



2020 RTP Economic Analysis Update

John Bernecker
Manager, Transmission Planning Assessment

October 20, 2020

Agenda

- Financial assumptions update
- Economic analysis update
 - Bearkat Area / Stanton Loop
 - Kendall Area
 - San Antonio Import / West Texas Export
 - Lower Rio Grande Valley
 - Comanche Switch Area

Financial Assumptions Update

- 2020 review of financial assumptions used for the economic planning criteria is complete
- Information has been posted to MIS Secure and the October 2020 RPG meeting page
- ERCOT will use 13.2% for the first-year revenue requirement as of October 2020
 - This will be utilized for 2020 RTP economic analysis

Economic Analysis Update

- Final economic project evaluations will be included in the report published in December
- Preliminary analysis results conducted for several studied areas are included on the following slides
 - Not a comprehensive review of 2020 RTP economic analysis
 - All project options and numbers are preliminary
 - Production cost savings based on the 2025 study year, unless otherwise stated

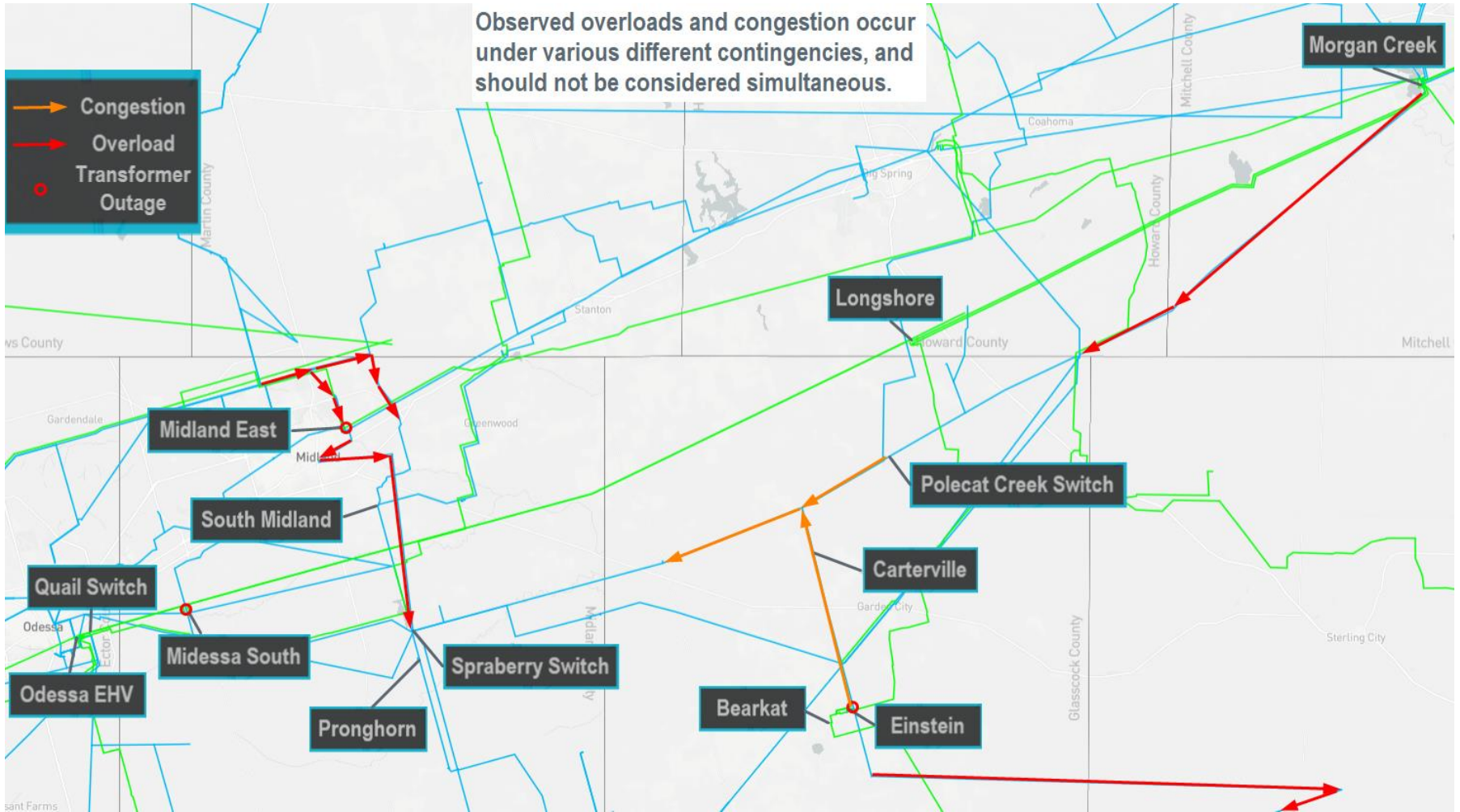
Bearkat Area / Stanton Loop

- 2020 RTP reliability analysis indicates the need for additional 345/138-kV transformer capacity along the Stanton Loop near Midland
 - Multiple X-1+N-1 criteria violations
 - Most significant first level transformer outage is at Einstein
- 2020 RTP economic analysis shows congestion on:
 - Polecat Creek Switch to Meyers Drive 138-kV line under the loss of the Morgan Creek to Quail Switch and Longshore to Odessa EHV 345-kV double circuit line
 - Einstein to Carterville 138-kV line under the loss of the Bearkat to Longshore 345-kV line
- ERCOT is working with TSPs to develop a project that addresses both the reliability and economic needs
- Future RPG submittal(s) expected

Bearkat Area / Stanton Loop

Observed overloads and congestion occur under various different contingencies, and should not be considered simultaneous.

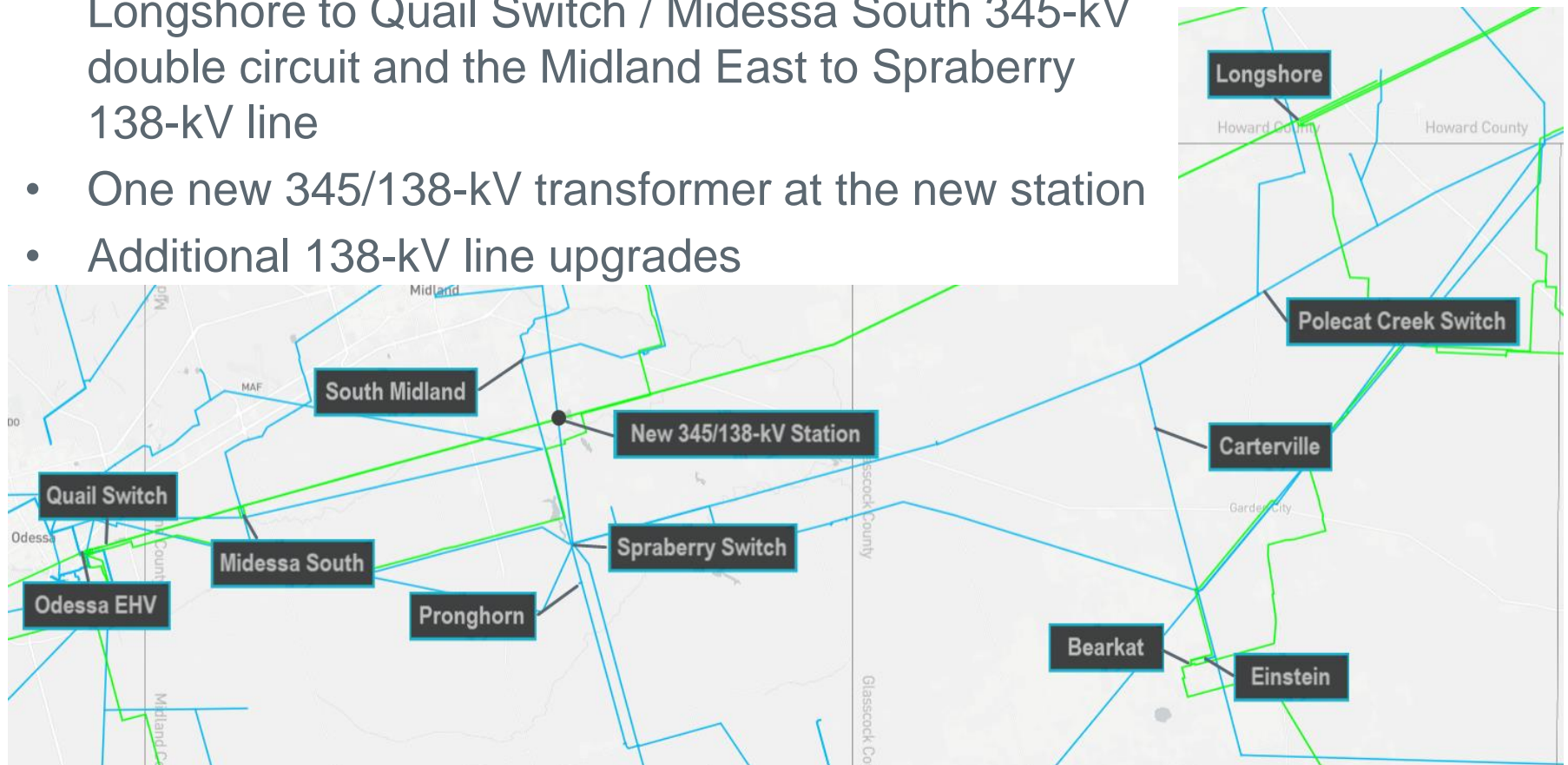
- Congestion
- Overload
- Transformer Outage



Bearkat Area / Stanton Loop

Current reliability option:

- New 345-kV/138-kV station at the intersection of the Longshore to Quail Switch / Midessa South 345-kV double circuit and the Midland East to Spraberry 138-kV line
- One new 345/138-kV transformer at the new station
- Additional 138-kV line upgrades

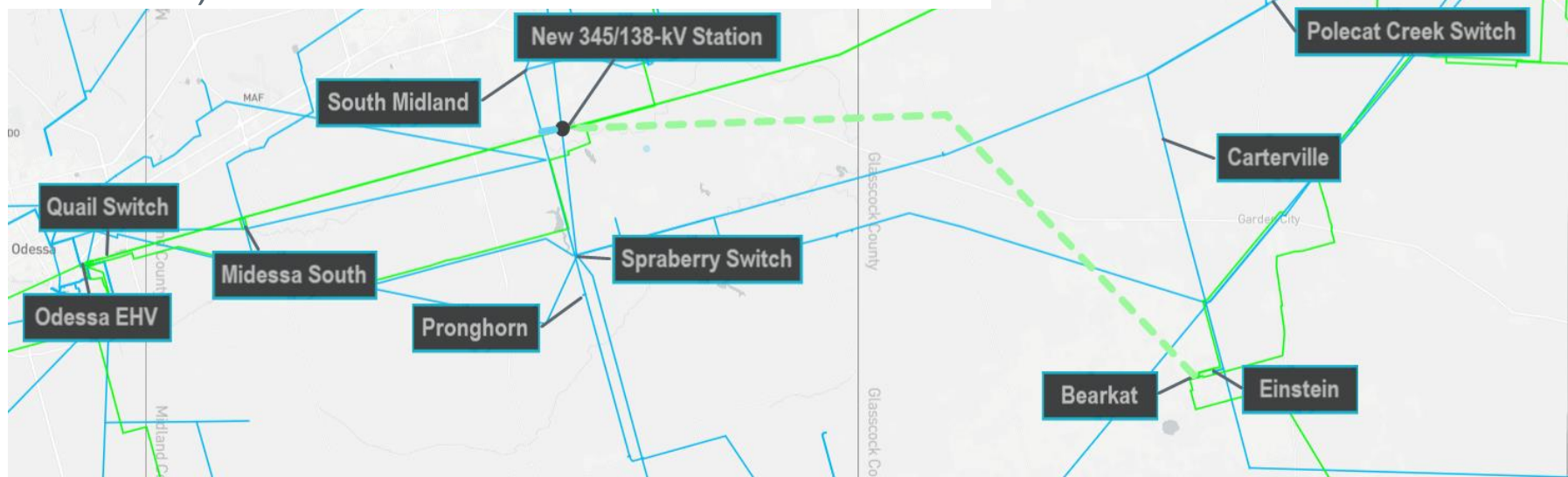


Bearkat Area / Stanton Loop

Example additional economic option:

- Add a second 345/138-kV transformer at the new station
- Loop the South Midland to Pronghorn 138-kV line into the new station
- Build a new 345-kV line from Bearkat to the new station (straight-line distance ~30 miles)

Preliminary Production Cost Savings (\$M)	Approximate Breakeven Cost (\$M)
12.8	97



Kendall Area



- Congestion on the Kendall to Bergheim 345-kV line, and several 138-kV lines in the Kendall area due to the loss of the Kendall to Cagnon transfer path
- Congestion on the Bergheim 345/138-kV transformer due to the loss of the Zorn to Hays Energy 345-kV double circuit line

Kendall Area

- Option 1: reroute one of the Big Hill to Kendall 345-kV lines to bypass Kendall and go directly to Cagnon
 - Resulted in ~\$0.5M in production cost savings
 - Bergheim 345/138-kV transformer remained highly congested
 - Congestion on the Kendall area 138-kV lines was largely reduced
- Option 2: upgrade the Bergheim 345/138-kV transformer
 - Resulted in ~\$5M in production cost savings
 - Significantly increased congestion on 138-kV lines downstream from the Bergheim 345/138-kV transformer
- Alternatives continue to be considered in conjunction with other ERCOT system needs

San Antonio Import / West Texas Export

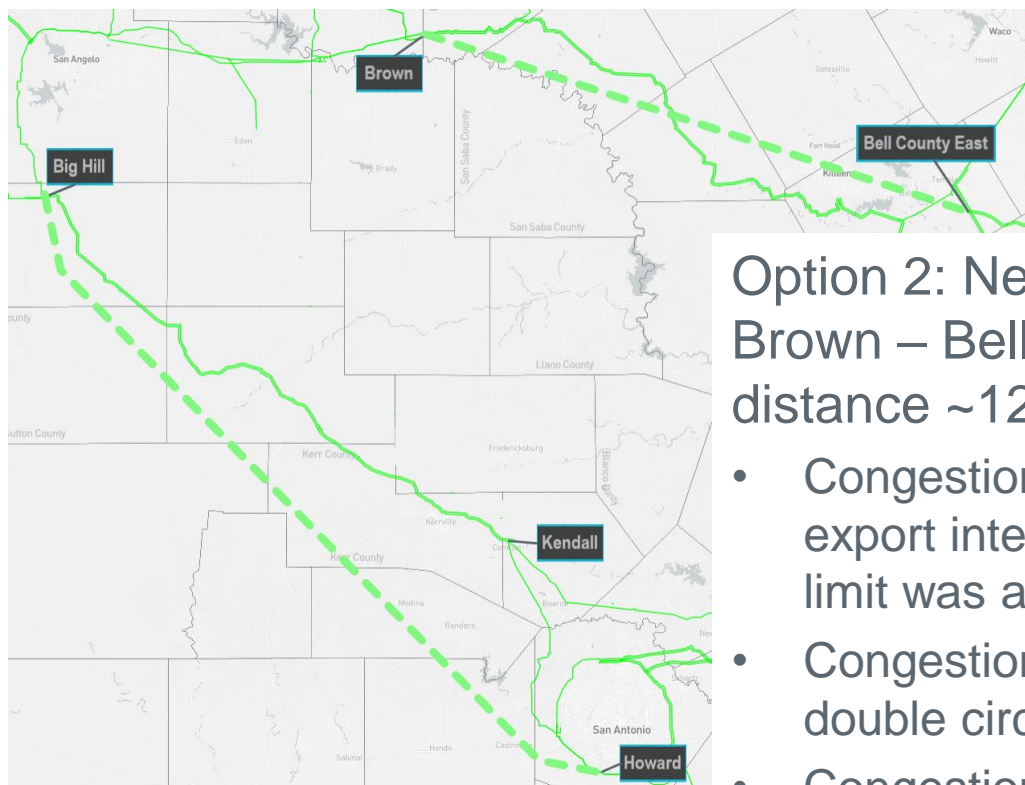


Option 1: New 345-kV double circuit from Big Hill – Howard (straight-line distance ~170 miles)

- Congestion decreased on the West Texas export interface (a 1 GW increase in the transfer limit was assumed)
- Kendall area 138-kV congestion was resolved
- Congestion was reduced on the Bergheim 345/138-kV transformer
- Congestion on paths into Houston increased

Preliminary Production Cost Savings (\$M)	Approximate Breakeven Cost (\$M)
43	326

West Texas Export



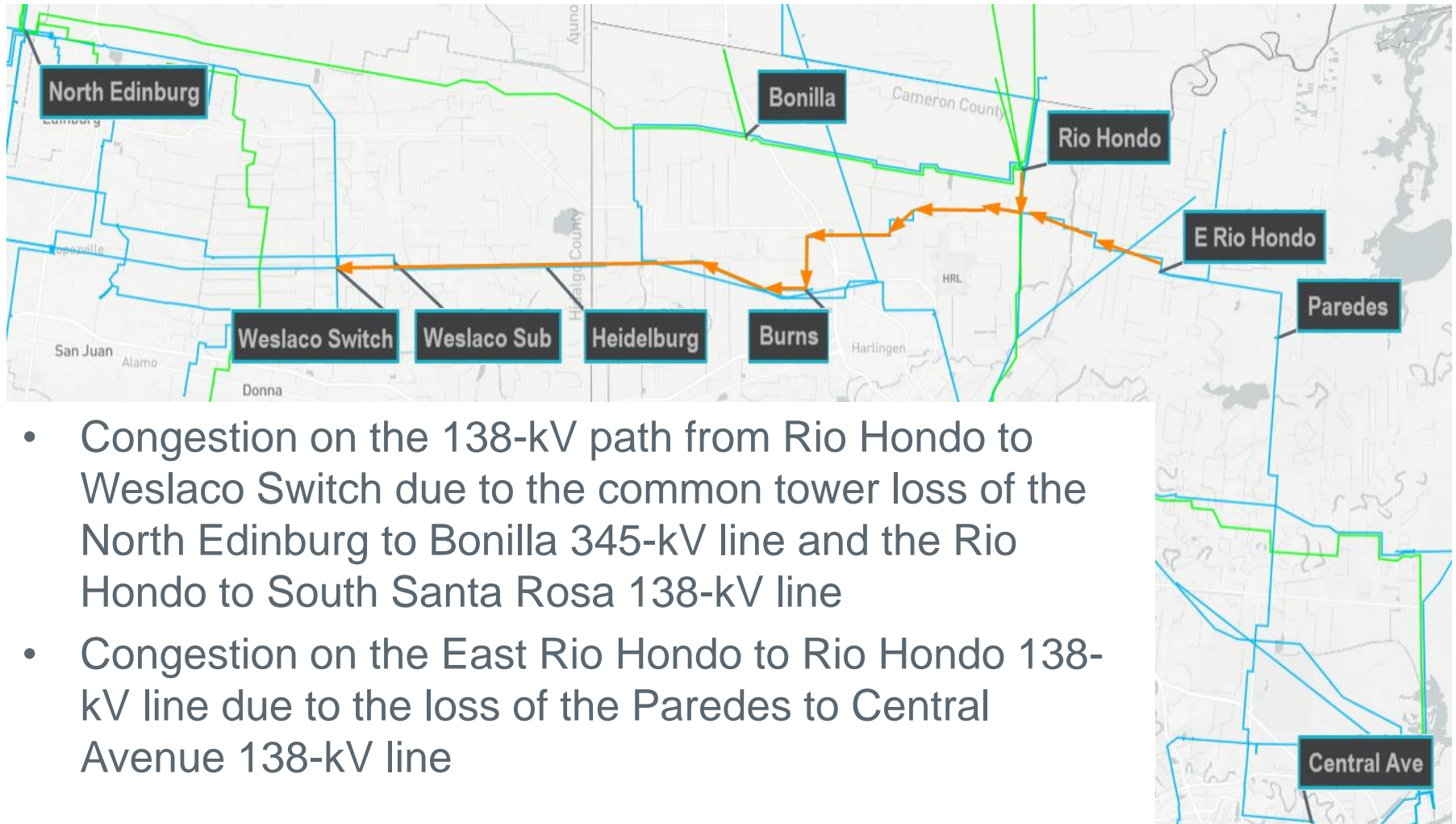
Option 2: New 345-kV double-circuit from Brown – Bell County East (straight-line distance ~120 miles)

- Congestion decreased on the West Texas export interface (a 1 GW increase in the transfer limit was assumed)
- Congestion on the Killeen to Salado 345-kV double circuit was resolved
- Congestion on paths into Houston increased

Option	Preliminary Production Cost Savings (\$M)	Approximate Breakeven Cost (\$M)
2	31	235
1 + 2*	65	492

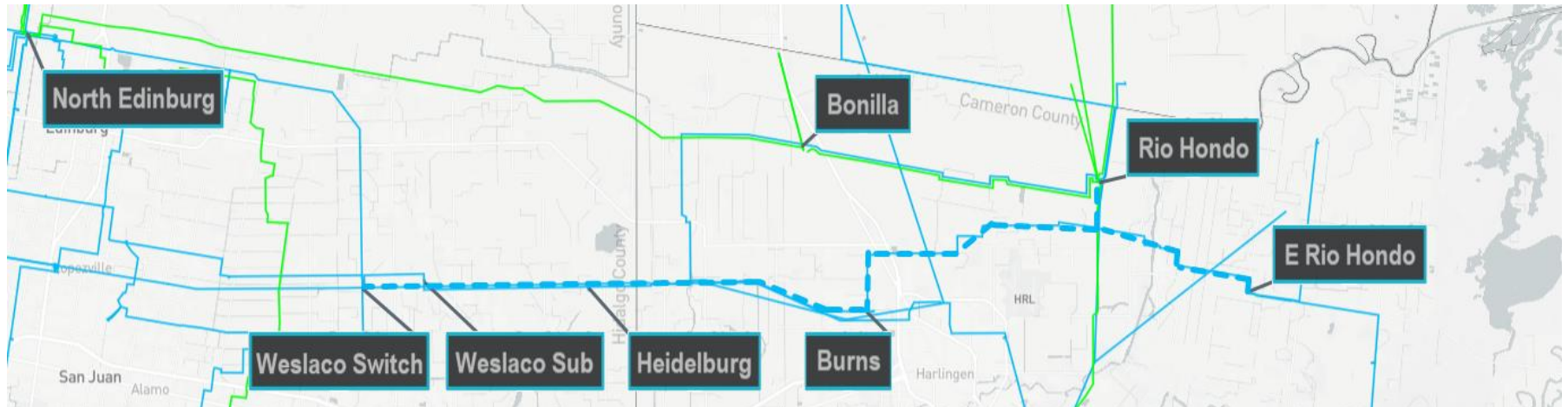
*2 GW increase in West Texas export transfer limit assumed

Lower Rio Grande Valley



- Congestion on the 138-kV path from Rio Hondo to Weslaco Switch due to the common tower loss of the North Edinburg to Bonilla 345-kV line and the Rio Hondo to South Santa Rosa 138-kV line
- Congestion on the East Rio Hondo to Rio Hondo 138-kV line due to the loss of the Paredes to Central Avenue 138-kV line

Lower Rio Grande Valley



Option 1: upgrade the 138-kV lines from Rio Hondo to Burns to Heidelberg to Weslaco Sub to Weslaco Switch (~31 miles)

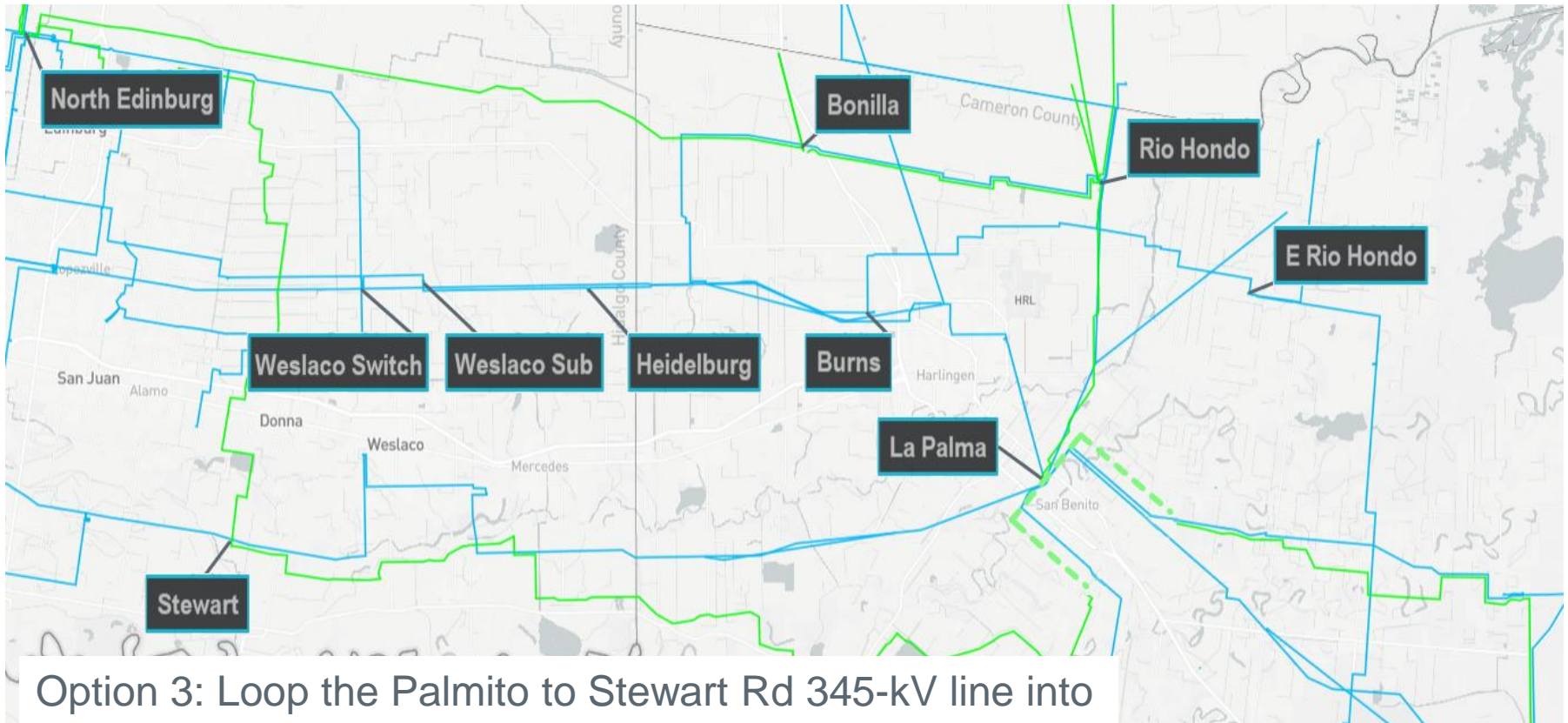
- Does not resolve East Rio Hondo to Rio Hondo congestion

Option 2: upgrade the 138-kV line from East Rio Hondo to Rio Hondo (~8 miles)

- Congestion on the 138-kV path from Rio Hondo to Weslaco Switch increased

Option	Preliminary Production Cost Savings (\$M)	Approximate Breakeven Cost (\$M)
1	5.1	39
2	0.8	6
1 + 2	6.2	47

Lower Rio Grande Valley

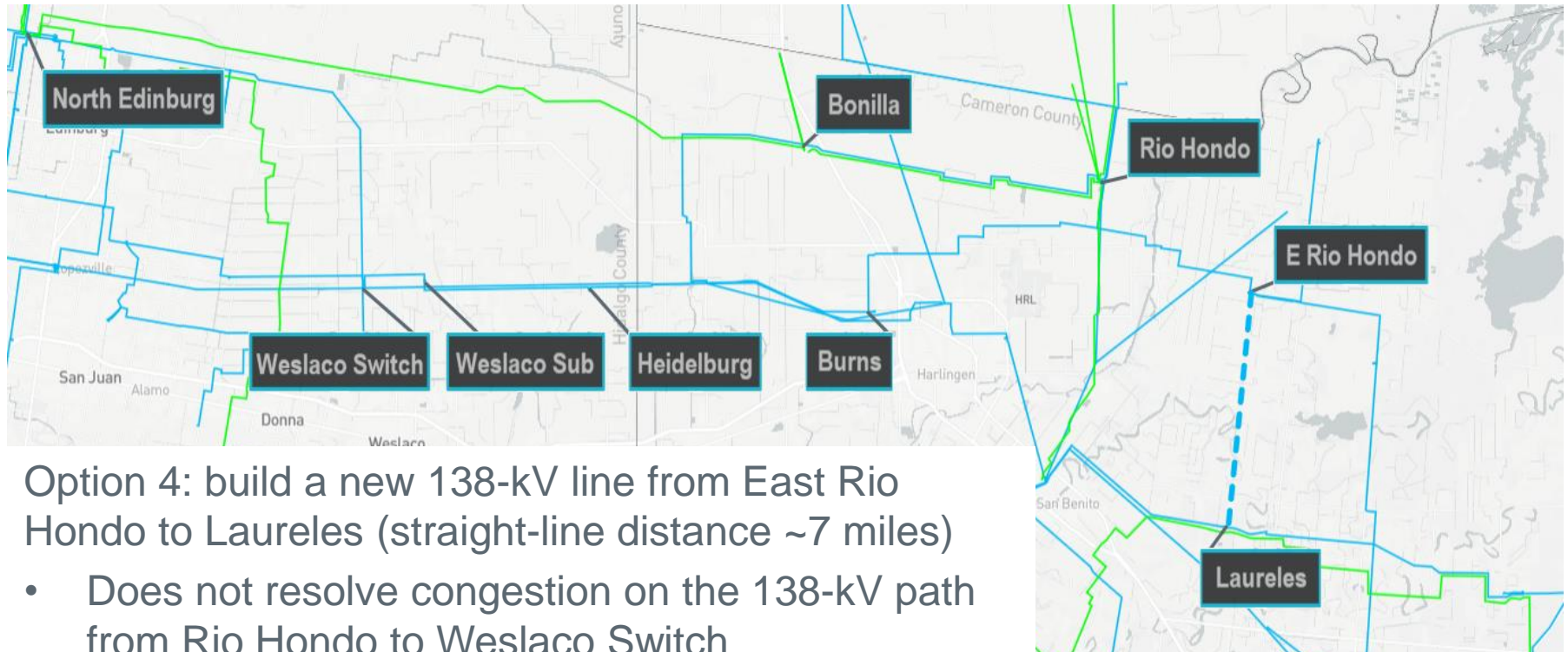


Option 3: Loop the Palmito to Stewart Rd 345-kV line into La Palma

- Does not resolve East Rio Hondo to Rio Hondo congestion

Preliminary Production Cost Savings (\$M)	Approximate Breakeven Cost (\$M)
3.9	30

Lower Rio Grande Valley



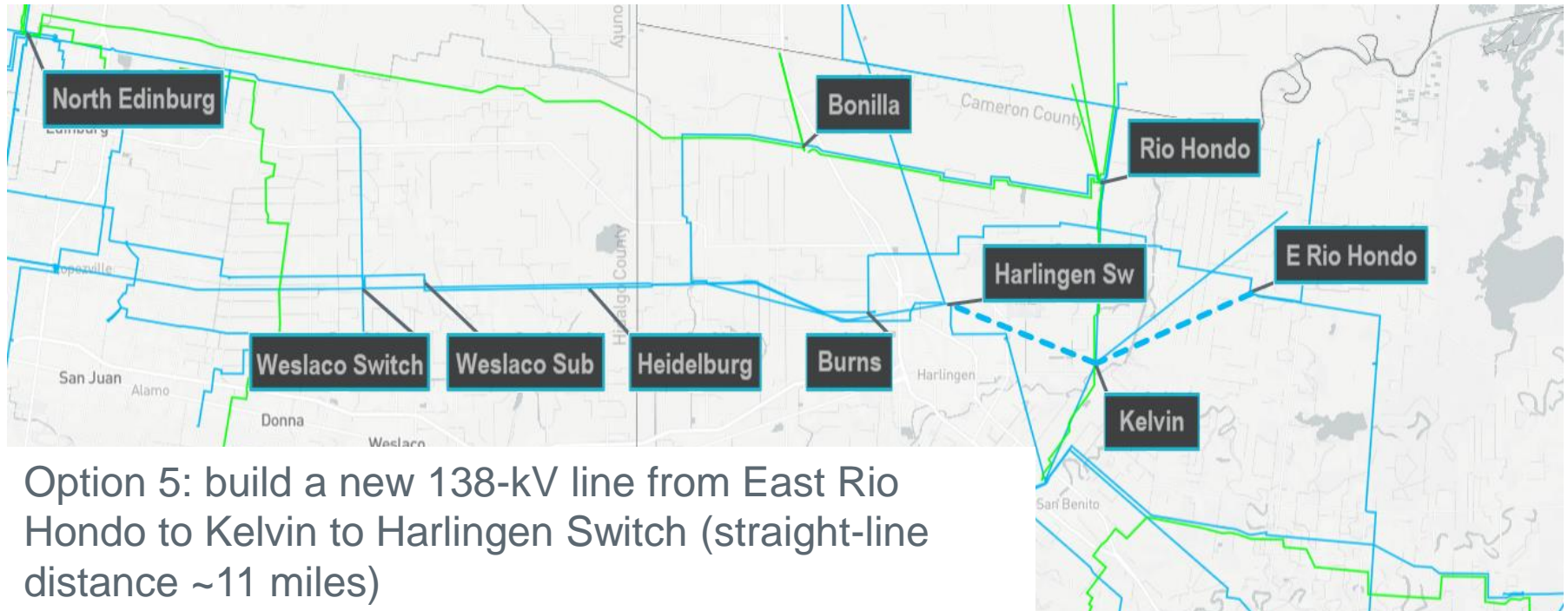
Option 4: build a new 138-kV line from East Rio Hondo to Laureles (straight-line distance ~7 miles)

- Does not resolve congestion on the 138-kV path from Rio Hondo to Weslaco Switch

Preliminary Production Cost Savings (\$M)	Approximate Breakeven Cost (\$M)
2.6*	20

*Levelized for 2022 and 2025 study years.

Lower Rio Grande Valley



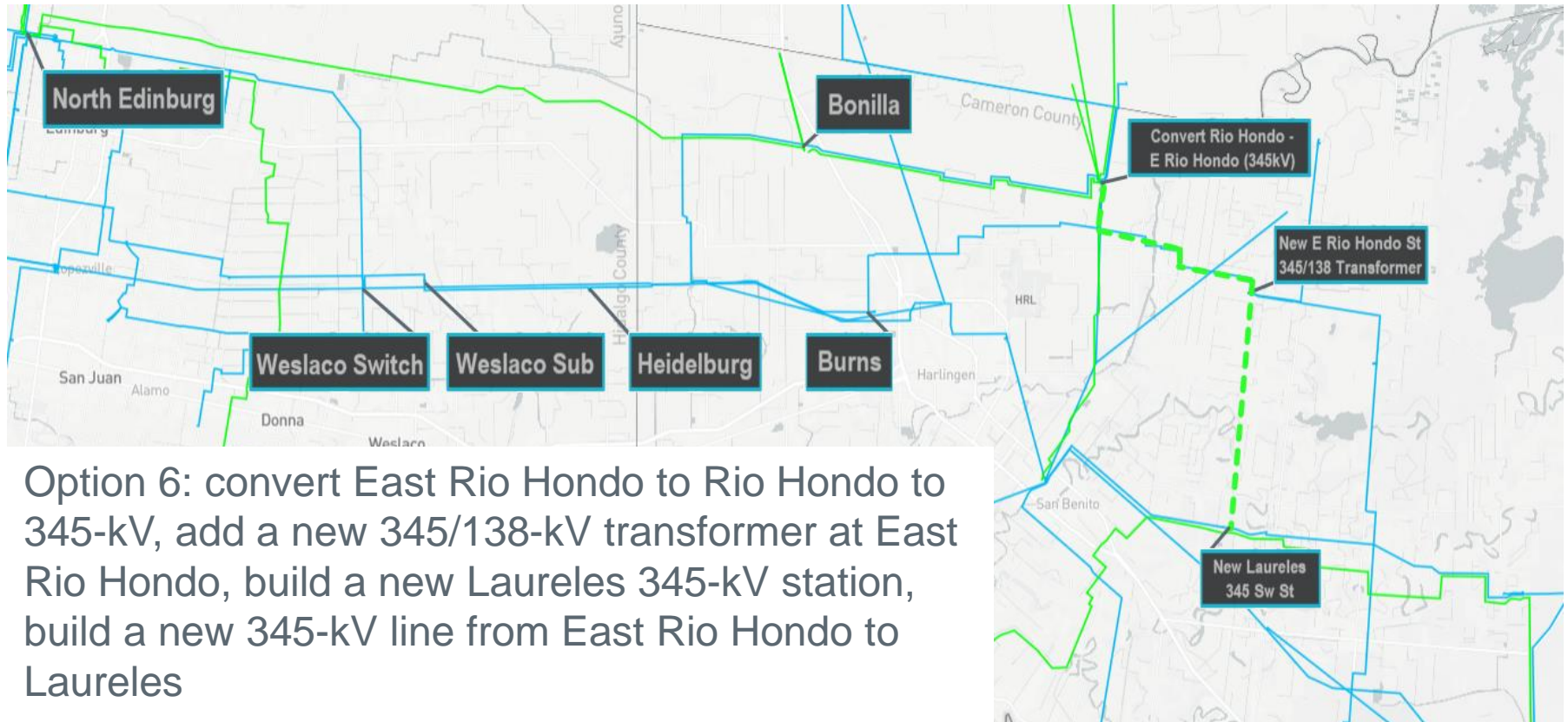
Option 5: build a new 138-kV line from East Rio Hondo to Kelvin to Harlingen Switch (straight-line distance ~11 miles)

- Does not resolve congestion on the 138-kV path from Rio Hondo to Weslaco Switch

Preliminary Production Cost Savings (\$M)	Approximate Breakeven Cost (\$M)
3.1*	23

*Levelized for 2022 and 2025 study years.

Lower Rio Grande Valley

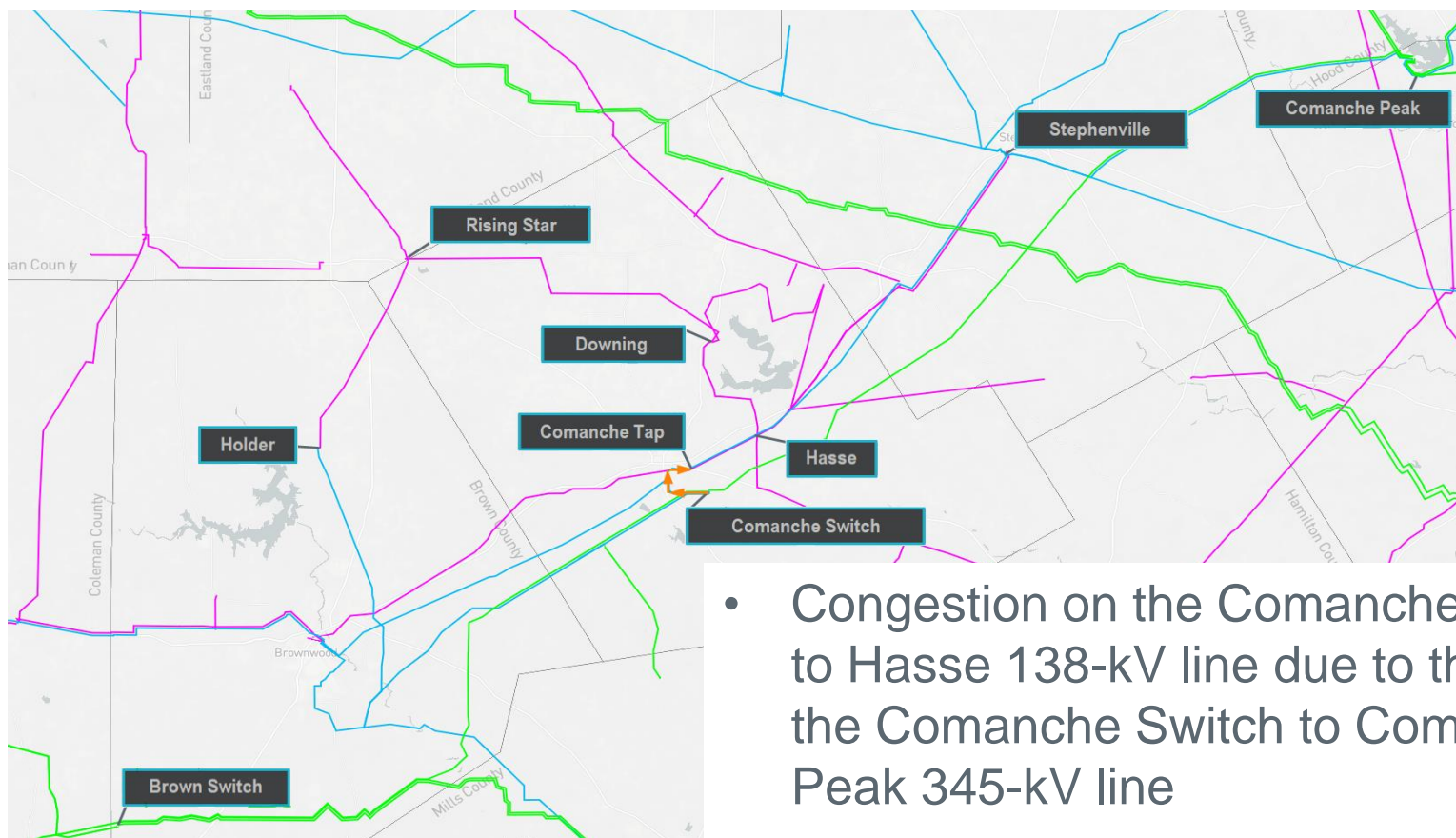


Option 6: convert East Rio Hondo to Rio Hondo to 345-kV, add a new 345/138-kV transformer at East Rio Hondo, build a new Laureles 345-kV station, build a new 345-kV line from East Rio Hondo to Laureles

- Resolves congestion on both the 138-kV path from Rio Hondo to Weslaco Switch and East Rio Hondo to Rio Hondo

Preliminary Production Cost Savings (\$M)	Approximate Breakeven Cost (\$M)
6.8	52

Comanche Switch Area



- Congestion on the Comanche Switch to Hasse 138-kV line due to the loss of the Comanche Switch to Comanche Peak 345-kV line
- Line upgrade being tested (~10 miles)

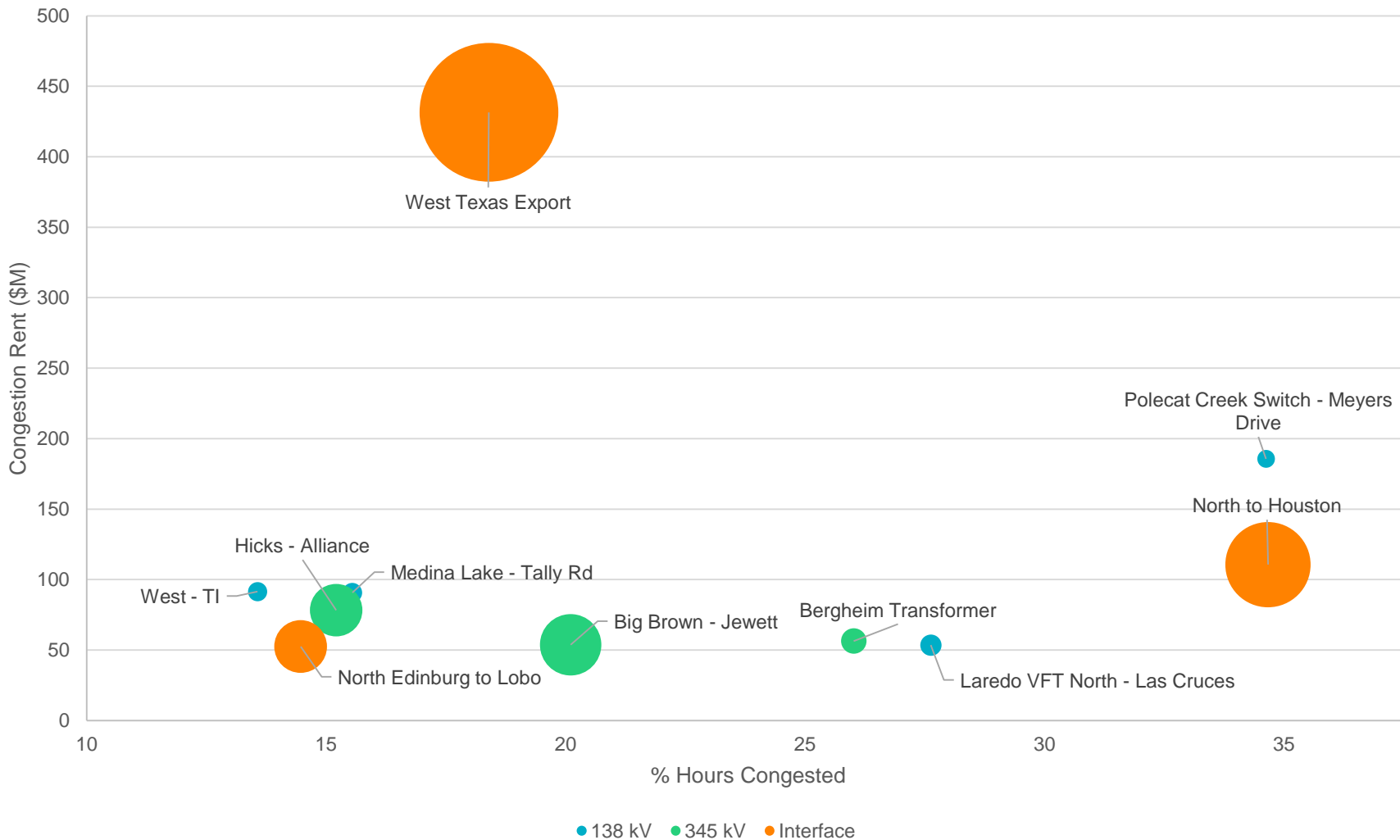
Preliminary Production Cost Savings (\$M)	Approximate Breakeven Cost (\$M)
3.6	27

Questions / Comments

- Please send questions and/or comments to John.Bernecker@ercot.com

Appendix

2020 RTP: Top Constraints (2022 + 2025)



2020 RTP: Top Constraints (2022 + 2025)

