SMARTransmission **Open Stakeholder Minutes**

Main Room

A. Introduction

The meeting was initiated with opening remarks by Dale A Landgren, ATC. The process for the meeting was described by Heather Geiger, AEP. The main meeting materials regarding the study objectives and key assumptions were presented by Don Morrow, Quanta Technology. This meeting minute summarizes the questions received from the public audience and the response provided by the SMARTransmission study team members.

B. Clarifying Questions/Answer Session after Don Morrow's Presentation

1. *In the transmission alternatives, would the study team be considering HVDC in addition to EHV AC lines?*
   This study is based on AC transmission line alternatives and do not include HVDC at this point in the scope of work. However, some point to point HVDC can be considered as options to transfer high amount of power over long distances.

2. *Have the study members defined the Transfer Capability and the boundaries?*
   This topic is still to be defined by the study team. One of the key factors the study team is focusing is the location of the on/off ramps.

3. *Are transmission alternatives also to be developed in areas outside the study?*
   The transmission alternatives are focusing on the study area however if there is an opportunity and need to go outside the study area we will consider extending the alternative.

4. *How will the study team treat the regions outside the study area?*
   The load at adjacent areas to the study area is also to be increased, but to a reduced degree. Other more distant areas are to be kept static and as they were modeled for the 2019 base.

5. *What is the expected incremental load growth from 2019 to 2029?*
   It is about 29 GW of new load for the 11 states under study.

6. *How are the Renewable Portfolio Standards (RPS) handled for each of the Futures. After the RPS requirements are met, how is the generation mix developed?*
   The study team is working on this topic and the plan is to start with the 20% Wind Energy Federal RPS requirements and then adjust it to state requirements. Based on the additional generation to be required, a 50/50 (natural gas CC / conventional steam) will be considered based on input from the study sponsors.

7. *Is the Eastern Wind Integration Transmission Study (EWITS) considered by the study group?*
   The EWITS study is one of the studies that will be reviewed by the study team.

8. *Can the study team clarify what is meant by Conventional Steam?*
   Conventional steam, for the purpose of this study is 50% gas and 50% steam

9. *How does this study relate to the Eastern Interconnect Planning Collaborative? Isn't this studying the same areas?*
   There are a number of differences between this and the EIPC work.
   1. This is a much more targeted study than the Eastern Interconnect Planning Collaborative. It covers areas of MISO, PJM and SPP and is focused on how significant amounts of wind could be moved electrically and economically from the wind-rich areas of the Midwest to load centers to the east.
   2. This is more of a top down study of an EHV overlay. The analytical process is similar to the stakeholder driven scenario work that the EIPC will do. The EIPC effort is meant to inform policy makers about the implications of different energy policy choices, while the SMARTransmission study is expected to result in projects that could be moved forward in the approval, siting and construction process.
   3. This study will be complete in 1Q 2010 while the EIPC study results will not be available until June 2011. We hope that the SMARTransmission study results can be used as options for the EIPC futures analysis.

10. *Is the study team considering the issues related to generation cycling?*
    The study team will look at generation cycling during Phase 2 of the study.

11. *Is the study team considering maintaining the generation VAR reserves?*
    The study team agreed to scale up the load at constant power factor and add power system capacitors to bring voltage within limits while keeping the generation VAR reserves.

12. *Has the study team considered the work of the Organization of MISO States (OMS) regarding tasks on Cost Allocation and Regional Planning Processes?*
    The cost allocation is outside the scope of this study. The study team is reviewing the materials developed by the OMS as they relate to transmission planning alternatives to integrate renewable energy for the 11 states within the study area.

13. *How does the study team plan to define Societal Benefits? Using LMP differentials among regions, fuel savings, cost of ramping, etc?*
    This question is related to the Phase 2 of the study which has not started yet. Inputs from the stakeholders on metrics to capture societal metrics are welcome by the study team.

The meeting continued with 4 Breakout discussions.

C. Next Steps

The smart study team will conduct the next stakeholder meeting to discuss transmission alternatives by the second week of November.

Break Out Session #1

1. *Is the modeling to start in 2029 and then go back?*
   Start with 2029 then back to 2024 and 2019. We want to start with the end in mind and figure out how we can get there incrementally.

2. *Membership/sponsorship closed?*
   This group of sponsors came together to get this study done. It is on a very fast time frame. There is nothing magic being a sponsor. We are taking all stakeholders' input and looking to them to be an important part of the process.

3. *Are you designing lines that go through the just the sponsor area?*
   Lines won't be directed just to sponsor area. We are looking at a plan to meet multiple needs. Also, we are looking at the TPL standards with an approach that will be beyond indicative plans but not necessarily ready for projects.

4. *For UMTDI, MISO provided a set of indicative plans and found that choice "W" was the most cost-effective, although it had no wind in Wisconsin – they found the sweet spot in Iowa and western Minnesota. Will your study produce least cost scenario? The Commissioners ultimately did not go with the least cost option.*
   The initial alternative will be based on technical assessment. There will be a number of different alternatives evaluated. We will rank them based on metrics and total cost will be a metric, though it may not be the deciding metric. We will be getting input from the sponsors on where the wind generation should go and using the information from the RGOS studies as well.

5. *RGOS II doesn't place wind in some places.*
   We will be looking at siting size and location of wind from UMTDI/RGOS studies and are assuming that the primary method of meeting RPS is wind.

6. *Will you include Biomass in your assumptions?*
   Yes, but we need to decide how much. Biomass has different factors to study. We do not believe it will be a big factor. We won't know until we develop all the assumptions.

7. *What data and models will you use? Is it proprietary?*
   The input data for phase 1 - steady state analysis, will be developed from a number of inputs: base case from MISO representing the eastern interconnection, various studies of the area, RTO/ISO inputs, stakeholder inputs, and supporter inputs. The data used in the steady state analysis is classified as Critical Energy Infrastructure Information (CEII) and as such the owners will treat the data accordingly. The simulation tool for the steady state analysis is PowerWorld and as such the models used in PowerWorld are property to PowerWorld.

8. *Where will you get information for Phase I?*
   Load flow analysis, initial work and models from MISO and data from sponsors, stakeholders, UMTDI, RGOS.

9. *In UMDTI, MISO doing RGOS work and that was slowed down by a lack of stability analysis. They did not do stability analysis initially and found out their answer did not*

work when they tried to do stability. Will you be able to develop credible plan without stability analysis?
Phase I study will be based on reliability. The economic analysis will be conducted in Phase II. The System Impact Study which does voltage, stability and operating will be done post-phase II which will be done by sponsors closer to when the projects move from the proposed stage to the planned stage. However, sponsors will be providing input to minimize these issues.

10. *With all the studies going on, Wisconsin working with OMS, RGOS, SMARTStudy, etc. does ATC have enough resources to cover large number of studies? The PSCW does not want ATC planning to degrade. MISO planning is more top down planning. There is top-down and bottom up planning – how does someone from outside know how to do planning in Wisconsin? This is a concern with the discussions about federal planning.*
Yes, ATC has enough resources in planning. Have Regional Planning, focused on reliability, economics. RGOS, Eastern Inter-connection Planning Collaborative. The work we do on behalf of our customers is the main focus for ATC. We continue to do our bottom-up planning and participate in top-down efforts to represent our customers' interests. Also, electricity does not respect state boundaries – it flows where physics dictates. This is an effort to develop a more efficient system over a larger area. We hope to inform and shape the outcomes of the federal discussion with this study and that is one reason we are doing this study in a short time frame.

11. *Timing issue; doing 3 study years 2019, 2024, and 2029; have you thought of how you are bringing wind resources up; all together or phasing them in?*
The wind resources will be studied by phasing them in.

12. *Will you be looking at RPS requirements in intervening years?*
Yes.

13. *Sat in on RGOS meetings. We believe that 8 - 765 kV lines easier but we can't wait 20 yrs for 765; need consideration of what could be built incrementally.*
The transmission will be built it in stages to get to 2029.

14. *How do you decide which wind areas are to be developed in what years?*
Start with 20% Fed RPS in 2029; factor in State RPS, get information from sponsors.

15. *If start in ND, need a massive build out right away; could assume closer wind built first makes more sense?*
The sponsors will discuss, make decision and share it with stakeholders

16. *Are you making specific assumptions with DR, biomass, electric storage or embedded within load growth forecasts?*
Much is embedded in load growth forecasts. Otherwise, we will need to look at specific changes, particularly for PHEV penetration because it changes the load shape. That really is a shoulder case and light load issue.

17. *Utilities are getting more DR inquiries – if looking at 20 yr look, should you take that into account?*
    Sponsors will consider this. With wind resources, we will see less load during the day and more during off-peak times.

18. *We (Alliant) have not included this yet but were looking at that, how do you sort out all the impacts – how much impact does each individual factor have?*
    We need to determine if we captured enough energy efficiency.

19. *You'll be on the conservative end?*
    Yes. Also once we get the studies back to the TOs, systems will be built sequentially and incrementally so that always have a complete system each year.

20. *Seems a very ambitious schedule?*
    That's why we want Quanta technical analysis to bee easy. We want to wait for stakeholder input at appropriate times. Sponsors have made the decision to delay schedule and get stakeholder input.

21. *Environmental plus to 765 using fewer ROW acres, could you build fewer lines, of 765? Also HVDC questioned.*
    We did white paper on considerations of 765. It is on the web site www.electrictransmissionamerica.com. MISO representative is working with us on this and SPP as well. We believe it is important to work off what has been done.

22. *Some do view SMART study as competitor to Green Power. Perception out there.*
    The study is not in response to Green Power Express and is something that Electric Transmission America (ETA) has been working on for some time to put together. In all fairness ETA is a competitor to ITC Holdings as outlined in the intervention in the recent FERC 205 filing. ETA is excited to put this together and is very pleased with the strong sponsors of this study. ETA has a wide range experience to bring to the table to help with this study. We have explained the study to MISO, PJM and SPP now they're working with us and we view this study as complementary to the RTO processes. The SMARTransmission study is an open and transparent process and we are seeking input from a wide range of stakeholders. This is a very similar collaborative approach as ETA was involved in at SPP and SPP took the EHV study work over ultimately. As a side note – if there are any questions that you think of after this meeting there is still time and a link on the website for input and ask questions.

Break Out Session #2

1. *What kinds of contingencies are considered for double (N-2) contingencies?*
   The study team is considering a selected number of double contingencies (N-2) to be provided by the study supporters. The N-2 contingencies that are found to cause violations are going to be reviewed with the project supporters to resolve them as N-1-1.

The list of double contingencies will not be included in the study materials to be uploaded at www.smartstudy.biz.

2. *Is the study team considering lower yearly load growth rates than the ones presented in the meeting? At the PSC in Wisconsin we are projecting load growth at 0.1 to 0.3 % for some areas*
   The study team is considering a lower than expected load growth as a sensitivity.

3. *What kind of process is followed for the location of proxy non-wind generation? The current process seems arbitrary. Are the study members following a detailed resource planning tool for this? Any input from MTEP 09 or EWITS?*
   Based on load growth and the amount of wind generation the non wind proxy generation amount is identified. The study members are considering input from the sponsors as well as assumptions from other studies such as the JSCP and the MTEP 08 and MTEP09 (when it becomes available).

4. *Is the study team considering new technology developments such as solar?*
   This study is mainly looking into wind at this time, however, we recognize that solar has potential and continue to study that as an option.

5. *Has the study team identified the areas in which the power is going to be exported? Lake Michigan is a key obstacle in Wisconsin.*
   This study team is planning to export power to the east and displace PJM generation. Final exports plans are not finalized at this time.

6. *Has the team identified metrics for societal benefits based on PROMOD analysis? The MTEP 09 report has useful information about such metrics and should be reviewed.*
   The study team is currently developing the metrics for phase 2 of this study, which deals with the societal benefits. The MTEP 09 report will be reviewed by the study team.

7. *Has the team reviewed the EWITS (Eastern Wind Integration Transmission Study)*
   The study team is currently reviewing EWITS information

8. *Is HVDC part of the scope of this study?*
   The study mainly deals with EHV AC transmission. However, some point to point HVDC can be considered as options to transfer high amount of power over long distances.

9. *Has the study team considered the cycling implications of generation units, particularly coal and nuclear. Is the study team considering dispatching wind power?*
   The study team is aware that generally the minimum load scenarios coincide with maximum wind power generation. The study team will consider the fact that generation based on coal or nuclear need 2-3 days to be turned off/on. Wind power dispatch/curtailment will be considered during phase 2 of the project.

Break Out Session #3

1. *Is the assumption of transferring power from the west end of the footprint to the east end correct? It makes more sense to assume that some power would be "dropped off" along the way.*
   Quanta will consider this comment in developing the study models. Quanta stated that the transfer zones to be used in the study models are not developed yet. It was also discussed that there should be multiple connections to local systems along the way.

2. *Is the purpose of the new transmission to transfer energy out of the region or serve the needs in the region?*
   The SMARTransmission Study is not just a transfer study and the defining appropriate sinks for the new energy within the footprint is part of the study.

3. *Will the new transmission end in Ohio or go further to the east?*
   PJM is providing input on this. It was discussed that if the LMP's are higher in Ohio, then the LMPs will decrease with additional transmission.

4. *In the Phase 2 portion of the study, will there be an optimization where certain components of the plan are removed and the performance is checked with PROMOD.*
   Some curtailment should be allowed as it is not likely the most economic system to design for delivering all of the renewable at all load levels / system conditions. It was suggested that a metric should be defined around this with an 80% of output being suggested. MISO staff comments that the RGOS studies considered 90% of the energy in off-peak for PROMOD as well as traditional power flow studies at 20% on-peak. Parties are welcome to submit ideas for the Phase 2 metrics per the link on the SMART Study web site or by e-mailing suggestions.

5. *Will PROMOD include wind profile information?*
   The study will use NREL meso-scale model data consisting of actual '04, '05 and '06 hourly load profiles synched to wind data. The study will use NREL data. Also, EWITS study data will be considered as well. NREL is the only common-set data for the eastern interconnection. NREL used weather data to simulate wind output and hourly variations. The NREL data can be used to determine differences between regions in terms of energy output and even on a smaller scale to limit potential outputs near cities.

6. *Does it make sense to curtail wind across the footprint in PROMOD?*
   In the power flow studies, MISO staff suggested that the SPA studies could be a good resource as in those studies they are looking at full output in one area with lower outputs in others in the same case in order to check for localized issues that only occur in some operating conditions.

7. *Will the RGOS and CARP overlays be used?*
   The RGOS information will be used but CARP does not include overlays. The CARP information that will be considered includes the economic futures such as carbon caps, etc.

8. *When will the next stakeholder meetings be?*
   The next meeting would be in mid-November at such time when some preliminary alternatives have been developed and are ready for review and discussion.

9. *What is PJM's involvement?*
   PJM has attended meetings on this effort and is closely monitoring it. PJM supports such stakeholder planning activities. Utilities and others in the local areas know a lot about their systems and PJM appreciates that. PJM believes that the SMARTransmission study will dovetail nicely with other study efforts such as the EIPC effort. PJM believes that the study should consider sinks within the footprint instead of sinking the energy in places such as New York. The PJM RTEP document contains a helpful outline of state RPS requirements. Another good site is www.dsireusa.org.

10. *Is the study monitoring all facilities in the power flow studies? Facilities should be monitored below 200 kV (down to 115 kV).*
    The technical representatives to the studies are providing guidance on this issue. For example, MidAmerican Energy has requested that facilities below 345 kV connecting to 345-161 kV substations be monitored as a reasonable way to find issues below 200 kV. In the Dakotas it will be necessary to monitor below 200 kV because there is not much existing 345 kV. Monitoring below 200 kV may make more sense at such time that the options have been narrowed to just a few. Ultimately MISO and PJM will fully evaluate any plans that come forward including impacts on lower voltage facilities.

11. *It was asked whether the effects of energy efficiency carve-outs in terms of Federal RPS requirements would be included.*
    It has been proposed in legislation that 20% of the RPS can be met with energy efficiency programs. Perhaps, the lower load growth sensitivities may cover this.

12. *In developing where renewable will be built,*
    Some states have restrictions on where the renewable are located (must be within the state) and some require that RECs be physically deliverable.

Break Out Session #4

1. *In Phase I, are the total costs are going to be transmission only costs for the alternatives?*
   Yes, the proposed metric is to only capture the cost of the transmission alternatives and not the wind farm or collector system costs.

2. *Is there any underlying need or definition of need for siting purposes?*
   This study does not address a needs statement for the purposes of siting. The transmission packages under consideration are generalized routes between substations. Detailed routing will occur at a later date.

3. *The transmission plan that comes out of this study will go back into the regional planning processes.*

Correct, it is expected the sponsors will forward this plan to appropriate regional Planning Authorities.

4. *What is the metric for energy costs?*
   This metric is for Phase Two and has not yet been developed.

5. *Why wouldn't you consider DC alternatives? DC also has benefits of controllability.*
   The plan will consider DC, but will not consider a DC system design as an alternative to an AC system design. Instead, DC will be considered for select long haul power transfers if appropriate.

Comment [STN1]: I don't know if that was Mike's comment or another comment but I have only one DC question/comment during the breakout session.

6. *Why you haven't looked more closely at other published transmission studies?*
   The sponsors and Quanta Technology are identifying and reviewing other relevant studies for developing a set of key assumptions and using them in developing the Alternative transmission packages.

7. *Going forward how do you make operating state assumptions in 2029?*
   The sponsors will provide guidance to Quanta Technology on generation dispatch patterns with the help from RTOs /ISOs providing the dispatch merit order as needed.

8. *Are we looking at a heavy concentration of wind in the west or more dispersed?*
   Both. The heaviest concentration of wind will be in the western end of the study area. However, the models are also including wind distributed throughout all of the states in the study area.

9. *Are you assuming any centralized siting authority?*
   This is not really a something to be considered at this stage of the analysis.

10. *What is the timeline for the analysis?*
    An attempt is being made to complete Phase 1 during Q4 of 2009 and Phase 2 during Q1 of 2010.

11. *How are you going to factor in the number of Mississippi river crossings? Other river crossings also?*
    This is a good point and the sponsors and Quanta Technology will consider this suggestion as a metric for gauging performance.

12. *How come we are not looking at off-peak losses?*
    The energy component of losses (all hours) will be analyzed during the Phase 2 portion of the study.

13. *Generation retirements/futures? RPS differences? Low carbon futures? Base future would reflect base but not carbon?*

The study team will assume a national RPS of 20% for the base future and make adjustments when necessary for the high and low wind scenarios. The study team will also consider adjusting coal generation for the low carbon future alternative.

14. *Possibilities of mine mouth coal generation?*
    This study is primarily about reliable delivery of the expected heavy concentrations of wind energy in the study area.

15. *Have we looked at any other retirements beyond sensitivity requirements?*
    Only those retirements that have been announced.

16. *What entity would be developing this project?*
    The entity or entities that develop these lines will be determined at a later date.