

1500 SW Arrowhead Road
Topeka, KS 66604-4027



Phone: 785-271-3100
Fax: 785-271-3354
<http://kcc.ks.gov/>

Mark Sievers, Chairman
Ward Loyd, Commissioner
Thomas E. Wright, Commissioner

Sam Brownback, Governor

Submitted electronically at: <http://energy.gov/oe/congestion-study-2012> and emailed to Mr. David Meyer at david.meyer@hq.doe.gov and Ms. Patricia A Hoffman at patricia.hoffman@hq.doe.gov

January 30, 2012

Office of Electricity Delivery and Energy Reliability, OE-20
U.S. Department of Energy
1000 Independence Avenue SW
Washington, DC 20585

RE: Preparation of the 2012 Congestion Study

Dear Mr. Meyer and Ms. Hoffman:

Thank you for the opportunity to provide comments and suggestions for the 2012 Congestion Study that the DOE is performing. It is important for Kansas to have a voice in this process. I am providing information and recommendations per the letter dated November 10, 2011, to my office, requesting transmission congestion related information from the Kansas Corporation Commission (KCC).

In that letter, the DOE asked for *Pertinent studies that you think DOE should review as part of its evaluation of transmission congestion in your State or region.*

The KCC recommends that the DOE review the following studies:

- SPP ITPNT¹ (Integrated Transmission Plan Near Term)
- SPP ITP 10² (Integrated Transmission Plan, 10 year outlook)
- SPP ITP 20 Report³ (Integrated Transmission Plan, 20 year outlook)
- NERC 2011 Long-Term Reliability Assessment⁴
- SPP Corporate Metrics Reports⁵

Secondly, the DOE asked for *Actions Kansas agencies have taken since the publication of the 2009 study that you think DOE should be aware of as it prepares the 2012 study.*

¹ <http://www.spp.org/section.asp?pageID=128> will take the viewer to Southwest Power Pool's (SPP) web page. Click on more links in the left hand side of the webpage to find more documents about ITPNT, ITP 10 and ITP 20.

² *id*

³ *id* See also: http://www.spp.org/publications/ITP20_Report_01-26-11.pdf

⁴ North American Electric Reliability Corporation issued this assessment November 2011. The assessment can be found at http://www.nerc.com/files/2011%20LTRA_Final.pdf

⁵ SPP Board of Directors meeting, December 13, 2012, Background material, pp. 149-157.
<http://www.spp.org/section.asp?group=113&pageID=27>.

Since the 2009 study, the KCC has approved four high voltage transmission projects (Statutorily, Commission approval of line siting is only required for projects 230 kV and above and five-miles or more in length.). The Commission also granted a certificate of public convenience to Clean Line Energy Partners for its Grain Belt Express project. These projects are listed below:

- Docket 09-ITCE-729-MIS, KETA Phase I, a 345 kV line from Spearville, Kansas, to Hays, Kansas.
- Docket 10-ITCE-557-MIS, KETA Phase II, a 345 kV line from Hays, Kansas, to the Nebraska border. This project will interconnect with NPPD at the state line.
- Docket 11-PWTE-600-MIS, V-plan, a double circuit 345 kV line from Wichita, Kansas, to Medicine Lodge, Kansas, continuing south from Medicine Lodge, Kansas, to the Oklahoma border where the project will interconnect with OG&E.
- Docket 11-ITCE-644-MIS, V-plan, a double circuit 345 kV line from Spearville, Kansas to Medicine Lodge, Kansas.
- Docket 11-GBEE-624-COC, resulted in a Commission Order granting a certificate of public convenience to Clean Line to become a public utility in the State of Kansas. The Commission and its Staff expect Clean Line to file a transmission line siting application sometime in 2012 for its Grain Belt Express project. The project is anticipated to originate in the Spearville, Kansas, area and will be routed east to the border with Missouri, continuing through Missouri and into Illinois and possibly Indiana.

Third, the DOE asked for *Metrics Kansas agencies or others have used in gauging the existence or significance of transmission congestion in your State or region.*

The KCC does not have system modeling tools or access to system topology data, and consequently relies on the SPP Regional processes to identify the existence or significance of transmission congestion in Kansas.

Finally, the DOE asked to identify *Obstacles to the removal or mitigation of significant transmission congestion.*

The DOE defined *Critical Congestion Areas* as severe, chronic congestion.

- The state of Kansas does not have areas that meet this definition.

The DOE defined *Congestion Areas of Concern* as significant congestion, but not severe.

- Again, the state of Kansas does not have areas that meet this definition. While the balancing authority areas of Sunflower and Westar may see a few hours of summer peaking conditions and prices may increase, the State does not experience problems moving power where it needs to be in order to keep the lights on.

The DOE defined *Conditional Congestion Areas* as rich in potential generation resources, but exiting transmission is not adequate to support development of substantial additional generation. Kansas is ripe for this category.

- Kansas has significant generation resources, yet wind developers are not able to develop their projects with the existing system. As was mentioned above, the KCC has approved four EHV projects in the past three years and expects a siting application for a 5th project sometime in 2012. These projects are expected to provide access for more than 7 GW of wind energy. SPP is also working to identify areas where additional lines are needed to provide access for wind farms.
- While the KCC is approving projects in Kansas and SPP is working to build a robust transmission network within its footprint; it is recommended that the DOE study ways to improve and strengthen the seams agreements and inter-regional transmission facilities between the RTO's. Such improvements between SPP and MISO as well as SPP and entities within the SERC would help to solve the Conditional Congestion problem that KS will face in developing even more wind energy for external markets.

Attached herein is a report from Charles River Associates that was presented to the Kansas Electric Transmission Authority (KETA), October 31, 2011, showing that increasing the amount of wind in the SPP footprint from 10 GW to 14 GW (an addition of 4 GW) did not find any substantial benefits from additional 345 kV transmission lines in Kansas. While this is an indication that Kansas is not conditionally constrained to the limits of the transmission grid at this time, it is our understanding that a total of 14 MW of wind in SPP is the approximate limit for wind delivery within the regional footprint. The SPP region will likely become a Conditional Congestion Area with the development of the additional wind capacity that is anticipated in Kansas.

Please contact the Mr. Michael Wegner, Chief of Energy Operations, Utilities Division, with any questions. Mr. Wegner can be contacted at m.wegner@kcc.ks.gov or 785-271-3198.

Sincerely,



Mark Sievers
Chairman
Kansas Corporation Commission

Kansas Electric Transmission Authority Evaluation of Four Transmission Projects

October 31, 2011

CRA Charles River
Associates

Agenda

1. Scope of Work
2. Results of Study - August
3. Results of Study - October
4. Going Forward



Scope of Work

Planned Objective and Evaluation Method

Objective

Evaluate four potential transmission projects for KETA:

1. Summit to Elm Creek 345 kV
2. Summit to Post Rock 345 kV
3. Post Rock to Mingo 345 kV
4. Comanche to Stevens 345 kV

Method of Evaluation

- Benefit assessment for 2022 to be performed by comparing the adjusted total production cost for KS with and without each project ("Baseline Case").
- Two Future scenarios to be assessed.
 - Future 1 with 10GW of wind in SPP.
 - Future 2 with 14GW of wind in SPP.
- Two gas price scenarios (Base and High Gas) to be assessed for each Future.
- Two models used.
 1. NEEM: Long-term model to calculate impacts of environmental policies and resulting generation mix outside of SPP
 2. MAPS: Hourly chronological model that calculates hourly LMPs and transmission line flows. Used to derive the following benefit metrics:
 - 1) adjusted total production cost,
 - 2) capacity and energy savings from reduced line losses,
 - 3) increased effective capacity factors measuring the benefit of adding transmission to reduce congestion on curtailed resources, and
 - 4) reduction in emissions (SO₂, NO_x, CO₂, Hg).

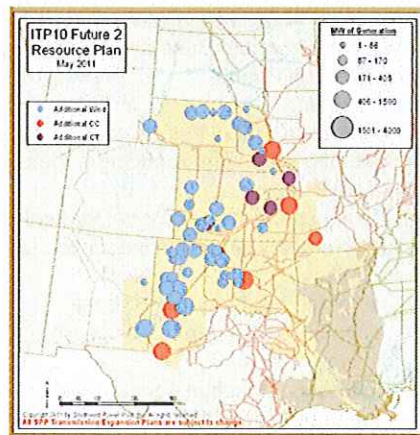
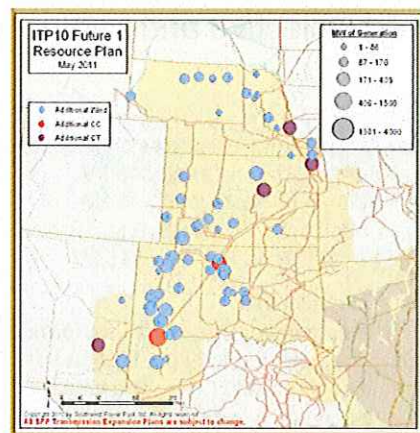
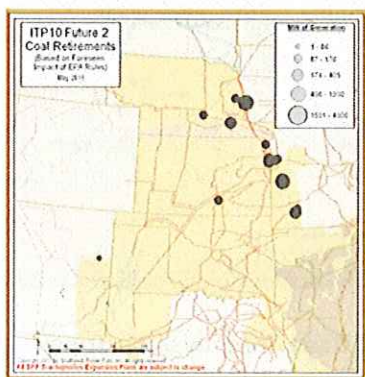


Baseline Case Transmission Topology

Scope of Work Modeling Assumptions

Assumptions were to match those used in the SPP ITP 10 process.

- Baseline transmission topology (i.e. without any of the four potential projects) includes all approved transmission projects with authorized Notice To Construct ("NTC") letters.
- Power flow cases for the Baseline and all individual projects were provided by SPP.
- Fuel prices matched closely.
- New additions and retirements for SPP, including future wind builds, matched.
- Hourly load profiles and wind profiles for SPP synchronized.



Agenda

1. Scope of Work
2. Results of Study – August
3. Results of Study - October
4. Going Forward



Results of Study - August

Initial Results and Change of Approach

Initial Results (August 2011)

No Benefits?

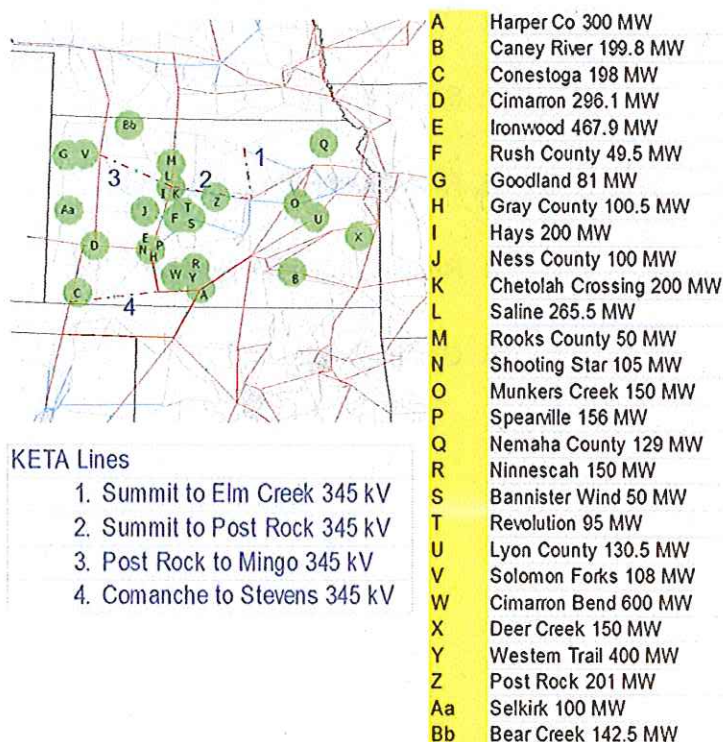
- Initial results of F1 Futures (10 GW wind) showed little to no benefits for all four potential projects.
- This was because no wind was curtailed in the Baseline Case.
- F1 Futures only had 1919 MW of wind in KS. (Current installation is 1073 MW.)
- Each 345kV line has a capacity of 1792 MW.
- SPP confirmed to have observed similar results.
 - ITP10 transmission plan is developed around the expected generation and load growth.
 - ITP10 state-level wind MW assumptions are based on participant surveys, but the locations of wind farms within the states are SPP's judgment.

Change of Approach (September 2011)

Would the Projects lead to more wind in KS?

- F2 Futures (14 GW wind) modeled.
- KS wind was increased to include 5 GW of proposed wind.
- Generic KS wind in ITP10 (1 GW) was removed.
- **Compared all potential projects in vs. baseline transmission**

5 GW of Additional KS Wind Plants



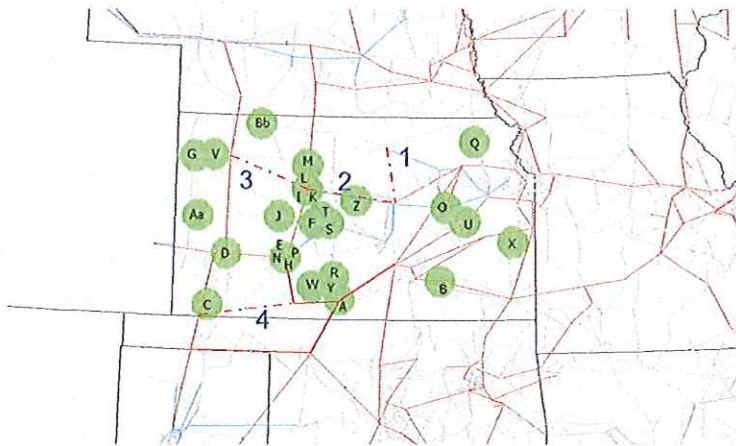
Agenda

1. Scope of Work
2. Results of Study – August
3. Results of Study - October
4. Going Forward



Results of the Study - October Results of New Approach

Results



- Most wind not significantly curtailed in the Baseline Case.
- The most substantial change is Post Rock 201 MW plant, but
- Summit to Post Rock 345kV alone will not alleviate the Post Rock wind plant curtailment observed in the Baseline Case.

Benefits that are substantial enough to justify the building the potential 345kV transmission projects were not found.

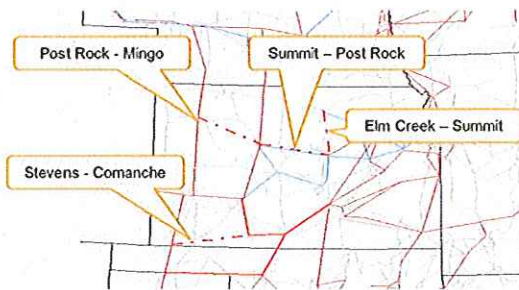
Wind Project	Generation (GWh)	
	Baseline	All Projects
Bannister Wind 50 MW	202.8	202.8
Bear Creek 142.5 MW	545.6	561.8
Caney River 199.8 MW	770.2	770.2
Chetolah Crossing 200 MW	790.8	793.0
Cimarron 296.1 MW	1263.2	1263.2
Cimarron Bend 600 MW	2404.5	2409.0
Conestoga 198 MW	738.4	738.4
Deer Creek 150 MW	510.8	510.8
Goodland 81 MW	305.9	309.6
Gray County 100.5 MW	428.8	428.8
Harper Co 300 MW	1050.2	1049.0
Hays 200 MW	791.8	793.1
Ironwood 467.9 MW	1923.5	1924.1
Lyon County 130.5 MW	513.9	513.9
Munkers Creek 150 MW	572.3	572.3
Nemaha County 129 MW	491.0	491.0
Ness County 100 MW	404.2	405.3
Ninnescah 150 MW	409.8	437.2
Post Rock 201 MW	443.8	790.2
Revolution 95 MW	384.6	384.4
Rooks County 50 MW	198.1	198.1
Rush County 49.5 MW	200.7	200.7
Saline 265.5 MW	1051.1	1052.8
Selkirk 100 MW	388.8	395.4
Shooting Star 105 MW	428.8	432.8
Solomon Forks 108 MW	409.1	413.4
Spearville 156 MW	641.5	641.5
Western Trail 400 MW	1643.6	1644.9
Total	19907.8	20327.8

Agenda

1. Scope of Work
2. Results of Study – August
3. Results of Study - October
4. **Going Forward**



Going Forward Recognition of the Projects' Benefits



Two of the potential projects are now included in the SPP ITP10 Proposed Expansion (for stability/voltage), released September 2011.

Elm Creek to Summit 345kV

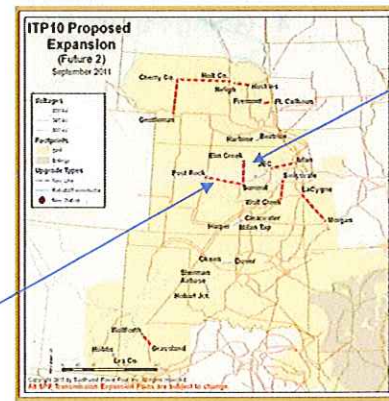
(found to be solution for the outages between Elm Creek and JEC in Future 1 and 2)

Summit to Post Rock 345kV

(found to be solution for the loss of Post Rock – Axtell in Future 2)

These reliability benefits are hard to measure on an economic basis, such as by Adjusted Production Cost Savings. Voltage constraints were studied recently and related data were not available at the time CRA started the study.

Comanche to Stevens 345kV could support the deliverability of future wind developed in the OK/TX panhandle area (will depend on specific location of developments.)



Contacts



Private and Confidential

Ira Shavel

ishavel@crai.com

1201 F Street, NW Suite 700

Washington, DC 20004

(202) 662-3901

Bruce Tsuchida

btsuchida@crai.com

200 Clarendon Street, T-33

Boston, MA 02116

(617) 425-6421

CRA Charles River
Associates

