



Valley RPG Independent Review Status Update

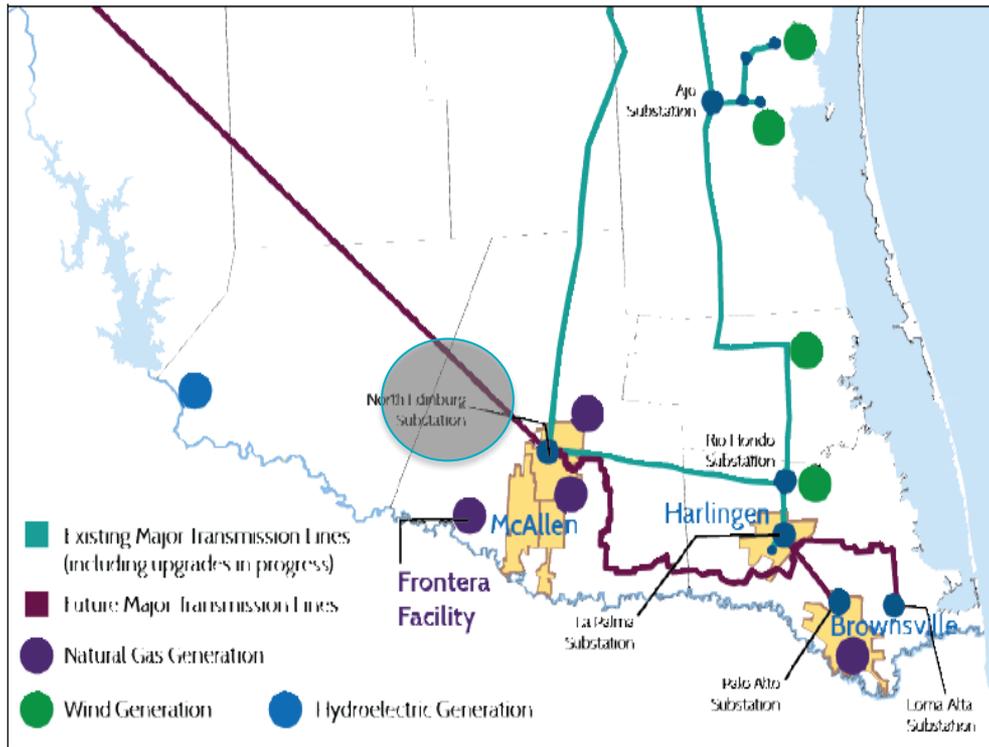
ERCOT System Planning

Regional Planning Group, March 22, 2016

Agenda

- LRGV Overview
- Base Case
- Scenarios
- Upgrade Options
- Next Step

LRGV Overview



**Generation in and near LRGV
(As of January, 2016)**

Capacity (MW)	Gas	Wind	Total	Cumulative
Existing	1245*	2265	3510	3510
Meet PG6.9	225	1888	2113	5623
IA Only	1601	250	1851	7474
SS/FIS	0	2716	2716	10190

*Exclude Frontera Facility

LRGV Area Load (MW)
2797**

** assuming no DGs are available for ERCOT deployment

Base Cases

- Base Cases
 - 2021 S/SC peak RTP case (Steady State Analysis)
 - 2797 MW (assuming no DGs are available for ERCOT deployment)
 - FY2021 DWG Flat Start Case (Dynamic Stability Analysis)
- Criteria
 - TPL-001-4, ERCOT Planning Guide
 - No UVLS triggering in P3 events (G1-G1, G1-N1)
 - UVLS less than 300 MW in P6 events (N1-N1)
- Key Assumptions
 - Summer dynamic load model
 - No DC export under P3, P6 events
 - Entire combined cycle train as a G1 event
 - Wind generation is dispatched at 10% output of its Pmax

Base Case Results

- [RPG presentation](#) in November, 2015
- Voltage Stability Analysis (PV analysis)
 - Less than 1% margin for N1-N1
- Dynamic Stability Analysis
 - Observe ULVS at G1-G1
 - Close to angular instability at N1-N1

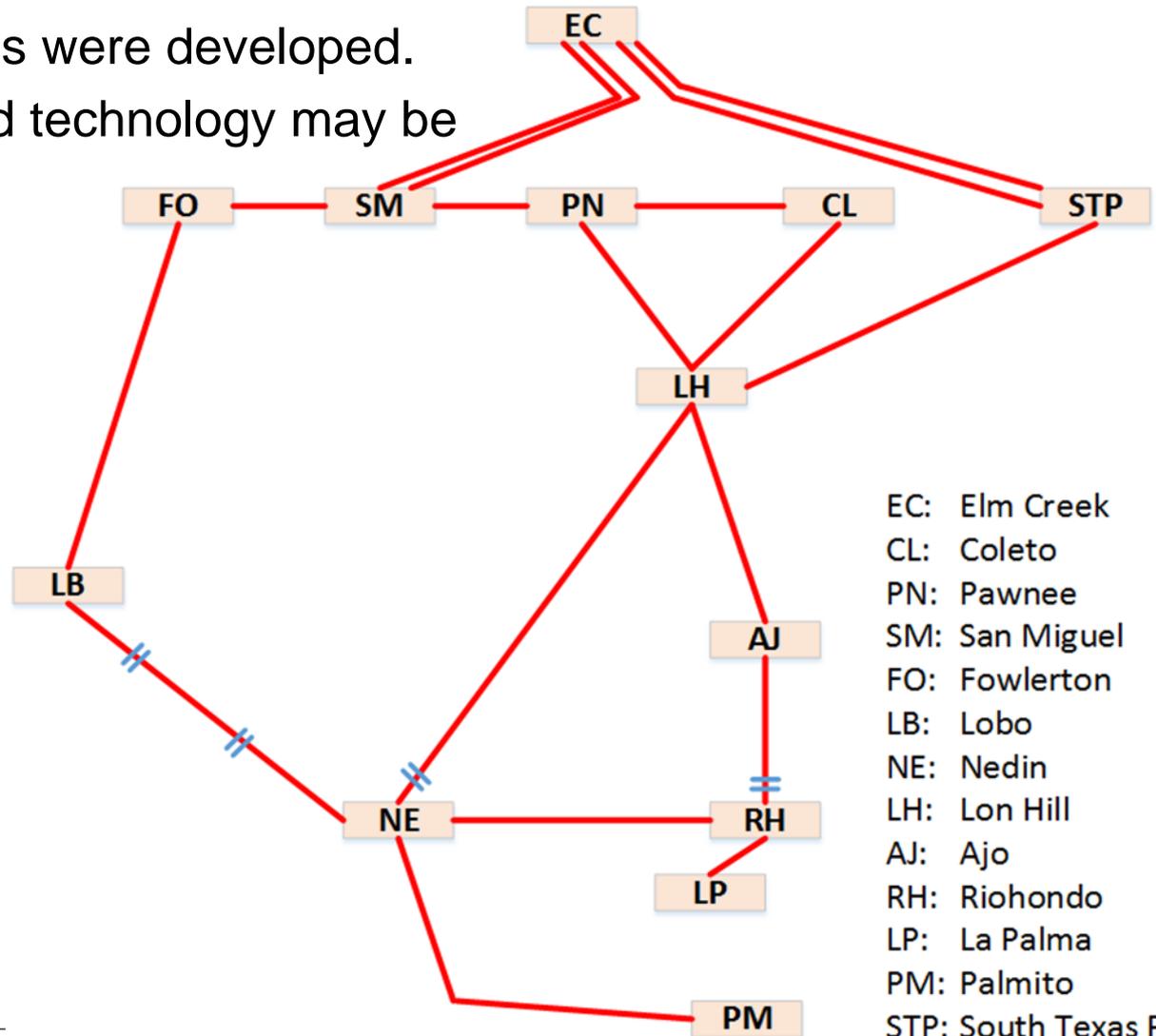
Scenarios

- Base Case

Scenario	Valley Load (MW)	LNG Load (MW)	New Generation (MW)
Base Case	2797	0	0
Sensitivity Case 1	2797	700	0
Sensitivity Case 2	2797	700	780

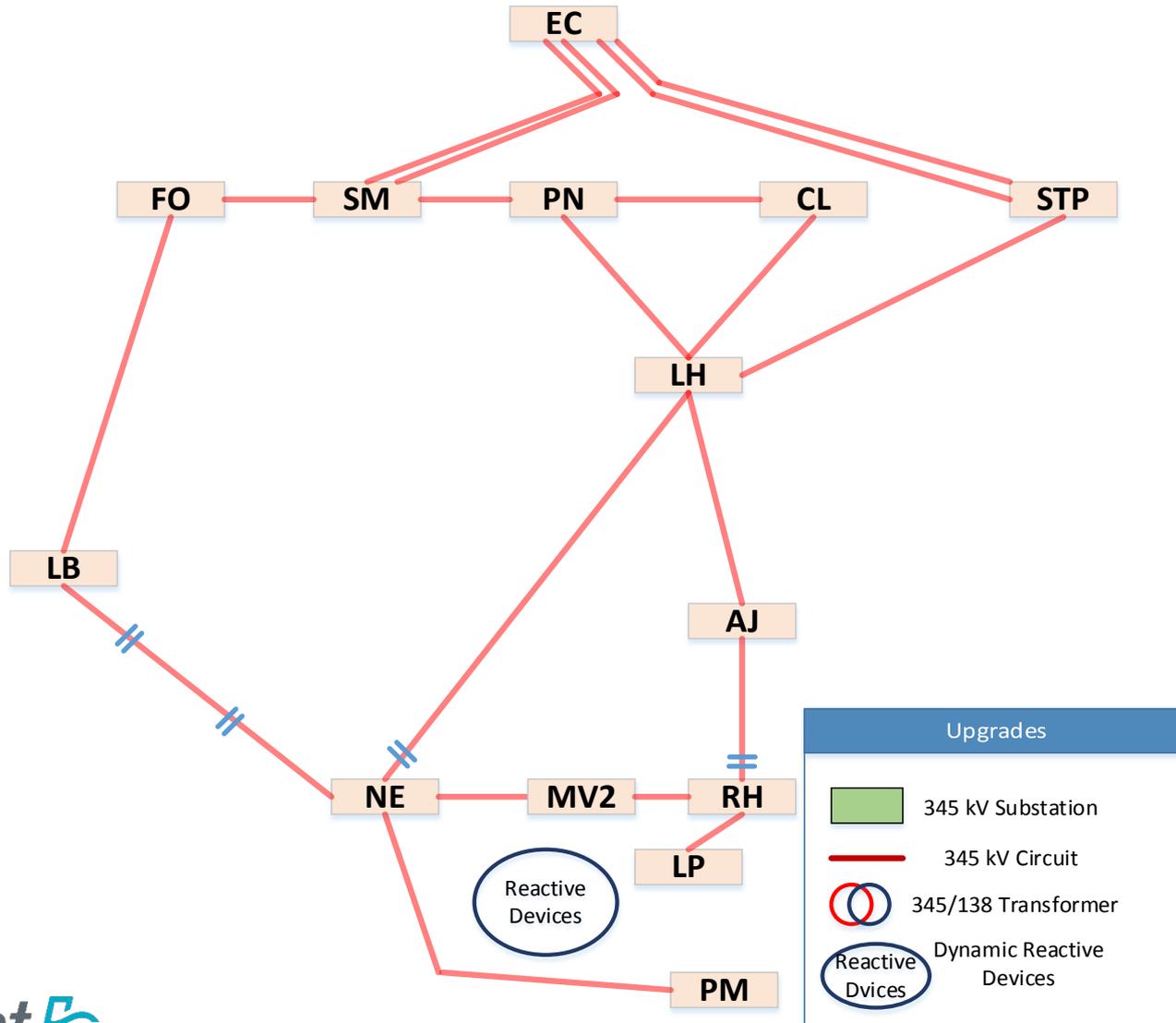
Upgrade Options

- 10 upgrade options were developed.
- Location, size, and technology may be revised.

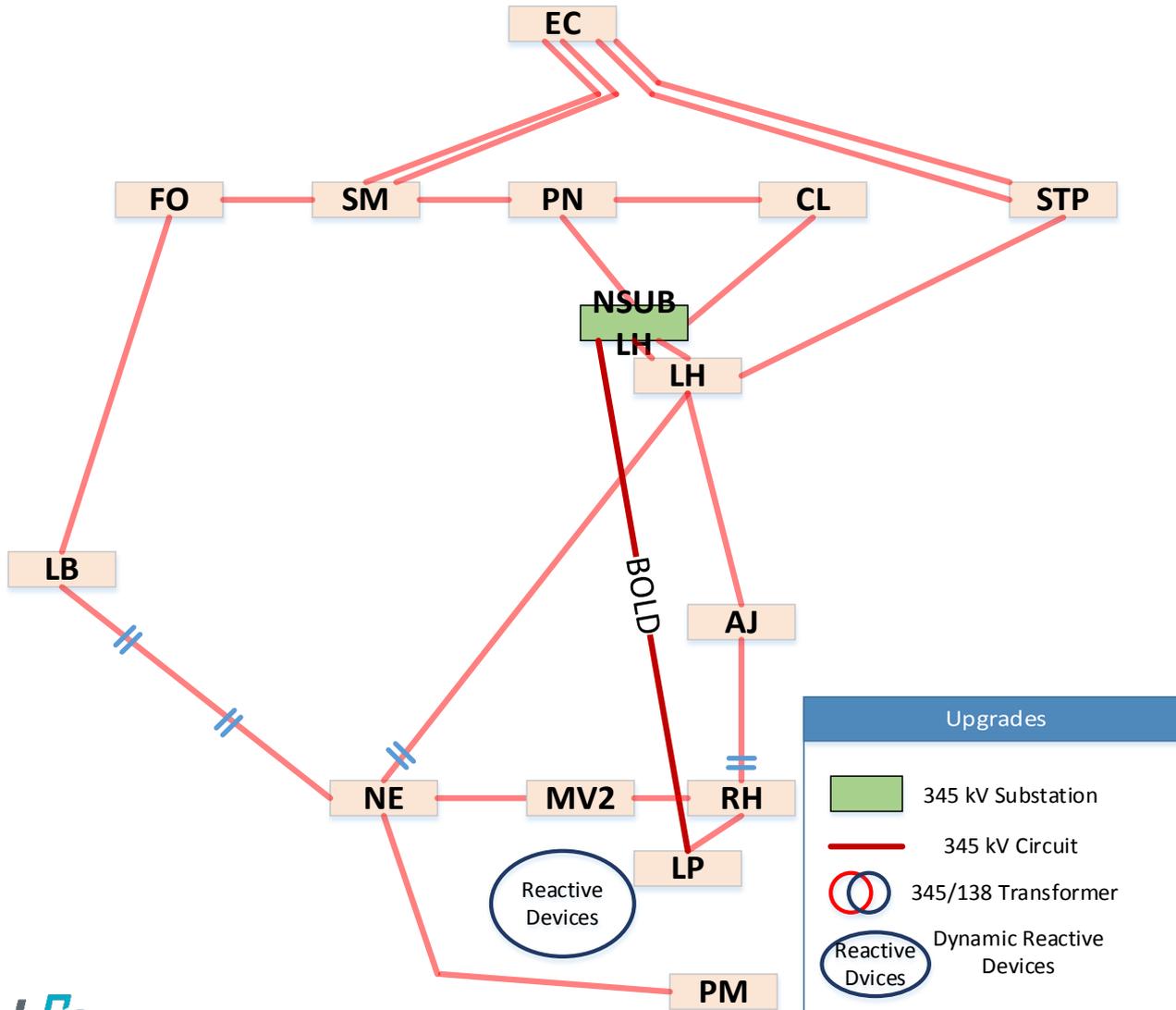


system topology after 2016 summer

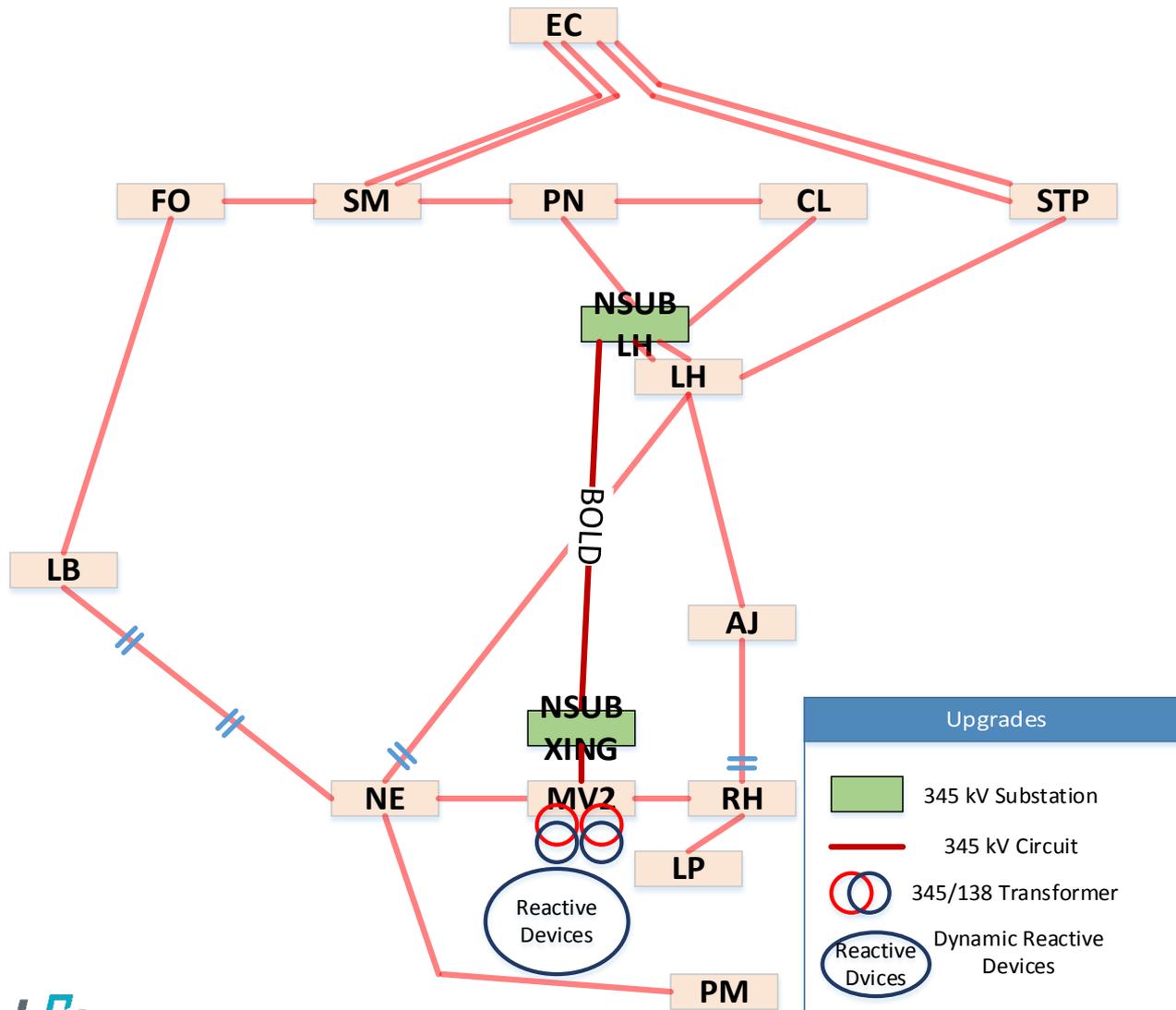
Option 1: Dynamic Reactive Devices



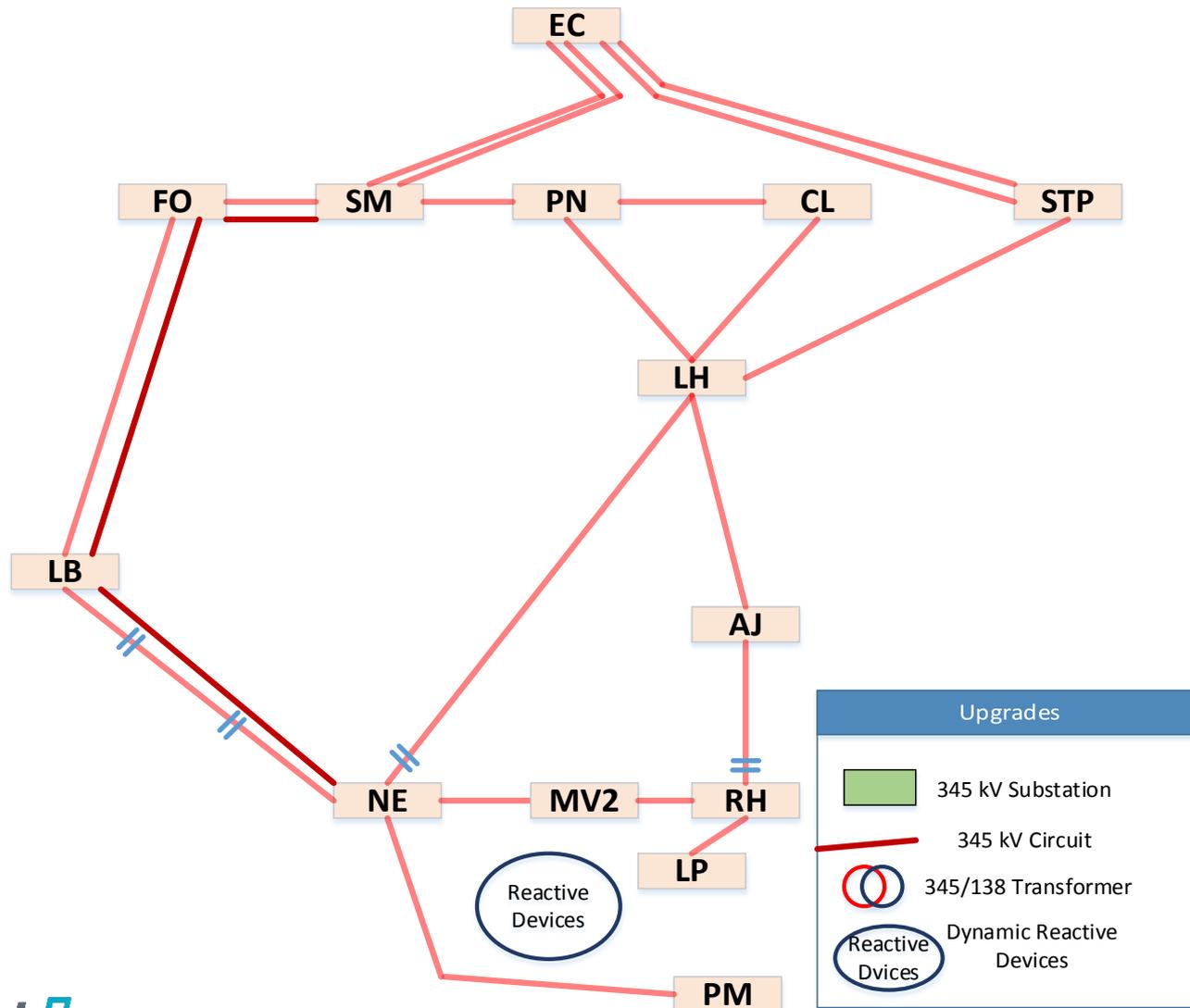
Option 2: NSUBLH-La Palma 345 kV (single circuit, Bold)



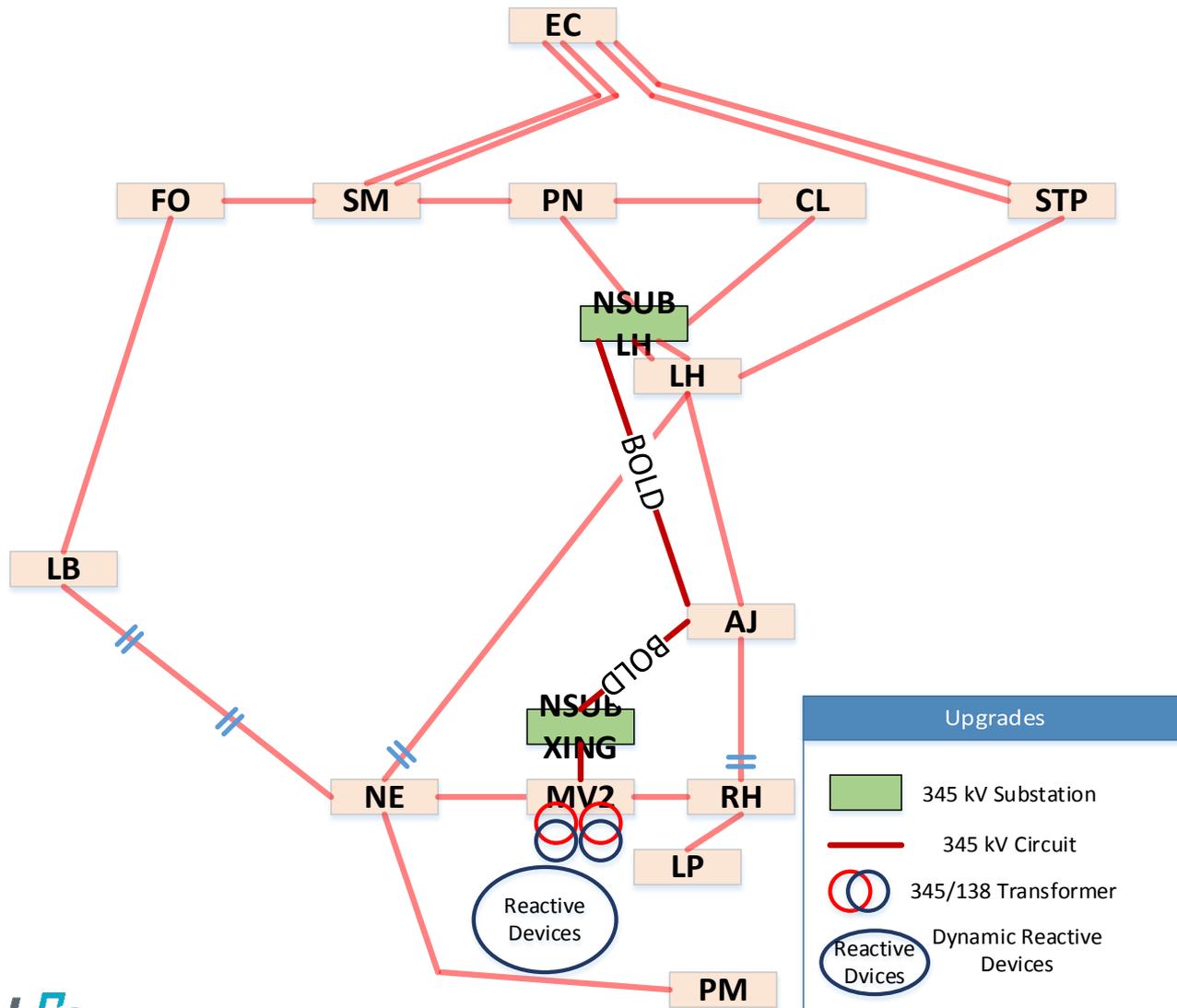
Option 3: NSUBLH-NSUBXING 345 kV (single circuit, Bold)



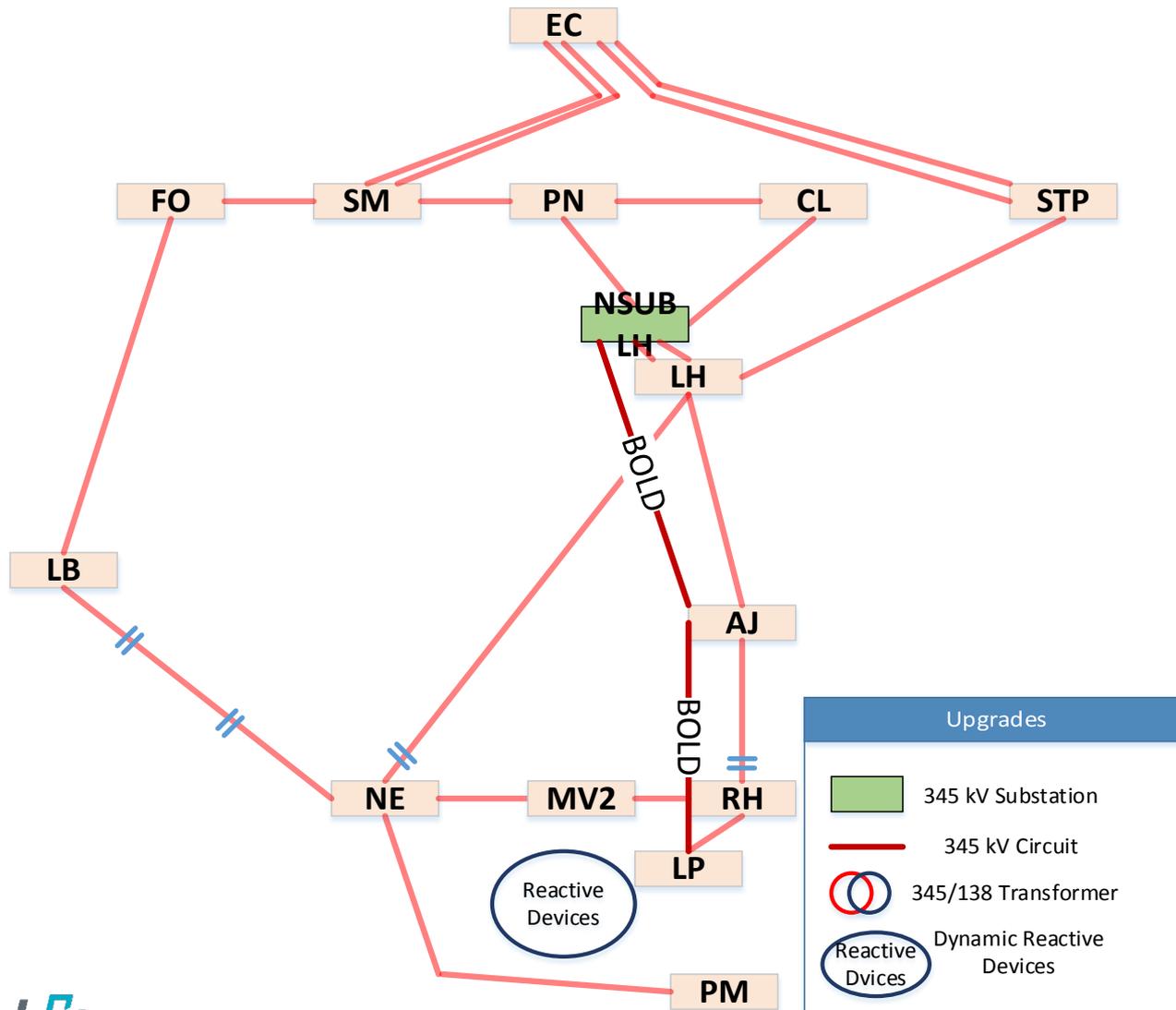
Option 4: SM-FO-LB-NEDIN 345 kV (second circuit, non Bold)



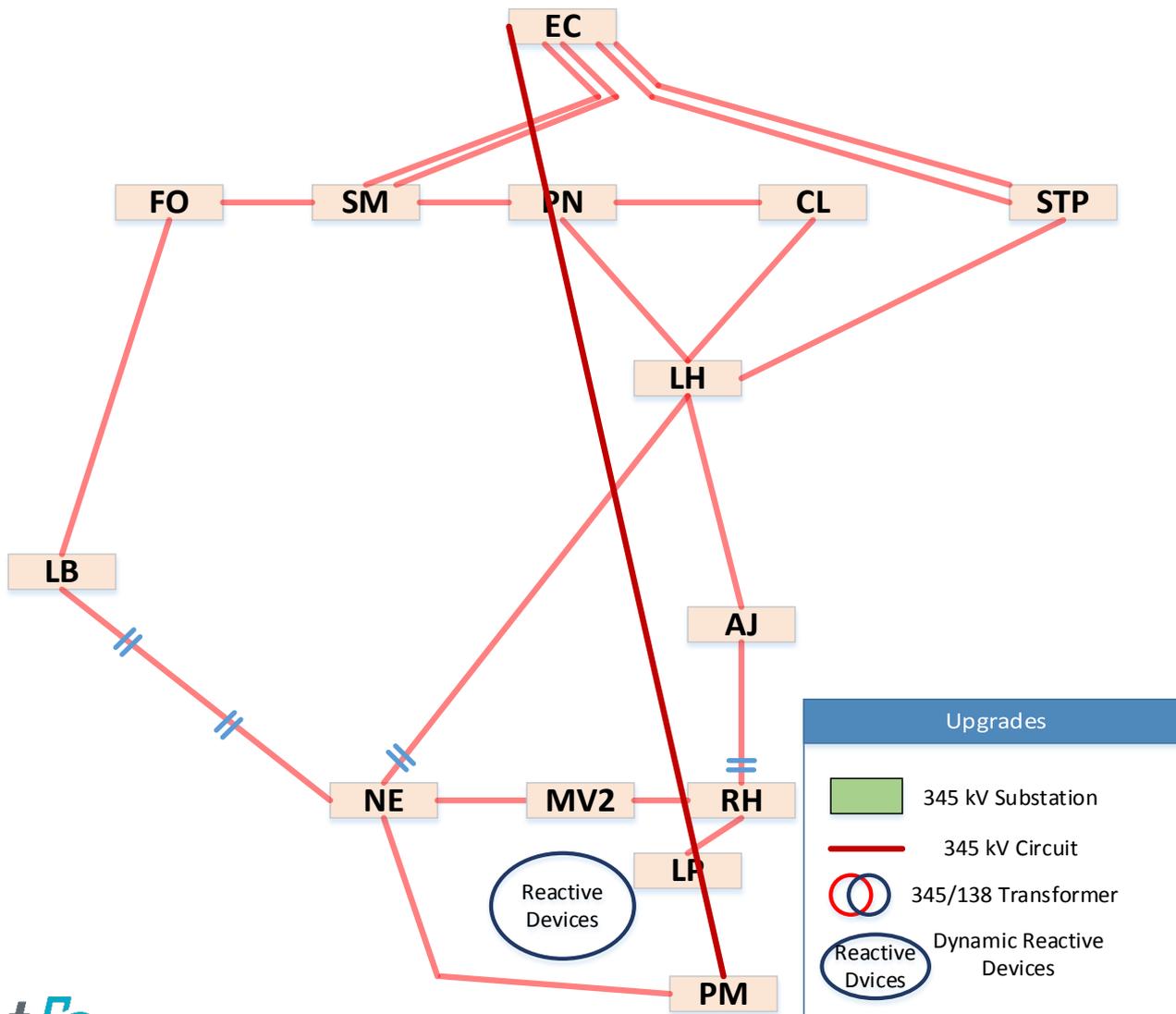
Option 5: NSUBLH-Ajo-NSUBXING 345 kV (single circuit, Bold)



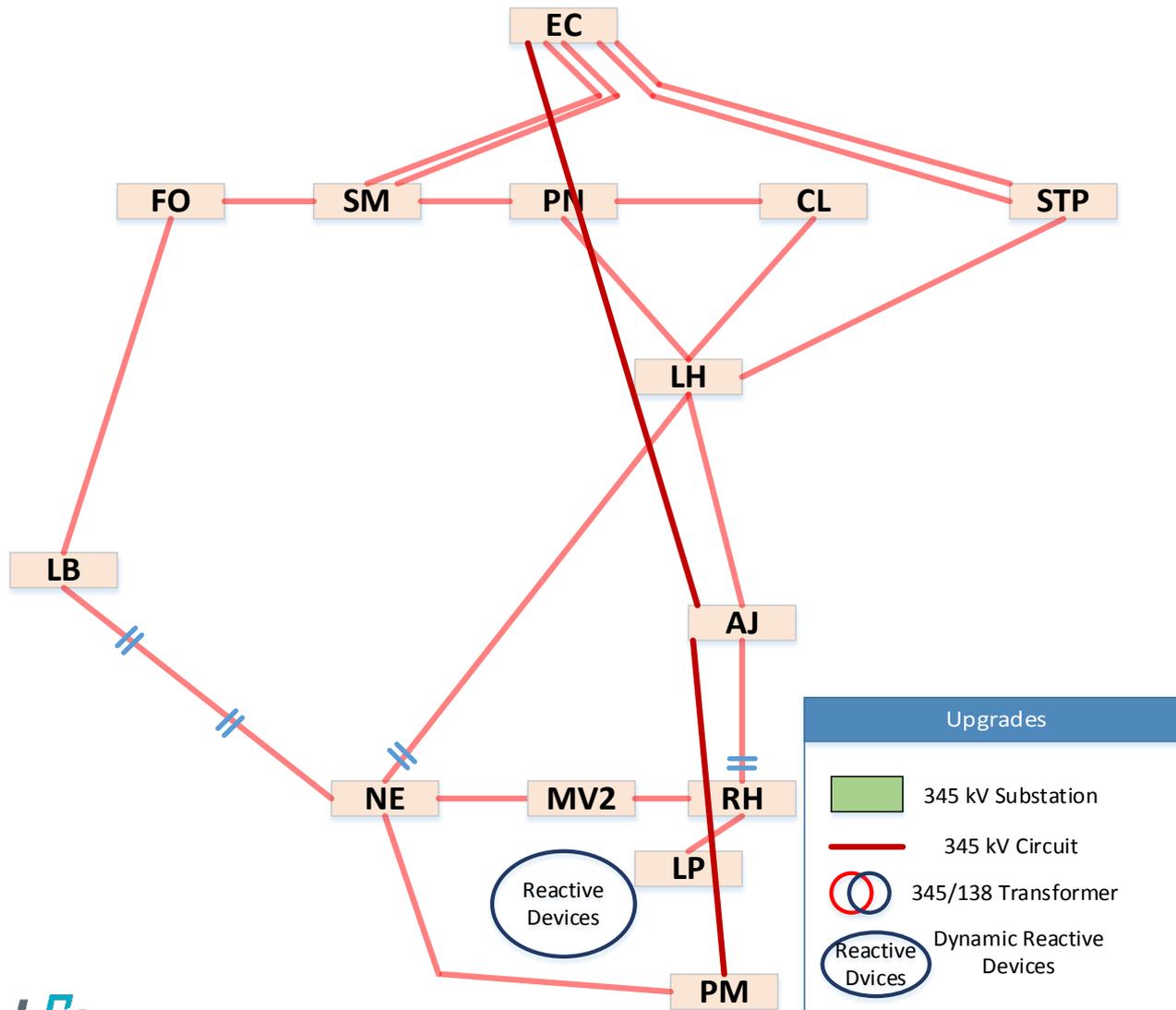
Option 6: NSUBLH-Ajo-La Palma 345 kV (single circuit, Bold)



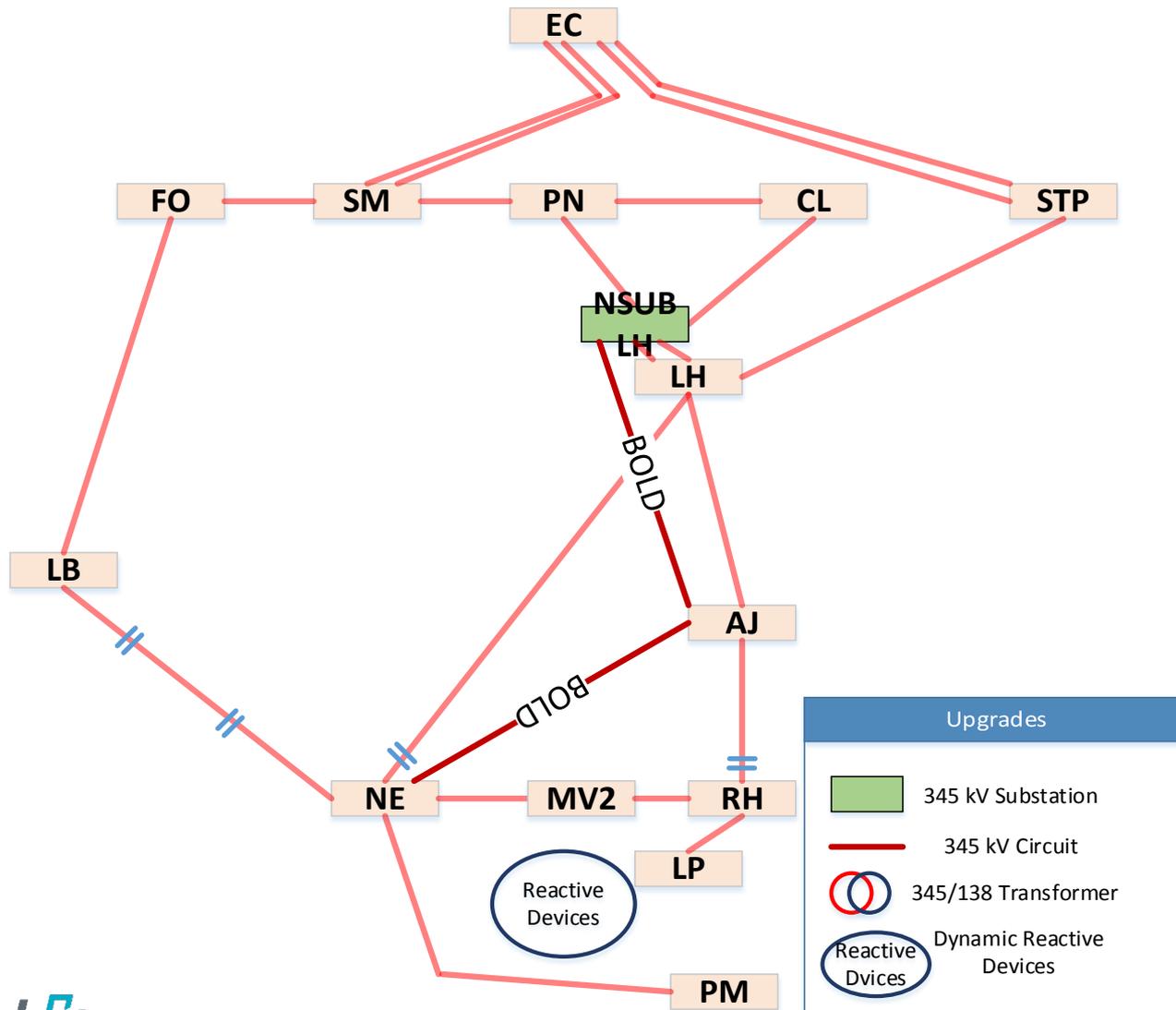
Option 7: Elm Creek-Palmito 345 kV (single circuit, non Bold)



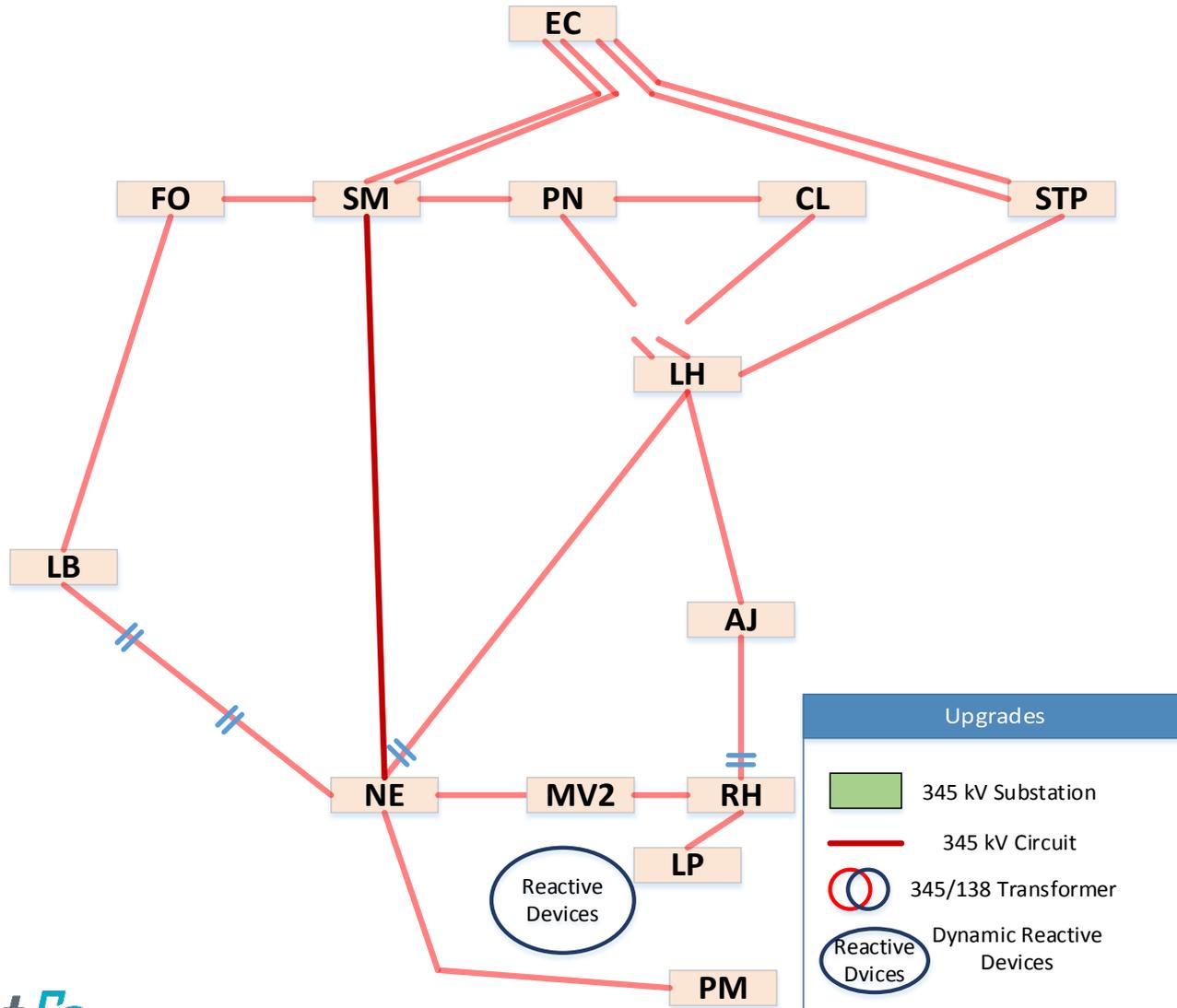
Option 8: Elm Creek-Ajo-Palmito 345 kV (single circuit, non Bold)



Option 9: NSUBLH-Ajo-NEDIN 345 kV (single circuit, Bold)



Option 10: SM-NEDIN new 345 kV (single circuit, non Bold)



Status Update

- Voltage Stability Analysis: in progress
 - Import/Export capability
- Dynamic Stability Analysis: in progress
 - Voltage and angular stability
- Economic Analysis: in progress