

SATS Saturation Cases Status Report

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Ron Belval & Bobby Chavez

Saturation Strategy A-A: 500kV Loop Tucson 2 EHV Paths Through Tucson NW-SE & NW-S



**DRAFT WORK-IN-PROGRESS
FOR DISCUSSION PURPOSES ONLY**

Saturation Strategy C: EHV Reach-In to Tucson

STRATEGY C

Reach-In to NL, EL & SS30:

- Tortolita – North Loop 345kV
- Tortolita – Marana 345kV
- Marana – North Loop 345kV
- South Loop – SS30 345kV
- Vail – South Loop 345kV
- Vail – East Loop 345kV

EXTERNAL SYSTEM ASSUMPTIONS

Possible Joint Projects:

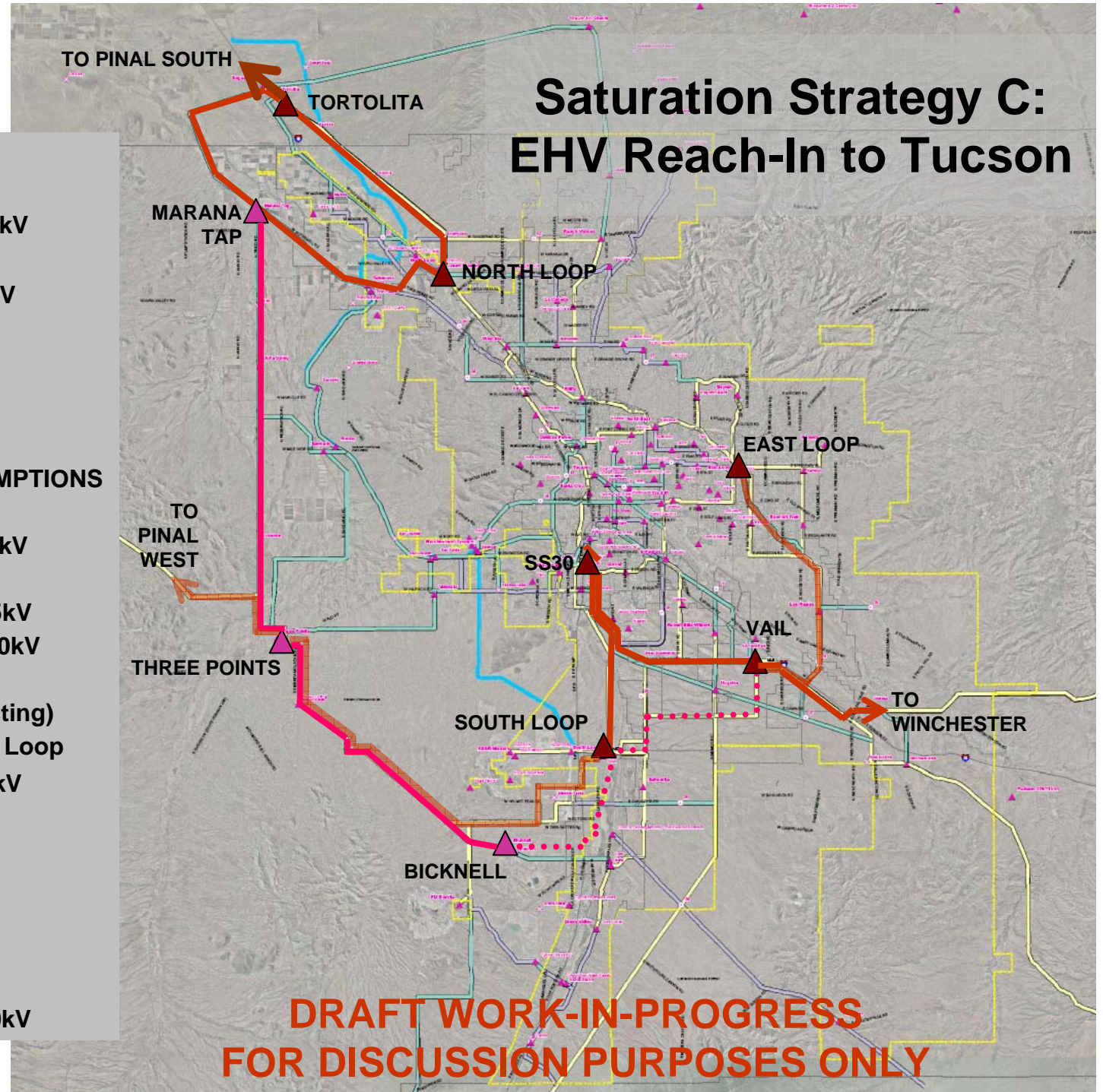
- Tortolita – Winchester 500kV
- Tortolita – Marana 345kV
- Marana – Three Points 345kV
- Three Points – Bicknell 230kV
 - 345kV Option?
- Bicknell – Vail 345kV (Existing)
 - No Loop-In @ South Loop
- 2nd Winchester – Vail 345kV

Possible TEP Projects:

- 2nd Vail – South 345kV

Committed TEP Projects:

- Pinal West 500/345kV
- Pinal South – Tortolita 500kV



Saturation Strategy B: 1 EHV Path Through Tucson

STRATEGY B

Western 345kV Path Only:

- Tortolita – Marana 345kV
- Marana – DMP 345kV
- DMP – SS30 345kV
- SS30 – South Loop 345kV

EXTERNAL SYSTEM ASSUMPTIONS

Possible Joint Projects:

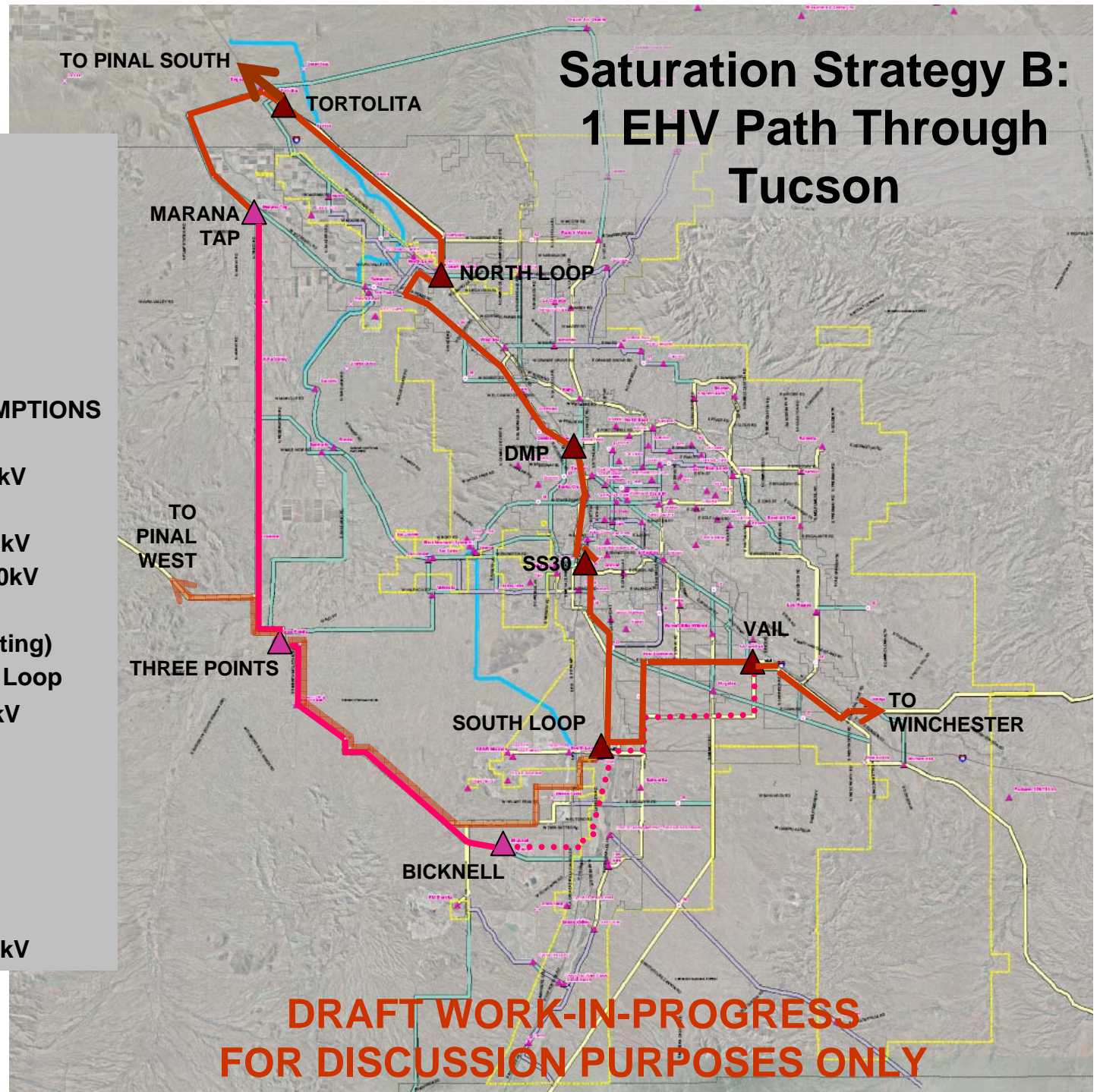
- Tortolita – Winchester 500kV
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- Three Points – Bicknell 230kV
 - 345kV Option?
- Bicknell – Vail 345kV (Existing)
 - No Loop-In @ South Loop
- 2nd Winchester – Vail 345kV

Possible TEP Projects:

- 2nd Vail – South 345kV

Committed TEP Projects:

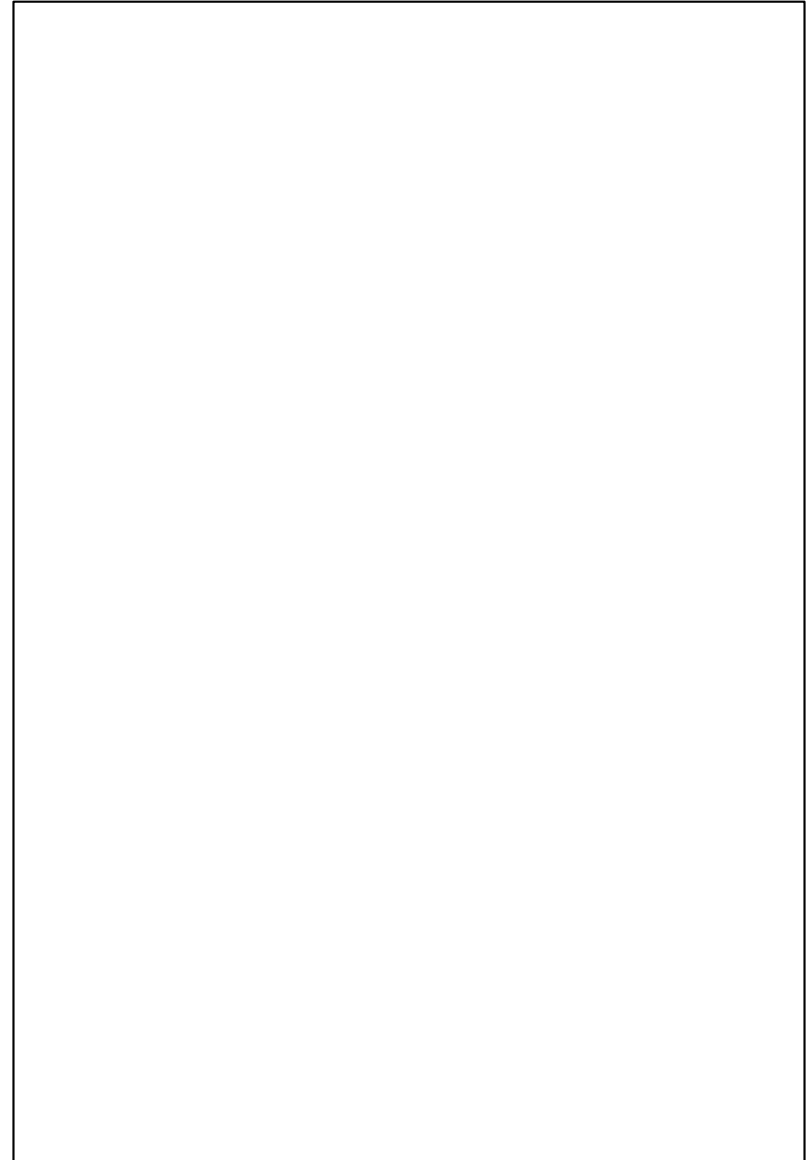
- Pinal West 500/345kV
- Pinal South – Tortolita 500kV



Strategy A Local Area 138kV Transmission Topology

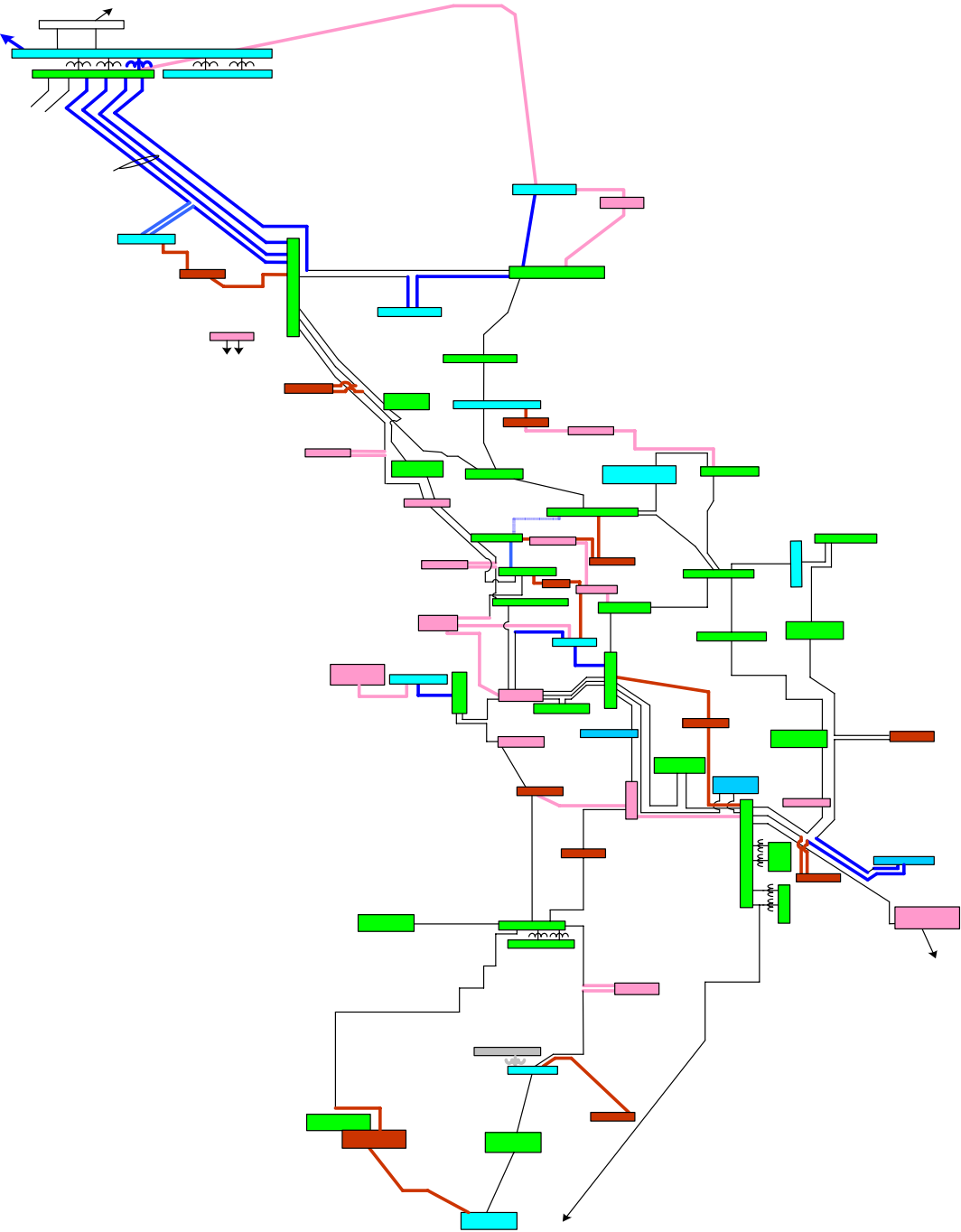
Compatible with Strategy A EHV Configuration

- Designed for 3 new 345/138kV delivery stations
 - North Loop
 - East Loop
 - SS 30
- Integrates Distribution Stations
 - 26 Existing (excludes Tortolita)
 - 6 Committed
 - 34 Planned
- Local Network Reliability
 - NERC Compliant

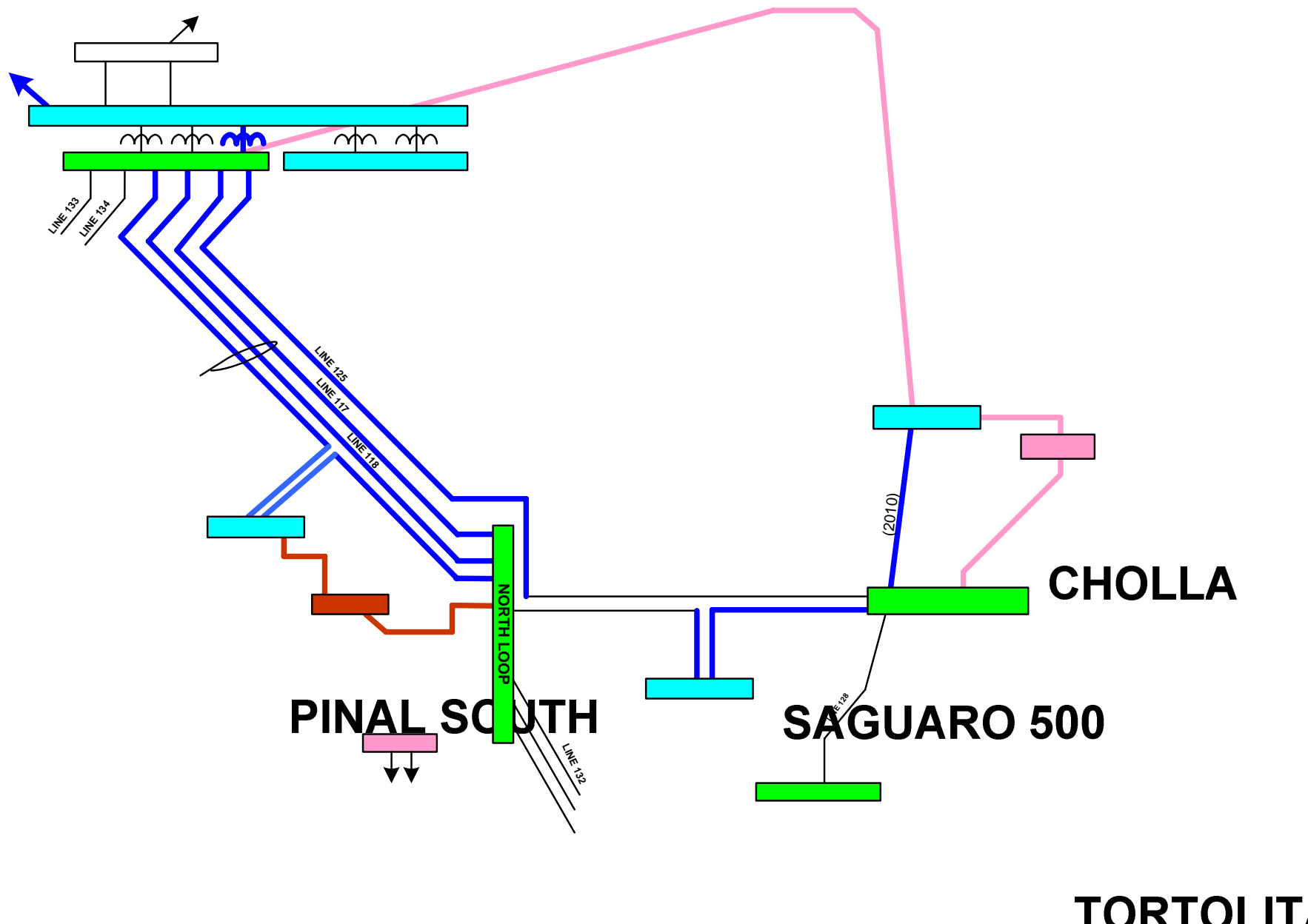


Local Area 138kV Transmission Topology

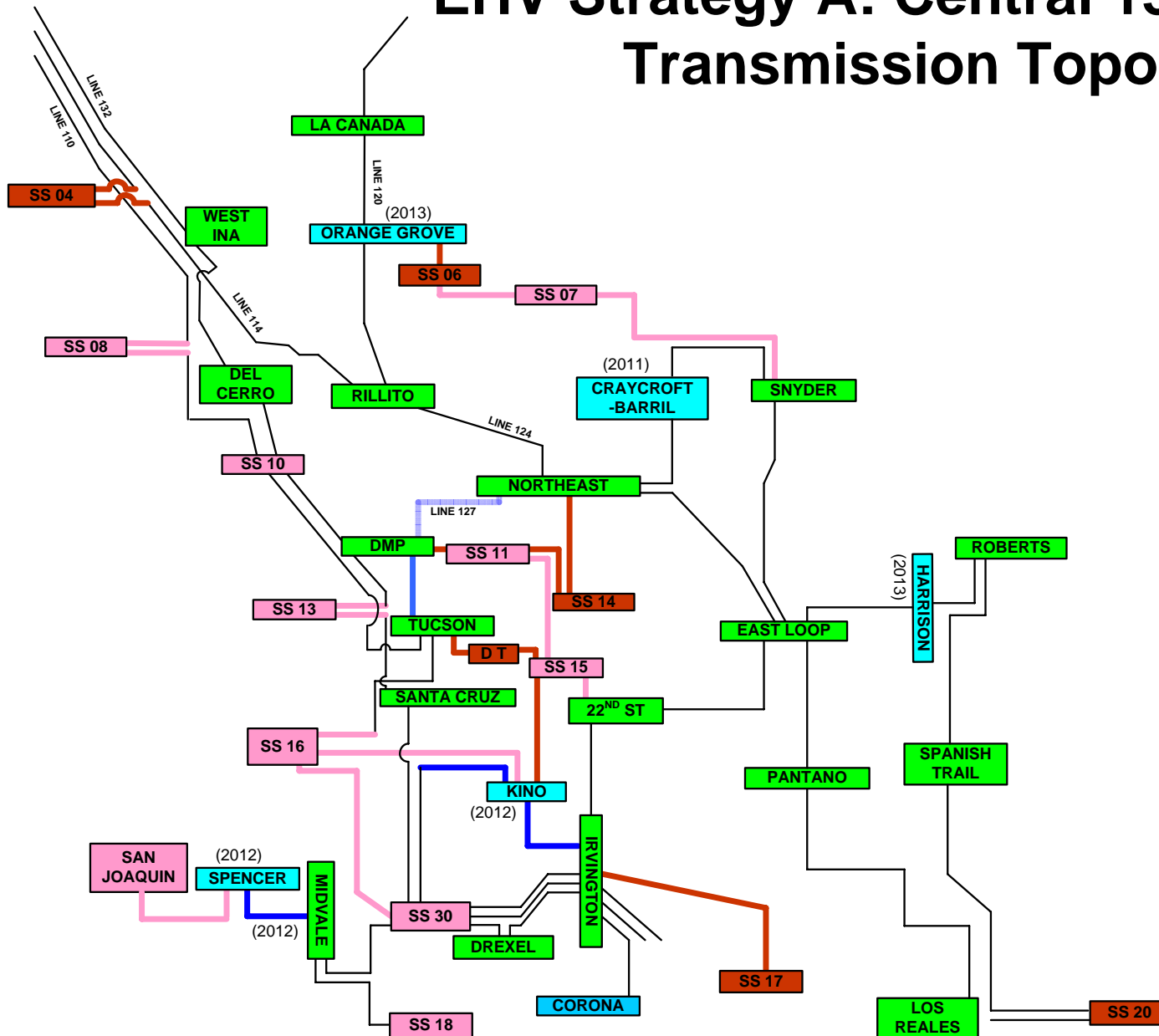
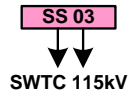
- = Existing 138kV Substation
- = Existing 138kV Line
- = Substation in 2008-12 Capital Budget
- = New 138kV Line in 2008-12 Capital Budget
- = Upgraded 138kV Line in 2008-12 Capital Budget
- = Planned Substation in 10 Year Plan
- = Planned 138kV Line in 10 Year Plan
- = Conceptual Substation in 20 Year Plan
- = Conceptual 138kV Line in 20 Year Plan
- = Conceptual Substation in Saturation Study
- = Conceptual 138kV Line in Saturation Study



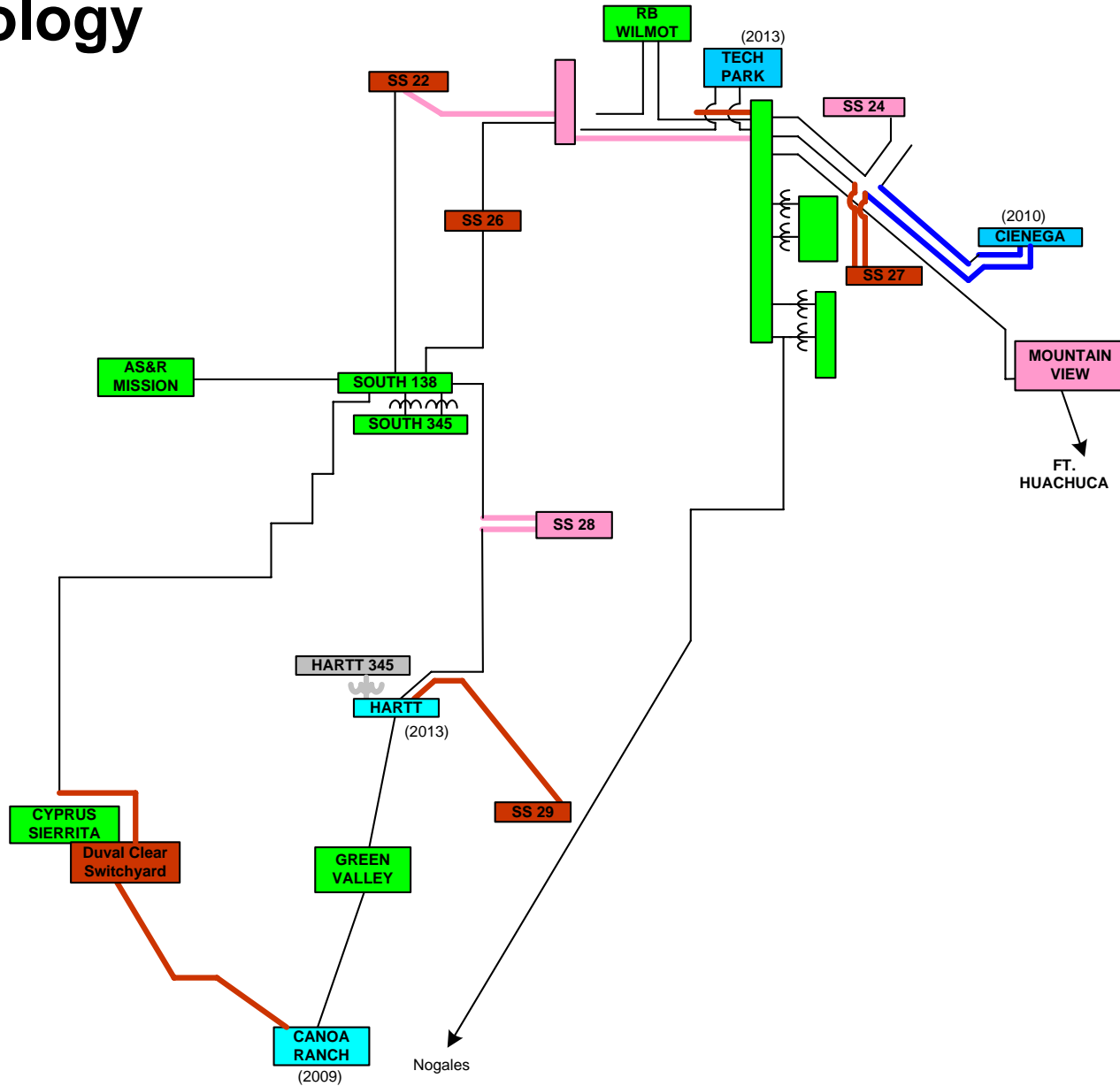
EHV Strategy A: NW 138kV Transmission Topology



EHV Strategy A: Central 138kV Transmission Topology



EHV Strategy A: Southern 138kV Transmission Topology



Work in Progress for 2007

Saturation Load Level

- Assess Feasibility of 500kV
 - Business case for 345kV or 500kV construction
- Determine feasibility of Strategies B, C and D
 - Develop 138kV configuration for three EHV Strategies
 - Assess need for 2 – 345kV corridors through Tucson

20 Year Case

- Confirm feasibility of 345kV (vs 500kV) at 20 Year Planning Horizon
- Complete EHV Strategy A & complementary 138kV topology
- Develop EHV Strategy C & complementary 138kV topology

Work in Progress for 2007

- continued -

10 Year Case

- Prepare case based on EHV Strategy A staged implementation
 - Tortolita – East Loop 345kV
 - Alternative TO-NL 345kV would require NL-RI 138kV
- List of Planned Projects
 - Required by ACC (1/31/08) and WestConnect (11/16/08)
 - 2013 through 2018
 - 2008-12 Capital Budget Projects

2008 SATS Study Plan

- 10 Year Power Flow Base Cases
 - Coordinate with CATS EHV 2018
 - Incorporate 20 Year & Saturation Analysis Findings into Model
- Saturation Studies
 - Areas Surrounding Tucson plus Cochise County
- Strategy Refinement
 - Power Flow Analysis – Coordinate HV with EHV Strategies
 - Sequence Construction Schedules
 - Capital Cost Estimates
- Scenarios
 - Load Forecast, Efficiency, Load Shed
 - Local Renewable Resources
 - Local & Distributed Generation
- Economic Analysis
- Potential Project Sponsors