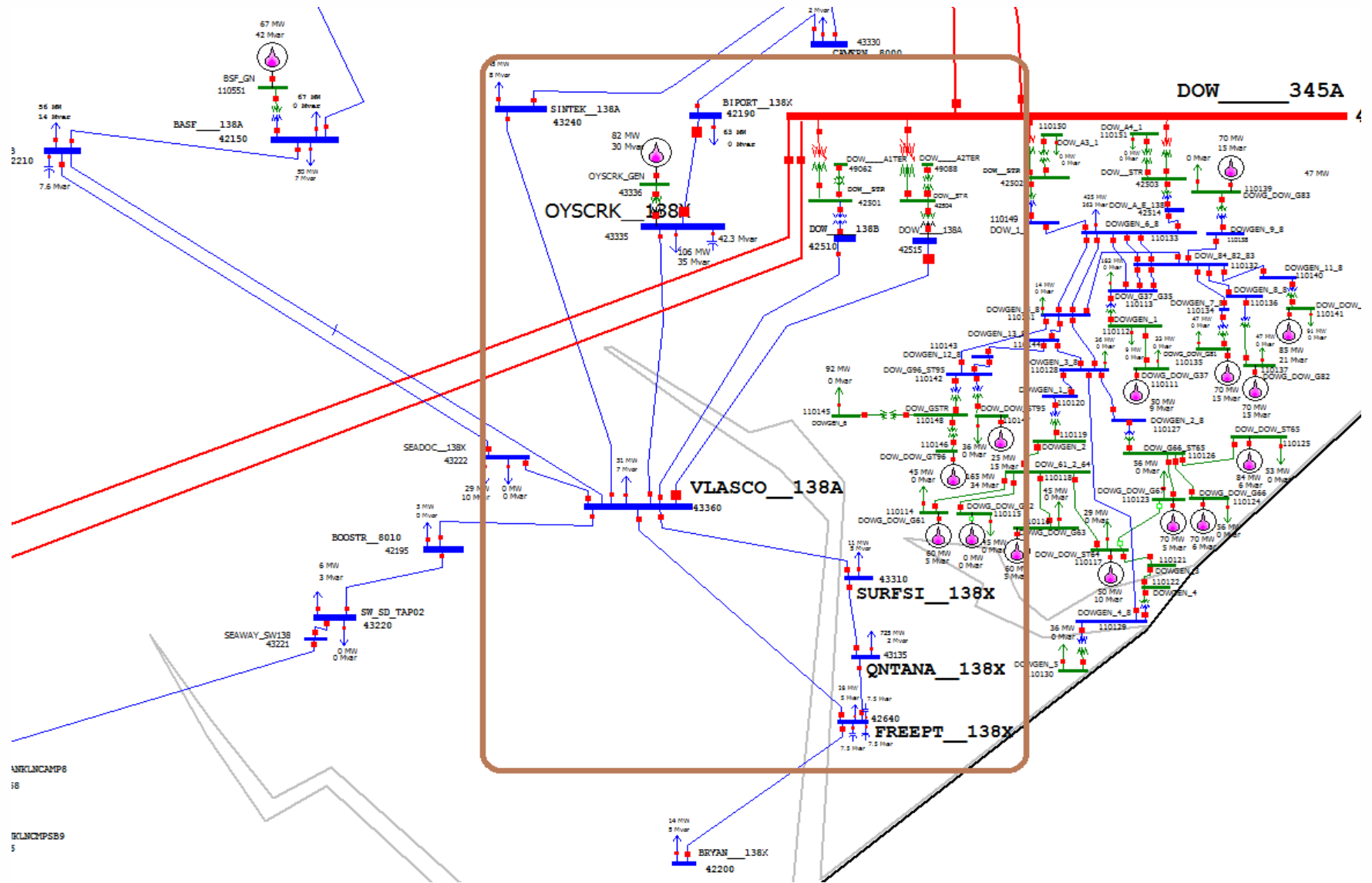

CNP Jones Creek Project – ERCOT Independent Review Update

**RPG Meeting
October 21, 2014**

Map of the Study Area



Background

- **721 MW load addition at Quintana substation**
- **CNP proposed solution**
 - Build a new 345/138 kV substation (Jones Creek Substation)
 - Install TWO new 800 MVA / 1000 MVA 345/138 kV autotransformers at the Jones Creek Substation
 - Loop the 345 kV Dow-STP circuit 18 into the Jones Creek Substation
 - Loop the 138 kV Freeport-Velasco circuit 59 into the Jones Creek Substation
 - Reconfigure circuits in the Freeport area: creating 138 kV Velasco-SURFSI-Freeport-Jones Creek circuit 59, 138 kV Velasco-QNTANA-Jones Creek circuit 48, and 138 kV Velasco-Jones Creek circuit 59;
 - Reconfigure 138 kV Velasco-Franklins Camp circuit 02 to create 138 kV Jones Creek-Franklins Camp circuit 02;
 - Upgrade 138 kV circuits in Freeport area to 838 MVA / 894 MVA rating
 - Install a new 138 kV 120 MVAR capacitor bank at the Jones Creek Substation

Study Model

- **Base Case**
 - The 2018 Reliability final Case from the 2013 RTP
- **Transmission Changes applied to Base Case**
 - Adjust load level to reflect the 2014 SSWG load forecast for the year of 2019 (CNP TSP area ~ 23078 MW)
 - Dow 345/138 autotransformer: install a second 345/138 kV autotransformer at the Dow-Velasco substation, and a second autotransformer lead to Velasco substation
 - Oyster Creek substation: add 138 kV Oyster Creek substation with 109 MW load, 82 MW generator, and 40 MVAR capacitor bank
 - 721 MW new load addition at Quintana substation

Reliability Analysis of Base Case

- **N-1 Contingency Analysis**

- Contingency definitions in 2013 RTP's 2018 Reliability Case

Contingency	Overloaded Element	Overload under the Worst Contingency
Freeport – Quintana 138 kV Circuit 47	Quintana – Surfside Beach 138 kV Circuit 59	150%
Quintana – Surfside Beach 138 kV Circuit 59	Freeport – Quintana 138 kV Circuit 47	148%

Reliability Analysis of Base Case

- **Selected X-1 & N-1 Contingency Analysis**

- Outage of 345/138 kV autotransformer A1 at Dow-Velasco substation
- Followed by N-1 contingency analysis

2 nd Contingency (N-1)	Overloaded Element	Rate B (MVA)	Worst % Loading
345/138 kV autotransformer A2 in Dow-Velasco	NA	NA	Unsolved
Dow – Velasco 138 kV Circuit 83	NA	NA	Unsolved
Freeport – Quintana 138 kV Circuit 47	Quintana – Surfside Beach 138 kV Circuit 59	562	153%
Quintana – Surfside Beach 138 kV Circuit 59	Freeport – Quintana 138 kV Circuit 47	562	151%
Retrieve – West Columbia 138 kV Circuit 02	Dow – Velasco 138 kV Circuit 83	1000	109%

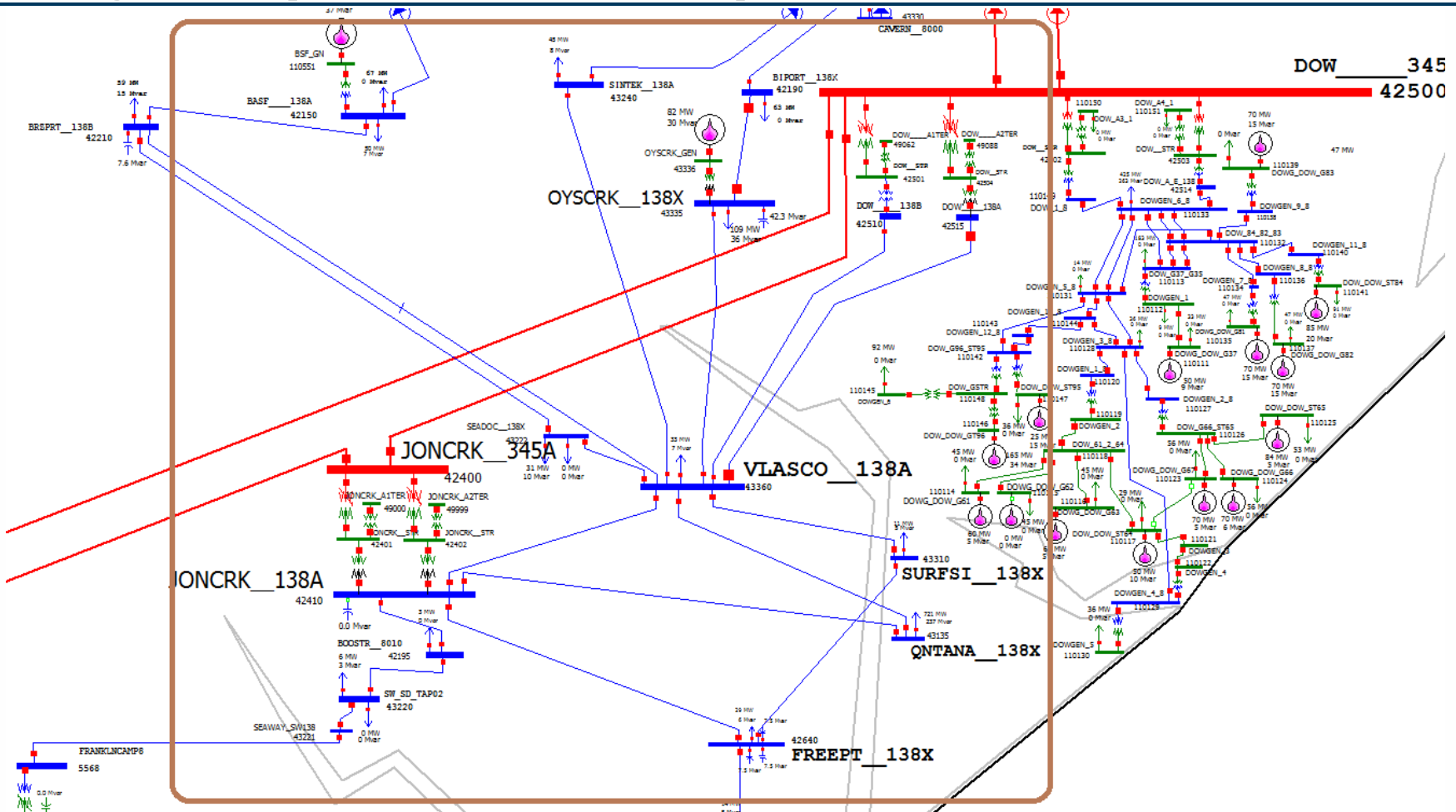
Project Option A (CNP Option 1)

- **Option A Upgrades**

- New 138 kV ring bus substation (New Substation)
- New 138 kV single circuit line from Angleton Substation to New Substation (approximately 21 miles)
- New 138 kV single circuit line from West Columbia Substation to New Substation (approximately 21 miles)
- New 138 kV double circuit line from New Substation to Freeport Substation (approximately 5 miles)
- Expand Freeport Substation
- Capacitor banks at New Substation and Freeport Substation

- **Total cost: \$ 125 million**

Project Option B (CNP Option 2) & C



- **Total cost**

- Option B: \$ 80 million
- Option C: \$ 78 million (Option B without Cap bank @ Jones Creek)

Reliability Analysis of Project Options

- **Selected X-1 & N-1 Contingency Analysis**
 - Outage of 345/138 kV autotransformer A1 at Jones Creek substation
 - Followed by N-1 contingency analysis
- **Selected G-1 & N-1 Contingency Analysis**
 - Two G-1 scenarios:
 - Outage of the 658MW unit in WAP generating station
 - Outage of the 1375MW unit in STP generating station
 - Followed by N-1 contingency analysis
- **Selected N-1-1 Contingency Analysis**
 - Outage of the STP – Dow 345 kV circuit 27
 - Followed by N-1 contingency analysis
- **With the selected project added, no overloads were found around the area of concern**

Economic Analysis of Project Options

- **Potential congestions in economical operation**
 - Base case: 2018 Economic case from the 2013 RTP
 - Changes:
 - Dow 345/138 autotransformer
 - Oyster Creek substation
 - Load addition at Quintana substation
 - Selected project, e.g. Jones Creek substation
 - UPLAN analysis was performed to study any the potential congestions under economical operation conditions
 - Monthly congestion report were compared with the 2013 RTP results to see any new congestions caused by the new load and the selected project
 - No new significant congestions were identified

Next Steps

- **Review additional feedback provided by Stakeholders**
- **Prepare the final report with ERCOT recommendation**
- **Present ERCOT recommendation to TAC and ERCOT Board of Directors endorsement**

