SPP RTO Missouri PSC Presentation

November – 2016

Paul Suskie – EVP and GC, SPP

Agenda

- Integrated Marketplace Updates
- Tariff Attachment Z2 Credits
- Regional Cost Allocation Review (RCAR) Update
- Regional and Interregional Planning Updates

Integrated Marketplace Update

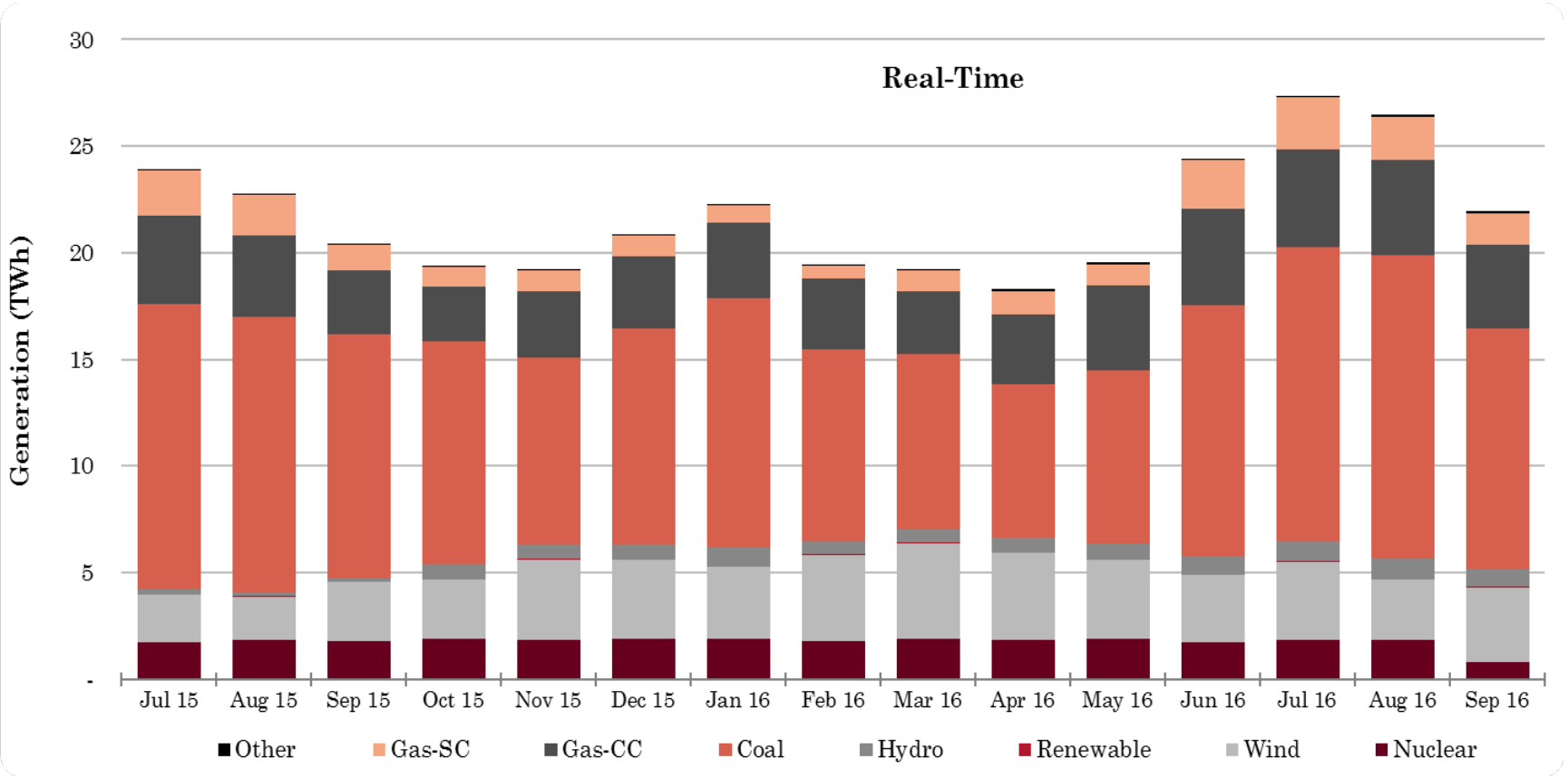
Bruce Rew, PE

Vice President, Operations

SPP Integrated Marketplace Update

- Marketplace Statistical Information
- Marketplace Wind Peak and Penetration
- Integrated Marketplace Savings

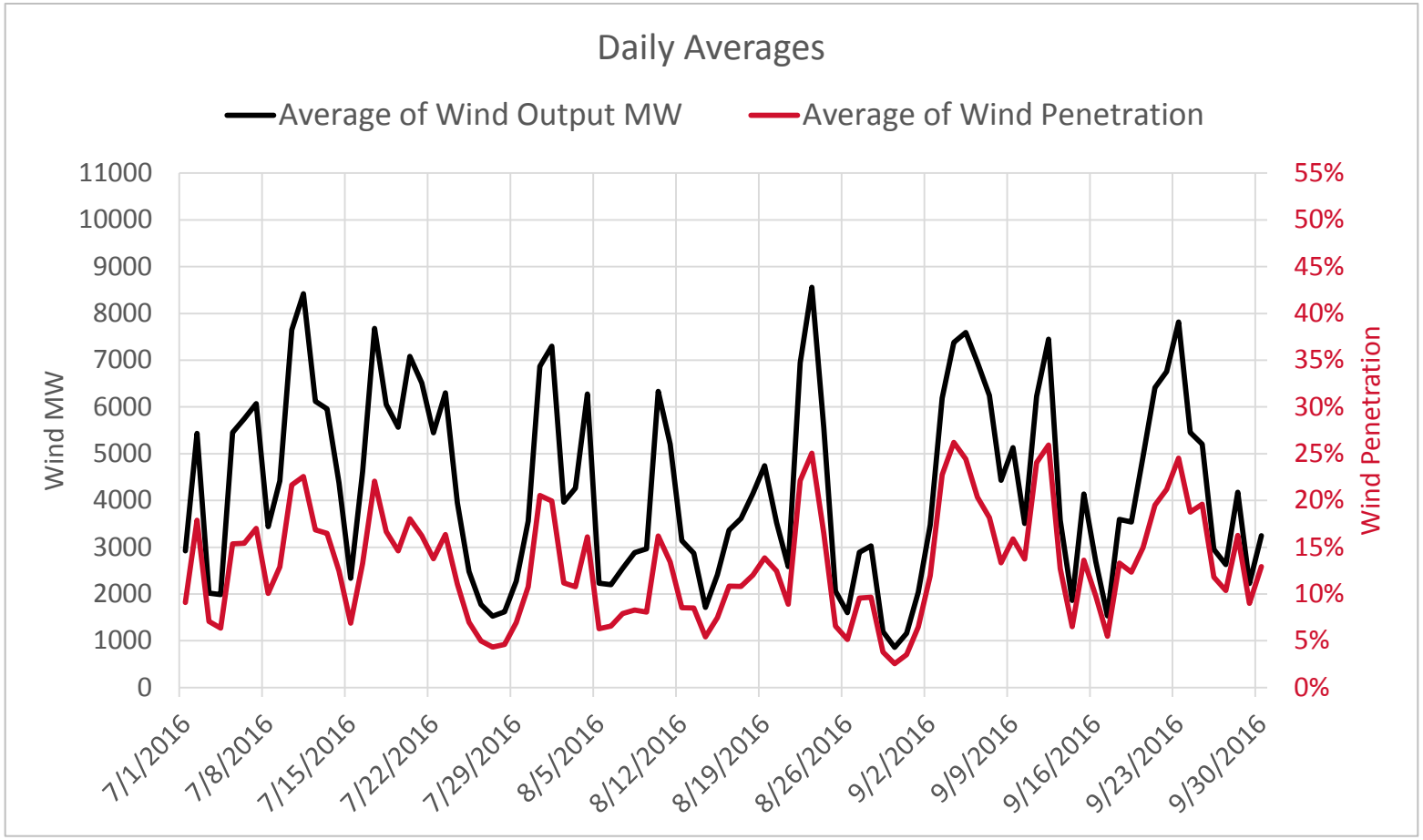
Dispatch by Fuel Type



Marketplace Operational Highlights

- 3rd Quarter Peak Load of 50,622 on July 21, 2016
  - New market footprint record
  - Largely due to addition of Integrated Systems October 2015
- Total of 12,400 MW of installed and operational wind capacity to date
  - As of October 1st, an additional 3,300 MW of wind registered
    - A portion of that has begun the commissioning/testing phase
- Additional 140MW of operational solar capacity
  - Total of 190MW currently installed and operational capacity
  - 25 MW registered, not yet operational

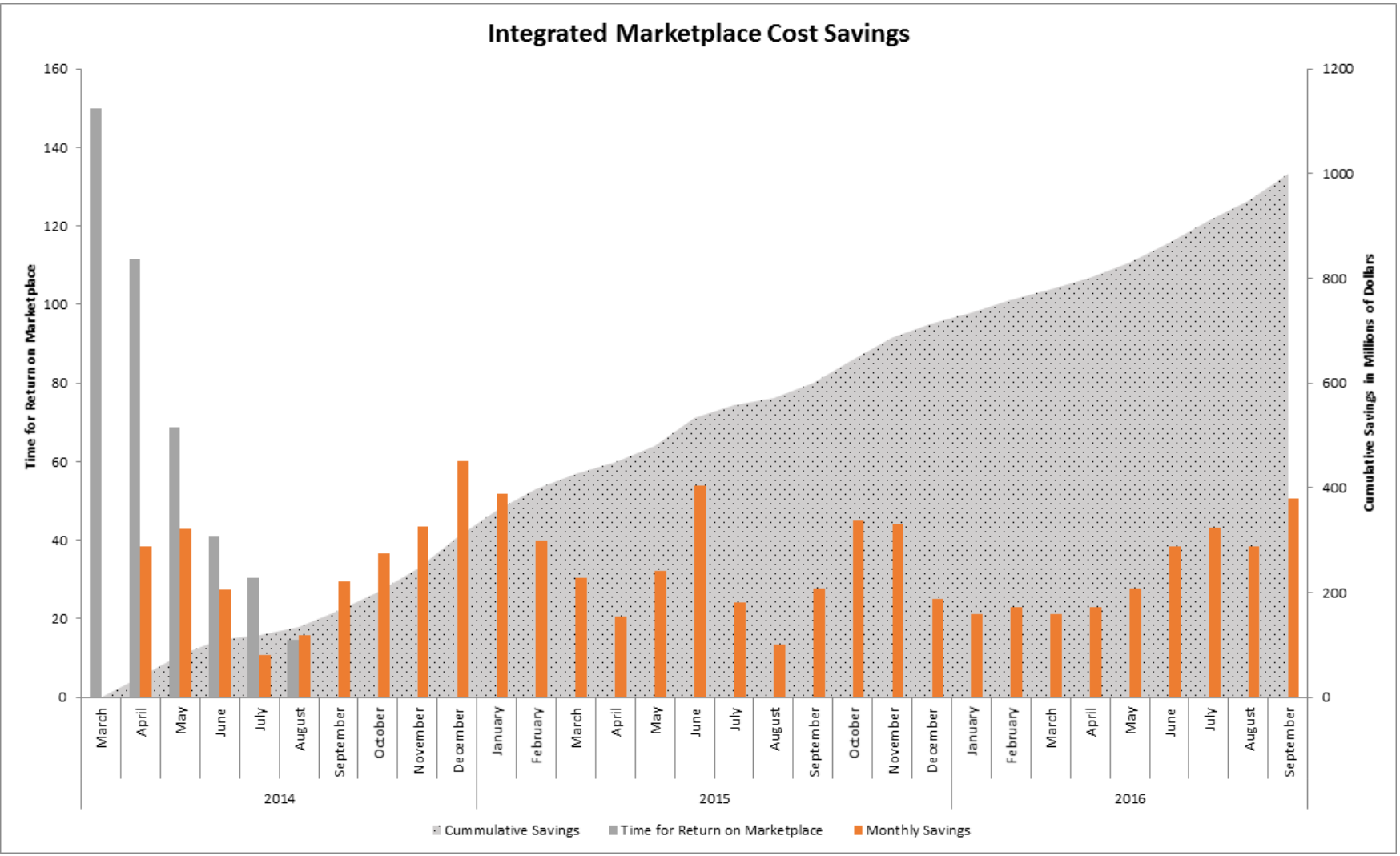
July – September 2016



Integrated Marketplace Savings

- Market continues to provide savings even with extremely low natural gas prices below $2
- First year net savings calculated to be $380 million
- 2015 annual net savings calculated to be $422 million
- At the July RSC Staff projected over $1 Billion in savings by the 75th Anniversary
- At the end of September the savings amount was:

$1,000,009,648


Integrated Marketplace Cost Savings
Time for Return on Marketplace
Cumulative Savings in Millions of Dollars
160
140
120
100
80
60
40
20
0
1200
1000
800
600
400
200
0
March
April
May
June
July
August
September
October
November
December
January
February
March
April
May
June
July
August
September
October
November
December
January
February
March
April
May
June
July
August
September
2014
2015
2016
Cummulative Savings
Time for Return on Marketplace
Monthly Savings

Questions

Integrated Marketplace

Z2 Update

Significant FERC Dockets

Original Obligations

- Rulemaking (RM02-1): Established national policy for revenue credits from transmission service for Generator Interconnection customers that bear upgrade costs [**FERC ORDER 2003**]

- ER05-109: Created revenue credits to compensate entities in SPP that bear directly assigned service upgrade costs (Attachment Z)

Clarifying Filings at FERC

- ER08-746: Attachment Z was separated into Z1 - Aggregate Study Procedures and Z2 – Revenue Crediting Procedures (Credits)
  - Credits based upon NITS & PTP service that could not be provided "but for" the existence of the upgrade
  - Included credits for Project Sponsors
  - Recognized that a Network Upgrade may also provide benefits for service in the opposite direction

- ER13-1914: Clarifications to Revenue Crediting
  - Clarified the funding of credits and the distribution of credit revenue for Creditable Upgrades under the Tariff
  - Included provisions that were designed to reduce the number of Creditable Upgrades over time

Attachment Z2 Background

- SPP Tariff Attachment Z2 provides a process to compensate (via revenue credits) those Upgrade Sponsors who pay for upgrades that are subsequently used by transmission customers
- Unpaid credit amounts occur as early as 2008
  - FERC approved a waiver of the Tariff to permit settlement of the 2008-2016 charges and credits under Attachment Z2

Z2 Implementation – Key Dates

Begin historical processing	Feb. 16
Network direct assignments to fund CPOs	Apr. 28
Provided long-term CPOs and Schedule 11 impacts	July 12
Posted initial settlements for historical period	Sept. 13
Summary and detailed results for each company	
Input data	
Payment plan election	Oct. 7
Post updated settlements for historical period	Oct. 19
Provide overall total on payment plan	Oct. 19
Invoice for historical period and September 2016	Nov. 3

ATRRs Compared to Annual Credit Payment Obligations (CPOs) ($millions)

Year	Total ATRR (Sch. 9+11)	Total CPO of LT Service	Percentage of ATRR
2008	$ 571.8	$ 0.1	0.0%
2013	$ 1,175.0	$ 26.0	2.2%
2018	$ 2,163.5	$ 68.0	3.1%
2023	$ 2,220.0	$ 38.5	1.7%
2028	$ 2,070.1	$ 34.2	1.7%
2033	$ 1,919.8	$ 21.9	1.1%
2038	$ 1,769.6	$ 4.1	0.2%
2043	$ 1,619.3	$ 1.4	0.1%

RARTF
RCAR II Presentation

July 5, 2016

OATT Requirements

SPP Tariff Requirement – Reviews.

- The Transmission Provider shall review the reasonableness of the regional allocation methodology and factors (X% and Y%) and the zonal allocation methodology at *least once every three years* in accordance with this Section III.D.
- The Transmission Provider and/or the Regional State Committee may initiate such review at any time.
- Any change in the regional allocation methodology and factors or the zonal allocation methodology shall be filed with the Commission.

RARTF Members

Chairman Steve Stoll	Missouri Public Service Commission
Vice-Chairman Richard Ross	American Electric Power
Commissioner Shari Feist Albrecht	Kansas Corporation Commission
Commissioner Lamar Davis	Arkansas Public Service Commission
Board Member Steve Lichter	Nebraska Power Review Board
Bill Grant	Southwest Public Service
Bary Warren	South Central MCN/GridLiance
Philip Crissup	Oklahoma Gas & Electric
Harry Skilton	SPP Board of Director

RCAR II RESULTS

RCAR II– B/C Ratio

	Present Value of 40-yr Benefits for the 2015-2054 Period (2016 $million)											PV of 40-yr ATRRs (2016 $million)				Gap to Reach B/C Ratio of 0.8 (2016 $million)	
	APC Savings	Avoided or Delayed Reliability Projects	Capacity Savings from Reduced On-Peak Losses	Mitigation of Trans-mission Outage Costs	Assumed Benefit of Mandated Reliability Projects	Benefit from Meeting Public Policy Goals	Increased Wheeling Through and Out Revenues	Marginal Energy Losses Benefits	Reduced Cost of Extreme Events	Reduced Loss of Load Probability	Capital Savings from Reduced Minimum Required Margin	Total Benefits	Before PtP and MISO Revenue Offset	PtP and MISO Revenue Offset	After PtP and MISO Revenue Offset	Benefit/ Cost Ratio	TOTAL	Levelized Real
AEP	$1,216	$20	$87	$207	$965	$0	$133	$59				$2,686	$1,654	$121	$1,533	**1.75**	$0	$0.0
CUS	-$33	$0	$0	$14	$53	$0	$5	$2				$42	$76	$5	$71	**0.59**	$15	$0.9
EDE	-$25	$0	$0	$24	$83	$0	$12	$0				$95	$126	$9	$117	**0.81**	$0	$0.0
GMO	$174	$1	$3	$38	$180	$0	$19	-$2				$412	$207	$15	$192	**2.15**	$0	$0.0
GRDA	$82	$0	$1	$19	$70	$0	$13	-$6				$179	$114	$8	$106	**1.68**	$0	$0.0
KCPL	$642	$1	$6	$76	$308	$0	$37	$51				$1,122	$407	$29	$378	**2.97**	$0	$0.0
LES	$115	$0	$1	$19	$64	$0	$8	$15				$223	$106	$8	$98	**2.27**	$0	$0.0
MIDW	$76	$0	$11	$8	$93	$0	$5	-$3				$190	$71	$5	$66	**2.89**	$0	$0.0
MKEC	$60	$0	$17	$13	$171	$0	$14	$30		Not Monetized		$306	$259	$20	$239	**1.28**	$0	$0.0
NPPD	$158	$1	$53	$58	$275	$0	$38	-$9				$574	$404	$29	$375	**1.53**	$0	$0.0
OGE	$1,428	$2	$65	$131	$635	$0	$66	-$64				$2,262	$838	$60	$777	**2.91**	$0	$0.0
OPPD	$24	$1	$3	$48	$150	$0	$23	$9				$257	$320	$23	$297	**0.87**	$0	$0.0
SEPC	$83	$0	$12	$9	$159	$0	$8	$11				$283	$82	$6	$76	**3.73**	$0	$0.0
SPS	$3,537	$12	$357	$115	$1,024	$0	$90	-$13				$5,122	$1,402	$102	$1,301	**3.94**	$0	$0.0
UMZ	$281	$1	$47	$96	$595	$0	$55	$191				$1,266	$397	$45	$352	**3.60**	$0	$0.0
WFEC	$159	$0	$77	$34	$222	$0	$20	$56				$568	$295	$21	$274	**2.08**	$0	$0.0
WR	$996	$1	$5	$105	$710	$0	$94	$100				$2,011	$1,002	$73	$930	**2.16**	$0	$0.0
TOTAL	$8,974	$41	$743	$1,014	$5,759	$0	$641	$427				$17,599	$7,760	$579	$7,180	**2.45**		

Work with Deficient Zone

- City Utilities of Springfield (CUS)
  - Staff has worked with CUS to address remedy options
  - CUS has expressed interest in Remedy #2
    - Issuance of NTCs for selected new upgrades
  - CUS will be focused on upcoming planning processes
    - 2017 ITP10 (January 2017)
    - Seams Study with AECI (End of 2016)
    - Seams Study with MISO (TBD)
  - Another option would be for the SPP BOD to direct a High Priority Study for the CUS area

Other Zones

- Two additional zones are above the 0.8 threshold but below the 1.0
  - OPPD and Empire
  - RARTF Report and Lessons Learned both stated that zones above the threshold but below 1.0; "that this analysis should be used and considered as a part of SPP's transmission planning process in the future."
  - Staff will work with both in upcoming planning processes to address needs and solutions for OPPD and Empire

2017 ITP10 Overview

October 24th, 2016

RSC

2017 ITP10 Futures

- Future 1 – Regional Clean Power Plan Solution
- Future 2 – State Level Clean Power Plan Solution
- Future 3 – Reference Case

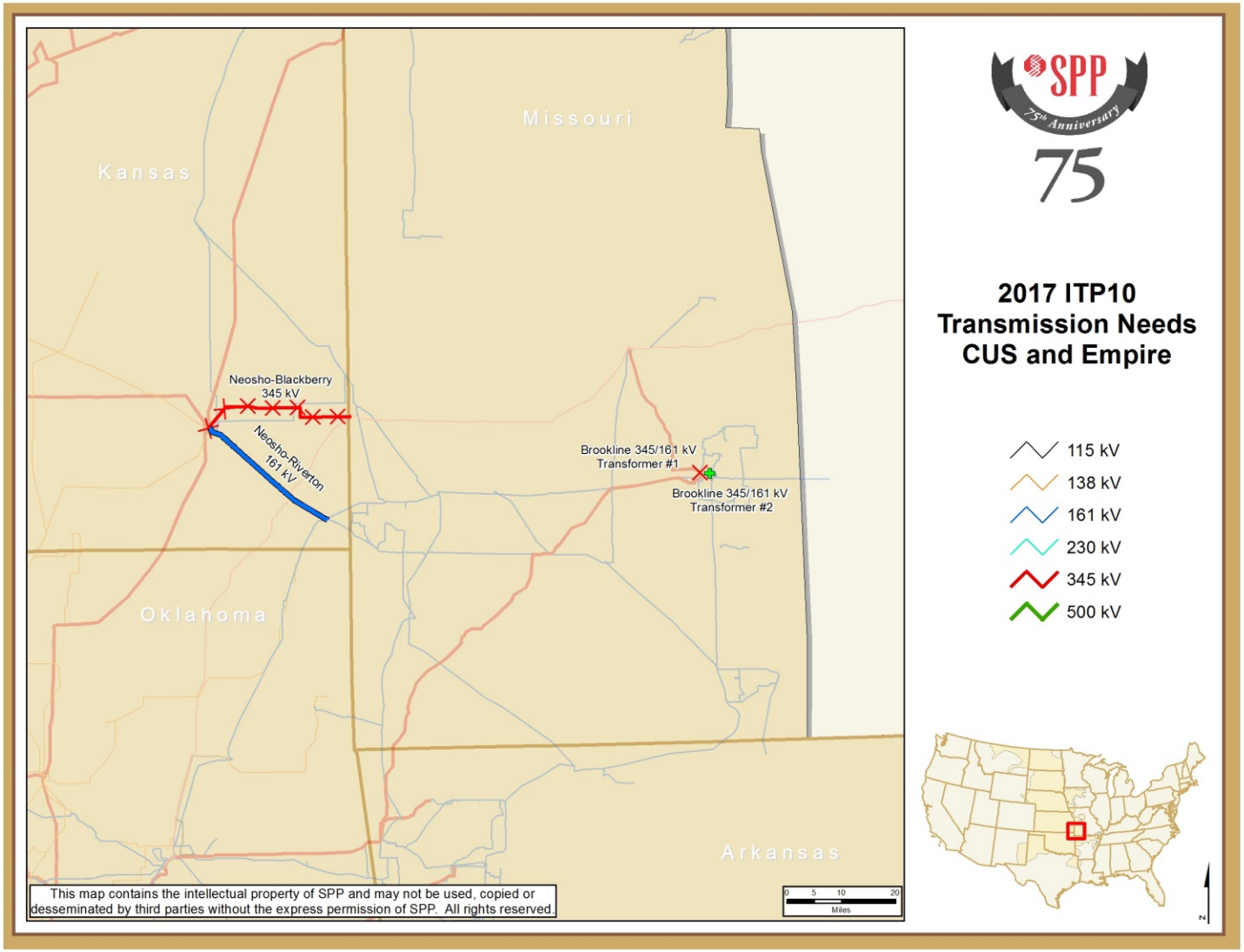
Needs and Project Evaluation

2017 ITP10

ITP10 Needs in CUS and Empire Area

- Neosho - Riverton 161 kV FLO Neosho - Blackberry 345 kV
  - Empire District
  - West to east power transfer limitation in southeast KS
- Brookline 345/161 kV transformer #1 FLO Brookline 345/161 kV transformer #2
  - City Utilities of Springfield
  - Bulk power transfer to serve load in the city of Springfield
- Both of these needs are chronic operational issues as well
- Solutions for these needs are currently being analyzed

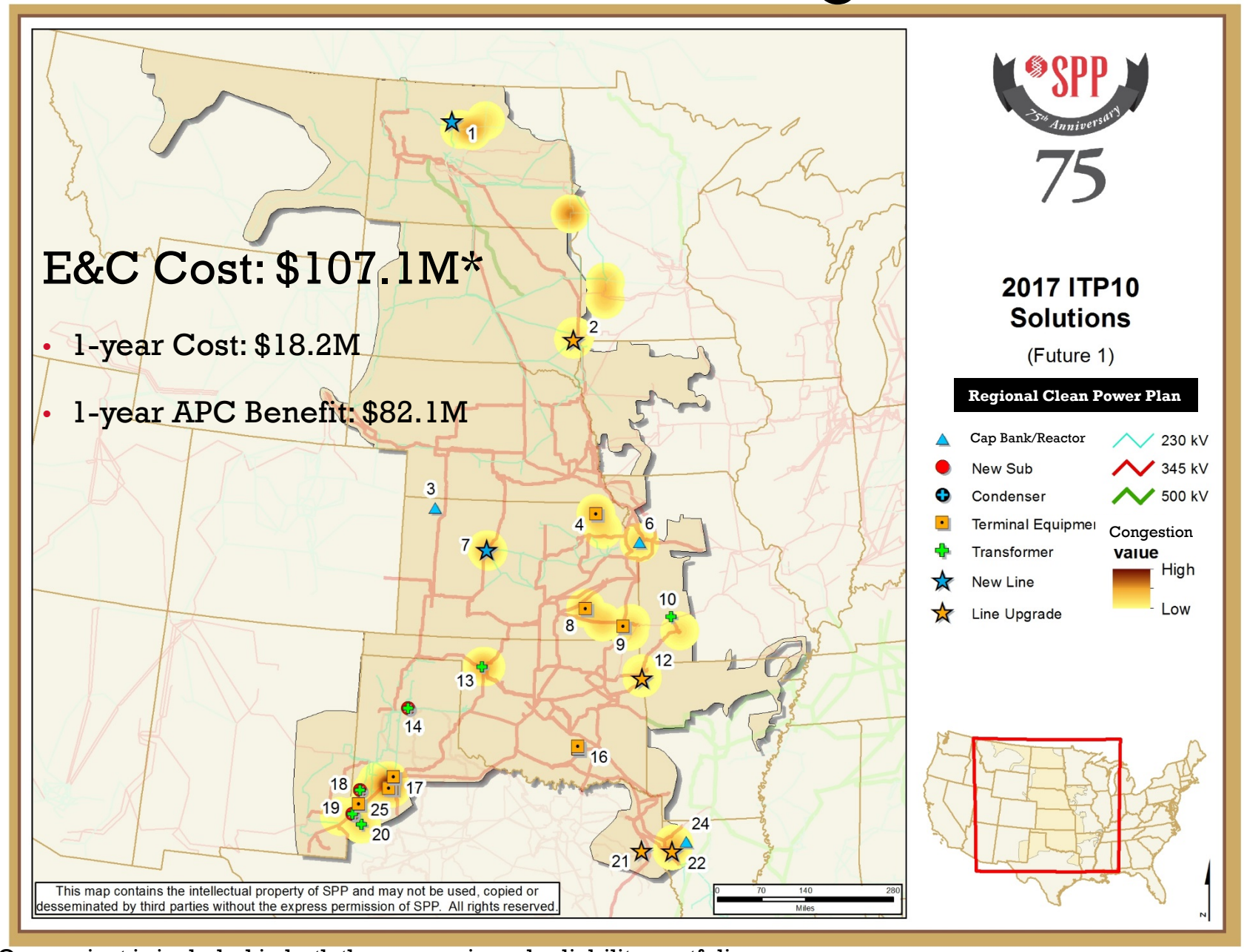
2017 ITP10 Needs in CUS and Empire



Project Portfolios

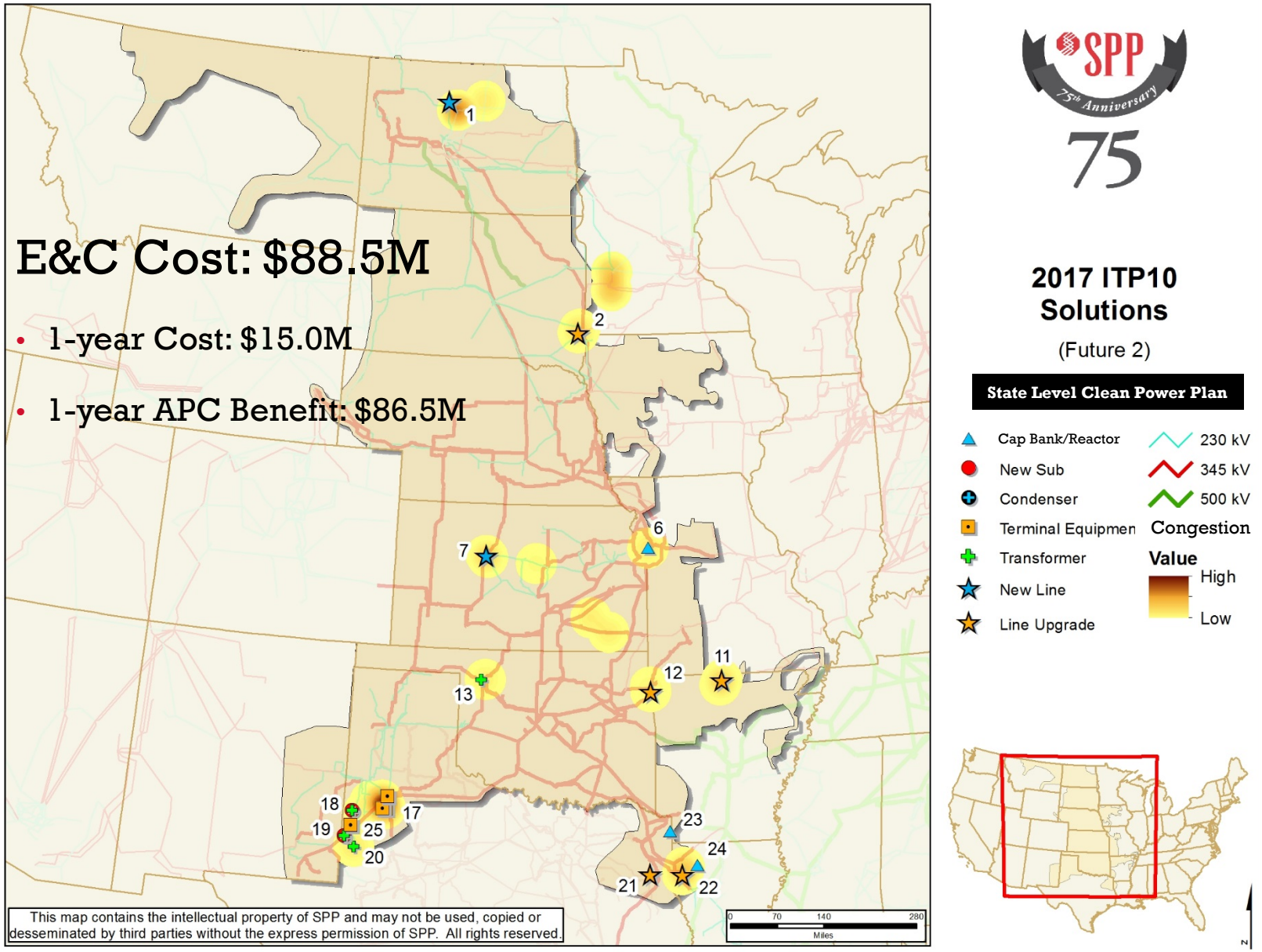
2017 ITP10

Future 1 Portfolio – Regional CPP

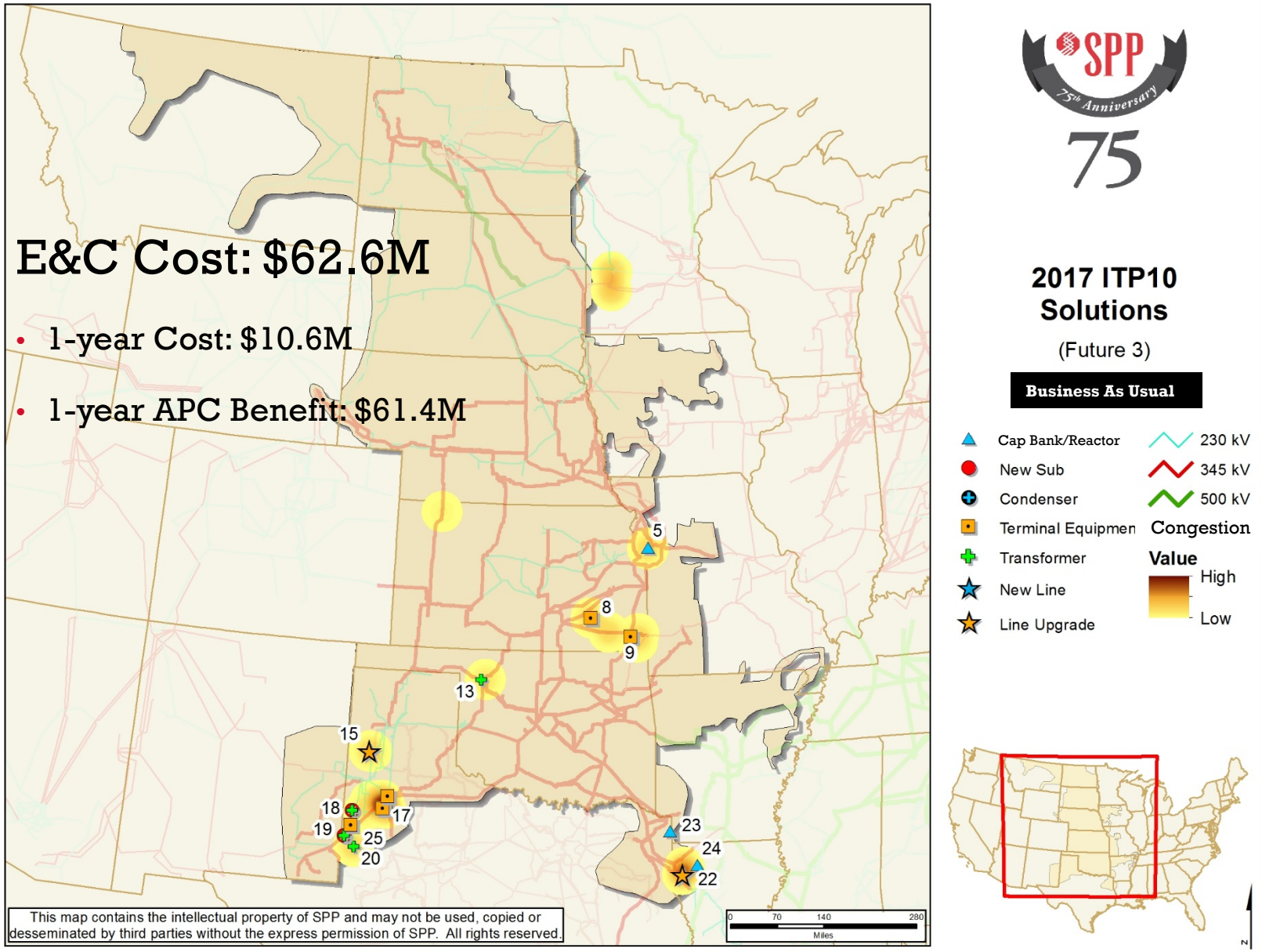


* One project is included in both the economic and reliability portfolios

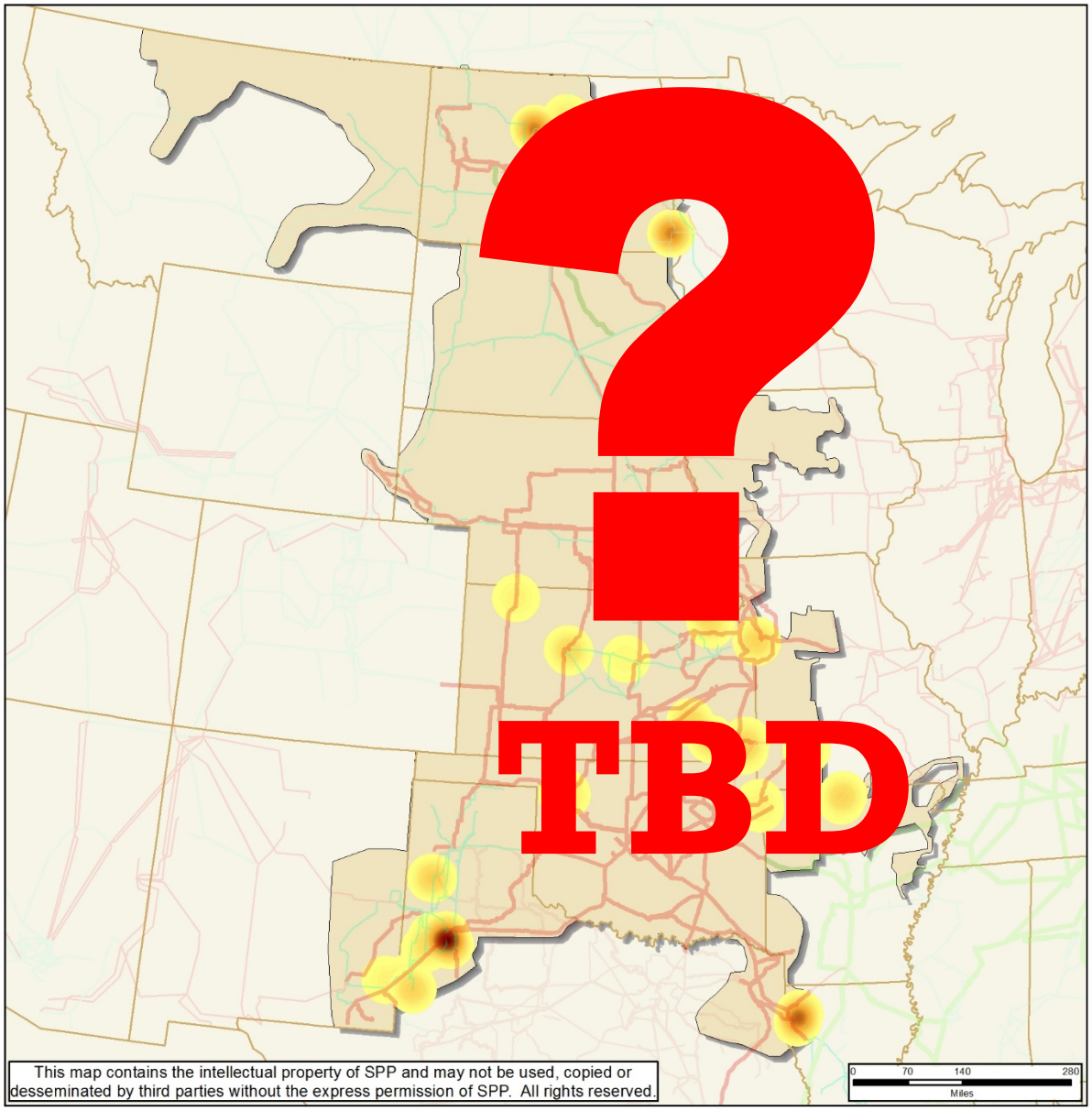
Future 2 Portfolio – State CPP



Future 3 Portfolio – Reference Case



Multi-Variable Portfolio



2017 ITP10 Needs

230 kV
345 kV
500 kV

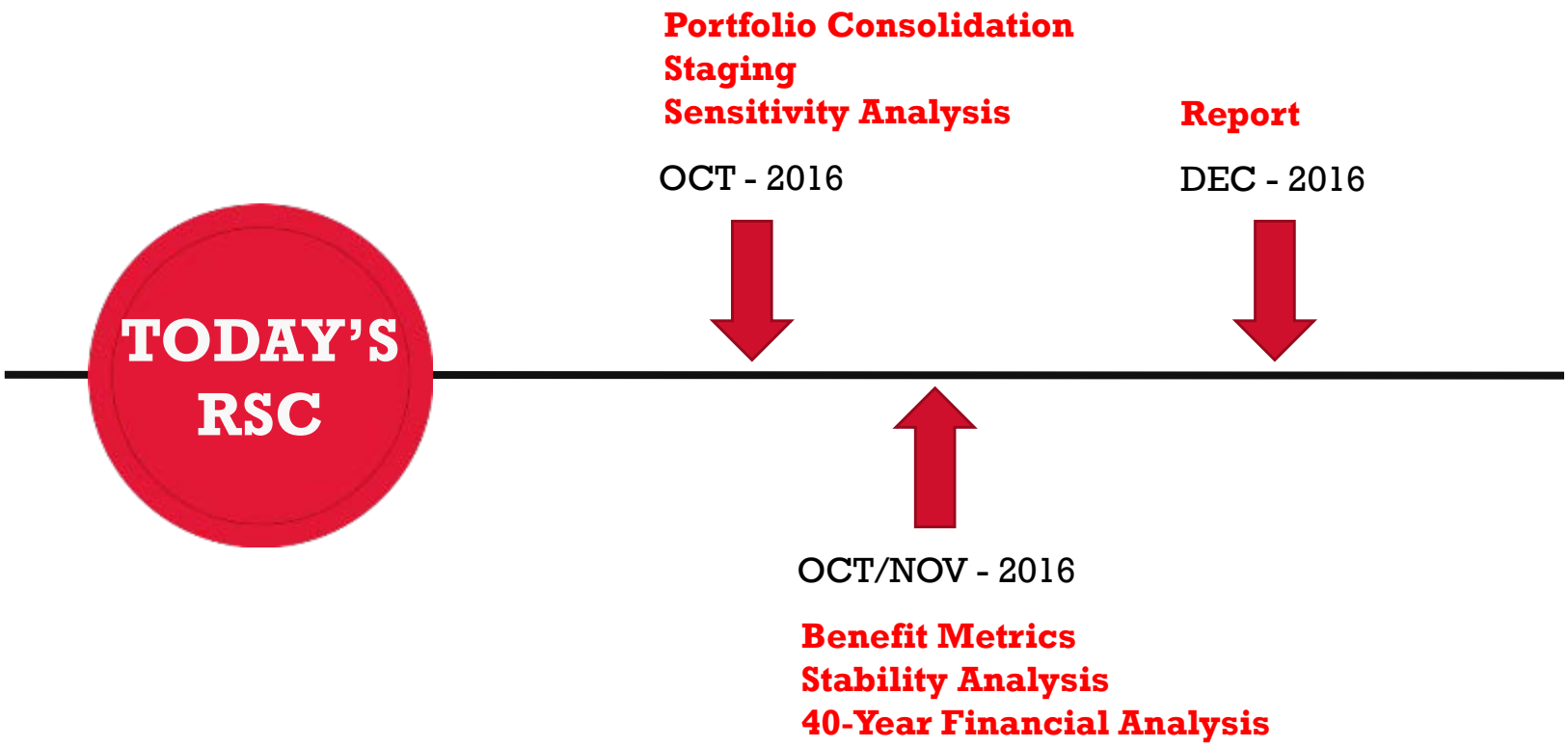
Needs Value

High
Low

Multi-Variable Portfolio

- Certain transmission issues identified under out of scope criteria were posted for informational purposes
- This was done to allow for submittal and further evaluation of projects that may support SPP initiatives but are not addressing official Needs per the ITP10 Scope
  - RCAR II
  - Seams
  - Operational issues
- Current target areas for potential project recommendations
  - Eastern Seams
    - Southeast Kansas – Southwest Missouri
    - Northeast Oklahoma – Northwest Arkansas
  - Texas Panhandle
    - SPS North to South

Next Steps


Portfolio Consolidation
Staging
Sensitivity Analysis
OCT - 2016
Report
DEC - 2016
TODAY'S RSC
OCT/NOV - 2016
Benefit Metrics
Stability Analysis
40-Year Financial Analysis

Questions

ITP-10 Planning Process

Seams Update

October 24, 2016

RSC Meeting

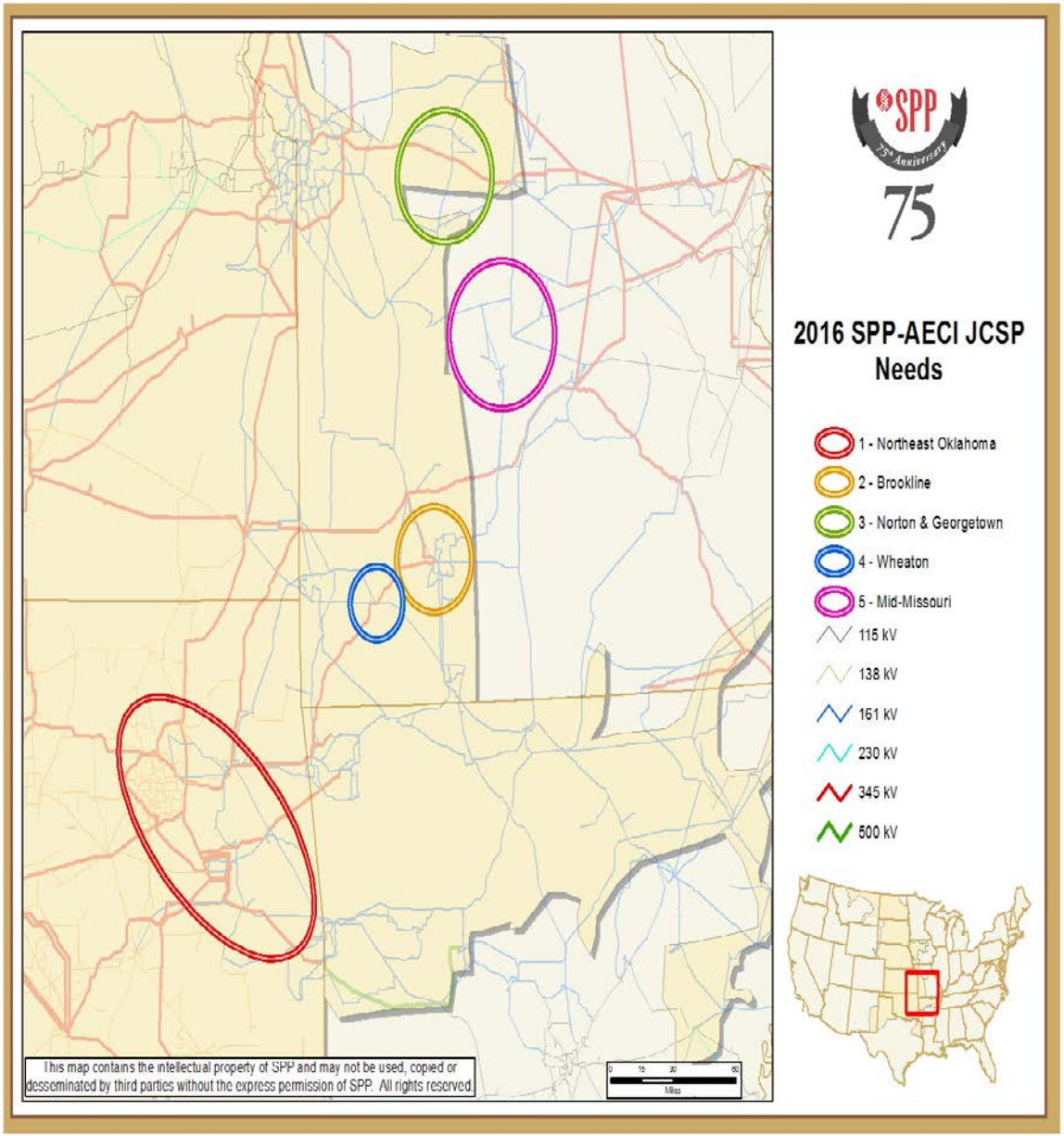
Associated Electric Cooperative Inc.

A Touchstone Energy® Cooperative

SPP-AECI JCSP

5 Focus Areas 2016 SPP-AECI JCSP Target Areas

- Northeast Oklahoma potential overloads and voltage issues
- Brookline potential overloads and voltage issues
- Norton & Georgetown potential low voltage issues
- Wheaton area potential upgrades
- Mid-Missouri potential low voltages



Next Steps

- October 4th, 2016
  - Target Area Models posted to TrueShare
  - Target Area needs posted to TrueShare
  - Solution ideas were requested from stakeholders
- November 7th, 2016
  - Deadline for stakeholder developed solutions to be submitted into the process
- December 2016
  - Issue draft study report
- Ongoing
  - SPP & AECI staff developing solutions

SPP-MISO CSP

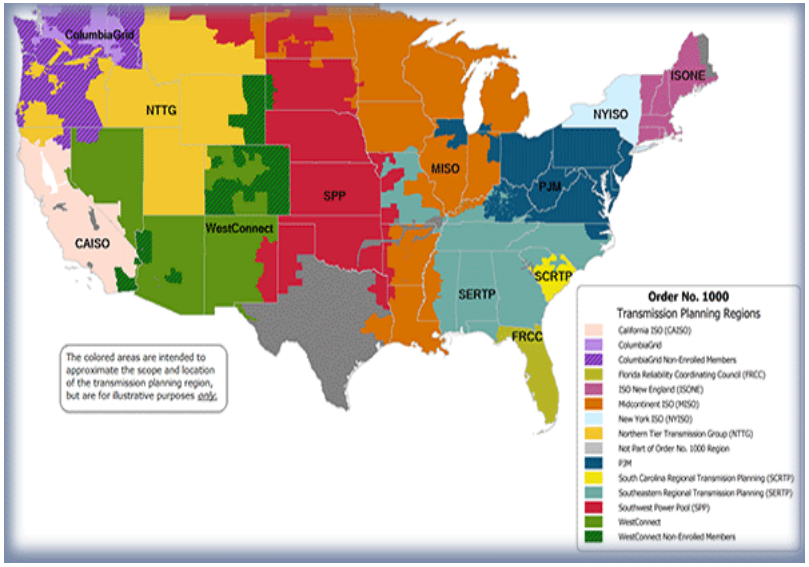
Interregional Order 1000

MISO

- ✓ Completed 2014 CSP in June 2015
- ✓ Received final FERC order on compliance on April 6, 2016
- ✓ Have begun 2016 CSP
- ❑ Process Improvements
- ❑ Interregional "Overlay" Study

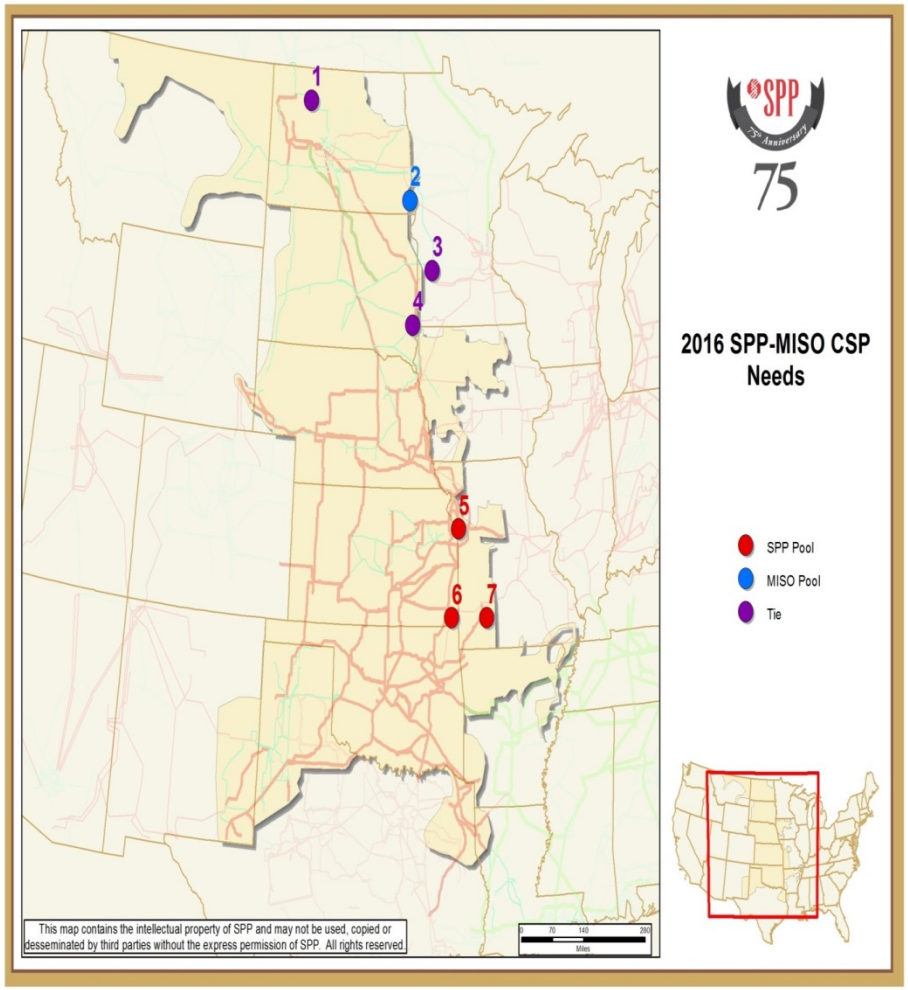
Southeastern Regional TRANSMISSION PLANNING

- ✓ Received final FERC order on compliance on April 12, 2016
- ✓ SPP-SERTP meeting held on June 30, 2016 to review respective regional transmission plans
- ❑ No interregional projects have been submitted or identified for evaluation



Credit FERC

2016 SPP-MISO CSP Needs



NEED ID	CONSTRAINT
1	Rugby WAUE-Rugby OTP Tie
2	Hankinson - Wahpeton 230kV FLO Jamestown - Buffalo 345kV
3	Sub3 - Granite Falls 115kV Ckt1 FLO Lyon Co. 345kV Ckt1
4	Sioux Falls - Lawrence 115kV FLO Sioux Falls - Split Rock 230kV
5	Northeast - Charlotte 161kV FLO Northeast - Grand Ave West 161kV
6	Neosho - Riverton 161kV FLO Neosho - Blackberry 345kV
7	Brookline 345/161kV Ckt 1 Transformer FLO Brookline 345/161kV Ckt 2 Transformer

Request for solutions

- October 3rd, 2016
  - Needs posted to SPP's TrueShare
    - Background presentation and maps
  - Solution ideas were requested
  - SPP and MISO regional models are available for project testing
- November 30th, 2016
  - Deadline for stakeholder developed solutions to be submitted into the process
- Ongoing
  - 2016 SPP-MISO Joint Model Build

Schedule

SPP-MISO CSP Tasks
1. Develop and finalize scope document for CSP study – August 2016
2. Develop detailed schedule for CSP study – August 2016
3. Economic Evaluation
• Model Development – November 2016
• Determine needs list from regional studies – August 2016
• Solution Development – November 2016
• Solution Evaluation and Robustness Testing – February 2017
• Reliability No Harm Analysis – March 2017
• Determine interregional cost allocation - March 2017
4. Coordinated Reliability Assessment – March 2017
5. Draft Coordinated System Plan study report – April 2017
6. Regional Evaluation and Cost Allocation (if needed)

Questions