



Regional Planning Update

May 10, 2010
ATC Customer/Stakeholder Meeting





Objectives

- Provide updates on the following regional planning efforts:
 - MISO Regional Generation Outlet Study
 - MISO Cross Border Top Congested Flowgate Study
 - SMARTtransmission Study
 - Eastern Interconnection Planning Collaborative



Regional Generation Outlet Study

- The objective of MISO's Regional Generation Outlet Study (RGOS) is to develop transmission needed to meet state renewable requirements in the MISO footprint.
- RGOS work includes:
 - Phase I indicative and detailed designs
 - Phase II indicative designs
 - Overall RGOS detailed analysis and designs
- RGOS Phase I focused on identifying transmission needed to meet RPSs in WI, MN, IA and IL.
 - RGOS I is being used by the Upper Midwest Transmission Development Initiative (WI, MN, IA, ND and SD)



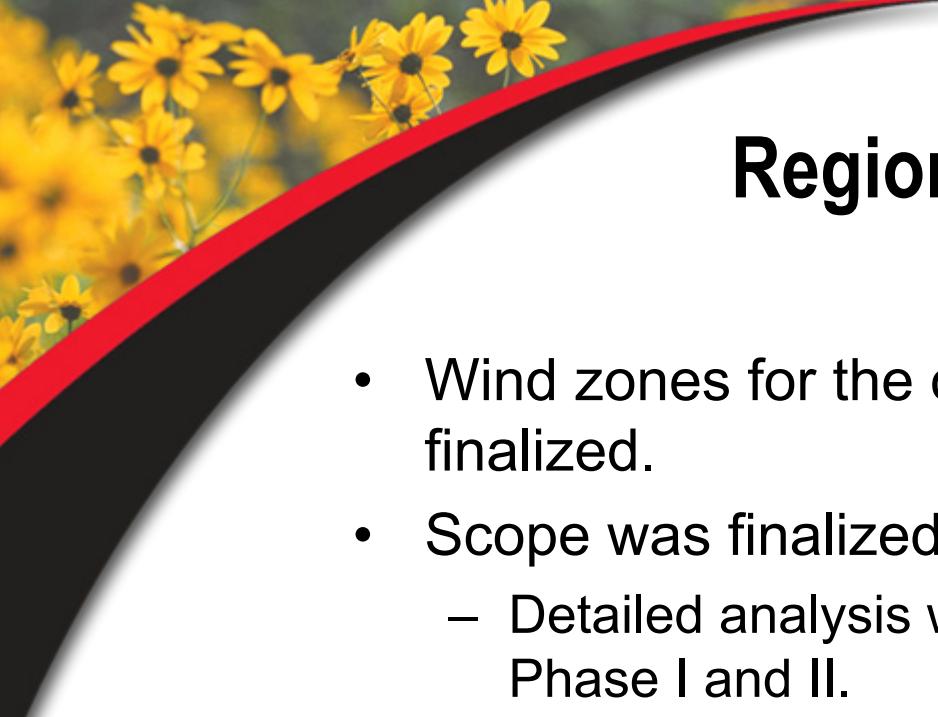
Regional Generation Outlet Study

- RGOS Phase I (Continued)
 - Two levels of wind injection considered:
 - “UMTDI Local” – 28 GW total
 - “Intra-Regional Transfer” – 34 GW total
 - Two wind zone configurations developed by UMTDI
 - Total of 12 transmission designs developed in detailed analysis
- Report of Phase I detailed analysis was finalized in March.
- RGOS Phase II indicative work considered renewable requirements for all non-UMTDI states and new requirements in such states as MO, MI, and OH.



Regional Generation Outlet Study

- RGOS Phase I plans were used as the starting points for the RGOS II indicative designs.
- RGOS Phase II indicative designs were developed for three main scenarios:
 - Local – RPSs and goals of RGOS II states met with in-state resources
 - Combination – RPSs and goals of RGOS II states met with a combination of resources in UMTDI states and in RGOS II states with the highest capacity factors (50/50 and 75/25)
 - Regional – RPSs and goals of RGOS II states met with highest capacity factor wind zones in MISO



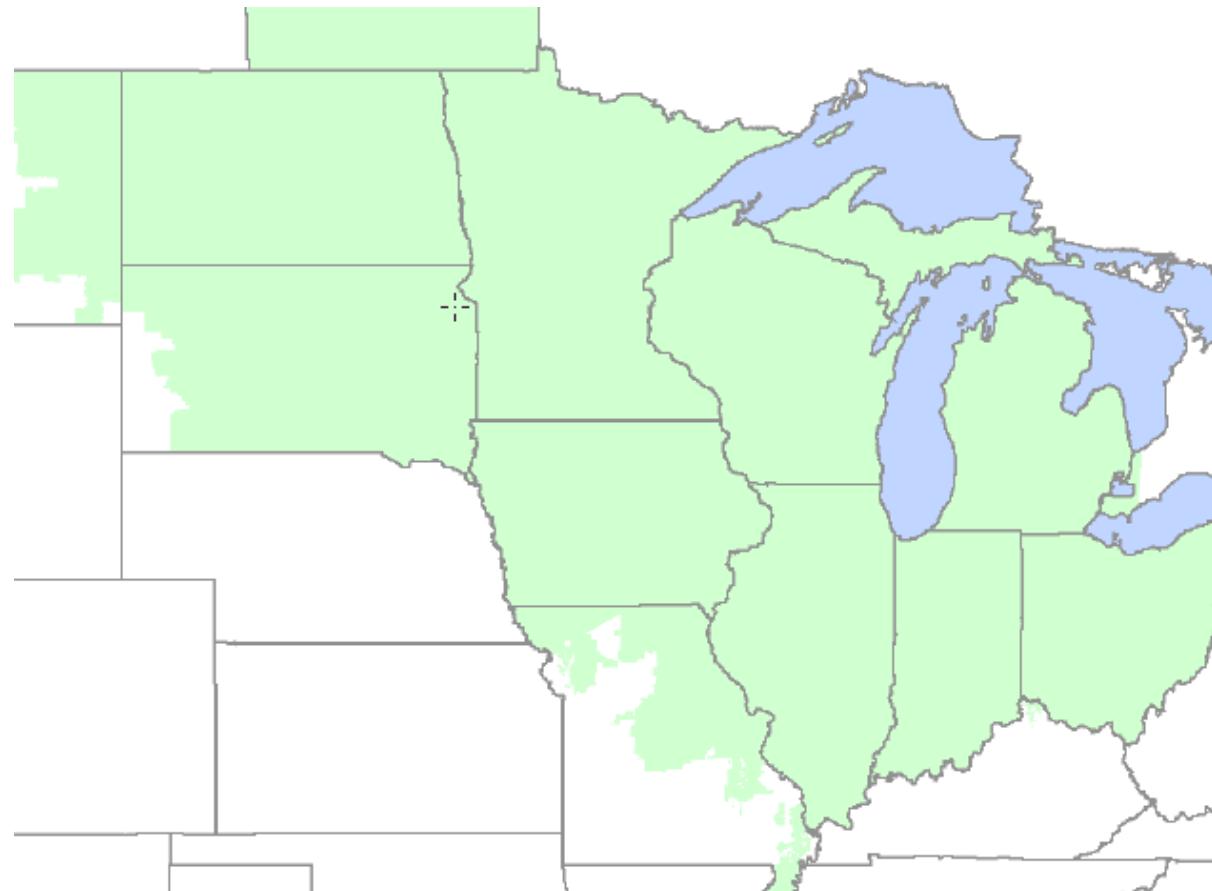
Regional Generation Outlet Study

- Wind zones for the overall RGOS detailed analysis are finalized.
- Scope was finalized in March:
 - Detailed analysis will leverage work done in RGOS Phase I and II.
 - ≈ 40 GW of total nameplate wind modeled in Midwest ISO footprint for 2019.
 - Three types of transmission solutions will be developed:
 - “Native” voltage solution (345 kV only except in areas where 765 kV is considered native voltage)
 - “Native” voltage solution with DC transmission
 - 765 kV solution (which will include 345 kV supporting transmission)



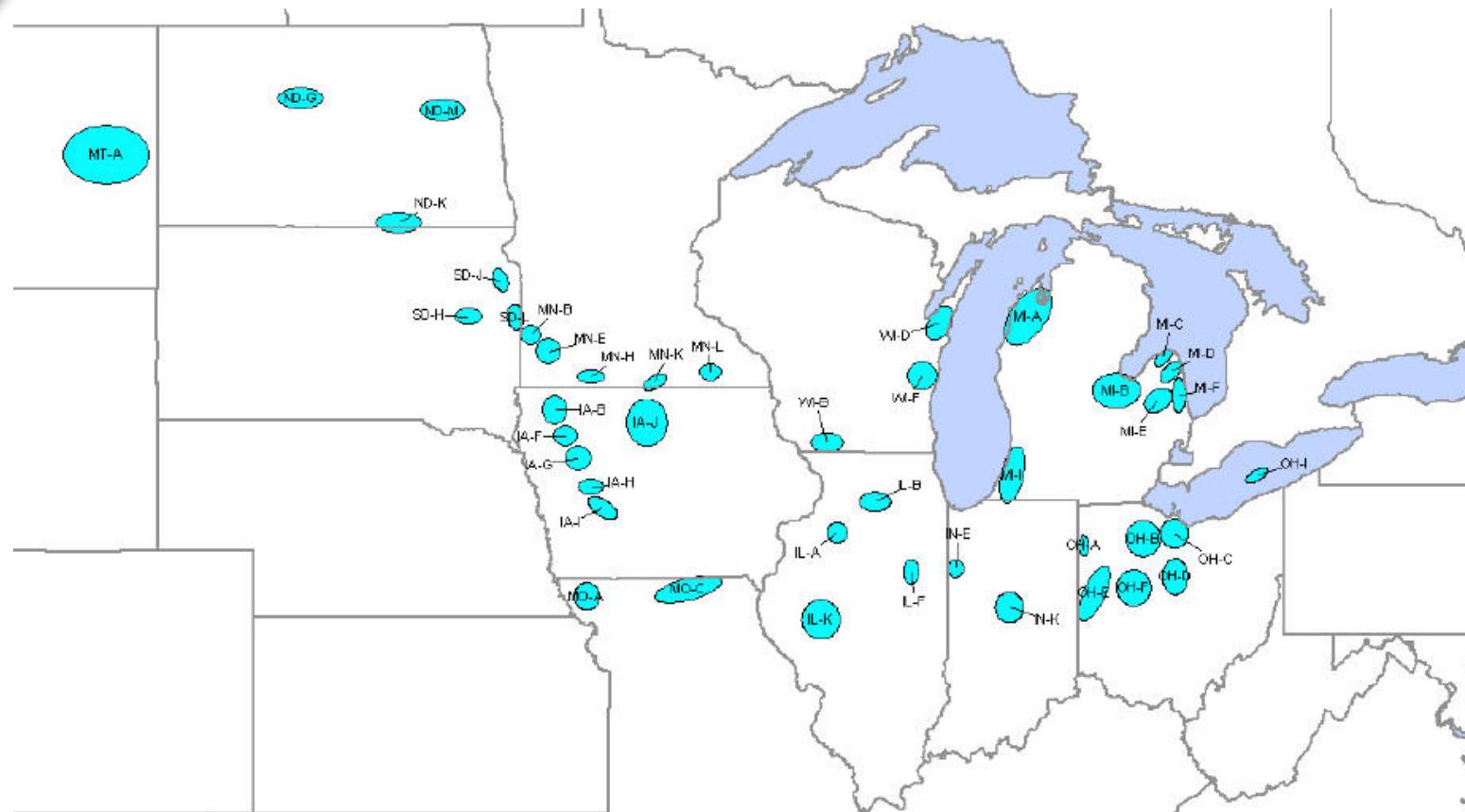
Regional Generation Outlet Study

RGOS Study Footprint



Regional Generation Outlet Study

RGOS Wind Zones





Regional Generation Outlet Study

- MISO and stakeholders are currently working on:
 - Refining the designs
 - Developing transmission cost estimates
 - Developing an approach for sequencing when RGOS projects will be constructed
- MISO intends to develop an RGOS transmission plan by the end of July to include the plan in Appendix B of MTEP 10.
- A final report is expected to be complete in October.



Cross Border Top Congested Flowgate Study

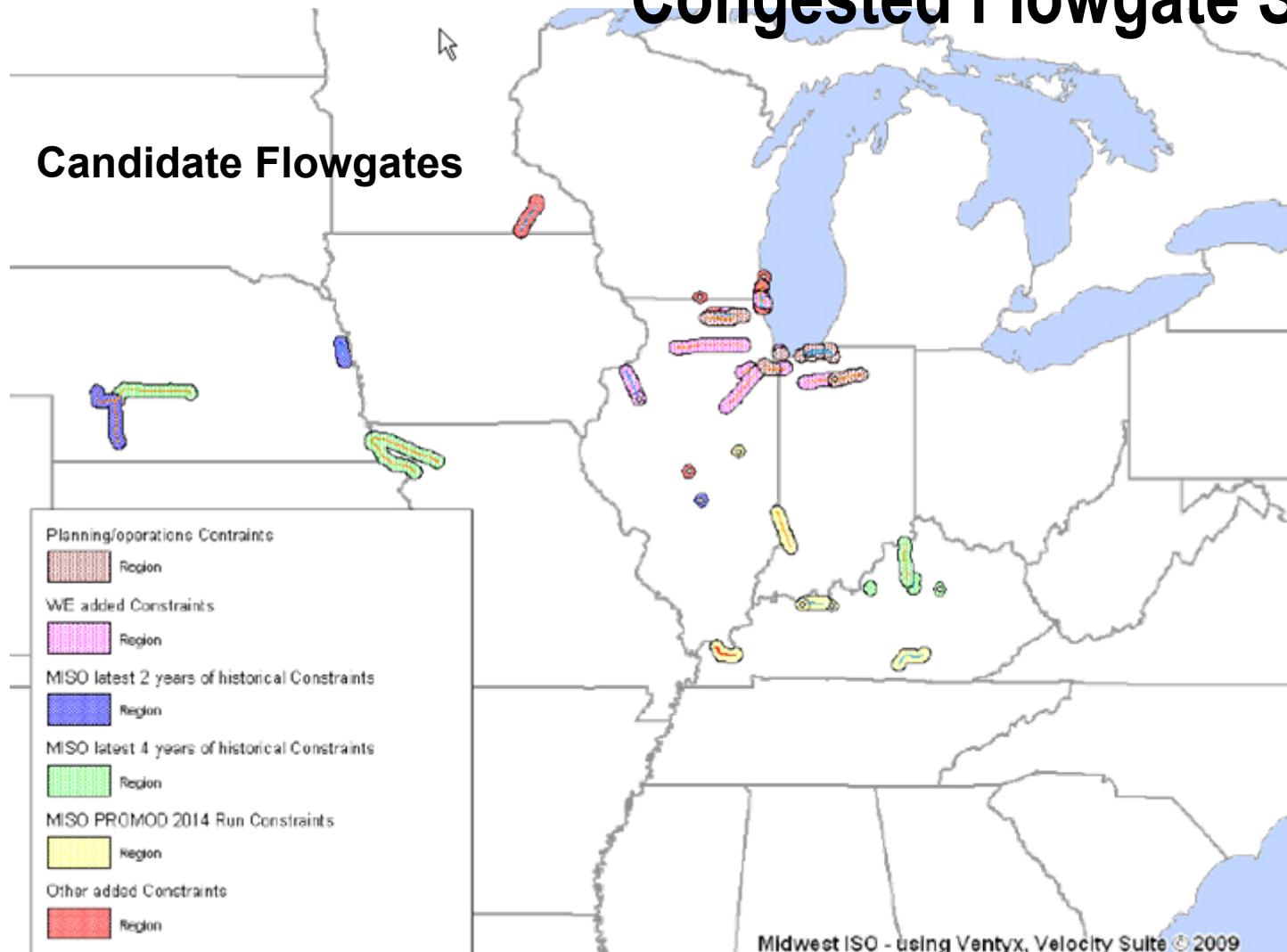
- As part of the MTEP 10 planning cycle, We Energies requested MISO to conduct a targeted planning study into increasing congestion issues in the south Lake Michigan area that are believed to be creating such problems as redispatch of generation in southeast Wisconsin.
- MISO broadened the study to address congestion issues with some of its seams with other RTOs/transmission providers and will focus primarily on these areas:
 - Lake Michigan Area: Southeast Wisconsin, Northern Illinois and Indiana Region

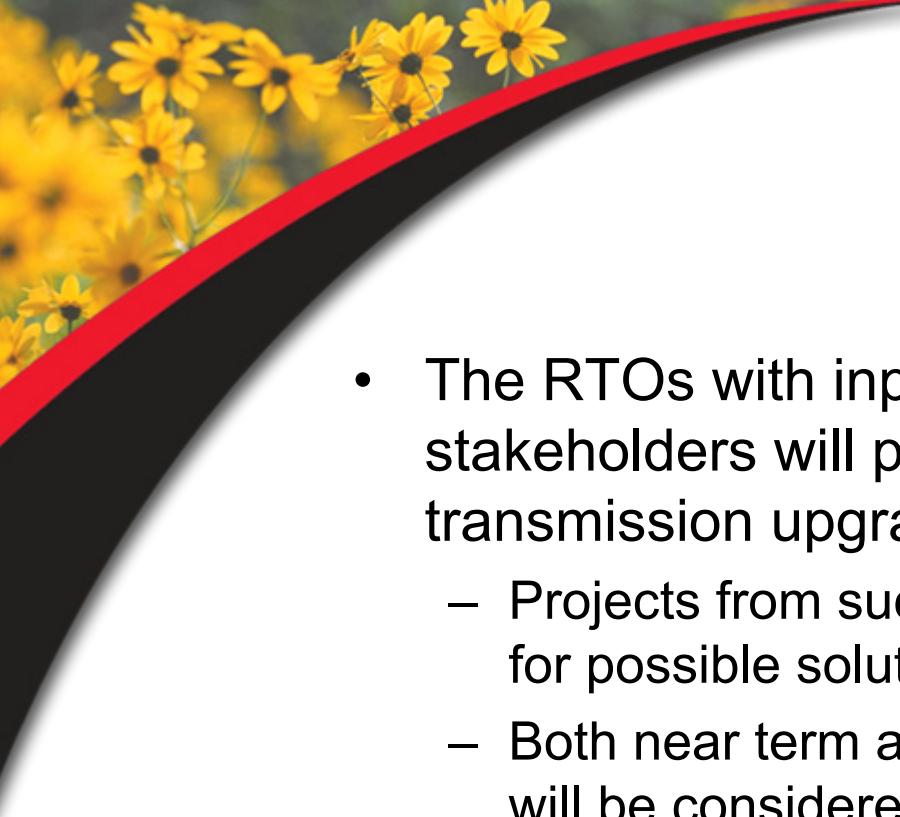


Cross Border Top Congested Flowgate Study

- MISO broadened the study... and will focus primarily on these areas: (Continued)
 - Indiana, Kentucky Area
 - Iowa, Nebraska Area
- The study will be divided into specific sub-target studies to address each of these areas, with separate stakeholder meetings to target each area.

Cross Border Top Congested Flowgate Study





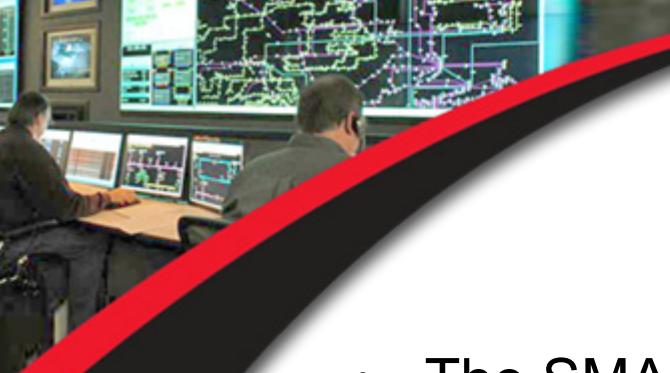
Cross Border Top Congested Flowgate Study

- The RTOs with input from the affected TOs and other stakeholders will participate in identifying potential transmission upgrades to address constraints.
 - Projects from such studies as RGOS will be considered for possible solutions
 - Both near term and longer term transmission upgrades will be considered
- PROMOD simulations will be run to evaluate the economic benefits of potential upgrades and will determine if they qualify for individual RTO or cross-border cost sharing.
 - MISO also will consider upgrades that may be funded by a Market Participant



Cross Border Top Congested Flowgate Study

- Recent developments:
 - Stakeholders have provided feedback on MISO's benchmark case
 - It was indicated that along with 2015, 2020 and 2025 will also be studied.
- MISO anticipates proposing a final set of upgrades and their respective cost sharing by 8/15/10.
 - It is anticipated that some projects will be added to Appendix A and B of MTEP 10.



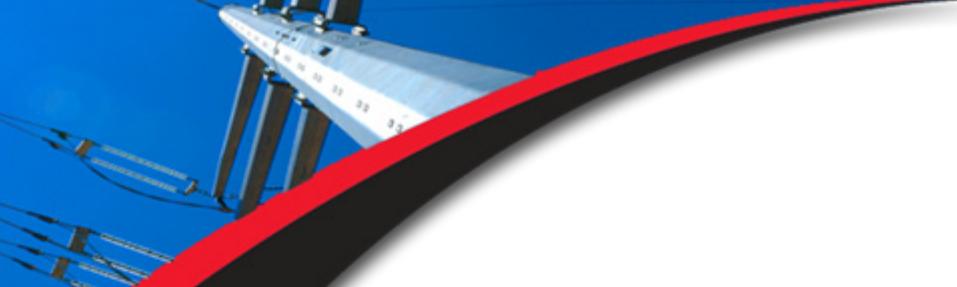
SMARTransmission Study

- The SMARTransmission Study is a comprehensive study of the transmission needed in the Upper Midwest to support renewable energy development and to transport that energy to consumers. ATC is among a group of transmission owners in Midwest ISO and PJM sponsoring the study.
- Analysis is underway and the study will be done in two phases:
 - Phase I: Identifying the Alternatives (reliability)
 - Steady State Analysis
 - Develop several alternatives



SMARTransmission Study

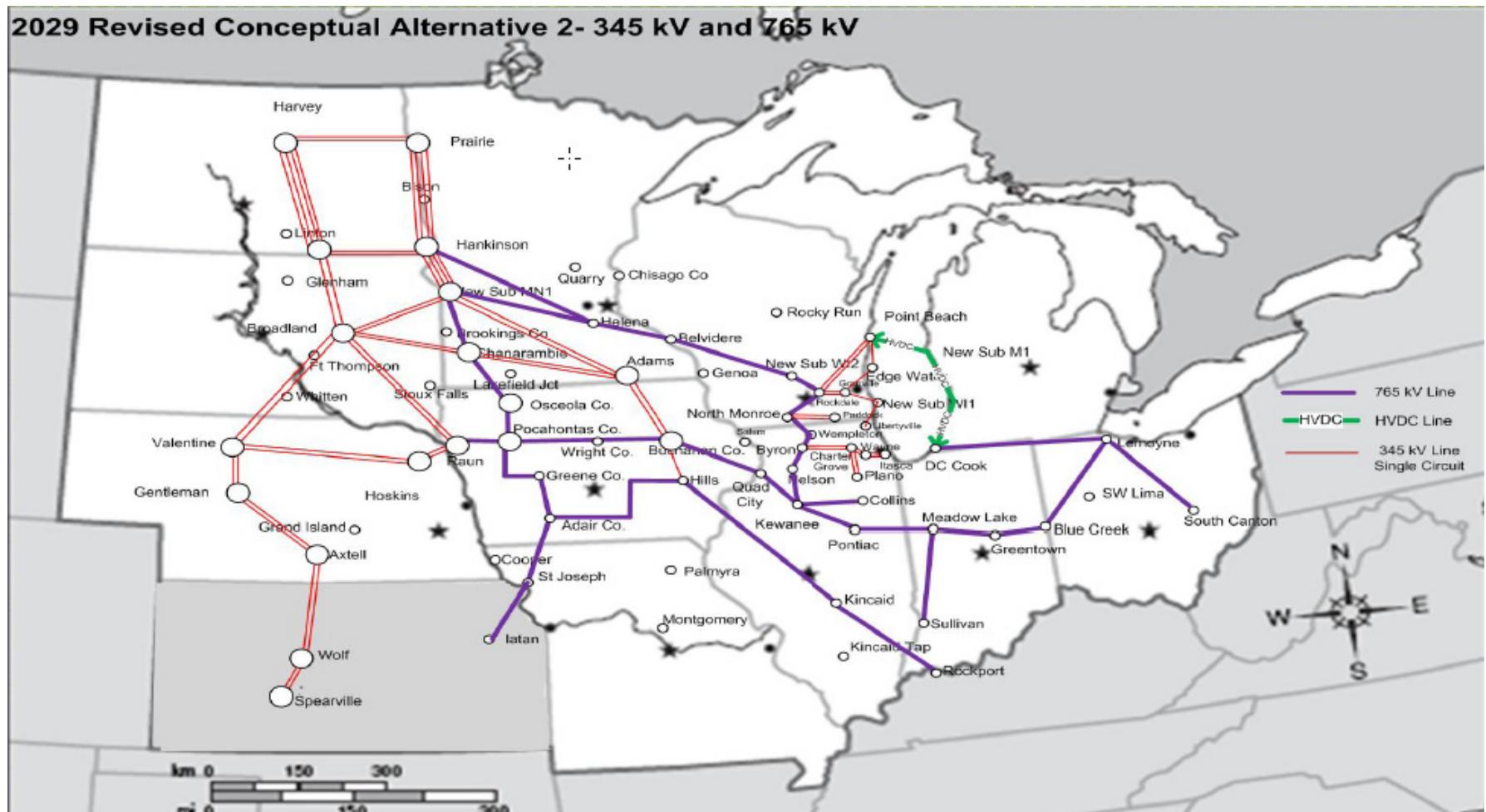
- Phase I: (Continued)
 - Develop performance metrics
 - Identify top performing alternatives
- Phase II: Societal Benefits Evaluation (economic)
 - Security Constrained Economic Dispatch
 - Develop Societal Benefits Metrics
 - Evaluate top performing alternative
 - Provide final ranking
- As part of Phase I of the analysis, eight conceptual designs were developed that were primarily 345 kV or 765 kV, or a combination 345 kV/765 kV (some with HVDC).



SMARTransmission Study

- After evaluating all the alternatives from a cost and reliability performance perspective, additional analysis using futures and sensitivities were conducted on three revised alternatives:
 - Alternative #2 (345 kV/765 kV)
 - Alternative #5 (765 kV)
 - Alternative #5A (765 kV with HVDC)
- Because HVDC may not provide local benefits in parts of the study footprint, the 345 kV/765 kV and 765 kV alternatives will be studied further to evaluate their economic performance.

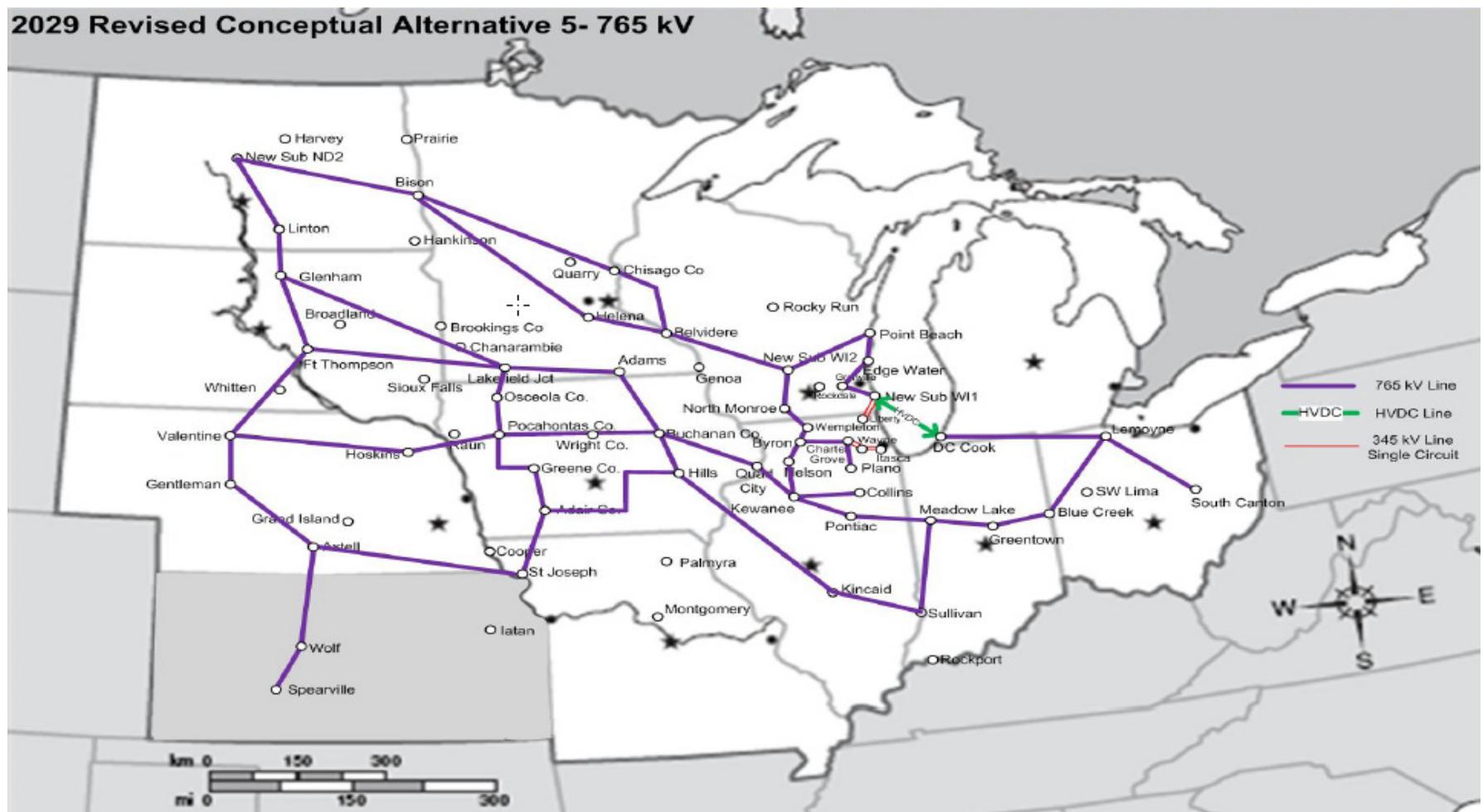
SMARTransmission Study



Alternative #2 is estimated to cost \$23.7 billion.

SMARTransmission Study

2029 Revised Conceptual Alternative 5- 765 kV



Alternative #5 is estimated to cost \$25.6 billion.



SMARTtransmission Study

- A report of Phase I results will be drafted.
- Work on Phase II will continue, including:
 - Identifying key assumptions to be used in the economic study
 - Developing a better performing alternative between #2 and #5
- Phase II is expected to be complete by the end of June.
- Information about the SMARTtransmission Study is located at: www.smartstudy.biz and on ATC's Website: www.atc10yearplan.com.



Eastern Interconnection Planning Collaborative

- ATC is among 24 planning authorities in the Eastern Interconnection that have formed the Eastern Interconnection Planning Collaborative.
- EIPC in September 2009 submitted a proposal with DOE for funds to conduct interconnection-wide planning in response to a DOE funding opportunity announcement.
- The DOE in December 2009 announced that it awarded EIPC \$16 million to fund the planning analysis effort described in EIPC's proposal.
 - EIPC is working to finalize the agreement with the DOE



Eastern Interconnection Planning Collaborative

- EIPC is developing the stakeholder process.
- EIPC developed a straw proposal for the Stakeholder Steering Committee (SSC) that was reviewed at a stakeholder meeting in April.
 - State representatives will have at least one-third of the total SSC seats (10) and state reps to be appointed by the Eastern Interconnection States' Planning Council (EISPC)
 - Aside from the state reps, and a seat for a Canadian Provincial rep, the SSC will maintain a balance in the representation of six sectors (TOs, GOs, TDUs and Public Power, NGOs, End Users and Other Suppliers), with each of those sectors receiving three seats



Eastern Interconnection Planning Collaborative

- EIPC developed a straw proposal for the Stakeholder Steering Committee (Continued)
 - Members to interconnection-wide caucuses for each sector (other than the NGO sector) will be appointed by each RTO or PA boundary; the NGO sector will select caucus members through an interconnection-wide process
 - Sector caucus members select SSC reps



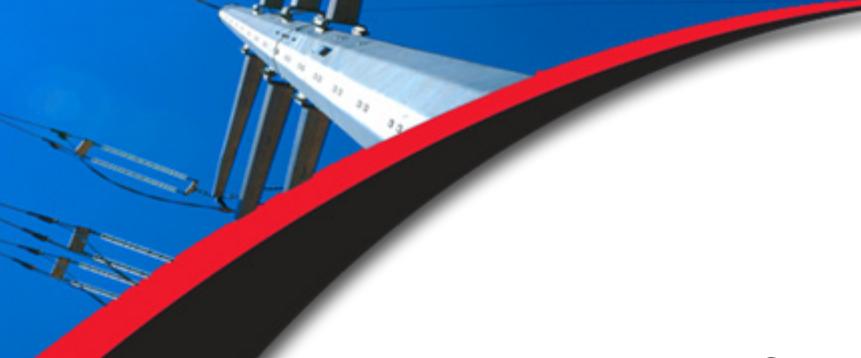
Eastern Interconnection Planning Collaborative

- The work of the EIPC will be guided by the SSC:
 - Develop consensus recommendations on the eight resource futures and related sensitivities to be submitted for macroeconomic analysis and high level transmission analysis
 - Develop criteria for selection of three future scenarios
 - Develop consensus recommendations for three future scenarios to be submitted for detailed transmission analysis
- EIPC recently held a stakeholder meeting in St. Louis to enable stakeholders to finalize the membership and operating rules of the Stakeholder Steering Committee.



Eastern Interconnection Planning Collaborative

- Concerns by Transmission Owners and Public Power entities on getting adequate representation with only three representatives on SSC.
- Discussions continue among stakeholders.
- Webinar to discuss alternate proposal(s) on May 7.
- EIPC also has formed its model building and economic analysis working groups.



Eastern Interconnection Planning Collaborative

- A narrative of the EIPC proposal, SSC straw proposal and other information about the EIPC is located at <http://eipconline.com/> and on ATC's Website at www.atc10yearplan.com.
 - An EIPC stakeholder listserv also has been created



Questions?

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