



May 23, 2019

NRDC Comments on ENERGY STAR Program Requirements for Air Source Heat Pump and Central Air Conditioner Equipment Version 6.0, Draft 1

On behalf of the Natural Resources Defense Council (NRDC) and our 3 million members and online activists, we offer the following comments on ENERGY STAR's version 6.0, draft 1, specification for air source heat pumps and central air conditioners. In summary, we believe that the proposed draft is an important step towards more efficient central air conditioners and air source heat pumps.

Background

The efficiency of central air conditioners and air source heat pumps is already an enormously important issue, and that importance is only poised to increase in coming years. According to the 2015 Residential Energy Consumption Survey, space heating and cooling represented approximately 32% of household electricity consumption in that year.¹ That's over 400 billion kilowatt-hours, with an emissions impact greater than operating 72 coal power plants for a year.²

More efficient central air conditioners and air source heat pumps directly benefit anyone installing them through lower resulting energy expenditures. The country as a whole also benefits from the reduced need to generate electricity and the corresponding reduction in carbon and pollution emissions. In the case of heating, lower operating costs in turn also make these units even more competitive with fossil fuel based alternatives, making it easier, in combination with increasingly green electric grids, to reduce the carbon emissions of the nation's homes.

Variable Capacity

The draft proposes that variable capacity (at least 2 stages) be a requirement for the ENERGY STAR label. While in general NRDC prefers technology neutral specifications for products, we recognize the substantial benefit that variable capacity can provide. By modulating capacity to match the load in a building, variable capacity units can reduce wasteful cycling behavior and improve overall efficiency. As a result, NRDC supports the variable capacity requirement in this draft.

We also note, however, that current test procedures do not adequately capture the impact of a variable capacity unit's control logic, which can also have a large impact on efficiency. This is not an issue that can be immediately resolved, but we support efforts, such as CSA Group's draft EXP07 load-based test procedure, to move towards test procedures that can capture these effects and which offer a superior option in the longer term.

¹ <https://www.eia.gov/consumption/residential/data/2015/c&e/pdf/ce4.1.pdf>.

² Calculated using the Environmental Protection Agency's greenhouse gas equivalency calculator. Available at: <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>.

Regions

NRDC supports the idea of region-specific specifications. Different regions have differing climates, and a unit that is most efficient in one climate may not be most efficient in another. A unit's energy efficiency ratio (EER) at 95 degrees may be less critical in colder climates than it is in hotter ones, especially when compared to cold weather performance and heating seasonal performance factor (HSPF). That said, we do not wish the EER requirements for cold climate to be lower than they need to be and would welcome further discussion and data regarding the specific levels chosen.

Other comments

We believe that AHRI 1380 appears to be a reasonable basis for connectivity requirements, though we reserve judgment until language is added to a future draft. In the future, we support exploring additional possible connectivity opportunities beyond demand management.

While we acknowledge that, as with load-based dynamic test procedures, this is a longer term issue, we believe that in the future moving beyond SEER and HSPF to more sophisticated metrics may ultimately improve the specification.

Conclusion

Thank you for your consideration of these comments. Please do not hesitate to contact us if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Joe Vukovich". The signature is fluid and cursive, with the first name "Joe" being the most prominent.

Joe Vukovich
Energy Efficiency Advocate