WASHINGTON STATE UNIVERSITY
EXTENSION ENERGY PROGRAM

February 28, 2013

C. Ray Allshouse, Council Chair
Washington State Building Code Council
1500 Jefferson Avenue SE
P.O. Box 41449
Olympia, WA 98504-1449

RE: Washington State Energy code Change Proposals

Dear Chairman Allshouse,

We have prepared two proposals to address unexpected changes in the federal gas or propane furnace efficiency standards. The two proposals have been submitted to provide the Council options for addressing this issue.

During the 2012 code development cycle, it was understood that the minimum efficiency for gas and propane furnaces would be 90% AFUE for the 20 northern states, including Washington and Oregon. The regional standards were to become effective May 1, 2013 for all furnaces. To resolve a court case related to the federal rule, DOE has eliminated the regional standards portion of the Final Rule. The federal standard AFUE is now 80% nationwide (80% AFUE has been the minimum product available from manufacturers for some time)

About 84% of new homes utilize natural gas for space heating. Furnace efficiency is an important option for meeting the energy code requirements of Section *R406.2 Additional energy efficiency requirements.*

With the change in federal baseline two issues need to be addressed. First, the number of points awarded for a gas furnace in Table 406.2 Option 3a. Second, how many points should be required under section R406.2.

Ecotope has examined the impacts of the space heating savings from high efficiency furnaces. They recommend that Table 406.2 Option 3a be a 93% AFUE and that this option be one credit. The AFUE has been selected to provide similar energy savings to other options in the table that provide one credit.

Ecotope has also made some preliminary estimates of the impacts of the changes in minimum standards for federal furnace efficiency. Ecotope recommends a more detailed analysis. But the following table roughly represents the impacts of the anticipated changes on the medium size home.

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Estimated impacts of different proposals for the new "medium size" home			
Code	Credits Required	Credits for option 3a	Estimate Statewide Savings (2009 to 2012 code)
2012 as adopted	1.5	95% AFUE / 0.5	9.6-9.8%
Proposal A	1.5	93% / 1	7.7-8.2%
Proposal B	2	93% / 1	11-12%

For medium size gas heated homes, *2012 as adopted* would have required a gas heated home to provide 1.5 credits. It is anticipated that builders would choose the 95% AFUE furnace (0.5 credits) and select and additional credit using other options.

Proposal A only addresses the assignment of credits for high efficiency furnaces under option 3a. The practical impacts of this measure are that gas heated homes will not be required to pursue as much efficiency as originally estimated in the 2012 residential code analysis. It is anticipated that many builders would choose the 93% AFUE furnace (1 credit) and select and additional 0.5 credits using other options. Other options are available.

Proposal B addresses the assignment of credits for high efficiency furnaces under option 3a and implements an additional 0.5 credits compared to the *2012 as adopted* baseline. It is anticipated that many builders would choose the 93% AFUE furnace (1 credit) and select one additional credit using other options.

Option B also impacts the requirements for homes that use electric heating. A medium size heat pump or electric resistance heated home would also need to achieve the increased number of points specified by code.

Cost Discussion:

The cost impact will be the incremental cost of 0.5 credits (+/-). Under proposal A the cost will be reduced for gas heated homes only. Under proposal B the cost will be increased for all housing.

There are many methods for meeting the requirements for Table 406.2. If the SBCC choses to move forward on proposal B, the development of detailed cost and benefits should be assigned to the Energy Code Technical Advisory Group.

The following table was included in the evaluation of the 2012 energy code as proposed. The cost difference between the small home that requires 0.5 credits and the mid-size house that requires 1.5 credits is an early indicator of cost for Proposal B. But as the requirements increase the cost per credit will go up. This leads us to believe that the cost will be in the range of $700. More input from the builder community is needed to confirm this.

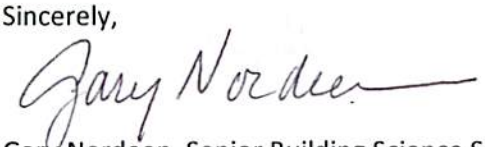
Table 1. Selected Combinations: Energy and Costs

		Savings vs 2009			Incremental Cost	Simple Payback
Prototype	Heating Type	kWh/yr	therms/yr	%	$	years
Mid-Size House	Gas Furnace	642	51	10%	$ 768	6.6
Small House		679	43	12%	$ 230	2.1
Mid-Size House	Heat Pump	1054	0	8%	$ 77	0.9
Small House		868	0	8%	$ -	0.0
Small House	Elec. Res. Zonal	671	0	6%	$ 77	1.4

Please contact Chuck Murray at (360) 725-3113 or myself if you any questions or comments.

Thank you and the council for considering this unforeseen situation.

Sincerely,



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