Interconnection and Transmission Service Request Criteria

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Interconnection Impact Study Methodology and Criteria

Loadflow – Local Interconnection Area Study

- Modeling
  - Latest VACAR-Southern-TVA case with detailed TVA system added
  - Merchant plants dispatched off-system. TVA resources dispatched to serve TVA load
- Goals
  - Identify overloaded facilities for all ties closed, single contingencies and certain double contingencies
  - Identify impact on reactive power resources
- Criteria
  - Loading increase > 3% and
  - Loading > 100%

Interconnection Impact Study Methodology and Criteria

Fault Analysis – Local Interconnection Study

- Modeling
  - Latest internal TVA fault case
  - All generation on
- Goal
  - Identify overstressed breakers
- Criteria
  - Symmetrical fault current increase >5% and
  - Fault current >95% of breaker interrupting capability

Interconnection Impact Study Methodology and Criteria

Stability – System Wide Study

- Modeling
  - Latest dynamically reduced external case with detailed TVA system
  - Merchant plants dispatched off-system, TVA resources dispatched to serve TVA load
- Goal
  - Identify local and cascading stability problems
- Criteria
  - No new stability problems and
  - No negative impact on existing stability problems

Transmission Service System Impact Study Criteria

General Guidelines

Transmission Service System Impact Study (TSIS) criteria must allow TVA to continue to maintain a safe and reliable transmission system

Transmission Service System Impact Study Criteria

- Request criteria
  - All requests must be placed on TVA's OASIS with all necessary information that a TSIS requires
  - Each request will be treated separate using the associated priority of each
  - A request must have only one valid source and one valid sink
  - If the source is a single plant, then the maximum of all TSRs is the maximum output of the plant. If requests total more than plant output then the requester must choose prior requests to eliminate from the study

Transmission Service System Impact Study Criteria

- Modeling Criteria
  - The modeling of the TVA transmission system will be the most recent version of the internal TVA model. External models will come from VST or NERC load flow cases
  - All prior requests have priority to use TVA's available transmission capacity, but counter flowing priors will not be modeled
  - One or more of the four seasonal models will be used, including off peak cases
  - Planned line outages will be used when the request falls within the 13 month outage schedule
  - Reasonable area generation sensitivities will be modeled for generation included in the TVA control area.

Transmission Service System Impact Study Criteria

Thermal overload criteria

- Network and point to point service

  The transmission service requester is responsible for costs if the requested service causes or worsens an overload on TVA's transmission system

  – First contingency facility loading >100%

  – Transfer distribution factor > 3% or 3% increase in line loading using ampacity rating

- Renewal Service from Existing Capacity

  If requested service causes or worsens an overload on TVA's transmission system, renewal would be contingent on mitigation of these overloads .

  – First contingency facility loading >100%

  – Transfer distribution factor > 3% or 3% increase in line loading using ampacity rating

Transmission Service System Impact Study Criteria

Reliability Margin Criteria

A predetermined amount of Total Transfer Capacity (TTC) is reserved on specific interfaces to ensure reliable service to TVA's firm transmission customers. The reliability margins include Capacity Benefit Margin (CBM) and Transmission Reliability Margin (TRM). These reliability margins are not compromised when granting transmission service.

Transmission Service System Impact Study Criteria

Voltage Criteria

The transmission service requester is responsible for costs if the requested transfer causes or worsens voltage problems on TVA's transmission system.

- Post transfer voltage < 95% - 161 kV line or
- Post transfer voltage <98% - 500 kV line

and

- Change in voltage >1%

or

- Causes or effects transient voltage recovery problem. The voltage recovery criterion is defined as: after a normally cleared 3-phase fault is cleared on the critical bus, the voltage on that bus must recover to 90% of nominal in 30 cycles (1/2 second)

Transmission Service System Impact Study Criteria

- Stability Criteria

  Network upgrades are required if stability analysis determines stability problems caused by requested transfer.

- Nuclear Criteria
  - All transmission related nuclear guidelines and regulations applicable to nuclear plants (e.g. off-site power) must still be met post transfer.

Transmission Service System Impact Study Criteria

Off System Impacts

- Request on TVA's OASIS
  - If impacts are identified on systems outside TVA, service is held contingent until that system has had an opportunity to identify problems
  - All network upgrades identified by the neighboring system must be completed in order for service to be granted
- Request on neighboring system OASIS
  - If TVA is notified of impacts on TVA's system by a neighboring utility, TVA will conduct an off system transmission system impact study (TSIS)
  - If the transmission service request has a sink of TVA then TVA will not conduct an off system TSIS, but will study the request when a TSR is placed on TVA OASIS

Criteria on OASIS

These criteria may be accessed on the Internet at the following web address:

http://www.oatioasis.com/tva/tva_bp.htm