

Tax Deduction Qualified Software for buildings placed in service on or after January 1, 2016.

DOE-2.2 version 48y

On this page you'll find information about the DOE-2.2 version 48y Qualified Software for Calculating Commercial Building Tax Deductions | Department of Energy <http://energy.gov/eere/buildings/qualified-software-calculating-commercial-building-tax-deductions>, which calculates energy and power cost savings that meet federal tax incentive requirements for commercial buildings.

Date Documentation Received by DOE: 19 October 2016

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.	
(1) The name, address, and (if applicable) web site of the software developer;	James J. Hirsch & Associates 12185 Presilla Road Camarillo, California 93012-9243 www.doe2.com
(2) The name, email address, and telephone number of the person to contact for further information regarding the software;	Jeff Hirsch James J. Hirsch & Associates Jeff.Hirsch@DOE2.com 805-553-9000 (phone) 805-532-2401 (fax)
(3) The name, version, or other identifier of the software as it will appear on the list;	DOE-2.2 version 48y
(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 developer of the software, made under penalties of perjury, that—	On behalf of the DOE-2.2 version 48y 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 (except for sections 5.2.4, 7, and 8);	"The software has been tested according to the American National Standards Institute/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ANSI/ASHRAE) Standard 140-2014 Standard Method of Test for Evaluation of Building Energy Analysis Computer Programs."
(b) The software can model explicitly—	"The DOE-2.2 version 48y is fully compliant with ASHRAE 90.1-2007 and meets all of the below requirements."
(i) 8,760 hours per year;	"The DOE-2.2 version 48y software complies."
(ii) Calculation methodologies for the building components being modeled;	"The DOE-2.2 version 48y software complies."
(iii) Hourly variations in occupancy, lighting power, miscellaneous equipment power, thermostat setpoints, and HVAC system	"The DOE-2.2 version 48y software complies."

operation, defined separately for each day of the week and holidays;	
(iv) Thermal mass effects;	"The DOE-2.2 version 48y software complies."
(v) Ten or more thermal zones;	"The DOE-2.2 version 48y software complies."
(vi) Part-load performance curves for mechanical equipment;	"The DOE-2.2 version 48y software complies."
(vii) Capacity and efficiency correction curves for mechanical heating and cooling equipment; and	"The DOE-2.2 version 48y software complies."
(viii) Air-side and water-side economizers with integrated control.	"The DOE-2.2 version 48y software complies with the air-side economizer requirements and with two forms of water-side economizers (WSE): dedicated WSE coils in air handlers and 'parallel' (i.e., non-integrated) WSE such as a strainer cycle. The DOE-2.2 version 48y software cannot model 'parallel' WSE (i.e., with integrated control) and shall not be used for projects with that technology."
(c) The software can explicitly model each of the following HVAC systems listed in Appendix G of Standard 90.1-2007 ⁽¹⁾ :	
(i) Packaged Terminal Air Conditioner (PTAC), constant volume (CV) fan, DX coil cooling, hot-water fossil fuel boiler.	"The DOE-2.2 version 48y software complies."
(ii) Packaged Terminal Heat Pump (PTHP), CV fan, DX coil cooling, electric heat pump heating.	"The DOE-2.2 version 48y software complies."
(iii) Packaged Rooftop Air Conditioner (PSZ-AC), CV fan, DX coil cooling, fossil fuel furnace heating.	"The DOE-2.2 version 48y software complies."
(iv) Packaged Rooftop Heat Pump (PSZ-HP), CV fan, DX coil cooling, electric heat pump heating.	"The DOE-2.2 version 48y software complies."
(v) Packaged Rooftop Variable-Air-Volume (PVAV) with reheat, Variable-Air-Volume (VAV) fans, DX coil cooling, hot-water fossil fuel boiler.	"The DOE-2.2 version 48y software complies."
(vi) Packaged VAV with parallel fan-powered boxes (PVAV with PFP boxes) with reheat, VAV fans, DX coil cooling, electric resistance heating.	"The DOE-2.2 version 48y software complies."
(vii) Packaged Rooftop VAV with reheat, VAV fans, chilled water cooling, hot-water fossil fuel boiler.	"The DOE-2.2 version 48y software complies."
(viii) VAV with PFP boxes with reheat, VAV fans, chilled water cooling, electric resistance heating.	"The DOE-2.2 version 48y software complies."
(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 DOE-2.2 version 48y software complies."
(ii) Design load calculations to determine required HVAC equipment capacities and air and water flow rates.	"The DOE-2.2 version 48y software complies."
(e) The software can explicitly model:	
(i) Natural ventilation.	"The DOE-2.2 version 48y software can model simple single-zone natural ventilation using air

	changes per hour (user-defined) or Sherman-Grimsrud (calculated)."
(ii) Mixed mode (natural and mechanical) ventilation.	"The DOE-2.2 version 48y software does not explicitly model this feature and shall not be used for projects with that technology."
(iii) Earth tempering of outdoor air.	"The DOE-2.2 version 48y software does not explicitly model this feature and shall not be used for projects with that technology."
(iv) Displacement ventilation.	"The DOE-2.2 version 48y software does not explicitly model this feature and shall not be used for projects with that technology."
(v) Evaporative cooling.	"The DOE-2.2 version 48y software complies."
(vi) Water use by occupants for cooking, cleaning or other domestic uses.	"The DOE-2.2 version 48y software does not explicitly model this feature and shall not be used for projects with that technology."
(vii) Water use by heating, cooling, or other equipment, or for on-site landscaping.	"The DOE-2.2 version 48y software does not explicitly model this feature and shall not be used for projects with that technology."
(viii) Automatic interior or exterior lighting controls (such as occupancy, photocells, or time-clocks).	"The DOE-2.2 version 48y software can explicitly model automatic interior or exterior lighting controls such as occupancy sensors or time-clocks, but cannot model photocells."
(ix) Daylighting (sidelighting, skylights, or tubular daylight devices).	"The DOE-2.2 version 48y software complies."
(x) Improved fan system efficiency through static pressure reset.	"The DOE-2.2 version 48y software does not explicitly model this feature and shall not be used for projects with that technology."
(xi) Radiant heating or cooling (low or high temperature).	"The DOE-2.2 version 48y software complies with the radiant system requirements for low delta-t heating panel applications. The DOE-2.2 version 48y software does not explicitly model radiant cooling systems or high temperature radiant heating systems and shall not be used for projects with that technology."
(xii) Multiple or variable-speed control for fans, cooling equipment, or cooling towers.	"The DOE-2.2 version 48y software complies."
(xiii) On-site energy systems (such as combined heat and power systems, fuel cells, solar photovoltaic, solar thermal, or wind).	"The DOE-2.2 version 48y software can model on-site energy systems including engines, gas turbines, steam turbine generators and

	photovoltaic arrays. DOE-2.2 version 48y cannot model fuel cells, solar thermal, or wind systems and shall not be used for projects with these technologies."
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- 1) 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.
- 2) 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.

Tax Deduction Qualified Software — <http://energy.gov/eere/buildings/qualified-software-calculating-commercial-building-tax-deductions>



James J. Hirsch

Owner, James J. Hirsch & Associates