

Requesting SWAT Base Cases and Study Work

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SWAT Meeting
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Requesting Base Cases

Requesting SWAT Base Cases

- ▶ At this time all requests for SWAT power flow cases will result in a referral to WECC.
 - All SWAT cases were originally WECC cases
 - While called “SWAT” cases, the cases currently available are developed by “CATS”, which covers Arizona.
- ▶ Requester will receive the seed case information (i.e. 15hs1sa1.sav) and be directed to WECC to obtain the case.
 - Existing SWAT cases have been modified to meet a particular need for study work and have not been vetted by all SWAT member utilities and developers

Requesting Study Work

Requesting Study work

- ▶ Currently there is no formal SWAT process or timeframe*
 - *Each utilities' OATT (Attachment K) outlines when requests should be made
- ▶ Determine what is to be studied and why it should be studied by SWAT or a SWAT subcommittee
- ▶ Submit requests to the SWAT Chairman

What should a study request include?

- ▶ Per the SWAT Charter:
 - Purpose and need
 - Objectives
 - Assumptions
 - Development of base case and other data
 - Methodology
 - Schedule
 - Assignment/allocation of study work

Purpose / Need

- ▶ Purpose of the study
 - What “problem” or “opportunity” is the study attempting address
 - What transmission is needed to meet 2030 Arizona load growth?
 - What transmission is needed to move xxx MW of renewable resources from SWAT to California (or the NW or Texas)
 - Why the utility/SWAT subcommittee/SWAT should be interested in participating in the study

Objectives

What is the Objective of the study?

- a. Reliability assessment?
- b. Impact assessment?
- c. Cost comparison?
- d. recommendations? To whom?

Assumptions

What conditions should be studied

- Year ? (all types of studies)
 - If that year isn't available, an alternate year
- What season should be studied?(reliability studies)
 - Summer (peak loads),
 - Spring, fall,(shoulder=usually low to moderate loads and low generation, fall and spring are typical maintenance times)
 - Winter (peak or low load, depending on the utility)
- What generation (or types)? (reliability studies)
 - If adding generation, what and where other generation should be turned down?
 - If removing generation, what and where is the replacement?

Development of base case and other data

What should be monitored?

- a. Particular busses? Entire footprint? Only 230kV elements? Only Arizona, New Mexico??
- b. Particular lines, transformers, generation?

What, if any, outages should be run?

- a. Typical outages for screening: N-0, N-1?,
- b. More in-depth studies usually include N-2? N-x

What dynamics or economic data is needed?

Methodology

Is this a Reliability, Economic or Policy study request?

- ▶ **Reliability**
 - **Power Flow – Reliability**
 - Steady state (either pre-disturbance or 30–60 minutes following a disturbance)
 - Results: line and transformer flows, voltage, voltage deviation, overloads.
 - **Transient Stability – Reliability**
 - 0–30 seconds
 - Results: How loads/generators respond to system disturbances, rotor angles, voltage and frequency response.
 - Typically graphic results (plots showing busses of interest voltage, frequency, rotor angle response)

Methodology, continued

- **Post Transient – Reliability**
 - 30 seconds to 3 minute timeframe
 - Results: indication of voltage collapse
 - Typically tabular results (xxx% voltage drop seen at ABC bus)
- ▶ **Economic (could be simple or complex)**
 - Not reliability based
 - Also known as “production cost modeling”
 - Results: the economic cost of running the transmission system
 - One baseline case, then test differing generation/transmission dispatch
- ▶ **Policy**
 - Example, differing energy efficiency impacts

Schedule

- ▶ Include a schedule for the completion of the study

Assignment/allocation of study work

Funding statement

- How will the study work be completed/financed?
 - Use consultant (at requestor's or jointly funded expense)
 - Would like the utilities (or SWAT subcommittee/SWAT membership) to fund
 - Requestor performed with SWAT/utility/subcommittee participation
 - Who else is interested / general interest of the group
- SWAT is a voluntary organization. There are no membership dues, consultants on retainer, or budget to perform study work outside of normal utility practice or statutory requirement. If study work is requested, it may be up to the requestor to fund the activity.

SWAT Study Request Window/Evaluation

Study Request Window?

- ▶ Should SWAT start with a study request window?
 - Yes – organizes requests (assuming there are multiple)
 - Yes – will help SWAT/Subcommittees/membership develop study plans for upcoming years
 - Yes – will help with WestConnect documentation
 - Yes – eliminates potential issue with a later request that really interests SWAT membership, but resources have already been committed to another study effort.
 - No – may limit timely requests, or any study work
- ▶ When and how long should the request window be? One *suggestion*:
 - August – September 15 request window
 - October – review/evaluation
 - November – draft/revise scope
 - February – SWAT Oversight approves study scope
 - March – ? Studies commence

Study Request evaluation

- ▶ How will study requests be evaluated?
 - SWAT Steering Committee (the Subcommittee Chairmen) will evaluate the request(s).
 - Steering Committee will assess and coordinate resources.
 - Steering Committee will determine if the study is foot-print wide or should be managed by a subcommittee.
 - Oversight Committee approves the plan

Miscellaneous

Miscellaneous thoughts

- ▶ SWAT is a planning environment. Requests for study work should be in the planning realm. Recognizing transmission can take 5–7 years to build, requesting a 2013 study with newly proposed transmission isn't a useful study.
- ▶ SWAT does not address contractual constraints, financing mechanisms, nor makes assessments on which transmission projects (if there are competing projects) should get built.

Miscellaneous thoughts, continued

- ▶ Smaller study requests are generally more “do-able” than large requests.
 - For example, request one or two years to be studied for a particular generation dispatch.
 - Think scalpel/targeted approach
 - Requests for multiple cases studied under multiple resource scenarios will take lots of time and effort and may not be successful.
 - Think shotgun approach
- ▶ Remember if transient, post transient, or economic studies are requested there is **SIGNIFICANTLY** more data required
 - More data = more time