



## ERCOT- RCEC Study – Secondary Option Review Results

RPG

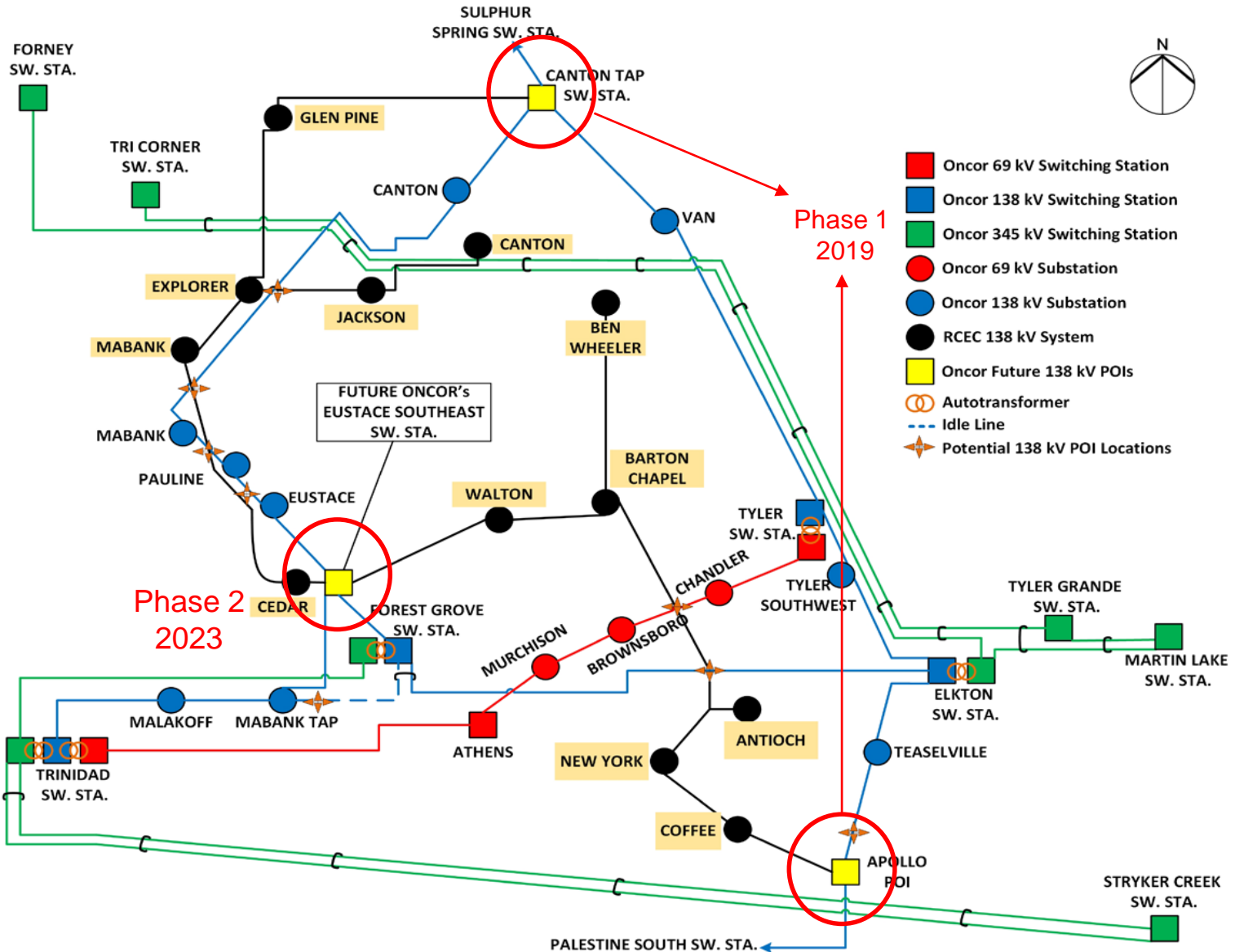
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# Outline

- RCEC System – Oncor 138 kV proposal
- Results
- Cost Estimate
- Conclusion

# RCEC System – Oncor’s Option (2 phases)



# ERCOT Recommended Modification to Oncor's Option

- Oncor's proposal – Phase 1 + Phase 2
  - Base case violation
  - High congestion
- ERCOT's modification:
  - Entire final option at same time (Phase 1 + Phase 2)
  - 4.3 miles line upgrade (495 MVA) – Forest Grove - Eustace
  - 1.3 mile line upgrade (249 MVA) – Palestine South – Palestine

# Preliminary Results - Reliability

- Steady state violations (Business as usual – 123 MW)

Contingency (NERC/ERCOT) reliability requirements	Violation
P0/P1/P7	None
P6 (X-1+N-1)	None

- Violations (Winter Peaking – 190 MW)

Contingency (NERC/ERCOT) reliability requirements	Violation
P0/P1/P7	None
P6 (X-1+N-1)	None

# Preliminary Results - Economic

Study Year	Annual Production Cost Increase (\$M)
2020	14.3
2025	16.8

# Transfer Capability Comparison

Options	Description	Base Load Level (MW)	Maximum Transfer	Thermal Overload
I	Modified Oncor Option	190	390	Eustace (#3178) – Mabank Tap (#29266)
II	Option 2		390	Forest Grove (#3131) – Eustace (#3179)

# ERCOT Generic Cost Estimates

<b>Option 2</b>	
Description	Total Cost (\$ million)
New 138 kV switching station on Teaselville – Palestine Alcoa line (Apollo)	9.6
Extend the 138 kV Coffee - Jacksonville single circuit line into new 138 kV Apollo switching station	0.5
Extend Bus Work & add 138kV jumper (<0.1 mile) to connect Canton Switch Station to Canton Tap	1.0
New 345 kV 6 breaker ring bus on Tyler Grande - Tricorner line	17.2
345/138 kV. 650 MVA auto at Aristotle	9.2
0.9 mile single circuit line from Aristotle to Benwheeler	0.9
Expand Benwheeler sub to accommodate Aristotle 345 sub and canton sub connection	2.0
Elkton – Tyler Switch 138 kV line upgrade	2.0
Palestine - Palestine South sw station 138 kV line upgrade (New)	1.3
	<b>43.8</b>



# ERCOT Generic Cost Estimates

<b>Modified Oncor Option</b>	
Description	Total Cost (\$ million)
New 138 kV switching station on Teaselville - Palestine Alcoa line (Apollo)	9.6
Extend the 138 kV Coffee - Jacksonville single circuit line into new 138 kV Apollo switching station	0.5
Connect Canton switching station to Canton Tap 138 kV station	1.0
Mabank Tap – Eustace Southeast Sw. Station 138kV Line	5.3
Eustace Southeast 138kV Sw. Station	9.6
Forest Grove Sw station - Eustace Southeast switching station 138 kV line upgrade (New)	4.2
Palestine - Palestine South switching station 138 kV line (New)	1.3
	<b>31.5</b>

# Conclusion

- Reliability is comparable to Option 2
- All three POIs and identified upgrades should be in service for reliable integration of Rayburn load (end of 2019)

# Questions?

For further inquiries please email Ajay Pappu (VPappu@ercot.com)