



**ONCOR Nacogdoches Southeast Switch –
Redland Switch-Lufkin Switch 345-kV Loop
Project – ERCOT Independent Review
Status Update**

**Ben Richardson
System Development, Transmission Planning**

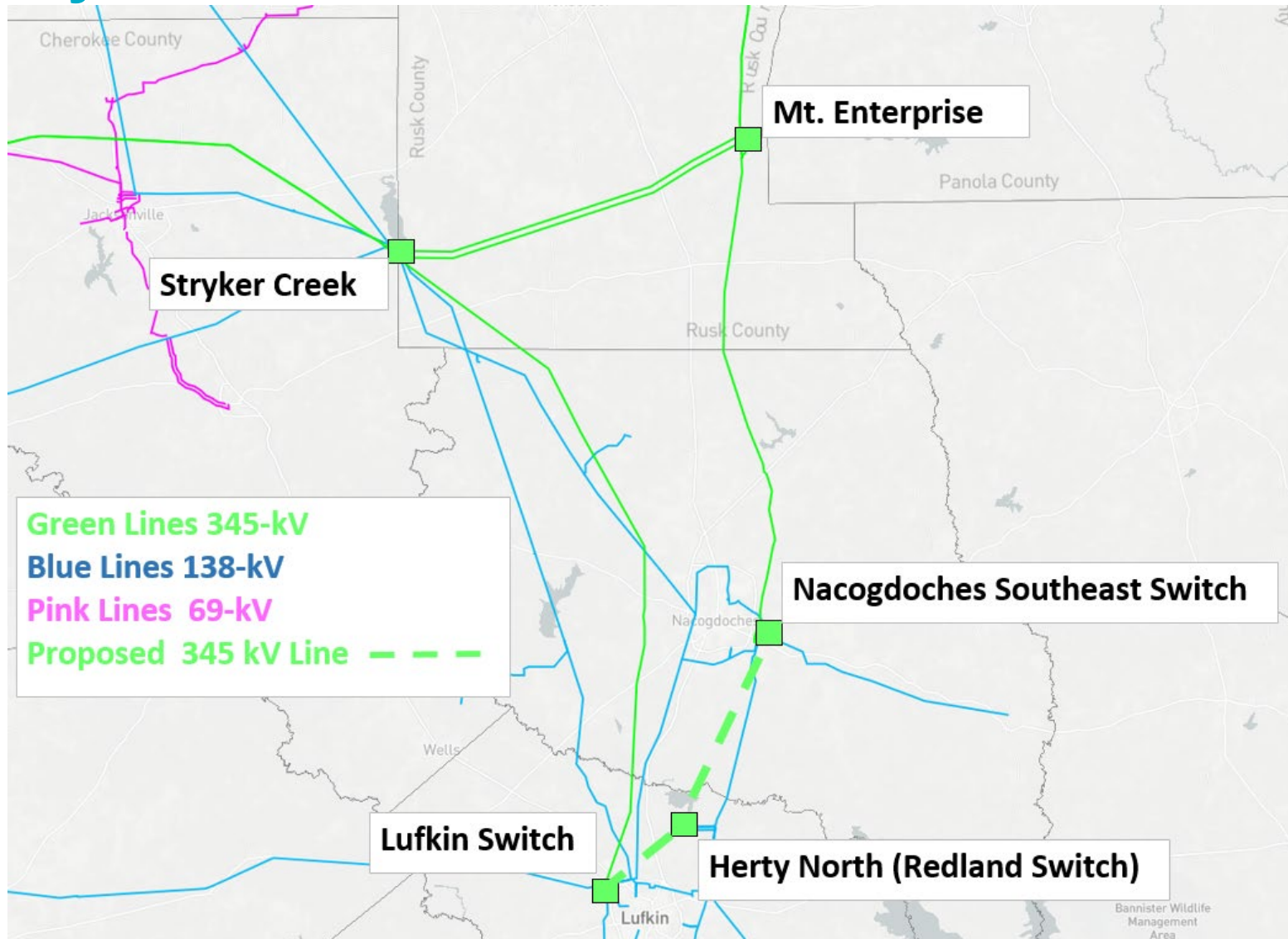
**Regional Planning Group
August 17, 2021**

Introduction

Oncor submitted the Nacogdoches Southeast Switch – Redland Switch - Lufkin Switch 345-kV Loop Project for Regional Planning Group review in October 2020. This is a Tier 2 project that is estimated to cost \$71 million.

- Proposed for Summer 2023, or sooner, in-service date
- Addresses thermal violations, load growth, improves dynamic performance and operational flexibility
- Provide thermal capacity and operational flexibility by
 - Adding 345-kV bus work and one 345/138-kV Herty North (Redland) substation
 - Adding 13 miles of 345-kV transmission Nacogdoches to Redland
 - Adding 10 miles of 345-kV transmission Redland to Lufkin
- Scope presented during December 2020 RPG:
http://www.ercot.com/content/wcm/key_documents_lists/189757/ERCOT_EIR_Oncor_Nacogdoches_Lufkin_Scope.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):

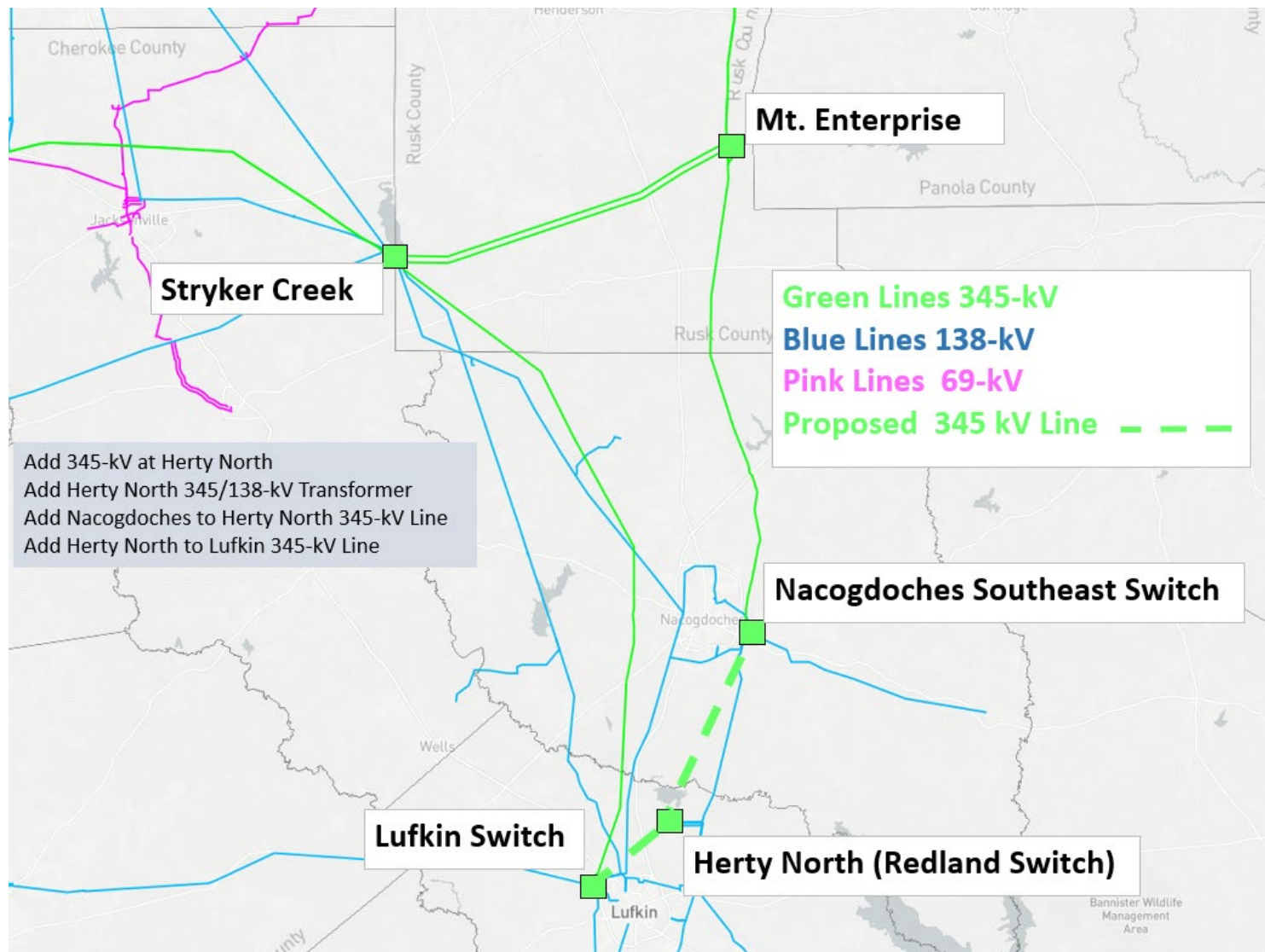
- Normal system condition (P0)
- N-1 conditions (P1, P2-1, P7)
- P2, P4, and P5 (EHV only)
- X-1 + N-1 (X-1 represents 345/138-kV transformer outage)
 - Lufkin 345/138-kV Transformer #1 + N-1
 - Nacogdoches 345/138-kV Transformer #1 + N-1
 - Stryker Creek 345/138-kV Transformer #1 + N-1
 - Jewett 345/138-kV Transformer #3 (X-1) + N-1
- G-1 + N-1 (G-1 represents generator outage)
 - Gateway Unit #4
 - Stryker Creek Unit #2
 - Nacogdoches Unit #1

Preliminary Results of Reliability Assessment

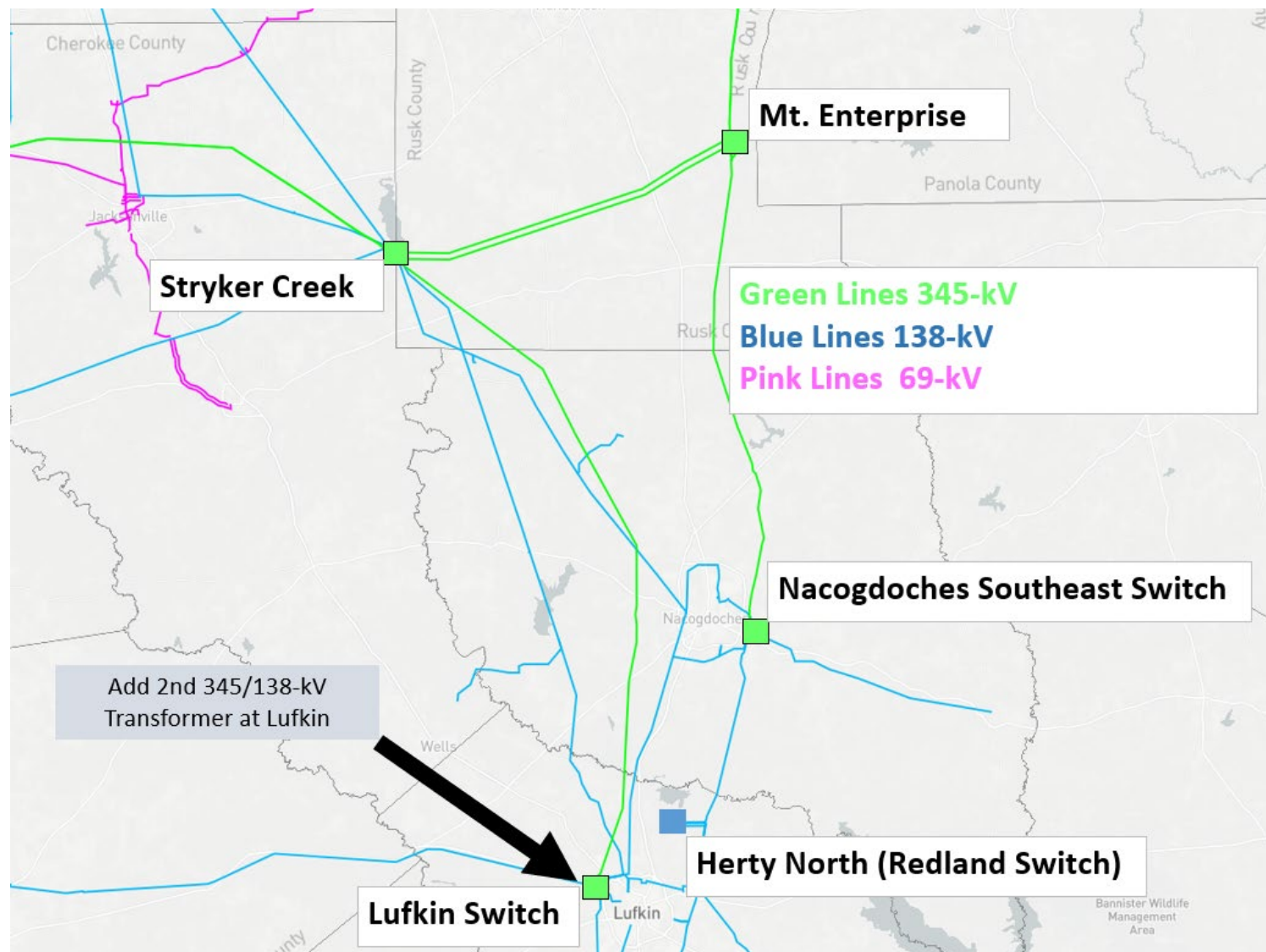
Contingency Category	Unsolved Power Flow	Thermal Overloads (Number of Elements)	Bus Voltage Violation
P1	0	0	0
P2.1	0	0	0
P3	0	0	0
P6.2 (X-1+N-1)*	0	13 mile 138-kV line (1)	0
P7	0	0	0
Total	0	13 mile 138-kV line (1)	0

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

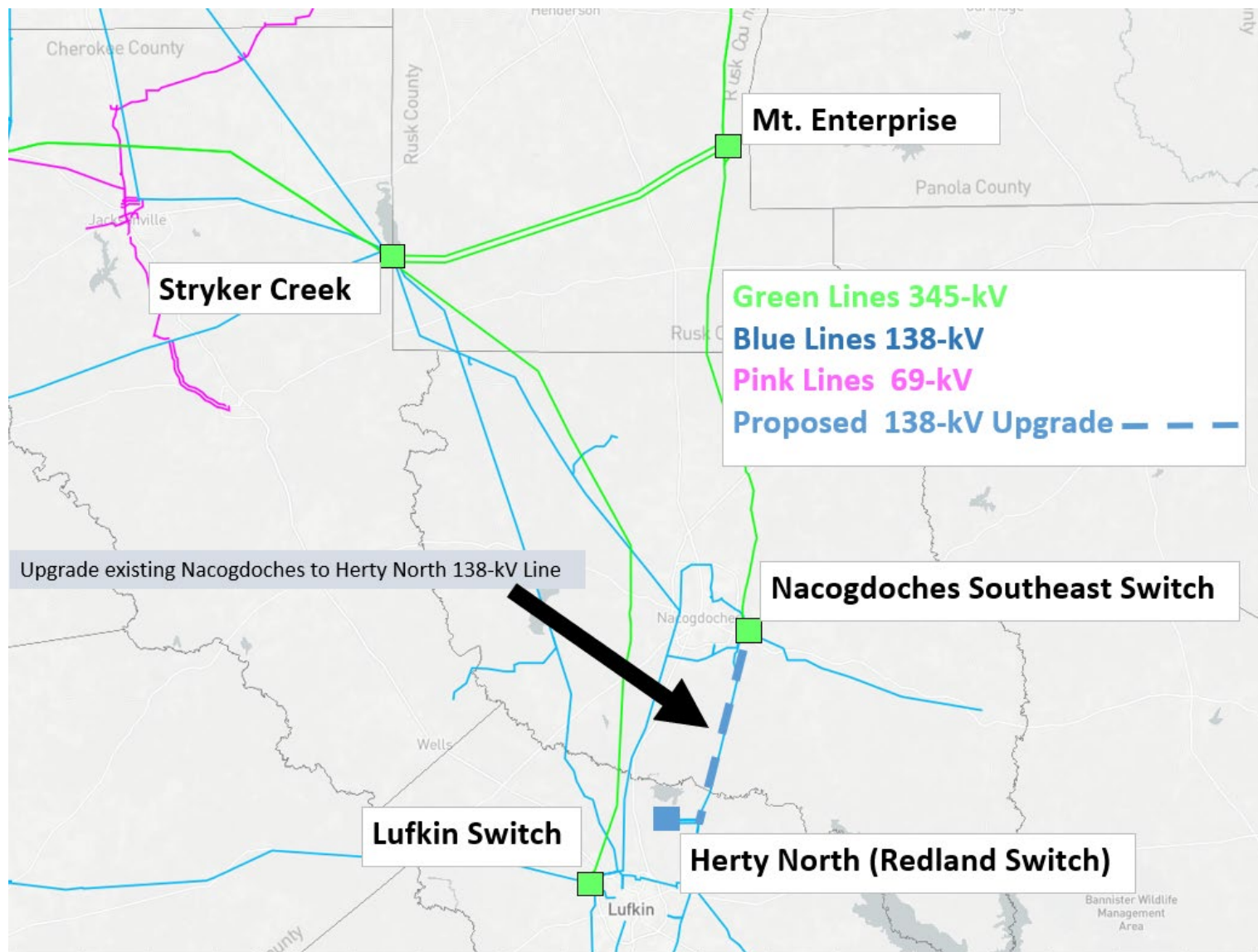
Option 1



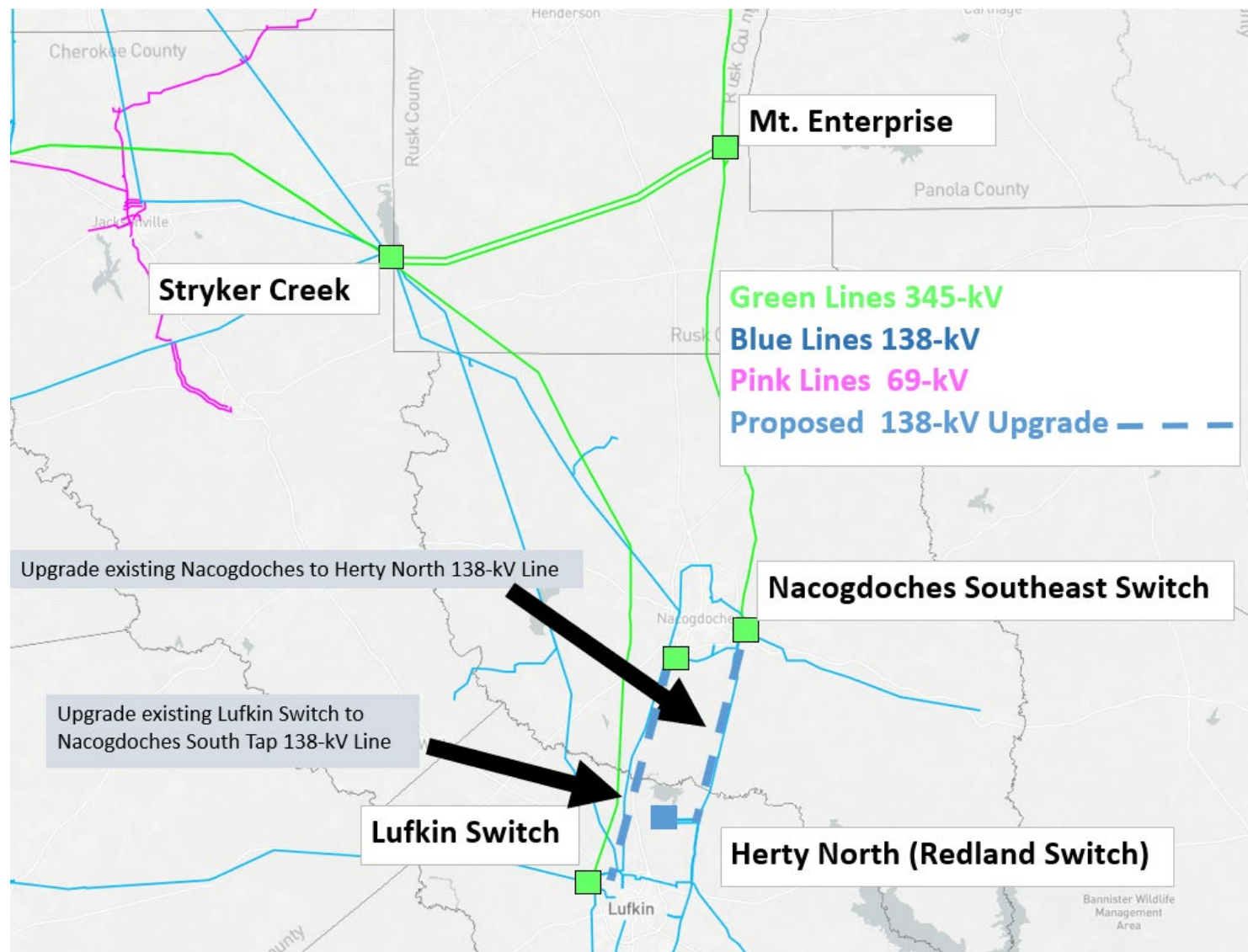
Option 2



Option 3



Option 4



Comparison of Options

Options	With SCOPF*	Without SCOPF**		
	X-1+N-1	X-1+N-1 (Overload %)	N-1+N-1 (Overload %)	Estimated Load Serving Capability
1	No Violations	No Violations	109% 16 mile 138-kV Line	In progress
2	No Violations	No Violations	136% 13 mile 138-kV Line and 109% 16 mile 138-kV Line	In progress
3	No Violations	109% 16 mile 138-kV Line	109% 16 mile 138-kV Line	In progress
4	No Violations	No Violations	No Violations	In progress

* SCOPF – Security Constrained Optimal Power Flow

** Maintain output from conventional generation in the area close to their maximum capacity

Next Steps

- ERCOT will continue to work with the TSP for cost estimates of each option and may perform the following assessments
 - SSR vulnerability assessment depending on preferred upgrade
 - Congestion analysis
 - Congestion analysis may be performed to ensure that the identified transmission upgrades do not result in new congestion within the study area

Tentative Timeline

- ERCOT will provide status updates at RPG meetings
- Final recommendation – September 2021



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