Docket No. 10-0079
ICC Staff Exhibit 3.0

REBUTTAL TESTIMONY

OF

MONA ELSAID

ELECTRICAL ENGINEER

ENGINEERING DEPARTMENT

ENERGY DIVISION

ILLINOIS COMMERCE COMMISSION

ILLINOIS POWER COMPANY d/b/a AmerenIP

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 transmission line in Macon County, Illinois

January 19, 2011

Contents

Introduction and Witness Qualification

Q. Please state your name and business address.

A. My name is Mona Elsaid. My business address is 527 East Capitol Avenue, Springfield, Illinois 62701.

Q. Are you the same Mona Elsaid who previously filed direct testimony in this proceeding?

A. Yes.

Q. Do you use acronyms in your testimony?

A. Yes. Below is a list of the acronyms used along with the full terms spelled out.

- kV stands for kilovolt or thousand volts.
- MW stands for megawatts or million watts. A watt is a measure of electric power that can perform useful work.

Q. Are there any attachments to your rebuttal testimony?

A. Yes. Attachments A and B are attached to my testimony. The attachments are described as follows:

Attachment A, marked as ICC Staff Ex. 3.0, Attachment A, consists of one page and is a copy of an attachment (identified as "ENG 4.06, Attach 5") to AmerenIP's responses to Staff data requests ENG 4.06.[1]

[1] The two-page response to data request ENG 4.06 was provided as Attachment C to ICC Staff Ex. 1.0. However, the 5 attachments to said response had not been included in ICC Staff Ex. 1.0.

Attachment B, marked as ICC Staff Ex. 3.0, Attachment B, consists of one page and is a copy of AmerenIP Ex. 7.1.

Purpose and Scope

Q. What is the purpose of your rebuttal testimony in this proceeding?

A. On September 23, 2010, Illinois Power Company d/b/a AmerenIP ("AmerenIP") filed a rebuttal testimony of Mr. Curtis E. Stepanek (AmerenIP Ex. 7.0) to respond to my direct testimony (ICC Staff Ex. 1.0) regarding the need for the proposed project in this proceeding. The purpose of my rebuttal testimony is to respond to the rebuttal testimony of AmerenIP's witness Mr. Stepanek (AmerenIP Ex. 7.0).

Q. What information did you review to drive a conclusion in this rebuttal testimony?

A. I reviewed the rebuttal testimony of Curtis E. Stepanek (AmerenIP Ex. 7.0), a power flow diagram supporting Mr. Stepanek's rebuttal testimony (AmerenIP Ex. 7.1), and AmerenIP's responses to Staff data requests.

Summary of Conclusions

Q. Please provide a summary of the conclusions you have drawn from your examination of AmerenIP's rebuttal testimony (AmerenIP Ex. 7.0).

A. Based on the information that AmerenIP provided in its rebuttal testimony and in response to Staff data requests, I conclude that the proposed transmission line is

needed by 2015 to comply with Ameren Transmission Planning Criteria.[2] The proposed transmission line should hedge against unacceptable low-voltage conditions[3] that might happen in the event of the outage of the Clinton to Latham 345 kV transmission line and the Clinton to Goose Creek 345 kV transmission line under a quick voltage collapse scenario.

The Need for the Proposed Transmission Line

Q. What did AmerenIP conclude regarding the need of the proposed project in its rebuttal testimony (AmerenIP Ex. 7.0)?

A. Based on a revised power flow analysis of the Decatur area that shows unacceptable low-voltage levels on many distribution buses, AmerenIP concluded as indicated in its rebuttal testimony[4] that, in order for AmerenIP to comply with its transmission planning criteria and to avoid a voltage collapse and the consequent outage, the proposed project should be completed by 2015.

Q. AmerenIP provided four power flow models with its original filing (AmerenIP Exs. 1.4-1.7). Which model did AmerenIP revise?

A. AmerenIP did not revise or use AmerenIP Exs. 1.4 -1.7 to support the need of the proposed project in its rebuttal testimony (AmerenIP Ex. 7.0). AmerenIP revised its power flow model that was provided as part of its response to Staff data request ENG 4.06(d) and used the revised version to prove the need of the

[2] AmerenIP Ex. 7.0, p.3, lines 55-64.
[3] AmerenIP voltage criteria used in identifying low voltage conditions are indicated in AmerenIP Ex. 1, pp. 9-10, lines 203-218.
[4] AmerenIP Ex. 7.0, pp. 21-22.

proposed transmission line by 2015 in its rebuttal testimony.[5] Both the power flow model from earlier discovery ("ENG 4.06, Attach 5") and the power flow model provided in AmerenIP's rebuttal testimony (AmerenIP Ex. 7.1) are attached to this testimony as Attachments A and B respectively.

Q. What is the key difference(s) between the aforementioned power flow model that was provided in response to Staff data request ENG 4.06(d) and the model that AmerenIP provided with its rebuttal testimony (AmerenIP Ex. 7.1)?

A. The aforementioned power flow model[6] that was provided as part of AmerenIP response to Staff data request ENG 4.06(d) models the Decatur area's electric system under the following conditions:

- A load level of 620 MW by 2016;
- The outage of both the Clinton to Latham 345 kV transmission line and the Clinton to Goose Creek 345 kV transmission line;
- After the operation of the transformer load tap changers (LTC) to mitigate low voltage conditions; and
- After dropping a load of 90 MW to mitigate low voltage conditions.

The aforementioned model suggests that there will not be a need for the proposed project by 2016, because AmerenIP will be able to control the low voltage conditions in the Decatur area in the event of the outage of both Clinton to Latham 345 kV transmission line and the Clinton to Goose Creek 345 kV

[5] AmerenIP Ex. 7.0, p. 15, lines 321-322.
[6] ICC Staff Ex. 3.0, Attachment A.

transmission line. The model also suggests that, without the proposed project, AmerenIP will stay in compliance with Ameren Transmission Planning Criteria and NERC Standards in 2016.

However, the new power flow model[7] models the Decatur area's electric system under the following conditions:

- A load level of 620 MW by 2016;
- The outage of both the Clinton to Latham 345 kV transmission line and the Clinton to Goose Creek 345 kV transmission line;
- Before the operation of the transformer load tap changers (LTC);
- No drop for any load to mitigate low voltage conditions; and
- More explicit modeling to some of the electric components (capacitors) on the underlying distribution system.[8]

In its original filing, AmerenIP provided two exhibits, AmerenIP Exs. 1.5 and 1.6, to show the Decatur area electric system after the outage of the Clinton to Latham 345 kV transmission line and the Clinton to Goose Creek 345 kV transmission line, and before and after the transformer LTCs operate, assuming a load level of 660 MW by 2013.[9] However, in its rebuttal testimony, AmerenIP decided to study the electric system in the Decatur area under a load level of 620 MW, before the operation of the LTCs (*i.e.*, assuming that the LTCs will not operate in a timely manner),[10] without dropping any load to mitigate low voltage

[7] ICC Staff Ex. 3.0, Attachment B.
[8] AmerenIP Ex. 7.0, p. 14, lines 314-317.
[9] AmerenIP Ex. 7.0, p. 13, lines 276-277.
[10] AmerenIP Ex. 7.0, p. 8, lines 166-173.

conditions (*i.e.*, assuming dropping a load will not be doable timely),[11] and with explicit modeling to electric components called capacitors, as indicated in AmerenIP Ex. 7.1.

Q. Did AmerenIP explain why it revised its original power flow model?

A. Yes. In its rebuttal testimony, AmerenIP indicated that the power flow models that are used to evaluate the transmission system do not explicitly represent the details of the distribution systems.[12] In addition, AmerenIP added that the model used in its initial evaluation of the Decatur area understated the exposure to voltage collapse.[13]

Q. Is there any electric equipment or electric device that can be used to restore the voltage to acceptable levels?

A. Yes. Transformer LTCs and voltage regulators can take the voltage to acceptable levels (up or down), but the LTCs and voltage regulators react after a certain time delay. However, AmerenIP assumes and explains that the voltage collapse may happen very quickly,[14] that is, before the LTCs and voltage regulators are able to react.[15] To support the aforementioned assumption, AmerenIP's new model[16] is built to represent the voltage levels before the operation of LTCs, assuming that the LTCs will not be fast enough to restore the

[11] AmerenIP Ex. 7.0, p. 8, lines 174-178.
[12] AmerenIP Ex. 7.0, p. 13, lines 285-286.
[13] AmerenIP Ex. 7.0, p. 14, lines 310-312.
[14] AmerenIP Ex. 7.0, p. 5, lines 92-93 and p.6, lines 123-129.
[15] AmerenIP Ex. 7.0, p. 8, lines 166-173.
[16] AmerenIP Ex. 7.1.

voltage in the Decatur area to acceptable levels. AmerenIP also indicated that, for a fast-acting voltage collapse involving an outage of a transmission line, system operators will not be able to respond quickly enough to prevent a voltage collapse.[17]

Q. Did AmerenIP specify the voltage level when the voltage collapse is assured?

A. Yes. AmerenIP specified the voltage level when voltage collapse is assured to be 85% of the voltage original value.[18]

Q. Did AmerenIP include the voltage levels under its new model (AmerenIP Ex. 7.1)?

A. Yes.[19] Based on those levels, it is clear that there will be two buses with voltage levels far below the 85% of their original value and many buses with unacceptable low voltage levels.

Q. What do you conclude about the need for the proposed transmission line?

A. Based on AmerenIP revised model and new assumptions, I conclude that the proposed transmission line is needed to comply with Ameren Transmission Planning Criteria. The proposed transmission line would hedge against low-voltage conditions that might happen in the event of the outage of the Clinton to

[17] AmerenIP Ex. 7.0, p. 8, lines 174-178.
[18] AmerenIP Ex. 7.0, p. 21, line 440.
[19] AmerenIP Ex. 7.0, pp. 15-16.

Latham 345 kV transmission line and the Clinton to Goose Creek 345 kV transmission line, assuming a quick voltage collapse.

Recommendations

Q. What are your overall recommendations regarding the proposed transmission line?

A. I recommend that the Commission grant AmerenIP a Certificate of Public Convenience and Necessity, pursuant to Section 8-406 of the Public Utilities Act ("Act"), 220 ILCS 5/8-406, and authorize AmerenIP to construct the proposed project, pursuant to Section 8-503 of the Act, 220 ILCS 5/8-503, by the year 2015. I also support AmerenIP's primary route "Route A" as the least cost and best route, as I mentioned in my direct testimony.

Conclusion

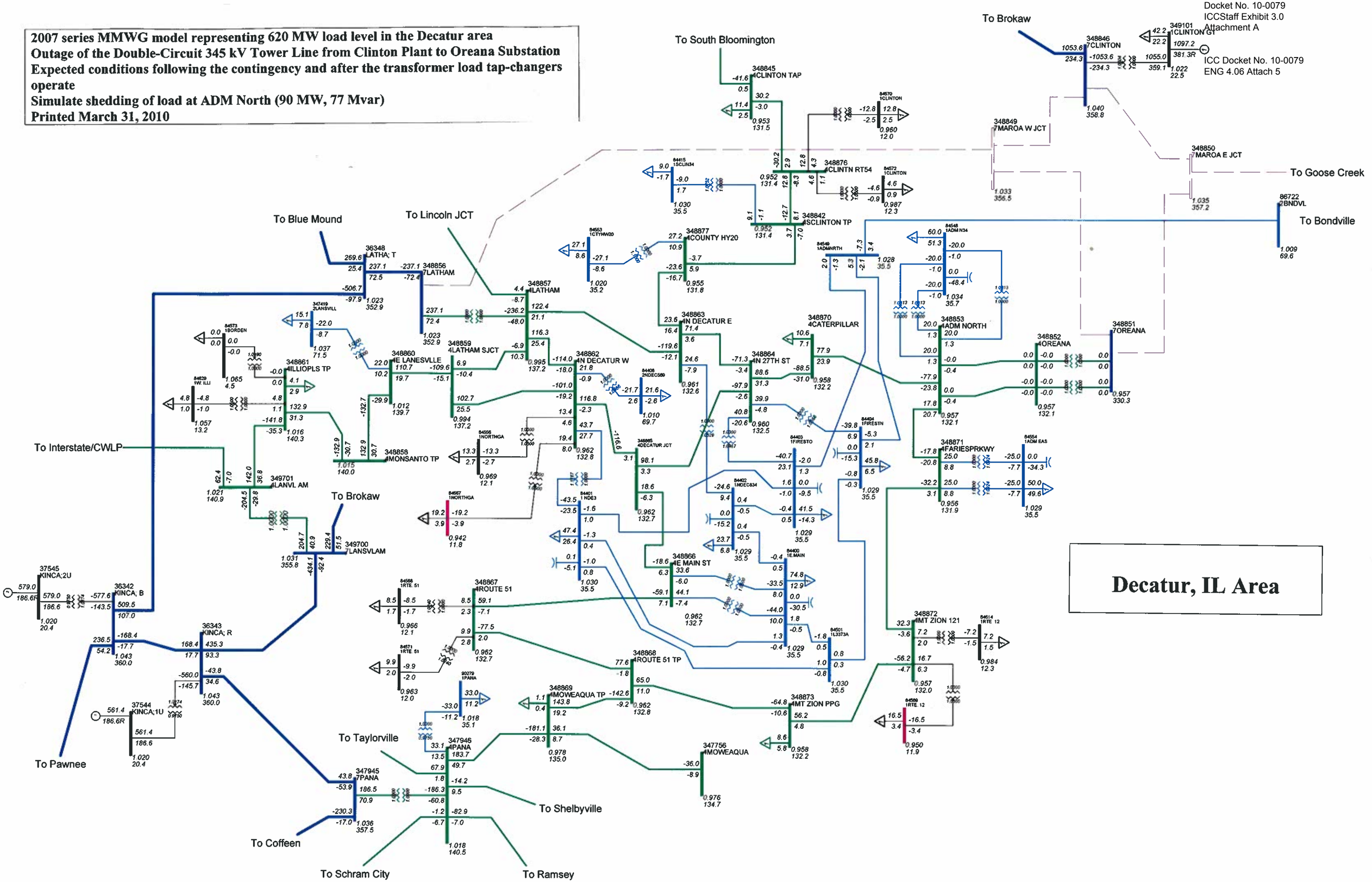
Q. Does this conclude your rebuttal testimony?

A. Yes.

Docket No. 10-0079
ICCStaff Exhibit 3.0
Attachment A

ICC Docket No. 10-0079
ENG 4.06 Attach 5

2007 series MMWG model representing 620 MW load level in the Decatur area
Outage of the Double-Circuit 345 kV Tower Line from Clinton Plant to Oreana Substation
Expected conditions following the contingency and after the transformer load tap-changers operate
Simulate shedding of load at ADM North (90 MW, 77 Mvar)
Printed March 31, 2010



2007 series MMWG model representing 620 MW load level in the Decatur area
Aggregate Decatur area distribution capacitor banks modeled explicitly
Outage of the Double-Circuit 345 kV Tower Line from Clinton Plant to Oreana Substation
Expected conditions following the contingency but before the transformer load tap-changers operate
Similar to AmerenIP Exhibit 1.5 and ENG Attach 4
Printed September 20, 2010