



**TNMP Ward and Winkler County
Transmission Improvement Project –
ERCOT Independent Review**

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Introduction

- **Texas New Mexico Power (TNMP) submitted Ward and Winkler County Transmission Improvement Project for Regional Planning Group review in March 2019. This is a Tier 2 project that is estimated to cost \$63.3 million.**
- **ERCOT presented the scope at the May 2019 RPG meeting**
http://www.ercot.com/content/wcm/key_documents_lists/165286/TNMP_Ward_Winkler_Study_Scope_05_14_2019.pdf
- **ERCOT provided a status update at the July 2019 RPG meeting**
http://www.ercot.com/content/wcm/key_documents_lists/165294/TNMP_Ward_Winkler_Study_Update_07_16_2019_RPG.pdf
- **At this RPG meeting, ERCOT will present the Independent Review results**

Load Assumptions

- As presented in the July 2019 RPG, TNMP updated its confirmed load in the study area. Based on the update, ERCOT adjusted the TNMP load in the study base cases.

Year	Updated Confirmed TNMP FW Load (MW)
2021	615
2024	891

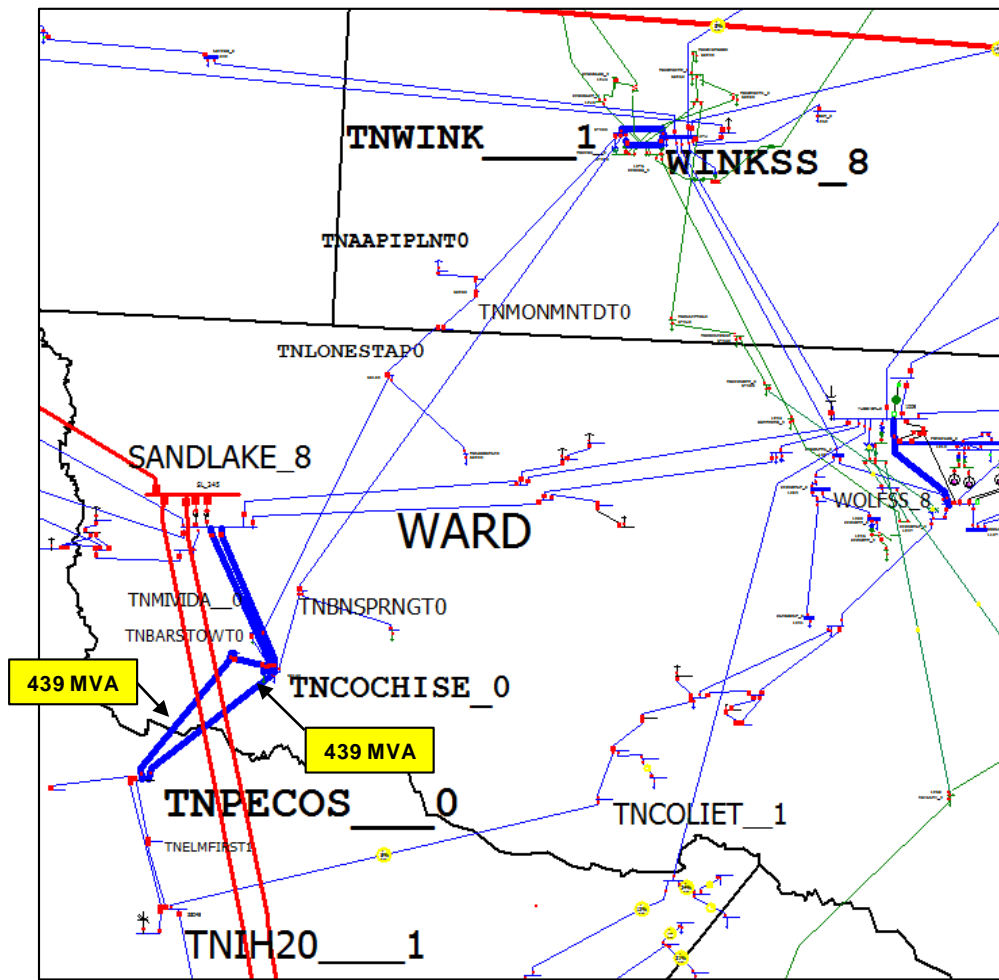
Status Update

- Analyses performed on base cases: N-1, G-1 N-1, X-1 N-1, N-1-1 (using critical P6 contingencies provided by TNMP)
- Thermal overloads and voltage violations were identified under N-1 conditions
 - ~5 miles of 69-kV lines experienced thermal overloads
 - 12 buses with low voltage issues
- G-1 N-1 and X-1 N-1 did not result in additional violations.
- Significant overloads, low voltages and potential local voltage collapse issues were observed under N-1-1

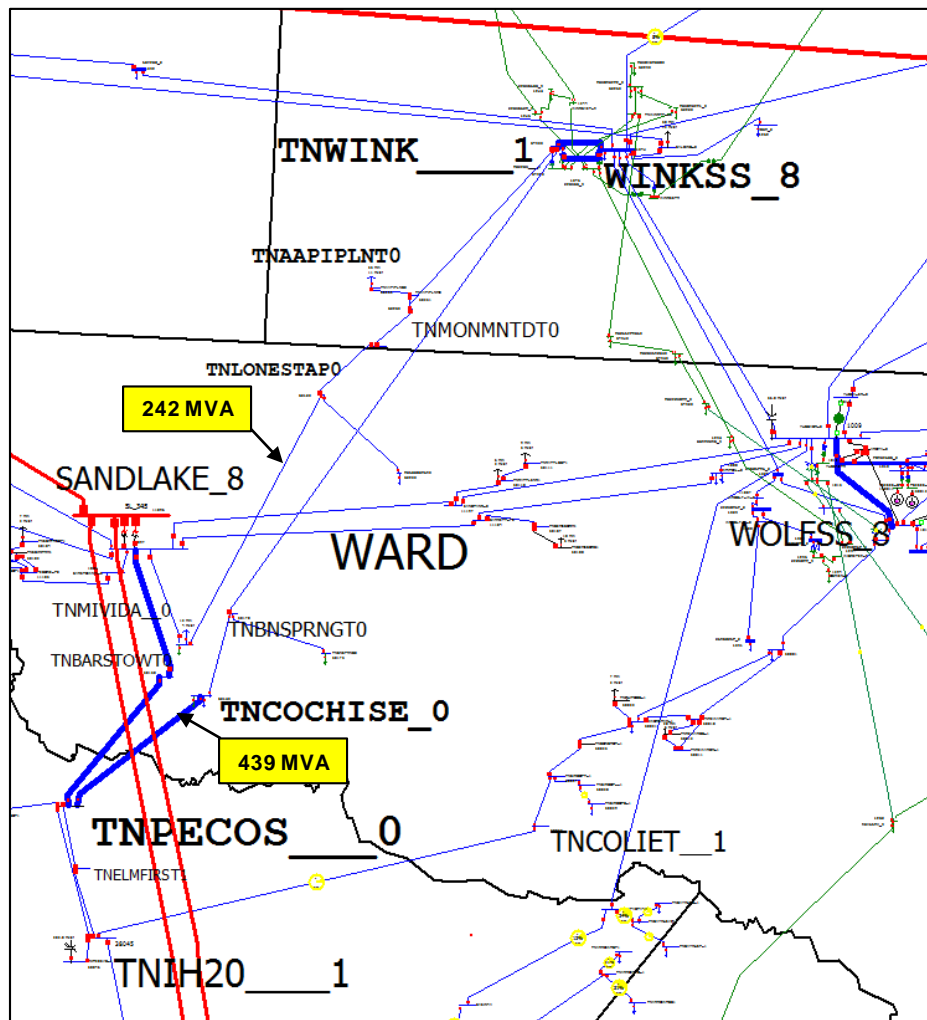
Options Evaluated

- Option 1 (TNMP Preferred Solution)
- Option 2 (TNMP Alternative 1)
- Option 3 (TNMP Alternative 2)
- Option 4 (ERCOT Option 1)
- Option 5 (ERCOT Option 2)

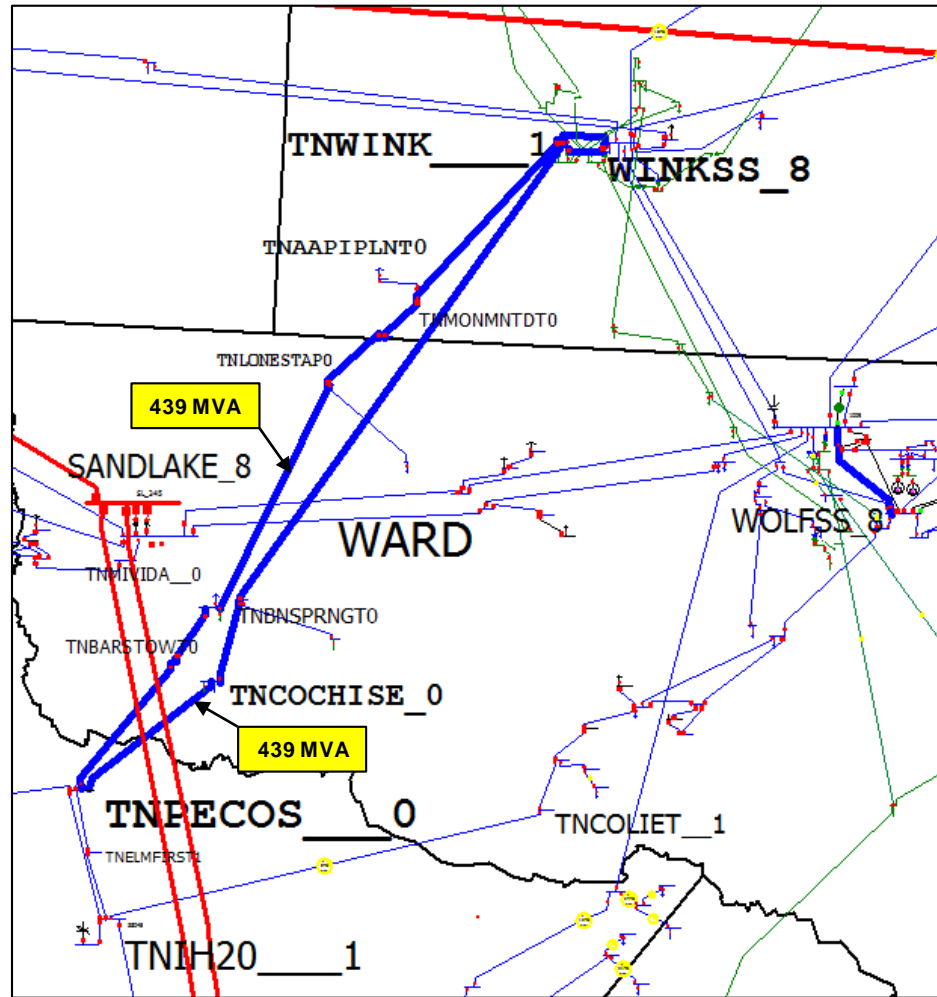
Option 1



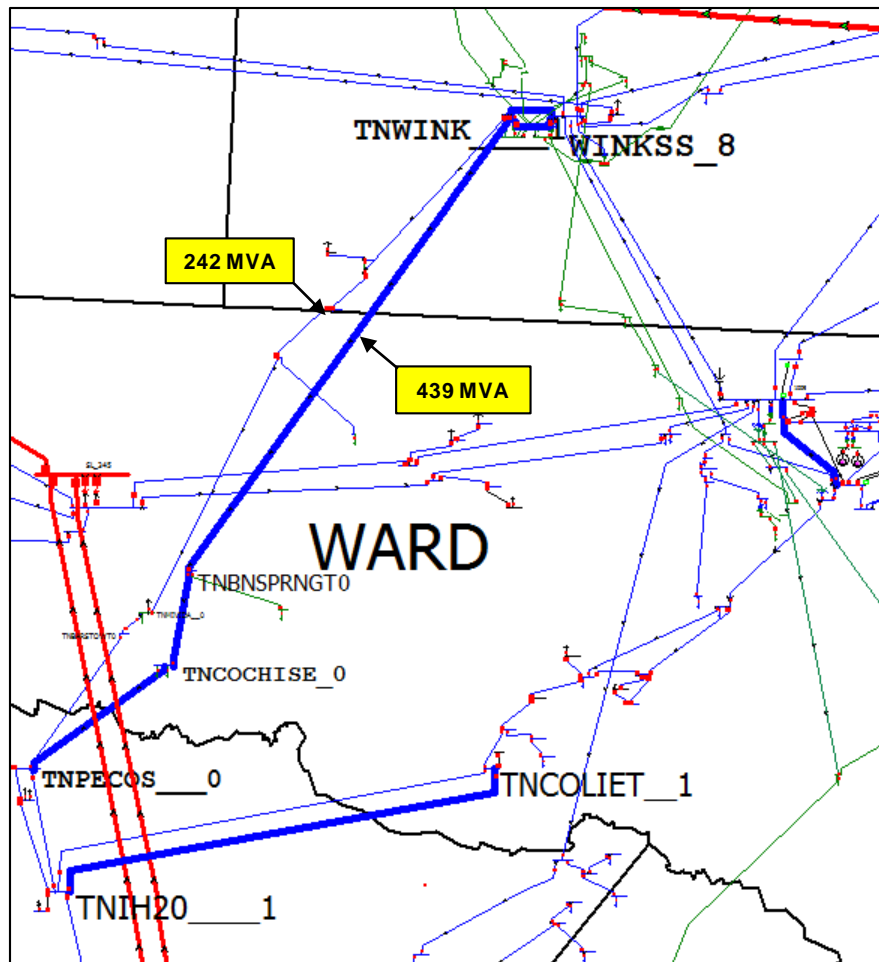
Option 2



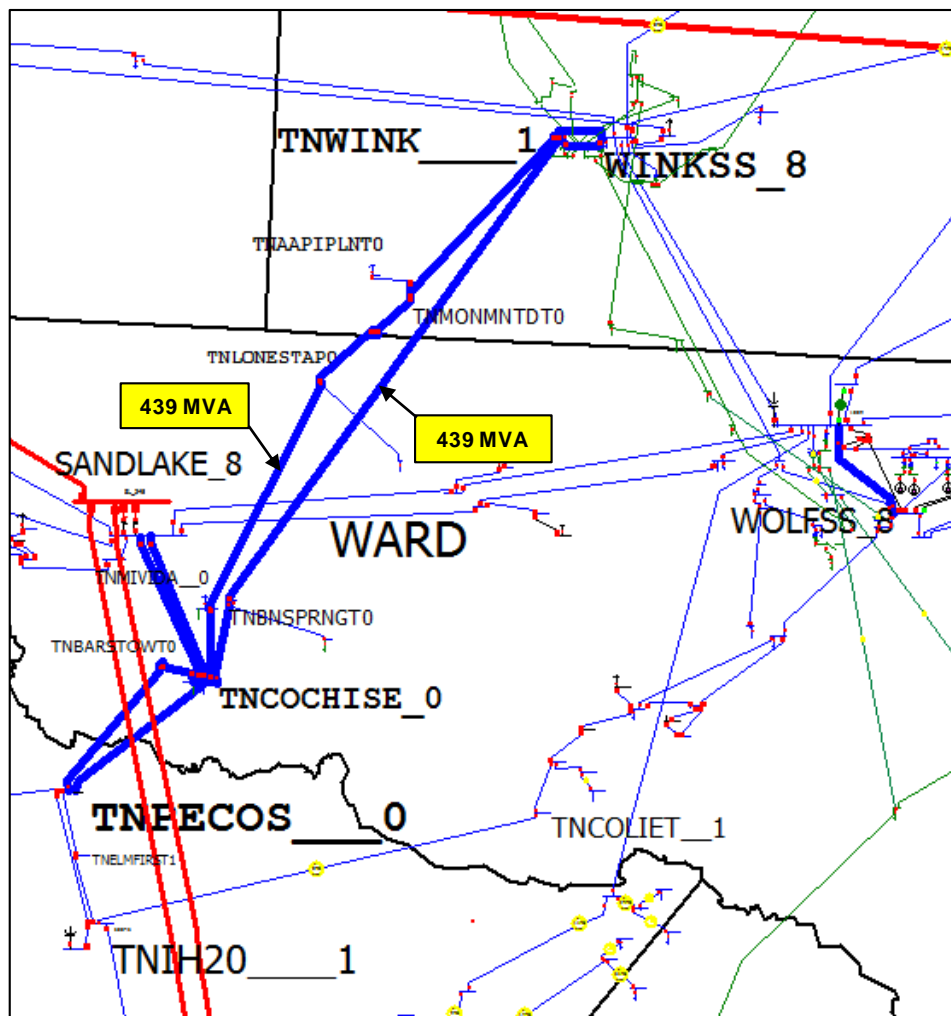
Option 3



Option 4



Option 5



Study Results

- All options address N-1 and N-1-1 thermal overloads and voltage issues under base load conditions
- The study results also showed that under certain critical P6 event(s) with high load sensitivity conditions (1,273 MW, SSWG load level for Year 2024), Option 1 and Option 5 perform better than other alternatives. They address all thermal issues although there are a few low voltage issues under P6.
- For the same high load sensitivity conditions, Option 2, Option 3, and Option 4 still have thermal overloads, low voltages and/or case unsolved.

Option Comparison

- Based on system performance and cost of each option evaluated, ERCOT recommends Option 1 (TNMP's Preferred Solution) as the preferred option

Load Level	Option 1	Option 2	Option 3	Option 4	Option 5
891 MW (Base Case)	Good	Good	Good	Good	Good
1094 MW (Base Case with Potential Load)	Good	Good	Good	Good	Good
1273 MW (SSWG Case Load Level)	P1/P6 (Voltage)	P1/P6 (Voltage)	P0 (Unsolved)	P1/P6 (Thermal, Voltage, Unsolved)	P1/P6 (Voltage)
Cost (M\$)	63.3	63.4	70.3	70.2	79.3

Congestion Analysis

- ERCOT performed congestion analysis on the recommended Option 1 using the 2019 RTP UPLAN economic model for 2024 to identify potential impact on system congestion related to upgrades
- No additional congestion was identified due to the addition of the recommended transmission upgrades

ERCOT Recommendation

- Based on the findings of the ERCOT Independent Review, ERCOT recommends Option 1 as the preferred option and is described as follows:
 - Rebuild/convert TNMP's existing Pecos Main 69-kV substation into 138-kV switching station
 - Construct a Wink 138-kV bus
 - Construct a new Cochise 138-kV switching station nearby to TNMP's existing Cochise substation
 - Convert the Wink – All American – Monument Draw – Lone Star – Mi Vida – Barstow Tap – Pecos Main 69-kV line to 138-kV
 - Bisect the Barstow Tap – Mi Vida 138-kV line section and extend the two lines to terminations at the new Cochise 138-kV bus
 - Reconductor the Pecos Main – Barstow Tap – Cochise 138-kV line such that the rating is at least 439 MVA
 - Convert the Wink – Bone Springs – Cochise – Pecos Main 69-kV line to 138-kV
 - Bisect the Cochise – Bone Springs 138-kV line section and extend the two lines to terminations at the new Cochise 138-kV bus
 - Reconductor the Pecos Main – Cochise 138-kV line such that the rating is at least 439 MVA

ERCOT Recommendation

- Construct two 138-kV tie-lines between TNMP's Cochise 138-kV bus and Oncor's Sand Lake 138-kV bus
 - Rebuild the TNMP Wink – Oncor Wink 138-kV line such that the rating is at least 439 MVA
 - Convert the TNMP Wink – Oncor Wink 69-kV line to 138-kV line and reconductor the line such that the rating is at least 439 MVA
 - Convert and rebuild Yucca – Wickett 69-kV line such that the rating is at least 439 MVA. Move the termination on the Yucca end of the line to Wolf by extending the line approximately 1.3 miles. New right of way (ROW) will be required for this component of the project
- Estimated Capital Cost: \$63.3M
 - Certificate of Convenience and Necessity (CCN) Application is required due to a new right of way (~1.3 miles)

Deliverables

- **Timeline**

- EIR Report to be posted in the MIS – September, 2019

Appendix – Option 1 Description

- Rebuild/convert TNMP's existing Pecos Main 69-kV substation into 138-kV switching station
- Construct a Wink 138-kV bus
- Construct a new Cochise 138-kV switching station nearby to TNMP's existing Cochise substation
- Convert the Wink – All American – Monument Draw – Lone Star – Mi Vida – Barstow Tap – Pecos Main 69-kV line to 138-kV
- Bisect the Barstow Tap – Mi Vida 138-kV line section and extend the two lines to terminations at the new Cochise 138-kV bus
- Reconductor the Pecos Main – Barstow Tap – Cochise 138-kV line such that the rating is at least 439 MVA
- Convert the Wink – Bone Springs – Cochise – Pecos Main 69-kV line to 138-kV
- Bisect the Cochise – Bone Springs 138-kV line section and extend the two lines to terminations at the new Cochise 138-kV bus
- Reconductor the Pecos Main – Cochise 138-kV line such that the rating is at least 439 MVA
- Construct two 138-kV tie-lines between TNMP's Cochise 138-kV bus and Oncor's Sand Lake 138-kV bus
- Rebuild the TNMP Wink – Oncor Wink 138-kV line such that the rating is at least 439 MVA
- Convert the TNMP Wink – Oncor Wink 69-kV line to 138-kV line and reconductor the line such that the rating is at least 439 MVA

Appendix – Option 1 Description Contd.

- Convert and rebuild the Yucca – Wickett 69-kV line such that the rating is at least 439 MVA. Move the termination on the Yucca end of the line to Wolf by extending the line approximately 1.3 miles. New right of way (ROW) will be required for this component of the project

Estimated Capital Cost: \$63.3M

Appendix – Option 2 Description

- Rebuild/convert TNMP's existing Pecos Main 69-kV substation into 138-kV switching station
- Construct a Wink 138-kV bus
- Convert the Wink – All American – Monument Draw – Lone Star – Mi Vida – Barstow Tap – Pecos Main 69-kV line to 138-kV
- Bisect the Barstow Tap – Mi Vida 138-kV line section and extend the two lines to terminations at the Oncor Sand Lake 138-kV bus
- Reconductor the Pecos Main – Barstow Tap – Sand Lake 138-kV line such that the rating is at least 439 MVA
- Convert the Wink – Bone Springs – Cochise – Pecos Main 69-kV line to 138-kV
- Reconductor the Wink – Bone Springs – Cochise 138-kV line sections such that the rating is at least 439 MVA
- Rebuild the TNMP Wink – Oncor Wink 138-kV line such that the rating is at least 439 MVA
- Convert the TNMP Wink – Oncor Wink 69-kV line to 138-kV line and reconductor the line such that the rating is at least 439 MVA
- Convert and rebuild Yucca – Wickett 69-kV line. Move the termination on the Yucca end of the line to Wolf by extending the line approximately 1.3 miles to a new point of interconnection between TNMP and Oncor at Oncor's Wolf station. A Certificate of Convenience and Necessity (CCN) Application will be required for this component of the project

Estimated Capital Cost: \$63.4 Million.

Appendix – Option 3 Description

- Rebuild/convert TNMP's existing Pecos Main 69-kV substation into 138-kV switching station
- Construct a Wink 138-kV bus
- Convert the Wink – All American – Monument Draw – Lone Star – Mi Vida – Barstow Tap – Pecos Main 69-kV line to 138-kV and reconductor the line such that the rating is at least 439 MVA
- Convert the Wink – Bone Springs – Cochise – Pecos Main 69-kV line to 138-kV and reconductor the line such that the rating is at least 439 MVA
- Rebuild the TNMP Wink – Oncor Wink 138-kV line such that the rating is at least 439 MVA
- Convert the TNMP Wink – Oncor Wink 69-kV line to 138-kV line and reconductor the line such that the rating is at least 439 MVA
- Convert and rebuild the Yucca – Wickett 69-kV line such that the rating is at least 439 MVA. Move the termination on the Yucca end of the line to Wolf by extending the line approximately 1.3 miles. New right of way (ROW) will be required for this component of the project

Estimated Capital Cost: \$70.3 Million.

Appendix – Option 4 Description

- Rebuild/convert TNMP's existing Pecos Main 69-kV substation into 138-kV switching station
- Construct a Wink 138-kV bus
- Convert the Wink – All American – Monument Draw – Lone Star – Mi Vida – Barstow Tap – Pecos Main 69-kV line to 138-kV
- Convert the Wink – Bone Springs – Cochise – Pecos Main 69-kV line to 138-kV and reconductor the line such that the rating is at least 439 MVA
- Rebuild the TNMP Wink – Oncor Wink 138-kV line such that the rating is at least 439 MVA
- Convert the TNMP Wink – Oncor Wink 69-kV line to 138-kV line and reconductor the line such that the rating is at least 439 MVA
- Convert and rebuild the Yucca – Wickett 69-kV line such that the rating is at least 439 MVA. Move the termination on the Yucca end of the line to Wolf by extending the line approximately 1.3 miles. New right of way (ROW) will be required for this component of the project
- Add a new approximately 3-mile long second circuit from IH20 Substation to Collie Field Tap. New right of way (ROW) will be required for this component of the project

Estimated Capital Cost: \$70.2 Million.

Appendix – Option 5 Description

- Rebuild/convert TNMP's existing Pecos Main 69-kV substation into 138-kV switching station
- Construct a Wink 138-kV bus
- Construct a new Cochise 138-kV switching station nearby to TNMP's existing Cochise substation
- Convert the Wink – All American – Monument Draw – Lone Star – Mi Vida – Barstow Tap – Pecos Main 69-kV line to 138-kV
- Bisect the Barstow Tap – Mi Vida 138-kV line section and extend the two lines to terminations at the new Cochise 138-kV bus
- Reconductor the Pecos Main – Barstow Tap – Cochise – Mi Vida – Lone Star – Monument Draw – All American - Wink 138-kV line such that the rating is at least 439 MVA
- Convert the Wink – Bone Springs – Cochise – Pecos Main 69-kV line to 138-kV
- Bisect the Cochise – Bone Springs 138-kV line section and extend the two lines to terminations at the new Cochise 138-kV bus
- Reconductor the Pecos Main – Cochise – Bone Springs – Wink 138-kV line such that the rating is at least 439 MVA
- Construct two 138-kV tie-lines between TNMP's Cochise 138-kV bus and Oncor's Sand Lake 138-kV bus
- Rebuild the TNMP Wink – Oncor Wink 138-kV line such that the rating is at least 439 MVA
- Convert the TNMP Wink – Oncor Wink 69-kV line to 138-kV line and reconductor the line such that the rating is at least 439 MVA

Appendix – Option 5 Description Contd.

- Convert and rebuild the Yucca – Wickett 69-kV line such that the rating is at least 439 MVA. Move the termination on the Yucca end of the line to Wolf by extending the line approximately 1.3 miles. New right of way (ROW) will be required for this component of the project

Estimated Capital Cost: \$79.3 Million.