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October 12, 2012

Mr. Jeff Derouen
Executive Director
Kentucky Public Service Commission
211 Sower Boulevard
P.O. Box 615
Frankfort, Kentucky 40602-0615

RECEIVED
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COMMISSION

Re: PSC Case No. 2012-00169

Dear Mr. Derouen:

On August 15, 2012, East Kentucky Power Cooperative, Inc. ("EKPC") filed a deliverability study ("EKPC Baseline RTEP Integration Report") in the above referenced case. In its response to Request 4 of Commission Staff's Second Information Request in this proceeding, EKPC acknowledged that a full RTEP analysis is expected to be completed by PJM by December 31, 2012. PJM has completed the "n-1-1" portion of this study. Please find enclosed for filing with the Commission, an original and 10 copies of an updated EKPC Baseline RTEP Integration Report which incorporates the "n-1-1" information.

Very truly yours,

Mark David Goss by D.

Mark David Goss
Counsel

Enclosures

CC: Parties of Record

East Kentucky Power Cooperative (EKPC) Baseline RTEP Integration Report

Issued August 13, 2012
Updated October 8, 2012

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INTRODUCTION

The PJM Regional Transmission Expansion Planning (RTEP) Process requires the establishment of cost responsibility for facility enhancements. There are three types of facility enhancements for which cost assignment must be made:

- Attachment Facilities required solely to interconnect a new generation project,
- Network Facilities that are required to enhance the network solely or in part because of a proposed project, and
- Network Facilities required to support load growth.

In order to establish a starting point for development of Regional Transmission Expansion Plans and determine cost responsibility for expansion facilities, a 'baseline' analysis of system adequacy and security is necessary. The purpose of this analysis is threefold:

- To identify areas where the system, as planned, is not in compliance with applicable reliability standards (for purposes of this report, "applicable reliability standards" will be defined as NERC, RFC, SERC, EKPC and PJM Reliability Planning Criteria). The baseline system will be analyzed using the same criteria and analysis methods that will be used for assessing the impact of proposed new generation projects. This will ensure that the need for system enhancement of the baseline system and enhancements due to generation projects are determined in a consistent and equitable manner.
- To bring those areas into compliance, develop and recommend facility expansion plans, including cost estimates and estimated in-service dates.
- To establish what will be included as baseline costs in the allocation of the costs of expansion for those generation projects proposing to connect to the PJM system.

The system as planned is evaluated for its compliance with applicable reliability standards and PJM design standards to accommodate the forecast demand, committed resources, and commitments for firm transmission services for a specified timeframe. Areas not in compliance with the standards are identified and enhancement plans are developed to achieve compliance.

This 'baseline' analysis and the resulting expansion plans served as the base system for the generator deliverability studies that were conducted for all generation that had an executed Interconnection Agreement with EKPC as of May 3, 2012.

The focus of this first EKPC baseline analysis was on the PJM Generator Deliverability test. Generators that already had firm transmission rights on the EKPC system are assumed to be part of the base system. This assumption is based on the fact that EKPC had previously studied these generators for compliance with SERC, NERC and EKPC criteria when these generators applied for interconnection and transmission service. In addition to the PJM Generator Deliverability test, preliminary Load Deliverability analysis and baseline thermal and voltage analysis are complete for the EKPC control area on 2016 RTEP case. This report documents the results of these analyses and the deliverability results for all existing generators and all planned generators in EKPC that had executed an Interconnection Agreement with EKPC as of May 3, 2012.

Annually, PJM Planning documents the results and requirements of the overall, PJM wide RTEP in an RTEP Baseline Report. During this 2012 year planning cycle, PJM is including a review of all applicable SERC and EKPC planning criteria along with a re-evaluation of the PJM load and generator deliverability studies. The reference year for analysis will be 2017 and the EKPC results will be included within the PJM RTEP Baseline Report which will also include results for the existing PJM system.

EXECUTIVE SUMMARY

PJM has responsibility for the development of a Regional Transmission Expansion Plan (RTEP) for the PJM system that will meet the needs of the region in a reliable, economic and environmentally acceptable manner. PJM also is responsible for recommending the assignment of any transmission expansion costs to the appropriate parties. In order to carry out these responsibilities, it is necessary to establish a starting point or 'baseline' from which the need and responsibility for enhancements can be determined.

In order to establish the baseline, PJM has defined the five (5) year period from 2011 through 2016 as the initial EKPC "baseline" planning period. The existing system plus any planned modifications to the transmission system scheduled to be in service prior to the 2016 summer peak period was chosen as the base system. Generators in the EKPC Control Area were studied in three categories as explained below:

1. Generators with an EKPC Interconnection Agreement (IA) effective prior to May 3, 2012: This group of generators will maintain the deliverability (i.e., capacity) rights granted under their current IAs. To the extent any system upgrades are needed to ensure they are deliverable in PJM, such upgrades will be considered baseline upgrades in the EKPC territory, and EKPC shall have the responsibility for providing the upgrade. In addition to the deliverability study, the PJM system will also be re-evaluated for transient stability and short circuit capability. Any upgrades required to meet PJM criteria for stability or short circuit will be considered baseline upgrades in the EKPC territory and paid for by EKPC.

2. Generators with an EKPC IA effective after May 3, 2012: Any system upgrades for deliverability, including short circuit and transient study analysis, that are needed to ensure that generation is deliverable in PJM in addition to those identified through EKPC's interconnection process, will be communicated to the generator, and the costs for the upgrades shall be the responsibility of the generator.

3. Generators that are in the EKPC study process but without an IA: All Interconnection Requests pending under the EKPC Tariff at the time of integration shall be assigned the same priority date under the PJM Tariff. These projects will be assigned PJM queue identifiers so that their priority dates relative to existing PJM queued generation can be easily determined. All such generators will be integrated into the existing PJM queue effective on the integration date, and will be subject to the PJM Tariff, which would include applicable study agreements and tariffs. On the integration date, PJM will assume the technical studies that have been started by EKPC, and determine if the generating units qualify as both energy and capacity resources. After the studies are complete, the generator will be required to pay for any system upgrades that are needed for the unit to qualify as a capacity resource under the PJM Tariff.

Category 1 generators were modeled in the original basecase. This category of generation was considered to have firm delivery rights and the responsibility for any identified reliability impacts and the associated system upgrades would be assigned to EKPC. This basecase was tested for compliance with EKPC and SERC planning criteria. Any system problems were documented, upgrades were identified to mitigate all problems and the system model was

updated accordingly. This was the reference system by which the category 2 generation was studied.

KEY FINDINGS

The following areas of the system as planned through 2016 were found to be non-compliant with applicable reliability criteria without additional system upgrades. These areas are described below along with the identified reinforcements to achieve compliance.

1) In 2016, the JK Smith – Union City – Lake Reba Tap 138KV line is overloaded for the loss of either the JK Smith – Dale 138kV line or the JK Smith – Fawkes EK 138kV line fault with a stuck breaker at the JK Smith 138kV (breaker E63-91T) and for a bus fault at Fawkes EK 138kV. T he operating temperature of the existing conductor for the JK Smith – Union City – Lake Reba Tap 138kV line will be upgraded. The estimated cost is $0.28M. The projected IS date is 06/01/2016. (The PJM RTEP baseline tracking identification number is B2066).

OBJECTIVE AND SCOPE

The objectives of this study were as follows:

- To identify areas where the system as planned for the period 2012 through 2016 would not be in compliance with applicable reliability criteria.
- To develop and recommend preliminary facility expansion plans, including cost estimates and estimated in service dates, to bring those areas into compliance.
- To establish what will be included as baseline expansion costs for the allocation of the costs of expansion for future EKPC generation projects.

The scope of this study included analysis for the period 2012 through 2016 to determine compliance with the PJM Deliverability requirements.

Transmission constraints on market dispatch are economic constraints. Economic constraints are not considered violations of reliability criteria as long as the system can be adjusted to remain within reliability limits on a pre-contingency basis. Performance of the planned system under intermediate and light load conditions will be analyzed in the PJM Reliability Assessment to verify that the system as planned can indeed be operated in compliance with applicable reliability criteria. This will include a determination that the generation resources in EKPC are sufficient and are appropriately dispersed so that the generation dispatch can be adjusted to maintain the system within established thermal equipment ratings and voltage criteria limits under intermediate and light load conditions.

DELIVERABILITY ANALYSIS METHODOLOGY

Deliverability analysis was based on a representation of the 2016 forecast peak load with all firm transmission services committed for the 2016 period represented in the base case (see below).

FROM	TO	PJM 2016
PJM	NYIS	2164
PJM	FE	0
PJM	OVEC	-2467
PJM	CIN	-64
PJM	DLCO	0
PJM	NIPS	0
PJM	IPL	50
PJM	WEC	750
PJM	EKPC	0
PJM	CPLE	-17
PJM	CPLW	0
PJM	DUK	113
PJM	TVA	-94
PJM	AMIL (AMRN)	-403.4
PJM	LGEE	-159
PJM	ALTW	264
PJM	MEC	1120
PJM	ALTE	140
PJM	MECS	-196
PJM	NEPTUNE	Included in NYIS
PJM	HE	0
PJM	SIGE	0
PJM	SIPC	0
PJM	AEPW	0
PJM	MGE	0
Total		1200.6

A study of all voltage limits was completed using this base system. For analysis pertaining to thermal limits including Generator Deliverability a multitude of dispatch patterns were analyzed. A complete description of the Generator Deliverability procedures is contained in Attachment E of PJM Manual M14B.

The 2016 base case was used to analyze network transfer capability. To maintain reliability in a competitive capacity market, resources must contribute to the deliverability of electricity in the Control Area in two ways: 1) energy must be deliverable from the aggregate of resources available to the Control Area to load in portions of the Control Area experiencing a localized

capacity emergency, or deficiency, 2) capacity resources within a given electrical area must, in aggregate, be able to be exported to other areas of the Control Area within some bounds that separate the reliability requirements of the Control Area from the reasonable economic function of the market place. PJM has developed two methods for evaluating the adequacy of network transfer capability for each of these deliverability requirements. These methods are described in more detail in Attachment E of PJM Manual M14B.

The CETO/CETL method will be used to determine if the Capacity Emergency Transfer Limit (CETL) to each of the various electrical areas of PJM is sufficient to deliver each respective area's Capacity Emergency Transfer Objective (CETO).

The PJM Generation Deliverability procedure was used to determine if Network Transfer Capability was adequate to deliver all capacity resources out of defined areas to the network.

Category 1 Generator Deliverability Results

PSSE NAME	ID	Unit Commercial Name	Capacity Injection Rights (MWs)	Resource Type	Result
1CPR 1G	1	Cooper 1	116	Capacity Resource	Deliverable
1CPR 2G	1	Cooper 2	225	Capacity Resource	Deliverable
1DALE 1G	1	Dale 1	23	Capacity Resource	Deliverable
1DALE 2G	1	Dale 2	23	Capacity Resource	Deliverable
1DALE 3G	1	Dale 3	74	Capacity Resource	Deliverable
1DALE 4G	1	Dale 4	75	Capacity Resource	Deliverable
1JKCT 1G	1	Smith CT1	104	Capacity Resource	Deliverable
1JKCT 2G	1	Smith CT2	104	Capacity Resource	Deliverable
1JKCT 3G	1	Smith CT3	104	Capacity Resource	Deliverable
1JKCT 4G	1	Smith CT4	74	Capacity Resource	Deliverable
1JKCT 5G	1	Smith CT5	74	Capacity Resource	Deliverable
1JKCT 6G	1	Smith CT6	74	Capacity Resource	Deliverable
1JKCT 7G	1	Smith CT7	74	Capacity Resource	Deliverable
1JKCT 9G	1	Smith CT9	88	Capacity Resource	Deliverable
1JKCT10G	1	Smith CT10	88	Capacity Resource	Deliverable
1LAUR 1G	1	Laurel Dam Hydro	70	Capacity Resource	Deliverable
1LOVE HY	1	Love Hydro	23.3	Capacity Resource	Deliverable
1LOVE HY	2	Love Hydro	23.3	Capacity Resource	Deliverable
1LOVE HY	3	Love Hydro	23.3	Capacity Resource	Deliverable
1SPLK 1G	1	Spurlock 1	300	Capacity Resource	Deliverable
1SPLK 2G	1	Spurlock 2	510	Capacity Resource	Deliverable
1EAG 3G	1	Spurlock 3	268	Capacity Resource	Deliverable
1SPLK 4G	1	Spurlock 4	268	Capacity Resource	Deliverable

Other Reliability Results

2016 Load deliverability test results:
The EKPC system passed this analytical test. No potential issues identified.

2017 Generator Deliverability study results:
The EKPC system passed this analytical test. No potential issues identified. All generators listed above are deliverable.

2017 Load deliverability test results:
The EKPC system passed this analytical test. No potential issues identified.

2017 Baseline Thermal Analysis and Baseline Voltage Analysis:
There is currently only one potential problem identified as part of this test methodology. PJM and EKPC are working to develop a proposed solution. The proposed solution is under development.

2017 N-1-1 Thermal and Voltage Analysis:
The EKPC system passed this analytical test. No potential issues identified.

Revision History

August 13, 2012
Original report issued.

October 8, 2012
Added 2017 N-1-1 Thermal and Voltage results to the results section.