# Requirements and Submission Process for Qualified Software

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. 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 140-2007: Standard Method of Test for the Evaluation of Building Energy Analysis Computer Programs.
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 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 Pkwy
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 and information in the right hand column of this table 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. | |
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| (1) The name, address, and (if applicable) Web site of the software developer; | |
| (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 | |
| (a) The software has been tested according to ANSI/ASHRAE Standard 140-2007 Standard Method of Test for the Evaluation of Building Energy Analysis Computer Programs; | The software has been tested according to ANSI/ASHRAE Standard 140-2007 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 90.1-2001 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. |

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| (c) The software can explicitly model each of the following HVAC systems listed in Appendix G of Standard 90.1-2004: | |
| (i) Packaged Terminal Air Conditioner (PTAC) (air source), single-zone package (through the wall), multi-zone hydronic loop, air-to-air DX coil cooling, central boiler, hot water coil. | The *AAA EnergySoftware* models this system. |
| (ii) Packaged Terminal Heat Pump (PTHP) (air source), single-zone package (through the wall), air-to-air DX coil heat/cool. | The *AAA EnergySoftware* models this system. |
| (iii) Packaged Single Zone Air Conditioner (PSZ-AC), single-zone air, air-to-air DX coil cool, gas coil, constant-speed fan. | The *AAA EnergySoftware* models this system. |
| (iv) Packaged Single Zone Heat Pump (PSZ-HP), single-zone air, air-to-air DX coil cool/heat, constant-speed fan. | The *AAA EnergySoftware* models this system. |
| (v) Packaged Variable-Air-Volume (PVAV) with reheat, multi-zone hydronic loop, air-to-air DX coil, VAV fan, boiler, hot water VAV terminal boxes. | The *AAA EnergySoftware* models this system. |
| (vi) Packaged Variable-Air-Volume with parallel fan powered boxes (PVAV with PFP boxes), multi-zone air, DX coil, VAV fan, fan-powered induction boxes, electric reheat. | The *AAA EnergySoftware* models this system. |
| (vii) Variable-Air-Volume (VAV) with reheat, multi-zone air; multi-zone hydronic loop, air-handling unit, chilled water coil, hot water coil, VAV fan, chiller, boiler, hot water VAV boxes. | The *AAA EnergySoftware* models this system. |
| (viii) Variable-Air-Volume with parallel fan powered boxes (VAV with PFP boxes), multi-zone air, air-handling unit, chilled water coil, hot water coil, VAV fan, chiller, fan-powered induction boxes, electric reheat. | The *AAA EnergySoftware* 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 EnergySoftware* complies. |
| (ii) Design load calculations to determine required HVAC equipment capacities and air and water flow rates. | The *AAA EnergySoftware* complies. |
| (e) The software can explicitly model: | |
| (i) Natural ventilation. | The *AAA EnergySoftware* models natural ventilation. |
| (ii) Mixed mode (natural and mechanical) ventilation. | The *AAA EnergySoftware* models mixed mode ventilation. |
| (iii) Earth tempering of outdoor air. | The *AAA EnergySoftware* models earth tempering of outdoor air. |
| (iv) Displacement ventilation. | The *AAA EnergySoftware* models displacement ventilation. |

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| (v) Evaporative cooling. | The *AAA EnergySoftware* models evaporative cooling. |
| (vi) Water use by occupants for cooking, cleaning or other domestic uses. | The *AAA EnergySoftware* models water use by occupants. |
| (vii) Water use by heating, cooling, or other equipment, or for on-site landscaping. | The *AAA EnergySoftware* 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 EnergySoftware* models automatic interior and exterior lighting controls. |
| (ix) Daylighting (sidelighting, skylights, or tubular daylight devices). | The *AAA EnergySoftware* models sidelighting, skylights, and tubular daylighting devices. |
| (x) Improved fan system efficiency through static pressure reset. | The *AAA EnergySoftware* models improved fan system efficiency through static pressure reset. |
| (xi) Radiant heating or cooling (low or high temperature). | The *AAA EnergySoftware* models low and high temperature radiant heating and cooling. |
| (xii) Multiple or variable-speed control for fans, cooling equipment, or cooling towers. | The *AAA EnergySoftware* 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 EnergySoftware* 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.