

Bruce A. Measure
Chair
Montana

Rhonda Whiting
Montana

W. Bill Booth
Idaho

James A. Yost
Idaho



Joan M. Dukes
Vice-Chair
Oregon

Bill Bradbury
Oregon

Tom Karier
Washington

Phil Rockefeller
Washington

July 27, 2011

MEMORANDUM

TO: Council Members

FROM: Tom Eckman

SUBJECT: Update on Direct Use of Natural Gas Analysis

At the June Power Committee meeting in Whitefish staff presented the results of its analysis of the potential cost and benefits of converting existing electric space and water heating customers to natural gas and converting existing natural gas space and water heating customers to electricity. This analysis was conducted using the Council's Resource Portfolio Model (RPM) to assess whether the regional power system's cost and risk could be reduced by changes in the market shares of these heating fuels. Based on the RPM analysis it appears that retaining the existing market share of natural gas space heating reduces both the regional power system's cost and risk.

With respect to the use of natural gas for water heating, the results of the RPM analysis indicated that in many cases the conversion to electric heat pump water heaters was preferable to using gas water heaters. The RPM analysis did not show that the conversion of homes with electric resistance space heating to natural gas space heating reduced power system cost or risk. However, the model did indicate that if the region were to see large scale conversions to electric space heating from natural gas it would increase the power systems cost and risk.

At the Whitefish meeting, staff indicated that the next phase of the Direct Use of Natural Gas analysis would focus on the question of whether consumers would select one heating source over the other based on the retail prices they pay for electricity and natural gas. Staff will present the results of this analysis to the Power Committee at its meeting on August 9th in Spokane. A short summary of these results follows.

- Conversion of existing water heaters, whether gas or electric, to heat pump water heaters appears to be preferable on a life cycle cost basis.
- However, gas condensing water heaters have life cycle costs that are very nearly as low as heat pump water heaters so this technology appears to be "competitive".

- Air Source heat pumps appear to be preferable on a life cycle cost basis when air conditioning is desired, except in zonal electric homes where “ductless” heat pumps have lower LCC
- Conversion of existing electric water and gas heating systems to higher efficiency systems (heat pump water heaters and heat pumps when air conditioning is desired) appears to be preferable to conversion to natural gas space heating and water heating from a life cycle cost perspective.

Staff proposed that the results of its analysis be presented to the RTF Direct Use of Gas subcommittee and other interested parties in the region prior to preparation of a recommendation on whether the Council’s current policy on direct use of gas requires revision.¹

The staff PowerPoint presentation describing the analytical approach and results accompanies this memo.

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¹ The Council’s existing policy appears in Chapter 8 of the 6th Plan.
(http://www.nwcouncil.org/energy/powerplan/6/final/SixthPowerPlan_Ch8.pdf)