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January 16, 2012

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VIA FEDERAL EXPRESS

Ms. Jennifer Bernardini
Internal Revenue Service
Office of Associate Chief Counsel
(Passthroughs & Special Industries)
CC: PSI: BO6, Room 4315
1111 Constitution Avenue, N.W.
Washington, D.C. 20224

Re: I.R.S. Notice 2008-35 – Approval of Software to Provide Certification of §45L Energy Efficient Home Credit

Dear Ms. Bernardini:

Pursuant to I.R.S. Notice 2008-35, the Alaska Housing Finance Corporation ("AHFC") previously submitted an application to the Internal Revenue Service requesting approval of its energy consumption calculation software, AkWarm, as a software program that may be used to calculate energy consumption for the purpose of providing the certification required under §45L of the Internal Revenue Code of 1986, as amended.

Notice 2008-35 requires that heating and cooling energy consumption be calculated in accordance with the procedures prescribed in Residential Energy Services Network (RESNET) Publication No. 05-001 or No. 06-001 *or in accordance with an equivalent calculation procedure.*

We are requesting that the enclosed comprehensive application be considered for approval by virtue of demonstrating that the heating and cooling energy consumption is calculated in accordance with "an equivalent calculation procedure" pursuant to Section 2.03 of the Notice, as supported by a declaration specified in Section 5.02(4)(ii), all as hereinafter detailed. AHFC is seeking approval for AkWarm only for use in Alaska.

AHFC submitted a package on June 22, 2010 which included the AkWarm software program, the AkWarm Evaluation Study by the Boulder Energy Associations, the Analysis of AkWarm Home Energy Rating Software Energy Predictions by the Alaska Building Science Network and a declaration by the developer of AkWarm. AHFC submitted an additional

package on September 17, 2010 which included an explanation of AkWarm's equivalent calculation procedure comparing AkWarm's formula for the computation of energy savings to the formula cited in RESNET Publication No. 06-001, the AkWarm programming code that implements the formula for the computation of energy savings, the AkWarm programming code that demonstrates AkWarm configures the reference home and qualifying home based upon the 2004 Supplement to the International Energy Conservation Code and the AkWarm Technical Manual.

AHFC is hereby resubmitting its application which includes: (i) the name, address and telephone number of the developer (see Exhibit A), (ii) the name of the software program (AkWarm), (iii) the test results and test runs demonstrating heating and energy consumption calculation in accordance with an equivalent calculation procedure and the software program with which the results and runs were performed (hereinafter detailed), and (iv) a declaration by the developer of the software program, made under penalties of perjury, that the software program "[h]as satisfied all tests necessary to permit a determination that the software program is sufficiently accurate to justify its use in calculating energy consumption for purposes of providing a certification under section 3 of th[e] notice" (see Exhibit A).

An equivalent calculation procedure is defined in Notice 2008-35 as "a procedure that produces results comparable to the results obtained under the procedures prescribed in Residential Energy Services Network (RESNET) Publication No. 05-001 (Nov. 17, 2005) or No. 06-001 (June 1, 2006)." RESNET Publication No. 06-001 contemplates a series of tests including HERS BESTEST Tier One, auto-generation of the reference home, RESNET HVAC tests and duct distribution tests. The following details how AkWarm produces comparable results. (The AkWarm programming code and the HERS BESTEST Validation are also included on the enclosed diskette.)

Heating and Cooling Loads

The Home Energy Rating System Building Energy Simulation Test (HERS BESTEST) determines the ability of the software to predict building heating and cooling loads. The Cold Climate Housing Research Center ran AkWarm for the thirty test cases in the HERS BESTEST Tier One (see Exhibit B). All AkWarm heating load results fell within the ninety percent confidence intervals required by HERS standards. Sixteen of the twenty-one AkWarm cooling load results fell within the ninety percent confidence intervals required by HERS standards. The five cooling test failures are associated with cases that address south-side opaque overhangs and glazing orientation. AkWarm does not model overhangs because they have little effect during the heating season in Alaska when sun angles are very low. Additionally, AkWarm includes shading from external buildings and trees and only requires the user to separate windows into south-facing and non-south facing categories which likely explains the glazing orientation tests. It should be noted that AkWarm was developed specifically to deal with climate and building conditions in Alaska, which are very different from the test case cities. Cooling loads in Alaskan

residences are usually more than 200 times smaller than heating loads, and very few Alaskan residences even have cooling systems. Note that AHFC is seeking approval for AkWarm only for use in Alaska.

We note that similar software programs appearing on the list of approved software programs that may be used to calculate energy consumption maintained by the Internal Revenue Service have also experienced some HERS BESTEST failures.

Reference Home and Qualifying Home Configuration.

The reference home tests verify the ability of the software to automatically generate the tax credit reference home. AkWarm configures the reference home and the qualifying home based upon the 2004 Supplement to the International Energy Conservation Code (the "2004 Supplement") as required by Section 45L of the Internal Revenue Code, as described in Exhibit C and the AkWarm programming code that implements the configuration (see Exhibit E). RESNET Publication No. 06-001 bases its rule set for the configuration of the reference home and the qualifying home upon the 2004 Supplement.

RESNET HVAC and Duct Distribution

The RESNET HVAC tests assess the consistency with which the software treats furnaces, air conditioners and air source heat pumps and the duct distribution tests measure the accuracy of air distribution system loss calculations. The HVAC tests require the software support compressor based air conditioning systems, oil, propane or natural gas forced air furnaces, electric resistance forced air furnaces and air source heat pumps. The duct distribution tests require that duct insulation, air leakage and location are accounted for in the software. The Department of Energy Approvals (see Exhibit F), including a letter from Simonson Management Services, addresses the accuracy of AkWarm's coverage of heating systems and accounting of duct leakage. Additionally, the previously submitted Boulder Energy Associates Study demonstrates that AkWarm has compared favorably in the past with the DOE-2 building energy analysis program that predicts the energy use and cost for all types of buildings.

We note that the Notice does not require the submission of a software program and test results/runs which are the same as those of RESNET, but that the proposed software program "has satisfied all tests necessary to permit a determination that the software program is sufficiently accurate to justify its use in calculating energy consumption for purposes of providing a certification under Section 3 of this notice." AHFC believes it has submitted sufficient information to comply with Notice 2008-35 and to demonstrate that the AkWarm software program calculates heating and cooling energy consumption in accordance with an equivalent calculation procedure.

On that basis we request your approval of the AkWarm software program. If you have questions or desire additional information, please contact me; if the questions or desired additional information are technical in nature, please contact John Anderson, AHFC Weatherization Program Officer, (907) 330-8155 or if by e-mail at janderson@ahfc.us.

AHFC is also pleased to note that the United States Department of Energy has again named AkWarm as complying with DOE's Weatherization Assistance Program for another 5-year period.

Sincerely,

John J. Wagner

Enclosures

cc: Mr. Daniel Fauske, AHFC
Mr. Robert Brean, AHFC
Mr. Mike Buller, AHFC (with enclosures)
Mr. Scott Waterman, AHFC
Mr. John Anderson, AHFC (with enclosures)
Mr. Alan Mitchell, Analysis North