



**Southwest Power Pool  
MODEL IMPROVEMENT TASK FORCE  
June 7, 2010  
Teleconference  
1:30 P.M. – 3:00 P.M.**

**• A G E N D A •**

- 1. Administrative ..... Don Taylor
  - a. Review agenda
  
- 2. Modeling Small Generation for Transmission Service (TWG Action Item) ..... All
  
- 3. MITF Strawman/Whitepaper..... All
  
- 4. Other ..... All
  
- 5. Closing Administrative Duties..... Don Taylor
  - a. Adjourn meeting



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**• M I N U T E S •**

**Agenda Item 1 - Administrative Items**

The meeting was called to order at 1:30 p.m. The following Model Improvement Task Force (MITF) members were in attendance:

Don Taylor – Westar Energy (WERE)  
Mike Clifton – Oklahoma Gas & Electric (OGE)  
John Fulton – Southwestern Public Service (SPS)  
Reené Miranda – Southwestern Public Service (SPS)  
Dustin Betz – Nebraska Public Power District (NPPD)

SPP Staff in attendance included Kelsey Allen (Secretary) and Chris Jamieson.

The following guests were also in attendance:

John Chamberlain – City Utilities of Springfield (CUS)  
Nathan McNeil – Midwest Energy (MIDW)  
Mitch Williams – Western Farmers Electric Cooperative (WFEC)  
Al Tamimi – Sunflower Electric Power Corporation (SEPC)  
Jim McAvoy – Oklahoma Municipal Power Authority (OMPA)

The agenda (**Attachment 1 – MITF Agenda 2010607**) and May 6 meeting minutes stand as written.

**Agenda Item 2 – Modeling Small Generation for Transmission Service:**

Don Taylor provided a short background of this topic brought forth by staff at OMPA. The issue was first presented as a slide presentation to the TWG in August of 2009 and again as a whitepaper in November (**Attachment 2 – Whitepaper on Network Integration Transmission Service**). It has been discussed at multiple meetings since then and was then suggested in the May 2010 TWG meeting that discussion continue with the MITF. The general issue raised is how distributive generation should be modeled and studied, specifically related to Transmission Service Studies.

Staff gave an overview of how this type of generation is currently being modeled and studied. For transmission service studies, staff models municipal generation as granular

as possible with multiple machines at one bus. In the case of many municipals the load is also being modeled at the same bus. SPP's practice when evaluating the system under G-1 contingency is to take out the largest machine at a bus. This is done using PSSMUST because prior to version 30, PSS/E could not redispatch a subsystem in a G-1 situation. Using this method, the outage of a GSU during the PSS/E single line contingency function is considered invalid.

Jim McAvoy explained that SPP's current practice does not fully test for the ability of the system to deliver firm transmission service to a load when multiple machines are modeled at a single bus and the remaining generation under G-1 contingency is used to serve load on the same bus. Jim stressed that this is an issue and could continue to be an issue with respect to distributive generation and the influx of wind and solar energy to come.

In consideration of this issue, Jim had previously talked with Don Taylor about methods of modeling or studying that could achieve the desired result which included modeling generation on the low side of a GSU and considering GSU outages or that SPP consider performing a G-1, N-1 analysis for selling transmission service.

Don Taylor mentioned the recent FERC ruling regarding the ongoing debate between SPP and KPP (Kansas Power Pool) related to transmission service studies and the method of studying of behind the meter generation. In its Order ER09-1397, FERC ruled that SPP was not in violation of the SPP Tariff.

After discussion, the group agreed that the issue of modeling small generation for transmission service is not simply a modeling issue but involves discussion of the study process which is outside the scope of this task force. The larger issue of concern for the MITF simply deals with the correct modeling of distributive generation which has been touched on under other topics of the strawman. Nathan McNeil questioned the need to explicitly model all generation, suggesting a MW cutoff for smaller generation. John Fulton and Don Taylor both responded by saying that any generation registered in the market should be represented in the planning models.

Kelsey Allen took on an action item to find the correct outlet for further discussion on modeling small generation for transmission service.

### **Agenda Item 3 – MITF Strawman/Whitepaper:**

With the remaining time, the group began rehashing issues related to the strawman document. Kelsey Allen asked the group for more comments on item 1.b., covering generation shortfall, and its relation to item 4.d., covering the modeling of new generation and transmission projects. The TWG is currently discussing the staff proposed "Rules and exceptions for generation deficiencies". The group agreed that this discussion at the TWG level may be sufficient for covering these two items as related to generation.

### **Agenda Item 4 – Other:**



No other topics were discussed.

**Agenda Item 5 - Closing Administrative Duties:**

*Adjourn Meeting*

The MITF meeting was adjourned at 3:10 p.m.

Respectfully submitted,  
Kelsey Allen  
MITF Secretary

# Whitepaper on Network Integration Transmission Service

## Section III of the SPP OATT

The Preamble of Section III of the SPP OATT states “Network Integration Transmission Service allows the Network Customer to integrate, economically dispatch and regulate its current and planned Network Resources to serve its Network Load in a manner comparable to that in which the Transmission Owners utilize the Transmission System to serve their Native Load Customers”. Section 28.3 of the same Tariff states “The Transmission Provider will provide firm transmission service over the Transmission System to the Network Customer for the delivery of capacity and energy from its designated Network Resources to service its Network Loads.....”. It is this latter condition that this paper is designed to address.

A literal translation of this statement assumes the TP will study each DNR’s ability to move its capacity to every customer load bus based upon the economic dispatch of the customer’s resources. It also assumes the TP will study the absence of the DNR and the ability of the remaining DNR’s to serve the customer loads. This works well for central station generation that is not normally connected to a load bus. However, whenever a load bus is also a generation bus, the load is lost in the netting effect of the generation and the load at that bus. In the typical N-1 analyses, each topological element is removed as the contingency and the impact of that removal is determined. For the bus that has both load and generation, the “line” element is removed to determine if the remaining “line” element has the deliverability to the “bus” being the net of the load and the generation. If the generation is removed, be it a single unit or the largest of the units, the deliverability to that bus is based upon the net of load and generation and the transmission system being intact, e.g. loss of the generation is the N-1 condition.

Let’s look at the results of this type of analyses. With typical generation conditions, periods exist under economic dispatch that in the off-peak period that local generation is not running and the load is being served from remote resources available to the customer. Firm service from these other resources is part of the determination of deliverability of the transmission system to serve the customer load. We all acknowledge that to perform an hourly transmission study to assure deliverability at all hours of the period is a monumental task that we do not wish to pursue. However, if we limit the firm service to only the peak period, or any other specific period, then the providing of firm service during the “other periods” is not being provided as required. Yes, we do model and study other periods under N-1 conditions, however, to limit the available firm service to only one snapshot of time, does not meet the requirement of the Tariff as written.

An illustration of this condition can readily be made using a recent NITS study result and the resultant service offered to the customer. Without mentioning names or specifics other than as illustrations, we have a condition whereby there is significant distributed generation being utilized by the customer to serve a diverse number of delivery points, some with and some without generation at the delivery point.

Due to the characteristic of the customer's resources, beyond its base load requirements, all of the remaining load is being served by the available distributed generation across the service territory. Utilizing the economic dispatch of this distributed generation portfolio, the study was performed and the results identified "no import" capabilities to particular load busses that had economic local generation tied to the load bus serving the "total load" of the group. The results show effectively no load or very little load on the load busses with generation due to the local generation "being dispatched" under the specific load period being studied. So, as a result, no or very limited firm transmission service was being offered to the load served from that bus. However, it has been recognized that under lesser load periods and utilizing the economic dispatch of the available resources provided as DNR's, the local generation is not dispatched but being served from more economic DNR resources available to the customer.

All understand that there are times that identified conditions exist that prevent specific generation from being available to serve load – reason for reserves. One of the benefits of distributed generation is the diversity of availability and the overall lesser impact on the delivery system due to that diversity. It seems logical that at a minimum, to test the deliverability of the transmission system, the local generation should be zeroed out to determine whether the local transmission facilities can indeed serve the load from other available DNR's as cited in the Tariff. If, absent the local generation, there are sufficient identified DNR's to serve the load then that condition should be tested. The current N-1 process produces an unintended consequence as it does not allow for this study process since in effect it produces an N-1-1 situation.

Let's look at another unintended consequence of the current N-1 study process. A customer currently receiving firm transmission under the N-1 process, e.g. taking a single topological element out of service and determining whether a reliability violation occurs in serving the customer load, has a independent generator apply for attachment to the customers load bus. The generator is sized such that it is greater than the load being served, but also is only available at certain times due to its characteristic – say wind. Knowing that wind is generally not available during the peak hours of the day, the characteristic of that load bus is negative during the night (delivering energy into the system) and positive during the peak hours drawing power from the system. A simple observation might be "that's OK" since it is not occurring during the peak use of the transmission system as a whole and there is sufficient "deliverability" during the off-peak periods to move that energy to other parts of the system and the load is being served during the more critical on-peak periods – load protected – provided that specific condition was studied. But what if the proposed generation is thermal in nature and available on-peak such that the load is "lost" in the netting with the proposed generation? How is the customer's service protected in the event that generation is not available? No firm transmission is available to move other resources to that load due to the netting of the load and generation during the peak period and that generation has become subject to curtailment leaving no transmission available to serve the load. Again, NITS service states that firm transmission will be made available to serve the load from the customers available DNR's and such service may or may not be available from the customers local DNR or the local independent generator.

As a point of information, it appears that the testing of the local system for deliverability to serve the local load, this exact practice is performed to assure the local facilities can provide the needed service in the event the local generation is not available. This test is more direct since most of these local system conditions are radial in nature and loss of the generation places the total impact of the load upon the local delivery system whereas not so for the network system as this condition is not being studied.

Lastly, let's look at the application of such limits placed upon the service being offered. Since the import limitations, determined from the peak period analyses, are cited in the service being offered, one sees no firm transmission service is available – zero import capabilities. Literally this means “no service” even when the local load goes down and economic dispatch of the available resources may switch from the local generation to more remote generation. As a result, the TO requires the customer to run its local generation since no transmission is available under the service agreement. Not right and contrary to the NITS. This possibility also allows for non-competitive actions to be indiscriminately administered - not that that would really happen in today's world.

Conclusion – it is believed we should look again at our processes to be sure the service being administered is non-discriminatory, that it meets the test of the Tariff intent, and that firm service to the customer is preserved under the terms and conditions of that Tariff. Therefore, to protect this service in our study process, it appears advisable that as we test the deliverability of the transmission system, we remove local generation from a load bus whenever we are testing the N-1 criteria for deliverability of the transmission system to serve that load. In addition, whenever a limited service is offered, there be an explanation as to the conditions of that limited service and its application under the Tariff. Ought to get what you are paying for – firm transmission service from all your DNR's to your entire load.

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