



July 7, 2014

Ms. Abigail Daken
U.S. Environmental Protection Agency (EPA)
ENERGY STAR HVAC Program

Re: Goodman Comments on 2015 Proposed System Status and Messaging Requirements for CAC/ASHP (Ducted and Ductless) and Furnaces

Dear Ms. Daken,

These comments are submitted by Goodman Global, Inc. ("Goodman") in response to the U.S. Environmental Protection Agency's (EPA) memorandum that was issued to ENERGY STAR HVAC stakeholders on June 9, 2014. The document pertains to proposed requirements associated with the ENERGY STAR Most Efficient 2015 program.

Goodman manufactures residential and light commercial heating and cooling equipment. Our products are sold and installed by contractors in every state within the United States. Goodman is a member of Daikin group, the largest HVAC manufacturer in the world. We appreciate the opportunity to comment on the specific issues raised within this EPA memorandum. Our comments are provided below.

Section 1 – General Comments

Although we are supportive of EPA's efforts to categorize products as most efficient for consumers who make purchasing choices based on energy efficiency (early adopters), we believe that the recognition criteria for the most efficient program do not necessarily have to change dynamically on an annual basis. The original ENERGY STAR programs for certain products have been implemented across several years and were able to consistently achieve the desired effect on early adopters for an extended time period.

Some of the features discussed within EPA's memorandum are patented by certain manufacturers, and cannot be mass produced by others due to patent infringement risks or high costs associated with licensing those patents. EPA should ensure that the requirements are specified in a generic and patent-neutral manner, so that all manufacturers can compete on a level-playing field with patent infringement being a non-issue.

We believe that EPA should increase the minimum HSPF level for ductless mini-split and multi-split heat pumps to 10.5 HSPF; this would help meet EPA's goal to develop an advanced specification compared to the ENERGY STAR Most Efficient 2014 specification. In addition,

raising the HSPF level would allow manufacturers to creatively compete within this program without risking the infringement of patents associated with overly prescriptive features.

Section 2 – Unit Setup Information

Although information related to capacity, the number of stages of cooling and heating, and default air flow for each stage is useful during the installation process, we believe that requiring such information to be transmitted to a controller would not necessarily guarantee that an HVAC system will be installed correctly and deliver the designed performance per the manufacturer's specified ratings. All of this information is readily available on either the equipment nameplate or the corresponding manufacturer's equipment instruction manual, so requiring such information to be transmitted to a controller only adds further cost to the unit without necessarily adding any value towards the consumer's purchase.

Goodman does have the ability to meet this proposal via a sophisticated indoor communicating system (ComfortNet™) that can be easily applied in the field by contractors. Using a maximum of four low voltage control wires, a ComfortNet™ system configures any compatible gas furnace, air conditioner or heat pump system in seconds. When properly installed, the ComfortNet™ system constantly monitors the performance of the indoor and outdoor system components to make certain that the entire indoor comfort system is operating as efficiently as possible. This combination offers what we consider to be an unmatched balance of indoor temperature and humidity control perfection.

However, as discussed in section 1 of this letter, overly prescriptive requirements could disadvantage several manufacturers if there are existing patents associated with such prescriptive requirements. Applied systems such as ours are designed to be installed by licensed contractors. A contractor who meets EPA's quality installation criterion should have the necessary proficiency to review the equipment nameplate and manufacturers' instruction manuals while performing a quality installation.

Another issue with regard to this proposal is that certain air conditioners and heat pumps are equipped with dip switches, thereby providing a contractor with some limited flexibility to customize the air flow of a unit based on the installation need. Providing the default air flow information in such instances would be of no value to the consumer.

EPA should also be cautious about the unintended ramifications that such a requirement could have on homeowners. Rather than relying on licensed contractors to perform a quality installation, certain homeowners who have no prior field experiences with regard to the installation of HVAC equipment could attempt to install equipment using the information provided on the controller. Although nothing currently precludes a homeowner from attempting an equipment installation, the ease of access to partial equipment information on a controller could be falsely interpreted by the homeowner, and the homeowner could presume that the applied HVAC equipment is as simple to install as a typical plug-in type appliance.

Section 3 – Monitoring and Message Requirements

The *static pressure* requirement will only work in an ideal world scenario. It is very much possible for a service need signal to be triggered immediately after the unit is installed (per the manufacturer's instructions) if the ductwork within an existing home is of poor quality, thereby rendering this feature to be futile.

Filter manufacturers readily disclose the estimated filter life on their product packaging. A disposable filter typically includes a provision for the homeowner to specify the date on which the filter was installed. The 2013 edition of California's Building Energy Efficiency Standards (Title 24) prescribes air filtration requirements within Section 150.0(m)12 of the standard; these requirements went into effect on July 1, 2014. EPA should review these requirements for air filters and consider them in lieu of the proposed static pressure signal requirement. We believe that the adoption of such requirements would benefit the homeowner and ensure that the efficiency of the system is maintained as installed.

In addition, thermostat technology has been equipped with a filter replacement indicator for several years, so it is not like homeowners have never had access to technologies that alert them about the need to replace their filters. Ultimately, filter replacement is heavily dependent on user patterns, and current tools already make that information readily available to consumers. The requirement to further digitize this information is not going to guarantee that the consumer will perform his or her or her due diligence and replace the filter in a timely manner.

As far as *refrigerant charging* within the field is concerned, we believe that it is important for licensed contractors to follow the charging instructions that are specified within manufacturers' instruction manuals. For units that are charged within a manufacturing plant, the manufacturer typically optimizes the charge during product development. Although error codes can be generated to indicate an undercharge or overcharge, we believe that more evaluations need to be conducted in order to determine whether or not charging and diagnostics systems can effectively function across various units and efficiencies. Additionally, some of these charging error codes are generated via on-board controls that cannot communicate with an external thermostat due to the proprietary nature of those on-board controls.

We believe that we can meet the *fault history* and *message requirements* proposals via our ComfortNet™ system. The system is capable of alerting the homeowner that a contractor should be notified when service is required on any part of the complete system. Standard features of this communicating system include dual-fuel operation without additional control requirements, outdoor temperature display, dehumidification control, advanced diagnostics, an adjustable electric resistance heat lockout option based on outdoor ambient, time-of-use scheduling, internet connectivity, a programmable, multi-speed continuous fan control, and more. However, we strongly recommend that EPA not preclude error codes from meeting the *message requirements* proposal. We manufacture ductless units that are highly efficient and are capable of generating error codes that are explicit enough to trigger action from the homeowner. Such highly efficient units (an attractive option to early adopters) that meet the energy efficiency levels of EPA's Most Efficient Program should not be unduly penalized for simply lacking a text-based notification. The messaging mode should not matter as long as it facilitates homeowner action.

Section 4 – Concluding Remarks

Goodman appreciates the opportunity to provide these comments. If you have any questions regarding this submission, please do not hesitate to contact me.

Sincerely,

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