

PJM RTEP - 2015 RTEP Proposal Window #1

Cambria 500/115 kV Station

A Proposal to PJM Interconnection, Submitted August 4, 2015

Submitted by

Transource® Energy, LLC

1 Riverside Plaza, Columbus, Ohio 43215-2372





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A. EXECUTIVE SUMMARY

Transource® Energy, LLC (Transource) is pleased to provide the following proposal to PJM in response to the *PJM RTEP-2015 RTEP Problem Statement & Requirements* document. Transource was specifically formed as a joint venture between subsidiaries of American Electric Power Company (AEP) and Great Plains Energy Incorporated (GPE) to participate in competitive processes for transmission development and to provide benefits to transmission customers through the planning, construction, and ownership of high quality, low cost transmission infrastructure. Transource is located at 1 Riverside Plaza in Columbus, Ohio.

A.1. General Description of Proposed Project

Transource proposes to build the “Cambria 500/115 kV Station Project” (or, “the Project”) in southern Pennsylvania.

The Project includes the following:

- A new 500/115 kV substation containing three new 500 kV breakers, three new 115 kV breakers and a new 500/115 kV, 200 MVA transformer.
- Approximately 0.16 miles of new 500 kV line to cut into the existing Conemaugh-Hunterstown 500 kV line that is located adjacent to the proposed new station.
- Approximately 0.2 miles of new 115 kV line to cut into the existing Claysburg – Salix (via Krayn) 115 kV line that is located adjacent to the proposed new station.
- A new 115 kV high side breaker for Transformer #1 and a 24.4 MVAR Capacitor Bank with SCADA control at Hooversville station.
- SCADA control at Somerset and Saxton 115 kV stations for their respective capacitor banks (if not existent).

Transource has completed the necessary preliminary project development work to determine project constructability, preliminary cost estimates, and a construction schedule. Experienced AEP engineering personnel were the primary resources for this work.

A project study area map and conceptual one-line diagram for the Project are provided below. Please note that this proposal contains multiple graphics that are available in high-resolution format upon request.

[Redacted]

Figure 1. Project Study Area Map

[Redacted]

Figure 2. Conceptual One-Line Diagram

Attachment 1 of this Proposal includes the required analytical files as set forth in the *PJM RTEP – 2015 Project Proposal Window 1 Problem Statement & Requirements* document. Attachment 2 of this Proposal includes the required *2015 RTEP Proposal Window Template*.

A.2. Reliability Problem(s) Proposed to Resolve

Transource submits the following Proposal to address the planning criteria violations listed below:

FG #	Bus #	Name	KV	Area	ContVolt	BaseVolt	Low Limit	Contingency 1	Contingency 2
N2-VM1	200501	26BDFORD N	115	226	0.9196	0.9606	0.9217	'B2-PN-115-072'	'B3-PN-115-013'
N2-VM2	200523	26SNAKE SP	115	226	0.9171	0.9589	0.9217	'B2-PN-115-072'	'B3-PN-115-013'
N2-VM3	200501	26BDFORD N	115	226	0.9163	0.9606	0.9217	'B2-PN-115-072'	'B2-PN-115-074'
N2-VM4	200523	26SNAKE SP	115	226	0.9188	0.9589	0.9217	'B2-PN-115-072'	'B2-PN-115-074'

Table 1. Addressed Voltage Magnitude Violations Identified by PJM

FG #	Bus #	Name	KV	Area	ContVolt	BaseVolt	Vdrop(%)	Contingency 1	Contingency 2
N2-VD40	200743	26HOOVERSV	115	226	0.938	1.0412	10.32	'B2-PN-115-064'	'B2-PN-230-014'

Table 2. Addressed Voltage Drop Violations Identified by PJM

The voltage magnitude (Table 1) and voltage drop (Table 2) issues that PJM identified occur with multiple contingency combinations around the Hooversville area. The project introduces a new 500/115 kV source among other upgrades to the affected areas that will prevent these violations.

This proposal also addresses Contingency ‘B3-PN-115-028’, which causes multiple voltage magnitude and voltage drop violations in the area, by installing a 115 kV circuit breaker on Transformer #1 at Hooversville. Below is the list of Voltage Magnitude and Voltage Drop violations associated with the subject contingency addressed by this upgrade (Table 3 and Table 4).

FG #	Bus #	Name	KV	Area	ContVolt	BaseVolt	Low Limit	Contingency 1	Contingency 2
N2-VM9	200501	26BDFORD N	115	226	0.9194	0.9942	0.9217	'B2-PN-115-066'	'B3-PN-115-028'
N2-VM26	200501	26BDFORD N	115	226	0.91	0.9981	0.9217	'B2-PN-115-065'	'B3-PN-115-028'
N2-VM27	200523	26SNAKE SP	115	226	0.9118	0.992	0.9217	'B2-PN-115-065'	'B3-PN-115-028'
N2-VM28	200744	26SOMERST	115	226	0.9164	1.0338	0.9217	'B2-PN-115-065'	'B3-PN-115-028'
N2-VM29	200745	26ALLEGHEN	115	226	0.9155	1.0227	0.9217	'B2-PN-115-065'	'B3-PN-115-028'
N2-VM30	200884	26NEW BALT	115	226	0.9172	1.021	0.9217	'B2-PN-115-065'	'B3-PN-115-028'
N2-VM31	202637	26PRIDE	115	226	0.9151	1.0276	0.9217	'B2-PN-115-065'	'B3-PN-115-028'
N2-VM32	200501	26BDFORD N	115	226	0.8971	0.9824	0.9217	'B2-PN-115-076'	'B3-PN-115-028'
N2-VM33	200516	26OSTRBURG	115	226	0.9134	0.9848	0.9217	'B2-PN-115-076'	'B3-PN-115-028'
N2-VM34	200523	26SNAKE SP	115	226	0.9	0.9782	0.9217	'B2-PN-115-076'	'B3-PN-115-028'
N2-VM35	200799	26CEN.CTY	115	226	0.8945	1.0197	0.9217	'B2-PN-115-076'	'B3-PN-115-028'
N2-VM36	200836	26STATHILL	115	226	0.8946	1.027	0.9217	'B2-PN-115-076'	'B3-PN-115-028'
N2-VM37	200501	26BDFORD N	115	226	0.8971	0.9962	0.9217	'B2-PN-115-080'	'B3-PN-115-028'
N2-VM38	200523	26SNAKE SP	115	226	0.9063	0.991	0.9217	'B2-PN-115-080'	'B3-PN-115-028'
N2-VM39	200799	26CEN.CTY	115	226	0.8945	1.0251	0.9217	'B2-PN-115-080'	'B3-PN-115-028'
N2-VM40	200836	26STATHILL	115	226	0.8946	1.0309	0.9217	'B2-PN-115-080'	'B3-PN-115-028'
N2-VM48	200501	26BDFORD N	115	226	0.8961	0.9971	0.9217	'B2-PN-115-064'	'B3-PN-115-028'
N2-VM49	200516	26OSTRBURG	115	226	0.9124	0.9962	0.9217	'B2-PN-115-064'	'B3-PN-115-028'
N2-VM50	200523	26SNAKE SP	115	226	0.899	0.9911	0.9217	'B2-PN-115-064'	'B3-PN-115-028'
N2-VM51	200742	26TOWER 51	115	226	0.8702	1.0331	0.9217	'B2-PN-115-064'	'B3-PN-115-028'
N2-VM52	200743	26HOOVERSV	115	226	0.8754	1.0412	0.9217	'B2-PN-115-064'	'B3-PN-115-028'
N2-VM53	200744	26SOMERST	115	226	0.8886	1.0323	0.9217	'B2-PN-115-064'	'B3-PN-115-028'
N2-VM54	200745	26ALLEGHEN	115	226	0.8923	1.0214	0.9217	'B2-PN-115-064'	'B3-PN-115-028'
N2-VM55	200746	26ROCKWOOD	115	226	0.9115	1.0334	0.9217	'B2-PN-115-064'	'B3-PN-115-028'
N2-VM56	200761	26ARNOLD R	115	226	0.9134	1.0352	0.9217	'B2-PN-115-064'	'B3-PN-115-028'
N2-VM57	200799	26CEN.CTY	115	226	0.8934	1.0275	0.9217	'B2-PN-115-064'	'B3-PN-115-028'
N2-VM58	200803	26MEY.NORT	115	226	0.9136	1.0354	0.9217	'B2-PN-115-064'	'B3-PN-115-028'
N2-VM59	200836	26STATHILL	115	226	0.8936	1.0334	0.9217	'B2-PN-115-064'	'B3-PN-115-028'

FG #	Bus #	Name	KV	Area	ContVolt	BaseVolt	Low Limit	Contingency 1	Contingency 2
N2-VM60	200854	26BERKLY H	115	226	0.9137	1.0355	0.9217	'B2-PN-115-064'	'B3-PN-115-028'
N2-VM61	200856	26LICK RUN	115	226	0.9131	1.0349	0.9217	'B2-PN-115-064'	'B3-PN-115-028'
N2-VM62	200881	26BIGBY	115	226	0.9134	1.0352	0.9217	'B2-PN-115-064'	'B3-PN-115-028'
N2-VM63	200884	26NEW BALT	115	226	0.8956	1.0198	0.9217	'B2-PN-115-064'	'B3-PN-115-028'
N2-VM64	202637	26PRIDE	115	226	0.8895	1.0262	0.9217	'B2-PN-115-064'	'B3-PN-115-028'
N2-VM77	200501	26BDFORD N	115	226	0.9119	0.99	0.9217	B2-PN-115-074	B3-PN-115-028
N2-VM78	200523	26SNAKE SP	115	226	0.9134	0.9849	0.9217	B2-PN-115-074	B3-PN-115-028
N2-VM79	200745	26ALLEGHEN	115	226	0.9199	0.9976	0.9217	B2-PN-115-074	B3-PN-115-028
N2-VM80	200799	26CEN.CTY	115	226	0.9094	1.0239	0.9217	B2-PN-115-074	B3-PN-115-028
N2-VM81	200836	26STATHILL	115	226	0.9095	1.0307	0.9217	B2-PN-115-074	B3-PN-115-028
N2-VM82	200884	26NEW BALT	115	226	0.9213	0.9988	0.9217	B2-PN-115-074	B3-PN-115-028

Table 3. Addressed Voltage Magnitude Violations Associated with B3-PN-115-028

FG #	Bus #	Name	KV	Area	ContVolt	BaseVolt	Low Limit	Contingency 1	Contingency 2
N2-VD10	200799	26CEN.CTY	115	226	0.9157	1.0244	10.87	'B2-PN-115-066'	'B3-PN-115-028'
N2-VD11	200836	26STATHILL	115	226	0.9159	1.0304	11.45	'B2-PN-115-066'	'B3-PN-115-028'
N2-VD12	200744	26SOMERST	115	226	0.9123	1.0338	12.15	'B2-PN-115-065'	'B3-PN-115-028'
N2-VD13	200745	26ALLEGHEN	115	226	0.9128	1.0227	10.99	'B2-PN-115-065'	'B3-PN-115-028'
N2-VD14	200746	26ROCKWOOD	115	226	0.9304	1.0346	10.42	'B2-PN-115-065'	'B3-PN-115-028'
N2-VD15	200761	26ARNOLD R	115	226	0.9322	1.0364	10.42	'B2-PN-115-065'	'B3-PN-115-028'
N2-VD16	200799	26CEN.CTY	115	226	0.9077	1.0289	12.12	'B2-PN-115-065'	'B3-PN-115-028'
N2-VD17	200803	26MEY.NORT	115	226	0.9325	1.0367	10.42	'B2-PN-115-065'	'B3-PN-115-028'
N2-VD18	200836	26STATHILL	115	226	0.9078	1.0349	12.71	'B2-PN-115-065'	'B3-PN-115-028'
N2-VD20	200856	26LICK RUN	115	226	0.932	1.0362	10.42	'B2-PN-115-065'	'B3-PN-115-028'
N2-VD21	200881	26BIGBY	115	226	0.9323	1.0365	10.42	'B2-PN-115-065'	'B3-PN-115-028'
N2-VD22	200884	26NEW BALT	115	226	0.915	1.021	10.6	'B2-PN-115-065'	'B3-PN-115-028'
N2-VD23	202637	26PRIDE	115	226	0.9117	1.0276	11.59	'B2-PN-115-065'	'B3-PN-115-028'
N2-VD24	200501	26BDFORD N	115	226	0.8966	0.9971	10.05	'B2-PN-115-064'	'B3-PN-115-028'
N2-VD25	200742	26TOWER 51	115	226	0.8675	1.0331	16.56	'B2-PN-115-064'	'B3-PN-115-028'
N2-VD26	200743	26HOOVERSV	115	226	0.8726	1.0412	16.86	'B2-PN-115-064'	'B3-PN-115-028'
N2-VD27	200744	26SOMERST	115	226	0.8854	1.0323	14.69	'B2-PN-115-064'	'B3-PN-115-028'
N2-VD28	200745	26ALLEGHEN	115	226	0.8904	1.0214	13.1	'B2-PN-115-064'	'B3-PN-115-028'
N2-VD29	200746	26ROCKWOOD	115	226	0.9073	1.0334	12.61	'B2-PN-115-064'	'B3-PN-115-028'
N2-VD30	200761	26ARNOLD R	115	226	0.9091	1.0352	12.61	'B2-PN-115-064'	'B3-PN-115-028'
N2-VD31	200799	26CEN.CTY	115	226	0.8939	1.0275	13.36	'B2-PN-115-064'	'B3-PN-115-028'
N2-VD32	200803	26MEY.NORT	115	226	0.9094	1.0354	12.6	'B2-PN-115-064'	'B3-PN-115-028'
N2-VD33	200836	26STATHILL	115	226	0.8941	1.0334	13.93	'B2-PN-115-064'	'B3-PN-115-028'
N2-VD34	200854	26BERKLY H	115	226	0.9094	1.0355	12.61	'B2-PN-115-064'	'B3-PN-115-028'
N2-VD35	200856	26LICK RUN	115	226	0.9089	1.0349	12.6	'B2-PN-115-064'	'B3-PN-115-028'
N2-VD36	200881	26BIGBY	115	226	0.9092	1.0352	12.6	'B2-PN-115-064'	'B3-PN-115-028'

FG #	Bus #	Name	KV	Area	ContVolt	BaseVolt	Low Limit	Contingency 1	Contingency 2
N2-VD37	200884	26NEW BALT	115	226	0.8941	1.0198	12.57	'B2-PN-115-064'	'B3-PN-115-028'
N2-VD38	202637	26PRIDE	115	226	0.8869	1.0262	13.93	'B2-PN-115-064'	'B3-PN-115-028'
N2-VD54	200799	26CEN.CTY	115	226	0.9231	1.0249	10.18	'B2-PN-115-075'	'B3-PN-115-028'
N2-VD55	200836	26STATHILL	115	226	0.9233	1.0312	10.79	'B2-PN-115-075'	'B3-PN-115-028'
N2-VD56	200799	26CEN.CTY	115	226	0.8985	1.0197	12.12	'B2-PN-115-076'	'B3-PN-115-028'
N2-VD57	200836	26STATHILL	115	226	0.8986	1.027	12.84	'B2-PN-115-076'	'B3-PN-115-028'
N2-VD58	200836	26STATHILL	115	226	0.926	1.0296	10.36	'B2-PN-115-105'	'B3-PN-115-028'
N2-VD59	200836	26STATHILL	115	226	0.9216	1.0278	10.62	'B2-PN-115-071A'	'B3-PN-115-028'
N2-VD62	200501	26BDFORD N	115	226	0.8961	0.9962	10.01	'B2-PN-115-080'	'B3-PN-115-028'
N2-VD63	200799	26CEN.CTY	115	226	0.8934	1.0251	13.17	'B2-PN-115-080'	'B3-PN-115-028'
N2-VD64	200836	26STATHILL	115	226	0.8935	1.0309	13.74	'B2-PN-115-080'	'B3-PN-115-028'
N2-VD65	200836	26STATHILL	115	226	0.9282	1.0328	10.46	'B2-PN-115-083'	'B3-PN-115-028'
N2-VD69	200799	26CEN.CTY	115	226	0.9253	1.0269	10.16	'B2-PN-115-082'	'B3-PN-115-028'
N2-VD70	200836	26STATHILL	115	226	0.9255	1.0335	10.8	'B2-PN-115-082'	'B3-PN-115-028'
N2-VD71	200836	26STATHILL	115	226	0.9234	1.0261	10.27	'B2-PN-115-090'	'B3-PN-115-028'
N2-VD91	200799	26CEN.CTY	115	226	0.9127	1.0239	11.12	B2-PN-115-074	B3-PN-115-028
N2-VD92	200836	26STATHILL	115	226	0.9129	1.0307	11.78	B2-PN-115-074	B3-PN-115-028

Table 4. Addressed Voltage Drop Violations Associated with B3-PN-115-028

Furthermore, the proposal also addresses the Generator Deliverability and N-1-1 violations specified below on Tables 5 and 6.

2020 PJM Generation Deliverability and Common Mode Outage Results													
FG #	Fr Bus	Name	To Bus	Name	C	KVs	Area	Rati	FN DC Fl	FN AC Fl	FN DC	FN AC	Cont Label
674	200753	26ROSEDALE	200752	26HILLTOP	1	115/115	226/226	185	180.3	188.8	97.46	102.05	'C5-PN-230-001'

Table 5. Addressed Gen Deliv Violations Identified by PJM

2020 PJM N-1 Thermal Result													
FG #	Fr Bus	Fr Name	To Bus	To Name	C	KVs	Area	Rati	DC Ld(%)	AC Ld(%)	Cont Typ	Contingency	
204	200753	26ROSEDALE	200752	26HILLTOP	1	115/115	226/226	185	97.19	101.91	Tower	'C5-PN-230-001'	

Table 6. Addressed N-1 Violations Identified by PJM

Transource performed analysis of existing and new contingencies that the Project may create and found no planning criteria violations.

A.3. Overall Schedule Duration

The Project is projected to be placed in service no later than the second quarter of 2020.

A.4. Overview of Cost Estimate and Cost Containment

The preliminary estimated capital cost of the Project is approximately \$21.4 million. This estimated cost includes all components of the Project, including components that PJM may consider as upgrades.

Transource offers a cost containment mechanism for the Project that provides financial incentive to deliver the Project at or below its estimated project cost. Total estimated project cost is \$21.4 million (in 2015 dollars), of which \$18.5 million is estimated to be designated to Transource. Under the cost containment mechanism for this Project:

- (a) Transource would be entitled to recover its FERC-approved return on equity plus incentives on the costs it incurs for the Project up to its estimated project cost of \$18.5 million (plus an escalation of the estimated project cost of 3 percent per year to account for inflation, until the project is placed in service), for the components of the Project designated to Transource.
- (b) Transource would forego any return on equity incentives approved by FERC (including the RTO participation adder) for the project cost portion that exceeds the estimated Transource -designated project cost of \$18.5 million. For purposes of this incentive rate waiver, Transource will escalate the estimated project cost at 3 percent per year, to account for inflation, until the project is placed in service.
- (c) In addition, in order to provide certainty to the customer rates, Transource commits to an actual equity content of no greater than 50 percent for the Project, once permanent financing is in place. This assumes that the capital market conditions remain normal and provides for the ability to finance these transmission projects with the proposed capital structure.

A.5. Designated Entity Statement of Intent

Transource seeks to be considered the Designated Entity for the project described within this Proposal, subject to determination regarding components deemed upgrades by PJM.

A.6. Designated Entity Status Pre-Qualification

Transource has been pre-qualified to be a Designated Entity for transmission projects in PJM under section 1.5.8 (a) of the PJM Operating Agreement. The pre-qualification information is contained in the document submitted to PJM on April 29, 2013, entitled *Pre-Qualification Application of American Electric Power and Certain Affiliates*. This document is on record with PJM and posted on the PJM website, with PJM pre-qualification ID of 13-05. PJM confirmed the pre-qualified status of Transource in a letter dated July 7, 2013. As required annually, Transource has reviewed this information and determined that no updates are required.

B. COMPANY EVALUATION INFORMATION

B.1. Overview of Transource Energy

Transource was formed to pursue the development of competitive transmission projects in marketplaces initiated by the implementation of FERC Order No. 1000. AEP owns 86.5 percent of Transource, and GPE owns 13.5 percent. The combined strengths of AEP and GPE in engineering, project management, procurement, project development, construction, operation and maintenance will result in effective and efficient delivery of transmission solutions that benefit transmission customers.

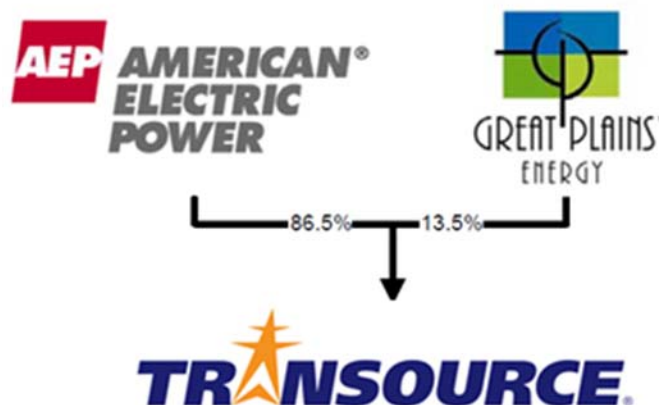


Figure 3. Summary of Transource Ownership Structure

Transource is currently developing two Southwest Power Pool (SPP) approved transmission projects in the state of Missouri through its subsidiary Transource Missouri LLC (Transource Missouri). The Iatan-Nashua 345 kV transmission project was recently placed into service, and the Sibley-Nebraska City 345 kV transmission project is currently under construction. Transource received approval from the Federal Energy Regulatory Commission (FERC) of a formula rate and certain incentives for Transource Missouri in FERC Docket No. ER12-2554. In addition, Transource Missouri received approval from the Missouri Public Service Commission of a settlement filed in File No. EA-2013-0098 for a line Certificate of Convenience and Necessity to finance, construct, own, operate and maintain these projects.

The figure below provides a snapshot of the states in which Transource’s owners, AEP and GPE, currently own or are developing transmission assets.

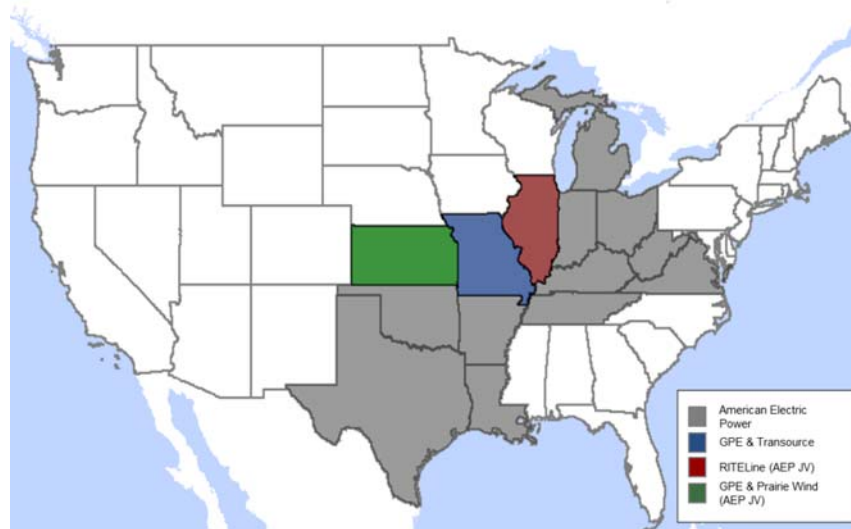


Figure 4. Combined Transmission Presence

B.2. Transource Contacts

Primary Contact	Joshua D. Burkholder Director, Asset Strategy	Transource 1 Riverside Plaza Columbus, Ohio 43215-2372
Secondary Contact	Takis Laios Manager, Transmission Asset Strategy	Transource 1 Riverside Plaza Columbus, Ohio 43215-2372

B.3. Transource Qualifications

Transource will bring to bear the talents, resources, and capabilities of AEP, GPE, and their respective subsidiaries to execute the Project. These capabilities are detailed in Transource’s prequalification submittal to PJM.

C. PROPOSED PROJECT CONSTRUCTABILITY INFORMATION

[Section Redacted]



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