

**Final SATS Conference Call Notes
October 15, 2009**

Attendees:

Bruce Evans, SWTC
EvaMarie King, SWTC
Jim Tang, CAP
Reuben Ruiz, CAP
Joshua Johnston, Western
John Kyei, PDS Consulting
Gary Trent, TEP
Bobby Chavez, TEP
Nazar Dhahir, TEP
Vincent Thor, APS
Estit Ramirez, APS
Lisa Szot, Tessera Solar
Suzanne James-King, 3M
David Bryan, SSVEC

Agenda Items:

1) Welcome and Introductions

Gary welcomed everyone to the conference call and the GoTo meeting webinar.

2) Review Agenda

Gary reviewed the agenda for today's call. No additions were made to the agenda.

3) Review/Approve 8/6/09 Meeting Notes

Bruce reviewed a few minor edits to the meeting notes that he received from Jim Tang. The second sentence of the first full paragraph on page 2 should read: "Bruce will **finalize** the notes and send them out to the group. . ."

The last sentence under item b of Agenda Item #4 Review Action Items from 6/4/09 Meeting should read: "John asked if a trip of Bowie would help this situation and was told that it probably would not help, and might cause higher overloads **on** the Apache to Bicknell system."

On page 5, under the sub-bullet of the first bullet of item a under Agenda Item #9 Study Update reads "ACSR → AC??". Jim had suggested changing "AC??" to "ACSS." However, Bruce mentioned that SWTC is still analyzing various types of high-ampacity conductors to use on its system and therefore the entry will stand as is.

4) Review Action Items from 6/4/09 Meeting

There were six action items from the 8/6/09 meeting:

- a. *Evaluation of the loss of the double 345 kV lines in 2012-2013 time frame.* This will be covered later in today's meeting.
- b. *Gary to discuss with CATS-EHV Chair coordination of SunZia Study Work with other SWAT sub-groups.* This will need to be explored further, as Gary has not had a chance to visit with the CATS-EHV Chair.
- c. *Develop an overview map of the SATS area for SWAT Committee Meeting, based on current study work.* This is still a work in progress but it won't be carried over as an action item from this meeting.
- d. *Gary to discuss coordination of SWAT sub-group resource study efforts, including Renewables, at the next SWAT Steering Committee Meeting.* This will be covered later in today's meeting.
- e. *Brainstorm ideas for the 2010 Study Plan and provide to Gary.* This will be covered later in today's meeting.
- f. *Begin development of a draft SATS Study Report for discussion at next SATS Meeting.* Gary has started on a draft SATS Study Report, which will be covered later in today's meeting.

5) SATS 2009 Study Plan Review

Most of the items in the Study Plan are complete. The following lists the progress made to date:

- Present plan & subsequent findings to SWAT, WestConnect and to local stakeholders
 - December 5, 2008 SATS Conference Call
 - January 13, 2009 SWAT Meeting
 - Study Plan Complete
- Revise load forecasts
 - SATS area load forecasts provided in February and March 2009
 - Complete
- Engage SATS in early case building to ensure accuracy of database for 2009 ten year planning cases:
 - Focus on Arizona for ten year planning to include cases for years 1 through 5 plus year ten;
 - Preparations for ACC ten year plans, RMR, BTA and compliance studies;
 - Provide support and documentation to other regulatory agencies such as FERC and Rural Utilities Service (RUS);
 - Complete
- Investigate implications of increased FMI loads in SATS study footprint:
 - Seek input from, and participation by FMI, to address their anticipated plan expansion.
 - FMI has nothing to discuss due to the economic downturn.
 - TEP received an updated forecast from FMI in June.
 - Complete

- Investigate alternative configurations to mitigate high flows on the Winchester 345/230 kV transformer, Apache – Bicknell 230 kV line and 230/345 kV Bicknell transformer caused by EHV system contingencies;
 - Ongoing
- Develop and evaluate alternatives to the two joint Tortolita – North Loop 345 kV proposal based on the SPPR Three Terminal proposal;
 - Deferred at the last meeting
- Investigate impact of SunZia in coordination with CATS EHV, NM, SWAT RTTF and other entities;
 - Removed at the last meeting
- Develop and evaluate alternatives for joint SWTC/TEP substation(s) to supply TEP/Trico loads south of Tucson;
 - Deferred at the last meeting
- Continue Cochise county planning in an effort to comply with ACC recommendations;
 - Agenda Item #7
- May conduct studies to accommodate renewable projects;
 - Removed at the last meeting. This analysis is being done in the SWAT RTTF Committee.
- Complete capital cost estimates and economic analysis, including losses;
 - Ongoing
- Identify potential projects;
 - Ongoing
- Conduct Scenario Sensitivity analysis, such as Load Forecast, Efficiency, Local Renewable Resources, Local & Distributed Generation, and location of external resources
 - Removed at the last meeting

In reference to the action item from the last meeting regarding a discussion at the SWAT Steering Committee on coordination of resources study work, Steering Committee participants felt that SATS should decide on its own which resources should be used in its study work.

6) Western RFI/SOI Update

Josh stated that there has been some movement on this item since the last SATS Meeting. The TIP or Transmission Infrastructure Program that Western is involved in is participating in a high level feasibility study plan for numerous projects. These projects were presented at the last SWAT Meeting. There are multiple elements being looked at and Josh will provide a map to Bruce to send to the group of these elements:

- Element A is a 500 kV line from Palo Verde to North Gila.
- Element B is a 500 kV line from Palo Verde to Blythe.
- Element C is an upgrade of Western’s River System that will run north and south of Parker and will include a 500 kV line from North Gila to Parker and north of Parker.
- Element D is a 500 kV line from North Gila to Devers.

There are 8 utilities participating in this high level study and a Study Plan is being developed.

Josh was asked to identify the 8 utilities and said that he will provide this information to Bruce for distribution to the group.

Gary asked about cost estimates for the various elements. Josh replied that in general, the proposed 500/230 kV line upgrade along Western's River System is approximately \$1.5 Billion. Element A is approximately \$180 Million and Element B is approximately \$200 Million. There are no estimates yet of the 500 kV line from North Gila to the West.

Josh also explained that the TIP is a revolving borrowing authority. In other words, the monies that are disbursed for use by Western are available to be drawn upon again, once the initial monies have been paid back.

7) Cochise County Study Update

David provided a short update on this item on behalf of the CCSG group. A meeting was held recently to discuss how to finish up the Study Report upon the loss of Ken Bagley. The group decided to hire PDS Consulting to write the Final Report and all paying entities have agreed to the terms set by PDS Consulting. The schedule for completion of the Final Report is December 18th. The next CCSG meeting will be held on November 9th to discuss the Final Report.

Once the Final Report is completed, SWTC has agreed to docket it with the ACC with its 10 year plan filing and the other utilities will reference the Report in their 10 year plan filings.

8) SunZia Update

John reported that a WECC Path Rating Process was initiated for the SunZia Southwest Transmission Project and Phase 1 was completed in July of 2008. The Comprehensive Progress Report ("CPR") was completed in April of this year and a letter from WECC approving the CPR was issued in July.

A Peer Review Group was been set-up for Phase II of the Path Rating Process in August to review the on-going studies and this process is expected to be completed by June of 2010.

With regards to the EIS effort, several scoping meetings were held in June and July and the BLM granted an extension to the comment period. Additional scoping meetings are also planned to be held:

October 26th in Las Cruces, NM
October 27th in Alamogordo, NM and
October 28th in Chaparral, NM.

Phase 1 of the Project, which is the financing, environmental, and permitting work, is expected to be completed in 2011. Phase 2, which is the engineering, design, and construction work, is expected to start in 2010 and be completed in 2013. Phase 3, which is final completion of the project, is expected to occur in late 2013 or early 2014.

There will be 2-500 kV lines extending from SunZia East to SunZia South, which is close to Luna, NM. This portion of the line will be series compensated at 70%.

Two 500 kV lines will then extend from Luna to Willow and will be series compensated at 50%.

The last portion of the project will be two 500 kV lines from Willow to Pinal Central which will be series compensated at up to 50%. There will be one transformation at SunZia South and one transformation at Willow. A 500 kV line from Willow to Tortolita is being looked at.

There is a SunZia BLM website available for project information and Gary will provide that to Bruce to distribute to the group.

9) Study Update

- a. SWTC Study Results. Nothing to report at this time
- b. TEP Study Results. Gary discussed the study efforts to date on the loss of the double 345 kV outage of Winchester to Vail and Springerville to Vail . The issue of this double outage, which is action item #1 from the last meeting, is the overload of the SWTC Apache to Bicknell 230 kV line in the 2012-2014 time frame. TEP looked at what could be done to bridge the gap before the Apache to Bicknell 230 kV line is upgraded. Three options were studied:

- 1) Do nothing – continue to load shed
- 2) Trip the Bicknell 345/230 kV Transformer
- 3) Trip the Winchester 345/230 kV Transformer

In the 2012-2013 time frame, all segments of the Apache to Bicknell 230 kV line were rated at 840A/924A. In 2014, the segment from Apache to Butterfield was rated at 1137A/1800A. The results are as follows:

WN-VL/SP-VL Results

Year	Do Nothing	Trip Bicknell	Trip Winchester
2012	DNS*	200	DNS*
2013	DNS*	120	DNS*
2014	DNS*	140	260

*DNS – Case quit solving while trying to relieve thermal OL on SWTC Apache-Bicknell 230 kV line

Even with the upgrade of the Apache to Butterfield line in 2014, tripping the Bicknell Transformer is the only viable option. It will still be necessary to shed 200 MW of load in 2012 and 120 MW of load in 2013. The decrease in the amount of load shed in 2013 is due to the installation of the Pinal Central to Tortolita 500 kV Line. And in 2014, further elements from Butterfield to Bicknell cannot be unloaded and it will be necessary to shed

140 MW of load with a trip of the Bicknell Transformer. A Trip of the Winchester Transformer will require a load shed of 260 MW.

Gary briefly reported on some initial studies that TEP has done on the Western SOI project that was jointly submitted by SWTC and TEP to upgrade the Western Saguro to Apache 115 kV line to a double-circuit 230 kV line. This initial results show some potential to defer some SWTC projects. More discussions will need to take place between SWTC and TEP on this.

10) Report

Gary has been working on a draft SATS Report and showed the progress he has made to date.

- 1) Executive Summary.
- 2) List of Participants. He stated that if there are entities on the call who have not been listed as participants in the Report to contact him and he will add them.
- 3) Study Scope. There are 13 parameters and an explanation of these parameters in the text that have either been deferred or removed is noted.
- 4) Load Forecast. TEP and other entities are showing a significant drop in their load forecasts over last year.
- 5) Power Flow Base Case Development
- 6) FMI Load Impacts. This will only have brief mention – due to the economic downturn, there is nothing of significance to discuss.
- 7) Study Results. These are broken down by year: 2010-2014 and 2014-2019. Josh noted that the results show an overload of the Adams Tap to Apache 115 kV line. He reminded Gary that he had sent an email on August 17th noting that the limiting element is not the disconnect switch which was assumed to have a rating of 600A. A field check has revealed that the switch actually carries a rating of 1200A and therefore the limiting element is now the conductor which is rated at 171/217 MVA. Gary had not received this e-mail, and Bruce will send it to the group. This correction will be made in the Report.
- 8) Conclusions.

Once Gary has finished the TEP edits to the Report, he will send it to SWTC for their edits and then it will be sent to the group for review.

Gary also noted that the Cochise County Study Group Report will not be included in the SATS Report, but that a reference will be made to it.

11) 2010 Study Plan

- 1) Present Plan and subsequent findings to SWAT, WestConnect, and local stakeholders;
- 2) Revise load forecasts;
- 3) Engage SATS in early case building to ensure accuracy of database for 2010 ten-year planning cases;

- 4) Investigate alternate configurations to mitigate high flows on the Winchester 345/230 kV transformer, Apache – Bicknell 230 kV line, and Bicknell 345/230 kV transformer caused by EHV system contingencies;
- 5) Develop and evaluate alternatives to the two joint Tortolita – North Loop 345 kV proposals based on the SPPR Three Terminal proposal;
- 6) Develop and evaluate alternatives for joint SWTC/TEP substation(s) to supply TEP/Trico loads south of Tucson;
- 7) Complete capital cost estimates and economic analysis, including losses;
- 8) Identify potential projects in the SATS footprint.

Items 1-3 are standard actions that need to take place each year; while items 4-8 are carry over items from the 2009 Study Plan. Gary asked for suggestions of additional items and encouraged the group to send these to him as soon as possible.

This will be an open agenda item for the next few meetings.

12) Added Agenda Items

- None

13) Review of Action Items

Bruce reviewed the action items from the meeting:

- Josh to provide a study map of the areas proposed in the Western TIP and a list of the 8 utilities that are involved in the study effort to Bruce who will forward them to the group
- Gary will provide Bruce with a url of the BLM SunZia Southwest Transmission Project who will forward it to the group
- Bruce will forward Josh's e-mail on the limiting elements of the Apache – Adams 115 kV line to the group
- Brainstorm ideas for the 2010 Study Plan and provide to Gary
- Gary to send 1st draft of the SATS Report to SWTC for their additions and then forward to the group for comments

14) Next Meeting Agenda

The agenda for the next meeting will be somewhat similar to today's agenda:

- Review/Approve Meeting Notes
- Study Update/Report
 - SWTC
 - TEP
- Cochise County Update
- Western RFI/SOI Update
- SunZia Update
- SWAT Meeting Summary

15) Next Steps/Meeting(s)

The next two meeting dates will be:

- November 12th – tentatively at TEP's offices
- January 21st – tentatively at TEP's offices. It is expected that the SATS Report will receive final approval at this meeting so that it can be presented at the SWAT Meeting in February.