Regional Planning Update

ATC Customer/Stakeholder Meeting

July 10, 2009

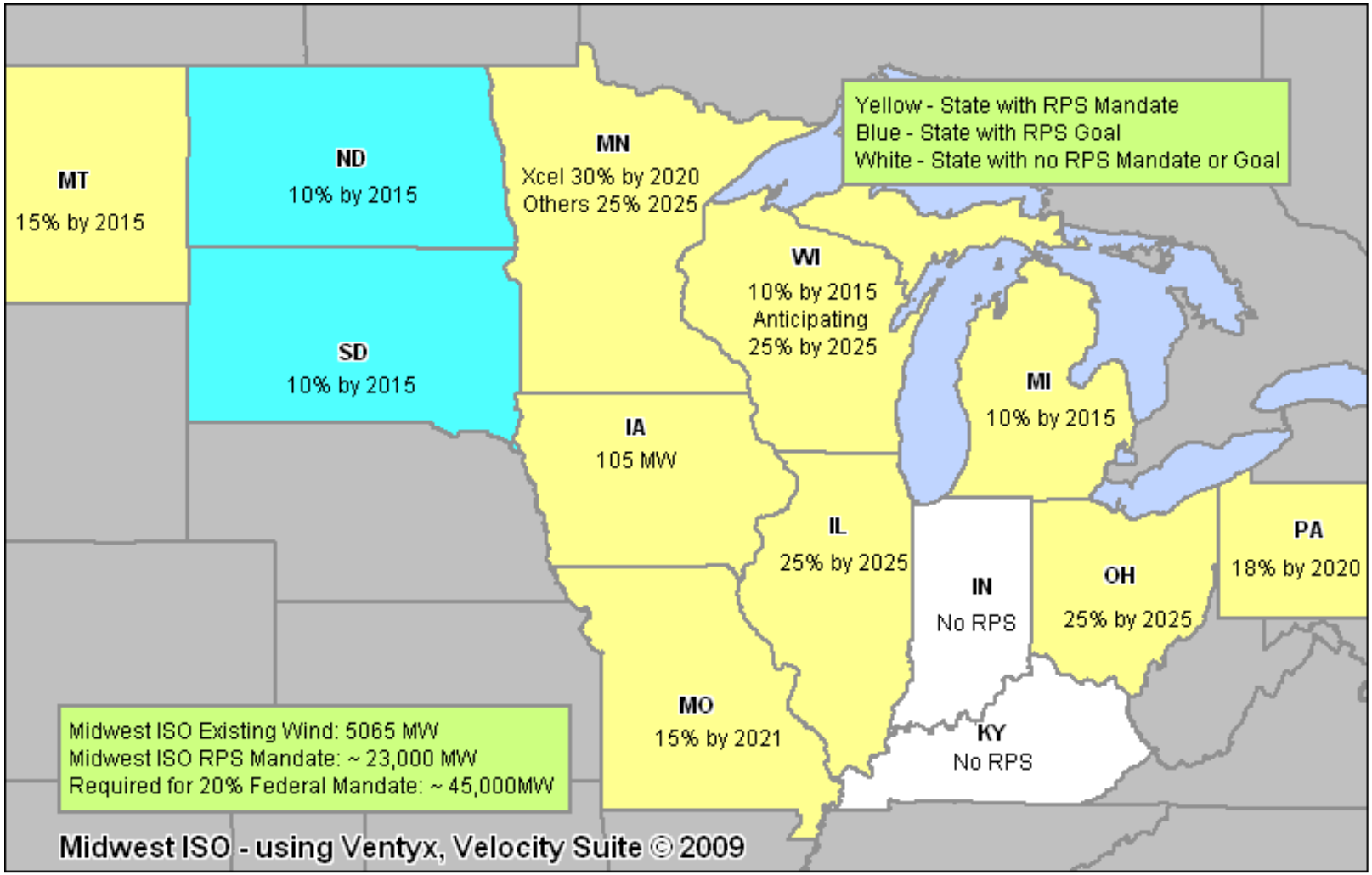
Overview

- Regional Generation Outlet Study (Phase I and II)
  - Upper Midwest Transmission Development Initiative
- Western Wisconsin Study
- Recent Minnesota Transmission Owners' Studies
  - Renewable Energy Standard Update Study
  - Capacity Validation Study
- Other regional studies
  - MISO Manitoba Hydro Transmission Service Request Study
  - MISO System Planning & Analysis studies

RGOS Context

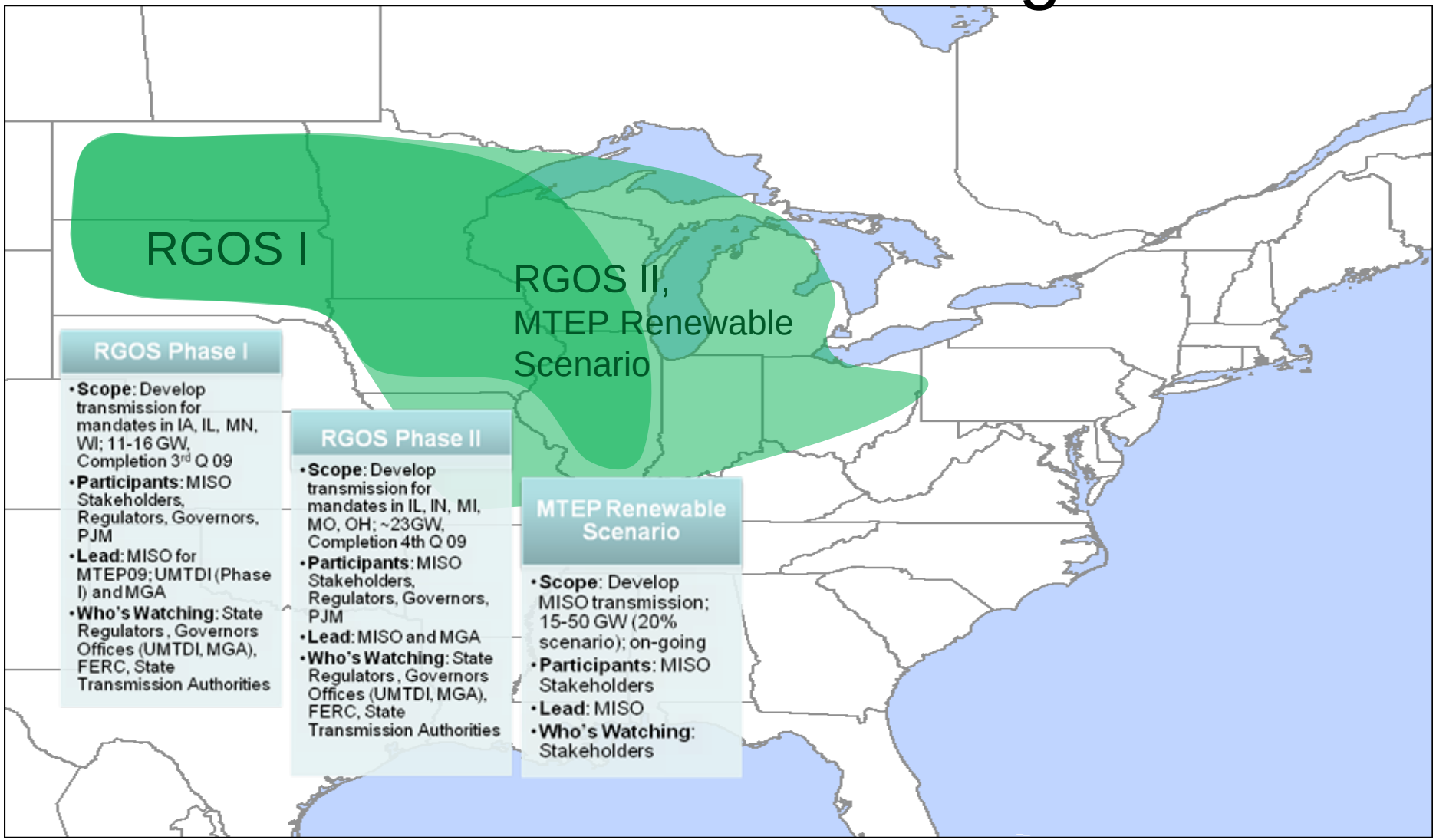
- There will be an anticipated ~23,000 MW of state mandated Renewable Portfolio Standards in the MISO footprint.
  - There currently is ~ 5,000 MW of wind in MISO.
  - WI currently has 10% by 2015. But the Governors Task Force on Global Warming (GTFGW) recommended increasing this to 10% by 2013, 20% by 2020 (6% from in-state sources), and 25% by 2025 (10% from in-state sources).
  - The Waxman–Markey bill recently approved by the U.S. House generally calls for 15% by 2020.

Current Midwest ISO RPS Requirements



MidwestISO
Energizing the Heartland

MISO Renewable Planning Efforts



MidwestISO
Energizing the Heartland

RGOS Phase I

- RGOS I is focused on identifying transmission needed to meet RPSs in WI, MN, IL and IA.
- RGOS I is being used by Upper Midwest Transmission Development Initiative effort, which selected two revised scenarios (A and B) for further analysis.
  - Identified 20 wind zones (20 x 750MW = 15GW) in each scenario in the UMTDI states, but additional zones in IL.
  - Will explore expandability of 15 GW plan by considering higher injection levels in UMTDI states:
    - 25 GW to meet all anticipated state RPSs in MISO.
    - 45 GW to meet a 20% national RPS in MISO.

UMTDI

- WI, MN, IA, SD and ND are developing a plan and a cost sharing methodology for transmission needed particularly to satisfy the states' RPSs.
  - RGOS I effort is providing the transmission study input.
- UMTDI is also conducting an effort to develop a cost allocation method for transmission identified in the plan the group develops.
  - UMTDI recently released cost allocation principles.
- UMTDI expects a draft transmission plan to be developed by August; the UMTDI effort is expected to conclude in the fall of 2009.

RGOS Phase I (cont.)

- Detailed analysis is underway.
  - Detailed analysis will be done for 15 GW and 25 GW; an indicative plan will be done for 45GW.
  - Detailed work includes power flow, stability and production cost analyses.
  - ATC is participating in the Design Sub-Team with other TOs and ATC also is conducting power flow analysis for the 15 GW 345 kV model.
- MISO's goal is to get projects in MTEP.

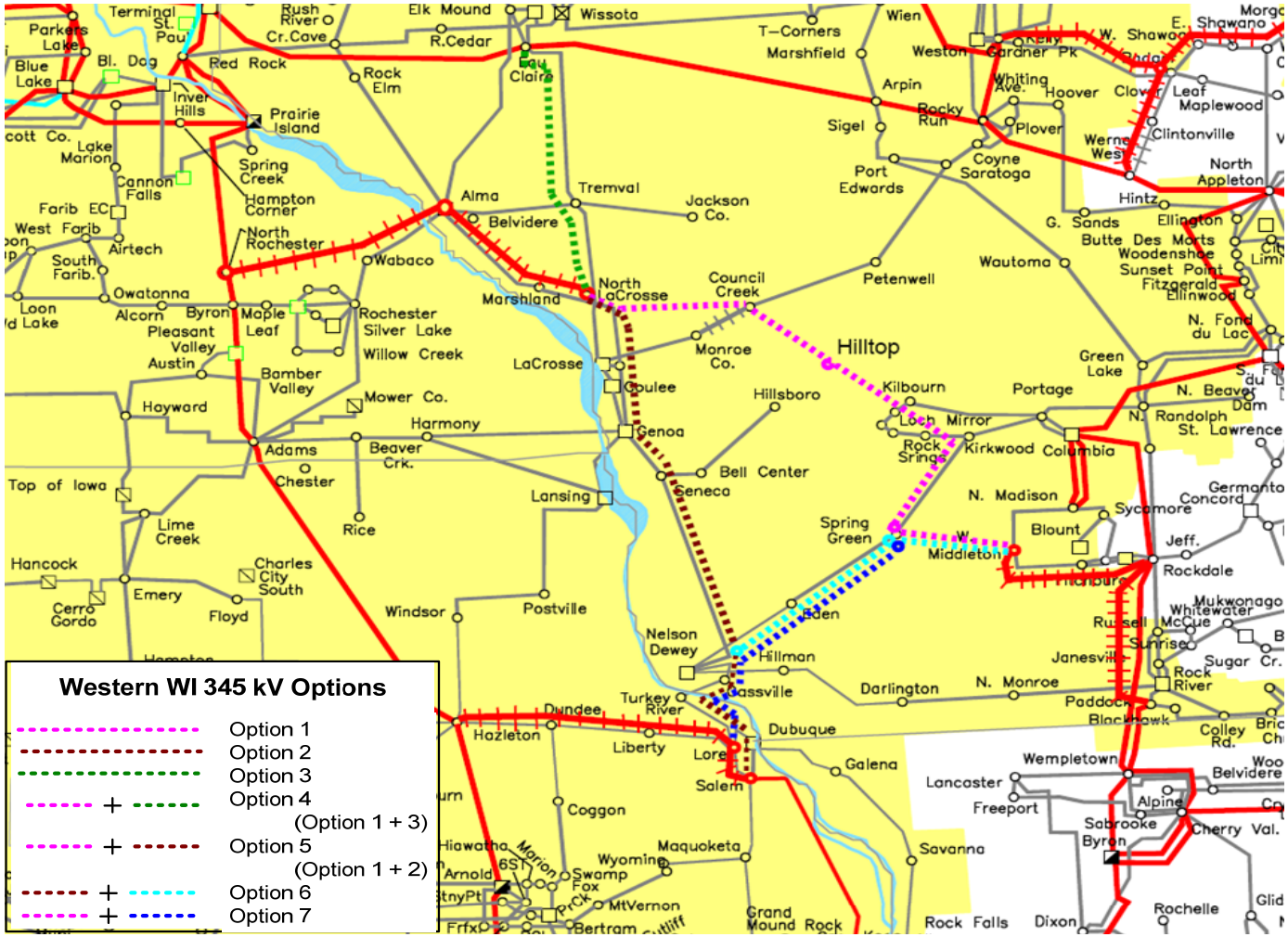
RGOS Phase II

- RGOS II kicked-off in May.
- Considers expanded requirements in RGOS I states and new requirements in such states as MO, MI, and OH.
- Builds off of RGOS I.
  - 25 GW plan will be the base case for RGOS II.
- MISO surveyed LSEs for projections of renewables needed and is developing draft wind zones.
- Indicative design workshop will be held in July – ATC will participate.
- Completion date expected December 2009.
- MISO indicates the goal is to get projects in MTEP.

Western Wisconsin Study

- The scope of the Western Wisconsin Study is to investigate the reliability needs in western Wisconsin and the transmission options that will address the identified needs.
- The study is led by ATC and, along with MISO, the following TOs are participating: Xcel, GRE, DPC, ITC Midwest and SMMPA.
- In July and August ATC will be conducting power flow and transfer analyses.
- ATC is aiming to complete the study by first quarter of 2010.

Western Wisconsin Transmission Study Area and Options*



*Note that additional options will be considered in the analyses, including a Genoa-North Monroe 765 kV line and a lower voltage alternative.

MN TO Studies

- The Minnesota Transmission Owners released the results from two studies in March that showed potential benefits of a new transmission line from La Crosse to Madison:
  - RES Update Study
  - Capacity Validation Study

MN TO Studies (cont.)

- The RES Update Study investigated potential benefits of a number of transmission projects to meeting the MN RES mandate beyond 2016.
  - The RES Update Study is a "vision study" that explored facilities that are needed beyond the "Corridor" project – an upgrade of Twin Cities–Granite Falls.
- Considered benefits of a La Crosse to the Madison area line.
  - Indicated that when wind generation increases beyond the level required for the state's 2016 RPS a new transmission line east of La Crosse would help avoid system stability issues in the Twin Cities.
  - Showed that in combination with the Corridor project a La Crosse to Madison line would provide an economic savings of $800 million to the MISO footprint.
  - Showed that a La Crosse to Madison area line would increase ties with WI and enable greater outlet of generation to the eastern part of MISO from MN and points further west.

MN TO Studies (cont.)

- The CVS study is a “high level visionary study” that evaluated several specific transmission projects – taken together and in combination – to determine how much additional generation can be added to the system and where as a result of the transmission additions.
- Identified a La Crosse–Madison 345 kV line as one of the top three projects analyzed that provides the most transfer capability across a variety of underlying assumptions.
  - The study evaluated 24 of “the most likely” transmission projects previously proposed.
  - Various sinks were analyzed and in nearly every scenario that sank to the MISO footprint, the King–Eau Claire line emerges as the limiting element. And the only scenario in which the line is not the limiting element is when a parallel line exists between La Crosse and Madison.

Other Regional Studies

- Manitoba TSR Study:
  - MISO is analyzing multiple Transmission Service Requests (TSRs) sourcing in and sinking into Manitoba Hydro.
  - Thermal issues have been identified.
    - A La Crosse – Madison line has been identified as part of some solution sets for the thermal issues.
  - Stability issues are now being evaluated.
    - An initial stability analysis has been run, but the analysis is being re-run with some revised assumptions. At ATC's request, sensitivities have been run with and without the identified North La Crosse – West Middleton 345 kV line to analyze its benefits. At this point, the line has been shown to resolve a dynamic voltage violation.

Other Regional Studies (cont.)

- MISO SPA Studies:
  - There are several System Planning & Analysis studies that are being conducted as part of MISO's generator interconnection queue process.
  - During the SPA phase, system impact studies for groups of proposed generators are conducted and preliminary transmission solutions are identified.
  - In the MN-Northern IA area study, a North La Crosse – Columbia double circuit 345 kV has been identified among the preliminary transmission solutions.

Questions

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