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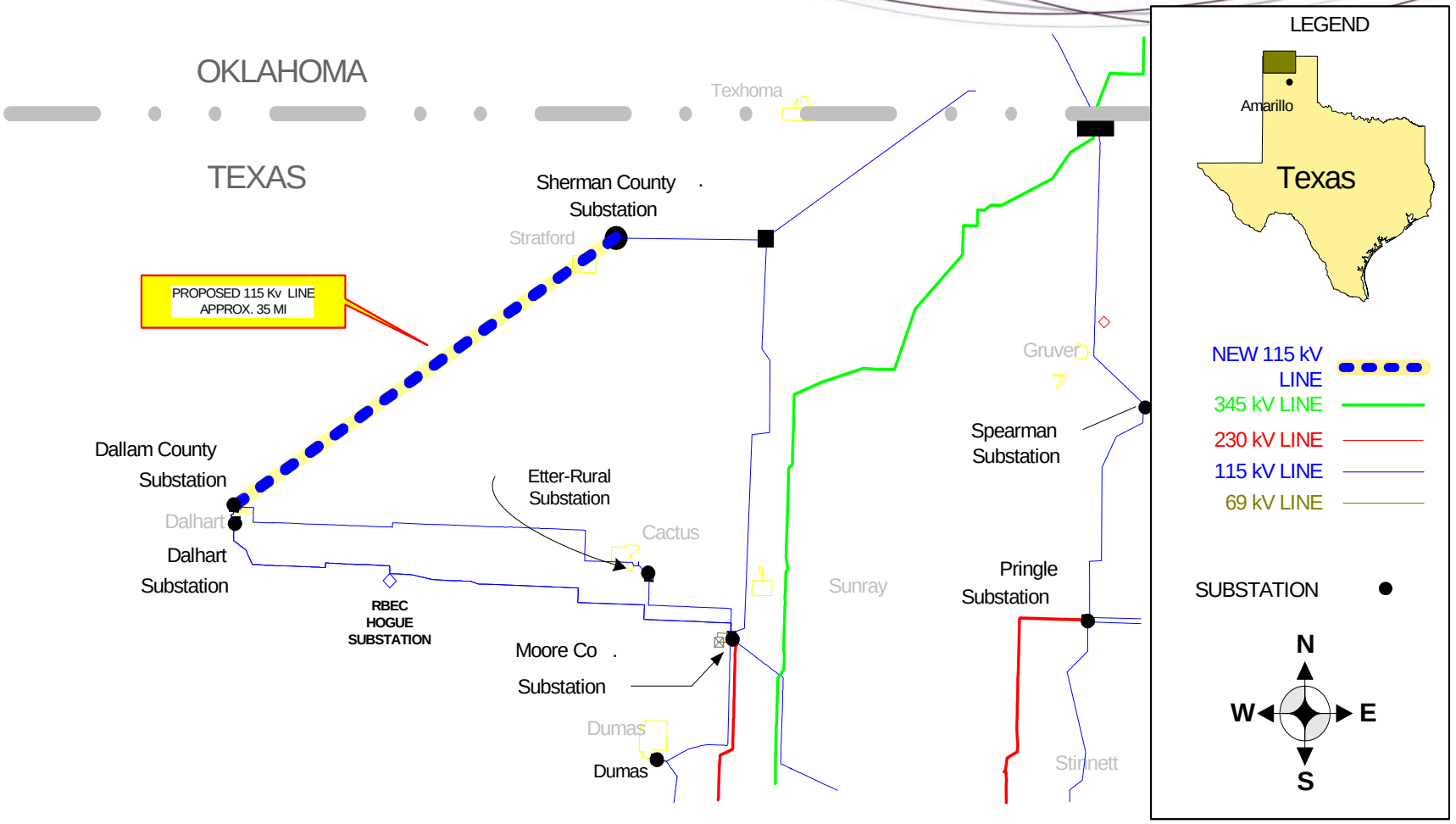
Southwestern Public Service Company Local Planning Meeting

September 15, 2011

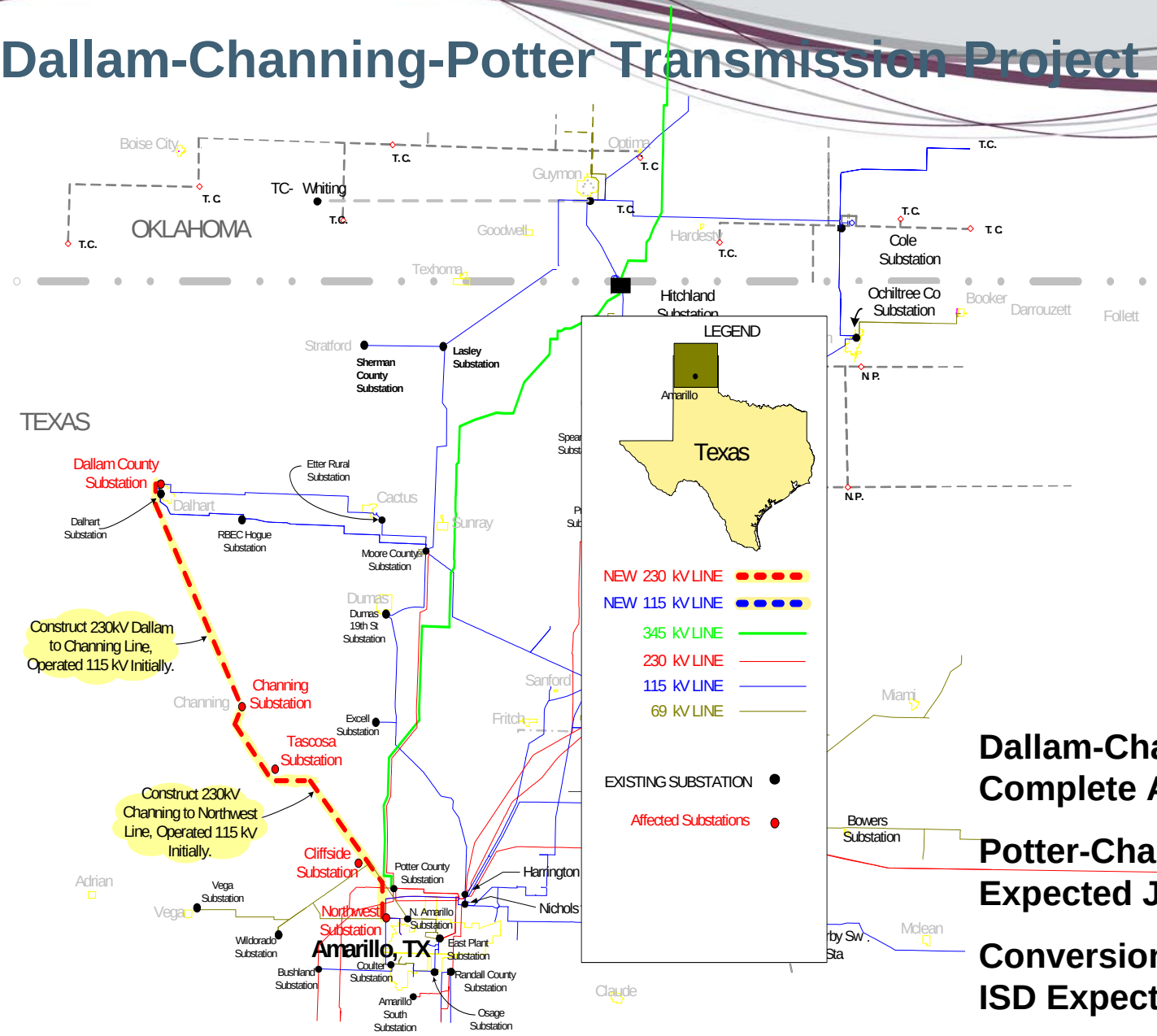
Update on Current Construction Projects

Dallam-Sherman 115 kV Line



Line & Subs Completed – ISD Apr 2011 into Hitchland

Dallam-Channing-Potter Transmission Project

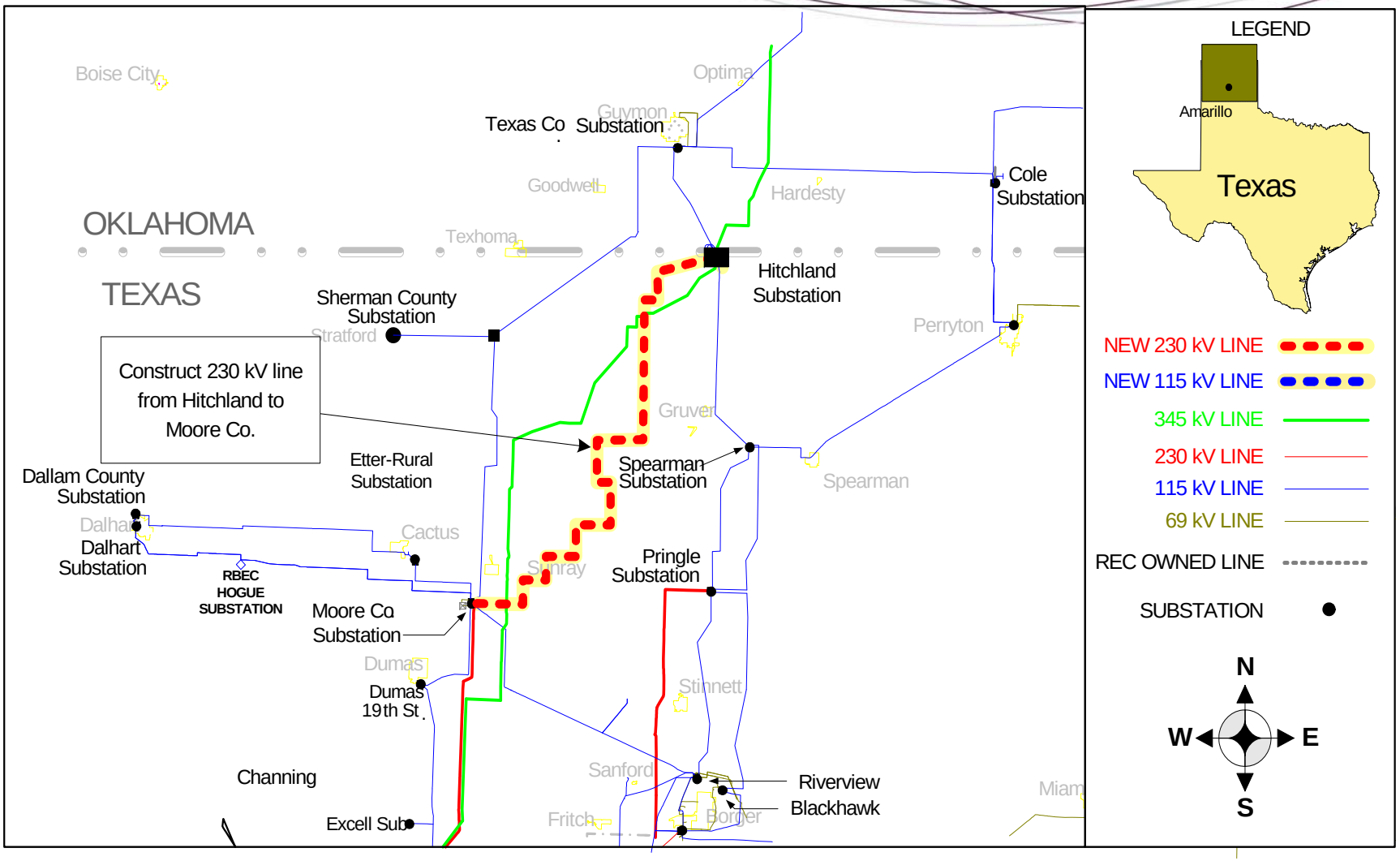


Dallam-Channing Complete Aug 2011

Potter-Channing ISD Expected Jan 2012

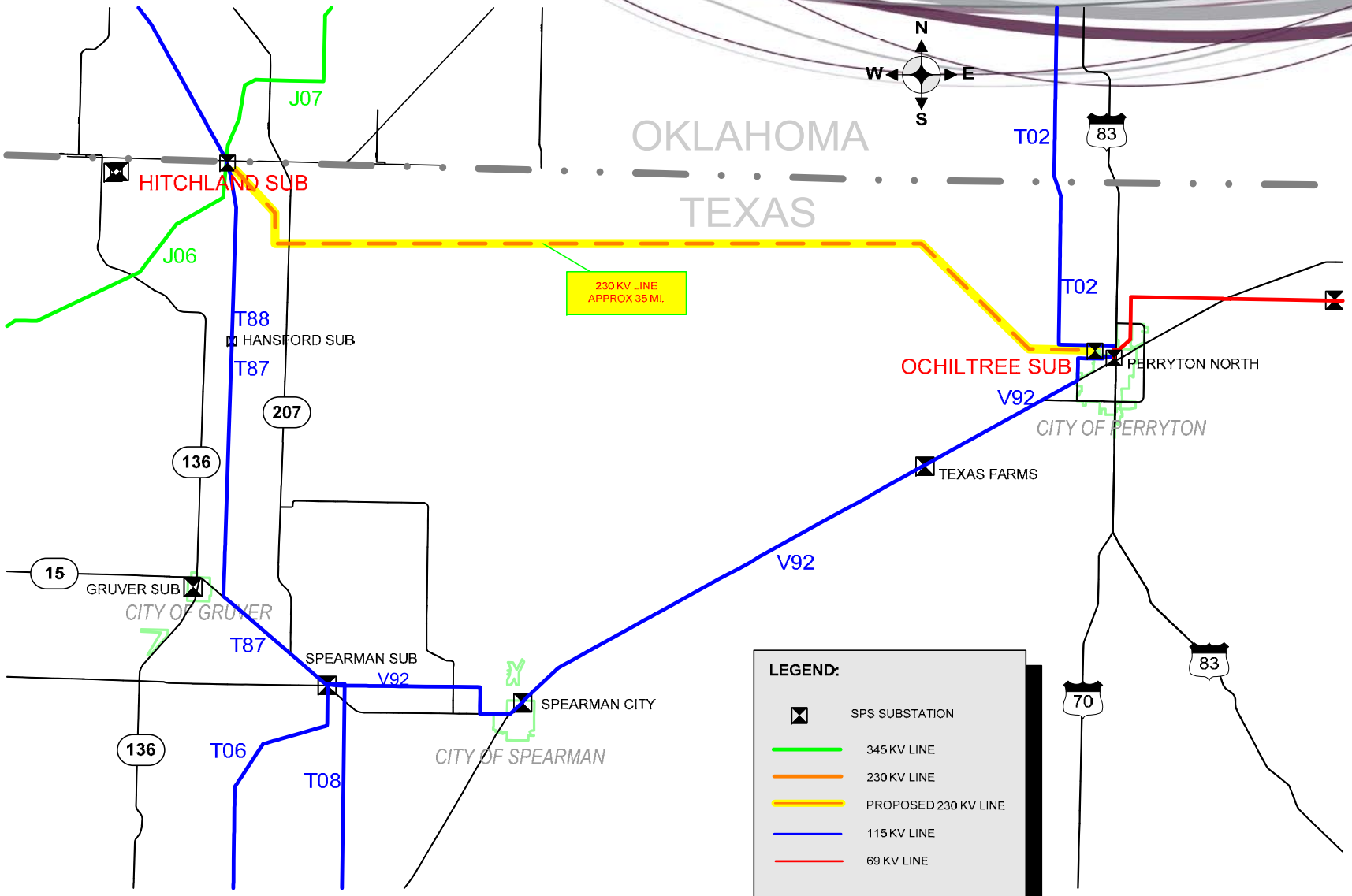
Conversion to 230 kV ISD Expected Dec 2015

Moore County to Hitchland 230 kV



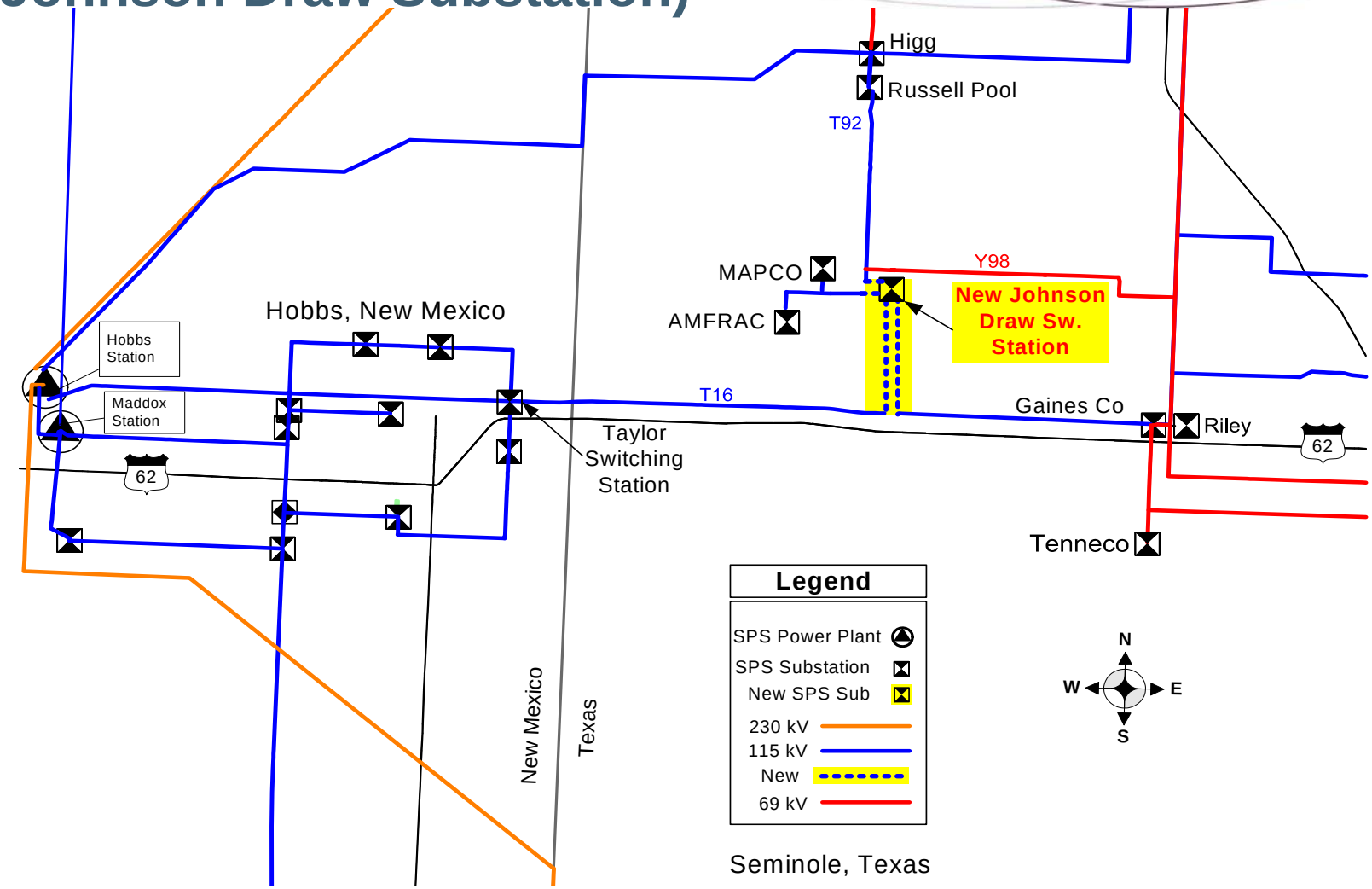
ISD Expected - July 2012

Hitchland to Ochiltree County



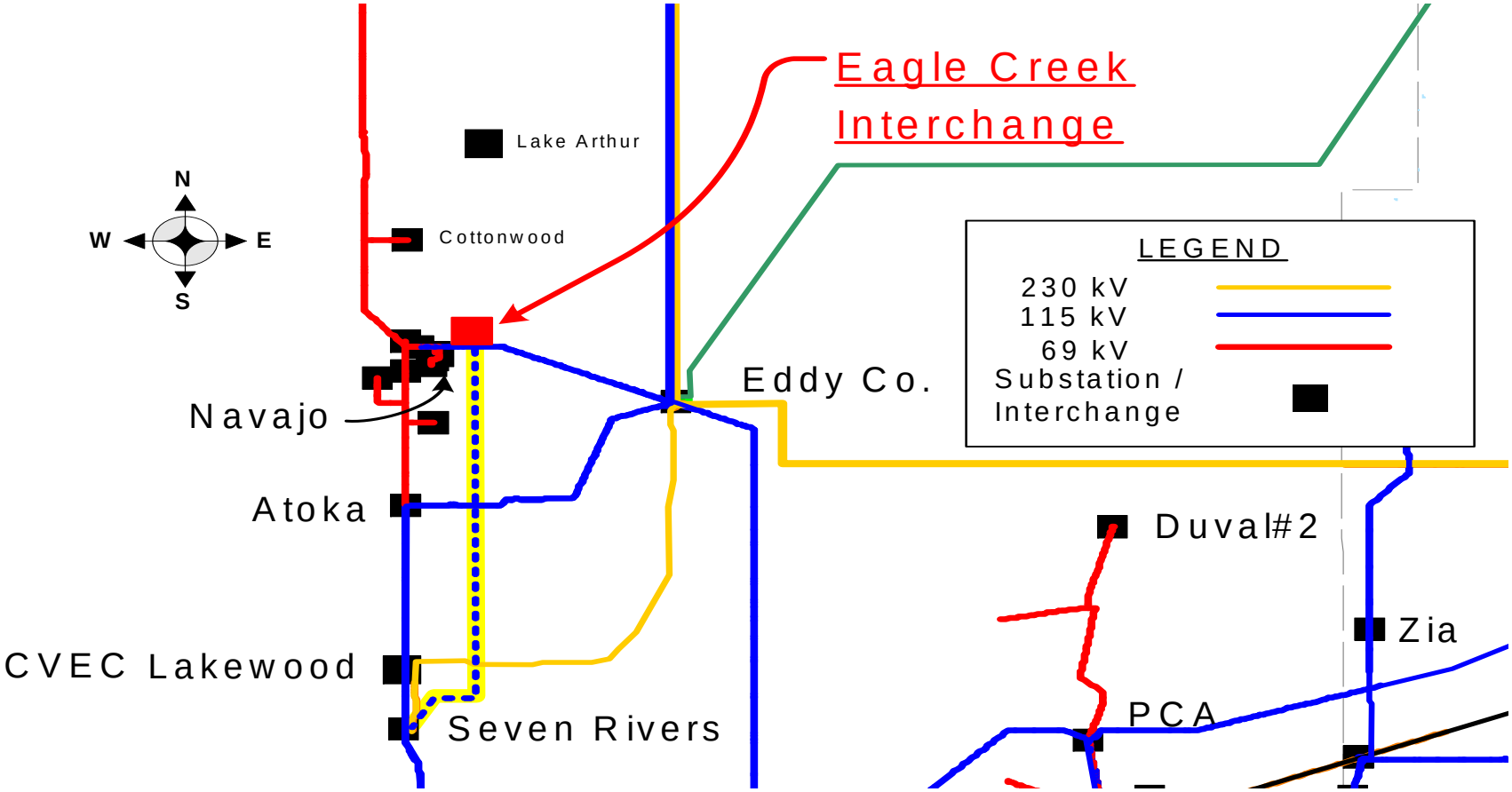
ISD Expected - Nov 2012

Lea Co. Cooperative 115 KV Project (Johnson Draw Substation)



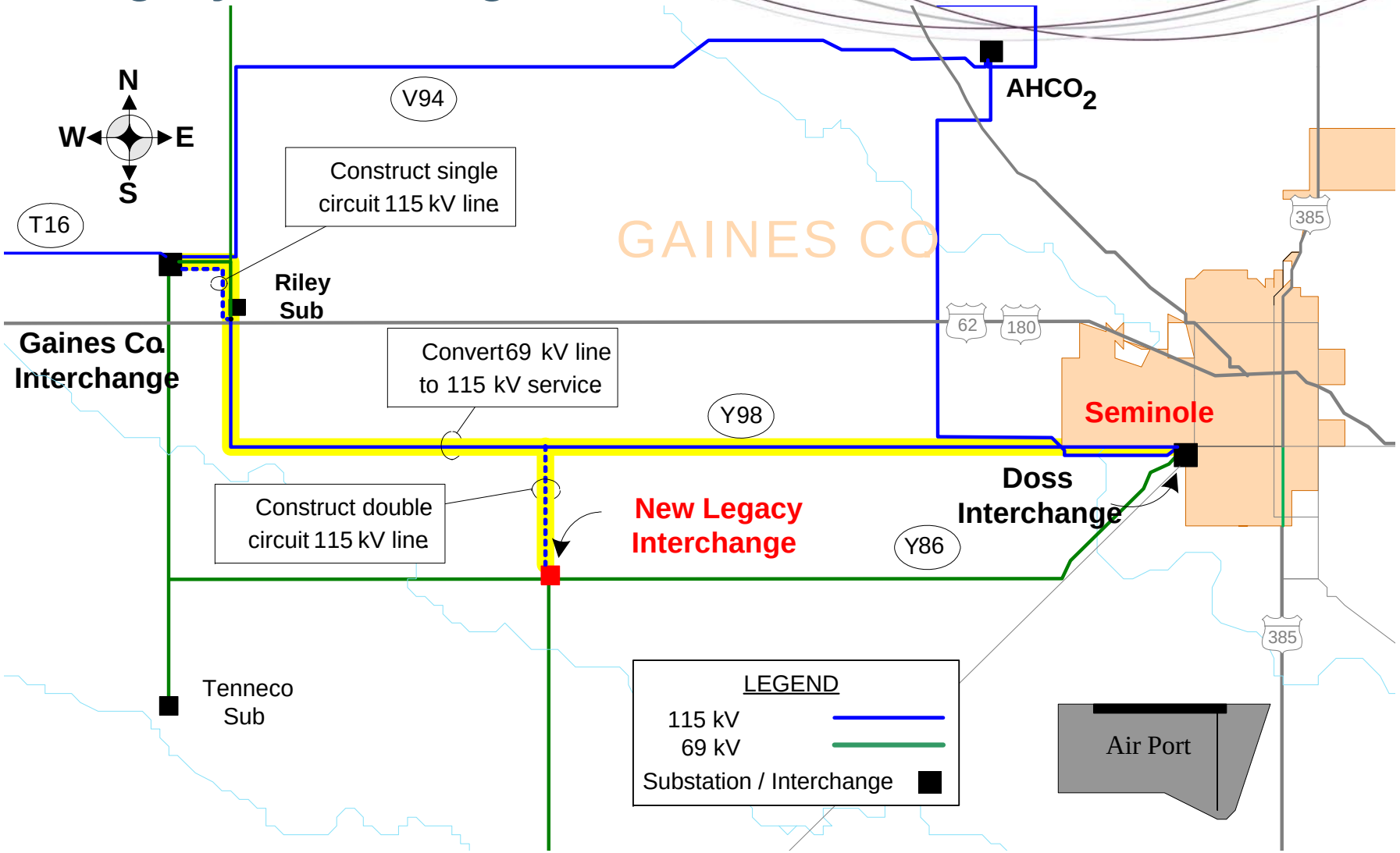
ISD Expected - June 2012

Eagle Creek Project



ISD – May 2011

Legacy Interchange



ISD – Aug 2011

Tuco – Woodward

ISD Expected – May 2014

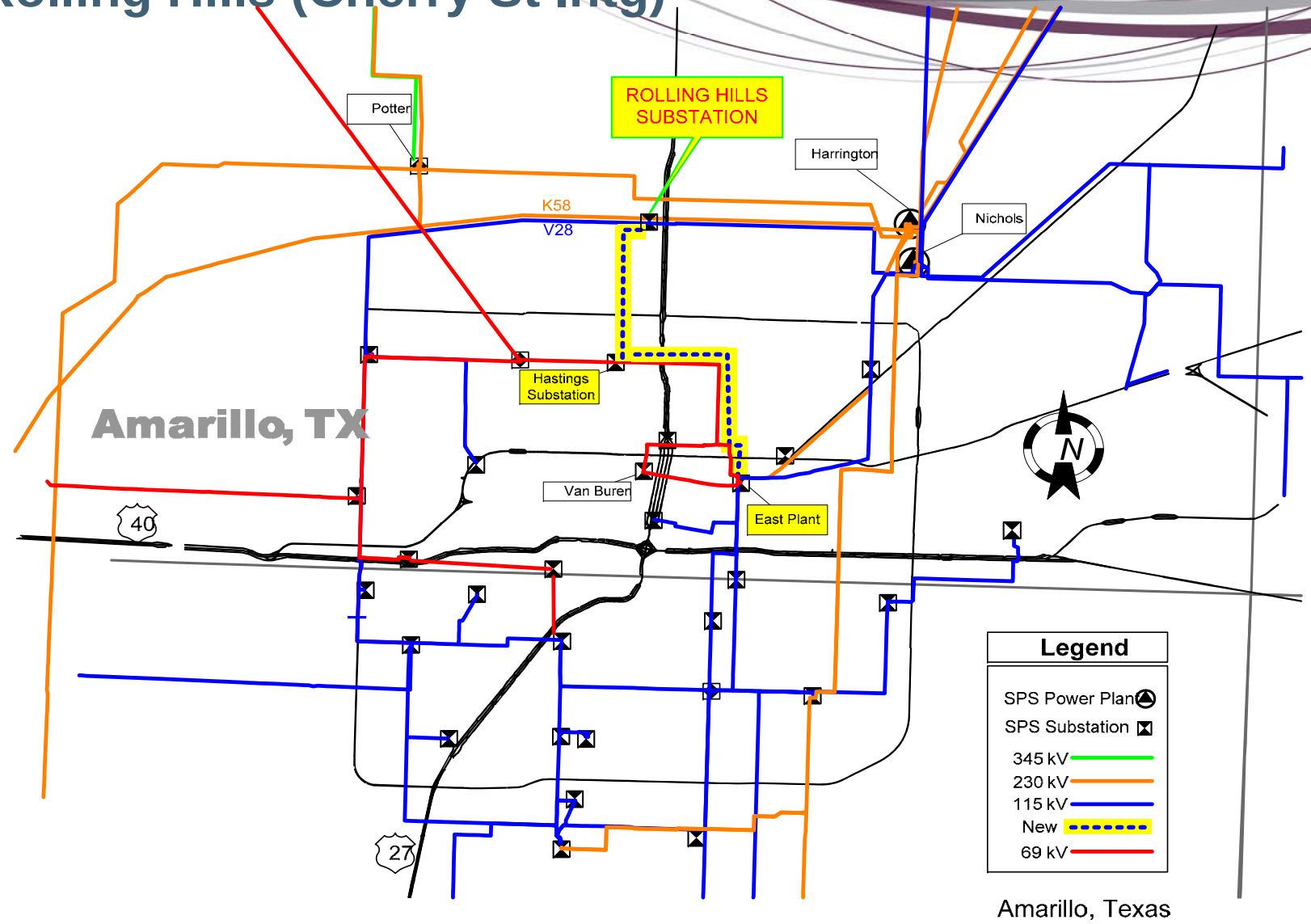
Other Project Completions

- Yoakum Co 230/115 kV – 2nd 150 MVA auto – Oct 2009
- Hale County 115/69 kV autos – 84 MVA – June 2010
- Cochran County 115/69 kV autos – 84 MVA – June 2010
- Lubbock East 115/69 kV autos – 84 MVA – Dec 2009
- Wheeler 230/115 kV 250 MVA auto – Aug 2010
  - Wheeler – Howard 115 kV Line, 115/69 kV 40 MVA auto at Howard
- Clovis – Curry- North Clovis 115 kV Conversion – July 2010
- Floyd County – 115 kV bus, 2 – 84 MVA 115/69 kV autos, Floyd – Cox 115 kV line – April 2009

New Transmission Projects

- **Projects have been budgeted**
- **Estimated ISD shown**

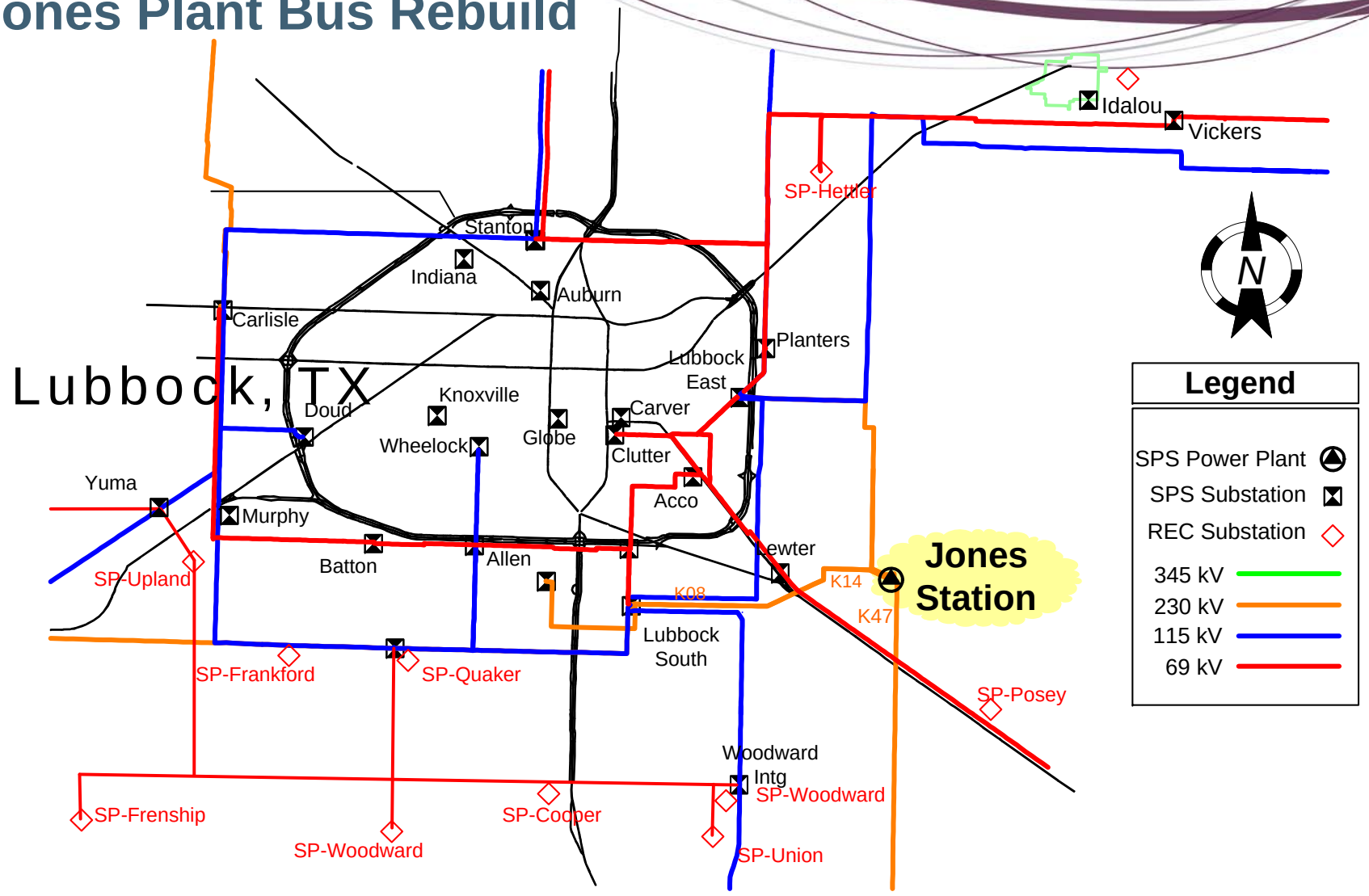
Rolling Hills (Cherry St Intg)



Amarillo, Texas

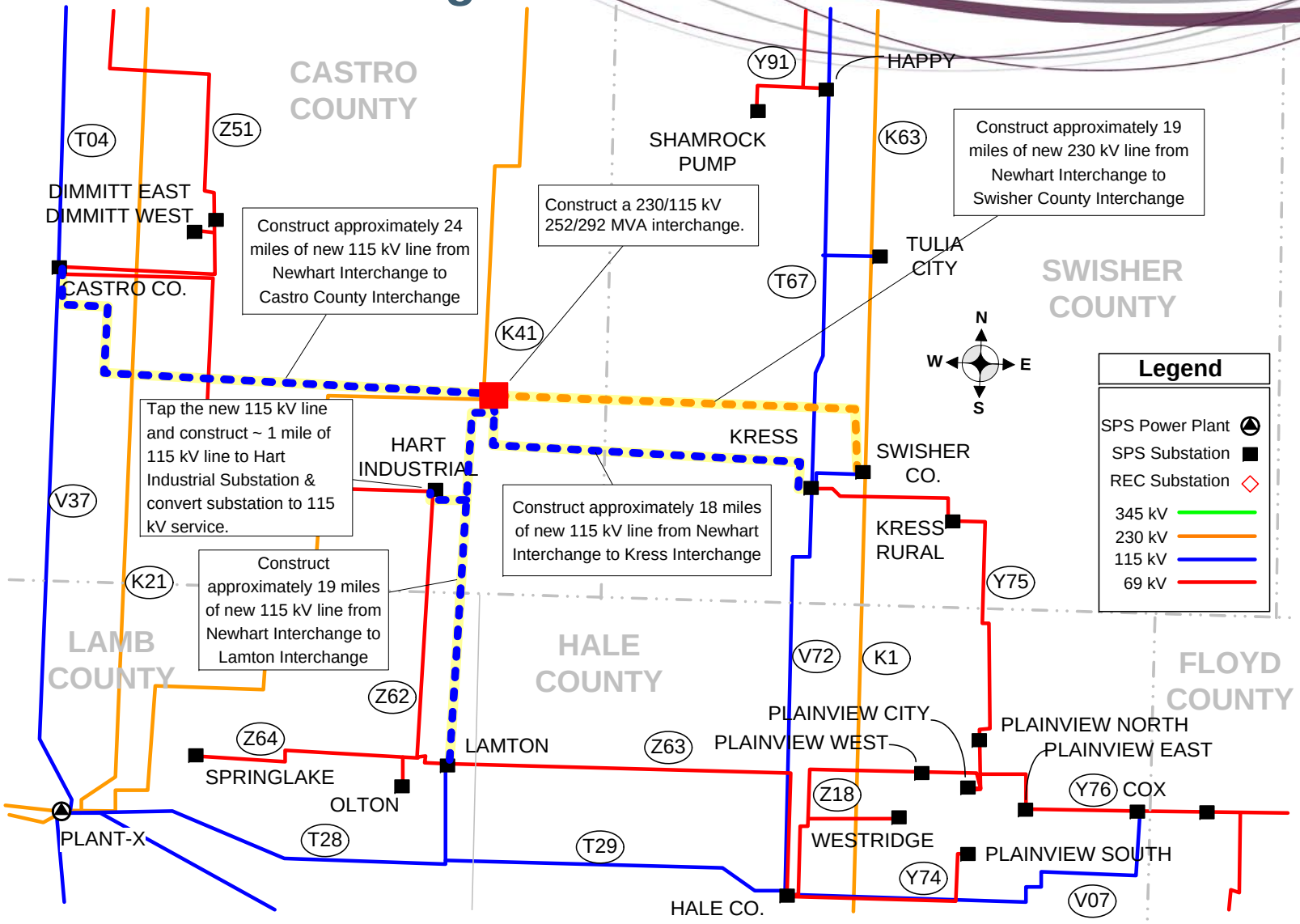
ISD Expected – Jun 2013

Jones Plant Bus Rebuild



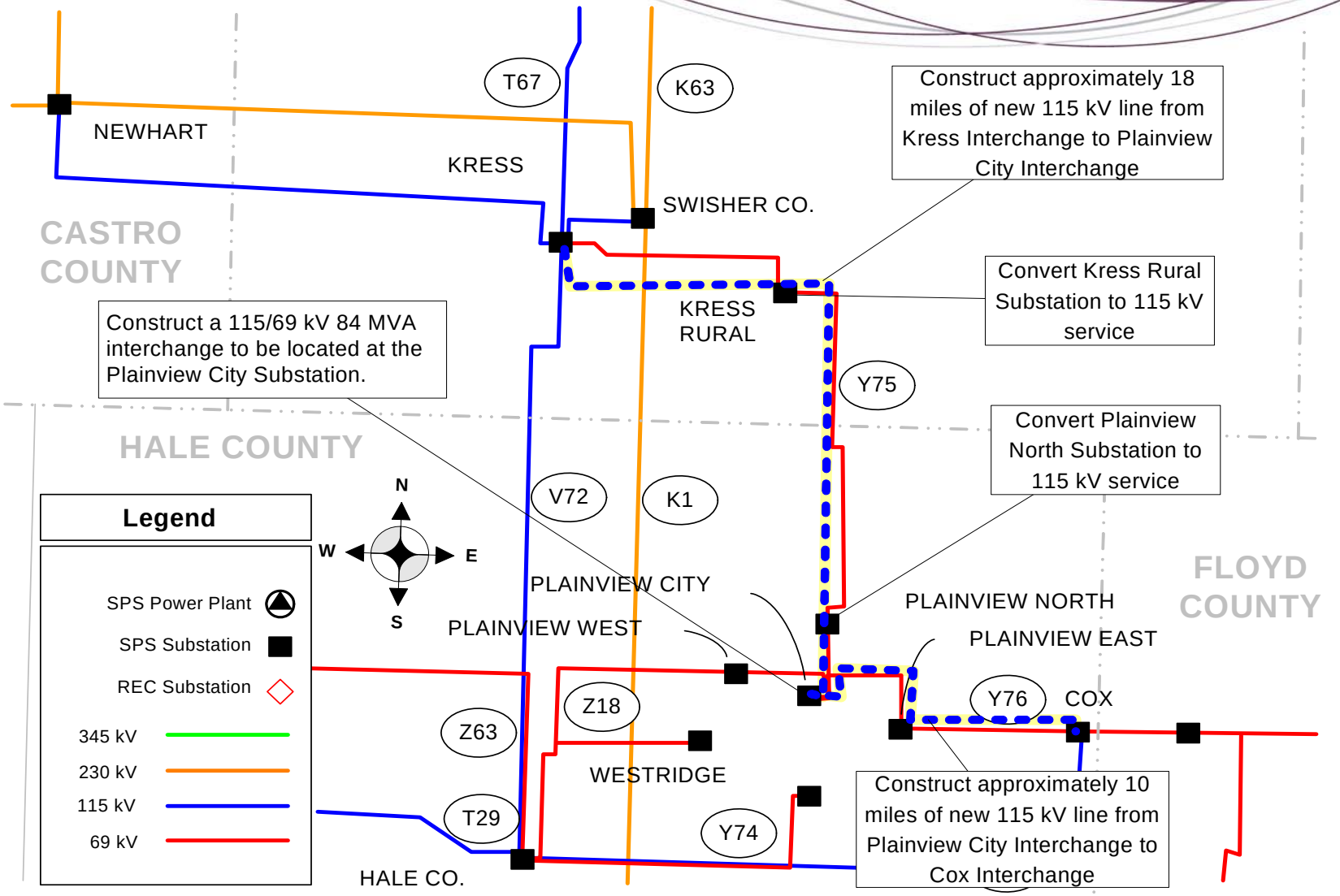
ISD Expected – July 1, 2013

Newhart Interchange



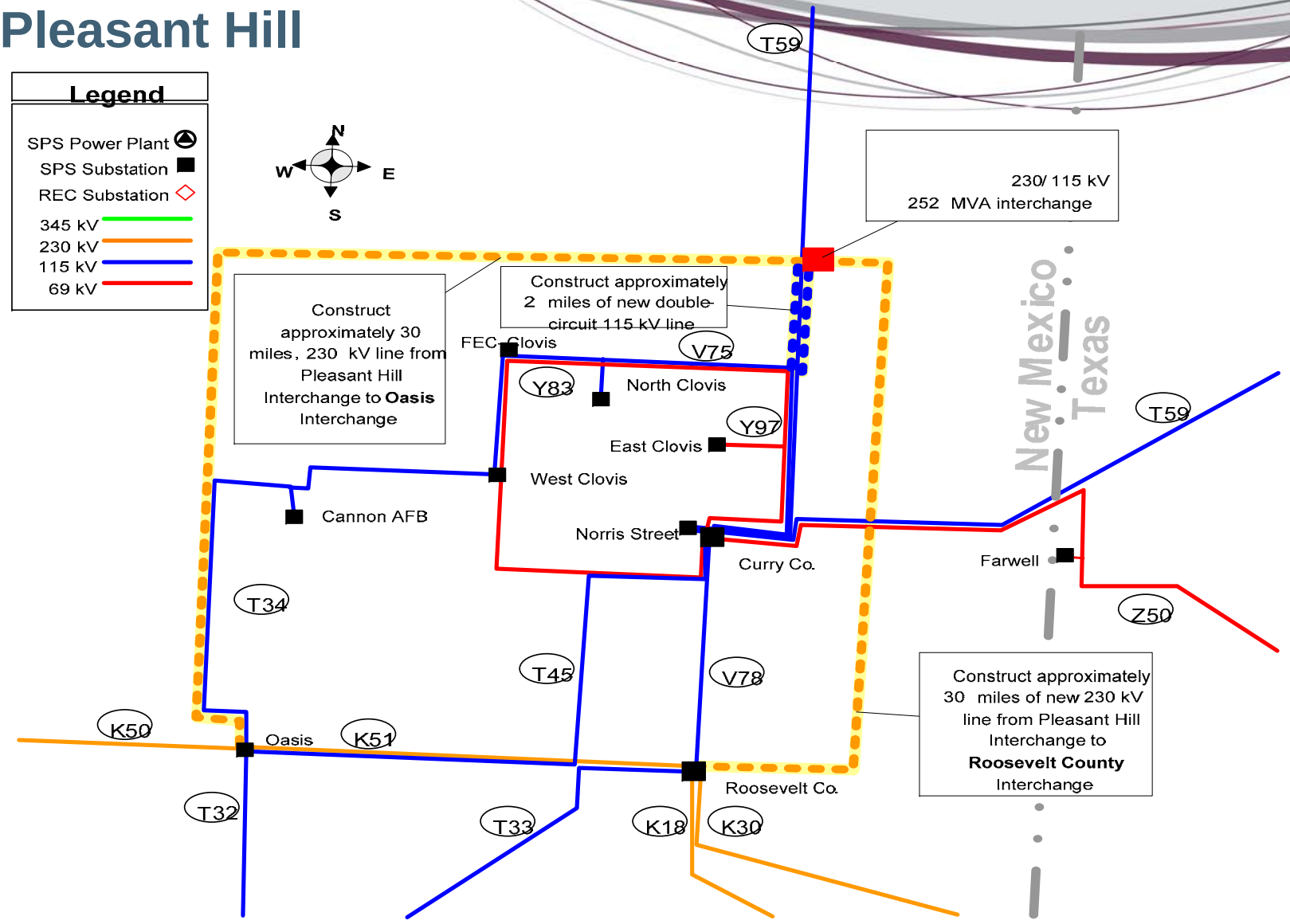
ISD Expected – Dec 2014

Plainview City Expansion



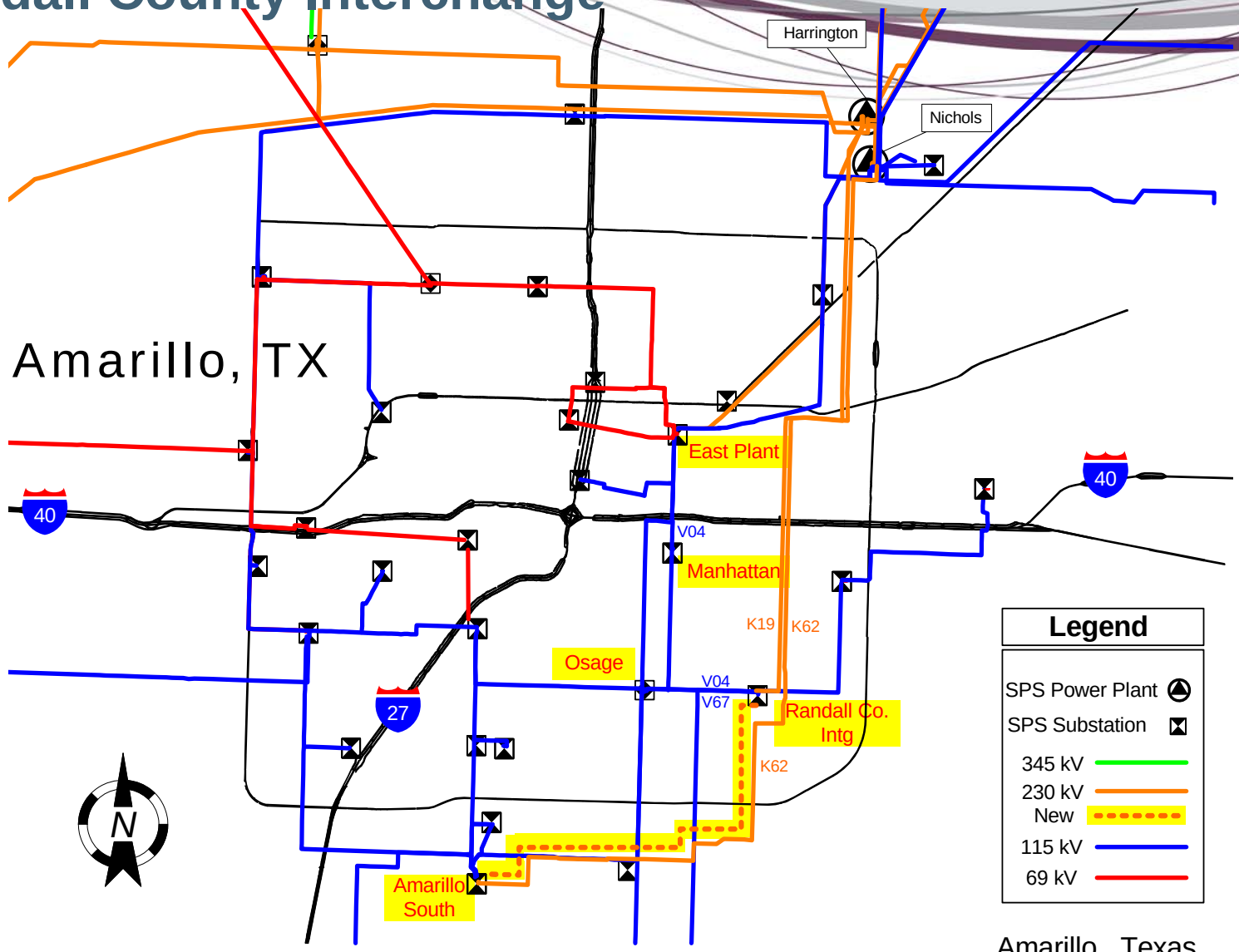
ISD Expected – Dec 2014

Pleasant Hill



ISD Expected – Dec 2014

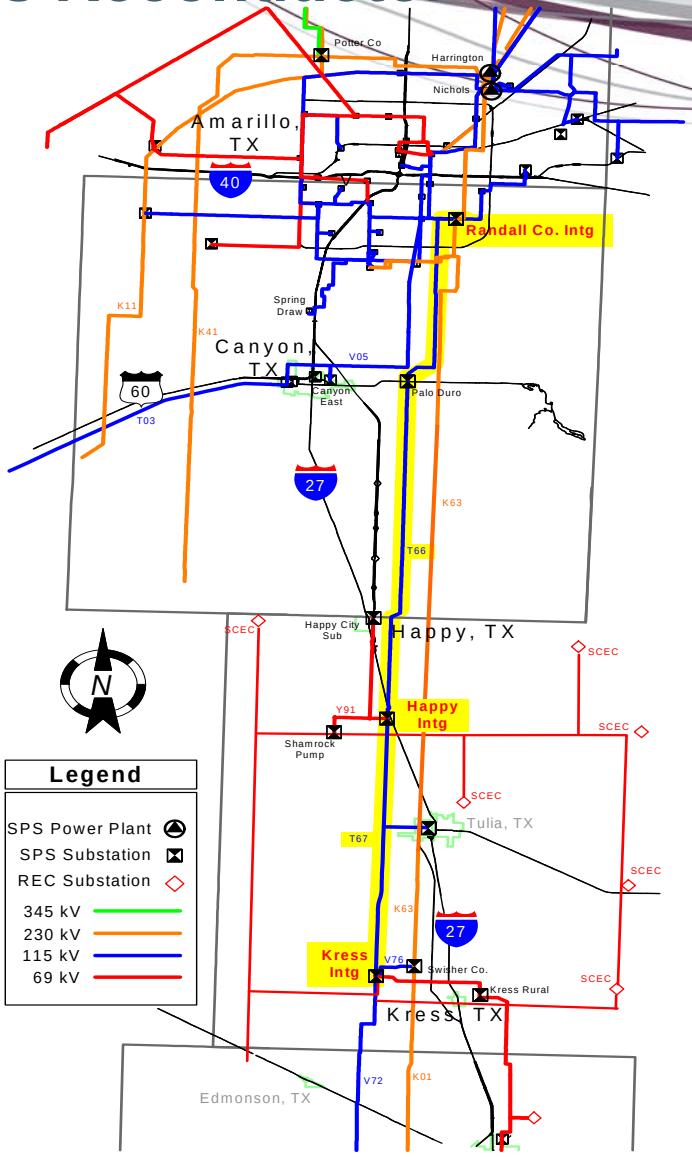
Randall County Interchange



Amarillo , Texas

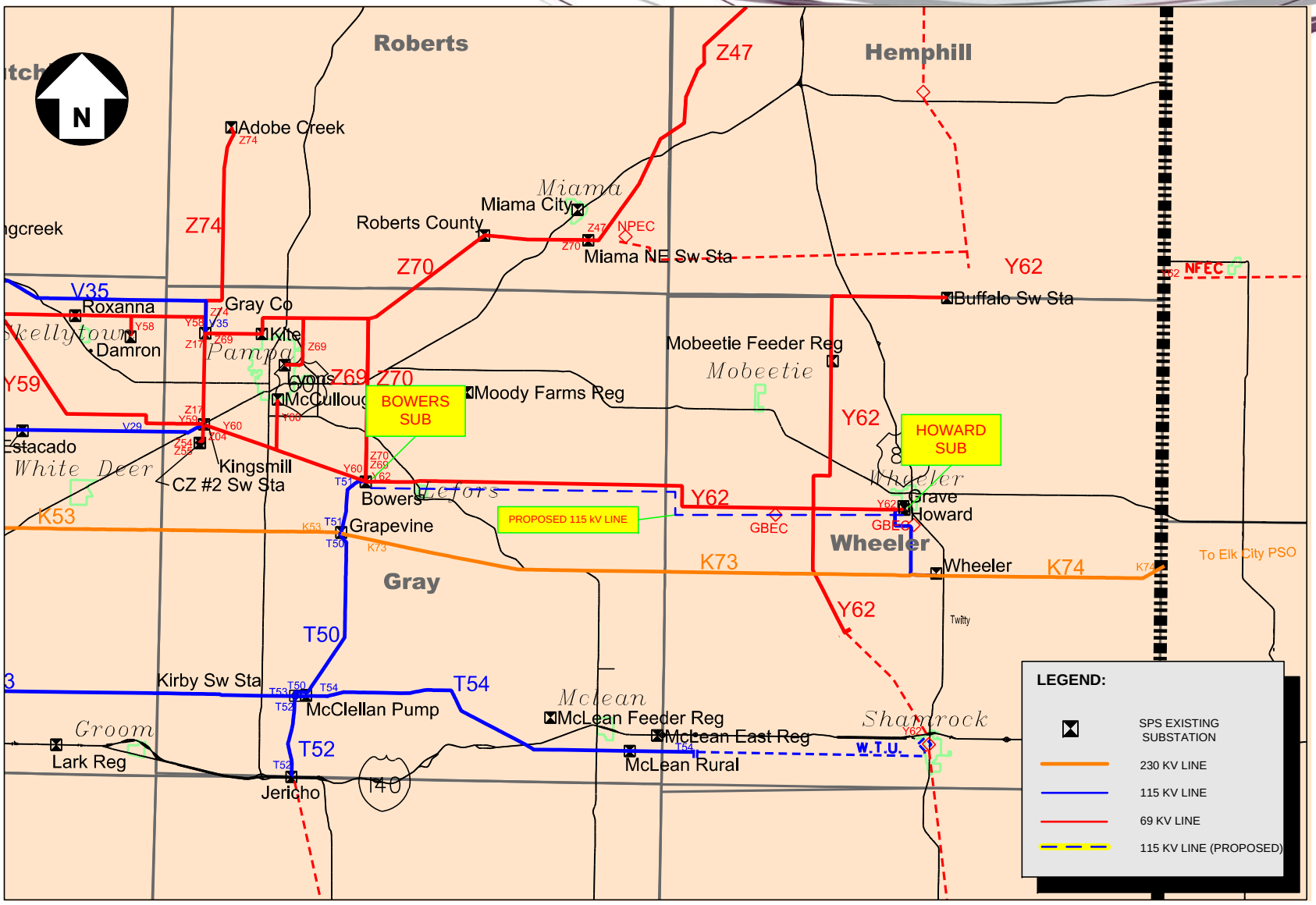
ISD Expected – Apr 2013

Randall – Kress Reconductor



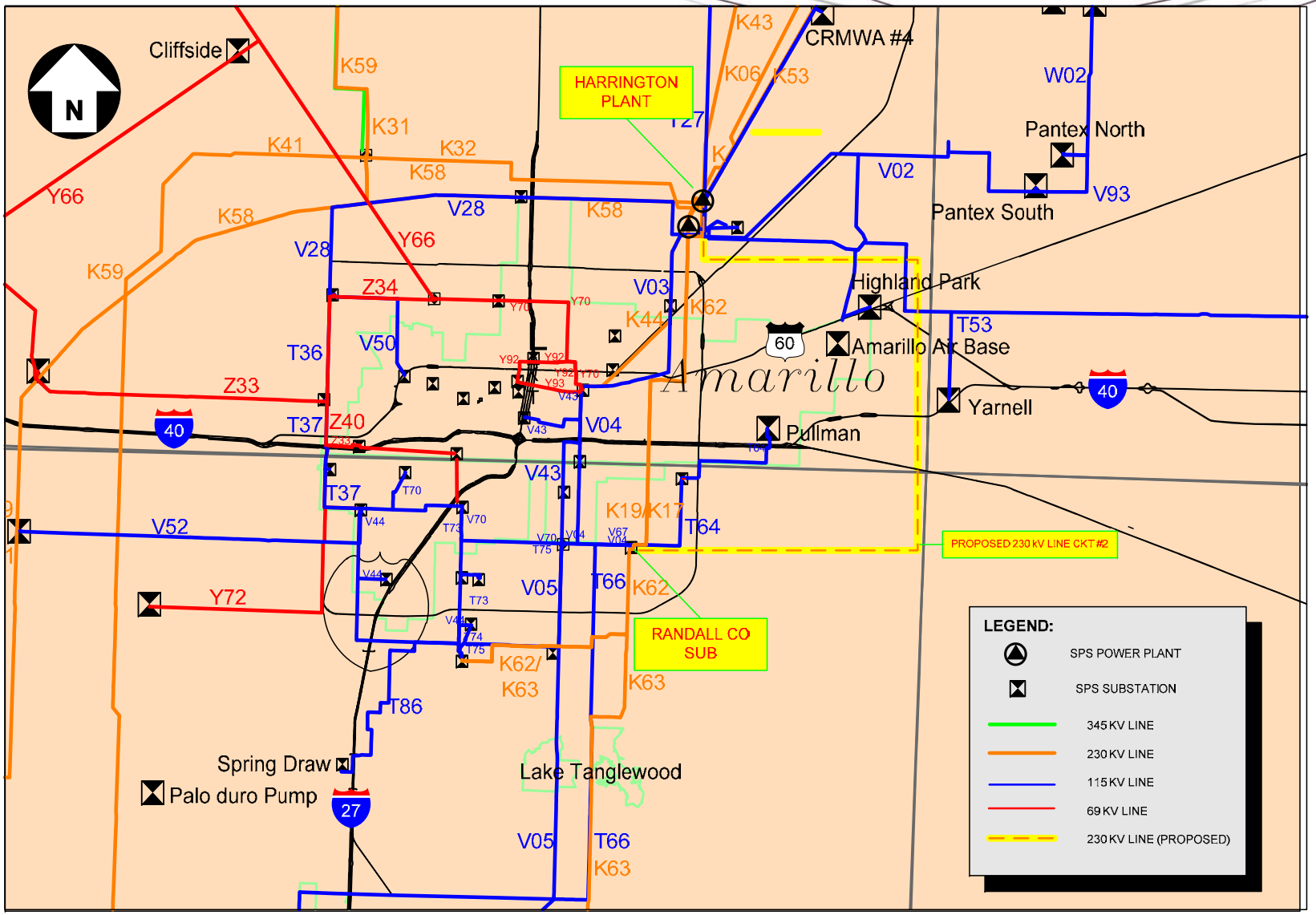
ISD Expected – Apr 2012

Bowers – Howard 115 kV



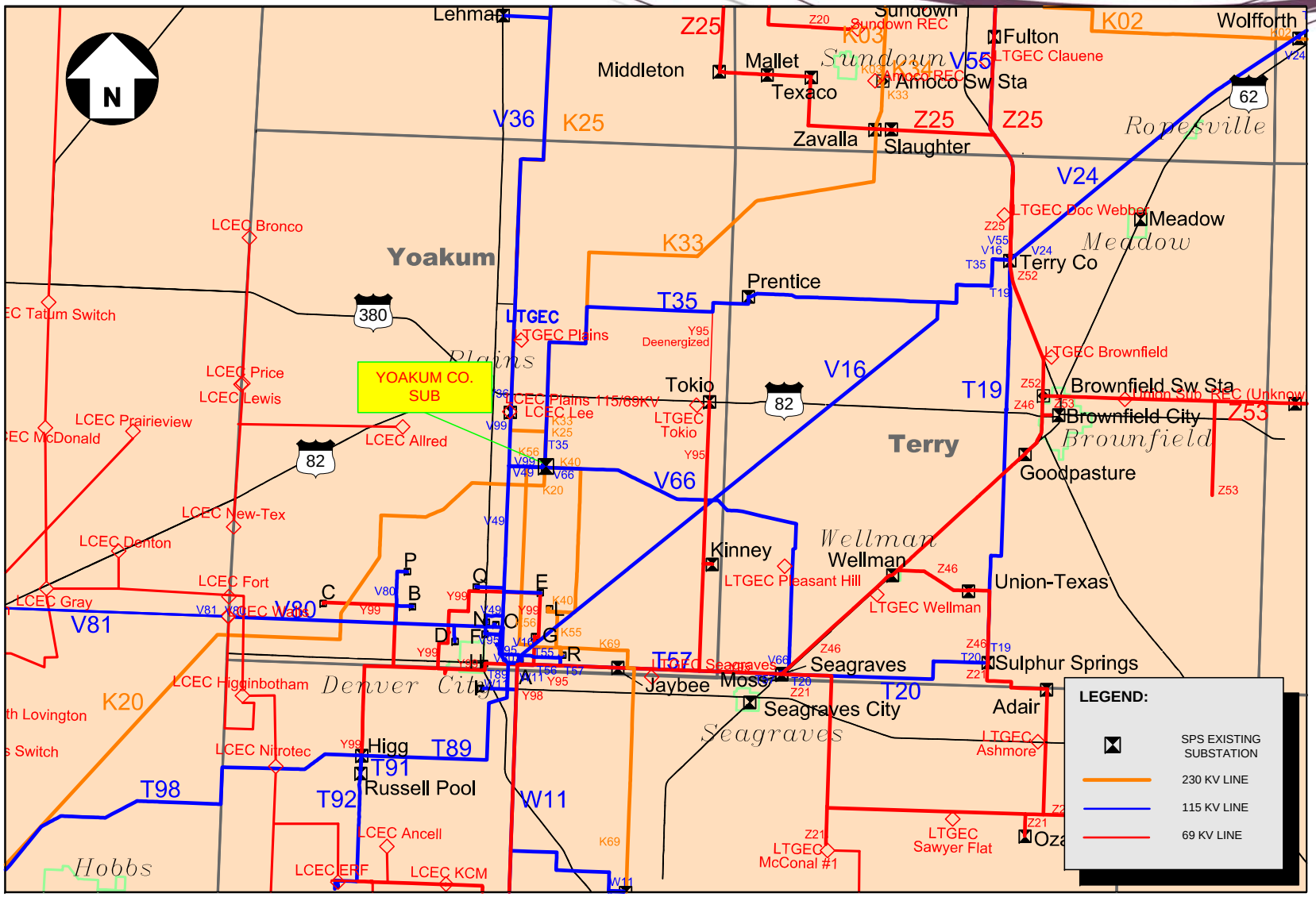
ISD Expected – June 2014

Harrington – Randall 230 kV #2



ISD Expected – June 2015

Yoakum 230 kV Bus Rebuild



ISD Expected – June 2014

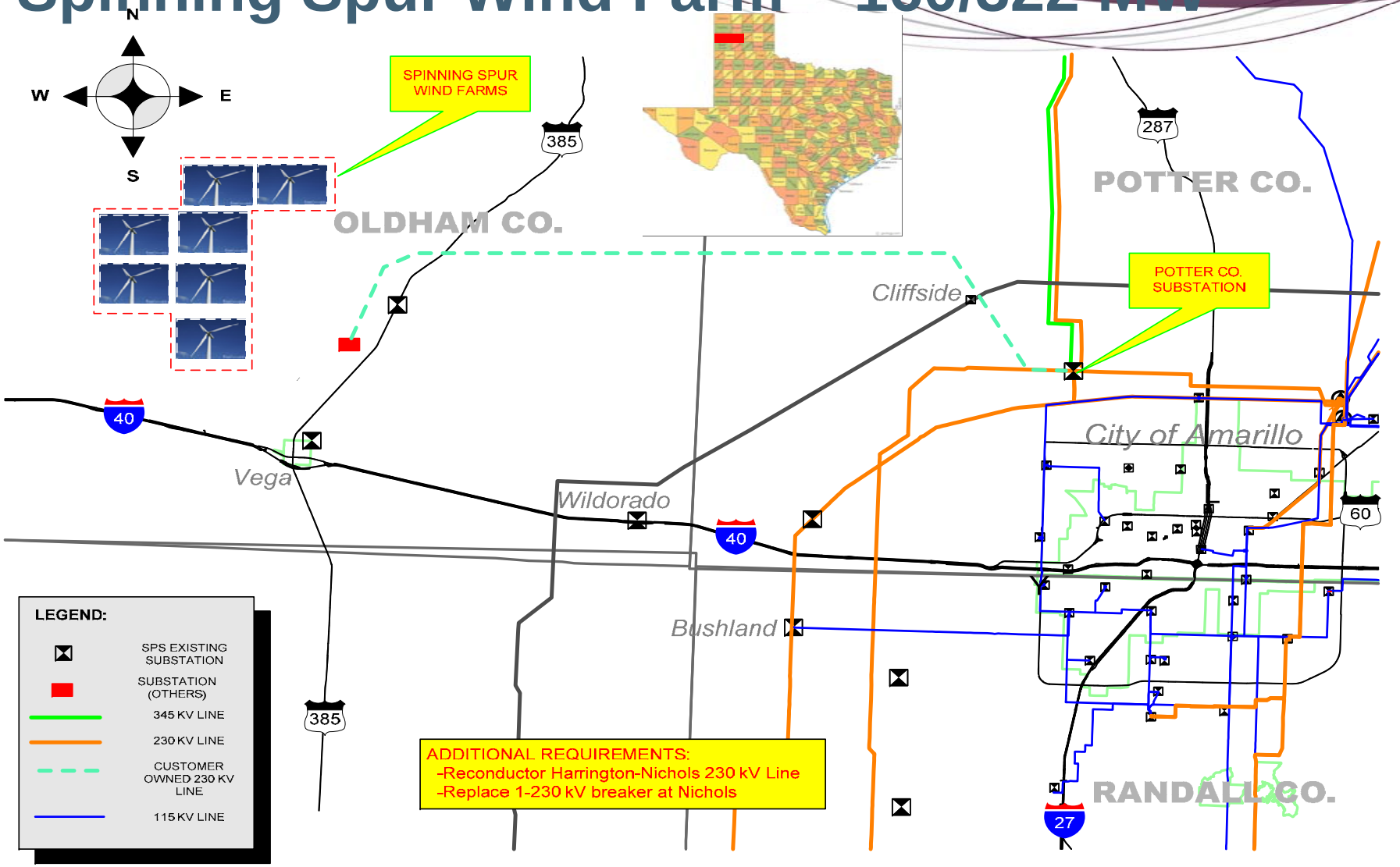
Additional Projects

- **Hobbs Area Improvements – ISD 5/2012**
  - **Reconductor Maddox-Sanger 115 kV line**
  - **Reconductor Maddox-Monument 115 kV line**
- **Kingsmill 2nd 115/69 kV auto – ISD 3/2013**
- **Portales – Zodiac 115 kV Conversion- ISD 6/2013**
- **Jones 4 GT – ISD 6/2013**

New Generation Interconnection Projects

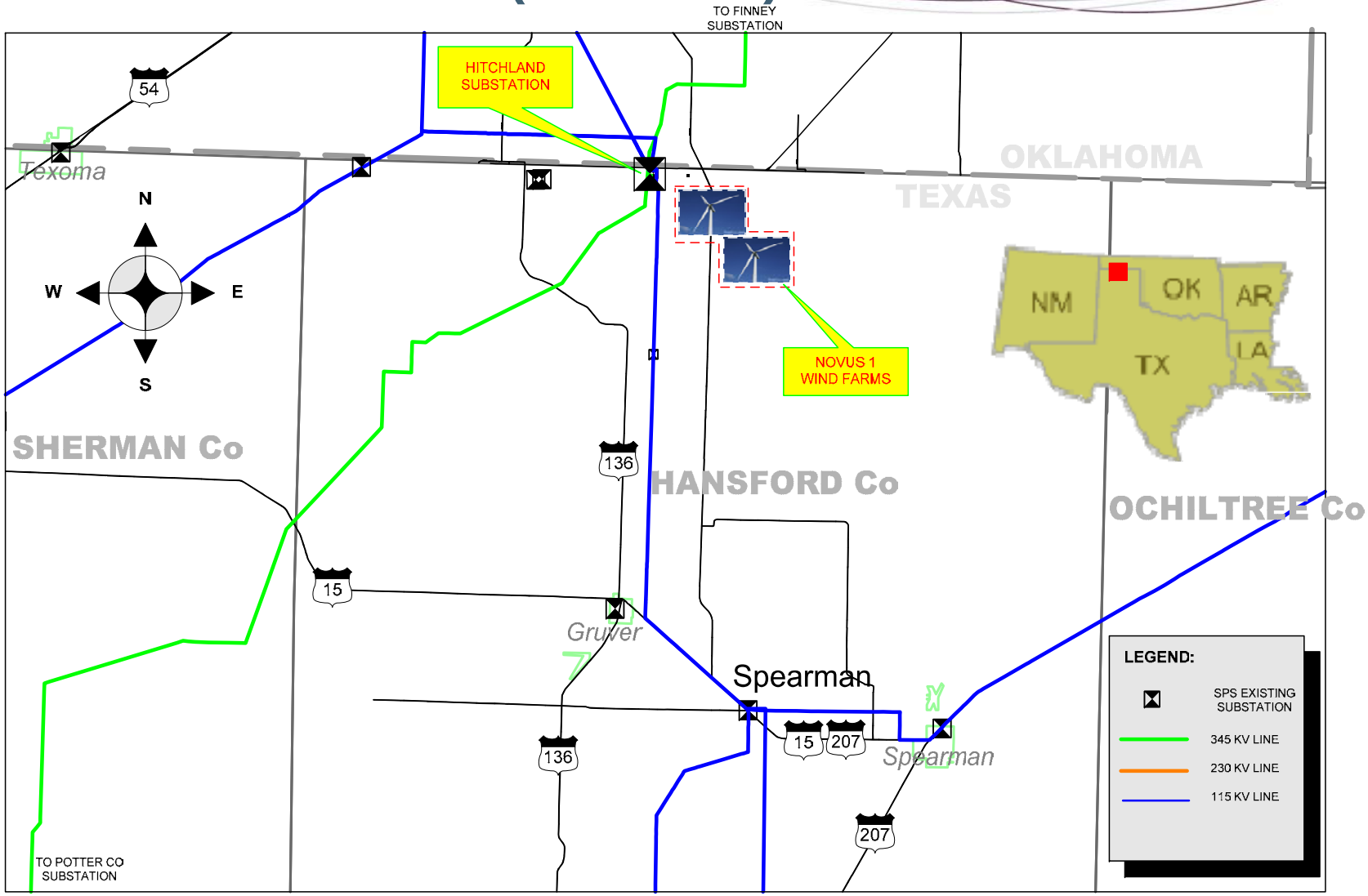
- **Projects have been budgeted**
- **Estimated ISD shown**

SPP Gen-2008-051
Spinning Spur Wind Farm – 160/322 MW



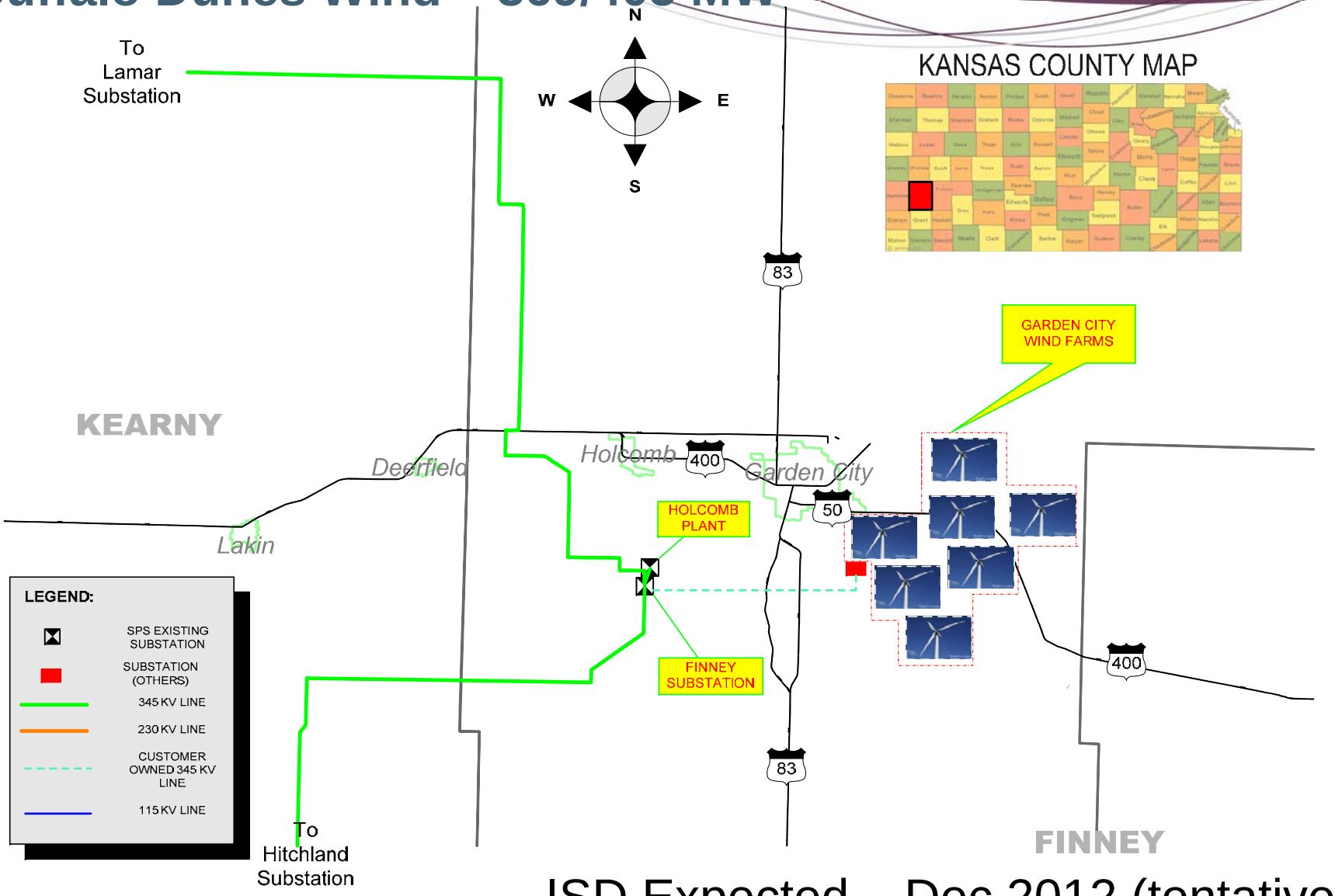
ISD Expected – Dec 2012

SPP Gen-2006-044
Novus 1 Wind Farm (Hitchland) – 250/370 MW



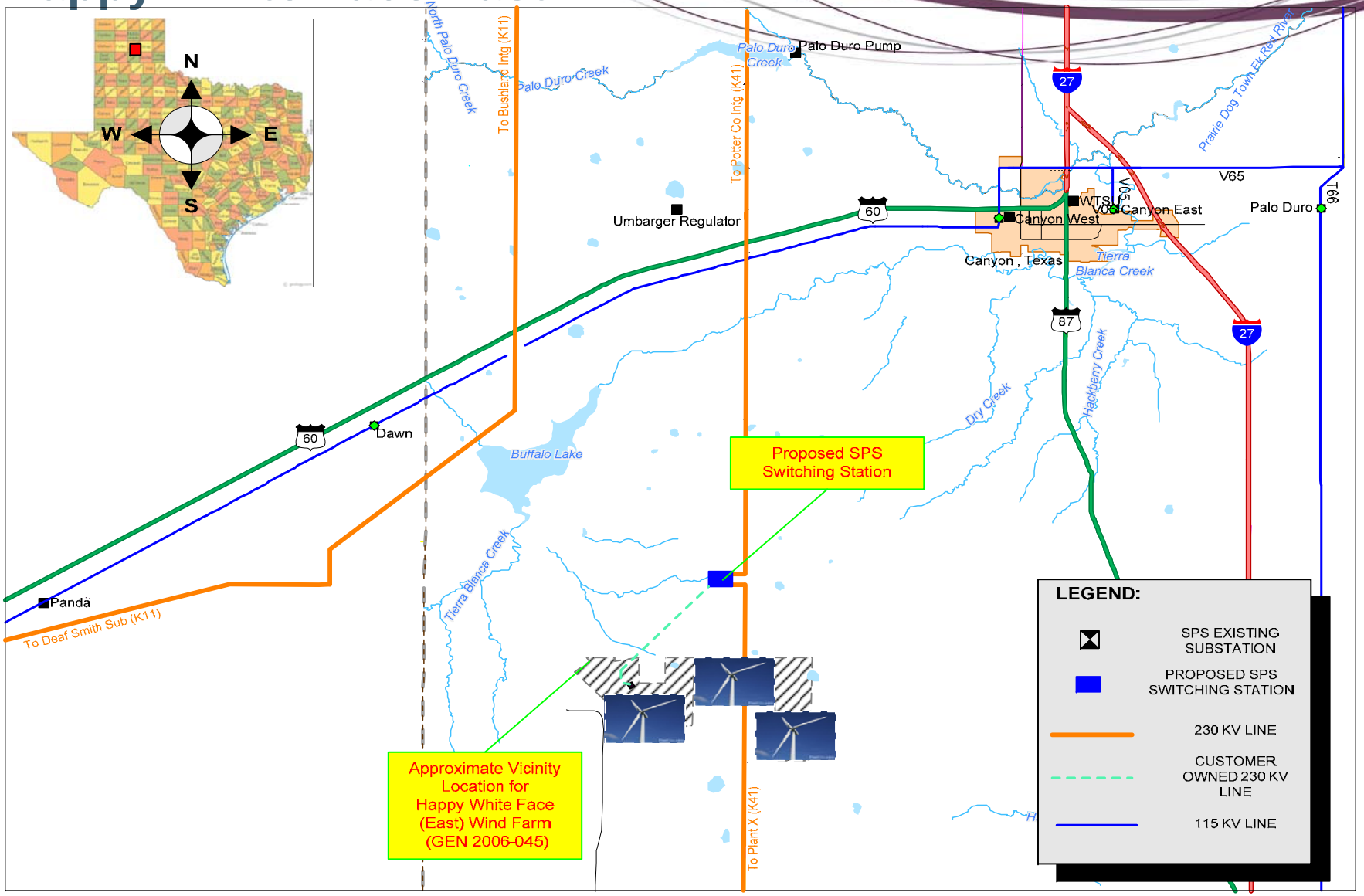
ISD Expected – Dec 2011

SPP Gen-2008-018
Buffalo Dunes Wind – 369/405 MW



ISD Expected – Dec 2012 (tentative)

SPP Gen-2006-045
Happy White Face East - 240 MW



ISD Expected – Dec 2013

Questions?

2012 SPP Model Build

- **SPS as a member of SPP participates in the submission of data to the SPP transmission planning model building process.**

- **Powerflow & Dynamic Seasonal Models**

  April Light (L) Spring Peak (G) Summer Peak (S)

  Shoulder (SH) Fall Peak (F) Winter Peak (W)

  - **2012 SPP Model Series Set:** *19 seasonal models*
    - red = both powerflow & dynamics, underline = short circuit also created

    - (5) 2012G, 2012S, 2012SH, 2012F, 2012/13W
    - (6) 2013L, 2013G, 2013S, 2013SH, 2013F, 2013/14W
    - (3) 2014G, 2014S, 2014W
    - (3) 2018L, 2018S, 2018/19W
    - (2) 2023S, 2023W

2012 SPP Model Build Schedule

- **Powerflow data due to SPP** ***(NERC MOD-010-0 & MOD-012-0 Requirement)***
- 2012 Approved Schedule: *http://www.spp.org/publications/MDWG 2012 Series Schedule and Model Selection.pdf*
- **Due Date: September 29, 2011**
  - If customer wishes that SPS submit the data in Models-On-Demand format along with SPS submittal. (Data due to SPS)
  - ***Power Flow Data Required***
    - ***New & Updated coincident load data for the seasonal models listed above, have been emailed out.***
    - ***Generator, Transmission Line, Transformer, Shunt Devices***
    - ***Generators: Manufacturer Electrical Data Sheet, Excitation System Data, Governor Data***
    - ***Transmission Lines: R, X, B (100 MVA Base, per-unit), Normal & Emergency Ratings (MVA)-Summer & Winter, Line Length (miles), and Bus-to-Bus Terminating Points***
    - ***Transformers: Copy of Transformer Test Report***
    - ***Shunt Devices: MVAR value rated voltage***
    - ***All data shall include BOTH Positive/Zero Sequence Data, AND Ratings Information.***

Generator Modeling

- Modeling generation on Cooperative, Municipal and Retail systems.
  - Requirements:
    - Transmission topology data connecting the generator to BES.
      - Positive Sequence R, X, B data
      - Zero Sequence R, X, B data
      - Ratings Data (Summer & Winter)
      - Any transformer data (manufacturer's test report)
    - All machine electrical data, exciter data and governor data.
      - PSS/E Version 32 format if data sheets are unavailable, otherwise data sheets.
      - Required for power and dynamics analysis.
      - Pmax, Pmin, Qmax, Qmin (seasonal values if applicable)
    - Generator step-up
      - Manufacturer's test report.

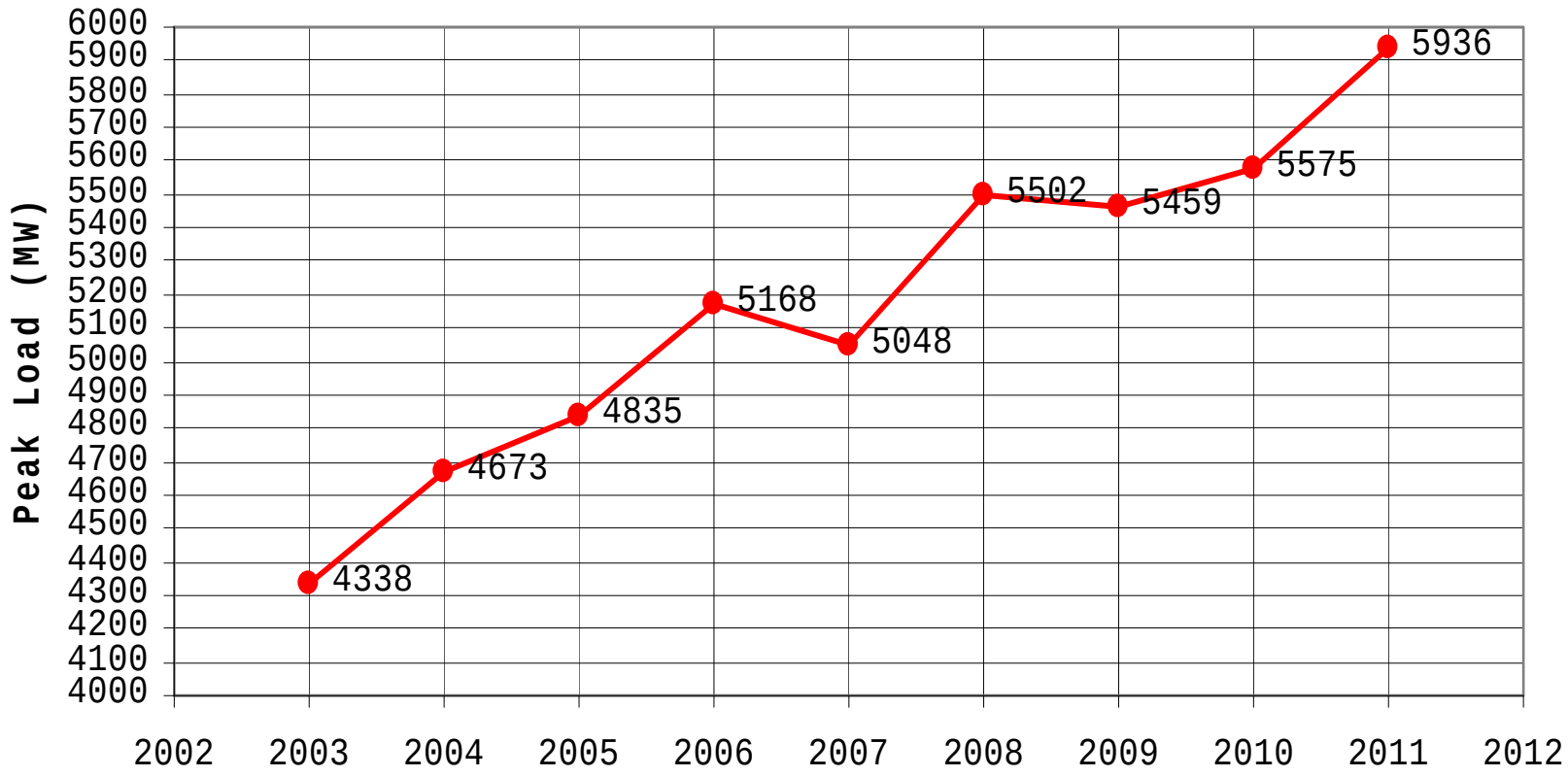
Modeling Facility Ratings

- Facility Ratings
  - Purpose: It's to ensure that Facility Ratings used in planning and operations of the BES are determined based on established methodologies.
  - Generators, transmission line, transformers, capacitors, reactors, etc.
    - Facilities Rating Methodology (NERC FAC-008)
      - Each Transmission and Generator owner shall document its current methodology used for developing a Facility Ratings.
      - Procedure Manual indicating assumptions and calculations.
    - Establish and Communicate Facility Ratings (NERC FAC-009)
      - Each Transmission and Generator owner shall establish Facility Ratings for its solely and jointly owned Facilities that are consistent with the FAC-008.
      - Shall provide Facility Ratings for its Facilities that are existing, new, modified to the Reliability Coordinator, Planning Authority, Transmission Planner and Operator as scheduled by such requesting entities.
  - Need communication and tracking documents with each connecting party

Please visit the NERC website for the exact language of each standard.

Facility Ratings data is now being managed by the SPS Substation Engineering Design.

SPS BA Coincident Peaks



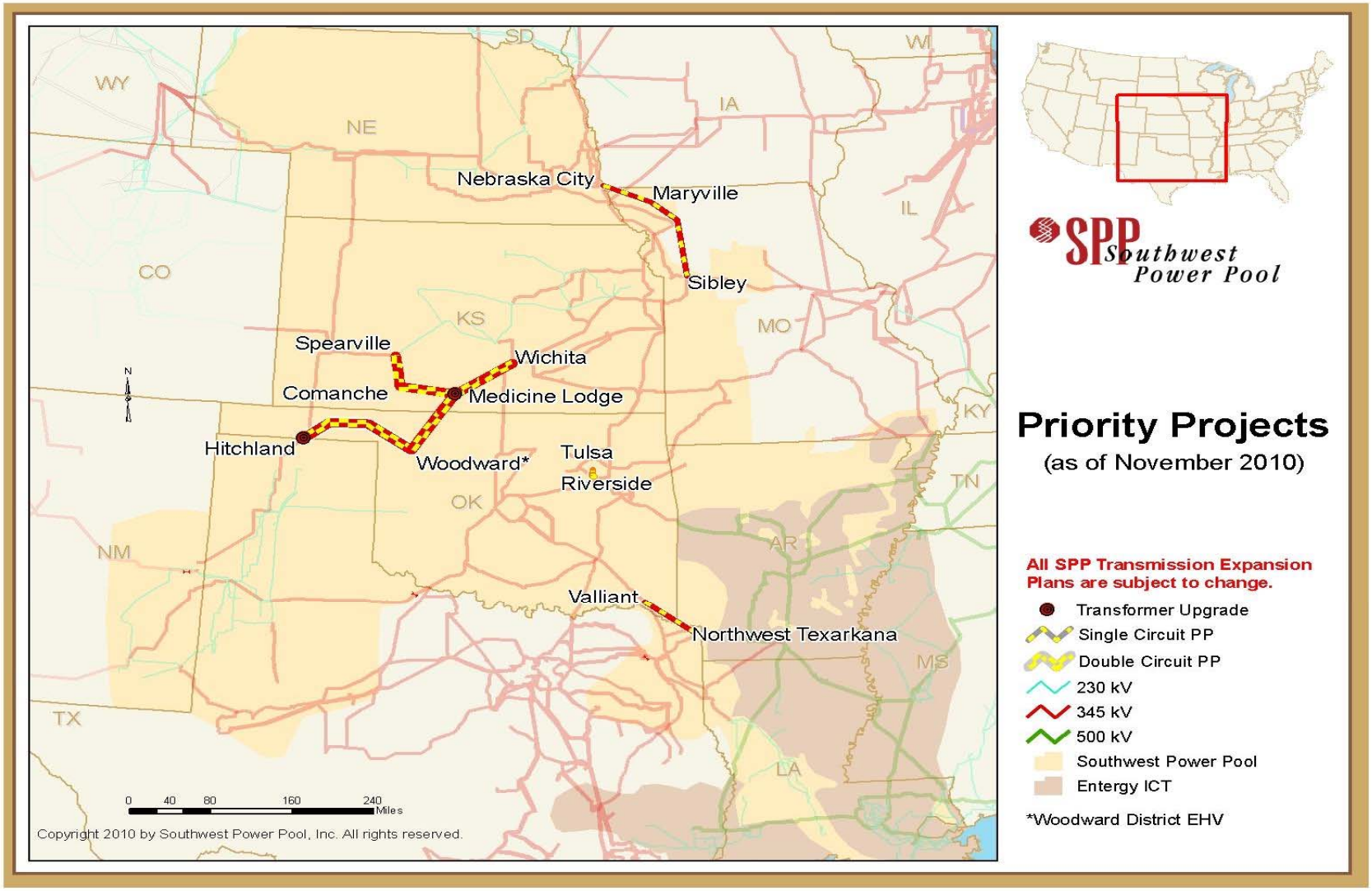
SPS BA Coincident Peaks (to August 2, 2011)

Load Comparison 2010-2011 Winter

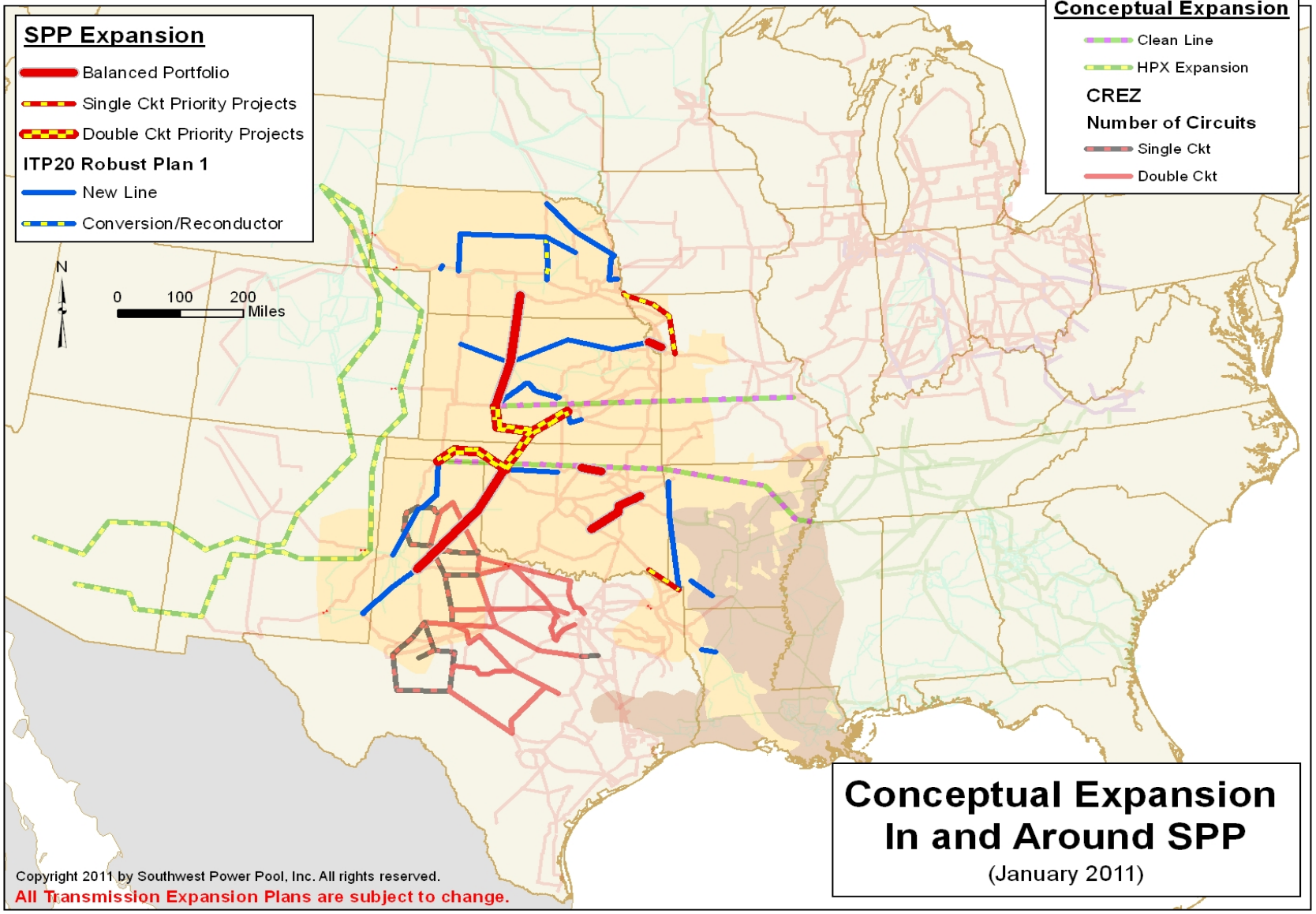
Southwest Power Pool **Criteria 3.3.3 - 2010/11 Winter Peak** **Area Actual Peak & Planning Peak Load Comparison**								
Area Num	Area Name	Actual Peak Load Date/Hour	Actual Real-Time Load	Planning Peak Load*	MW Difference	% Difference	eDNA Data Point	Notes
502	CLEC	2/2/2011 7:10	2306	2237	-69	-3.1%	SPP.EMS.00006598	
503	LAFA	1/12/2011 6:20	405	384	-21	-5.5%	SPP.EMS.00036694	
504	LEPA	2/11/2011 7:00	183	172	-10	-6.1%	SPP.EMS.00008044	
515	SPA	1/12/2011 7:20	1246	1224	-22	-1.8%	SPP.EMS.00008939	Includes SPRM, AECC (10%)
520	CSWS|AEPW	2/1/2011 18:40	8104	8049	-54	-0.7%	SPP.EMS.00006775	Includes OMPA (25%), AECC (90%)
523	GRDA	1/12/2011 7:20	727	719	-8	-1.0%	SPP.EMS.00007327	
524	OKGE	2/1/2011 18:20	4876	4756	-121	-2.5%	SPP.EMS.00008570	Includes OMPA (70%)
525	WFEC	2/10/2011 7:00	1525	1356	-170	-12.5%	SPP.EMS.00009409	Includes OMPA (5%)
526	SPS	2/8/2011 20:30	4242	3917	-325	-8.3%	SPP.EMS.00008973	
534	SECI	2/1/2011 11:10	761	699	-63	-8.9%	SPP.EMS.00008879	Includes MKEC
536	WR	2/8/2011 18:30	4629	4368	-261	-6.0%	SPP.EMS.00009470	Includes MIDW
540	MPS	2/10/2011 7:20	1591	1555	-36	-2.3%	SPP.EMS.00008345	
541	KCPL	2/8/2011 18:50	2719	2633	-86	-3.3%	SPP.EMS.00009828	
542	KACY	2/8/2011 18:30	381	364	-18	-4.9%	SPP.EMS.00007704	
544	EDE	2/10/2011 7:10	1160	1149	-11	-1.0%	SPP.EMS.00006934	
545	INDN	2/8/2011 18:40	190	174	-17	-9.5%	SPP.EMS.00006668	
640	NPPD	2/1/2011 10:20	2656	2486	-170	-6.9%	SPP.CALC.NPPDMKTL	
645	OPPD	2/1/2011 18:10	1838	1742	-95	-5.5%	SPP.EMS.00018125	
650	LES	2/1/2011 18:00	575	519	-56	-10.8%	SPP.EMS.00018105	

*Note: Planning Peak Load is Load + Losses to compare to the Actual Load reported via ICCP in real-time.

SPP Priority Projects



SPP Conceptual Expansion

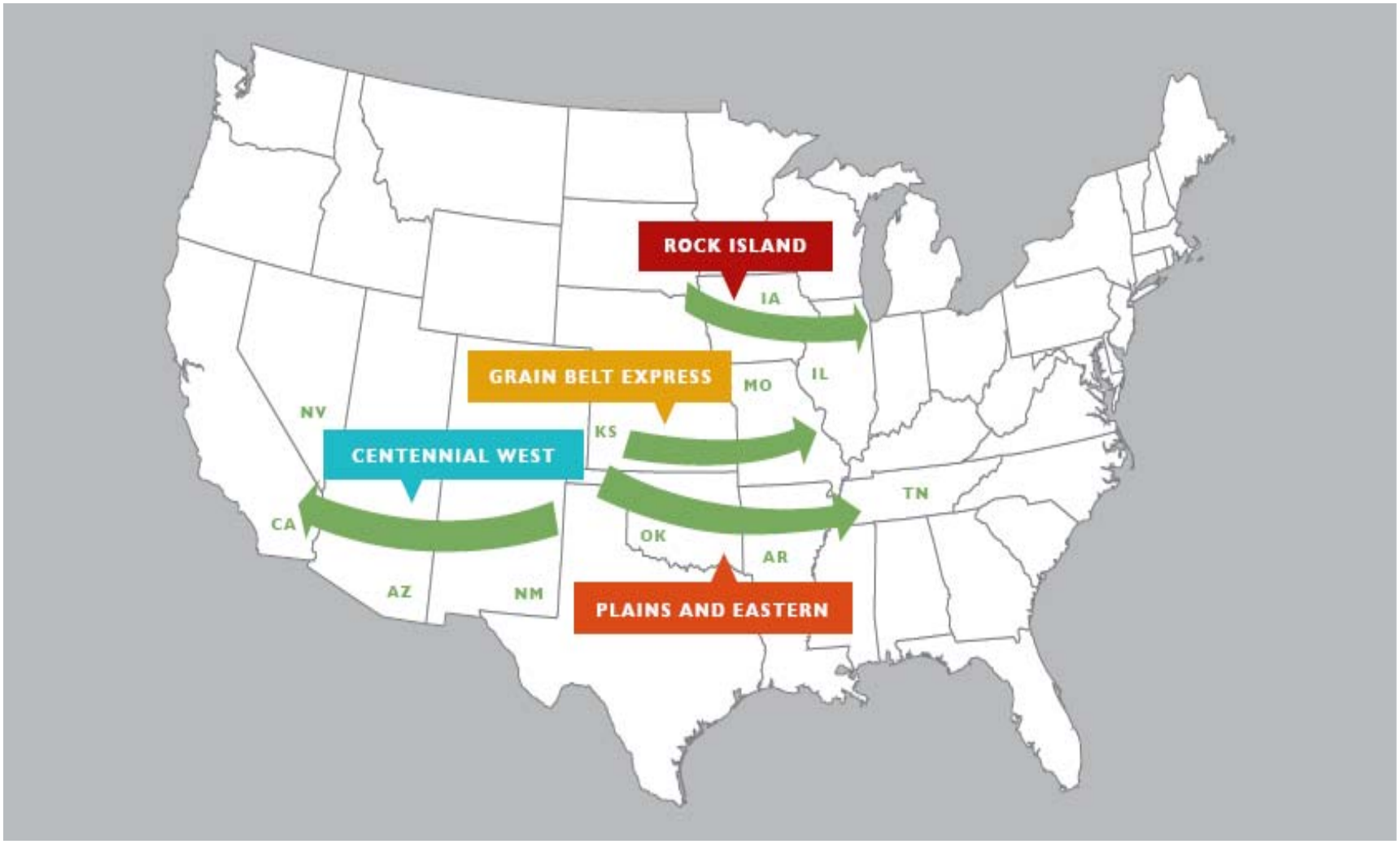


All Transmission Expansion Plans are subject to change.

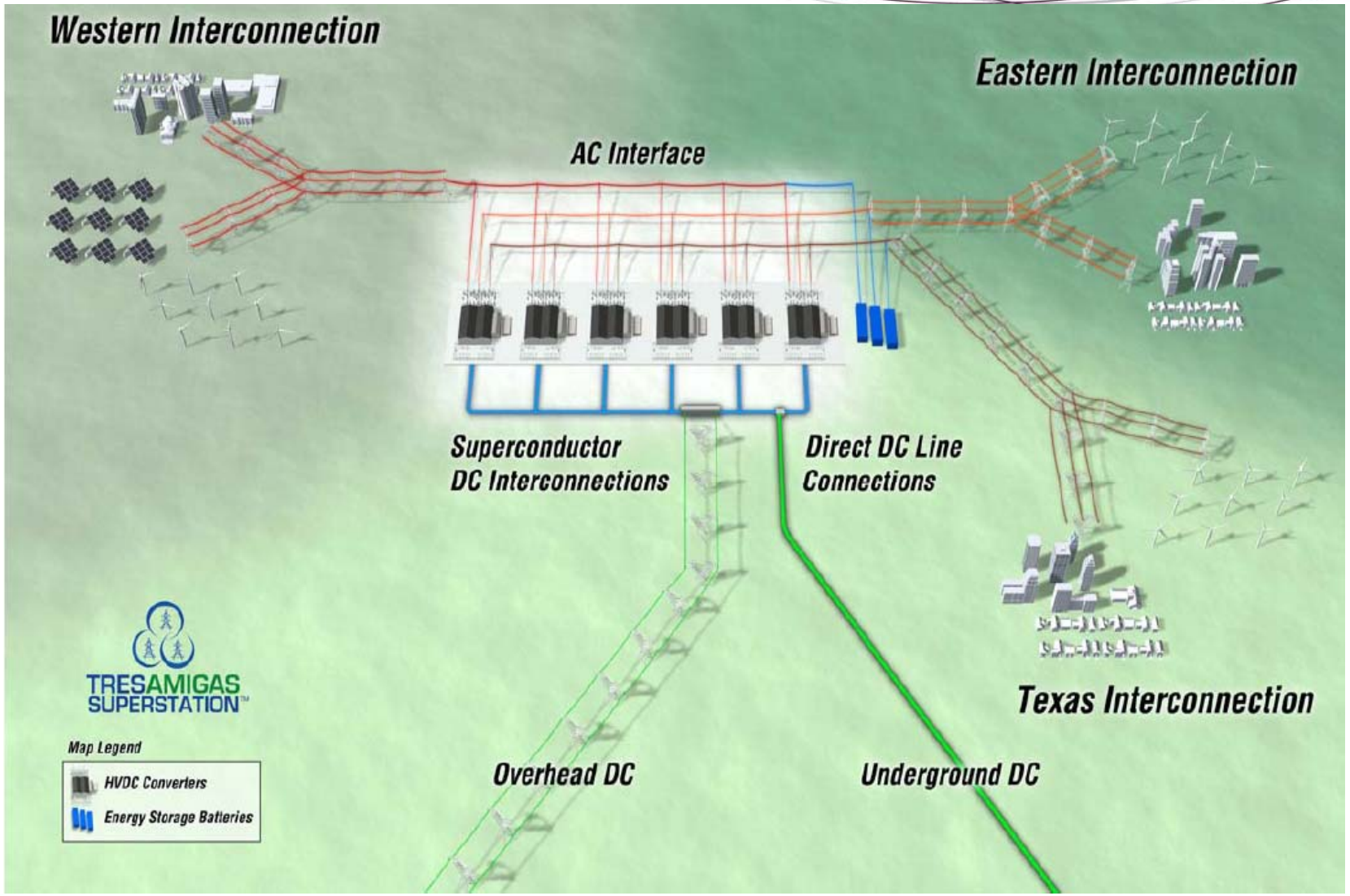
Independent Transmission Projects

- Clean Line DC Lines
  - Plains and Eastern (TVA)– 2015?
    - 2 phases 1700 MW each phase
  - Grain Belt Express
    - Spearville, KS to Ameren in Missouri – 2016?
  - Tres Amigas
    - Eastern New Mexico Project
    - Multi Grid capable

Clean Line Plains – Eastern (TVA) Line



Tres Amigas


Western Interconnection
Eastern Interconnection
AC Interface
Superconductor
DC Interconnections
Direct DC Line
Connections
TRESAMIGAS
SUPERSTATION
Texas Interconnection
Map Legend
HVDC Converters
Energy Storage Batteries
Overhead DC
Underground DC

Questions?

SPS Planning and other Websites

- **Current Addresses**
- **SPS Planning Website**
  - **http://www.xcelenergy.com/About_Us/Transmission/About_Transmission/Planning_for_the_SPS_Transmission_System**
  - **Pages will be updated with meeting presentations as soon as possible**
- **“Power for the Plains” Website**
  - **http://www.powerfortheplains.com/**

SPP Web Site Links

- **Planning Information**
  - **http://www.spp.org/section.asp?pageID=128**
  - **High level page to their planning information**
- **Generation Interconnection Studies and Queue Status, Aggregate Transmission Service Studies**
  - **http://sppoasis.spp.org/documents/swpp/transmission/studies.cfm**

Compliance Update

Compliance Issues

- New Standards - 2011
- New Standards - October 2011
- Compliance Application Notices
- Event Analysis Process

New Standards - 2011

BAL-006-2	Inadvertent Interchange	4/1/2011	BA
CIP-001-1a	Sabotage Reporting	2/2/2011	RC, BA, **TOP, GOP, LSE**
CIP-005-3a	Cyber Security – Electronic Security Perimeters)	2/2/2011	RC, BA, IA, TSP, **TO, TOP, GO, GOP, LSE**, NERC, RE
INT-003-3	Interchange Transaction Implementation	4/1/2011	BA
IRO-005-2a	RC – Current Day Operations	5/26/2011	RC, BA, TSP, **TOP, GOP, LSE, PSE**
IRO-006-5	RC – Transmission Loading Relief	7/1/2011	RC, BA
IRO-006-EAST-1	Transmission Loading Relief Procedure for the Eastern Interconnection	7/1/2011	RC
MOD-001-1a	Available Transmission System Capability	4/1/2011	TSP, **TOP**
MOD-004-1	Capacity Benefit Margin	4/1/2011	**LSE,** RP, TSP, TA, TP
MOD-008-1	Transmission Reliability Margin Calculation Methodology	4/1/2011	**TOP**
MOD-021-1	Documentation of the Accounting Methodology for the Effects of Demand-Side Management in Demand and Energy Forecasts	4/1/2011	**LSE**, TP, RP
MOD-028-1	Area Interchange Methodology	4/1/2011	**TOP**, TSP
MOD-029-1	Rated System Path Methodology	4/1/2011	**TOP**, TSP
MOD-030-1	Flowgate Methodology	4/1/2011	**TOP**, TSP
PER-004-2	RC – Staffing	4/1/2011	RC
PER-005-1	System Personnel Training	4/1/2011	RC, BA, **TOP**
TOP-005-1.1a	Operational Reliability Information	5/26/2011	RC, BA, **TO, PSE**

New Standards – October 2011

CIP-001-2a	Sabotage Reporting	RC, BA, **TOP, GOP, LSE**
EOP-002-3	Capacity & Energy Emergency	RC, BA, **LSE**
FAC-002-1	Coordination of Plans for New Gen, Trans, End-User Facilities	**GO, TO, DP, LSE,** TP, PA
IRO-002-2	RC - Facilities	RC
IRO-004-2	RC – Operations Planning	BA, TSP, **TOP**
IRO-005-3a	RC – Current Day Operations	RC, BA, TSP, **TOP**
IRO-008-1	RC – Operational Analyses and Real-time Assessments	RC
IRO-009-1	RC – Action to Operate within IROLs	RC
IRO-010-1a	RC – Data Specification and Collection	RC, BA, IA, **GO, GOP**, **LSE, TOP, TP**
TOP-003-1	Planned Outage Coordination	RC, BA, **GOP, TOP**
TOP-005-2a	Operational Reliability Information	BA, PSE, **TOP**
TOP-006-2	Monitoring System Conditions	RC, BA, **TOP, GOP**
VAR-001-2	Voltage and Reactive Control	TOP, **PSE, LSE**

Compliance Application Notices

- **Provide Transparency to Industry**
- **Establish Consistency**
- **15 Current CANs**
- **5 Posted for Comments**
- **Many More in Development**

Event Analysis Process

- **Purpose**
  - **Indentify What Transpired**
  - **Understand Cause of Events**
  - **Indentify Corrective Actions**
  - **Disseminate Lessons to Industry**
- **Required Forms**
  - **Appendix A – Brief Report Template**
  - **Appendix D – Lessons Learned Template**
  - **Appendix G – Compliance Analysis Template**

Distribution Connected Generation Interfacing with SPP

Need:

- Increasing number of small QF wind developers requesting interconnection to SPS's distribution lines.
- SPS is seeing more and more requests at locations where generation will EXCEED substation load at low-load levels.
- Any generation beyond substation load requirements will back-feed to the SPS transmission system.

Problem:

- **SPP is the Regional Transmission Organization, mandated by FERC to ensure reliable supplies of power and adequate transmission infrastructure.**
- **TX and NM regulatory commissions have jurisdiction over SPS's distribution system. The SPP does not.**
- **Therefore, the SPP cannot require a transmission impact study of a possible interconnected distribution generator back-feeding the transmission system.**
- **TX and NM do allow the utility to conduct additional studies needed when studying distribution interconnection.**

SPS Requirement:

- **SPS now requires that generation exceeding load by a mega-watt or more to be studied by SPP.**
- **SPS will request that SPP perform all studies needed at the cost of the interconnecting customer.**
- **A $30,000 deposit per interconnection must be provided by customer in advance before request is submitted.**
- **Impact studies are performed by the SPP starting in April and October of each year and take between 60 and 120 days to complete.**

SPP Integrated Transmission Update

SPP ITP Process and Status

- **Integrated Transmission Plan – new process to integrate 20 year, 10 year, and near term (~6 year) planning process**
- **ITP20 - 20 year – economic plan, high level transmission plan > 230 kV**
- **ITP10 - 10 Year – transmission/economic reliability plan, folding in 20 year results**
- **ITPNT – Near Term Plan – reliability plan – similar to old STEP studies**
- **New estimating process and proposed design standards for regionally recovered projects**

ITPNT Schedule

1. ✓ **Build models – February - April**
2. ✓ **Perform contingency analysis - April**
3. ✓ **Distribute results of contingency analysis – April/May**
4. ✓ **Receive stakeholder feedback - May**
5. ✓ **Identify solutions – May-August**
6. ✓ **Summit – Mid July**
7. **Draft ITPNT Report - October**
8. **Draft STEP Report – November**
9. **Deliver STEP Report to TWG for Approval - December**

ITP10 Schedule

ITP 10 Key Milestones	Approximate Completion Date	Status
Scoping	1/12/2011	✓
Futures Review and Approval	4/12/2011	✓
Steady-State Model development	4/28/2011	✓
Constraint assessment	5/30/2011	In-progress
Economic Model development	6/3/2011	In-progress
Metric Selection	6/27/2011	ESWG - about to start
ITP Manual Update	6/27/2011	In-progress
Economic assessment	7/14/2011	
Reliability assessment	7/14/2011	
Per Future Solution development	7/28/2011	
Reliability/Economic/Stability Assessment Phase 2	9/8/2011	
Benefit calculation	9/26/2011	
2011 ITP10 Draft Report	9/26/2011	
Refinements to 2011 ITP10 Plans and Report	Dec 2011	
2011 ITP10 Final Report	Dec 2011	

SPPITPNT/ITP10 Key Dates

- September 21-22, 2011 – Planning Summit – Dallas
- ITPNT Report – November 15, 2011
- ITP10 Report – October 1, 2011
- SPP BOD Approvals – 3rd Week of January 2012
- NTCs/ATP – 2nd week February 2012
  - ATP – Authority to Plan

Proposed ITP Near Term Solutions

- 2012 Summer Projects
  - Bushland 50 Mvar Cap bank
  - Several 69 kV normal open point changes
- 2013
  - Eddy County 230/115 KV 252 MVA Auto #2
- 2014
  - Drinkard 14.4 Mvar Cap bank
  - Etter Rural 2nd 14.4 Mvar Cap bank
  - NE Hereford 2nd 115/69 kV auto
  - Cedar Lake 115/69 KV Substation
  - Happy 115/69 KV auto upgrades

Proposed ITP Near Term Solutions

- 2015
  - Spearman 115/69 KV auto upgrade
- 2016
  - Graham 2nd 115/69 kV auto addition
- 2017
  - Grassland 115/69 kV auto upgrade
- 2022
  - Wolfforth-Grassland 230 kV line
  - Artesia – 115/69 KV auto upgrades
  - Bailey – Curry 115 kV line addition
  - Canyon E – Canyon W 115 kV – line upgrade
  - Canyon E – Randall 115 kV line addition
  - Carlisle – Wolfforth 230 kV line addition
  - Chaves – Sampson 115 kV – 795 MCM re-conductor
  - Tuco – Stanton 345 kV line and 300 MVA 345/115 kV auto

Proposed ITP10 Solutions (2022 F1 and F2)

- **Bushland – Hereford Center 230 kV line and new 230/115 kV 252 MVA substation for north Hereford area**
- **Tolk – Tuco 345 kV line**
- **Tuco-Yoakum 345 kV line**
- **Hitchland 2nd 230/115 kV 252 MVA auto**
- **And everything listed previously in the ITPNT list**
- **Still working on these cases – may need to be re-run again**

Questions?