Oncor – Temple Area Project ERCOT Independent Review Status Update – Options

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RPG Meeting
May 14, 2024

Recap – Introduction

- Oncor submitted the Temple Area Project for Regional Planning Group (RPG) review in January 2024
  - This Tier 1 project is estimated to cost $120.7 million, and filling of Certificate of Convenience and Necessity (CCN) is not required
  - Estimated in-service date is May 2026
  - This project addresses identified thermal violations, provides additional 345-kV sources, further networks transmission facilities, and enhances system reliability in the Temple area in Bell County
- Oncor presented project overview and ERCOT presented study scope for this ERCOT Independent Review (EIR) at the February RPG meeting
  - https://www.ercot.com/calendar/02122024-RPG-Meeting
- ERCOT provided status update at the March RPG meeting
  - https://www.ercot.com/calendar/03182024-RPG-Meeting-_-Webex

Recap – Preliminary Results of Reliability Assessment – Need Analysis

- ERCOT conducted steady-state load flow analysis for the study base case according to the NERC TPL-001-5.1 and ERCOT Planning Criteria to identify project need

Contingency Category	Voltage Violations	Thermal Violations	Unsolved Power Flow
N-0 (P0)	None	None	None
N-1 (P1, P2-1, P7)	None	None	None
G-1+N-1 (P3)*	None	None	None
X-1+N-1 (P6-2)**	31	5	None

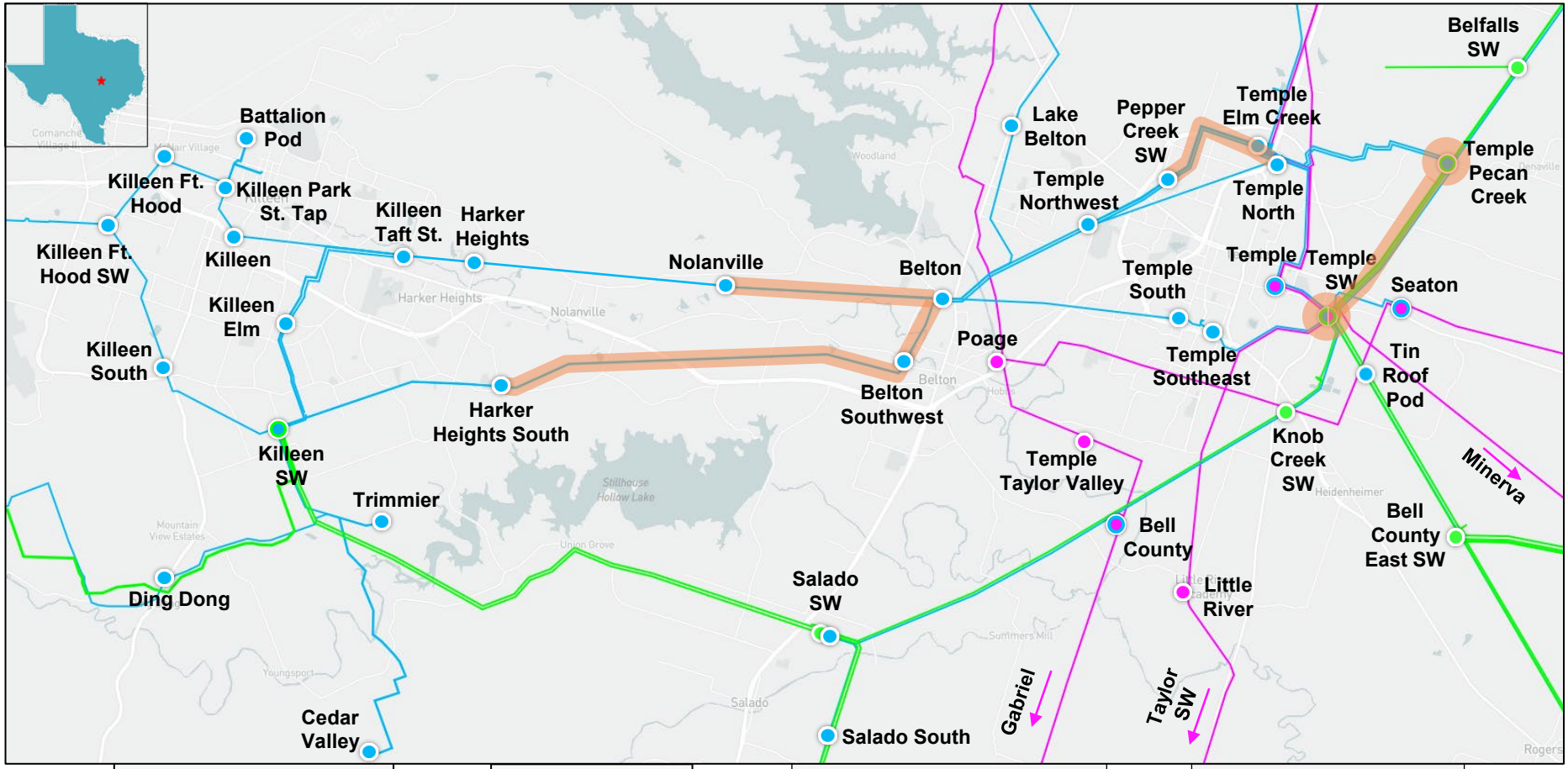
* G-1: Comanche Peak Unit and Panda CC Train
** X-1: Temple Switch, Temple Pecan Creek Switch, Killeen 345/138-kV autotransformers, Seaton and Bell County 138/69-kV transformers (sensitivity provided by TSPs)

Recap – Details of Thermal Overloads Seen in the Reliability Assessment – Need Analysis

Overloaded Element	Worst Contingency (N-1-1)	Length (miles)	Worst Overload (%)
Temple Pecan Creek SW – Temple SW 138-kV Line	Temple SW 345/138-kV Autotransformer + Temple Pecan Creek – Temple Elm Creek 138-kV DCKT	4.4	122.3
Belton - Belton Southwest 138-kV Line	Killeen SW 345/138-kV Autotransformer 2 + Killeen SW 345/138-kV Autotransformer 1	2.0	115.5
Belton Southwest – Harker Heights South 138-kV Line	Killeen SW 345/138-kV Autotransformer 2 + Killeen SW 345/138-kV Autotransformer 1	10.3	103.8
Temple Pecan Creek SW 345/138-kV Autotransformer	Temple SW 345/138-kV Autotransformer + Knob Creek SW – Salado SW 345-kV Line	0.0	103.5
Temple North 2 – Pepper Creek SW 138-kV Line	Killeen SW 345/138-kV Autotransformer 2 + Temple North 2 – Temple Elm Creek 138-kV Line	2.2	103.3
Temple SW 345/138-kV Autotransformer	Temple Pecan Creek SW 345/138-kV Autotransformer + Knob Creek SW – Salado SW 345-kV Line	5.1	102.8
Belton - Nolanville 138-kV Line	Killeen SW 345/138-kV Autotransformer 2 + Killeen SW 345/138-kV Autotransformer 1	0.0	101.8

(Map on next slide)

Recap – Study Area Map with Violations Seen by ERCOT



Project Need Seen by ERCOT
- Thermal Violation
- Aging Infrastructures
- TSP Criteria Violation

Voltage Legend
- 69-kV
- 115-kV
- 138-kV
- 345-kV

Line Legend
- Existing Line
- Proposed New Line
- Upgrade Existing Line
- Convert Existing Line
- Retire Existing Line

Substation Legend
- Existing Substation
- New/Convert Substation
- New Transformer

Status Update

- Project Evaluation
  - Alternate options identified
  - Reliability analysis all option
    - N-1
    - G-1+N-1
      - G-1: Comanche Peak Unit 1
      - G-1: Panda CC Train 1
    - X-1+N-1
      - X-1: Temple Switch, Temple Pecan Creek Switch, Killeen 345/138-kV autotransformers
      - X-1: Seaton and Bell County 138/69-kV autotransformers (sensitivity provided by TSPs)
  - Short-listed option identified
    - Long-term load serving capability assessment

Option 1 – Proposed Project by Oncor

- Install a second 345/138-kV autotransformer at the existing Temple Pecan Creek substation with 600 MVA rating and loop in the existing Temple SW – Belfalls 345-kV transmission line into Temple Pecan Creek substation
- Install a second 345/138-kV autotransformer at the existing Temple SW substation with 600 MVA rating, and rebuild the existing Temple SW substation with 11 345-kV and 16 138-kV breakers in breaker-and-a-half arrangements, and remove the 138/69-kV autotransformer
- Construct a second circuit to the existing Temple Pecan Creek – Temple SW 138-kV transmission line with a minimum ratings of 486 MVA, 4.4-mile
- Construct a new Boggy Creek 138/69-kV substation approximately 3.58-mile south of the existing Temple 138-kV substation. Relocated the existing 138/69-kV autotransformer from Temple SW to the new Boggy Creek substation, install seven 138-kV breakers in breaker-and-a-half arrangement, and install two 69-kV breakers in single bus arrangement
- Loop in the existing Bell County SW – Temple SW 138-kV transmission line into the new Boggy Creek substation and loop in the existing Taylor SW – Temple SW 138-kV transmission line into the new Boggy Creek substation
- Construct a new Boggy Creek – Minerva 69-kV transmission line with a minimum ratings of 197, approximately 5.0-mile
  - From the Bobby Creek on the vacant sides of the existing double circuit capable structures of Taylor SW – Temple SW and Poague – Seaton 69-kV transmission lines and connecting the existing Minerva at STR 3/5. Disconnecting the existing Temple SW – Minerva 69-kV transmission line at STR 3/5
- Upgrade the existing Temple Pecan Creek – Temple Elm Creek 138-kV double-circuit transmission line with a minimum ratings of 486 MVA, 5.1-mile per circuit

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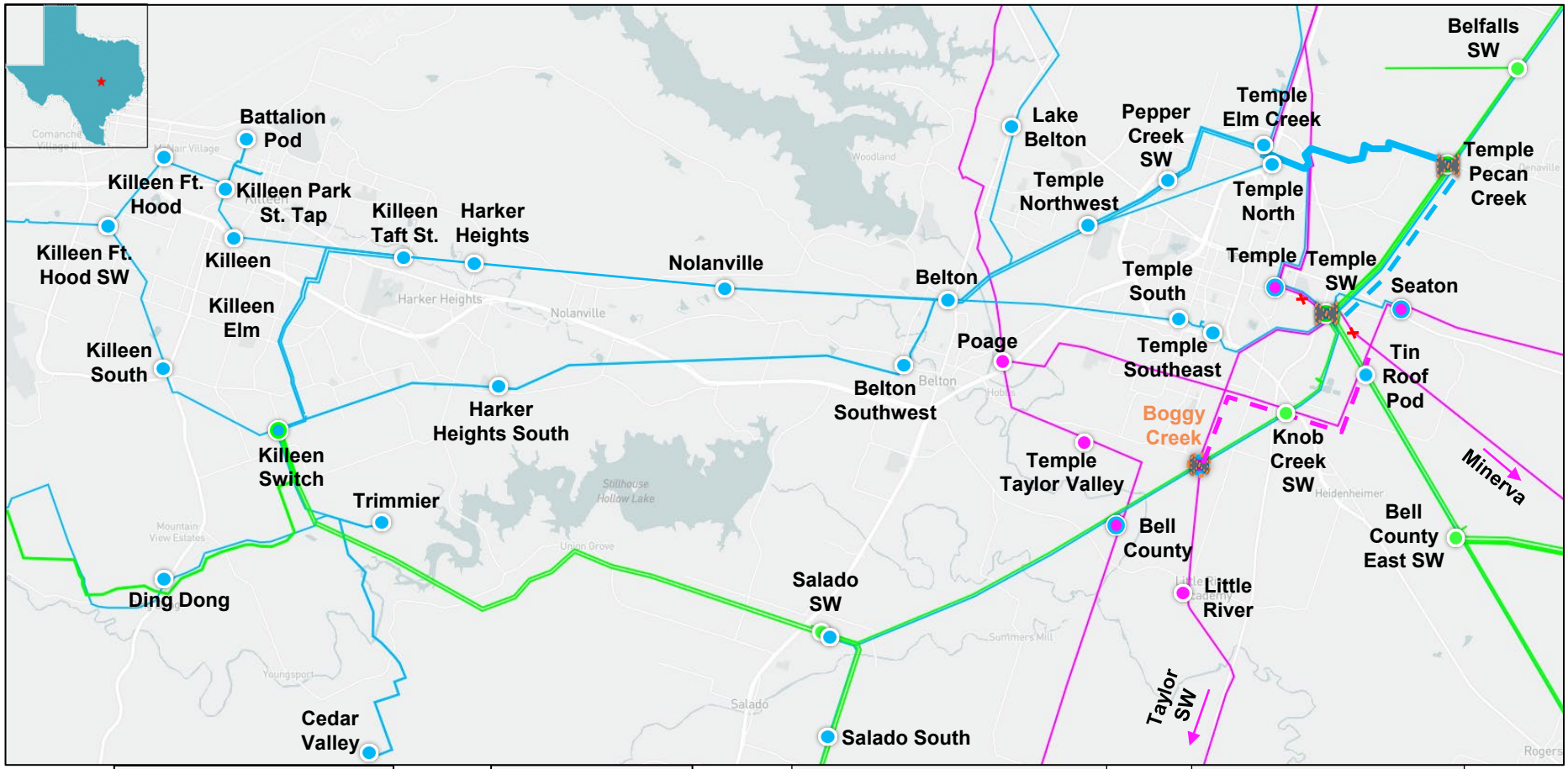
Option 1 Map



Project Need Seen by ERCOT
- Thermal Violation
- Aging Infrastructures
- TSP Criteria Violation

Voltage Legend
- 69-kV
- 115-kV
- 138-kV
- 345-kV

Line Legend
- Existing Line
- Proposed New Line
- Upgrade Existing Line
- Convert Existing Line
- Retire Existing Line

Substation Legend
- Existing Substation
- New/Convert Substation
- New Transformer

Option 2 – Similar to Option 1

- Install a second 345/138-kV autotransformer at the existing Temple Pecan Creek substation with 600 MVA rating and loop in the existing Temple SW – Belfalls 345-kV transmission line into Temple Pecan Creek substation
- Install a second 345/138-kV autotransformer at the existing Temple SW substation with 600 MVA rating, and rebuild the existing Temple SW substation with 11 345-kV and 16 138-kV breakers in breaker-and-a-half arrangements, and remove the 138/69-kV autotransformer
- Construct a second circuit to the existing Temple Pecan Creek – Temple SW 138-kV transmission line with a minimum ratings of 486 MVA, 4.4-mile
- Construct a new Boggy Creek 138/69-kV substation approximately 3.58-mile south of the existing Temple 138-kV substation. Relocated the existing 138/69-kV autotransformer from Temple SW to the new Boggy Creek substation, install seven 138-kV breakers in breaker-and-a-half arrangement, and install two 69-kV breakers in single bus arrangement
- Loop in the existing Bell County SW – Temple SW 138-kV transmission line into the new Boggy Creek substation and loop in the existing Taylor SW – Temple SW 138-kV transmission line into the new Boggy Creek substation
- Construct a new Boggy Creek – Minerva 69-kV transmission line with a minimum ratings of 197, approximately 5.0-mile
  - From the Bobby Creek on the vacant sides of the existing double circuit capable structures of Taylor SW – Temple SW and Poague – Seaton 69-kV transmission lines and connecting the existing Minerva at STR 3/5. Disconnecting the existing Temple SW – Minerva 69-kV transmission line at STR 3/5

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Option 2 – Continued

- Upgrade the existing Belton – Belton Southwest – Harker Heights South 138-kV transmission lines with a minimum ratings of 486 MVA, 20.6-mile
- Upgrade the existing Belton – Nolanville 138-kV transmission lines with a minimum ratings of 486 MVA, 2.1-mile
- Upgrade the existing Temple North-2 – Pepper Creek 138-kV transmission line with a minimum ratings of 486 MVA, 2.2-mile
- Install two blocks of 18.4 MVAR capacitor banks at each of the existing Killeen Taft St., Killeen, and Killeen Ft. Hood 138-kV substations

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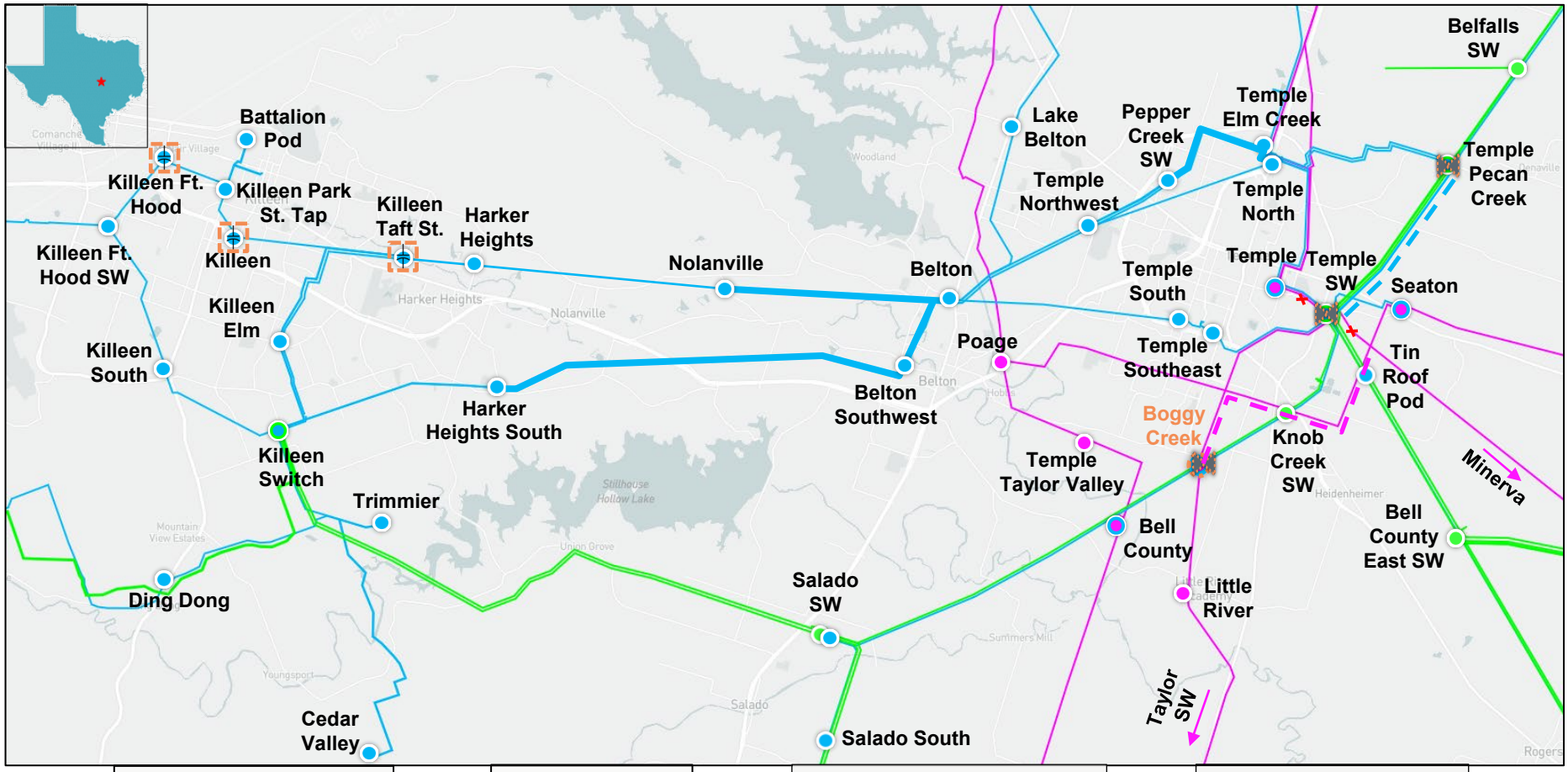
Option 2 Map



Project Need Seen by ERCOT
- Thermal Violation
- Aging Infrastructures
- TSP Criteria Violation

Voltage Legend
- 69-kV
- 115-kV
- 138-kV
- 345-kV

Line Legend
- Existing Line
- Proposed New Line
- Upgrade Existing Line
- Convert Existing Line
- Retire Existing Line

Substation Legend
- Existing Substation
- New/Convert Substation
- New Transformer

Option 3 – Similar to Option 2

- Install a second 345/138-kV autotransformer at the existing Temple Pecan Creek substation with 600 MVA rating and loop in the existing Temple SW – Belfalls 345-kV transmission line into Temple Pecan Creek substation
- Install a second 345/138-kV autotransformer at the existing Temple SW substation with 600 MVA rating, and rebuild the existing Temple SW substation with 11 345-kV and 16 138-kV breakers in breaker-and-a-half arrangements, and remove the 138/69-kV autotransformer
- Construct a second circuit to the existing Temple Pecan Creek – Temple SW 138-kV transmission line with a minimum ratings of 486 MVA, 4.4-mile
- Construct a new Boggy Creek 138/69-kV substation approximately 3.58-mile south of the existing Temple 138-kV substation. Relocated the existing 138/69-kV autotransformer from Temple SW to the new Boggy Creek substation, install seven 138-kV breakers in breaker-and-a-half arrangement, and install two 69-kV breakers in single bus arrangement
- Loop in the existing Bell County SW – Temple SW 138-kV transmission line into the new Boggy Creek substation and loop in the existing Taylor SW – Temple SW 138-kV transmission line into the new Boggy Creek substation
- Construct a new Boggy Creek – Minerva 69-kV transmission line with a minimum ratings of 197, approximately 5.0-mile
  - From the Bobby Creek on the vacant sides of the existing double circuit capable structures of Taylor SW – Temple SW and Poague – Seaton 69-kV transmission lines and connecting the existing Minerva at STR 3/5. Disconnecting the existing Temple SW – Minerva 69-kV transmission line at STR 3/5

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Option 3 – Continued

- Upgrade the existing Belton – Belton Southwest – Harker Heights South 138-kV transmission lines with a minimum ratings of 486 MVA, 20.6-mile
- Upgrade the existing Belton – Nolanville 138-kV transmission lines with a minimum ratings of 486 MVA, 2.1-mile
- Upgrade the existing Temple North-2 – Pepper Creek 138-kV transmission line with a minimum ratings of 486 MVA, 2.2-mile
- Install two blocks of 18.4 MVAR capacitor banks at each of the existing Killeen Taft St., Killeen, and Killeen Ft. Hood 138-kV substations
- Upgrade the existing Nolanville – Harker Heights – Killeen Taft Street – Killeen Elm 138-kV transmission lines with a minimum ratings of 486 MVA, 11.3-mile
- Upgrade the existing Temple Elm Creek – Temple North 138-kV double-circuit transmission line with a minimum ratings of 486 MVA, 0.5-mile per-circuit
- Install a second 138/69-kV autotransformer at the existing Seaton 138/69-kV substation with 100 MVA rating
- Upgrade the existing Seaton – Poague – Temple Taylor Valley 69-kV transmission lines, 138-kV capable but operational at 69-kV, with a minimum ratings of 197 MVA, 3.4-mile
- **NOTE:** A sensitivity was tested on Option 3 that included a second circuit to the existing Knob Creek – Salado SW 345-kV transmission line with a minimum ratings of 1912 MVA, 13.8-mile

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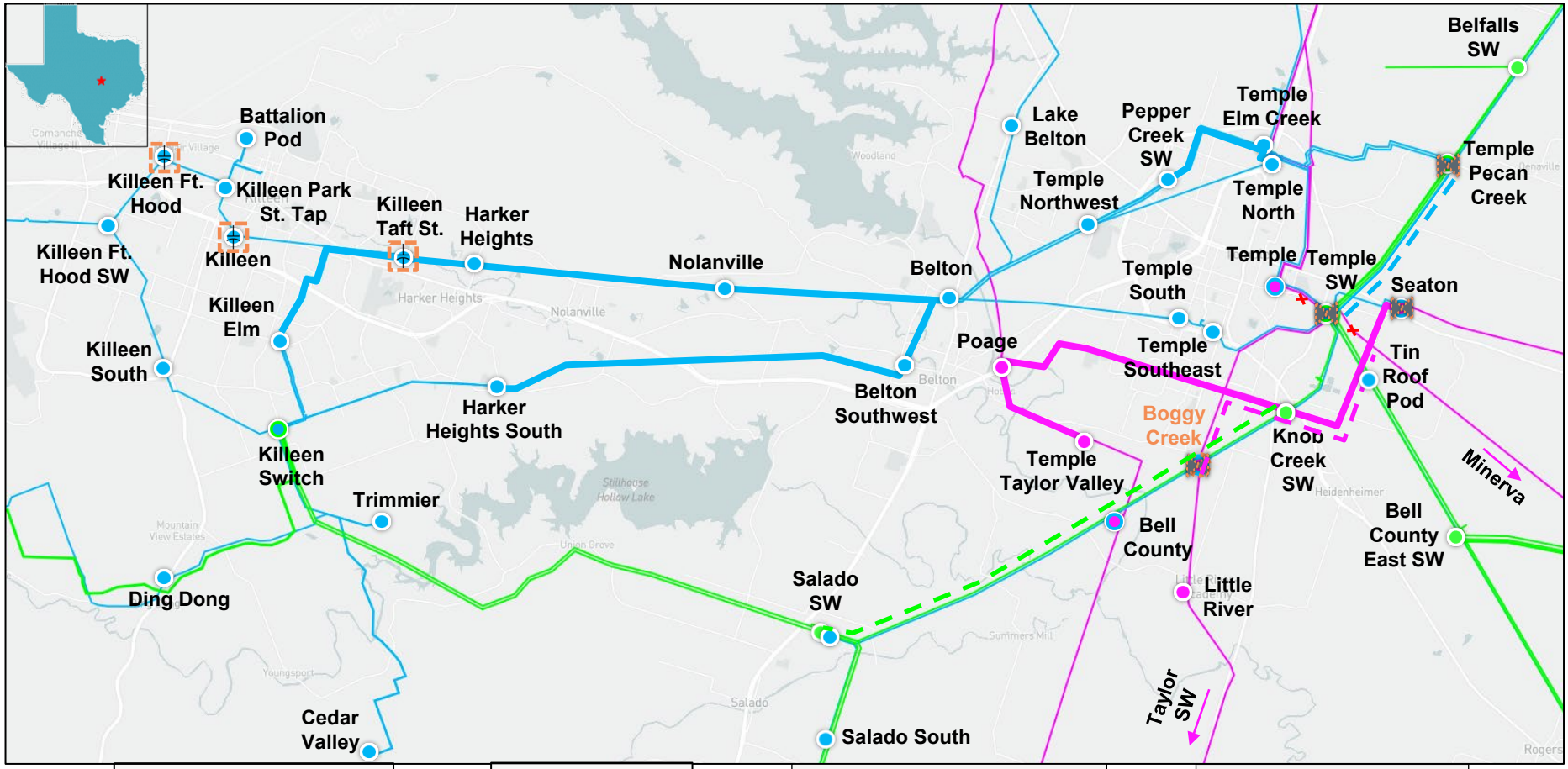
Option 3 Map


Battalion Pod
Killeen Ft. Hood
Killeen Park St. Tap
Killeen Taft St.
Harker Heights
Killeen Ft. Hood SW
Killeen
Nolanville
Killeen Elm
Killeen South
Harker Heights South
Killeen Switch
Trimmier
Ding Dong
Cedar Valley
Salado SW
Salado South
Belton
Belton Southwest
Lake Belton
Pepper Creek SW
Temple Elm Creek
Temple Northwest
Temple North
Temple Pecan Creek
Belfalls SW
Temple South
Temple
Temple SW
Seaton
Poage
Temple Southeast
Tin Roof Pod
Boggy Creek
Temple Taylor Valley
Knob Creek SW
Minerva
Bell County
Bell County East SW
Little River
Taylor SW
Project Need Seen by ERCOT
Thermal Violation
Aging Infrastructures
TSP Criteria Violation
Voltage Legend
69-kV
115-kV
138-kV
345-kV
Line Legend
Existing Line
Proposed New Line
Upgrade Existing Line
Convert Existing Line
Retire Existing Line
Substation Legend
Existing Substation
New/Convert Substation
New Transformer

Option 4 – Similar to Option 3, without the 69-kV Upgrade & Separating 138/345-kV DCKT

- Install a second 345/138-kV autotransformer at the existing Temple Pecan Creek substation with 600 MVA rating and loop in the existing Temple SW – Belfalls 345-kV transmission line into Temple Pecan Creek substation
- Install a second 345/138-kV autotransformer at the existing Temple SW substation with 600 MVA rating, and rebuild the existing Temple SW substation with 11 345-kV and 16 138-kV breakers in breaker-and-a-half arrangements, and remove the 138/69-kV autotransformer
- Construct a second circuit to the existing Temple Pecan Creek – Temple SW 138-kV transmission line with a minimum ratings of 486 MVA, 4.4-mile
- Construct a new Boggy Creek 138/69-kV substation approximately 3.58-mile south of the existing Temple 138-kV substation. Relocated the existing 138/69-kV autotransformer from Temple SW to the new Boggy Creek substation, install seven 138-kV breakers in breaker-and-a-half arrangement, and install two 69-kV breakers in single bus arrangement
- Loop in the existing Bell County SW – Temple SW 138-kV transmission line into the new Boggy Creek substation and loop in the existing Taylor SW – Temple SW 138-kV transmission line into the new Boggy Creek substation
- Construct a new Boggy Creek – Minerva 69-kV transmission line with a minimum ratings of 197, approximately 5.0-mile
  - From the Bobby Creek on the vacant sides of the existing double circuit capable structures of Taylor SW – Temple SW and Poague – Seaton 69-kV transmission lines and connecting the existing Minerva at STR 3/5. Disconnecting the existing Temple SW – Minerva 69-kV transmission line at STR 3/5

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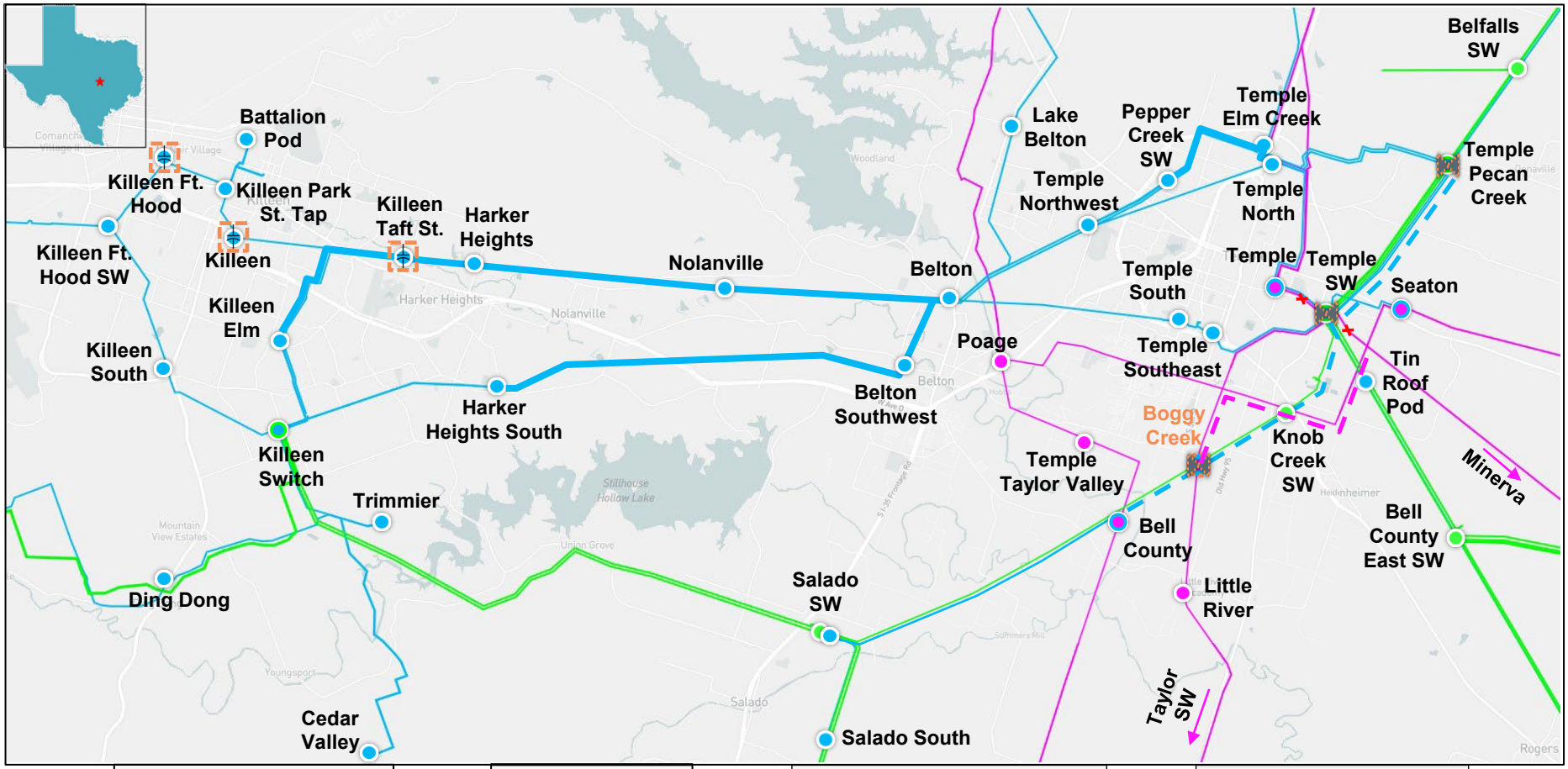
Option 4 – Continued

- Upgrade the existing Belton – Belton Southwest – Harker Heights South 138-kV transmission lines with a minimum ratings of 486 MVA, 20.6-mile
- Upgrade the existing Belton – Nolanville 138-kV transmission lines with a minimum ratings of 486 MVA, 2.1-mile
- Upgrade the existing Temple North-2 – Pepper Creek 138-kV transmission line with a minimum ratings of 486 MVA, 2.2-mile
- Install two blocks of 18.4 MVAR capacitor banks at each of the existing Killeen Taft St., Killeen, and Killeen Ft. Hood 138-kV substations
- Upgrade the existing Nolanville – Harker Heights – Killeen Taft Street – Killeen Elm 138-kV transmission lines with a minimum ratings of 486 MVA, 11.3-mile
- Upgrade the existing Temple Elm Creek – Temple North 138-kV double-circuit transmission line with a minimum ratings of 486 MVA, 0.5-mile per-circuit
- Rebuild the existing Temple SW – Boggy Creek – Bell County 138-kV transmission line, on an existing ROW parallel to the existing Knob Creek – Salado 345-kV line but on separate structure, with a minimum ratings of 614 MVA, 7.7-mile

(Map on next slide)

Option 4 Map



Project Need Seen by ERCOT
- Thermal Violation
- Aging Infrastructures
- TSP Criteria Violation

Voltage Legend
- 69-kV
- 115-kV
- 138-kV
- 345-kV

Line Legend
- Existing Line
- Proposed New Line
- Upgrade Existing Line
- Convert Existing Line
- Retire Existing Line

Substation Legend
- Existing Substation
- New/Convert Substation
- New Transformer

Option 5 – Option 4 with 69-kV to 138-kV Conversion

- Install a second 345/138-kV autotransformer at the existing Temple Pecan Creek substation with 600 MVA rating and loop in the existing Temple SW – Belfalls 345-kV transmission line into Temple Pecan Creek substation
- Install a second 345/138-kV autotransformer at the existing Temple SW substation with 600 MVA rating, and rebuild the existing Temple SW substation with 11 345-kV and 16 138-kV breakers in breaker-and-a-half arrangements, and remove the 138/69-kV autotransformer
- Construct a second circuit to the existing Temple Pecan Creek – Temple SW 138-kV transmission line with a minimum ratings of 486 MVA, 4.4-mile
- Construct a new Boggy Creek 138/69-kV substation approximately 3.58-mile south of the existing Temple 138-kV substation. Relocated the existing 138/69-kV autotransformer from Temple SW to the new Boggy Creek substation, install seven 138-kV breakers in breaker-and-a-half arrangement, and install two 69-kV breakers in single bus arrangement
- Loop in the existing Bell County SW – Temple SW 138-kV transmission line into the new Boggy Creek substation and loop in the existing Taylor SW – Temple SW 138-kV transmission line into the new Boggy Creek substation
- Construct a new Boggy Creek – Minerva 69-kV transmission line with a minimum ratings of 197, approximately 5.0-mile
  - From the Bobby Creek on the vacant sides of the existing double circuit capable structures of Taylor SW – Temple SW and Poague – Seaton 69-kV transmission lines and connecting the existing Minerva at STR 3/5. Disconnecting the existing Temple SW – Minerva 69-kV transmission line at STR 3/5

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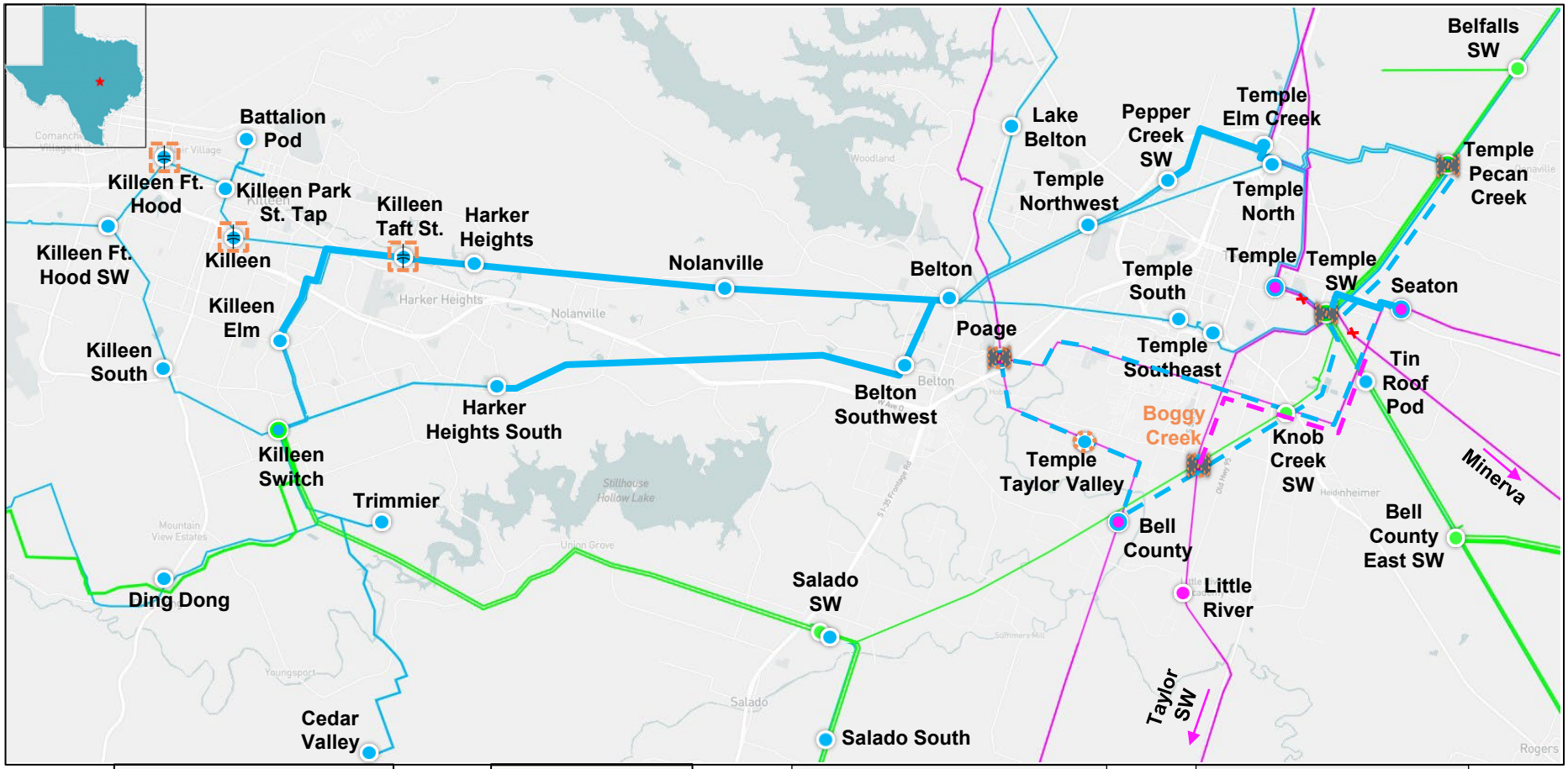
Option 5 – Continued

- Upgrade the existing Belton – Belton Southwest – Harker Heights South 138-kV transmission lines with a minimum ratings of 486 MVA, 20.6-mile
- Upgrade the existing Belton – Nolanville 138-kV transmission lines with a minimum ratings of 486 MVA, 2.1-mile
- Upgrade the existing Temple North-2 – Pepper Creek 138-kV transmission line with a minimum ratings of 486 MVA, 2.2-mile
- Install two blocks of 18.4 MVAR capacitor banks at each of the existing Killeen Taft St., Killeen, and Killeen Ft. Hood 138-kV substations
- Upgrade the existing Nolanville – Harker Heights – Killeen Taft Street – Killeen Elm 138-kV transmission lines with a minimum ratings of 486 MVA, 11.3-mile
- Upgrade the existing Temple Elm Creek – Temple North 138-kV double-circuit transmission line with a minimum ratings of 486 MVA, 0.5-mile per-circuit
- Rebuild the existing Temple SW – Boggy Creek – Bell County 138-kV transmission line, on an existing ROW parallel to the existing Knob Creek – Salado 345-kV line but on separate structure, with a minimum ratings of 614 MVA, 7.7-mile
- Upgrade the existing Temple SW – Seaton 138-kV transmission line with a minimum ratings of 486 MVA, 2.7-mile
- Convert the existing Poague 69-kV substation to 138/69-kV substation by installing a new 100 MVA 138/69-kV
- Convert the existing Temple Taylor Valley 69-kV substation to 138-kV substation
- Convert the existing Seaton – Poague – Temple Taylor Valley – Bell County 69-kV transmission lines to 138-kV with a minimum ratings of 486 MVA, 5.9-mile

(Map on next slide)

Option 5 Map



Project Need Seen by ERCOT
- Thermal Violation
- Aging Infrastructures
- TSP Criteria Violation

Voltage Legend
- 69-kV
- 115-kV
- 138-kV
- 345-kV

Line Legend
- Existing Line
- Proposed New Line
- Upgrade Existing Line
- Convert Existing Line
- Retire Existing Line

Substation Legend
- Existing Substation
- New/Convert Substation
- New Transformer

Option 6 – Option 3 with 69-kV to 138-kV Conversion

- Install a second 345/138-kV autotransformer at the existing Temple Pecan Creek substation with 600 MVA rating and loop in the existing Temple SW – Belfalls 345-kV transmission line into Temple Pecan Creek substation
- Install a second 345/138-kV autotransformer at the existing Temple SW substation with 600 MVA rating, and rebuild the existing Temple SW substation with 11 345-kV and 16 138-kV breakers in breaker-and-a-half arrangements, and remove the 138/69-kV autotransformer
- Construct a second circuit to the existing Temple Pecan Creek – Temple SW 138-kV transmission line with a minimum ratings of 486 MVA, 4.4-mile
- Construct a new Boggy Creek 138/69-kV substation approximately 3.58-mile south of the existing Temple 138-kV substation. Relocated the existing 138/69-kV autotransformer from Temple SW to the new Boggy Creek substation, install seven 138-kV breakers in breaker-and-a-half arrangement, and install two 69-kV breakers in single bus arrangement
- Loop in the existing Bell County SW – Temple SW 138-kV transmission line into the new Boggy Creek substation and loop in the existing Taylor SW – Temple SW 138-kV transmission line into the new Boggy Creek substation
- Construct a new Boggy Creek – Minerva 69-kV transmission line with a minimum ratings of 197, approximately 5.0-mile
  - From the Bobby Creek on the vacant sides of the existing double circuit capable structures of Taylor SW – Temple SW and Poague – Seaton 69-kV transmission lines and connecting the existing Minerva at STR 3/5. Disconnecting the existing Temple SW – Minerva 69-kV transmission line at STR 3/5

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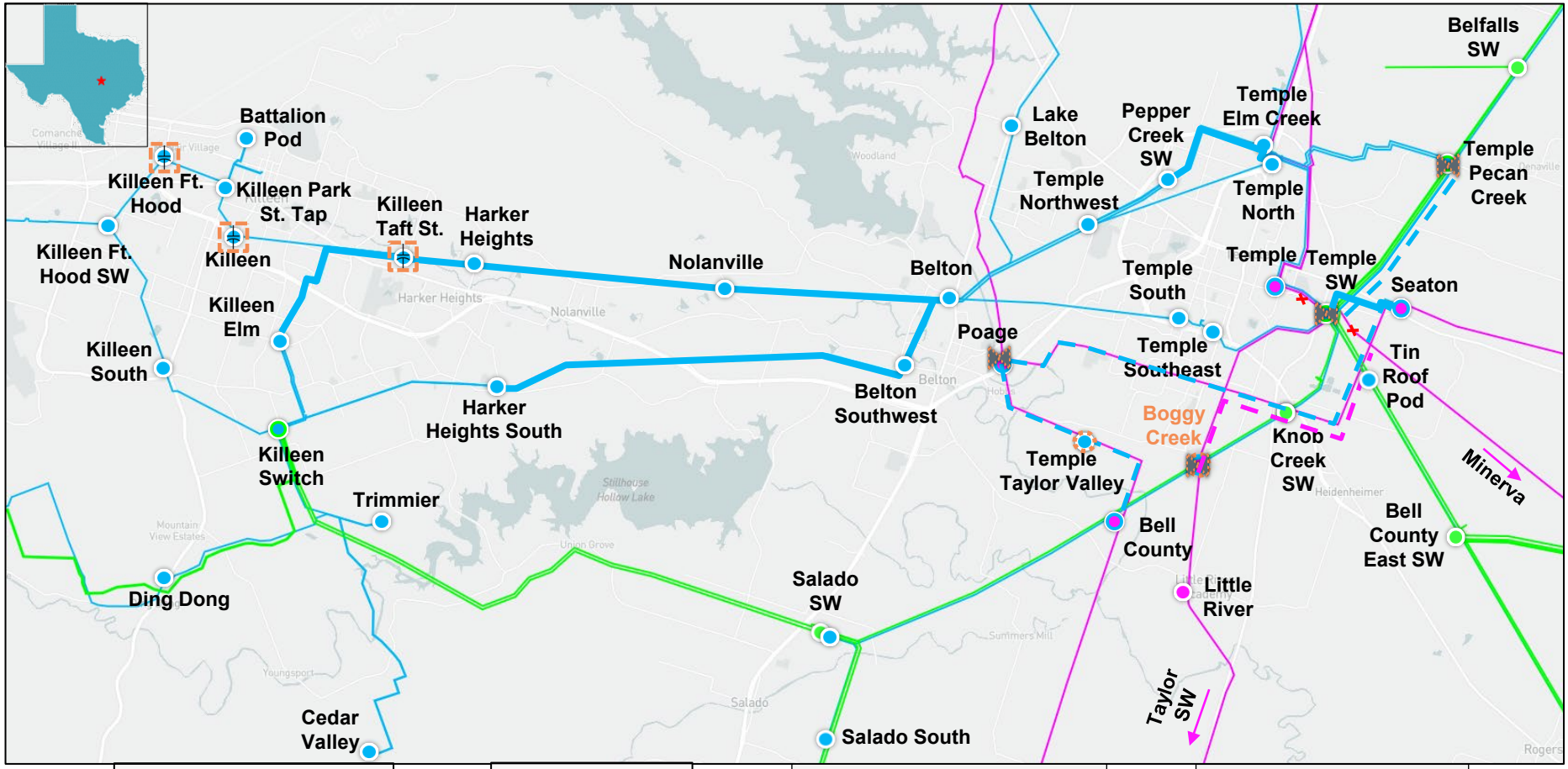
Option 6 – Continued

- Upgrade the existing Belton – Belton Southwest – Harker Heights South 138-kV transmission lines with a minimum ratings of 486 MVA, 20.6-mile
- Upgrade the existing Belton – Nolanville 138-kV transmission lines with a minimum ratings of 486 MVA, 2.1-mile
- Upgrade the existing Temple North-2 – Pepper Creek 138-kV transmission line with a minimum ratings of 486 MVA, 2.2-mile
- Install two blocks of 18.4 MVAR capacitor banks at each of the existing Killeen Taft St., Killeen, and Killeen Ft. Hood 138-kV substations
- Upgrade the existing Nolanville – Harker Heights – Killeen Taft Street – Killeen Elm 138-kV transmission lines with a minimum ratings of 486 MVA, 11.3-mile
- Upgrade the existing Temple Elm Creek – Temple North 138-kV double-circuit transmission line with a minimum ratings of 486 MVA, 0.5-mile per-circuit
- Upgrade the existing Temple SW – Seaton 138-kV transmission line with a minimum ratings of 486 MVA, 2.7-mile
- Convert the existing Poague 69-kV substation to 138/69-kV substation by installing a new 100 MVA 138/69-kV
- Convert the existing Temple Taylor Valley 69-kV substation to 138-kV substation
- Convert the existing Seaton – Poague – Temple Taylor Valley – Bell County 69-kV transmission lines to 138-kV with a minimum ratings of 486 MVA, 5.9-mile

(Map on next slide)

Option 6 Map



Project Need Seen by ERCOT
- Thermal Violation
- Aging Infrastructures
- TSP Criteria Violation

Voltage Legend
- 69-kV
- 115-kV
- 138-kV
- 345-kV

Line Legend
- Existing Line
- Proposed New Line
- Upgrade Existing Line
- Convert Existing Line
- Retire Existing Line

Substation Legend
- Existing Substation
- New/Convert Substation
- New Transformer

Option 7

- Install a second 345/138-kV autotransformer at the existing Temple Pecan Creek substation with 600 MVA rating and loop in the existing Temple SW – Belfalls 345-kV transmission line into Temple Pecan Creek substation
- Install a second 345/138-kV autotransformer at the existing Temple SW substation with 600 MVA rating, and rebuild the existing Temple SW substation with 11 345-kV and 16 138-kV breakers in breaker-and-a-half arrangements, and remove the 138/69-kV autotransformer
- Construct a second circuit to the existing Temple Pecan Creek – Temple SW 138-kV transmission line with a minimum ratings of 486 MVA, 4.4-mile
- Construct a new Boggy Creek 138/69-kV substation approximately 3.58-mile south of the existing Temple 138-kV substation. Relocated the existing 138/69-kV autotransformer from Temple SW to the new Boggy Creek substation, install seven 138-kV breakers in breaker-and-a-half arrangement, and install two 69-kV breakers in single bus arrangement
- Loop in the existing Bell County SW – Temple SW 138-kV transmission line into the new Boggy Creek substation and loop in the existing Taylor SW – Temple SW 138-kV transmission line into the new Boggy Creek substation
- Construct a new Boggy Creek – Minerva 69-kV transmission line with a minimum ratings of 197, approximately 5.0-mile
  - From the Bobby Creek on the vacant sides of the existing double circuit capable structures of Taylor SW – Temple SW and Poague – Seaton 69-kV transmission lines and connecting the existing Minerva at STR 3/5. Disconnecting the existing Temple SW – Minerva 69-kV transmission line at STR 3/5

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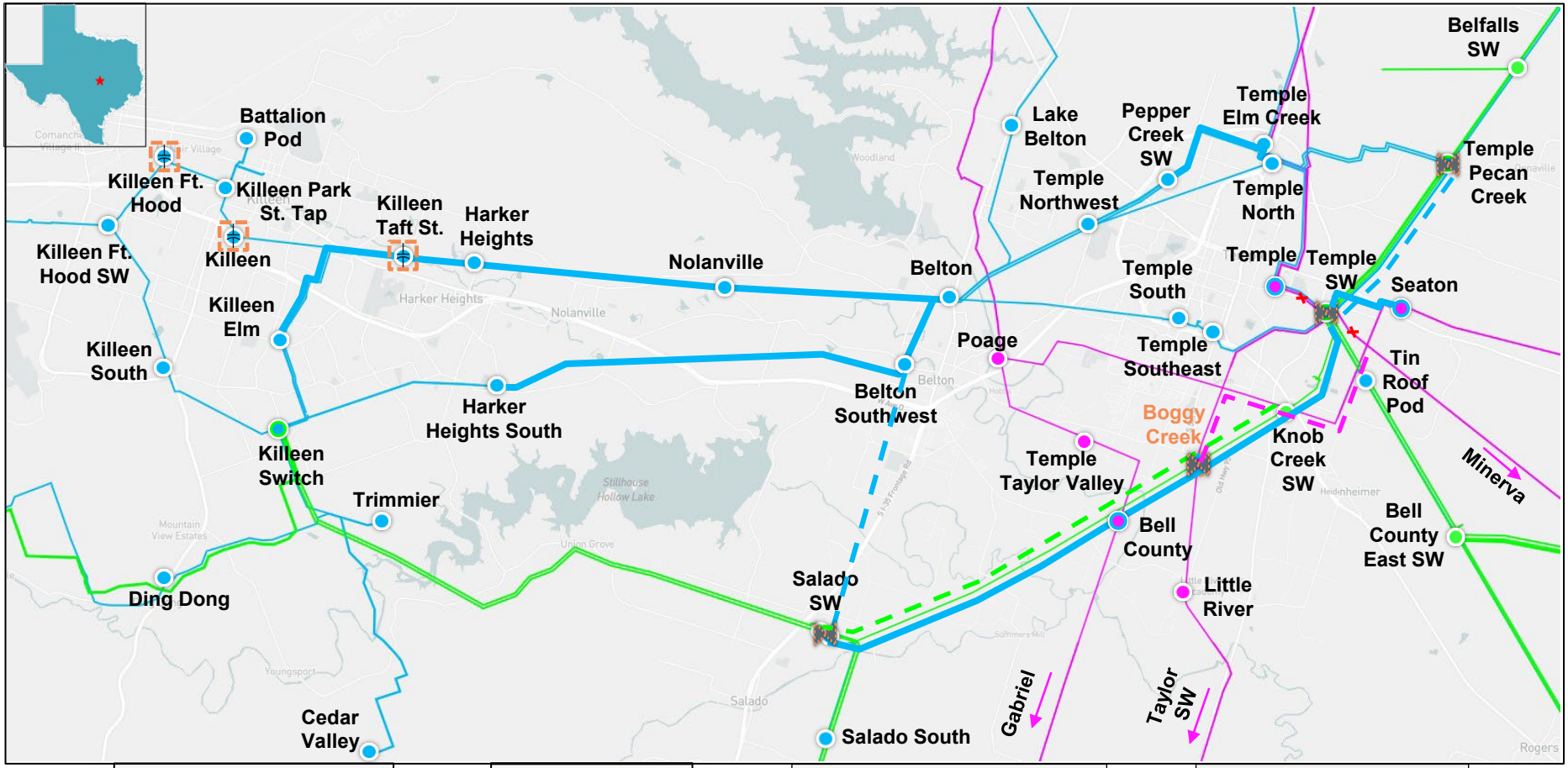
Option 7

- Upgrade the existing Belton – Belton Southwest – Harker Heights South 138-kV transmission lines with a minimum ratings of 486 MVA, 20.6-mile
- Upgrade the existing Belton – Nolanville 138-kV transmission lines with a minimum ratings of 486 MVA, 2.1-mile
- Upgrade the existing Temple North-2 – Pepper Creek 138-kV transmission line with a minimum ratings of 486 MVA, 2.2-mile
- Install two blocks of 18.4 MVAR capacitor banks at each of the existing Killeen Taft St., Killeen, and Killeen Ft. Hood 138-kV substations
- Upgrade the existing Nolanville – Harker Heights 138-kV transmission lines with a minimum ratings of 486 MVA, 7.0-mile
- Install a new 600 MVA 345/138-kV autotransformer at the existing Salado SW and connect the existing 138-kV and 345-kV
- Construct a new Salado SW – Belton Southwest 138-kV transmission line with a minimum ratings of 486 MVA, approximately 7.4-mile
- Construct a new second circuit to the existing Knob Creek – Salado SW 345-kV transmission line with a minimum ratings of 1912 MVA, 13.8-mile
- Rebuild the existing Temple SW – Boggy Creek – Bell County 138-kV transmission line, on an existing ROW parallel to the existing Knob Creek – Salado 345-kV line but on separate structure, with a minimum ratings of 614 MVA, 7.7-mile
- Upgrade the existing Temple SW – Seaton 138-kV transmission line with a minimum ratings of 486 MVA, 2.7-mile

(Map on next slide)

Option 7 Map


Battalion Pod
Killeen Ft. Hood
Killeen Park St. Tap
Killeen Taft St.
Harker Heights
Killeen Ft. Hood SW
Killeen
Killeen Elm
Killeen South
Killeen Switch
Trimmier
Ding Dong
Cedar Valley
Harker Heights South
Nolanville
Belton
Belton Southwest
Salado SW
Salado South
Lake Belton
Pepper Creek SW
Temple Elm Creek
Temple Northwest
Temple North
Belfalls SW
Temple Pecan Creek
Temple South
Temple
Temple SW
Seaton
Poage
Temple Southeast
Tin Roof Pod
Boggy Creek
Knob Creek SW
Temple Taylor Valley
Bell County
Bell County East SW
Minerva
Little River
Gabriel
Taylor SW
Project Need Seen by ERCOT
Thermal Violation
Aging Infrastructures
TSP Criteria Violation
Voltage Legend
69-kV
115-kV
138-kV
345-kV
Line Legend
Existing Line
Proposed New Line
Upgrade Existing Line
Convert Existing Line
Retire Existing Line
Substation Legend
Existing Substation
New/Convert Substation
New Transformer

Preliminary Results of Reliability Assessment – Options

Option	N-1		G-1 + N-1		X-1 + N-1	
	Thermal Violations	Voltage Violations	Thermal Violations	Voltage Violations	Thermal Violations	Voltage Violations
Base Case	None	None	None	None	7	31
Option 1	None	None	None	None	6	19
Option 2	2	None	None	None	2	None
Option 3	3	None	None	None	None	None
Option 3 with 345-kV DCKT	2	None	1	None	None	None
Option 4	None	None	None	None	None	None
Option 5	None	None	None	None	None	None
Option 6	1	None	1	None	None	None
Option 7	None	None	None	None	None	None

- Options 4, 5, and 7 were selected for further evaluations

Long-Term Load Serving Capability Evaluation

- Assumptions
  - Adjusted load up in the study area (Bell County), excluding Flexible Loads in the area
  - Adjusted conforming load down outside of study area to balance power
  - Based on N-1 contingency
- Preliminary Findings

Option	Incremental Load Serving Capability (~MW)
Option 4	547
Option 5	542
Option 7	496

Next Steps and Tentative Timeline

- ERCOT will continue to evaluate options and provide status updates at future RPG meetings
  - Planned maintenance outage evaluation
  - Cost estimates and feasibility assessment
- ERCOT may perform the following assessment on the preferred Option
  - Congestion analysis
  - Generation addition and load scaling sensitivity analyses
    - Planning Guide (PG) section 3.1.3 (4)
  - Subsynchronous Resonance (SSR) Assessment
    - Nodal Protocol Section 3.22.1.3(2)
- Tentative timeline
  - Status update at future RPG meetings
  - Final recommendation in Q2 2024

Thank you!

Stakeholder comments also welcomed through:

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