Clarifying EPAct 2005

Federal Tax Incentives for Commercial Buildings

By Michael Deru, Ph.D., Member ASHRAE; and Drury Crawley, Member ASHRAE

The Energy Policy Act of 2005 (EPAct 2005), Public Law 109-58 was signed by President George W. Bush on Aug. 8, 2005. This law contains substantial incentives and requirements for the use of renewable energy and energy efficiency for all sectors of energy demand and supply. Section 1331 of this law enacted Section 179D of the Internal Revenue Code and established incentives for energy-efficiency measures in commercial buildings.

These measures were drafted by a collaborative group of industry and efficiency advocates and offered to Congress as a way to focus efforts on opportunities for energy savings. There have been many articles, seminars, and training sessions on this section. We want to add one more article to the mix with the hopes of adding some clarification and new information.

The intent of Section 1331 is to encourage energy efficiency in commercial buildings through tax incentives. The tax incentives are in the form of tax deductions of up to $1.80/ft² ($19.38/m²) for energy-efficiency improvements in the interior lighting; HVAC; service hot water (SHW); and building envelope. To qualify for the full tax deductions, the energy-efficient property must produce at least 50% energy and power (i.e., peak demand) cost savings in the energy used for the interior lighting, HVAC, and SHW systems compared to a reference building that meets the minimum requirements of ANSI/ASHRAE/IESNA Standard 90.1-2001, Energy Standard for Buildings Except Low-Rise Residential Buildings. In addition, partial

About the Authors
Michael Deru, Ph.D., is a senior engineer at the National Renewable Energy Laboratory in Golden, Colo. Drury Crawley is with the U.S. Department of Energy in Washington, D.C.
tax deductions can be awarded for efficiency improvements in the subsystems. The efficiency improvements must be determined through the use of annual energy simulations, and the energy-efficient property must be inspected by a qualified individual.

One major concern about this new law is the limited time availability of tax deductions. EPAct 2005 authorizes the tax deductions for a period of two years starting Jan. 1, 2006 and ending Dec. 31, 2007. This is a short timeline, considering that it may take more than two years from design to occupation of a commercial building. Therefore, it may only be applicable to buildings that were already in the design process, which may be too late to effect a large-scale change in the building industry. Congress provided some relief in December 2006 with passage of the Tax Relief and Health Care Act of 2006 (H.R. 6111), which extends tax deductions for an additional year. In addition, there is an effort to extend the commercial building tax deduction further and increase the amount of the tax deduction.

While EPAct 2005 defines the broad intent of the tax incentives, it leaves out many of the details of how it is to be implemented. The Internal Revenue Service issued IRS Notice 2006-52 to clarify many of the issues. Most importantly, Notice 2006-52 establishes a process for certification of an energy-efficient property that meets the requirements of Standard 90.1-2001 as in effect on April 2, 2003 (includes Addenda a, b, c, d, and k).

The interim rule for lighting systems allows for a reduced tax deduction based on reductions in the installed lighting power density.

The energy and power cost savings are calculated using only the energy use in the HVAC, SHW, and interior lighting systems.

Three things must take place to show compliance:
- The energy and power cost savings must be proven with energy simulations by qualified software.
- Correct installation of the energy-efficient property in the commercial building must be proven by inspection.
- The results of the energy simulation and inspection must be documented by a qualified individual.

Table 1: Summary of EPAct 2005 federal tax deductions for commercial buildings.

<table>
<thead>
<tr>
<th>Essential Points of Section 1331</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The tax deductions apply to property placed in service after Dec. 31, 2005, and prior to Jan. 1, 2009.</td>
</tr>
<tr>
<td>• This is a tax deduction and not a tax credit, which means that the net value is approximately one-third, assuming a 34% tax bracket.</td>
</tr>
<tr>
<td>• The deduction applies only to efficiency measures in the HVAC, SHW, interior lighting, and envelope systems.</td>
</tr>
<tr>
<td>• The energy-efficient property must be installed on a building in the United States that is within the scope of Standard 90.1-2001.</td>
</tr>
<tr>
<td>• The amount of the tax deduction equals the cost of the energy-efficient property up to $1.80/ft² ($19.38/m²), or up to $0.60/ft² ($6.46 m²) for partially qualifying properties.</td>
</tr>
<tr>
<td>• The energy-efficient property must be shown through energy simulations of achieving 50% energy and power cost savings compared to a reference building that complies with the minimum requirements of Standard 90.1-2001 as in effect on April 2, 2003 (includes Addenda a, b, c, d, and k).</td>
</tr>
<tr>
<td>• The interim rule for lighting systems allows for a reduced tax deduction based on reductions in the installed lighting power density.</td>
</tr>
<tr>
<td>• The energy and power cost savings are calculated using only the energy use in the HVAC, SHW, and interior lighting systems.</td>
</tr>
<tr>
<td>• Three things must take place to show compliance:</td>
</tr>
<tr>
<td>o The energy and power cost savings must be proven with energy simulations by qualified software.</td>
</tr>
<tr>
<td>o Correct installation of the energy-efficient property in the commercial building must be proven by inspection.</td>
</tr>
<tr>
<td>o The results of the energy simulation and inspection must be documented by a qualified individual.</td>
</tr>
</tbody>
</table>
Where to Get More Information

DOE has a summary of the tax incentives in EPAct 2005 at www.energy.gov/taxbreaks.htm.


The list of qualified software can be found at www.eere.energy.gov/buildings/info/qualified_software/.


Notice 2006-52 defines a partially qualifying property as one that produces a $16\frac{2}{3}\%$ energy and power cost savings. In other words, a partially qualifying interior lighting system would produce a $16\frac{2}{3}\%$ energy and power cost savings in the energy used in the HVAC, SHW, and interior lighting systems over the period of one year. This definition treats all energy savings equally. However, it also makes it extremely difficult to meet the requirements for a $16\frac{2}{3}\%$ energy and power cost savings with improvements to the building envelope.

Notice 2006-52 also defines who can perform the certifications and qualifications for the software. Individuals qualified to certify the energy and power cost savings must be an engineer or contractor licensed in the jurisdiction in which the building is located. Notice 2006-52 lists several requirements for qualified software. DOE is responsible for reviewing software submissions and maintaining the list of qualified software at www.eere.energy.gov/buildings/info/qualified_software/.

As of early February 2007, there are five programs on the qualified list. Parties interested in adding their software to the qualified software list have to submit the information required in Notice 2006-52 to DOE for review.

One of the main points that Notice 2006-52 establishes is that the performance rating method (PRM) in Appendix G of Standard 90.1-2004 shall be used to calculate the energy and power cost savings. The purpose of Appendix G is to provide a method of determining how well a proposed building performs compared to a reference building that meets the minimum requirements of Standard 90.1-2004. In doing so, Appendix G defines how to model the proposed building and the reference building. In particular, it defines how the reference building is to meet the requirements of Standard 90.1. However, this poses a slight problem in that Appendix G is written to work with the 2004 version of Standard 90.1 and not the 2001 version.

The National Renewable Energy Laboratory (NREL) prepared further guidance on completing the energy simulations and inspections to certify the energy-efficient property. This document is titled Energy Savings Modeling and Inspection Guidelines for Commercial Building Federal Tax Deductions, which was published recently.

The thrust of this guideline document is to provide further definition in completing the energy simulations to show compliance, how to carry out the inspections, and how to document the results. Several issues covered in this document include:

- Coordinating Standard 90.1-2004 Appendix G with Standard 90.1-2001;
- Establishing a consistent reference building;
- Selecting utility rate structures to use; and
- Calculating the energy and power cost savings from the energy use in just the HVAC, SHW, and interior lighting systems.

Table 1 summarizes the categories and the savings. A fully qualifying property is one that achieves 50% savings in the annual energy and peak demand costs.
**Tax Credits for Homeowners**

For homeowners, the Energy Policy Act of 2005 provides tax credits for energy efficiency and renewable energy for their home—a dollar for dollar reduction of taxes due. Residential tax credits created by EPAct 2005 are nonrefundable—credits may only be used to reduce a taxpayer’s tax liability. If a taxpayer has no tax liability, they will receive no benefit from the tax credits. Residential tax credits created by EPAct 2005 are subject to limitation by the alternative minimum tax (AMT).


Requirements:
- Installed on taxpayer’s principal U.S. residence in 2006 or 2007 (Several bills in Congress propose extending the tax credits to 2012 or beyond.); and
- For building envelope components expected to remain in use for at least five years.

$500 maximum credit per residence for all tax years with these limits:
- Up to 10% of the cost of insulation materials or systems; doors; and metal roofs (with appropriate pigmented coatings);
- Up to 10% of the cost of exterior windows (including storm windows and skylights), but no more than $200;
- Up to $50 for advanced main air-circulating fans;
- Up to $150 for natural gas, propane, or oil furnace or hot water boilers; and
- Up to $300 for heat pumps, air conditioners, and gas/oil/propane water heater.

Manufacturers must certify to the homeowners that their products meet the requirements of Internal Revenue Code §25C.

Section 25C credits are taken on IRS Form 5695 and may not be carried forward to future tax years.


Requirements:

Credit of 30% of the cost of installation of:
- Photovoltaic/solar electric systems, maximum credit: $2,000.
- Solar water heating systems that provide at least half of the energy used for water heating, maximum credit: $2,000.
- Fuel cell systems, maximum credit: $500 per 0.5 kW of capacity.

Labor costs and the cost of piping or wiring to connect these systems to the residence are included in the credit computation.

Section 25D credits are taken on IRS Form 5695 and may be carried over to future tax years.
to run the HVAC, SHW, and interior lighting systems. The fully qualifying property may receive a tax deduction up to $1.80/ft² ($19.38/m²). A partially qualifying property is one that achieves a 16⅔% savings in the annual energy and peak demand costs to run the HVAC, SHW, and interior lighting systems. A partially qualifying property can be achieved with energy-efficiency improvement to the envelope, interior lighting, and/or the HVAC and SHW systems.

In addition, an interim rule exists that defines an alternate method to achieve a partially qualifying interior lighting system. The interim rule for interior lighting systems defines a simple method using lighting power density (LPD) with a sliding scale on the tax deduction. The LPD must be reduced by at least 25% (50% for warehouses) over the values in Standard 90.1-2001 (prior to Addendum g, which reduced the LPDs). Either the building area or space-by-space method may be used to determine the savings. The tax deduction is $0.60/ft² ($6.46/m²) times the applicable percentage. The applicable percentage varies linearly between 50% at 25% reduction in LPD and 100% at 40% reduction in LPD. The reduction in LPD must be determined and documented by approved software on the DOE list of qualified software. This software can be compliance type software and does not have to be building simulation software.

An interesting note about the interim rule for lighting systems is that many building types will qualify for the tax deductions by complying with the stricter limits in Standard 90.1-2004. A comparison of the building area LPDs in Standard 90.1-2001 to those in Standard 90.1-2004 shows that 15 of the 32 building types will qualify for the tax deductions by complying with the 2004 LPDs.

ASHRAE members interested in applying for the tax deduction or members asked to provide services to support application for the tax deductions can learn more from the references listed in the sidebar Where to Get More Information. The DOE Building Technologies Web site contains links to other sources of information that provide answers to frequently asked questions. There are also several seminars and webinars offered that provide more information.

This legislation was designed to encourage energy efficiency in commercial buildings. It will be interesting to see how effective it is. Is the $1.80/ft² ($19.38/m²) tax deduction enough of an incentive to encourage taxpayers to pay for the extra effort required to achieve the aggressive 50% energy and power cost savings? The federal government will have to determine if this tax law creates the right balance between making the incentives attractive and meaningful without costing excess tax revenue. Building owners must determine if

the extra costs of calculating whether they comply with the requirements for the tax deduction is the best use of resources. In some cases, better energy savings and better return on investment may be possible with other approaches. An important point to consider for building owners is that tax deductions received under this tax law reduce the depreciable basis of the qualifying property.

This legislation is the first attempt to offer federal tax incentives to encourage energy efficiency in commercial buildings. Because it is new, there is a lot to learn about the nuances of the law and how it applies to different situations. As with most new ideas, there are several issues to work through in application that may not work out as intended. While the legislation may not be perfect, we believe it is a step in the right direction.