

# Transmission Service System Impact Study Criteria

Tennessee Valley Authority (TVA)

## I. General Guidelines

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

## II. Request Criteria

1. All requests must be placed on TVA's OASIS with all necessary information that a TSIS requires.
2. Each request will be treated separate using the associated priority of each.
3. A request must have only *one* source and *one* sink.
4. A specific plant may only be used as the source plant to confirm up to the maximum output of the source plant. At the point the requested amount being studied exceeds the source plant's output, each subsequent study must be contingent on a prior non-confirmed study(s) of the same amount from that source plant not being confirmed. The requester may choose the prior study(s).

## III. Modeling Criteria

1. The modeling of the transmission system will use TVA's most recent version of internal load flow cases, VST load flow cases, and/or NERC Multiregional Modeling Working Group (MMWG) load flow cases.
2. All prior requests have priority over TVA's available transmission capacity, but counter flowing priors will not be modeled.
3. One or more of the four seasonal cases will be used including off peak cases.
4. Planned line outages will be modeled under the following conditions:
  - i. The request falls within the 13 month outage schedule.
  - ii. Outages required to interconnect a specific plant fall within the study duration.

If the study duration falls within the 13-month outage schedule, then all outages occurring for 5 days or more during a specific season will be modeled. Outages that occur for less than 5 days during that month, but will significantly impact the study transfer, may also be modeled.

5. Reasonable area generation sensitivities may be taken into account for studies involving source plants within the TVA region.

## IV. Thermal Overload Criteria

### 1. Network Service Request

- i. The transmission service requester is responsible for costs if the requested network service causes or worsens an overload on TVA's transmission system. The following criteria will be used to determine causation:

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1. Facility loading > 100% with worst contingency(s)  
-&-
  2. Transfer Distribution Factor (TDF) > 3% or 3% increase in line loading using ampacity ratings
2. *Point-to-Point Service*
- i. The transmission service requester is responsible for costs if the requested point-to-point transfer causes or worsens an overload on TVA's transmission system. The following criteria will be used to determine causation:
    1. Facility loading > 100% with worst contingency(s)  
-&-
    2. Transfer Distribution Factor (TDF) > 3% or 3% increase in line loading using ampacity ratings
3. *Renewal Service (Rollovers)*
- i. The transmission service requester will be denied renewal service if the requested point-to-point transfer causes or worsens an overload on TVA's transmission system. The following criteria will be used to determine causation:
    1. Facility loading > 100% with worst contingency(s)  
-&-
    2. Transfer Distribution Factor (TDF) > 3% or 3% increase in line loading using ampacity ratings

## V. Reliability Margin Criteria

A predetermined amount of Total Transfer Capacity (TTC) is reserved on specific interfaces to insure reliable service to TVA's firm transmission customers. The reliability margins include Capacity Benefit Margin (CBM) and Transmission Reliability Margin (TRM). If a requested transfer would use transmission capacity already committed, including that required for TVA native load import reservations, or diminish the reliability margins, then network upgrades will be required.

## VI. Voltage Criteria

The transmission service requester is responsible for costs if the requested transfer causes or worsens voltage problems on TVA's transmission system. The following criteria will be used to determine causation:

Either

1. A. Post-transfer voltage < 95% - 161 kV line or  
Post transfer voltage < 98% - 500 kV line  
-&-  
B. Change in voltage > 1%

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Or

2. 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 90% of nominal in 30 cycles.

## VII. Stability Criteria

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

## VIII. Nuclear Criteria

All nuclear guidelines and regulations applying to TVA's nuclear plants (e.g. off-site power) must still be met post transfer or network upgrades will be required.

## IX. Off-System Impacts

1. Off-System Impacts Outside TVA (transmission service request on TVA's OASIS)
  - i. If impacts are identified on a third-party system, service will be held contingent until that system has been given the opportunity to identify problems caused by the requested transfer.
  - ii. All network upgrades identified by the third-party system's study must be completed in order for service to be granted.
2. Off-System Impacts On TVA (transmission service request on neighboring system's OASIS)
  - i. 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).
  - ii. If TVA is notified of impacts occurring in TVA's control area due to a transmission service request on a neighboring system's OASIS in which the request has a sink of TVA, then TVA will not conduct an off-system TSIS and instead opt to study the impacts when the request is placed in TVA's OASIS.