

*ENG 3.01 AmerenIP's witness Stepanek states that the Decatur area load of approximately 660 MW is supplied by a network of 138 kV transmission lines from 345/138 kV substation sources at Oreana, Latham, Lanessville, and Pana substations (AmerenIP Exhibit 1, lines 248-249).

In addition, AmerenIP's witness Stepanek states that, based on studies performed a few years ago and annually assessed since that time, it is expected that by 2012 either part of the Decatur regional area load, approximately 100 MW, would need to be dropped during peak load conditions or a large part of the Decatur area load would be subject to low voltage conditions and possible voltage collapse should an outage event occur that results in the loss of two or more bulk electric system elements (AmerenIP Exhibit 1, lines 288-293).

Furthermore, AmerenIP's witness Stepanek provided four power flow diagrams to show the expected 2013 summer power flow with the Decatur transmission system under normal and contingency conditions.

In response to Staff data request ENG 1.7, AmerenIP states that load forecast for the Decatur area is as follow:

Ameren IP added that a large customer in the Decatur area is pursuing a major load increase XX.

- A) Using the information that AmerenIP provided as a response to Staff data request ENG 1.7, please explain how AmerenIP's witness Stepanek calculated the Decatur area load to be 660 MW. Please provide an explanation and support for any data used to show the calculation. When does AmerenIP's witness Stepanek expect the Decatur area load to be 660 MW?
- B) What is the probability that the large customer in the Decatur area that AmerenIP mentioned in its response will actually add a major load increaseXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX? When will this large customer confirm to AmerenIP that it will need the major

*AmerenIP's Response to Staff DR ENG 3.01 did not completely quote Staff's DR. This Attachment contains the complete DR request and accurately quotes AmerenIP's Response but is a specially created document.

- load increase or not need any load increase? How large will this customer's electric load increase be and when will it reach this size?
- C) What was the total size of the Decatur area load that AmerenIP's witness Stepanek used to build the four power flow diagrams in Exhibits 1.4-1.7? If the size of the Decatur area load, depicted in the power flow diagrams, is different from the information provided in AmerenIP response to Staff data request 1.7, explain why it is different.
 - D) If Ameren believes that the study provided in AmerenIP Exhibits 1.4-1.7 is in error, please provide power flow diagrams including the correct estimates.
 - E) Using the information provided by AmerenIP as a response to Staff data request 1.7, the Decatur's peak load in 2012 is estimated to be XXXXXXXXXXXXXXXXXXXX. Does AmerenIP's witness Stepanek still believe that by 2012 either part of the Decatur regional area load, approximately 100 MW, would need to be dropped during peak load conditions to prevent low voltage conditions and possible voltage collapse in the Decatur area in the event of the loss of two or more bulk electric system elements as he indicated above? If yes, please explain why.
 - F) If the expected load in 2013 is XXXXXXXXX, why did not AmerenIP's witness Stepanek use this expected load when building AmerenIP Exhibits 1.4-1.7?
 - G) Please specify the year when AmerenIP believes that it will need to drop 100 MW of the Decatur area load during the peak load condition to prevent low voltage conditions. What is the size of the Decatur area load in the year specified above? During this specified year, how will the Decatur area load (in MW) be divided among the Oreana, Latham, Lanesville, and Pana substations? How much of the Decatur area load will be supplied from the Bloomington area?

RESPONSE

Prepared By: Curtis E. Stepanek
Title: Principal Transmission Planning Engineer
Phone Number: 314-554-3392

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- e) If the load in the Decatur area is 632.6 MW or less in 2012, it is expected that less than 100 MW would be required to be shed during summer peak conditions to maintain adequate voltages for the double-circuit outage of the Clinton-Latham 345 kV line 4571 and the Clinton-Goose Creek 345 kV line 4545. Please note that this statement is made without the benefit of any study, but reflects the knowledge that slightly more than 100 MW of load would be required to be shed to maintain adequate voltages for a 660 MW load level. The response to data request ENG 1.09 shows that shedding load to a level of approximately 560 MW still leaves portions of the Decatur area with transmission and distribution bus voltages of less than 95%.

- f) See (a), (c) and (d) above. The load forecast information provided in the response to data request ENG 1.07 was obtained in February, 2010 and provided to Staff in early March, after the Exhibits 1.0 and 1.4-1.7 were filed in January, 2010. However, as discussed in (a), (c) and (d), the forecast data in ENG 1.07 does not change AmerenIP's conclusion that the Latham-Oreana line is necessary to provide adequate and reliable service to the Decatur area.

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**AmerenIP's
Response to ICC Staff Data Requests
Docket No. 10-0079
Petition for a Certificate of Public Convenience and Necessity, pursuant to Section
8-406 of the Illinois Public Utilities Act, to construct, operate and maintain a new
345,000 volt electric line in Macon County, Illinois.
Response Date: 3/9/2010**

ENG 1.07

What is the current Decatur area's peak electric load? Did AmerenIP examine actual metered data to validate Decatur's peak electric load? Does AmerenIP expect this load to grow in the future? If there is no expectation that the Decatur area's load will grow in the future, does AmerenIP still need a new transmission line? Provide all documentation and evidence that support your responses.

RESPONSE

**Prepared By: Curtis E. Stepanek
Title: Principal Transmission Planning Engineer
Phone Number: 314-554-3392**

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**AmerenIP's
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ENG 4.06

In his direct testimony, on page 16, beginning on line 351, AmerenIP's witness, Curtis E. Stepanek, states ". . . Ameren criteria would require a project if the amount of load to be shed in a controlled manner would exceed 100 MW. For the second category, Ameren criteria would require a project if the amount of load exposed to being dropped for more than 15 minutes due to system topology and/or the natural response of the system would exceed 300 MW." Assuming a Decatur area summer peak load equal to that experienced in the year 2009 and assuming the loss of the double circuit transmission line that runs between the Clinton Power Plant and the Oreana substation, please answer the following questions.

- a) What is the amount of load to be shed in a controlled manner to mitigate the low voltage conditions?
- b) What is the amount of load to be dropped for more than 15 minutes due to system topology and/or the natural response of the system?
- c) Assume the Decatur area summer peak load is 600 MW and answer part A and part B above.
- d) Assume the Decatur area summer peak load is 620 MW and answer part A and part B above.

RESPONSE

**Prepared By: Curtis E. Stepanek
Title: Principal Transmission Planning Engineer
Phone Number: 314-554-3392**

- a) Assuming 2009 summer load conditions with the double-circuit outage of the Clinton-Latham 345 kV line 4571 and the Clinton-Goose Creek 345 kV line 4545, approximately 60 MW would need to be dropped in a controlled manner to bring the Decatur area voltages to 95%. These conditions are shown in ENG 4.06 Attach 1.
- b) Based on the diagram developed in AmerenIP's response to subpart c) of ENG 4.05 AmerenIP would expect that the induction motors in the Decatur area would slow down, but no loss of load would be expected due to the natural response of the system, as the lowest voltage in the Decatur area would be approximately 90%.
- c) Assuming a load level of 600 MW, expected in 2012 without the new load additions proposed by an existing customer in the Decatur area, the voltages in the Decatur area

would fall to as low as 89% for the double-circuit outage of the Clinton-Latham 345 kV line 4571 and the Clinton-Goose Creek 345 kV line 4545 (see ENG 4.06 Attach 2). For these voltage levels, the induction motors in the area would slow down, but it is believed that no significant amount of stalling of these motors would occur. Therefore, AmerenIP does not expect that any load would be dropped due to the natural response of the system. However, to mitigate the low voltages in the area, approximately 70 MW of load would need to be dropped to maintain 95% voltages in the Decatur area (see ENG 4.06 Attach 3).

- d) Assuming a load level of 620 MW, expected in 2016 without the new load additions proposed by an existing customer in the Decatur area, the voltages in the Decatur area would fall to as low as 87% for the double-circuit outage of the Clinton-Latham 345 kV line 4571 and the Clinton-Goose Creek 345 kV line 4545 (see ENG 4.06 Attach 4). For these voltage levels, the induction motors in the area would slow down, but it is believed that no significant amount of stalling of these motors would occur. Therefore, AmerenIP does not expect that any load would be dropped due to the natural response of the system. However, to mitigate the low voltages in the area, approximately 90 MW of load would need to be dropped to maintain 95% voltages in the Decatur area (see ENG 4.06 Attach 5).

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Response Date: 3/9/2010

ENG 1.10

Provide a table, including the following information listed below, for each alternative plan discussed (AmerenIP Exhibit 1.0, lines 417-426):

- a) Description of the alternative
- b) The location of the alternative
- c) The estimated cost of the alternative
- d) List of the potential advantages of the alternative
- e) List of the potential disadvantages of the alternative
- f) List of the specific planning guidelines or criteria that the alternative is not in compliance with (and provide copies of these as well)

Provide all the evidence available to support AmerenIP's responses to the above six requests. Please note that the explanation provided as an answer to the question on line 427 of AmerenIP Exhibit 1.0 is not sufficient. Please provide more explanation and evidence to support AmerenIP's decision to refuse or not to offer any alternative.

RESPONSE

Prepared By: Curtis E. Stepanek
Title: Principal Transmission Planning Engineer
Phone Number: 314-554-3392

AmerenIP objects to this request as overly broad and unduly burdensome. Subject to and without waiving this objection, AmerenIP responds as follows.

<u>Options to Provide a Third 345 kV Supply to Oreana Substation</u>					
<u>Description</u>	<u>Location</u>	<u>Estimated Cost</u>	<u>Advantages</u>	<u>Disadvantages</u>	<u>Criteria Violations</u>
Line Extension From Clinton Plant	DeWitt-Macon Counties	\$38 million	Strong source when Clinton generation is on	Cost, 18 mile line extension, No diversity of supply	None
Line Extension From Latham	Logan-Macon Counties	\$36 million	Strong source, breaker additions at Latham	Cost, 16 mile line extension, Duplicates existing	None

Substation			Substation	facilities	
Line Extension From Lanesville Substation	Sangamon-Macon Counties	\$51 million	Strong source, diversity of ComEd interconnection	Cost, 24 mile line extension, must cross several 138 kV lines	None
Line Extension From Pana Substation	Christian-Macon Counties	\$78 million	Strong source, diversity of supply, fits in with long-range plan	Cost, 36 mile line extension	None
Line Extension From Sidney Substation	Champaign-Piatt-Macon counties	\$90 million	Strong source, diversity of supply,	Cost, 45 mile line extension	None
Line Extension From Neoga Substation	Shelby-Moultrie-Macon Counties	\$102 million	Strong source, diversity of supply	Cost, 49 mile line extension	None
Line Extension From Kansas Substation	Coles-Douglass-Piatt-Macon Counties	\$118 million	Strong source, diversity of supply, fits in with long-range plan	Cost, 56 mile line extension	None
60 Mvar Capacitor bank Addition at ADM North	ADM North Substation Macon County	\$2.5 million plus significant modification or rebuilding of existing capacitor banks	Defer transmission line addition	Not a practical alternative, 60 Mvar would not provide adequate voltage support, concerns for voltage magnification and inrush during switching and need to rebuild many existing capacitor banks	TPL-003
Proposed Solution Open	Macon County	\$18 million	Cost, Strong source, diversity of		None

Latham connection at the Maroa Tapping Structure and Extend Existing Line to Oreana Substation			supply, eliminates three-terminal 345 kV line connection, breaker additions at Latham Substation, only an 8-mile line, impacts a minimum number of property owners		

As mentioned above, the addition of 60 Mvar of capacitors was investigated, as shown in the attached spreadsheet, and for varying load levels at some of the larger customers in the Decatur area. However, for the double-circuit outage event, a 60 Mvar capacitor bank was not adequate for the high load case and just barely adequate after LTC operation for the low load case. Informal discussions with design engineers identified that some of the existing capacitor banks in the Decatur area were not designed with phase reactors to limit inrush currents, and without these reactors, these banks could not withstand switching of large nearby capacitor banks. Concern for voltage magnification at capacitor banks downstream on the 34 kV subtransmission system was also expressed. To accommodate the addition of a large capacitor bank, significant modifications to some of these existing capacitor banks would be required, but the space available to perform such modifications was not available. As some of these capacitor banks are in customer substations, it was believed that replacement of these capacitor banks was an unnecessary burden on the customers. Therefore, for the reasons cited above, the addition of large capacitor banks in the Decatur area was determined not to be a practical solution.

AmerenIP considered several possible 345 kV line extensions to Oreana Substation from the nearest 345 kV sources in central Illinois, although detailed studies of the above alternatives were not performed. The cost estimates included above are planning quality estimates based on assumed costs for line extension and circuit breaker additions. Please note that the alternatives are significantly more expensive than the proposed option, by \$18-100 million, and therefore, these alternatives were dismissed because of cost considerations.

From a planning perspective, the existing Clinton-Latham line connection arrangement at the Maroa tapping structure, offers no benefit to the Decatur area load for the double-circuit outage of the 345 kV lines that supply the Oreana Substation. AmerenIP believes that the proposed option involving the construction of a short 8-10 mile 345 kV line extension to create a new Latham-Oreana 345 kV line is the least cost method to meet the

requirements of NERC standard TPL-003 and Ameren transmission planning criteria. It does not make engineering or economic sense to build a much longer line and create a larger impact to the public when a simple modification to the connection arrangement of the existing Clinton-Latham line 4571 and a short line extension will suffice.

Please note that cost and line extension information, similar to what is included in the above table, was presented in work papers.

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Response Date: 4/1/2010**

ENG 4.01

In its response to Staff's data request ENG 2.2 (a), AmerenIP states, "with the exception of the U.S. Army Corps of Engineers, each identified agency was contacted with regard to their review of all proposed routes. AmerenIP met with the Illinois Department of Agriculture on August 4, 2009. As identified in Ms. Murphy's direct testimony, consultation with the U.S. Army Corps of Engineers has not been initiated. See ENG 2.2 (a) Attach 1 thru 3 for copies of the letters."

In its response to Staff's data request ENG 2.2 (b), AmerenIP states, "AmerenIP contacted the Illinois Department of Transportation in July 2009. See ENG 2.2 (b) Attach for a copy of the letter."

In addition, AmerenIP's witness, Donnell Murphy, states in her direct testimony, page 17, beginning on line 362, that "on behalf of AmerenIP, NRG has contacted relevant public agencies regarding the project, including the Illinois Department of Natural Resources, Illinois Historical Preservation Agency, U.S. fish & Wildlife Service, U.S. Army Corps of Engineers, and Illinois Environmental Protection Agency. NRG has compiled information regarding environmental resources by initiating consultation with the following state or federal agencies:

Agency	Issue of Interest
U.S. Fish & Wildlife Service	Threatened & Endangered ("T&E")
Illinois Department of Natural Resources	Illinois Natural Heritage Inventory data base, T&E species, Nature Preserves, wetlands/floodways/floodplains
Illinois Historical preservation Agency	Illinois Inventory of Archaeological Sites and the historic Architectural and Archaeology Resources Geographic Information system, Cultural resources

AmerenIP will also coordinate with the Illinois Department of Transportation from whom AmerenIP may require permits."

- a) The ENG 2.2 (b) Attachment contains the result of the review of IDNR EcoCAT website regarding the Endangered Species Protection and Natural Areas Preservation. The ENG 2.2 (b) Attachment does not contain any information

regarding AmerenIP's contact with the Department of Transportation as AmerenIP states in its response to Staff data request ENG 2.2 (b). Please provide all evidence and documentation that show AmerenIP's contact with the Illinois Department of Transportation in connection with the proposed transmission line.

- b) In her direct testimony, page 17, beginning on line 362, AmerenIP's witness, Donnell Murphy, states that NRG contacted the U.S. Army Corps of Engineers. However, AmerenIP's response to Staff data request ENG 2.2 (a) indicates that AmerenIP did not contact the U.S. Army Corps of Engineers. Please clarify the contradiction between AmerenIP's response to Staff data request ENG 2.2 (a) and AmerenIP's witness Donnell Murphy's direct testimony regarding AmerenIP's contact with the U.S. Army Corps of Engineers.

RESPONSE

Prepared By: Donell Murphy
Title: Project Manager, Natural Resource Group
Phone Number: 312-650-7401

Ms. Murphy's response to Staff's data request ENG 2.2(b) incorrectly made reference to a letter associated with AmerenIP having contacted the Department of Transportation. No such letter exists. AmerenIP has no formal documentation of the phone call to the Department of Transportation in July 2009.

On page 17 beginning on line 362, Ms. Murphy's direct testimony was in error. As identified in Ms. Murphy's response to Staff's data request ENG 2.2(a) and on page 18 beginning on line 379 of Ms. Murphy's direct testimony, no agencies have been contacted with specific requests regarding potential wetland impacts or permit requirements.

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Response Date: 3/11/2010

ENG 2.02

Ms. Murphy testifies that Natural Resources Group LLC contacted the following public agencies regarding the proposed transmission line (page 17, lines 360-367, and page 19 lines 402-407, AmerenIP Exhibit 4.0): Illinois Department of Agriculture; Illinois Department of Natural Resources; Illinois Environmental Protection Agency; Illinois Historical Preservation Agency; Federal Aviation Administration; U.S. Fish & wildlife Service; U.S. Army Corps of Engineers;

- a) Did AmerenIP contact the relevant public agencies to check on the compliance of AmerenIP's alternative routes or did AmerenIP check only on the compliance of the primary route?
- b) Did AmerenIP contact Illinois Department of Transportation?
- c) Please provide all evidence and documentation that show AmerenIP's contact with the above agencies.

RESPONSE

Prepared By: Donnell Murphy

Title: Project Manager, Natural Resource Group, LLC

Phone Number: 312-239-1494

- a) With the exception of the U.S. Army Corps of Engineers, each identified agency was contacted with regard to their review of all proposed routes. AmerenIP met with the Illinois Department of Agriculture on August 4, 2009. As identified in Ms. Murphy's direct testimony, consultation with the U.S. Army Corps of Engineers has not been initiated. See ENG 2.02a Attach 1 thru 3 for copies of the letters.
- b) Yes. AmerenIP contacted the Illinois Department of Transportation in July 2009. See ENG 2.02b Attach for a copy of the letter.
- c) AmerenIP objects to this request as overly broad and unduly burdensome. Subject to and without waiving this objections. AmerenIP responds as follows. Each of the above identified agencies, excluding the Federal Aviation Administration, was invited to participate in each of the three stakeholder working groups. Documentation corresponding to other agency contacts is separately provided. See ENG 2.02c Attach 1 thru 3 for copies of the letters. See also ENG 2.02a & b and ENG 2.01 and workpapers for Ms. Murphy and Mr. Koch.