BUILDING OPERATING management

HVAC

Very Efficient HVAC Systems May Qualify for Tax Deductions

By Charles Goulding, Jacob Goldman and Siddharth Sheth

The Energy Policy Act of 2005 (EPAct) provides potentially significant tax deductions for energy efficient HVAC systems installed in new and existing buildings. But there is a caveat: To qualify for the deduction, the HVAC system must reduce energy costs by at least 16.67 percent compared to HVAC systems designed to meet ASHRAE 90.1-2001.

Under current law, the project must be placed in service between Jan. 1, 2006 and Dec. 31, 2008 to qualify for EPAct tax benefits. There are efforts in Congress to increase the tax deductions and extend EPAct through the 2012 tax year and through 2014 for projects certified as of 2012.

For tax purposes the term “HVAC” includes all building HVAC equipment but excludes refrigeration. Qualifying HVAC projects typically fall into four categories.

1. **Comprehensive energy-efficient HVAC systems.** Merely changing one of the major components of an HVAC system — such as a package unit, a chiller or heat pumps — is generally insufficient to qualify for EPAct tax deductions. Normally only comprehensive energy-efficient HVAC system installations qualify — those that include very high efficiency core equipment plus variable frequency drives and additional enhancements, such as demand ventilation and energy recovery ventilation. The installation of an energy-efficient chiller in a building smaller than 150,000 square feet does provide an opportunity for an EPAct deduction since the ASHRAE reference building will include a less efficient HVAC package unit.
2. **Geothermal.** Numerous geothermal installations qualify for HVAC EPAct tax deductions because geothermal is not part of the ASHRAE 2001 reference building methodology.
3. **Thermal storage.** Thermal storage systems present excellent opportunities for EPAct tax deductions resulting from time-of-day pricing. Thermal storage systems make ice or cool water at night, which is used to cool a building during daylight hours. Night time electrical cost can be as much as 40 percent less than day rates which creates the type of substantial energy cost savings necessary to achieve EPAct tax deductions.
4. **Central plant environments.** Central plant environments present some potentially large EPAct deduction opportunities particularly if the central plant is very energy efficient and serves buildings smaller than 150,000 square feet.

The interdependence of the HVAC and lighting systems may offer additional opportunities for achieving HVAC deductions under EPAct. The consensus is that there is a 1-watt reduction in power consumption for an HVAC unit for every 3-watt reduction in lighting power. Thus, installing energy-efficient lighting may help a facility qualify for a deduction for the HVAC system. HVAC operating costs can further be reduced by reducing the operating hours of the lighting fixtures.

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To obtain a tax deduction for an HVAC system, the energy cost savings must be confirmed or supported by energy modeling software accepted by the Internal Revenue Service (IRS). As of now, five software models have gained IRS approval: Trane Trace 700, Energy Plus, Carrier HAP, Visual DOE and EnergyGauge. Other modeling software will probably be sent to the IRS for approval as time goes on.

Energy modeling can be quite expensive because it requires a lot of expertise and time for data entry. Ordinarily, tax savings potential alone does not justify the expenses of a model. Rather, modeling is generally used for non-tax reasons such as analyzing building equipment choices or for incentive/rebate requirements or LEED certification.

Those reasons can help justify the cost of a model needed to obtain an HVAC tax deduction. It is important to note that EPAct requires a different modeling approach than the one used for LEED. Facility executives should make sure that the engineers doing the modeling understand EPAct modeling requirements.

There are other ways to reduce the cost of energy modeling. For example, rebates may be available to reimburse some or all modeling costs. These rebates must usually be lined up before the model is completed; it is generally not possible to obtain a modeling rebate after the fact.

For large HVAC projects, the equipment manufacturer may absorb some or all of the modeling costs pursuant to the sale process.

More EPAct Projects

Despite the significant tax benefits available for energy-efficient HVAC systems, most of the projects that have qualified for tax deductions under EPAct have involved lighting. But that is beginning to change as facility executives learn about the tax incentives that are available.

In New Jersey, for example, the famed Monmouth Park horse racing facility is planning a comprehensive energy-efficiency initiative involving lighting, HVAC and the building envelope. The proposed HVAC investment includes air-to-air energy recovery ventilation. The facility exceeds 500,000 square feet. Preliminary calculations show that the EPAct tax deduction should fall between $300,000 and $600,000.

As the number of LEED projects increases, the number of HVAC, building envelope and whole building projects that qualify for EPAct will increase. Presuming Congress extends the window for EPAct projects, and that HVAC systems get more energy efficient, the number of standalone HVAC projects that qualify for EPAct should also increase. BOM

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