

New York State's Green Building Tax Credit

by Craig Kneeland, Senior Project Manager

New York State Energy Research and Development Authority
17 Columbia Circle
Albany, NY 12203
518-862-1090 x 3311
518-862-1091 (fax)
cek@nyseda.org

ABSTRACT

In May of 2000, New York State passed the country's first Green Building Tax Credit (GBTC). The GBTC is a 25 million dollar income tax credit for owners and tenants of buildings which meet energy, indoor air quality, materials, commissioning, water conservation, appliance, and size criteria. GBTC and LEED™ regulations differ in that the GBTC is prescriptive, provides for on-going maintenance of green building performance, and allows compliance to be certified by licensed architects and engineers. The proposed draft regulations for the GBTC were developed via a process that included concerned parties from the public and private sector, representing both upstate and downstate interests. The greatest challenges faced in developing proposed draft regulations of the technical components of the regulations included time constraints, creating a modeling method for energy simulation programs, establishing indoor air quality measurement requirements, and the lack of uniform standards for materials. Opportunities for improvement identified by Advisory Committee members and others include eliminating the incentive for refrigerants and replacing the indoor air quality measurement requirement with an IAQ operation and maintenance plan.

New York State's Green Building Tax Credit (GBTC) was initially conceived of in 1995 by private sector individuals interested in sustainable design. The attendees at the original meeting included Asher Derman, Barry Dimson, Richard Farren, Rick Fedrizzi, Bob Fox, Ashok Gupta, Joe LaQuatra, Val Lehr, Ira Rubenstein, Dan Tishman, Adrian Tuluca, and Marilyn Weisman. The fundamental idea was to create a state income tax credit that would provide incentives to promote the design, construction, and operation of environmentally responsible buildings. Soon afterwards, a larger group of stakeholders, including real estate industry representatives, environmentalists, architects, engineers, developers, lawyers, and government officials gathered to discuss the ideas that would form the basis of the enabling legislation. This group met on a regular basis for the next two years and produced the first legislative draft. Some of the group members and the constituents they represented thought that further changes were desirable. After more meetings and considerable debate, NRDC and the Real Estate Board of New York

(REBNY) drafted the version of the bill that was introduced to the State Legislature in June of 1998. There was no action taken on this legislative proposal, but there was interest in it. The Department of Taxation and Finance put the bill into language consistent with other tax credit legislation and then it was reintroduced in January of 1999. Negotiations continued throughout 1999 and 2000, with the final version being passed by the legislature and signed into law by Governor Pataki in May of 2000.

In its original form, the Green Building Tax Credit would have no cap. However, a maximum dollar amount for the tax credit was added to the final version of the bill passed by the legislature, due to concerns about the potential liability to which no cap could expose the State. The first version of the tax credit bill also had a provision to make the credits tradable, so that not-for-profits, schools, municipalities and other groups not paying taxes could take advantage of the GBTC incentives. Given the difficulties of tracking traded credits, a decision was made to eliminate this condition also.

The New York State Green Building Tax Credit provides \$25 million in income tax credits over a nine year period, beginning at \$1 million in credits in year one and ramping up by \$1 million per year to \$5 million in year five, and then ramping down by \$1 million per year to \$1 million in year nine. Taxpayers receive 20% of the credits for which they are eligible each year for a five year period, provided they continue to meet the criteria established in the regulations.

The types of buildings that the tax credit targets include multiple dwellings (permanent and transient occupancy, seniors, adult residential care), business, mercantile (display and sale of goods, wares and merchandise), assembly (amusement, civic, dining, patriotic, political, religious, social and sports), and institutional. The minimum building size is 20,000 square feet; the minimum tenant space size is 10,000 square feet.

New York's Green Building Tax Credit offers three compliance paths. The first is a *green base building*, which is defined as the area of the building not intended for occupancy by a tenant or owner. Because developers typically have no control over what tenants do in their leased space, this option was created to ensure that developers did not have to depend on their tenants to receive the benefits of the GBTC. The base building tax incentive is 5% of allowable costs, which are capped at \$150 per square foot. This makes the green base building tax incentive worth a maximum of \$7.50 per square foot¹. Allowable costs are "amounts properly chargeable to capital account, other than for land," such as construction, commissioning, professional fees allocable to construction, and site costs, but excluding the cost of telephone systems and computers, fuel cells, photovoltaics, or air-conditioning equipment using approved refrigerants.

The second path is a *green tenant space*, which may or may not be within a green base building, in recognition of the fact that individual tenants in a given building have limited control over

¹ This figure is for the *entire* tax credit. The successful applicant receives 20% of this amount per year for five years.

what the developer and other tenants do in their space. The tenant space tax incentive is 5% of allowable costs, which are capped at \$75 per square foot. This makes the green tenant space tax credit worth a maximum of \$3.75 per square foot². There can be multiple green tenant spaces within a single building; any owner-occupied space in a green base building must be green tenant space.

The third path is taken if the base building is green and 100% of the tenant space is green. In this case, the building is eligible for a *green whole building* tax credit of 7% of the allowable costs, so that the base building receives \$10.50 per square foot³ (\$150 x .07) in incentives and the tenant space receives \$5.25 per square foot⁴ (\$75 x .07). If a green base building, green tenant space or green whole building is located in an economic development zone, the incentives increase by one percent (5% becomes 6%, 7% becomes 8%).

There are additional credits available for fuel cells, photovoltaics, and air-conditioning equipment that uses green refrigerants if installed in a green base building, tenant space or whole building. The tax credit cannot be used for these measures alone; all other green criteria must also be met (see next paragraph). For fuel cells, the state will give a credit of 30% of the installed cost, up to \$1,000 per kilowatt of DC-rated capacity⁵. For building-integrated photovoltaics (BIPV), the tax credit covers 100% of the incremental cost (relative to the material being replaced) such as spandrel glass. Non-BIPV is supported by a tax credit of 25% of its cost. For either type of photovoltaic system, the cap is \$3 per watt of DC-rated capacity⁶. Finally, for air-conditioning equipment that uses an EPA-approved non-ozone depleting refrigerant or R-123, there is an incentive of 10% of the equipment cost⁷.

The main criteria that are used to determine whether a building or tenant space is green include energy efficiency, indoor air quality, materials, commissioning, and appliances. The energy efficiency component is performance-based, requiring new buildings and tenant spaces to use 65% of the energy that a 1991 New York State Energy Conservation Construction Code (Energy Code) -compliant building would. Rehabilitated tenant space and buildings may use 75% of the energy allowed by the Energy Code. These figures are reduced for office buildings, because the 1991 Energy Code allowed a very high lighting power density for this occupancy (2.4 watts/square foot); hence, with typical, currently used lighting technology alone, it is easy to achieve significant savings. The energy use requirements for office buildings range from 55% to 75% of the Energy Code, depending on the percentage of office space in the building and whether the application is for a tenant space or a whole building. Energy modeling with DOE

²⁻⁷ These figures are for the *entire* tax credit. The successful applicant receives 20% of this amount per year for five years.

2.1E or equivalent is used to determine compliance with this requirement. All equipment must meet the requirements of the energy code or be Energy Star® listed.

The criteria for Indoor Air Quality (IAQ) include the creation and implementation of an IAQ plan during construction and an IAQ management plan for operation and maintenance. Annual IAQ testing for carbon dioxide, carbon monoxide, total volatile organic compounds (TVOCs), formaldehyde, particulates, and radon is also required.

There are two ways to meet the requirements for materials. The first is performance-based, for recycled content, rapidly renewable materials, maximum toxicity/VOC content, and construction waste management. There are alternatives to each of these criteria. They include building reuse, an alternative method to demonstrate compliance with the requirement to limit toxicity and VOCs (volatile organic compounds), salvaged or refurbished products, local/regional materials, and green roofs. The second path is for materials that were listed in the enabling legislation. They are concrete, wood, wood products and millwork, insulation, flooring and ceramic, ceramic/glass or cementitious tiles, ceiling tiles and panels, carpet and carpet tile, architectural coatings, adhesives and sealants and new furniture. Substitution options include low mercury-content lamps, building reuse, and green roofs. There are, in addition, six pre-requisites on this path, for fibrous insulation, supply and return air plenums, duct liners, synthetic carpet and carpet cushion, carpet adhesive and endangered wood.

The GBTC commissioning requirements are drawn from documents issued by the Sheet Metal and Air Conditioning Contractors' National Association (SMACNA), the United States Green Building Council (USGBC), Portland Energy Conservation, Incorporated (PECI), and the American Society for Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE). The final product is similar to the commissioning prerequisite plus the Additional Commissioning Credit available in LEED™, Version 2.0 (Leadership in Energy and Environmental Design, the USGBC's green building rating program). The GBTC only requires the commissioning of the mechanical system in the base building and IAQ systems that affect mechanical ventilation in it. However, GBTC requirements for these systems are more specific, and, therefore, likely to be more stringent than those of LEED 2.0.

Water conservation strategies are specified for buildings located in areas where water use is not metered and for buildings located in areas that do not have sewers or have designated storm sewers. Where water use is not metered, gray water, rainwater or drainage water must be used for flushing urinals and toilets, and may be used for laundry, car wash, fire sprinklers, fire fighting, landscape water features, or irrigation. Alternatively, water cascading from sink to toilet and the use of post-wash rinse water as laundry wash water in institutional laundry machines is allowed in residential, hotel and motel structures. Buildings located in areas that do not have sewers or have designated storm sewers must provide an oil grit separator or a water quality pond, or use pervious paving materials for at least 50 percent of non-landscaped areas.

To the greatest extent possible, the regulations for the technical components of the GBTC were developed based on existing sources. Some of the resources used were documents created by ASHRAE, ASTM, California Department of Health Services, California Air Resources Board, California Bay Area Air Resources Board, California South Coast Air Quality Management District, Carpet and Rug Institute (CRI), Green Seal, International Agency for Research on Cancer (IARC), National Air Duct Cleaners Association (NADCA), National Fire Protection Association (NFPA), New York State Energy and Environmental Laws, SMACNA, Underwriter's Laboratories (UL), and the United States Environmental Protection Agency (USEPA).

The major exception to the use of existing standards is the energy modeling section. There are no energy simulation tools designed to separate base building and tenant space energy use. As a result, Steven Winter Associates (SWA), NYSERDA's consultant for developing the proposed draft technical components of the GBTC regulations provided to DEC, had to create a methodology that would address this shortcoming. After trying several different approaches, SWA came upon a reasonable solution for the problem. For a green base building, the solution involves using separate electrical and fossil fuel meters in the computer model for lighting, domestic hot water, and other end-uses common to both the base building and tenant space, and excluding the energy use in the tenant space associated with these components, except their effect on heating and cooling loads. For tenant space, the solution involves estimating, one-by-one, the effect on the building's total energy use the following systems that serve the green tenant space: primary heating and/or cooling equipment, lighting, interior glazing, domestic hot water (DHW), and HVAC (heating, ventilating and air-conditioning) fans and pumps. The contribution of all these components is summed up to yield the energy use attributable to the tenant space only. Earlier, more accurate solutions required either numerous parametric simulations or complex algorithm development. These solutions were abandoned as impractical for anything other than a research project, in favor of the current, simpler approach.

There are significant differences between the Green Building Tax Credit and LEED™. In part this is due to the fact that New York State law prevents the adoption of third party standards that may change with time. In part it is due the fact LEED™ 2.0 was under development when the enabling legislation for the tax credit was being written. The building materials, finishes, and furnishings section of the GBTC most resembles LEED™, because the legislation required this section to be informed by LEED™. The greatest difference between the GBTC and LEED™ is that the tax credit is prescriptive, telling the applicant exactly what must be done in order to be eligible for the income tax credit, while LEED™ has a limited number of pre-requisites and then offers a menu of options to achieve green building status.

For example, energy use (Btus) in a new building applying for the GBTC must be no more than 65% of an Energy Code-compliant building or, in a rehabilitated facility, 75% of an Energy Code-compliant building. As stated earlier, if the application is for an office building, the energy use requirements are lower. LEED™'s energy requirements are based on cost, not use, and offer

options for performance values ranging from a pre-requisite of compliance with ASHRAE 90.1-1999 to 60% more efficient than ASHRAE-90.1-1999.

Where LEED™ makes an IAQ management plan during construction optional, the GBTC requires it. IAQ measurements are not mandated for a LEED™ -rated building, but they are for a building seeking to acquire a green building tax credit from New York State. Most importantly, from the perspective of the public and private sector IAQ experts on the GBTC Advisory Committee, the tax credit mandates an IAQ management plan for operations and maintenance.

GBTC commissioning requirements are the approximate equivalent of LEED™'s commissioning prerequisite plus the Additional Commissioning credit, including a Systems and Energy Management manual and post-occupancy review. GBTC commissioning also includes as-built energy modeling, but excludes design reviews, as well as commissioning of lighting and water systems in the base building, or any systems within tenant spaces.

Another difference between LEED™ and the Green Building Tax Credit is that licensed architects and professional engineers are used to certify compliance with the GBTC. This keeps the private sector involved as much as possible in the process. However, if the Department of Environmental Conservation (DEC), which is administering the tax credit, has reason to believe that an architect or professional engineer has engaged in professional misconduct, then it will inform the Education Department, which is responsible for professional licensing.

Finally, the GBTC requires record keeping of performance measures such as annual energy consumption⁸, yearly results of air monitoring, annual confirmation that smoking requirements have been maintained, tenant green building guidelines, requests to remedy IAQ problems, as well as initial and monthly results of photovoltaic and fuel cell performance.

The tax credit legislation calls for the DEC to administer the program, and to develop the regulations in consultation with the New York State Energy Research and Development Authority (NYSERDA) and the Department of Health (DOH). NYSEDA itself does not have regulatory authority, however, because of its experience in green buildings, dating back to 1996 and its work on 4 Times Square and other New York City projects, NYSEDA acted as a technical consultant to DEC and developed proposed draft regulations for the technical components of the GBTC. These draft regulations were delivered to DEC for its consideration and incorporation into its rulemaking.

NYSERDA's first step toward creating the proposed technical components of the draft regulations was to issue a Request for Proposals (RFP) for technical assistance. Four proposals from companies in the United States and Canada were submitted. After evaluation by a Technical

⁸ Annual energy consumption must be recorded, but the GBTC does not require that the actual energy use match the energy use predicted by the computer simulations. The complexities of such a match can only be addressed in research projects..

Evaluation Panel (TEP), consisting of NYSERDA staff and external reviewers, Steven Winter Associates (SWA) of Norwalk, Connecticut was selected to do the work. Adrian Tuluca, Catherine Bobenhausen and Ian Graham were the people from Steven Winter Associates who worked on this project. Their first task was to review existing standards to determine which of them could be used for the GBTC.

In order to provide input from interested parties, NYSERDA next assembled an Advisory Committee consisting of representatives from the public and private sectors in upstate and downstate New York, with expertise in architecture, engineering, project management, indoor air quality, real estate, business and environmental issues. The Advisory Committee members were Dale Bryk of NRDC, Doug Mass of Cosentini Associates, Adam Hinge of Sustainable Energy Partnerships, Ken Pokalsky of the Business Council of New York State, Mike Slattery of REBNY, Steve Campbell of Phoenix Design, Sylvia Smith of Fox & Fowle, Terry Brennan of Camroden Associates, Todd Nelson of Project Directions, and Wayne Tusa of Environmental Risk and Loss Control. Ralph Steinglass of Team Builders facilitated the meetings. DEC was represented by Jim Austin; Ed Horn represented DOH. Craig Kneeland, Dawn Jablonski, and Bob Carver of NYSERDA served on the Advisory Committee as chair, counsel, and technical advisor, respectively. The Advisory Committee also included staff from Taxation and Finance, Empire State Development Corporation, and the Governor's Office of Regulatory Reform.

This group met for two hours on a monthly basis to review the submittals of Steven Winter Associates. These submittals were distributed in advance of the meeting to Advisory Committee members and other interested parties. Ground rules were established for the meetings. First, it was agreed that, while input was highly valued, consensus from the Advisory Committee was not needed for decisions to be made. This was primarily a function of the time frame within which the regulations needed to be drafted. Second, the meetings were open to the public and announced well ahead of time to facilitate attendance. Requests for input from the general public at the meetings had to be approved by the Advisory Committee in advance. The idea behind this was to ensure that the business at hand for each meeting could be finished. Finally, each of the Advisory Committee members agreed to act as liaison with organizations throughout the State, ensuring that they had a voice at the table.

New York State's Green Building Tax Credit achieved a number of firsts in various categories. Foremost among these is that the GBTC is the first of its kind in the country. In New York State, this was the first time multiple agencies developed regulations together using the methodology described in this paper. Because of the cooperation involved and the celerity with which the proposed draft technical components of the regulations were developed, this is considered to be a successful venture that involved parties hope will be replicated. This was also one of the first times in New York State that regulations were developed with input from affected parties at every step of the way, from formulating the enabling legislation, to reviewing and commenting on drafts of the proposed regulations, to providing comments at the public hearings prior to the finalization of the regulations.

The ancillary impacts of the GBTC have proven to be interesting as well. A number of states throughout the country have contacted both NYSERDA and DEC about developing their own green building tax credits. NYSERDA and DEC even entertained a delegation from Japan. Maryland adopted New York State's legislation verbatim. Others known to have expressed an interest include California, Massachusetts, Connecticut, Pennsylvania, Rhode Island, Delaware, and Virginia.

In May of 2001, Governor Pataki authorized Executive Order 111, entitled "Green and Clean State Buildings and Vehicles." The language in the Executive Order calls for the green building guidelines to be based upon those in the GBTC regulations and LEED™. Also, a number of groups involved in the redevelopment of Lower Manhattan have called for the GBTC to be made available there so that the buildings are sustainably designed, operated, and maintained.

Creating proposed draft technical components for regulations for the GBTC presented significant challenges. As alluded to earlier in this paper, time was a major factor. The enabling legislation required some of the regulations to be completed within six months of the passage of the bill, while twelve months were available for other regulations. All of the technical components of the draft regulations were completed in six months.

Energy modeling for base buildings and tenant space was another large challenge. As previously stated, there are no programs that are designed to do this. In essence, Steven Winter Associates conducted a research project to develop a methodology for this in the middle of making the proposed draft regulations.

Indoor air quality measurement standards have long been points of contention, whether for green building tax credits, EPA's BASE (Building Assessment Survey and Evaluation) study, or investigation of IAQ complaints. The major IAQ-related questions that NYSERDA, DEC, DOH, Steven Winter Associates and the Advisory Committee had to address were which standards to use, what sampling and analytical methods to employ, when to test, where to test, and whether retesting would be permissible if initial results were unsatisfactory.

Perhaps the most time-consuming issue in the development of the proposed draft regulations was related to refrigerants. The essence of the problem was determining whether a refrigerant with an ozone depletion potential (ODP) of zero is more environmentally beneficial than one with a low global warming potential (GWP). This same issue has generated considerable debate in the LEED™ rating system. With respect to the GBTC, the solution to this problem was to allow the additional tax credit for equipment using non-ozone depleting refrigerants for the term of the tax credit, and to allow it for equipment using R-123 for two years after the regulations come into effect. The two year time limit does not apply if the Commissioner of the Department of Environmental Conservation determines that the environmental attributes of R-123 are equal to or more beneficial than the environmental attributes of EPA-approved non-ozone depleting refrigerants.

Finally, there was concern over a lack of uniform standards for selecting green materials. For example, it was noted by people on the Advisory Committee and industry representatives that resilient flooring is not allowed to contain synthetic latex, vinyl, other thermoplastics or thermosetting plastics as backings or pre-finished coatings, yet plastic lumber is considered a viable alternative for pressure-treated wood. There are numerous efforts in the green building industry underway to establish a uniform standard for material selection, for example, those by the Athena Institute (Life Cycle Inventory reports and their Environmental Impact Estimator) and National Institute of Standards and Technology's BEES (Building for Environmental and Economic Sustainability) program. In the meantime, judgements about the environmental benefits of materials will continue to be made by specifiers, based on the best available information at the time.

In recognition of the fact that the green building industry is changing rapidly, the legislation requires that DEC, in consultation with NYSERDA and DOH, review and update the regulations for energy, appliances, and materials every two years. This will provide the state with on-going opportunities to improve the GBTC criteria. The legislation also mandates that, by April 1, 2008, DEC make a recommendation regarding the establishment of a permanent green building tax credit program.

CONCLUSION

The creation of New York State's Green Building Tax Credit demonstrates the key ingredient of a successful green building project: teamwork. The idea initially conceived of by a few people in a room was nurtured by green building advocates from all sectors of the industry. There was disagreement at times, but the advocates reached a compromise that was satisfactory to most of them. Interested parties such as REBNY, NRDC, DEC, the Department of Taxation and Finance, and NYSERDA came together to create the version of the legislation that was ultimately passed by the legislature. SWA, NYSERDA and DEC worked with the Advisory Committee, who worked with their constituents, to create proposed draft technical components of the regulations that were acceptable to all interested parties. The hope and expectation is that all this cooperation will help to promote the incorporation of green building technologies into standard design, operation and maintenance practices.

References:

Athena Institute: www.athenasmi.ca

Portland Energy Conservation, Inc.: www.peci.org

American Society for Heating, Refrigerating, and Air Conditioning Engineers: www.ashrae.org

ASTM: www.astm.org

California Department of Health Services: www.dhs.cahwnet.gov

California Air Resources Board: www.arb.ca.gov

California Bay Area Air Resources Board: www.baaqmd.gov

California South Coast Air Quality Management District: www.aqmd.gov

Carpet and Rug Institute: www.carpet-rug.com

Green Seal: www.greenseal.org

International Agency for Research on Cancer: www.iarc.fr

National Air Duct Cleaners Association: www.nadca.com

National Institute of Standards and Technology: www.bfrl.nist.gov/oea/software/bees.html

National Fire Protection Association: www.nfpa.org

Natural Resources Defense Council: www.nrdc.org

Real Estate Board of New York: www.rebny.com

Sheet Metal and Air Conditioning Contractor's National Association: www.smacna.org

Underwriter's Laboratories: www.ul.com

United States Environmental Protection Agency: www.usepa.gov

United States Green Building Council: www.usgbc.org

For references to specific documents, please go to: www.nyserda.org/green.html , scroll down to the section on the Green Building Tax Credit, click on the link to the New York State Department of Environmental Conservation, and click on the tax credit regulations. The references are at the end of the regulations.