

NorthWesternTM Energy

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December 22, 2011

Ms. Kate Whitney
Montana Public Service Commission
1701 Prospect Avenue
P. O. Box 202601
Helena, MT 59620-2601

RE: Docket No. D2011.5.38
Electric Tracker
PSC Set 1 Data Requests (001-035)
Update to PSC-005d

Dear Ms. Whitney:

Enclosed for filing is one copy of NorthWestern Energy's updated response to PSC-005d in PSC Set 1. Copies of the responses are being mailed to the service list in this docket and efiled with the PSC.

Please call Joe Schwartzenberger at 497-3362 if you have any questions.

Sincerely,



Nedra Chase
Administrative Assistant
Regulatory Affairs

Enclosures

cc: Service List

NorthWestern Energy
Docket D2011.5.38
Electric Tracker

Montana Public Service Commission (PSC)
Set 1 (001-035)

Data Requests received August 24, 2011

PSC-005

Regarding: Forecasting Wind
Witness: Fine

- a. Please describe in detail how NorthWestern Energy forecasts wind, and schedules expected wind generated energy.
- b. If NorthWestern Energy uses a third party product such as 3-Tier, please describe how NorthWestern Energy incorporates the third party product into its forecast.
- c. Please specify any accuracy parameters that NorthWestern Energy expects to attain in forecasting wind.
- d. Please describe how NorthWestern Energy verifies that its accuracy standards are met. In particular, describe any statistical tests that NorthWestern uses to test the accuracy of wind forecasts.
- e. If NorthWestern Energy uses a third party product to forecast wind, please describe any statistical tests that NorthWestern Energy uses to verify that the product is providing useful benefit.

RESPONSE:

- a. NorthWestern has multiple time frames in which it utilizes estimates of wind energy output. Long-term forecasts of wind energy for the purpose of annual, quarterly, and monthly energy planning for the Supply portfolio utilize average historical wind energy production. Day ahead pre-schedule forecasts of hourly wind energy output are prepared using wind energy production forecast information provided by a third party, 3-Tier, for the Judith Gap wind project. These schedules of wind energy production can be made two to three days in advance of the day being scheduled. The 3-Tier forecast is relied upon to establish the hourly pre-schedule wind energy production values.

The data provided by 3-Tier through a secure website is utilized to prepare the real time or hour-ahead schedule. Real time schedulers monitor wind production through both a utility data feed and the 3-Tier secure website. The 3-Tier forecasting service utilizes wind and weather information from multiple sources including the three meteorological towers that NorthWestern installed in conjunction with the Judith Gap wind facility. Every hour the real time schedulers perform an assessment of the wind resource and determine a wind energy value to place in the next hourly schedule. Schedulers exercise

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PSC-005 cont'd

judgment when preparing the wind energy forecast. Depending on the performance of the 3-Tier forecast in prior time periods and current conditions, the scheduler may elect to use a forecast value that is different than the forecast value being supplied by 3-Tier.

- b. See response to Data Request PSC-005(a), above.
- c. The accuracy parameters that NorthWestern expects to attain over time are described in the services agreement with 3-Tier. The 3-Tier services agreement states in part:

“3TIER guarantees that its forecasts will beat two important benchmarks. For the Hour Ahead time frame, 3TIER guarantees that the forecasts delivered to the client for each month will have a lower root mean squared error (RMSE) than a forecast based on persistence. For the Day Ahead time frame, 3TIER guarantees that the forecasts will beat climatology (as expressed by a reduction in integrated day ahead RMSE).”
- d. 3-Tier supplies a graphical and numerical expression of monthly forecast accuracy.
- e. See response to Data Request PSC-005(d), above.

UPDATED RESPONSE (December 22, 2011):

- d. In response to an early December phone call from PSC Staff requesting data that compares the wind forecasts NWE receives from 3-Tier to real-time projections and real-time generation at the time the forecasts were made, the attached CD provides data for each month of 2010 and the first six months of 2011, plus year-to-date summaries for both years.

CERTIFICATE OF SERVICE

I hereby certify that a copy of NorthWestern Energy's Updated Response to PSC-005d from PSC Set 1 (001-035) Data Requests, Docket D2011.5.38 Electric Tracker, has been served by mailing a copy, thereof, by first class mail, postage prepaid and efiled with The Montana Public Service Commission.

Date: December 22, 2011

Nedra Chase

Nedra Chase
Administrative Assistant
Regulatory Affairs

A. Service List D2011.5.38

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