



NTTG 2012 Economic Study Plan

Great Falls to Malin 500 kV Line

Introduction:

As part of the first quarter of the biennial study process, the Northern Tier Transmission Group (NTTG) planning committee sends out a request for ten-year forecast data from members of the group. This is also the time when any stakeholders can make requests for economic studies. During the 2012-13 planning process, three separate studies were requested – 1) a new 500 kV line from Great Falls, MT to Malin, OR substation; 2) a new 500 kV line from Townsend, MT to Midpoint, ID (MSTI project); and 3) a new 500 kV upgrade from Colstrip to Townsend and on to the Mid-Columbia transmission hub in the Pacific Northwest. The NTTG planning committee evaluated these requests and determined that requests #1 and #2 and the Montana part of #3 could be combined together as one study. The requestors for this study have requested only power flow reliability studies be performed as opposed to actual economic studies. The purpose of this study plan is to outline the study process for: 1) demonstrating what, if any, additional transmission requirements there are to transfer 1500 MW of wind generation from Great Falls to Malin via the MSTI project from Townsend to Midpoint; and 2) determining how much power can be moved from Great Falls to Malin with just the single 500 kV line from Great Falls to the MSTI project from Townsend to Midpoint.

Study Objectives and System Conditions:

The objective of this study is to determine what transmission additions are needed in the next ten years, from a reliability standpoint, when 1500 MW of wind generation is exported to the west from Montana utilizing new 500 kV lines from Great Falls through Townsend, Midpoint and on to Malin. The plan includes the development of at least two base cases with stressed conditions—one with peak coincident summer loads in the NTTG footprint, and the other with peak coincident NTTG export conditions, with heavy flow on transmission paths from Montana to the Northwest (path 8), Montana to Idaho (path 18) and Idaho to the Northwest (path 14).

A second objective is to determine how much power can be delivered from Great Falls to Malin with just a single 500 kV line from Great Falls to the MSTI Project from Townsend to Midpoint.

Study Schedule:

The NTTG study schedule calls for economic study requests to be completed by the end of the second quarter (Q2) of the study process. It is assumed that power flow reliability study requests, such as this one, would be under the same schedule as economic study requests.



Since the 2022 base cases for the NTTG biennial study plan will not be completed until the third quarter of the study cycle, this study request may not be completed by the end of Q2. However, this study request will be given top priority by the Technical Work Group to complete it as soon as possible.

Base Cases:

Five power flow base cases (core cases) for the NTTG study plan will be developed from data extracted from the 2022 TEPPC production cost case. Work on these cases will begin in the second quarter of the study cycle and will be completed during the third quarter (Q3). However, the two core cases to be used for this study request (peak NTTG summer load and peak NTTG export) will be done first in order to expedite this study request.

Study Methodology:

1. Using power flow software, the two core cases extracted from the TEPPC economic study model (described above) will be adjusted and fine-tuned in order to achieve a solution. Next, any new transmission projects reported in the Q1 submittal that are not in the TEPPC case will be added to the case and a series of critical N-1 contingencies will be simulated in order to determine if the reliability criteria is met.
2. After these studies are performed, the proposed transmission project from Great Falls to Townsend will be added to the case. 1500 MW of new wind generation will be added at Great Falls in Montana and 1500 MW of load will be represented at Malin. A power flow solution will then be attempted with this new transfer. If this case solves, then N-1 contingencies will be simulated once again to see if the results meet the reliability criteria.
3. If additional transmission is needed, the MSTI project from Townsend to Midpoint will be added to the case and tested again to see if the case will solve and if the reliability criteria is met for the contingency analysis.
4. If the reliability is not met, two studies will ensue. In one study, the transmission facilities or Step 3 will be maintained and the Great Falls Wind generation reduced until reliability performance is met. The other study will identify what new transmission facilities are required to meet reliability criteria.

Study Criteria:

The study results will be evaluated based on the NERC and WECC performance criteria.



Study Report:

At the conclusion of the studies discussed above, the NTTG Technical Work Group (TWG) will analyze the study performance results and prepare a report of the conclusions, including recommendations on any required transmission additions are needed for the 1500 MW delivery from Great Falls to Malin. The report will also identify how much power can be delivered with just a single 500 kV line from Great Falls to the MSTI Project from Townsend to Midpoint.

This report will then be given to the study requestors for their comments and any recommendations for additional study work. Any additional studies will then be added to the report and submitted to the requestors for their comments. The report will then be revised and a final report provided to the NTTG planning committee and stakeholders for their approval.