



## Building Technologies Program

# **Requirements and Submission Process for Qualified Software for Estimating Savings for Section 179D Tax Deductions – for buildings placed in service after December 31, 2015.**

The U.S. Department of Energy (DOE) verifies and maintains the list of software that qualifies for the calculation of the energy and power cost savings for commercial building tax deductions under tax code Section 179D. The software requirements are listed under Internal Revenue Service (IRS) Code §179D (c)(1) and (d) Regulations, Notice 2006-52 Section 6, dated June 2, 2006 as amplified by Notice 2008-40, Section 4. The IRS Code §179D was recently updated per the PATH Act of 2015. This document provides a complete list of requirements and submission details.

Qualification steps for each version of the software to be listed:

1. Test the software according to ANSI/ASHRAE Standard 140-2014: Standard Method of Test for the Evaluation of Building Energy Analysis Computer Programs (except for sections 7 and 8).
2. Submit test results for all test cases, input files, output files, weather data, modeler reports, and the executable version of the software with which the tests were conducted to DOE and the National Renewable Energy Laboratory (NREL).
3. Submit a document with the software submission requirements listed on page 2. The manager responsible for the software development organization must sign the document affirming the claims.
4. NREL will review the submitted materials and coordinate any needed revisions.
5. NREL will verify the satisfactory qualification of the software and will post a notice on the DOE Web site (<http://energy.gov/eere/buildings/qualified-software-calculating-commercial-building-tax-deductions>) indicating the qualification.

Submit the package of information outlined in steps 2 and 3 electronically to [179DSoftware@nrel.gov](mailto:179DSoftware@nrel.gov) and mail it to the following addresses:

Commercial Software List  
Department of Energy  
Office of Building Technologies, EE-2J  
1000 Independence Ave., SW  
Washington, DC 20585-0121

Commercial Software List  
Ron Judkoff  
National Renewable Energy Laboratory  
15013 Denver West Parkway  
Golden, CO 80401

## Requirements for Qualified Software

Software providers must submit and affirm the truth of the following information to qualify their products as tax deduction software.

*Statements within quotation marks are from the software developer.*

Internal Revenue Code §179D (c)(1) and (d) Regulations Notice 2006-52, Section 6 requirements as amplified by Notice 2008-40, Section 4 requirements.	
(1) The name, address, and (if applicable) Web site of the manager in charge of software development;	
(2) The name, email address, and telephone number of the person to contact for further information regarding the software;	
(3) The name, version, or other identifier of the software as it will appear on the list;	AAA EnergySoftware, Version 1.0
(4) All test results, input files, output files, weather data, modeler reports, and the executable version of the software with which the tests were conducted; and	Provided to DOE
(5) A declaration by the manager in charge of software development, made under penalties of perjury, that all statements and information in the right hand column of this table are true and correct	"On behalf of the AAA EnergySoftware development team I certify the following:"
(a) The software has been tested according to ANSI/ASHRAE Standard 140-2014 Standard Method of Test for the Evaluation of Building Energy Analysis Computer Programs;	"The software has been tested according to ANSI/ASHRAE Standard 140-2014 Standard Method of Test for the Evaluation of Building Energy Analysis Computer Programs."
(b) The software can model explicitly—	"The AAA EnergySoftware is fully compliant with ASHRAE 90.1-2007 and meets all of the below requirements."
(i) 8,760 hours per year;	"The AAA EnergySoftware complies."
(ii) Calculation methodologies for the building components being modeled;	"The AAA EnergySoftware complies."
(iii) Hourly variations in occupancy, lighting power, miscellaneous equipment power, thermostat setpoints, and HVAC system operation, defined separately for each day of the week and holidays;	"The AAA EnergySoftware complies."
(iv) Thermal mass effects;	"The AAA EnergySoftware complies."
(v) Ten or more thermal zones;	"The AAA EnergySoftware complies."
(vi) Part-load performance curves for mechanical equipment;	"The AAA EnergySoftware complies."
(vii) Capacity and efficiency correction curves for mechanical heating and cooling equipment; and	"The AAA EnergySoftware complies."
(viii) Air-side and water-side economizers with integrated control.	"The AAA EnergySoftware complies."

(c) The software can explicitly model each of the following HVAC systems listed in Appendix G of Standard 90.1-2007 <sup>1</sup> :	
(i) Packaged Terminal Air Conditioner (PTAC), constant volume (CV) fan, DX coil cooling, hot-water fossil fuel boiler.	"The AAA <i>EnergySoftware</i> models this system."
(ii) Packaged Terminal Heat Pump (PTHP), CV fan, DX coil cooling, electric heat pump heating.	"The AAA <i>EnergySoftware</i> models this system."
(iii) Packaged Rooftop Air Conditioner (PSZ-AC), CV fan, DX coil cooling, fossil fuel furnace heating.	"The AAA <i>EnergySoftware</i> models this system."
(iv) Packaged Rooftop Heat Pump (PSZ-HP), CV fan, DX coil cooling, electric heat pump heating.	"The AAA <i>EnergySoftware</i> models this system."
(v) Packaged Rooftop Variable-Air-Volume (PVAV) with reheat, Variable-Air-Volume (VAV) fans, DX coil cooling, hot-water fossil fuel boiler.	"The AAA <i>EnergySoftware</i> models this system."
(vi) Packaged VAV with parallel fan-powered boxes (PVAV with PFP boxes) with reheat, VAV fans, DX coil cooling, electric resistance heating.	"The AAA <i>EnergySoftware</i> models this system."
(vii) Packaged Rooftop VAV with reheat, VAV fans, chilled water cooling, hot-water fossil fuel boiler.	"The AAA <i>EnergySoftware</i> models this system."
(viii) VAV with PFP boxes with reheat, VAV fans, chilled water cooling, electric resistance heating.	"The AAA <i>EnergySoftware</i> models this system."
(d) The software can—	
(i) Either directly determine energy and power costs or produce hourly reports of energy use by energy source suitable for determining energy and power costs separately; and	"The AAA <i>EnergySoftware</i> complies."
(ii) Design load calculations to determine required HVAC equipment capacities and air and water flow rates.	"The AAA <i>EnergySoftware</i> complies."
(e) The software can explicitly model:	
(i) Natural ventilation.	"The AAA <i>EnergySoftware</i> models natural ventilation."
(ii) Mixed mode (natural and mechanical) ventilation.	"The AAA <i>EnergySoftware</i> models mixed mode ventilation."
(iii) Earth tempering of outdoor air.	"The AAA <i>EnergySoftware</i> models earth tempering of outdoor air."
(iv) Displacement ventilation.	"The AAA <i>EnergySoftware</i> models displacement ventilation."
(v) Evaporative cooling.	"The AAA <i>EnergySoftware</i> models evaporative cooling."

<sup>1</sup> 90.1-2007 is defined by the PATH Act of 2015 as "Standard 90.1–2007 of ASHRAE and IESNA (as in effect on the day before the date of the adoption of Standard 90.1–2010 of such Societies)." This definition includes 90.1-2007 and the addenda supplement package (Addenda a, b, c, g, h, i, j, k, l, m, n, p, q, s, t, u, w, y, ad, and aw) and addendum r, plus all published errata.

(vi) Water use by occupants for cooking, cleaning or other domestic uses.	"The AAA <i>EnergySoftware</i> models water use by occupants."
(vii) Water use by heating, cooling, or other equipment, or for on-site landscaping.	"The AAA <i>EnergySoftware</i> models water use by heating, cooling, and other equipment as well as for on-site landscaping."
(viii) Automatic interior or exterior lighting controls (such as occupancy, photocells, or time-clocks).	"The AAA <i>EnergySoftware</i> models automatic interior and exterior lighting controls."
(ix) Daylighting (sidelighting, skylights, or tubular daylight devices).	"The AAA <i>EnergySoftware</i> models sidelighting, skylights, and tubular daylighting devices."
(x) Improved fan system efficiency through static pressure reset.	"The AAA <i>EnergySoftware</i> models improved fan system efficiency through static pressure reset."
(xi) Radiant heating or cooling (low or high temperature).	"The AAA <i>EnergySoftware</i> models low and high temperature radiant heating and cooling."
(xii) Multiple or variable-speed control for fans, cooling equipment, or cooling towers.	"The AAA <i>EnergySoftware</i> models multiple and variable-speed control for fans, cooling equipment, and cooling towers."
(xiii) On-site energy systems (such as combined heat and power systems, fuel cells, solar photovoltaic, solar thermal, or wind).	"The AAA <i>EnergySoftware</i> models on-site energy systems including combined heat and power, photovoltaic systems, and solar water and air systems."

Software that cannot explicitly model one or more of the HVAC systems or features in sections 5.c and 5.e of the table can still be listed as qualified software. It cannot, however, be used for 179D analyses of projects that need to model such systems or features. When this is the case, the statement used for the particular requirements shall be as follows: "The AAA *EnergySoftware* cannot model *system or feature X* and shall not be used for projects with this technology."