



**Lower Rio Grande Valley Project -
Status Updates of ERCOT
Independent Review**

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November 12, 2019 – RPG Meeting

Outline

- ❖ Background
- ❖ Results of Reliability Analysis with 405 MW LNG
- ❖ Results of Sensitivity Analysis with Additional 840 MW LNG (total 1245 MW)
- ❖ Next Steps

Background

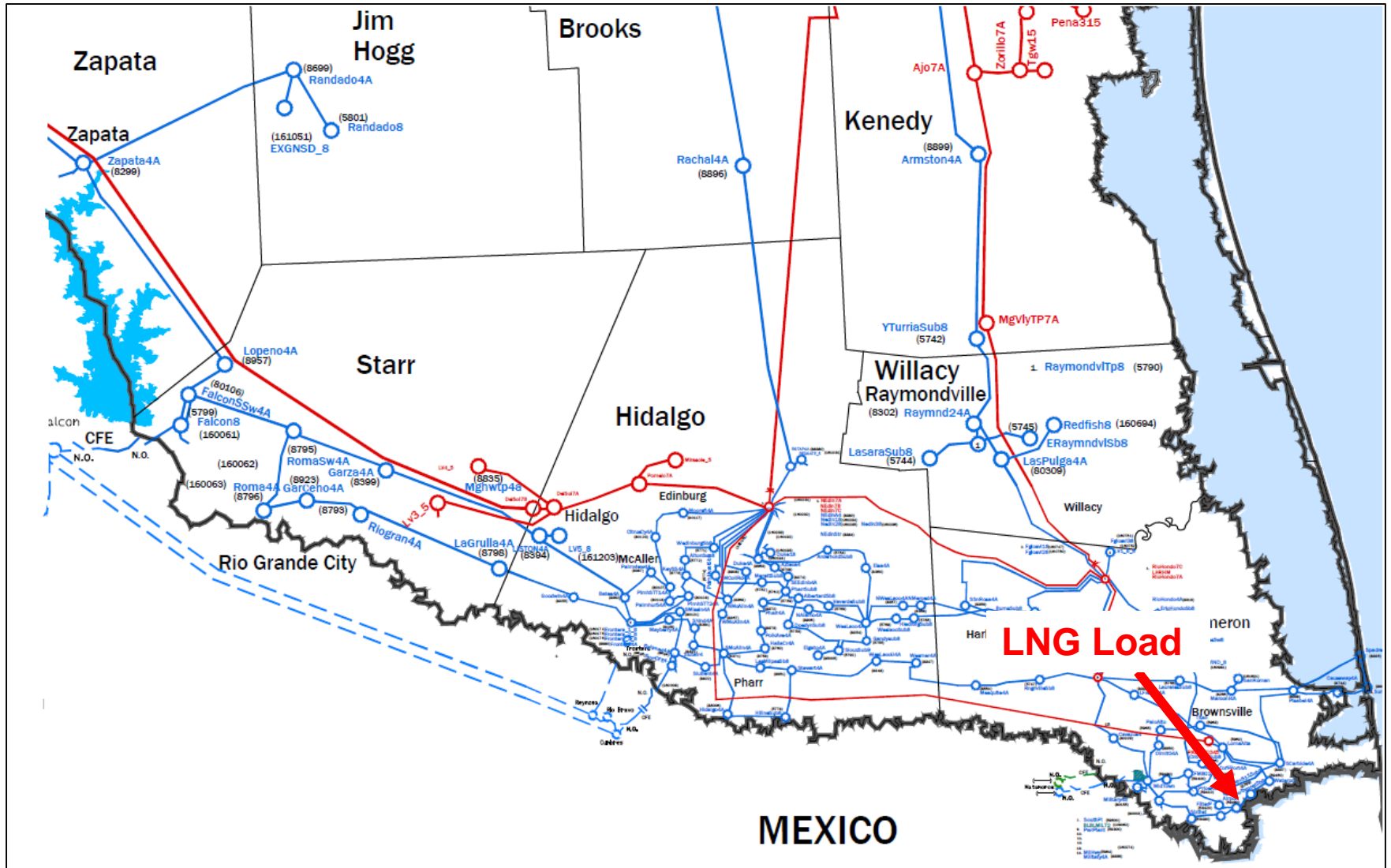
- ❖ AEPSC submitted Lower Rio Grande Valley (LRGV) Import Project in January 2018 to address the Native Valley load growth beyond 2021 and the addition of potential LNG loads in Valley.
 - During ERCOT's independent review of this project, both new planned generation in the study area and revised load model were included in the study.

- ❖ STEC submitted LRGV Transmission Expansion Proposal Project in May 2019 to integrate the expected LNG load of 405 MW and the addition of potential two LNG loads of 840 MW in Valley.
 - ERCOT combined the independent reviews for AEP and STEC Valley Import RPG projects to identify the need of serving Valley load growth and potential LNG load.

Background

- ❖ Currently, there is no confirmed LNG load in the Valley area. In accordance with Protocol Section 3.11.4.9(3), ERCOT will not issue the independent review recommending a project to meet needs identified for the LNG load until a customer meets the agreement, notice to proceed and financial security requirements.
- ❖ ERCOT confirmed that the existing Valley transmission system can serve the Native Valley load through 2026.
- ❖ ERCOT identified a reliability need for a new import path into Valley and additional transmission upgrades inside Valley to support the addition of 405 MW LNG load.
- ❖ ERCOT conducted a sensitivity analysis for an additional 840 MW LNG load.

Location of Potential LNG Load in Valley



Study Methodology

Determine Valley
load serving
capability

Identify upgrade
options for the
addition of 405
MW LNG load

Identify upgrade
options for the
addition of total
1245 MW LNG
load

Upgrade
Option
Considerations

- Can serve both the near term and long term Valley load growth including potential LNG addition
- Provide operational flexibility
- Mitigate the existing challenges in the region, e.g. stability and SSR

Existing Valley Load Serving Capability

- ❖ Without LNG, no load-serving reliability issues were observed at the projected 2026 Valley load.

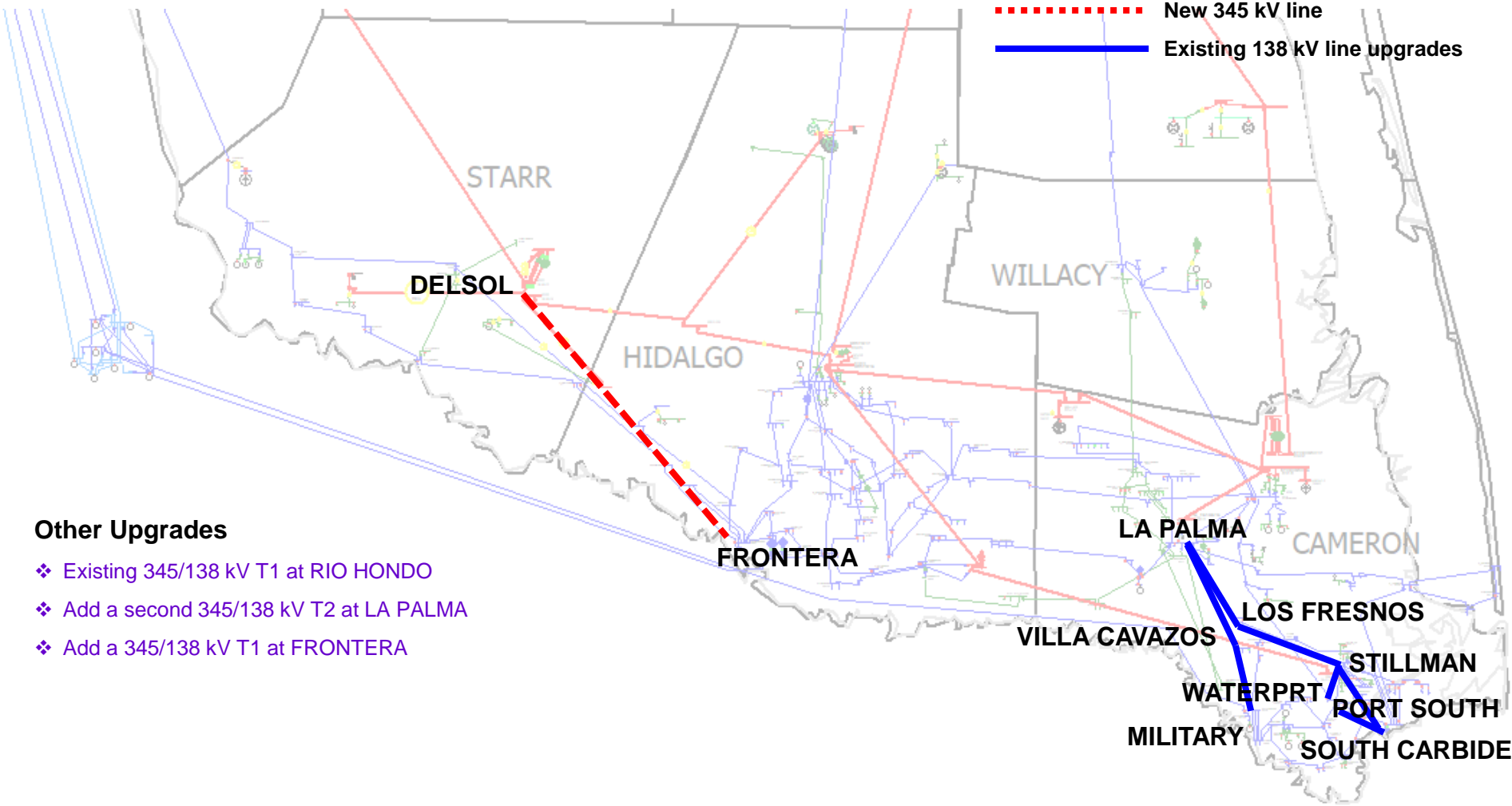
- ❖ With 405 MW LNG, reliability issues are observed from both dynamic and steady-state perspectives at the projected 2024 Valley load (3005 MW). Upgrades to integrate this LNG load will include:
 - improvement of Valley Import capability
 - upgrades inside Valley to serve this LNG load
 - As presented at the Sep 2019 RPG meeting, ERCOT assumed the DELSOL – FRONTERA 345 kV line as placeholder for potential addition of LNG.

Upgrade Need for the Potential 405 MW LNG

- ❖ At the September 2019 RPG, ERCOT presented two initial Valley Import options and five Valley upgrade options to integrate the potential 405 MW LNG load.
- ❖ ERCOT has observed no significant impact of the initial Valley Import options on the five inside Valley upgrade options since both Valley Import options connect to the same station in the Valley.
- ❖ Table below summarizes N-1-1 results.

N-1-1 Results (Assumed Spring and Fall Peak Load Conditions)					
Reliability Criteria	Opt. 1	Opt. 2	Opt. 3	Opt. 4	Opt. 5
Thermal Overloads	41.65 mi	42.55 mi	17.92 mi	14.66 mi	NO
Voltage Violations	NO	NO	NO	NO	NO
Unsolved Cases	NO	NO	NO	NO	NO

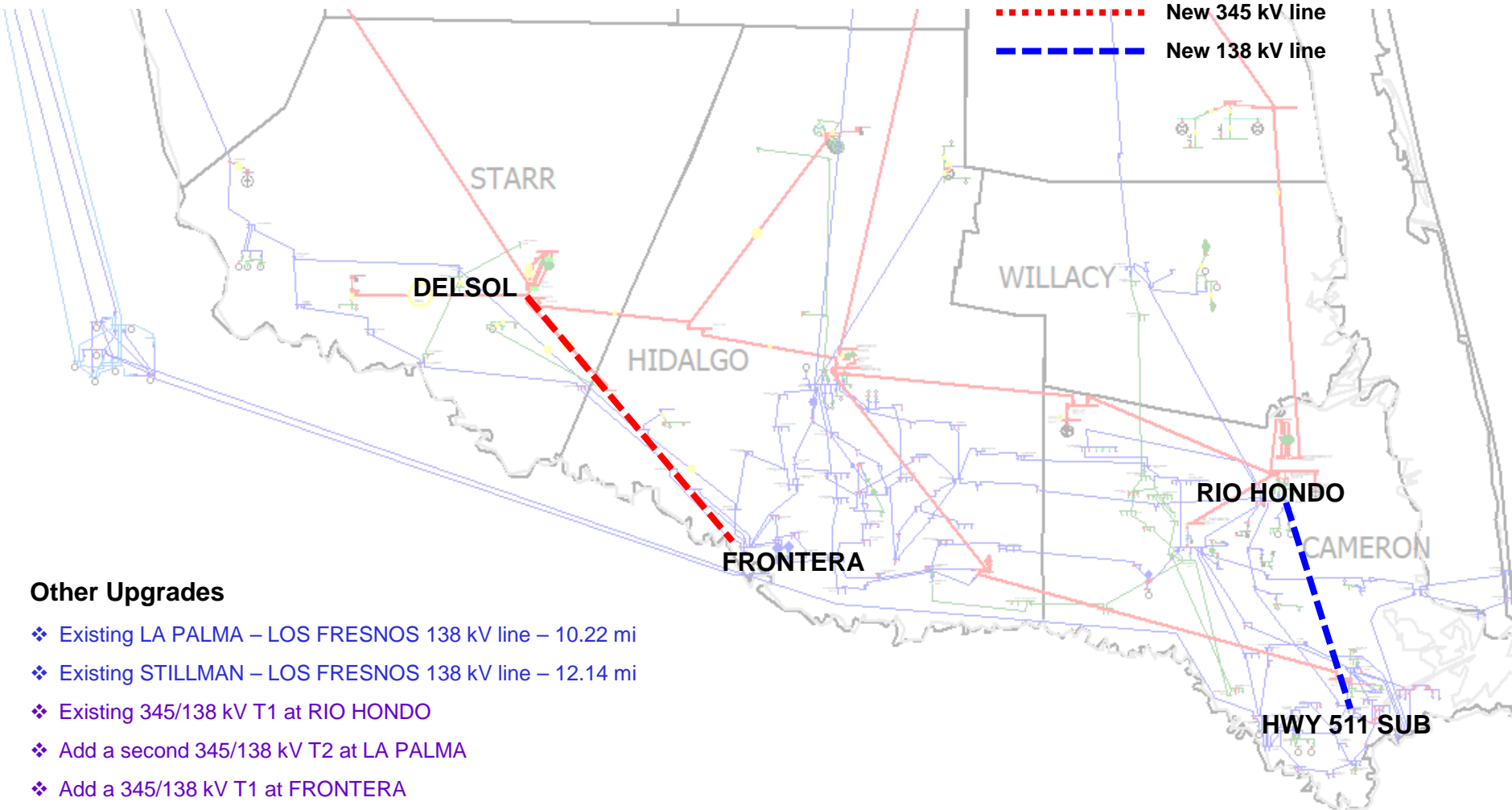
Valley Upgrade Option 1 for 405 MW



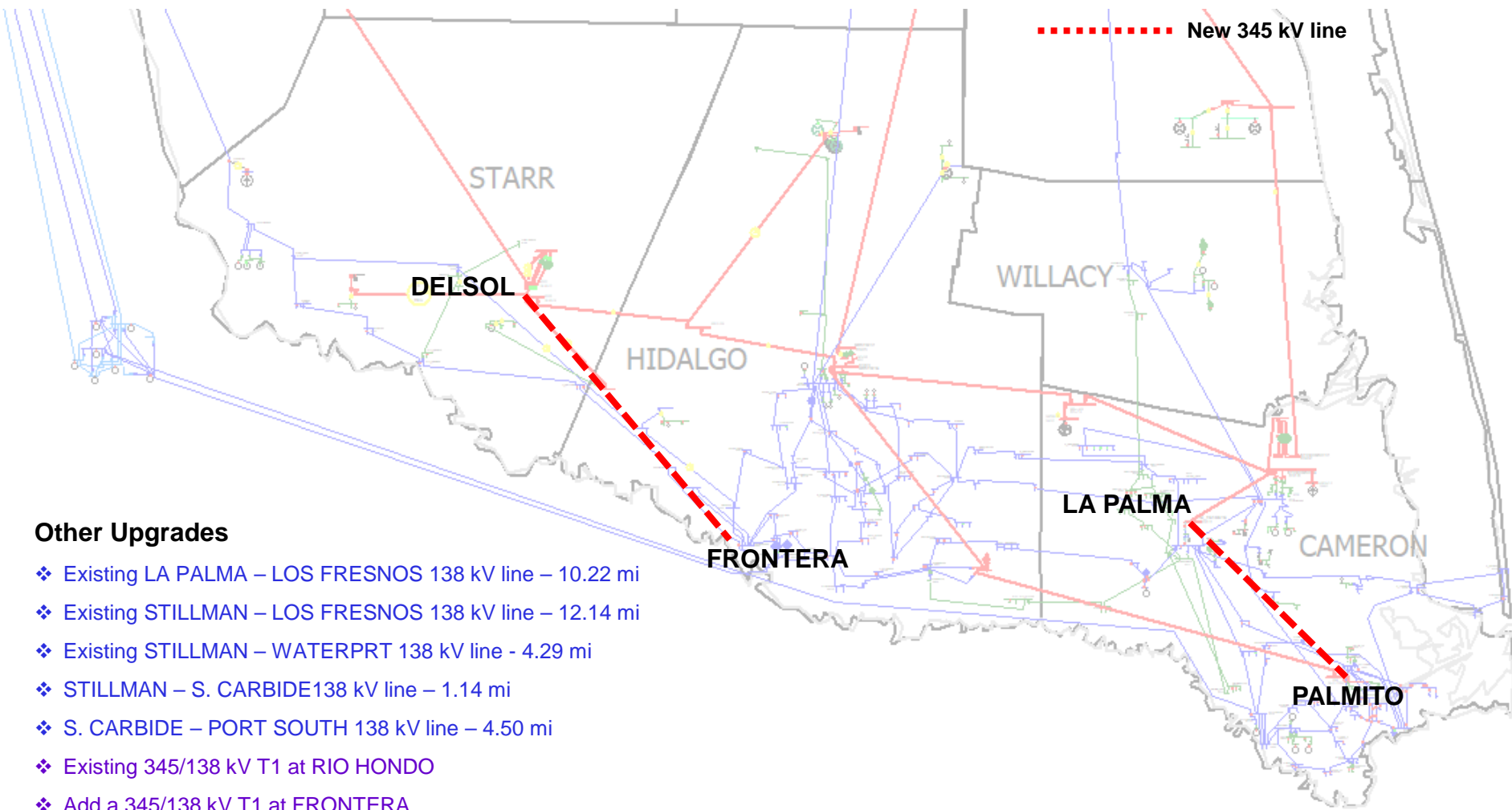
Other Upgrades

- ❖ Existing 345/138 kV T1 at RIO HONDO
- ❖ Add a second 345/138 kV T2 at LA PALMA
- ❖ Add a 345/138 kV T1 at FRONTERA

Valley Upgrade Option 2 for 405 MW



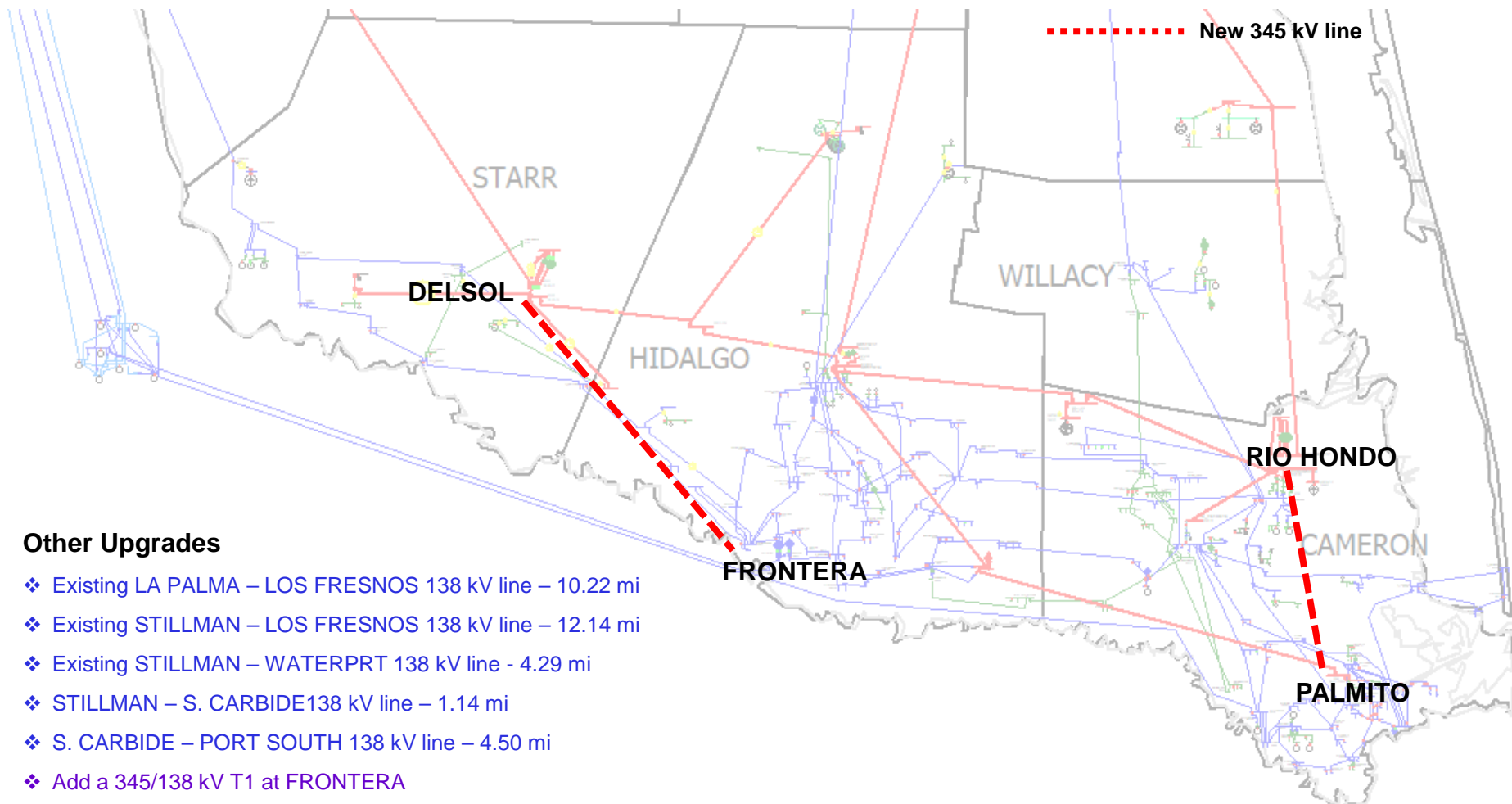
Valley Upgrade Option 3 for 405 MW



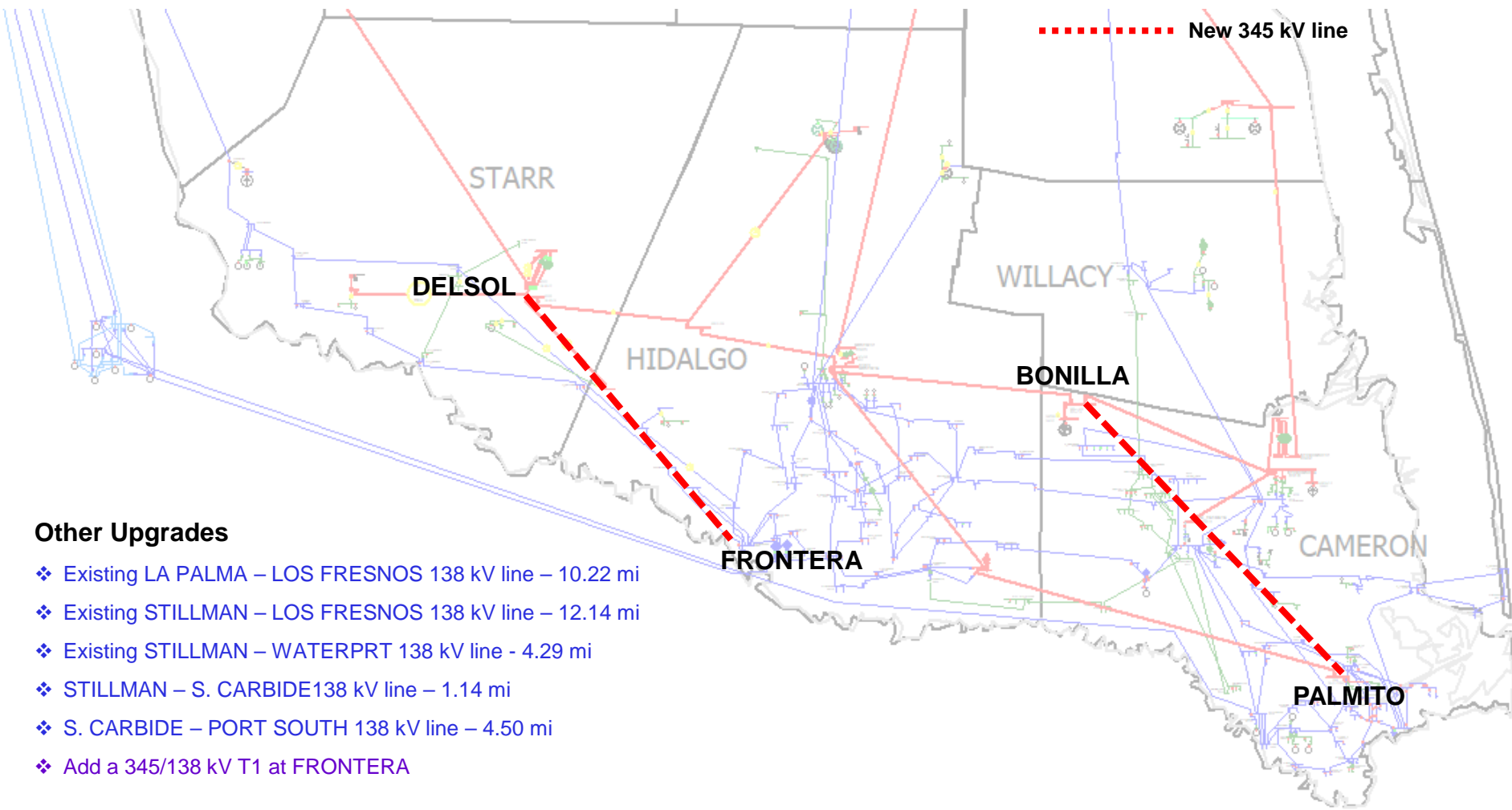
Other Upgrades

- ❖ Existing LA PALMA – LOS FRESNOS 138 kV line – 10.22 mi
- ❖ Existing STILLMAN – LOS FRESNOS 138 kV line – 12.14 mi
- ❖ Existing STILLMAN – WATERPRT 138 kV line - 4.29 mi
- ❖ STILLMAN – S. CARBIDE 138 kV line – 1.14 mi
- ❖ S. CARBIDE – PORT SOUTH 138 kV line – 4.50 mi
- ❖ Existing 345/138 kV T1 at RIO HONDO
- ❖ Add a 345/138 kV T1 at FRONTERA

Valley Upgrade Option 4 for 405 MW



Valley Upgrade Option 5 for 405 MW



Other Upgrades

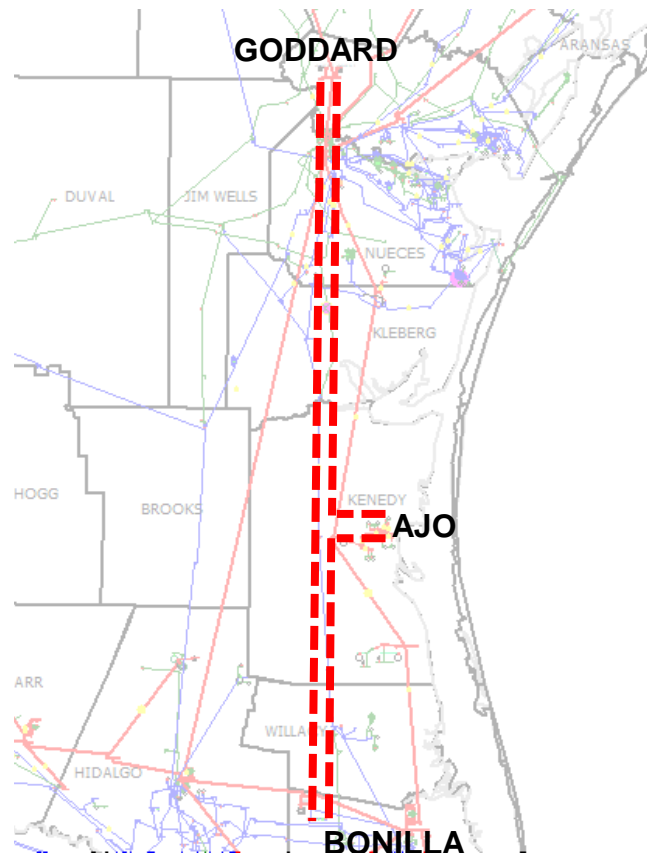
- ❖ Existing LA PALMA – LOS FRESNOS 138 kV line – 10.22 mi
- ❖ Existing STILLMAN – LOS FRESNOS 138 kV line – 12.14 mi
- ❖ Existing STILLMAN – WATERPRT 138 kV line - 4.29 mi
- ❖ STILLMAN – S. CARBIDE 138 kV line – 1.14 mi
- ❖ S. CARBIDE – PORT SOUTH 138 kV line – 4.50 mi
- ❖ Add a 345/138 kV T1 at FRONTERA

Sensitivity Analysis with Additional 840 MW LNG (total 1245 MW)

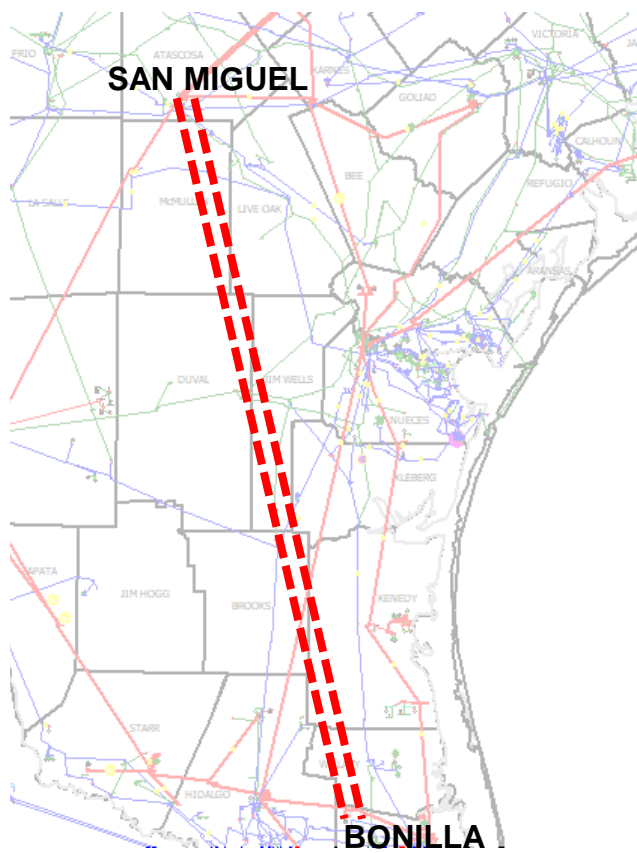
- ❖ ERCOT conducted sensitivity analysis for additional 840 MW LNG to identify the upgrade needs.
- ❖ The sensitivity analysis considered both Valley import needs and needs inside the Valley.
- ❖ The following new transmission lines were added as placeholder interconnection facilities for 840 MW LNG load.
 - STILLMAN – POMPANO 138 kV Single Circuit (9 miles)
 - SCARBIDE – POMPANO 138 kV Single Circuit (8 miles)
 - POMPANO – TEXALNG 138 kV Double Circuit (2.2 miles)
- ❖ ERCOT identified three import options and two inside Valley upgrade options to accommodate 1245 MW LNG load.

Three Valley Import Options for the potential 1245 MW LNG

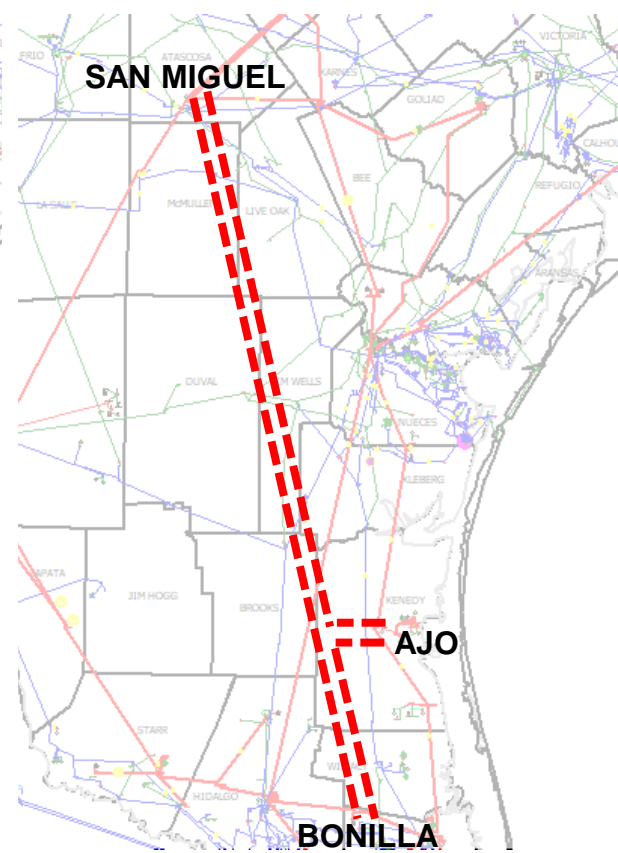
Import Option 1
(Goddard-Ajo-Bonilla)



Import Option 2
(San Miguel-Bonilla)

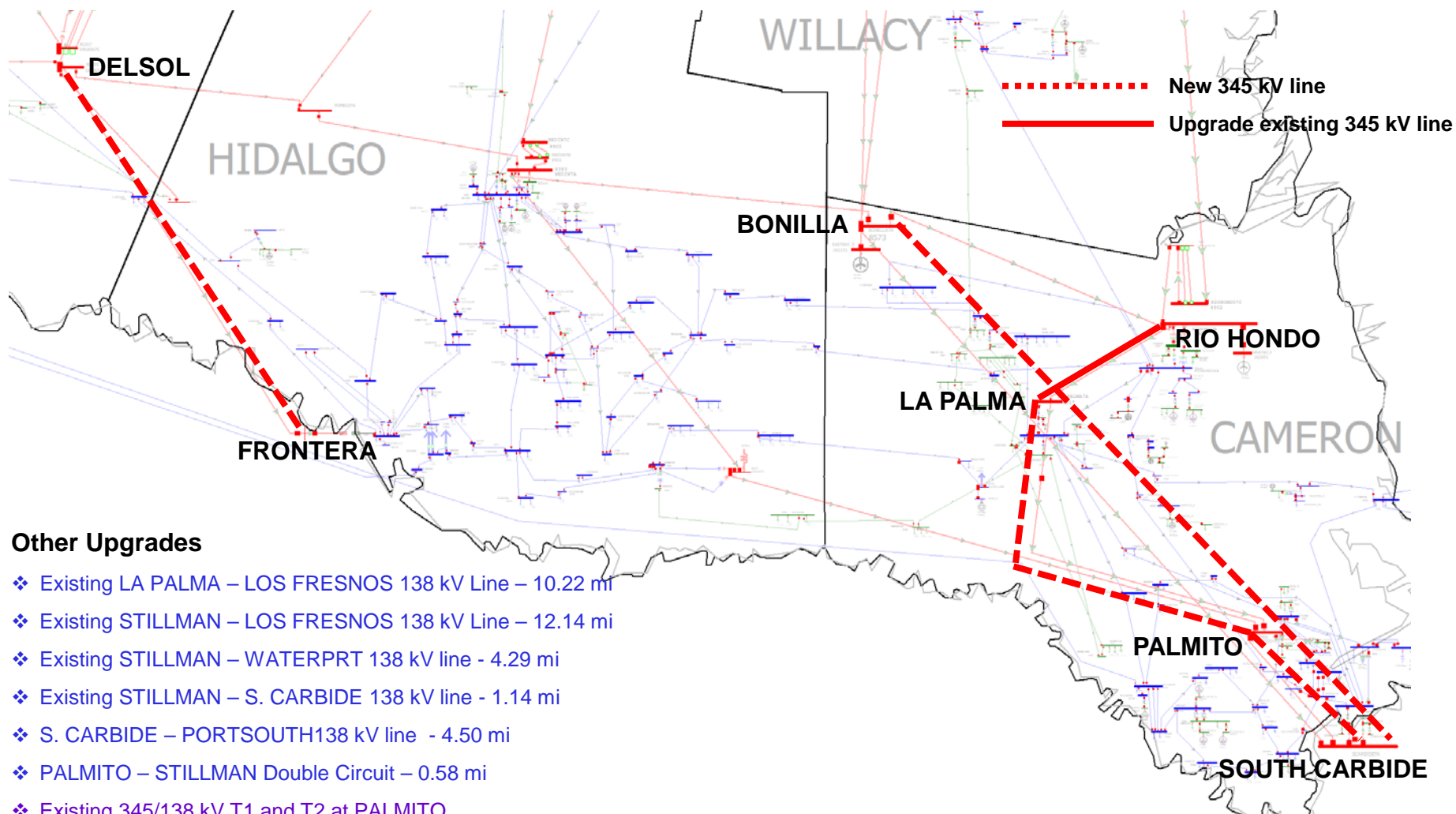


Import Option 3
(San Miguel-Ajo-Bonilla)



..... New 345 kV line

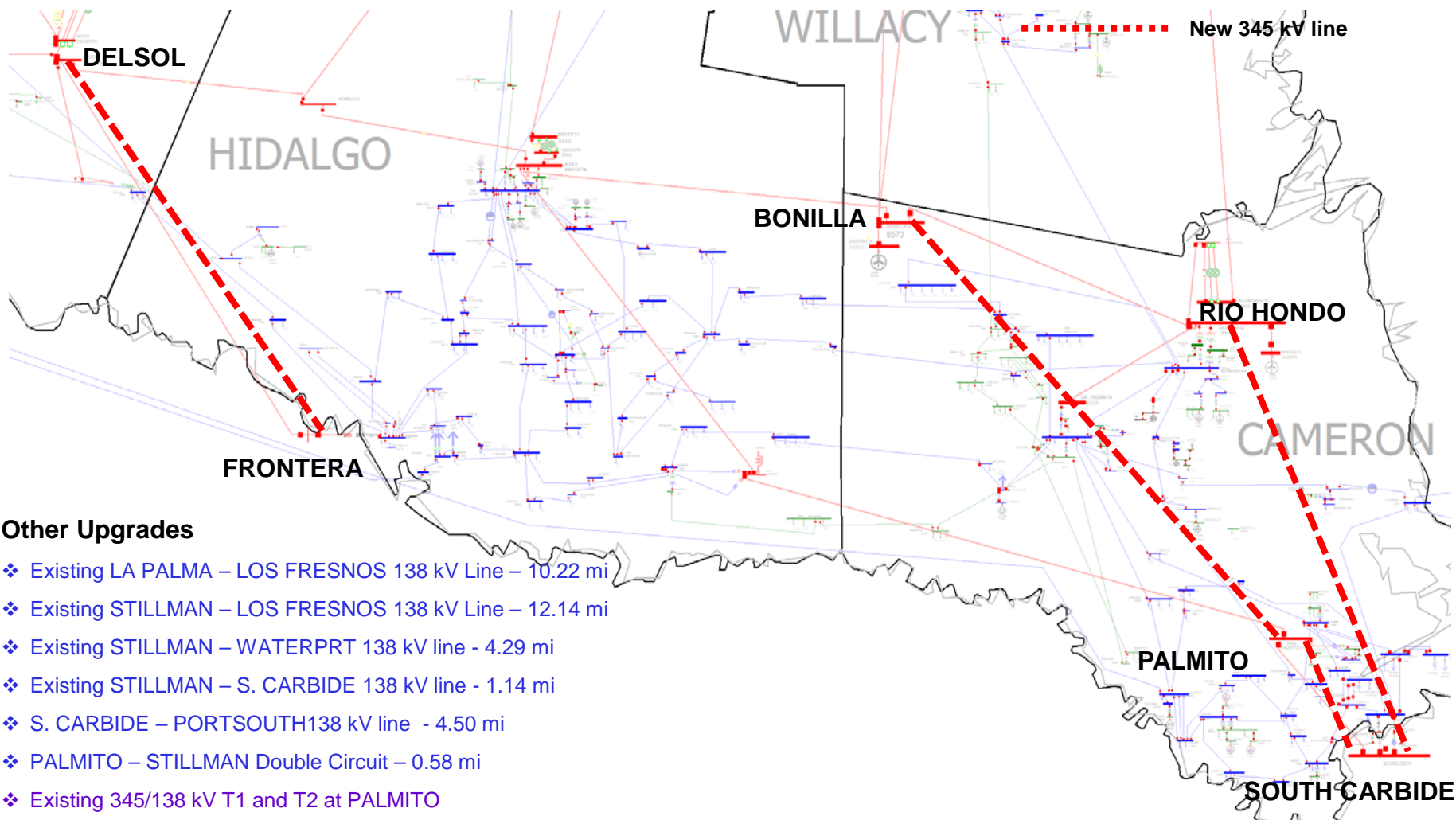
Valley Upgrade Option A for 1245 MW



Other Upgrades

- ❖ Existing LA PALMA – LOS FRESNOS 138 kV Line – 10.22 mi
- ❖ Existing STILLMAN – LOS FRESNOS 138 kV Line – 12.14 mi
- ❖ Existing STILLMAN – WATERPRT 138 kV line - 4.29 mi
- ❖ Existing STILLMAN – S. CARBIDE 138 kV line - 1.14 mi
- ❖ S. CARBIDE – PORTSOUTH 138 kV line - 4.50 mi
- ❖ PALMITO – STILLMAN Double Circuit – 0.58 mi
- ❖ Existing 345/138 kV T1 and T2 at PALMITO
- ❖ Add 345/138 kV T1 and T2 at S. CARBIDE
- ❖ Add a 345/138 kV T1 at FRONTERA

Valley Upgrade Option B for 1245 MW



Other Upgrades

- ❖ Existing LA PALMA – LOS FRESNOS 138 kV Line – 10.22 mi
- ❖ Existing STILLMAN – LOS FRESNOS 138 kV Line – 12.14 mi
- ❖ Existing STILLMAN – WATERPRT 138 kV line - 4.29 mi
- ❖ Existing STILLMAN – S. CARBIDE 138 kV line - 1.14 mi
- ❖ S. CARBIDE – PORTSOUTH 138 kV line - 4.50 mi
- ❖ PALMITO – STILLMAN Double Circuit – 0.58 mi
- ❖ Existing 345/138 kV T1 and T2 at PALMITO
- ❖ Add 345/138 kV T1 and T2 at S. CARBIDE
- ❖ Add a 345/138 kV T1 at FRONTERA

Results for 1245 MW LNG – Inside Valley

- ❖ The inside Valley Upgrade Option 5 for the 405 MW LNG is a subset of Options A and B for the 1245 MW LNG.
- ❖ Option B provides better operational flexibility for planned maintenance outage conditions as shown in the table below.

Results of N-1-1 Analysis (Assumed Spring and Fall Peak Load Conditions)		
Reliability Criteria	Option A	Option B
Thermal Overloads	24.65 mi	NO
Voltage Violations	NO	NO
Unsolved Cases	NO	NO

Valley Import Results for 1245 MW LNG

- ❖ Significant increase of import flow into the Valley region caused thermal overload outside Valley where the new import circuits are connected. Additional upgrades were also identified to address these thermal overloads for each import option.

Outside Valley Upgrades for 1245 MW LNG

- ❖ Following table shows the lines that are upgraded to alleviate the reliability issues outside Valley respective to each import option.

Import Options	From Bus	From (kV)	To Bus	To (kV)	Length (mi)
Import Option 1	PAWNEE SWITCHING STATION	345	GODDARD	345	46.01
	CHOKE CANYON AEP	138	SAN MIGUEL	138	25.92
	CHOKE CANYON AEP	138	SIGMOR	138	2.25
	DILLEY SWITCH AEP	138	JARDIN	138	11.46
	JARDIN	138	COTULLA SUB	138	1.32
	DUPON SWITCH INGLESIDE	138	McCAMPBELL	138	1.30
	CHAMPLIN	138	WEIL TRACT	138	1.37
	GEORGE WEST SWITCHING	138	SIGMOR	138	5.10
Total 46.01 miles of 345 kV line and 48.72 miles of 138 kV lines are upgraded					
Import Option 2	CELANESE BISHOP	138	NELSON SHARPE	138	10.11
	CELANESE BISHOP	138	KLEBERG	138	6.09
	BESSEL	138	LON HILL	138	17.90
	ALICE	69	NORTH ELLA	69	14.26
	NORTH ELLA	69	PREMONT	69	10.85
Total 34.10 miles of 138 kV line and 25.11 miles of 69 kV lines are upgraded					
Import Option 3	BESSEL	138	LON HILL	138	17.90
	ALICE	69	NORTH ELLA	69	14.26
	NORTH ELLA	69	PREMONT	69	10.85
Total 17.90 miles of 138 kV line and 25.11 miles of 69 kV lines are upgraded					

Discussion of Upgrade Options for 1245 MW LNG

- ❖ ERCOT performed dynamic stability analysis for the three import options in combination with upgrades inside the Valley. The results show that all options provide acceptable dynamic performance and provide more than 10% of stability margin based on 3,005 MW of the Valley load expected in 2024 and 1,245 MW LNG.
- ❖ Import Options 1 and 3 are expected to improve the existing NELSON SHARPE – RIO HONDO GTC.

Preliminary Summary

- ❖ The existing Valley transmission system is expected to serve the forecasted Valley load up to 2026.
- ❖ Without 405 MW LNG, ERCOT assumed a DELSOL – FRONTERA 345 kV line as placeholder to address reliability issues seen in the west side of Valley area beyond the projected 2026 Valley load.
- ❖ To integrate potential 405 MW LNG,
 - One new Valley Import line will be required
 - Additional upgrades are needed inside the Valley
- ❖ To integrate potential 1245 MW LNG, the upgrades associated with integrating 405 MW LNG are needed plus:
 - Additional upgrades outside of the Valley
 - New 345 kV lines inside the Valley

Next Steps

- ❖ ERCOT is working with TSPs for cost estimates of each transmission upgrade.
- ❖ ERCOT will identify transmission improvements to reliably serve the Valley load (without LNG) beyond 2026.
- ❖ ERCOT will finalize the analysis by December 2019.



Stakeholder Comments Also Welcomed Through:

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