U.S. Department of Energy
Energy Efficiency and Renewable Energy

Building Technologies Program

Tax Deduction Qualified Software

Green Building Studio Web Service version 3.4

On this page you'll find information about the Green Building Studio Web Service version 3.4 qualified computer software (www.buildings.energy.gov/qualified_software.html), which calculates energy and power cost savings that meet federal tax incentive requirements for commercial buildings.

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Statements in quotes 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;	Autodesk, Inc. 444 Tenth Street, Suite 300 Santa Rosa, California 95401 http://www.autodesk.com
(2) The name, email address, and telephone number of the person to contact for further information regarding the software;	John F. Kennedy Autodesk, Inc. info@greenbuildingstudio.com +1 (707) 569-7373
(3) The name, version, or other identifier of the software as it will appear on the list;	Green Building Studio web service version 3.4 (based on DOE-2.2-44e4)
(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—	"Autodesk's Green Building Studio development team certifies the following:"
(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—	
(i) 8,760 hours per year;	"The Green Building Studio web service Version 3.4 software complies."
(ii) Calculation methodologies for the building components being modeled;	"The Green Building Studio web service Version 3.4 software 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 Green Building Studio web service Version 3.4 software complies."

(iv) Thermal mass effects;	"The Green Building Studio web service Version 3.4 software complies."
(v) Ten or more thermal zones;	"The Green Building Studio web service Version 3.4 software complies."
(vi) Part-load performance curves for mechanical equipment;	"The Green Building Studio web service Version 3.4 software complies."
(vii) Capacity and efficiency correction curves for mechanical heating and cooling equipment; and	"The Green Building Studio web service Version 3.4 software complies."
(viii) Air-side and water-side economizers with integrated control.	"The Green Building Studio web service Version 3.4 software complies with the air-side economizer and water-side economizer requirements. The underlying DOE-2.2-44e4 software cannot model water-side economizers 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 90.1-2004:	
(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 Green Building Studio web service Version 3.4 software complies."
(ii) Packaged Terminal Heat Pump (PTHP) (air source), single-zone package (through the wall), air-to-air DX coil heat/cool.	"The Green Building Studio web service Version 3.4 software complies."
(iii) Packaged Single Zone Air Conditioner (PSZ-AC), single-zone air, air-to-air DX coil cool, gas coil, constant-speed fan.	"The Green Building Studio web service Version 3.4 software complies."
(iv) Packaged Single Zone Heat Pump (PSZ-HP), single-zone air, air-to-air DX coil cool/heat, constant-speed fan.	"The Green Building Studio web service Version 3.4 software complies."
(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 Green Building Studio web service Version 3.4 software complies."
(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 Green Building Studio web service Version 3.4 software complies."
(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 Green Building Studio web service Version 3.4 software complies."
(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 Green Building Studio web service Version 3.4 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 Green Building Studio web service Version 3.4 software complies."
(ii) Design load calculations to determine required HVAC equipment capacities and air and water flow rates.	"The Green Building Studio web service Version 3.4 software complies."
(e) The software can explicitly model:	
(i) Natural ventilation.	"The Green Building Studio web service Version 3.4 software can model simple natural ventilation with air changes per hour or Sherman-Grimsrud coupled with schedules."
(ii) Mixed mode (natural and mechanical) ventilation.	"The Green Building Studio web service Version 3.4 software can alternate between natural and mechanical ventilation through the use of schedules."
(iii) Earth tempering of outdoor air.	"The Green Building Studio web service Version 3.4 software cannot model earth tempering of outdoor air. The underlying DOE-2.2-44e4 software cannot model earth tempering of outdoor air and shall not be used for projects with that technology."
(iv) Displacement ventilation.	"The Green Building Studio web service Version 3.4 software cannot directly model displacement ventilation. The underlying DOE-2.2-44e4 software cannot directly model displacement ventilation and shall not be used for projects with that technology."
(v) Evaporative cooling.	"The Green Building Studio web service Version 3.4 software can model evaporative cooling. The underlying DOE-2.2-44e4 software can model evaporative cooling as a pre-conditioner for other systems or as the only source of cooling"
(vi) Water use by occupants for cooking, cleaning or other domestic uses.	"The Green Building Studio web service Version 3.4 software can model total domestic water consumption. The underlying DOE-2.2-44e4 software models water consumption in total, varying the amounts through the use of schedules."
(vii) Water use by heating, cooling, or other equipment, or for on-site landscaping.	"The Green Building Studio web service Version 3.4 software can model water use by heating, cooling, or other equipment, or for on-site landscaping by entering the amount as part of the total domestic water

	consumption, and varying the amounts through the use of schedules. Water use by individual equipment or for on-site landscaping cannot be modeled explicitly."
(viii) Automatic interior or exterior lighting controls (such as occupancy, photocells, or time-clocks).	"The Green Building Studio web service Version 3.4 software can model automatic interior lighting controls. Automatic exterior lighting controls can be modeled through the use of detailed schedules."
(ix) Daylighting (sidelighting, skylights, or tubular daylight devices).	"The Green Building Studio web service Version 3.4 software can model daylighting (sidelighting and skylights)."
(x) Improved fan system efficiency through static pressure reset.	"The Green Building Studio web service Version 3.4 software can model static pressure reset."
(xi) Radiant heating or cooling (low or high temperature).	"The Green Building Studio web service Version 3.4 software can model baseboard heat. The underlying DOE-2.2-44e4 software cannot model radiant heating or cooling 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 Green Building Studio web service Version 3.4 software can model multiple or 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 Green Building Studio web service Version 3.4 software can model on-site energy systems including engines, gas turbines, and steam turbine generators and photovoltaic arrays."

Effective Date: 16 October 2008