

## Regulatory Impact Statement

1. Statutory Authority: Public Authorities Law Section 1872(4) authorizes the Authority to promulgate rules and regulations setting standards for new and substantially renovated residential buildings that will qualify for an incentive to cover a portion of the incremental costs of building “green” and “sustainable”; Public Authorities Law Section 1855 authorizes the Authority to promulgate rules and regulations; and State Administrative Procedures Act Section 102 generally authorizes the promulgation of rules and regulations.

2. Legislative Objectives: The Legislative objectives are to establish standards for “green” and “sustainable” residential building design and construction; and to provide an approximately 4-year incentive program to cover a portion of the incremental costs of incorporating “green” and “sustainable” construction techniques in new and substantially renovated residential buildings of fewer than twelve dwelling units.

3. Needs and benefits: The U. S. Department of Energy (DOE) estimates that the residential building sector accounts for twenty-two percent of energy consumed, seventy-four percent of water used, and twenty-one percent of carbon dioxide emissions produced in the United States. Construction and renovation of residential buildings that use “green” design and construction techniques can result in lowered energy consumption, conservation of natural resources, promotion of healthy indoor living environments, reduction of pollutants and emissions, and incorporation of products that are environmentally responsible, in comparison to standard design and constructed residential buildings.

The green residential building program (Program) will increase access to green, single and multifamily residential buildings of fewer than twelve units in New York State by providing an incentive to cover a portion of the incremental costs of constructing or substantially renovating residential buildings. In order to qualify for the program, an Owner is required to design and construct the residential building to the silver performance level of the National Association of Home Builders’ National Green Building Standard or the U.S. Green Building Standard Leadership in Energy and Environmental Design (LEED) for Homes. An Owner with a

residential building of four or fewer dwelling units must also achieve specified performance standards for improved energy efficiency. An Owner will have a complete Application when construction is complete and a certification of performance has been obtained from one of the two prescribed performance levels. Funds will be awarded on a first come, first served basis, until funds are exhausted. Complete Applications will be time and date stamped to determine order of receipt. Potential applicants will be able to check the Authority's website concerning the amount of available funding. Applicants may use an Authority-developed Application that will be posted on its website, but it is not required. Technicians and builders who meet the qualifications set forth in the regulations may request that they be listed on the Authority's website. If a complete Application is not received before October 31, 2013, no incentive will be payable. For complete applications filed before October 31, 2013, incentives will be paid to the extent that funds are available.

If an application is determined to be incomplete, the Authority will notify the Owner in writing within 45 days of the receipt of the Application describing the steps that need to be taken to submit a complete Application. Owners notified that an Application is incomplete will need to meet the October 31, 2013, deadline for submitting a complete Application. It is possible that an Owner will not receive an incentive if funds are exhausted or the necessary documentation necessary to complete the Application is not received within the stated deadlines.

4. Costs: In determining which standards to use, and to obtain input and guidance from interested and involved parties, the Authority established an Advisory Committee. The Advisory Committee is comprised of representatives from the New York State Department of State, New York State Division of Housing and Community Renewal, New York State Department of Environmental Conservation, New York City Economic Development Corporation, Urban Green Council (New York City Chapter) of the U.S. Green Building Council (USGBC), the U.S. Department of Housing and Urban Development, and the New York State Builders

Association, as well as affordable housing developers, builders, architects, project managers, and engineers with professional experience and expertise in green buildings.

The Program establishes the green residential building standards for residential buildings that are designed and constructed, or substantially renovated, to obtain the second (Silver) or higher level LEED certification using either the LEED for Homes (LEED-H) Rating System, or the LEED for New Construction (LEED-NC) Rating System, or obtain a second level (Silver) or higher certification from the National Green Building Standard, International Code Council 700-2008 (NGBS). LEED-H and NGBS generally apply to single-family residential buildings of 3 or fewer stories in height (low-rise), and LEED-NC applies to multi-family buildings of greater than 3 stories in height (mid-rise and high-rise). NGBS may be used for low-rise to high-rise residential buildings. Owners will be required to demonstrate 500 kilowatt/hours of annual electricity use reduction for each dwelling unit by installing a combination of more energy efficient household appliances and lighting. The incremental cost for achieving the 500 kWh incremental savings is about \$386. A residential building with four or fewer dwelling units and three stories or fewer in height above grade will also be required to demonstrate that it meets or exceeds the minimum energy efficiency and performance specifications of the Authority's separately administered New York ENERGY STAR<sup>®</sup> Labeled Homes program. The New York ENERGY STAR<sup>®</sup> Labeled Homes program requires a residential building to demonstrate that it is approximately 30% more efficient than standard construction. As prescribed by the statute, the Program is available to single-family residential buildings and multi-family residential buildings and townhouse structures containing less than 12 dwelling units.

In meeting the standards, incremental construction and other costs will be incurred, as compared to the cost of meeting the minimum standards contained in the New York State Energy Conservation Construction Code (ECCC). The additional costs associated with building green can include both "soft" costs such as registration and certification fees, developing a building plan and performing design review, on-site inspections,

and testing and verifying building performance; and “hard” costs, such as incremental costs associated with environmentally preferable building materials, such as certified wood products, paints and adhesive with low levels of volatile organic compounds (VOCs), more water-efficient plumbing fixtures, and more energy efficient equipment, including heating and air conditioning equipment, domestic hot water heaters, lighting, and household appliances. Some green building measures, such as building design to position windows to optimize passive solar heating, are considered cost-neutral.

There are several other variables that will influence costs, such as size of the residential building or dwelling unit, whether or not the residential building design is being replicated within a development or custom designed and built, and a builder’s familiarity with green residential building programs and techniques. The following cost analysis is based on average additional costs for median-sized and median-priced residential buildings and dwelling units and the New York State average of 2.7 residents per household as determined by the Census Bureau for 2005-2007.

For single-family residential buildings, incremental costs for meeting the minimum energy efficiency requirements and obtaining a LEED-rating for a residential building in a development in New York State averages about \$8,000. Custom-built residential buildings and those undergoing substantial renovation, because of their unique characteristics, incur incremental costs of approximately double this amount.

For single-family residential buildings, based on a March 2008 National Association of Home Builders (NAHB) Research Center report, incremental costs for meeting the minimum energy efficiency requirements and obtaining the second-level NGBS (Silver performance level) standard ranges from \$4,700-\$6,000 for an entry-level, single-family residential building in a development in Silver Springs, MD. Using the location adjustment factors provided in the report, incremental costs would be in the ranges of \$5,250-\$6,700 in the Syracuse, New York metropolitan area and \$6,400-\$8,165 in the White Plains, New York metropolitan area.

With respect to a multi-family residential building, incremental costs for meeting the minimum energy efficiency standards and obtaining a LEED-rating for a duplex total an average increase of \$11,100, incremental costs for a 5 dwelling unit LEED-rated residential building built for rent averages \$17,250, and one built for sale averages \$18,375. Incremental costs for an eleven unit LEED-rated residential building built-for-rent totals an average on \$27,150, and one built-for-sale totals an average of \$29,625.

Based on information from a major LEED for Homes administrator, average estimated soft costs associated with a LEED-Silver residential building achieving LEED certification, typically range from \$2,800 for an average single-family residential building in a development to \$11,000 for an average custom-built, single-family residence. Soft costs associated with an NGBS-Silver certification for a single-family residential building are estimated to be similar or somewhat lower, based on the NAHB Research Center report. Average estimated soft costs associated with a multi-family residential building range from \$4,600 for a duplex in a development of similar buildings, \$15,000 for a 5 dwelling unit residential building, and up to \$22,200 for an 11 dwelling unit LEED-rated multifamily residential building where units are build to rent.

The Authority estimates, based on its existing programs, that for a residential building with one to four dwelling units, incremental hard costs will range from \$5,250 for a single-family residential building up to \$6,040 for a four-unit residential building, based on additional costs of meeting energy efficiency performance requirements of the Program. For a multi-family residential building with 5-11 dwelling units built to rent, based on the Authority's Green Affordable Housing program, and which receives funding under the Authority's Multi-Family Performance Program, an average incremental increase in hard costs of \$0.45 per occupied square foot with a median square footage of 1000 feet per dwelling unit is estimated. The New York State Division of Housing and Community Renewal (DHCR) has indicated that the average size of dwelling units in affordable housing projects receiving State funding is approximately 1,000 square feet. The median square footage of dwelling units in built-to-rent buildings in the Northeast states was 1,080 square feet in 2007 according to the

U.S. Census. Additional non-energy related hard costs are thus projected to be \$2,250 for a five dwelling unit building and \$4,950 for an eleven unit building where units are built-to-rent.

In a 5 to 11 dwelling unit residential building, when dwelling units are built-for-sale, the median square footage in the Northeast states in 2007 was 1,472. For purposes of this analysis 1,500 square feet is used as the median, multiplied by \$0.45 per occupied square foot. Total additional hard costs for a 5 dwelling unit residential building when the units are built-for-sale are thus projected to be \$3,375, and for an 11 dwelling unit residential building when the units are built-for-sale are projected to be \$7,425.

For a multi-family residential building when dwelling units are built-to-rent, for LEED-rated residential building achieving the 500 kWh annual electric savings, total additional costs are projected to be \$17,636 for a 5 dwelling unit building, and \$27,536 for an 11 dwelling unit building; for dwelling units built-for-sale, these costs are projected to be \$18,761 for a 5 dwelling unit building and \$30,011 for an 11 dwelling unit building.

Counterbalancing these incremental up-front costs are life-cycle, money-saving benefits due to increased energy and water efficiencies. A residential building with one to four dwelling units meeting Program requirements will achieve projected annual baseline energy cost savings of approximately 30% compared to residential buildings constructed to meet the minimum requirements of ECCC, based on average energy use and occupancy patterns.

Average annual household energy costs for a single family residential building in New York State are estimated by the Authority to be \$2,830. This is based on the approximate median square footage of new single-family residential buildings (2,300) in the Northeast completed in 2007, multiplied by \$1.23 in energy costs per square foot taken from the 2005 Residential Energy Consumption Survey (RECS) data from the U.S. Energy Information Agency (EIA), reduced by 15%, which according to the U.S. Environmental Protection Agency (EPA), accounts for miscellaneous electrical loads, such as televisions, computers, microwaves, and other small appliances, that are not calculated in baseline building energy efficiency. Thus, a single-family

residential building meeting the green building residential standards prescribed by these regulations is projected to yield an average annual energy cost saving of approximately \$720. Water efficiency measures should reduce indoor and outdoor water use by 30%, providing an additional average annual savings of \$100 in water bills for single family residential buildings which pay on a usage basis, based on USGBC information. Coupling energy and water cost savings, total annual savings should approach \$820, or \$8,200 over 10-years.

Similar annual energy cost savings of 20% to 30% are projected for the multi-family residential buildings eligible to participate in this program. Average annual energy costs for one dwelling unit within a multifamily residential building are projected by the Authority to be \$1,230 for dwelling units built-for-rent, and \$1,845 for dwelling units built-for-sale, based on the 2005 RECS data from the U.S. EIA. Average energy expenditures are \$1.23 per square foot, multiplied by the median dwelling unit size of 1,000 square foot for dwelling units built-for-rent, and 1,500 square feet for dwelling units built-for-sale, and reduced by 15% to account for miscellaneous electrical loads. Thus, average annual energy cost savings are projected to be in the range of \$210 to \$315 for dwelling units built-for-rent, and \$315-to-\$470 for dwelling units built for sale, based on average energy use and occupancy patterns. As with single-family residential buildings, water efficiency measures should reduce overall water use by 30%, providing additional average annual savings of \$50 in water bills, based on USGBC estimates referenced above, and reduced by half to reflect that per household water use for multifamily buildings is about half of the amount for single-family residential buildings, according to EPA data. Coupled with a \$50 annual water bill saving, total annual savings should approach \$260 to \$365 per dwelling unit built-for-rent to \$365 to \$520 per dwelling unit built-for-sale, or an average of \$3,100 to \$4,400 over 10-years, respectively.

The incentive levels are set at roughly 50%-60% of the additional costs associated with meeting the green building performance standards. With Program awards increased on a per-dwelling unit basis, ranging from \$5,125 for a single residential building to \$13,375 for an 11-unit multi-family residential building, simple

payback periods on the up-front incremental costs are shortened considerably: from one to four years for single family building in developments, to three to seven years for multifamily buildings. Since most residential buildings have service lives much longer than this, benefits should continue to accrue for many years thereafter. U.S. Census Bureau statistics show that the average age of residential buildings in the U.S. in 2001 was 32 years.

Anticipated funding for the Program is estimated to be \$19.3 million. At this funding level, the Program is projected to provide awards to nearly 3,000 residential buildings during its almost four years of operations 2010-2013, including approximately 2,200 residential buildings of 1 and 2 dwelling units, 600 of 3 to 5 dwelling unit buildings, and 100 of 6 to 11 dwelling units. Based on this level of funding, the Program could result in the creation of 4,600-8,500 green dwelling units. These estimates are based upon projected residential building trends for 2009-12 prepared by the Congressional Budget Office, prior year housing starts in New York State for buildings less than 12 dwelling units as reported by the US Census Bureau and McGraw Hill Construction, and from current participation figures in the New York ENERGY STAR<sup>®</sup> Labeled Homes program and Multifamily Performance Program.

The Authority anticipates that a majority of the residential buildings participating in the Program will be new construction projects. This is because becoming LEED-rated or NGBS-rated is difficult for projects that do not include “whole building” performance-based renovations, which entail comprehensive analysis of and improvements to the building envelope, and needed upgrades of heating, ventilation, and air conditioning equipment, household appliances, and lighting to meet the energy efficiency requirements of these standards.

5. Costs to the Agency: The Authority anticipates allocating up to \$19.3 million for the Program. No State appropriations are needed for the Program.

6. Local government mandates: There are no mandates placed directly on local governments. If a local government chooses to build a green residential building and to participate in the Program, such as through construction of affordable housing, it would have to comply with Program requirements.

7. Paperwork: Owners will be required to complete and submit an Application for payment which will include the following documents and information: a copy of the building owner's notification from the USGBC or NAHB that the building has successfully certified at the required minimum level or higher; a copy of the Certificate(s) of Occupancy, Certificate of Completion, or other documentation; documentation showing that inspections pertaining to the applicable green building certification have been completed; and a description of the work performed that qualified the building(s) for the incentive(s).

8. Duplication: The Authority has sought to minimize duplication by adopting widely accepted national standards or rating systems as the basis for the Program. To the extent that there are other State and Federal energy efficiency incentive programs that may be available to Owners, and to the extent an Owner chooses to participate in those programs, there may be additional incentives available. To the extent that the green building standards also include the minimum requirements of the ECCC, there might be minor duplication.

9. Alternatives: PAL 1872 authorizes the Authority and the Advisory Committee to consider and develop a New York State-specific standard or set of criteria for green residential buildings. After careful consideration and discussion with the Advisory Committee, consensus was reached that the time and cost associated with the development of an entirely new standard, specific to New York State, was both impractical in the timeframe provided, and unnecessary in light of existing national and State standards and programs that have already been widely accepted and are based on proven techniques and best practices in the residential construction industry. The Advisory Group deliberated over which green building standards would be included in the Green Residential Building Program. Some participants promoted LEED as the favored national green building certification program as it was third party verified for certification compliance. Others supported use

of the NGBS standard which is also a third party verified program. The Advisory Group reached a consensus that both LEED and NGBS should be utilized.

The definition of Substantial Renovation was another issue where differences in opinion among the Advisory Group arose, because there are several definitions of substantial renovation currently in the marketplace. One of the major concerns regarding greening an existing residential building was the extent that such building could feasibly attain performance standards comparable to a newly constructed residential building. For example, replacement of only a furnace meeting the efficiency standards would only affect a small, although important, aspect of a structure's efficiency. The consensus was that this small an upgrade should not qualify the entire structure for the incentive and would probably be impractical given the cost of obtaining the certifications. Whether an addition should qualify the entire structure for an incentive was also discussed. It was ultimately decided that, for new structures, the LEED and NGBS certifications required inspection of the building envelope so that this level of renovation should be included as one criterion for qualifying a structure as undergoing substantial renovation. It was also determined that replacing two of the three building systems would also result in significant improvement in the efficiency of a structure and indirectly allow inspection of a significant portion of the building envelope. This was also third-party verifiable. The Advisory Group also noted the existence of other State programs that provide financial support for small improvements, such as the weatherization programs and incentives for replacing of lighting and heating and cooling equipment.

Establishing minimum certification requirements was another issue that was deliberated by the Advisory Group. There was some concern that the two standards would not produce comparable results in terms of performance and energy efficiency. This was resolved when input from contractors on the Advisory Group with experience implementing both programs advised that silver certifications from LEED and NGBS were reasonably equivalent.

Existing green building rating systems and standards were analyzed, including LEED-H and LEED-NC from the USGBC, the National Green Building Standard, International Codes Council 700-2008 from the NAHB, the Enterprise Green Communities Criteria from Enterprise Community Partners, the NAHB Green Home Guidelines, and Earth Advantage.

Three main criteria were used to evaluate the suitability of the various existing rating systems and standards for purposes of the Program. The first criterion was whether they could comprehensively and reliably measure green building performance in the areas of building site selection and preparation, energy- and water-efficient design, indoor environmental quality, material selection, and occupant education on green operations and maintenance for residential construction. The second criterion focused on the various standards' relative rigor and the transparency of the certification process, including a requirement that an independent inspector be used to verify compliance. The third was whether the administering entity has sufficient organizational capacity to verify compliance within New York State. The only two standards that sufficiently met all of these criteria were the LEED Rating Systems and the National Green Building Standard (NGBS).

After review of the subcategories of certification levels available through LEED and NGBS, the Advisory Group determined that all LEED second (Silver) level or higher certification and the second-or higher level (Silver Performance or higher) NGBS standard certification were to be the green residential building standards that must be met or exceeded to receive an incentive through the program. These certification levels will likely result in both single-family and multi-family residential buildings that achieve energy efficiency improvements of 20% to 30% above ECCC, and address each of the goals of the legislation, while balancing the incremental costs associated with building or renovating a certified green residential building.

The two green building standards prescribed in the regulations are national standards or rating systems and are intended to serve the general needs of all states. In New York, the Authority administers the New York ENERGY STAR<sup>®</sup> Labeled Homes program. This program addresses specific New York State needs. New

York State has a relatively high reliance on imported oil and other external energy sources to meet its energy needs. The New York ENERGY STAR<sup>®</sup> Labeled Homes program addresses this concern by promoting the construction of more energy efficient residential buildings. It provides incentives to residential buildings with one to four dwelling units if they meet higher than the legally required minimum energy efficiency and performance specifications.

Based on projected participation in the Program over its term, residential buildings meeting minimum Program requirements will reduce heating fuel use by over 230,000 million Btus, and electricity consumption by over 5,860 megawatt hours. This translates to reducing greenhouse gas emissions by over 17,000 metric tons, the equivalent of taking 10,357 passenger cars off the road for a year, according to the EPA. Requiring residential buildings in this Program to meet these more stringent energy standards, as well as meeting one of the two national green building standards, is in the best interest of the State of New York and its citizens and promotes the State's policy of reducing reliance on imported oil and other non-renewable energy sources, while reducing greenhouse gas emissions. For this reason, 1-to-4 dwelling unit residential buildings must meet both requirements.

The minimum level of training for Technicians would cost in the range of \$400-\$500. The cost for a builder to meet the training requirements will cost a minimum of \$400-\$600. Continuing course work for builders will cost in the same range, biannually. There are numerous educational institutions, private sector building-related associations, and technical and professional organizations that currently offer programs meeting the regulation requirements for both Technicians and builders. To assist builders in identifying properly credentialed Technicians, the Authority will maintain a list of qualified courses and update the list as new courses are developed. Requests for qualifications for course work will be reviewed on a case-by-case basis for those not on the list.

10. Federal standards: Although the Federal Energy Policy Act provides \$2,000 in tax credits to builders who build homes achieving a 50% improvement in energy efficiency, there are no federal green residential building standards.

11. Compliance schedule: The Authority will begin implementing the regulations as soon as they are made final and funding is available to pay Program awards, and will continue administering the Program until funds are exhausted or the stated deadlines are reached. No Applications will be accepted after October 31, 2013.