



Oncor – Roanoke Area Upgrades – ERCOT Independent Review Status Update

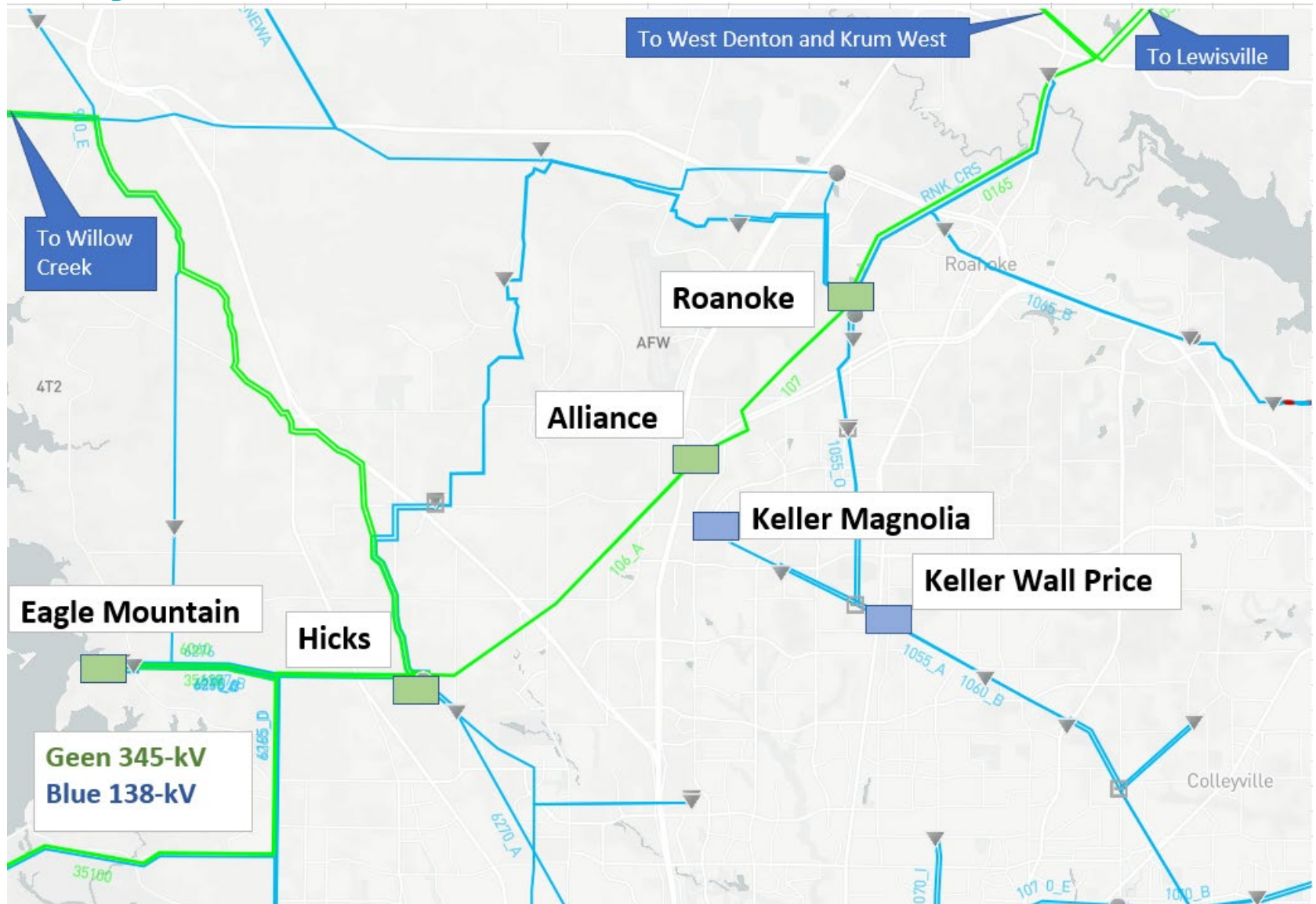
Ben Richardson

Regional Planning Group
May 17, 2022

Recap

- **Oncor submitted the Roanoke Area Upgrade Project for Regional Planning Group review in February 2022. This is a Tier 1 project that is estimated to cost \$285.9 million**
 - Proposed for May 2025. Oncor has expressed a need for “critical status designation”
 - Address rapid load growth in Roanoke area, existing capacity limitations and forecasted thermal and voltage violations
 - Increase thermal capacity and operational flexibility in Roanoke area
- **ERCOT provided study scope for ONCOR Roanoke Area Upgrade Project during March 2025 RPG meeting:**
 - https://www.ercot.com/files/docs/2022/03/11/Oncor_Roanoke_Area_Upgrades_EIR_Scope_03_15_2022.pdf
 - Based on comments updated scope to include Denton Data Center load at Jim Christal 138-kV bus
 - Alliance 345/138-kV transformer included in P6-2: X-1 + N-1
 - https://www.ercot.com/files/docs/2022/04/07/Oncor_Roanoke_Area_Upgrades_EIR_Status.pdf

Study Area



Contingencies and Criteria

- **Contingencies for Study Region**

- NERC TPL-001-4 and ERCOT Planning Criteria

- (http://www.ercot.com/content/wcm/current_guides/53526/04_050115.doc):

- P0 (Normal system condition)
 - P1, P2-1, P7 (N-1 conditions)
 - P2, P4, and P5 (EHV only)
 - P3: G-1 + N-1 (G-1: Handley, Panda Sherman generator train outages)
 - P6-2: X-1 + N-1 (X-1: Alliance, Roanoke, Hicks, Lewisville, Eagle Mountain 345/138-kV transformer outages)

- **Criteria**

- Thermal

- Monitor all transmission lines and transformers in study region
 - Use Rate A for pre-contingency conditions
 - Use Rate B for post-contingency conditions

- Voltages

- Monitor all busses 60 kV and above in the study region
 - Voltages exceeding their pre-contingency and post-contingency limits
 - Voltage deviations exceeding 8% on non-radial load busses

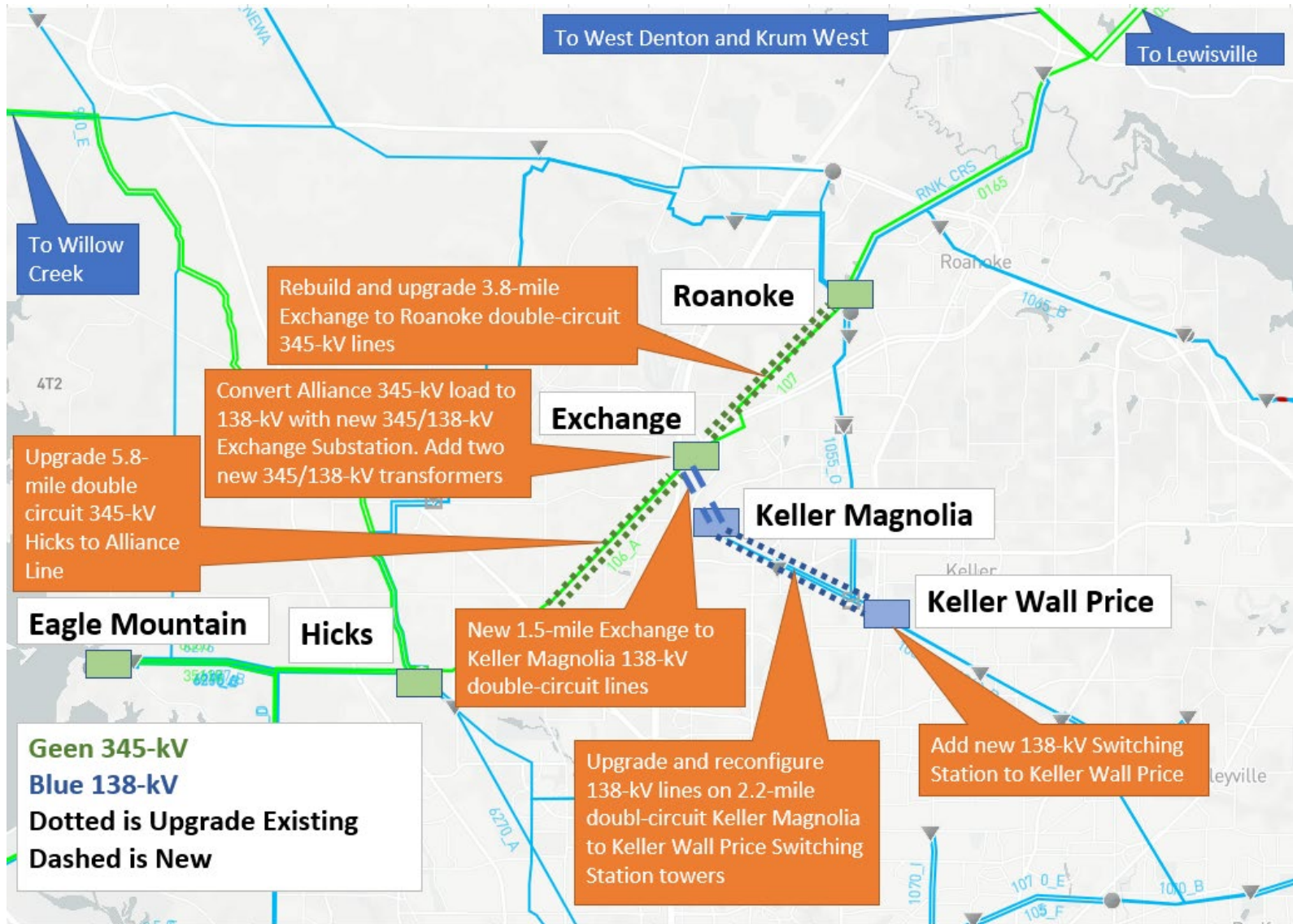
Preliminary Results of Reliability Assessment

Contingency Category*	Unsolved Power Flow	Thermal Overloads (Quantity of Elements)
P1	0	0
P2.1	0	0
P3 (G-1+N-1)**	0	15.4 miles of 345-kV lines (1) 345/138-kV transformers
P6.2 (X-1+N-1)* *	0	17.7 miles of 138-kV lines 25.9 miles of 345-kV lines (3) 345/138-kV transformers
P7	0	0
Total	0	17.7 miles of 138-kV lines 25.9 miles of 345-kV lines (3) 345/138-kV transformers

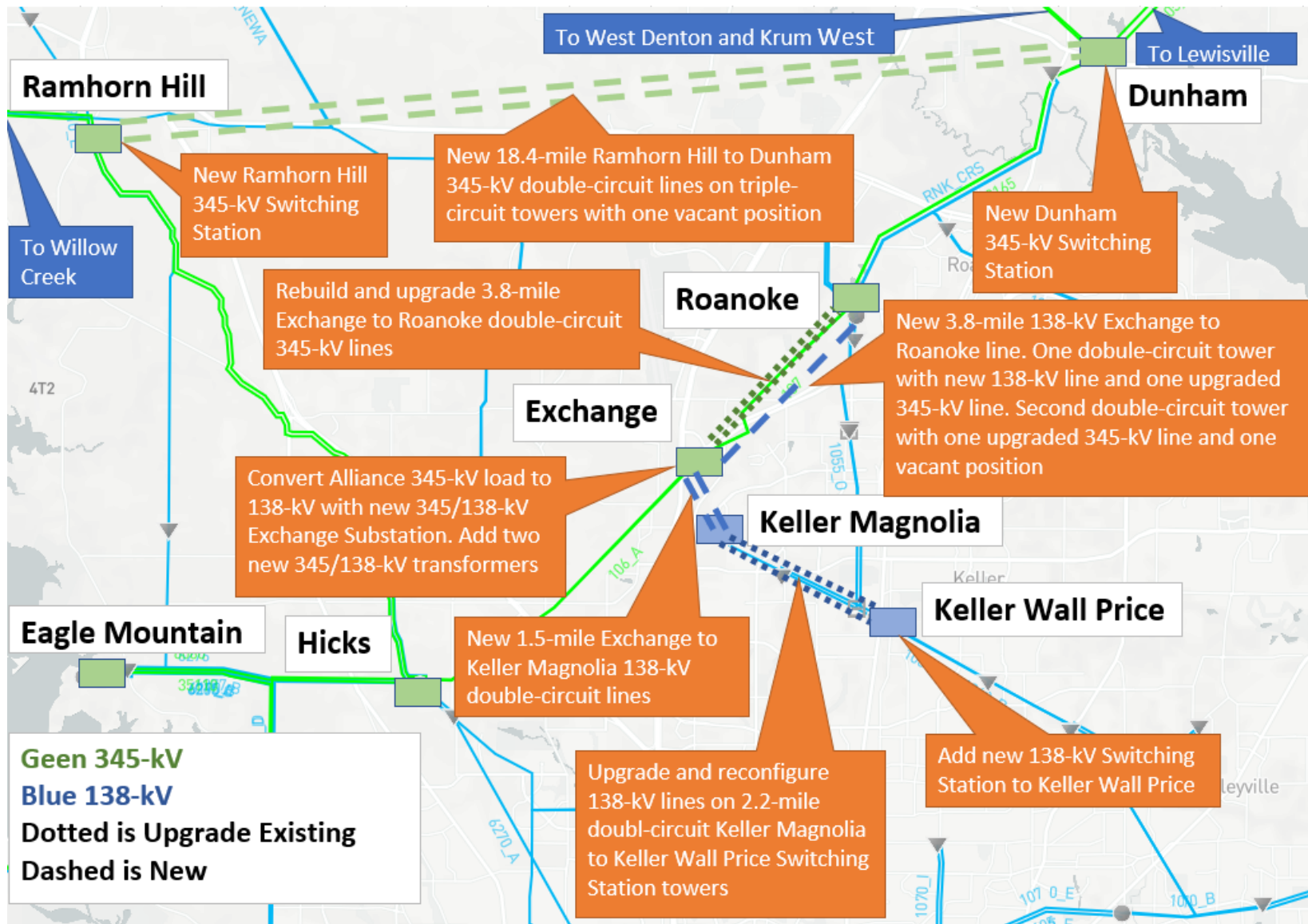
*Bus voltage violations were also identified

**See slide 4 for list of G-1 generators and X-1 transformers tested

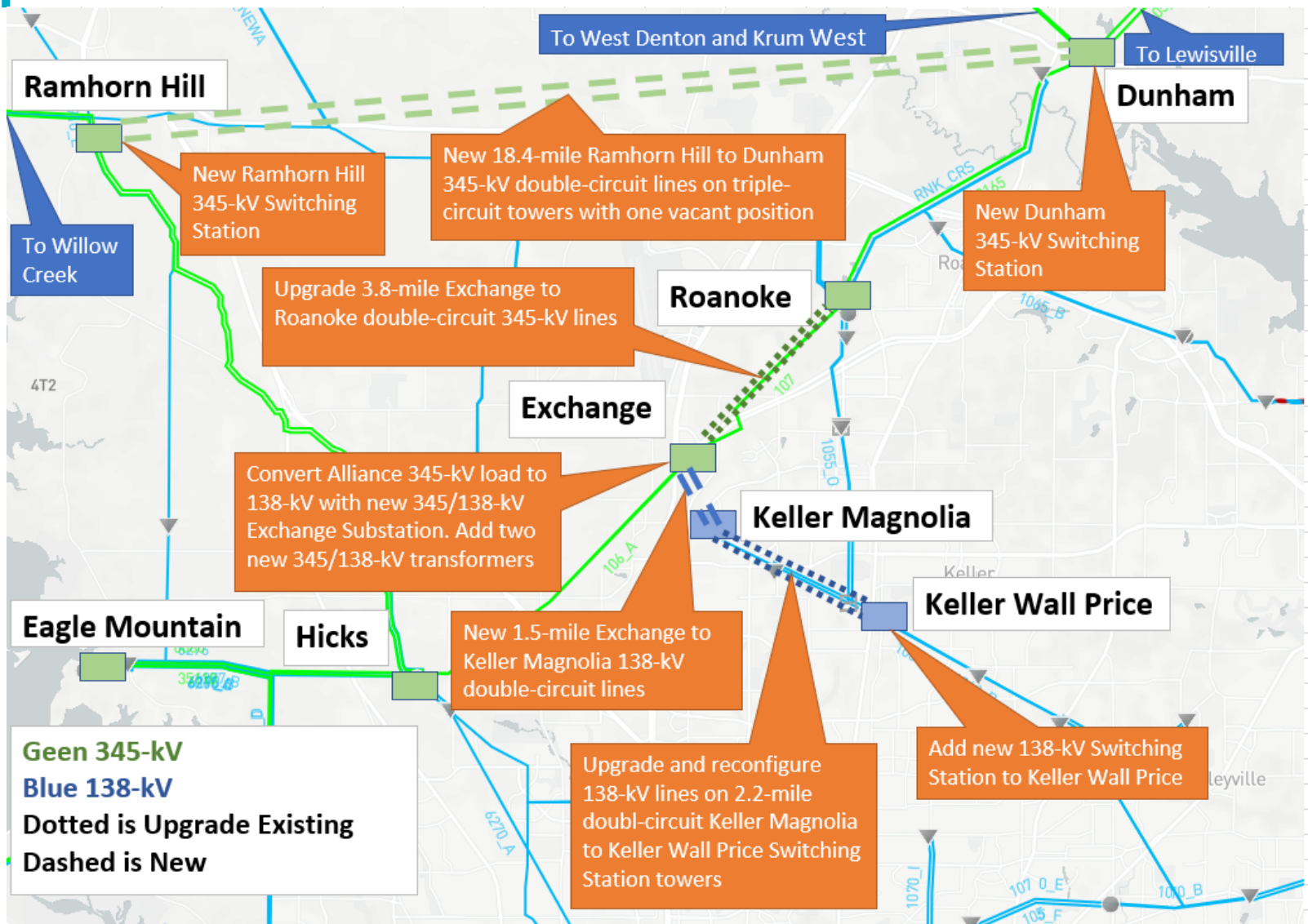
Option 1



Option 2



Option 3



Reliability Assessment for short-listed Options

	N-1		X-1 N-1		G-1 N-1	
	Thermal Violations	Voltage Violations	Thermal Violations	Voltage Violations	Thermal Violations	Voltage Violations
Option 1	No	No	No*	No	No	No
Option 2	No	No	No	No	No	No
Option 3	No	No	No	No	No	No

*Produced some thermal loadings just under 100%

Next Steps

- **Project Evaluation**
 - ERCOT may also perform the following studies:
 - Planned maintenance outage
 - Long-term Load Serving Capability Assessment
 - Dynamic stability impact
- **Generation and Load Scaling Sensitivity Analyses**
 - Planning Guide Section 3.1.3(4)
- **Subsynchronous Resonance (SSR) Assessment**
 - Nodal Protocol Section 3.22.1.3(2)
- **Congestion Analysis**
 - Congestion analysis will be performed to ensure that the identified transmission upgrades do not result in new congestion within the study area

Deliverables

- **Tentative Timeline**

- Status updates at RPG meetings
 - June 2022
- Final recommendation – July 2022



Stakeholder Comments Also Welcomed to Sun Wook Kang:
skang@ercot.com