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March 31, 2004

MEMORANDUM

TO: Power Committee

FROM: Terry Morlan

SUBJECT: Draft Section on Fuel Choice

The Council last revisited its policy on fuel choice (alias fuel switching, direct use of natural gas, or fuel conversion) in 2001 at the request of a group of natural gas companies. In response to that request an issue paper was developed that gave a brief history of the Council's considerations of fuel choice issues and laid out a number of policy alternatives for the Council to consider.[1] [http://www.nwcouncil.org/library/2001/2001-17.htm] At that time, the Council's policy was contained in the 1994 issue paper on the direct use of natural gas.[2] The policy statement from the 1994 paper has been excerpted in italics at the end of this memorandum.

As I recall, the Power Committee's decision in July 2001 was to reaffirm the then existing Council policy on direct use of natural gas (see italics below). The natural gas companies had proposed a fuel conversion incentive program as a response to the electricity crisis, but that was judged to take too long to implement to have an appreciable effect on the crisis.

The attached draft power plan section is intended to make it clear that the Council has carefully considered fuel choice issues a number of times, and to make the Council's fuel choice policy explicit in the power plan. It also documents that the Council believes that fuel choice markets are working reasonably well and have recognized the efficiency of the direct use of natural gas to a large extent.

It is not clear to me exactly where in the power plan this language would fit best. It may be desirable to add an explicit statement of the Council's policy, which I have not included in this draft. I look forward to your discussion and recommendations.

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[1] Northwest Power Planning Council. *Direct Use of Natural Gas Policy*. Document 2001-17. July 17, 2001.
[2] Northwest Power Planning Council. *Direct Use of Natural Gas: Analysis and Policy Options*. Publication 94-41. August 11. 1994.

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Council Policy [From Council Publication 94-41, August 11, 1994]

The reduced price outlook for natural gas and the improved technology of gas-fired electricity generation have made gas-fired base-load generation cost-effective. This development raises anew fuel choice and fuel conversions as a policy issue for the Council. Past Council policies regarding fuel conversions and fuel choice were summarized in an earlier section and are described in Appendix A. To briefly recap, the Council has not included fuel conversion actions in its previous plans. The Council has stated that it does not consider fuel conversions to be conservation, but that electricity efficiency programs should be monitored to ensure that they do not affect fuel choice by discouraging the use of natural gas where it is available, energy efficient and cost-effective.

Public comment on the draft of this issue paper supported the need for the Council to increase its consideration of direct use of gas in its power planning. However, there was little support for treating conversions as a resource to be acquired and paid by electric utilities. Based on the issue paper, public comment and consultations with gas industry representatives the Council adopted the following policy statement to guide staff analysis for the 1995 power plan.

Council Policy Statement

The Council recognizes that there are applications in which it is more energy efficient to use natural gas directly than to generate electricity from natural gas and then use the electricity in the end-use application. The Council also recognizes that in many cases the direct use of natural gas can be more economically efficient. These potentially cost-effective reductions in electricity use, while not defined as conservation in the sense the Council uses the term, are nevertheless alternatives to be considered in planning for future electricity requirements.

The changing nature of energy markets, the substantial benefits that can accrue from healthy competition among natural gas, electricity and other fuels and the desire to preserve individual energy source choices --all support the Council taking a market-oriented approach to encouraging efficient fuel decisions in the region.

The following examples illustrate the market-oriented approaches to encouraging cost-effective fuel choices:

(1) Providing information in the power plan on the cost-effectiveness of direct natural gas use along with the resources in the power plan resource portfolio. This will include identification of possible synergy between fish and wildlife flows and the pattern of demand reductions from fuel conversions.

(2) *Encouraging efficient pricing of energy so that consumers can see the true value of alternative choices.*

(3) *Working with electric utilities, public utility commissions and others to ensure that policies on system expansion and new service connections, advertising, electric efficiency incentives, zoning practices, building codes and other policies do not unnecessarily distort consumer decisions about energy choices.*

(4) *Continuing the role of the Natural Gas Advisory Committee as a forum for coordination and discussion of issues that affect both gas and electric industries.*

(5) *Council staff participating in least-cost planning efforts of both gas and electric utilities, possibly encouraging utilities to consider direct use of gas as an alternative in their own least-cost plans.*

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Attachment:
Draft 5th Plan Section on Fuel Choice, or Direct Use of Natural Gas

The appropriate role for the Council in promoting the direct use of natural gas for space and water heating has long been an issue in the region. The Council has analyzed the technical and policy issues in a number of studies.[1] The specific issues have changed somewhat over time and include:

- Should fuel conversions to natural gas be considered conservation of electricity?
- Will incentive payments for electricity efficiency improvements adversely affect natural gas choice?
- What are the potential reductions in electricity use from cost-effective fuel switching available to the region?
- Are fuel choice markets working adequately, or are there impediments that keep consumers from making the most economical choice?
- What are the relative risks of price change for natural gas and electricity?
- How do the environmental effects differ between direct natural gas use and gas use for electricity generation?

The Council policy on fuel choice has consistently been that fuel conversions, while they do reduce electricity use, are not conservation under the Northwest Power Act because they do not constitute a more efficient use of electricity. The Council has recognized, however that, if its conservation programs were to cause a reduction in the use of natural gas in favor of electricity, it would reduce the electricity savings expected from electricity conservation programs.

Council analyses have found that in cases where retail natural gas service is readily available it is often more economically efficient to use natural gas directly for space and water heating than to use electricity generated by a gas-fired generator. However, this is very case specific and depends on a number of factors including the proximity of natural gas distribution lines, the size and structure of the house, the climate and heating requirements in the area, and the desire for air conditioning and suitability for heat pump applications. In general, although direct use of natural gas is more thermodynamically efficient (except for the case of heat pumps), it is more costly to purchase and install. Moreover, the price of natural gas for a small residential or commercial consumer is generally higher than the

[1] See for example; Northwest Power Planning Council. *Direct Use of Natural Gas: Analysis and Policy Options.* Publication 94-41. August 11, 1994; or Northwest Power Planning Council. *Direct Use of Natural Gas Policy*. Publication 2001-17, July 17, 2001.

price to the operator of a gas-fired power plant, reducing the operating cost advantage of the more thermodynamically-efficient direct use. Therefore, the economic advantage of direct use of gas depends on the ability to save enough in energy costs to pay for the higher initial cost. One particularly attractive opportunity for conversion to natural gas is in homes that have natural gas space heating systems, but electric water heaters. In many of these cases, it would be cost effective for consumers to install natural gas water heaters.

The Council has not included programs in its power plans to encourage the direct use of natural gas, or to promote conversion of electric space and water heat to natural gas. This policy is consistent with the Council's view of its legal mandate. In addition, the Council's analysis has indicated that fuel choice markets are working well. Since the large electricity price increases around 1980, the electric space heating share has stopped growing in the region while the natural gas space heat share in existing homes increased from 26 to 37 percent. A survey of new residential buildings conducted in 2000 for the Northwest Energy Efficiency Alliance found that nearly all new single-family homes constructed where natural gas was available had gas-fired forced air heating systems.[2] The survey also found an increased penetration of natural gas heating in the traditionally electric heat dominated multi-family market, especially in larger units and in Washington.[3] Fuel conversion of existing houses to natural gas has been an active market as well, often promoted by dual fuel utilities. These trends extend to the commercial building sector as well. A recently completed Commercial Building Stock Assessment shows significantly higher penetration of gas heating in new commercial floor space. Since 1987, about 74 percent of commercial floor space is gas heated compared to 61 percent before 1987. In addition, significant conversion from electric heat to gas heat has occurred in the in pre-1988 stock increasing the gas-heated share from 50 to 61 percent.[4]

The Council's policy on fuel choice is a market-based approach. The Council will leave the choice of heating fuels to individual consumers. But at the same time, the Council will work to facilitate appropriate fuel choice through information and promoting efficient pricing of electricity. Electricity prices that reflect the cost of incremental supplies are important incentives not only for fuel choice, but for electricity use and conservation decisions as well.

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[2] David Baylon et.al. *Baseline Characteristics of the Residential Sector: Idaho, Montana, Oregon, and Washington*. Report to the Northwest Energy Efficiency Alliance. October, 2001

[3] David Baylon et.al. *Baseline Characteristics of the Multi-Family Sector: Oregon, and Washington*. Report to the Northwest Energy Efficiency Alliance. October, 2001

[4] Kema-Xenergy Inc. *Assessment of the Commercial Building Stock in the Pacific Northwest.* Report prepared for the Northwest Energy Efficiency Alliance. March 8, 2004