

FINAL SATS CONFERENCE CALL NOTES
February 26, 2008

Attendees:

Bruce Evans, SWTC
Ray Som, SWTC
Don Adams, K.R. Saline & Associates
Jim Charters, WSES
Ken Bagley, Genesee/SSVEC
Don Bryce, USBR
Larry Karr, USBR
Suzanne James-King, 3M
Gary Trent, TEP
Ron Belval, TEP
David Bryan, SSVEC
Ron Brown, Trico
Karen Cathers, Trico
Abhishek Singh, APS
Don Byron, Western
Leonard York, Western
Peter Castaneda, USBR
Lisa Szot, NM RETA

Welcome:

Ron Belval welcomed everyone on the conference call and stated that TEP has been busy working on the next draft of the SATS Report. The task of adding a Table of Contents and adding references to the tables and figures in the last draft was taking more time than expected due to technical difficulties. For this reason it was decided to hold a conference call instead of a face-to-face meeting.

Ron proposed a few changes to the Agenda. The first item to be discussed will be an update on the NM Wind and HPX Integration Study which was requested by Jim Charters. Review and approval of the 1/14/2008 meeting notes will follow an update of the SATS Draft Report, as the notes are the basis for discussion of the draft of the Report. The agenda for this meeting, as updated, is as follows:

- 1) NM Wind & HPX Integration Study Update
- 2) SATS Draft Report Update
- 3) Review/Approve 1/14/2008 Meeting Notes
- 4) WAPA ROW Report & Options Update
- 5) Cochise County Study Update
- 6) Action Items

- 7) Next Meeting Agenda
- 8) Next Steps / Meeting(s)

SWTC and SSVEC were asked to briefly discuss write-ups in the Report corresponding to their areas. It was noted that a discussion of the Cochise County Study work, under Agenda Item #2, SATS Draft Report update may overlap with Agenda Item #5, Cochise County Study Update.

Agenda Items:

1) NM Wind & HPX Integration Study Update

Ron asked Jim Charters to begin the discussion. Jim stated he and Ron participated in a New Mexico Subgroup teleconference that was held on February 14th. Jim said, through his involvement with the NM Study Group, that he was initially concerned about modeling 1,500 MW throughput from New Mexico into the SATS study area. His concern has increased since the NM Subgroup is now discussing the need to haul 3,000 MW through Central New Mexico into Arizona. The interconnection points have not yet been established for this higher amount of power and it will be awhile before the Subgroup is able to put it all together. During the call the Subgroup also discussed the possibility of transmitting renewable energy generated in New Mexico north into Colorado.

Ron added that the study effort is to concentrate on the objective of integrating wind resource related transmission options proposed by the High Plains Express Transmission Project, referred to as HPX, with internal New Mexico alternatives. The idea is to investigate options to integrate the southern part of the HPX proposal with a collector system for wind resources within New Mexico. The study will also look into integrating the SunZia Transmission Project. Therefore the study is to determine the implications of flowing the renewable energy into the interconnected transmission system in New Mexico, while recognizing the need to consider flowing excess that may not be absorbed out of New Mexico. The latter could be modeled by displacing generation west of New Mexico, and specifically mentioned displacing Palo Verde generation. Ron pointed out during the Subgroup call that the choice of location for generation to be displaced by renewable options is important as transmission system impacts may be significantly different. Nevertheless, the purpose of the “New Mexico Wind Expansion Options and HPX Integration” study is to determine the requirements to integrate at least 1,500 MW, and possibly as much as 3,000 MW of wind energy into the New Mexico transmission system. Impacts on adjacent systems will not be evaluated in detail since the impacts of HPX and SunZia are anticipated to be conducted by those other impacted transmission providers.

The High Plains Express (HPX) Project could bring another 3,000 MW from Wyoming down through Colorado and eventually into Arizona, for a total of 6,000 MW. The Subgroup is considering studying alternatives for displacement, but with the objective of modeling impacts to the New Mexico systems. Generally, the goal was to simulate flows

from New Mexico into Southeast Arizona, and this could be accomplished by displacing generation at Palo Verde or Marketplace. However, Jim felt that displacement of generation at Marketplace isn't viable.

Jim is worried that it appears that the Subgroup isn't concerned about the impacts beyond the New Mexico border. Ron noted that he felt the discussion with the New Mexico Subgroup affirmed that the SATS Scenario approach with generation modeled at Winchester to simulate EHV transmission coming out of Southwestern New Mexico was the right decision. The NM Subgroup is struggling with how to model the external system just as we did while we were planning the study for SATS. Jim feels that SATS needs to take a more active role in keeping track of what the NM Study Group is doing, as again, they aren't concerned about what happens to the transmission system as the MW's are flowed out of New Mexico.

Ken Bagley stated that a reality check is needed, because 6,000 MW is a very large quantity of power. Jim replied that while that is a large amount of power, this group needs to understand that it is already there; but no contracts exist to buy it yet. Ken replied that the SunZia Project can only accommodate about 1,500 MW and to his knowledge, there are no additional proposed transmission projects that could bring 6,000 MW into Arizona, so how is SATS going to model this? Gary Trent stated that we will need to watch the quantities of load modeled in the SATS cases as they may not match up with what is being studied for HPX. This mismatch will create issues that will need to be mitigated, either through the SATS study effort or through the HPX study effort.

Jim stated that SWAT is the entity that has been set up to handle this and should be coordinating the various study efforts. Gary agreed, noting that coordination will be needed not only with the subgroups within SWAT, but also with the study efforts of the Mega-Projects. Ron stated that regional studies involving interstate EHV transmission projects to transmit output from large renewable generation projects are being addressed through the WECC Transmission Expansion Policy Planning Committee (TEPPC). WestConnect is actively involved in coordinating these study efforts between SWAT and adjacent regional groups such as the Colorado Coordinated Planning Group (CCPG) and a recently formed group called the Sierra Planning Group (Sierra) covering northern Nevada and northern California. Each of the transmission providers has recently filed their procedures for coordinating such studies in Attachment K to their respective OATTs. These procedures include a means for determining whether the studies should be done locally or more appropriately done regionally. Coordination of the NM Subgroup effort is a likely candidate for a regional effort. WestConnect may choose to coordinate these studies or form a new group to perform the task. Ron agreed to bring this issue up at the next conference call of the WestConnect Planning Management Committee, which is the group that will be looking at the Mega-Projects.

Lisa Szot, who is the Executive Director of the New Mexico Renewable Energy Transmission Authority (RETA) was asked if she had any comments to the discussion. She said that the New Mexico Group has not come up with a decision on the MW value to use in the studies for throughput out of New Mexico, nor has the Group settled on the

sink points for the renewable energy. She stated that she is looking for comments on this by SATS and others.

Ron recalled that at the last meeting, the Group looked at potential interconnections for the renewable energy being at either Winchester or Springerville. He noted that the SATS study effort looked at HPX and SunZia as viable projects with 1,500 MW modeled at Winchester. However, due to the increase in the amount of renewable energy that the Group is looking it, it may be necessary to increase the amount modeled at Winchester to 2,000 MW, but not as high as 3,000 MW, as the transmission system to import that amount is very uncertain.

2) SATS Draft Report Update

As noted earlier, Ron will be following the draft SATS 1/14/2008 meeting notes for his discussion of this agenda item. He asked Lisa if she would like to have RETA acknowledged in the Report, and she replied that she would, only if she could make significant contributions and that she will work on wording to be included in the Report.

Ron has added the information about the participating organizations to the Report, as noted on page 1 and 2 of the draft notes. The Sections of the Report, as noted in the draft meeting notes will also be listed in these notes with the attendant discussion as follows:

3.0 Definitions. A question was asked if the definition of High Voltage (HV), as being greater than 100 kV and less than or equal to 230 kV, was checked to see if it agreed with the Authoritative Dictionary of IEEE Standard Terms. Ken remembered that the group had agreed to this definition, so that it was consistent with what is being used in the CATS study groups. The group decided to strike “per The Authoritative Dictionary of IEEE Standard Terms.” This makes it consistent with the EHV definition.

4.0 Study Process. The only comment to this section is that it needs to be expanded to include the renewable energy efforts in NM. Lisa agreed to come up with wording for this.

5.0 Study Goals and Objectives. No comments were received for this Section.

6.0 Study Scope and Schedule. Ron will incorporate the changes as noted in the meeting notes.

7.0 Study Criteria. Gary will do his action item to modify Table 1 and to add a post-contingency table for this Section. A question as to the reformatting of the criteria tables in the Report will be determined later.

8.0 Study Methodology. Jim noted that he has not done his action item and will get to it asap, possibly even today. Gary had a question about the self-certification process for compliance with the NERC/WECC Standards. He asked

if anyone was planning on using the SATS Report as evidence of compliance with the Standards. He wondered if we should add a reference to the appropriate NERC Standard but the group felt that since the Standards are changing it may not be helpful to make reference to one Standard and not to another. The Report includes a statement that the study results are based on the Standards that were in force at the time of writing. However, each entity should be free to use the SATS Report in its documentation of compliance with the Standards, but there should be no reference to a particular Standard in the Report. Others suggested that perhaps language should be added to the Report stating that it supports the NERC Standards. Jim offered to integrate these comments into the leading paragraph to this Section that he has agreed to write.

Ron noted that the SATS Report is a reliability study that can be used by TEPPC for their economic studies. It is not clear how system impacts caused by through-flow of energy resulting from potential Mega-Projects will be addressed from a reliability perspective. TEPPC or other appropriate entity will have to do a study of potential congestion issues that arise from the through-flow of energy between study group areas.

9.0 Saturation Load Study. TEP is still working on this with Mark Etherton, who was contracted to do the Study. The build-out in the TEP service area was based on the latest land-use plans that they had received from the jurisdictional entities. Some EHV strategies have been identified, through an iterative process, and TEP is close to wrapping up the Saturated Load Study. Some SWTC strategies in Pima County were based on saturation load study work that was previously done by Trico. Ron asked if these had been reviewed, and Ray Som replied that they had.

10.0 Load Forecast. A question was raised about the SWTC peak demand forecast and if the table would be modified to show only the medium load forecast. Ray replied that he felt it was more instructive to leave it as is, with the high, medium and low load forecasts shown in the figures.

Cochise County Study Update. David Bryan said that the write-up of this Study will be done by Ken Bagley. It will contain 8 Sections:

- 1) Executive Summary
- 2) Description of participating companies
- 3) Summary of issues – BTA notes, SATS study work, etc.
- 4) Description of options
- 5) Summary of load flows
- 6) Recommendation
- 7) Appendix A – Meeting notes
- 8) Appendix B – Load flow diagrams

David next discussed his corrections to the meeting notes. The last sentence of the last full paragraph on page 5 of the notes was modified to add information about the 3rd option that was studied, viz. that “a transformer with the capacity ratings envisioned was extremely unusual; therefore the transformer would be expensive and difficult to integrate into the system. This option was therefore dropped.”

Additions to the next paragraph brought a question from Bruce Evans as to what was the intent of the addition of the statement that “SSVEC argued that building 37+ miles of radial 230 kV transmission to a new substation does not make sense. There will be a minimum distance separating any new transmission substation and San Rafael. The 230 kV loop should be the project, not another radial transmission line.” Bruce asked if this added statement had reference to the 3rd 230 kV injection into the system and if this 230 kV loop is what SSVEC wants looped all the way to San Rafael. David replied that it was. SSVEC wants the loop completed, rather than constructed initially as a radial line, as was discussed at the last Cochise County Study Group Meeting. Discussion of who would pay for the 230 kV loop, as referenced in the notes, is going to require further discussion at the SSVEC and SWTC Board level.

The last addition to the notes that David added was: “Therefore the customers of southern Cochise County for all three load serving entities [APS, TEP, and SSVEC] shall be out-of-power should the primary transmission line[s] serving the entity fail. Power will be restored after manual switching is completed, generator started, and/or the problem with the primary transmission is fixed.” A question was raised by Stan Sierra in an e-mail as to what was meant by this statement and David agreed to have this statement deleted, as he felt his point had been made.

As Ken will be doing the Cochise County Study Report, he asked for all of the study work and write-ups that have been done by SWTC. SWTC accepted an action to provide this data.

The notes next reference a report by Dick Gibson of CAP concerning an agreement that had been signed between Western and CAP. Ken stated that the wording in the notes about the northern portion of the CAP system being ceded to Western should be changed to more correctly refer to the 230 kV system of CAP being ceded to Western. Larry Karr briefly stated that there are three aspects to the CAP/Western Agreement:

- 1) Integrated Western/CAP Transmission System
- 2) Interfaces between CAP and Western
- 3) CAP Projects

Bruce will contact Larry after this conference call to come up with the appropriate wording for the meeting notes.

11.0 Scenarios. This was pretty much discussed earlier during the discussion of the NM Wind Integration Study.

12.0 Alternative Projects. No comments on this Section.

13.0 Western 115 kV Transmission Corridor. An update on this will be given later on in the call.

14.0 Long-Term SATS and Individual Transmission Provider Strategies. The corrections as discussed in the notes are being made. Formatting and clarification to the exhibits are being worked on. TEP's N-1 and N-2 analyses are to be further identified.

With regards to the statement about the study work only being half-done, Ron noted that the presentation that he made to the SWAT Oversight Committee Meeting on January 16th was current up to the January 14th SATS meeting. He reported to the Committee that the Report was a work in progress and the Committee asked that it be posted on the WestConnect website as an Interim Report, with no apologies for it not being completed. As outlined in the 2008 SATS Study Plan, the Report will be completed by the fall of this year.

15.0 Inventory of Projects. No comments on this Section.

16.0 Findings from Power Flow Analysis. This is still being worked on and will incorporate the Cochise County Study efforts.

17.0 Economic Analysis. TEP is still working on this, and Ron noted that more projects are to be added as a result of ongoing transmission analysis. Bruce noted that SWTC is also working on this.

18.0 Developing a Flexible Plan. Ron's goal is to make this Section more specific instead of generic.

20.0 2008 Study Plan. No additional comments on the Study Plan were discussed.

3) Review/Approve 1/14/2008 Meeting Notes

Bruce will get with David to revise his corrections to the meeting notes and will re-issue the notes for approval at the next SATS meeting.

4) WAPA ROW Report & Options Update

Leonard York reiterated to the group that Ron Moulton's position is that Western is willing to participate in the SATS Study Process and if use of Western's ROWs can help to facilitate the development joint projects arising out of the SATS study work, then

Western is willing to be a part of the effort.

Don Byron stated that the work that has been done to date, for the most part, was included on a CD that was sent to Bruce. However, Ron asked Don if he would be willing to memorialize the Western effort, without going into the detail that is provided on the CD, as a lot of it is confidential, into a short paragraph that could be included in the Report. Items to include would be to describe the Western ROWs in the SATS area, what the issues are for use of the ROWs and what rights would Western have and if it will be feasible to purchase additional ROWs for the joint 345/115 kV projects or double-circuit 345 kV projects that would use the Western ROWs. Don accepted this as an action item.

Western is looking at the Saguaro to Tucson to SWTC 115 kV line corridor and the Tucson to Oracle 115 kV line corridor. The initial research to validate the size of the Oracle to Tucson corridor has revealed that it is very narrow. The Tucson to Apache corridor was found to have a width of 100 feet, except for the piece right out of Tucson Substation. Encroachments have not been looked at yet. With regards to purchasing of additional ROWs this would need to be done as per the Government regulations.

5) Cochise County Study Update

This was covered earlier during discussion of the SATS Report.

6) Action Items

Bruce noted that many of the action items that were listed in the 1/14/2008 SATS meeting notes are still valid:

- a. All entities that have responsibility for inputs into specific areas of the Report need to provide these to Ron asap.
- b. Gary will update Table 1 and prepare a new “post-contingency” table for TEP.
- c. TEP will continue the reformatting effort of the Report, and incorporate the changes outlines in the meeting notes.
- d. Jim Charters will prepare introductory language for Section 8 Study Methodology and Assumptions.
- e. Ron will reformulate Figure 4: Scenario Example influence Diagram to match the wording in the Report as found on pages 23-24 and place the diagram after the wording, instead of ahead of it.
- f. Lisa will provide a write-up of RETA for the Report and include discussion of the renewable energy efforts within NM.
- g. Ron will bring up the subject of coordination of study efforts between the SWAT sub-groups and the Mega-Projects at the next WestConnect Planning Management Conference Call.
- h. Bruce and David will work on a revision to the 1/14/2008 meeting notes as it regards Cochise County and resend the notes for approval at the next SATS meeting.

- i. Bruce will contact Larry Karr for more correct wording to the notes regarding the agreement between CAP and Western.
- j. Bruce will provide SWTC data to Ken for the Cochise County Study Report
- k. Don Byron will write up a short summary of the Western ROW study effort.
- l. Ken will write an Executive Summary for the Report. Ken asked that he receive the next draft of the Report, so that he can cut and paste the areas that he will include in the Summary.
- m. Karen Cathers will provide comments on the Trico section of the Report in coordination with SWTC.

7) Next Meeting Agenda

The agenda for the next meeting will be similar to what was used for today's conference call but will include the Draft Report Executive Summary:

- a. Welcome and Introductions
- b. Review/Approve 1/14/2008 Meeting and 2/26/2008 teleconference Notes
- c. NM Wind & HPX Integration Study Scope
- d. SATS Draft Report – Review
- e. WAPA ROW Report & Options Update
- f. Cochise County Study Update
- g. Draft Report Executive Summary
- h. Action Items
- i. Next Meeting Agenda
- j. Next Steps / Meeting(s)

8) Next Steps / Meeting(s)

The next meeting of the group will be Thursday, March 27th at TEP's Offices, Training Room A, and will start at 9:30 a.m.