Northwest Power and Conservation Council

January 4, 2006

MEMORANDUM

TO: Power Committee

FROM: Massoud Jourabchi

SUBJECT: Presentation on Requirements of a New Demand Forecasting System

Over the past five plans the Council staff has used the Demand Forecasting System (DFS) that was developed in the 1980s and 1990s. This system served the Council well. It has produced fairly reasonable forecasts of the electricity demands of the region. However, as the regional electricity industry has evolved, so have the requirements for the DFS. The existing system will have to respond to a new set of needs.

The new DFS system has to go beyond forecasting annual electricity demand of the region. It has to forecast, the level and timing of load. It may need to forecast for more business sectors, more areas and for more periods. The new DFS needs be able to forecast electricity demand at regional, state and maybe even utility level. The new DFS is envisioned to be flexible and integrated, so that it can address, transmission and environmental policy and planning issues as they arise.

Based on the above requirements, we have evaluated four alternatives. Our preliminary evaluation of the options indicates that a vendor provided tool would be best meet long-term load forecasting requirements. We have been working with BPA, evaluating one such model (Energy2020). Energy2020 has been used throughout the country by many states and utilities. It can produce electricity energy and load forecasts for a wide range of business sectors. We are currently testing this model.

As part of testing, selection and preparation of the next generation of DFS, we are also re-grouping the Forecasting Advisory group. We hope to update you in the August meeting on the Charter for the group and seek your approval.

851 S.W. Sixth Avenue, Suite 1100
Portland, Oregon 97204-1348
www.nwcouncil.org

Steve Crow
Executive Director

503-222-5161
800-452-5161
Fax: 503-820-2370

q:\tm\council mtgs\july 06\dfs requirements cl.doc

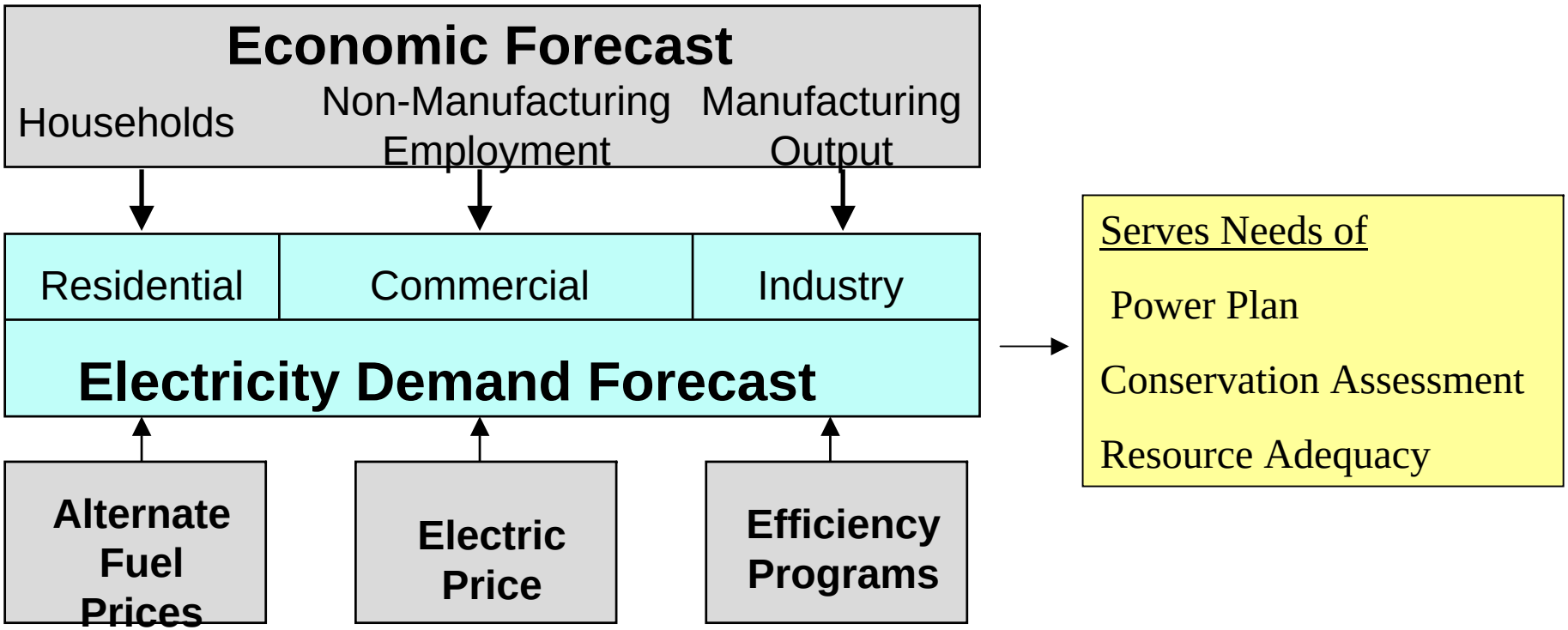
Demand Forecasting System Requirements

Power Planning Committee

Missoula, MT

July 11 , 2006

What is the Demand Forecasting System?



Demand Forecasting Dimensions

- Sectors
- End-uses
- Building types & vintages
- Disaggregated industrial sectors
- Fuels
- Utility ownership
- Hourly load shapes

New DFS Requirements

Long-term purpose, 20-year forecast (per Power Act)

Needs to:

A. Accommodate to greater spatial, temporal and sectoral detail

B. Estimate conservation and Demand Response potential

C. Produce a consistent load forecast for outside of PNW

D. Allow resource and environmental policy testing

1. Short-term Forecast for Resource Adequacy

Needs to:

A. Accommodate hourly load forecast

B. Incorporate impact of temperature variations on load

DFS options evaluated

1. **Long-term model options:**
    1. **Econometrically estimated models**
    2. **Council's existing models**
    3. **Commercially available single sector models**
    4. **Commercially available integrated model**

2. **Short-term model options**
    1. **Model developed in-house**

Evaluation of Options

Criteria	Aggregate Model	Older in-house model	Single Sector Models	Integrated Models
Accommodate greater spatial, and sectoral detail And Suitable for Long-term forecast	No	Yes	Yes	Yes
Accommodate greater Temporal requirement	Yes	Yes Annual/monthly	No Annual	Yes Annual/Monthly & by Period
Estimate Conservation and DR as a Resource	No	Yes	Yes	Yes
Produce WECC wide Forecast	Yes	No	No	Yes
Expandable	Yes	No	No	Yes
Allow policy analysis	Not easily	To some degree	To some degree	Yes. Extensive policy levers.
Models evaluated			REEP and COMMEND	Energy2020

Recommendations

- For long-term forecasting needs
  - Continue evaluation of Energy 2020
  - Re-establish Forecasting Advisory group
- For Short-term forecasting needs
  - Build in-house model