



2017 10-Year Assessment – www.atc10yearplan.com

High Bias Study

The main objective for this study was to determine what limitations, beyond those being addressed with the 2017 10-Year Assessment project list, ATC might see with high biases across the ATC transmission system.

The base model for the study was the 2027 all-project shoulder peak from the 2017 10-Year Assessment. Nine different biases were applied to the model and then no load loss allowed contingencies were applied. SPS/RAS operation and voltage limitations were not considered in the study. The nine different biases were:

- Minnesota to ATC
- Minnesota to Illinois and Indiana
- Iowa to ATC
- Iowa to Illinois and Indiana
- Minnesota and Iowa to ATC
- Minnesota and Iowa to Illinois and Indiana
- Illinois and Indiana to ATC
- Illinois and Indiana to Minnesota
- Illinois and Indiana to Minnesota and Iowa

The study showed a number of elements within ATC could be limitations under high bias scenarios. The first and second limitations for each bias scenario is shown in table 1.

Table 1: ATC First and Second Limitations for Each Bias Scenario

Bias Scenario	ATC First Limiting Element	ATC Planning Zone	ATC Second Limiting Element	ATC Planning Zone
Minnesota to ATC	Petenwell – Saratoga 138-kV Line X-43	1	Castle Rock – McKenna 69-kV Line Y-47	1
Minnesota to Illinois and Indiana	Arpin – Sigel 138-kV Line X-33	1	None	N/A
Iowa to ATC	Petenwell – Saratoga 138-kV Line X-43	1	Castle Rock – McKenna 69-kV Line Y-47	1
Iowa to Illinois and Indiana	Petenwell – Saratoga 138-kV Line X-43	1	Castle Rock – McKenna 69-kV Line Y-47	1
Minnesota and Iowa to ATC	Petenwell – Saratoga 138-kV Line X-43	1	Castle Rock – McKenna 69-kV Line Y-47	1



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Minnesota and Iowa to Illinois and Indiana	Petenwell – Saratoga 138-kV Line X-43	1	Arpin – Sigel 138-kV Line X-33	1
Illinois and Indiana to ATC	Petenwell – Saratoga 138-kV Line X-43	1	Bluemound - Butler 138-kV Line 5061	5
Illinois and Indiana to Minnesota	Point Beach - Kewaunee 345-kV Line Q-303	4	Fox River - North Appleton 345-kV Line 6832	4
Illinois and Indiana to Minnesota and Iowa	Point Beach - Kewaunee 345-kV Line Q-303	4	Fox River - North Appleton 345-kV Line 6832	4

The study was informational only and no projects to fix the thermal limitations above, or other thermal limitations found in the study, will be proposed in this Assessment. ATC will continue to monitor thermal limitations identified in this study in subsequent Assessments.