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

Carrier HAP 5.11

On this page you'll find information about the Carrier HAP 5.11 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: April 17, 2018

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.	
(1) The name, address, and (if applicable) web site of the software developer;	Carrier Software Systems Bynum Training Center P.O. Box 4808 Syracuse, NY, 13221 USA http://www.carrier.com/commercial/en/us/software/
(2) The name, email address, and telephone number of the person to contact for further information regarding the software;	Carrier Software Systems software.systems@carrier.utc.com 800-253-1794
(3) The name, version, or other identifier of the software as it will appear on the list;	Carrier HAP 5.11
(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 Carrier HAP 5.11 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[1]—	Carrier HAP 5.11 is fully compliant with ASHRAE 90.1-2007 and meets all of the below requirements.
(i) 8,760 hours per year;	Carrier HAP 5.11 complies.
(ii) Calculation methodologies for the building components being modeled;	Carrier HAP 5.11 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;	Carrier HAP 5.11 complies.
(iv) Thermal mass effects;	Carrier HAP 5.11 complies.
(v) Ten or more thermal zones;	Carrier HAP 5.11 complies.
(vi) Part-load performance curves for mechanical equipment;	Carrier HAP 5.11 complies.
(vii) Capacity and efficiency correction curves for mechanical heating and cooling equipment; and	Carrier HAP 5.11 complies.
(viii) Air-side and water-side economizers with integrated control.	Carrier HAP 5.11 complies.

| (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.	Carrier HAP 5.11 models this system.
(ii) Packaged Terminal Heat Pump (PTHP), CV fan, DX coil cooling, electric heat pump heating.	Carrier HAP 5.11 models this system.
(iii) Packaged Rooftop Air Conditioner (PSZ-AC), CV fan, DX coil cooling, fossil fuel furnace heating.	Carrier HAP 5.11 models this system.
(iv) Packaged Rooftop Heat Pump (PSZ-HP), CV fan, DX coil cooling, electric heat pump heating.	Carrier HAP 5.11 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.	Carrier HAP 5.11 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.	Carrier HAP 5.11 models this system.
(vii) Packaged Rooftop VAV with reheat, VAV fans, chilled water cooling, hot-water fossil fuel boiler.	Carrier HAP 5.11 models this system.
(viii) VAV with PFP boxes with reheat, VAV fans, chilled water cooling, electric resistance heating.	Carrier HAP 5.11 models this system.
(d) The software can—	

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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.

(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	Carrier HAP 5.11 complies.
(ii) Design load calculations to determine required HVAC equipment capacities and air and water flow rates.	Carrier HAP 5.11 complies.
(e) The software can explicitly model:	
(i) Natural ventilation.	Carrier HAP 5.11 cannot model natural ventilation and shall not be used for projects with this technology.
(ii) Mixed mode (natural and mechanical) ventilation.	Carrier HAP 5.11 cannot model mixed mode (natural and mechanical) ventilation and shall not be used for projects with this technology.
(iii) Earth tempering of outdoor air.	Carrier HAP 5.11 cannot model earth tempering of outdoor air and shall not be used for projects with this technology.
(iv) Displacement ventilation.	Carrier HAP 5.11 can model displacement ventilation by equivalent means.
(v) Evaporative cooling.	Carrier HAP 5.11 cannot model evaporative cooling and shall not be used for projects with this technology.
(vi) Water use by occupants for cooking, cleaning or other domestic uses.	Carrier HAP 5.11 cannot model water use by occupants for cooking, cleaning or other domestic uses and shall not be used for projects with this technology.
(vii) Water use by heating, cooling, or other equipment, or for on-site landscaping.	Carrier HAP 5.11 cannot model water use by heating, cooling or other equipment or for on-site landscaping and shall not be used for projects with this technology.
(viii) Automatic interior or exterior lighting controls (such as occupancy, photocells, or time-clocks).	Carrier HAP 5.11 can explicitly model automatic interior or exterior lighting controls such as occupancy sensors or time clocks. Carrier HAP 5.11 cannot model photocell automatic interior or exterior lighting controls and shall not be used for projects with this technology.
(ix) Daylighting (sidelighting, skylights, or tubular daylight devices).	Carrier HAP 5.11 can model daylighting (sidelighting, skylights, or tubular daylight devices) through the use of equivalent lighting schedules.
(x) Improved fan system efficiency through static pressure reset.	Carrier HAP 5.11 can model static pressure reset through the application of user-defined fan part-load curves.

(xi) Radiant heating or cooling (low or high temperature).	Carrier HAP 5.11 can model radiant heating or cooling (low or high temperature) by equivalent means.
(xii) Multiple or variable-speed control for fans, cooling equipment, or cooling towers.	Carrier HAP 5.11 explicitly models variable speed control for fans, cooling equipment and cooling towers. Carrier HAP 5.11 explicitly models multiple speed fans for cooling towers. Carrier HAP 5.11 explicitly models multiple speed control for indoor fans or cooling equipment.
(xiii) On-site energy systems (such as combined heat and power systems, fuel cells, solar photovoltaic, solar thermal, or wind).	Carrier HAP 5.11 cannot model on-site energy systems (such as combined heat and power systems, fuel cells, solar photovoltaic, solar thermal or wind) and shall not be used for projects with this technology.

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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: *AAA EnergySoftware cannot model system or feature X and shall not be used for projects with this technology*.
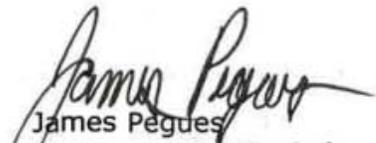
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