

New York State Energy Research and Development Authority

New York Green Residential Building Program

Annual Report
September 2012

NEW YORK GREEN RESIDENTIAL BUILDING PROGRAM

Annual Report

Prepared for the
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ENERGY RESEARCH AND
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Executive Summary

On September 29, 2008, Public Authorities Law (PAL) 1872 established a green residential building grant program. PAL 1872 directs the New York State Energy Research and Development Authority (NYSERDA) to establish a green residential building grant program to serve residential buildings with up to 11 dwelling units¹ for buildings receiving a Certificate of Occupancy during the January 1, 2010-October 31, 2013 timeframe. NYSERDA initiated a rulemaking process in accordance with the law to establish Program regulations, requirements, and procedures. NYSERDA developed a website to provide the public with information about the law, and status of the rulemaking process, including the public comment period. Final regulations were published in the State Register on September 22, 2010.

The New York Green Residential Building Program (the "Program") was made available as a program offering by NYSERDA on September 23, 2010, and is the second statewide program in the country² to provide direct incentives to building owners³ for certified green buildings. The [current website](#) provides all information (such as Program Guidelines and forms) needed for owner participation. In order to receive Program incentives, qualifying residential buildings must be certified as meeting or exceeding the second level (Silver) of either the Leadership in Energy and Environmental Design (LEED) for Homes or LEED for New Construction, or National Green Building Standard (NGBS) requirements, and additional Program-specific energy efficiency performance and occupant health and safety requirements. "Green" building refers to those buildings that are designed and built to deliver improved environmental performance in site preparation, water efficiency, energy efficiency, building materials selection, and indoor environmental quality, relative to buildings that are built using typical construction practices.

The Program is an important addition to NYSERDA's suite of residential building energy efficiency programs, with a current budget allocation of \$3.79 million. To date, NYSERDA has received 222 incentive applications, 188 have been approved for payment, and \$1,016,293 in Program incentives paid to qualifying building owners. Of the 188 buildings, 184 are newly constructed, and four are substantial renovations.

This report is provided to the Governor, Temporary President of the Senate, and Speaker of the Assembly, pursuant to *Section 5. Reporting* of PAL 1872, and provides information on Program activities from August 1, 2011 through July 31, 2012.

¹ A dwelling unit is defined in Program Regulations (21 NYCRR, Part 508) as "a single, independent unit for providing living, sleeping, eating, cooking, and sanitation facilities, for one or more persons to perform life activities," which aligns closely with the definition in the Building Code of New York State.

² Delaware's "Green for Green Program," initiated in May 2010, is the first.

³ The "owner" is defined in the Program regulations as the individual or entity that owns the building on the date the Certificate of Occupancy is issued for newly constructed buildings, or the date the Certification of Completion is issued for substantially renovated buildings.

Program Budget Summary

There is currently \$3.79 million in total funds allocated to the Program⁴. All expenditures and commitments are detailed in Table 1 below. Additional funds may be allocated to the Program, depending on the outcomes of future Regional Greenhouse Gas Initiative (RGGI) auctions.

Table 1 – Green Residential Building Program Budget Summary
(as of July 31, 2012)

Budget Item	Commitments	Expenditures	Balance	Totals
Incentives	2,335,646	1,016,293	134,755	3,486,694
Regulatory Filing Costs		143,450		143,450
Marketing		18,323		18,223
Database Development		30,091		30,091
Quality Assurance Contractor	<u>40,050</u>	<u>69,950</u>	_____	<u>110,00</u>
Totals	\$2,375,696	\$1,278,007	\$134,755	\$3,788,458

Program Activity (August 1, 2011 – July 31, 2012)

Program staff continue to make enhancements to the Program to facilitate participation by building owners and Technicians. Significant Program milestones and activity for the current reporting year include:

- **Ongoing from August 1, 2011 through July 31, 2012**
 - 108 incentive applications were received and paid during the reporting period, representing 108 buildings and 122 total dwelling units. 105 incentive applications were received in the previous reporting year. Program-to-date incentive⁵ application activity through July 31, 2012, is summarized in Table 2, on the following page.
 - 30 site inspections on buildings that applied for Program incentives were completed by NYSERDA's Quality Assurance contractor during this reporting year. These inspections have confirmed that participating Technicians are accurately documenting the measures installed and performing high-quality building diagnostic testing on the sampled buildings.

⁴ \$3.29 million in RGGI funds have been allocated to the Program to date. In August, 2011, \$500,000 in State Energy Planning (SEP) grant funds were allocated to the Program.

⁵ A table showing available Program incentives is provided in Appendix 1.

- **November, 2011** – NYSERDA implemented an incentive reservation process to ensure that demand for the program did not exceed funds available. Building owners must now provide an Incentive Reservation Form to NYSERDA, with the owner’s best estimate of construction start/completion dates, and total incentives, which will be requested after completion. Owners must receive written approval of the Incentive Reservation Form from NYSERDA before they may submit Incentive Application Forms. This process serves two primary purposes: first, it gives building owners assurance that there will be a Program incentive available for them upon completion of the project and submittal of an incentive application; and second, it allows NYSERDA to establish a reliable project pipeline to gauge interest and manage the Program budget.
- **January, 2012** – NYSERDA introduced a clearer and streamlined process to approve participation by Technicians in the Program. Technicians are required to provide a Signature Form, and documentation showing they meet strict qualifications per the Program regulations. The Signature Form binds them to a Partnership Agreement, which details NYSERDA’s requirements for participation. Prior to this, Technicians were approved through a more formal and time-consuming Request for Qualifications (RFQ) process which involved quarterly review committee meetings. Nineteen (19) Technicians are currently participating for the 2012 program year.

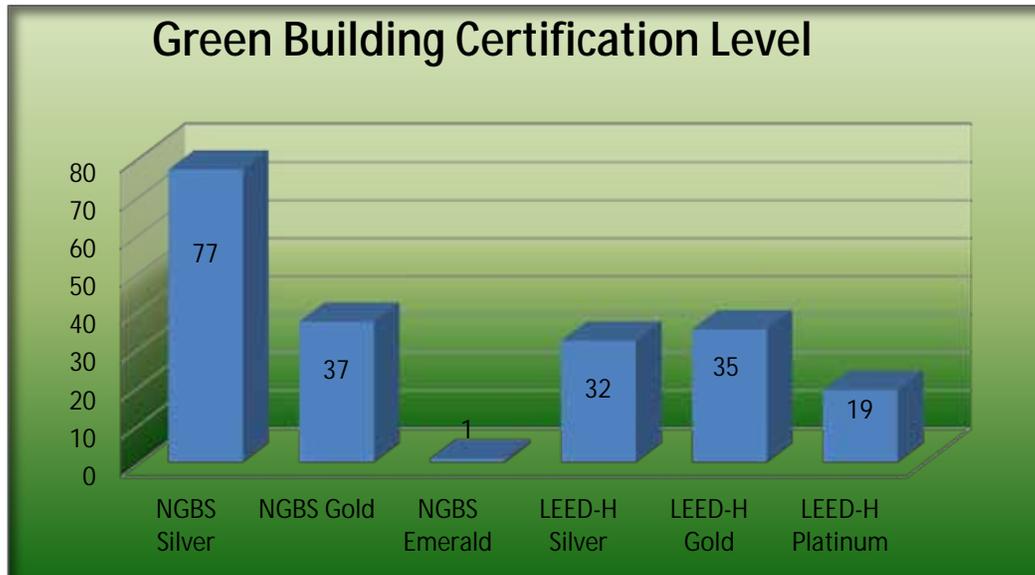
Table 2 – Program Incentive Applications Received and Incentives Paid
(Program to date, through July 31, 2012)

Incentive Applications Received	Applications Approved	Applications Pending	Applications Denied or Withdrawn	Incentives Paid
222	188	13	21	\$1,016,293

In addition to the Incentive Application activity noted above, 86 Incentive Reservation Forms have been received to date, requesting that NYSERDA reserve \$2,335,646 million in Program incentives. The rate of denied or withdrawn applications is 9.4 percent of the total submitted, which indicates that participants continue to generally understand what is required for program compliance. The projects participating in the Program to date are predominantly single-family homes or townhouses, but a few small multi-family buildings have now received incentives through the Program. Additional small multi-family buildings are in the Program pipeline and are due for completion sometime between the second half of 2012 and 2013. However, because of the building size limitation (11 dwellings units) NYSERDA does not anticipate the Program will have significant penetration into the multi-family housing market. There continues to be good participation in the program by affordable housing developers. Although mixed-use buildings (which typically include ground-floor retail with residential dwelling units above) are eligible to participate in the Program, none have applied to date.

Of the 201 applications submitted and approved or pending for Program incentives, 86 received LEED for Homes (LEED-H) certification, and 115 are certified to the National Green Building Standard (NGBS) through the National Association of Homebuilders Research Center's National Green Building Program. This indicates that there is continued interest in both rating systems, and the two have achieved relative market parity in New York State. The number of projects achieving specific certification levels is shown on Chart 1 below.

Chart 1 –Projects by Green Building Certification Level*
(Program Inception through July 31, 2012)



*Platinum is the highest level achievable under LEED-H and Emerald highest under the NGBS; Silver is the lowest certification level allowed by the Program (both LEED and NGBS offer a Bronze level). The certification level achieved is largely determined by total points accumulated on the project: more points are obtained by implementing more green building practices, indicating a higher level of green building performance.

Program Situation Analysis

Interest in green building has likely been dampened by the recession and ongoing poor conditions in the housing market, which has both greatly reduced the number of new construction starts in New York State, and put downward pressure on prices for existing homes. Buyers that remain in the new homes market have become extremely price-conscious, according to builders in both the Green Residential Building Program and New York ENERGY STAR Homes (NYESH) Program. According to recent market research conducted by NYSERDA's Marketing group, energy efficiency and green features are not "top of mind" attributes that buyers are looking for in a home. There is a general perception that buyers believe green and more energy efficient buildings cost more, which may have decreased their interest in pursuing homes meeting these criteria.

On a positive note, NYSERDA has seen increasing levels of participation and interest in the Program from production builders who are certifying green buildings for the first time. While NYSERDA does not have a formal definition of “production builder,” typically these are builders constructing more than 10 homes per year. In this business model, clients generally contract with builders to construct a home based on a model home or floor plan the builder has already developed. This is in contrast to “custom” builders, who uniquely design the home to the client’s needs and specifications.

This seems to indicate that the relatively large Program incentive for single-family homes (\$5,125) is attracting builders and homeowners who might not otherwise have chosen to pursue green building certification. In addition to the Program incentive, some builders cite the marketing advantages that having certified green buildings provides to them, with respect to their competitors, during this challenging time in the new construction market. It seems that some builders are having success by highlighting the overall cost savings and quality of life advantages of green construction. Further, builders already building to NYESH requirements realize that achieving Silver-level certification (particularly using the National Green Building Standard) does not add significant cost or require them to change many of their standard practices.

Energy Savings Data and Green Building Measures

Improved energy efficiency performance relative to code-minimum requirements is at the core of any legitimately “green” building. The energy efficiency performance of buildings participating in the GRBP continues to be impressive. The average Home Energy Rating System (HERS) Index⁶ achieved by buildings in the Program is 53. To put this in context, a building achieving a HERS Index of 100 would be expected to have the energy usage characteristics of building meeting the 2003 International Energy Conservation Code (IECC). A lower HERS Index is a very good indicator of better energy efficiency performance.

Accordingly, a high percentage of projects participating in the Green Residential Building Program also participate in the NYESH Program or Long Island Power Authority’s (LIPA) ENERGY STAR Homes program. Under this scenario, the projects’ energy savings are attributed to the NYESH program, if the project is in System Benefits Charge (SBC) and/or Energy Efficiency Portfolio Standard (EEPS) service territory, for purposes of reporting energy savings to the Public Service Commission. Nevertheless, the Program has enhanced the effectiveness of the delivery of NYSERDA’s SBC/EEPS-funded programs, and has helped to meet New York State’s

⁶ A HERS Index is a numeric comparison of the projected annual energy use of a home being designed or built and a virtual home that would meet the minimum requirements of the Residential Energy Services Network’s (RESNET) Reference Home. The HERS Index is expressed on a descending scale from 100 to 0: an index of 100 for the as-built home means it equals Reference Home performance in terms of projected annual energy consumption/cost; an index of 0 means the home is projected to use no net purchased energy resources. Actual energy efficiency performance may vary, depending on weather, occupant behavior, and other factors.

energy use and carbon reduction goals by saving approximately 14,000 MMBtu of gas/propane and 692 MWh of electricity through July 31, 2012.

Below is a summary of some of the measures and techniques commonly included on green building projects participating in the Program. These advanced green, energy-efficient building measures and techniques contribute to a building's increase in energy efficiency.

- **High-efficiency furnaces** – Ratings of 92 percent Annual Fuel Utilization Efficiency (AFUE) or above are required in the Program, if a gas furnace is installed. However, 95 percent efficient units are the norm in this Program
- **Energy (or Heat) Recovery Ventilators (ERVs)** – ERVs reduce energy usage by pre-heating incoming air with the air being exhausted (through a heat exchanger, which separates the two air streams), and provide whole-house ventilation to bring adequate fresh air into the building.
- **Ground-source Heat Pumps** – Ground-source heat pumps use the ground (and its relatively constant temperature) as the heat/cold sink for purposes of space conditioning, and are several times more efficient than the most efficient gas furnaces or electric heat pumps.
- **ENERGY STAR-labeled** - Appliances, lighting, and mechanical equipment (e.g., central air conditioners) save energy relative to standard products.
- **High-performance windows** – Windows with low U-values: the lower the U-value, the more heat transfer across the window assembly is reduced.
- **On-demand (tankless) water heaters** – Tankless water heaters heat water when needed only, rather than storing/maintaining hot water constantly, as with conventional tank equipment.
- **Advanced framing** – This refers to techniques that reduce the amount of framing lumber and increase the amount of insulation in a wall or roof assembly, while providing structural integrity as required by code.
- **Spray-foam insulation** – Provides a higher R-value per inch than typical fiberglass insulation (R-value is the measure of resistance to heat transfer by conduction) and far more effectively reduces air leakage into and out of the building.
- **Alternative framing systems** – Several projects in the Program have used Insulated Concrete Forms and Structural Insulated Panels, which provide a building thermal envelope with higher R-values than typical wood-framed construction.
- **Water efficient appliances and fixtures** – Efficient dishwashers, and low-flow shower heads and faucets reduce hot water use, and thereby reduce energy use.

The median size of homes in the Program is approximately 2,140 square feet, which is below the national average new home size (approximately 2,400 square feet, according to the National Association of Home Builders). A reduction in a home's conditioned floor area may help to reduce energy use, material use, waste produced, and the size of the building's physical footprint, which are important elements of the green building design philosophy and approach.

In terms of indoor environmental quality (which includes indoor air quality), all buildings in the Program must meet the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) Standard 62.2-2007 requirements for proper mechanical ventilation. ASHRAE 62.2 guides the design of the ventilation system to provide adequate exhaust ventilation to remove stale air and pollutants from the building, and bring in adequate fresh air for occupants based on the number of bedrooms. Selection of materials such as wood products and finishes (paints and stains) with low or no levels of volatile organic compounds (VOC), and use of hard flooring surfaces rather than carpet, are other common practices for Program buildings, to improve indoor air quality and benefit those with respiratory ailments.

Program Incentive Recipients

Appendix 2 includes the location of buildings qualifying for Program incentives, the number of buildings an owner has successfully submitted to the Program, and total amount of incentives paid. The LEED-H or NGBS certification level(s) achieved on the buildings are also shown.

Appendix 1: New York Green Residential Building Program Incentive Levels

Number of Dwelling Units in Building	Calculated Minimum Building Size (in QOSF)	Maximum Program Incentive Award for Building*
1	1367	\$5,125
2	1633	\$6,125
3	1900	\$7,125
4	2167	\$8,125
5	2367	\$8,875
6	2567	\$9,625
7	2767	\$10,375
8	2967	\$11,125
9	3167	\$11,875
10	3367	\$12,625
11	3567	\$13,375

* Note: If a building's qualified occupied square footage (QOSF) is below the Calculated Minimum Building Size shown in Table 1, the incentive for that building shall not exceed \$3.75 per qualified occupied square foot. No building owner may receive more than \$120,000 per calendar year in Program incentives.

Appendix 2: Recipients of Program Incentives During August 1, 2011--July 31, 2012 Reporting Year

City	Zip	Number of Buildings	Incentives Paid	Certification Level(s) Achieved
Rochester	14604	2	\$10,250.00	NGBS Silver
Huntington	11743	1	\$5,125.00	LEED-H Gold
Webster	14580	3	\$15,375.00	NGBS Gold
Schenectady	12307	10	\$51,064.00	LEED-H Platinum (8)/Gold (2)
Copake	12516	13	\$78,625.00	LEED-H Gold (12)/Silver (1)
Ancram	12502	1	\$3,240.00	LEED-H Platinum
Dryden	13053	1	\$5,125.00	NGBS Silver
Webster	14580	1	\$5,125.00	NGBS Silver
New York	10023	1	\$5,125.00	NGBS Gold
Middle Grove	12850	1	\$5,125.00	NGBS Silver
East Hampton	11397	1	\$5,125.00	NGBS Gold
Ithaca	14850	1	\$5,125.00	NGBS Silver
Rochester	14612	1	\$5,125.00	NGBS Silver
Ontario	14519	4	\$20,500.00	NGBS Silver
Middle Island	11953	2	\$8,893.00	LEED-H Platinum (1)/Gold (1)
Syracuse	13203	5	\$25,625.00	LEED-H Platinum (2)/Gold (1)/Silver (2)
Skaneateles	13152	1	\$5,125.00	LEED-H Platinum
Clifton Park	12065	21	\$107,625.00	NGBS Silver
Rochester	14623	2	\$10,250.00	NGBS Gold (1)/ Silver (1)
Saugerties	12477	1	\$5,125.00	NGBS Gold
Clarence	14031	3	\$15,375.00	NGBS Silver
Clarence	14031	1	\$5,125.00	NGBS Gold
Seneca Falls	13148	1	\$5,125.00	NGBS Gold
Rochester	14620	17	\$82,003.00	NGBS Silver
Brooklyn	11201	1	\$6,125.00	LEED-H Gold
Tuxedo	10987	9	\$46,125.00	NGBS Silver
Pittsford	14534	3	\$15,375	NGBS Silver

NYSERDA, a public benefit corporation, offers objective information and analysis, innovative programs, technical expertise and funding to help New Yorkers increase energy efficiency, save money, use renewable energy, and reduce their reliance on fossil fuels. NYSERDA professionals work to protect our environment and create clean-energy jobs. NYSERDA has been developing partnerships to advance innovative energy solutions in New York since 1975.

To learn more about NYSERDA programs and funding opportunities visit www.nyserdera.org

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