New York State Energy Research and Development Authority

Green Jobs – Green New York Q4 2019 Quarterly Update

Quarter ending December 31, 2019

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Program Description

Green Jobs – Green New York (GJGNY) provides funding for energy assessments, low-cost financing for energy upgrades, and technical and financial support to develop a clean energy workforce. GJGNY is a statewide effort to strengthen communities through energy efficiency and uses constituency-based organizations to support program outreach in underserved communities. GJGNY enables New Yorkers to make a significant difference in homes, businesses and neighborhoods—making them more comfortable, more sustainable, and more economically sound. GJGNY is administered by NYSERDA and made available by the Green Jobs – Green New York Act of 2009.

1 Workforce Development

GJGNY supports a broad range of education and training programs aimed at creating an experienced green collar workforce. This workforce will have the relevant skills and credentials needed to support New York State's growing clean energy economy. The workforce training programs help meet the demand for energy efficiency and renewable energy measures and technologies. Through public-private partnerships, workforce development programs fund the development and delivery of cutting-edge training programs and provide financial support to those who wish to pursue new career training, professional certifications, and critical on-the-job training.

1.1 Clean Energy Technical Training

From the program's inception through March 2019, over 4,184 New Yorkers were trained in a range of energy efficiency and renewable energy courses.

NYSERDA issued an On-the-Job Training (OJT) for Energy Efficiency and Clean Technology Program Opportunity Notice, which includes approximately \$520,000 in GJGNY workforce training funds that will be made available to eligible New York State employers outside of the Systems Benefit Charge service territory. This program supports wages for new hires on a first-come, first-served basis for eligible clean energy businesses. The program includes higher wage subsidies for employers that hire workers with additional barriers to employment NYSERDA added one OJT company this quarter, bringing the total number of GJGNY businesses to two for a total investment of approximately \$79,153 of GJGNY funds in the OJT program. To date, 15 people have been hired by these businesses under the OJT program.

2 Outreach

2.1 Community Energy Engagement Program

The Community Energy Engagement Program (CEEP) incorporates and builds upon the success of previous engagement efforts including the Green Jobs, Green New York (GJGNY) Outreach Initiative. Historically, outreach and engagement were conducted as part of the CBO program funded by GJGNY. While the initial GJGNY funding allocated for outreach activities has been exhausted, NYSERDA continues locally-based outreach and engagement efforts through the CEEP program with funding provided via the Clean Energy Fund (CEF) and Regional Greenhouse Gas Initiative.

Through CEEP, NYSERDA awarded approximately \$5.5 million to deploy Community Energy Advisors to conduct engagement activities to New York State residents, small businesses, and multifamily building owners, with an emphasis on low-to-moderate income (LMI) households and communities. These Community Energy Advisors focus on improving energy affordability and increasing deployment of distributed energy resources for community members of all income levels.

Additionally, the program seeks to address energy affordability needs, reduce energy bills, and increase participation in energy efficiency and renewable energy solutions and programs for residential, multifamily and small business customers. The program also seeks to ensure residential, multifamily and small business customers' awareness of and access to financing options for energy efficiency and renewable energy projects while educating households and communities to achieve greater energy literacy, understand the value proposition of clean energy solutions, enable informed energy decisions, facilitate action in completing clean energy projects, and decrease energy consumption.

Key activities this quarter included:

- General outreach and engagement at a variety of public events including but not limited to food pantry lines, farmers' markets and community festivals, where Community Energy Advisors exhibited and encouraged residential and small business customers to be better informed about available resources such as financing options for energy efficiency and renewable energy projects.
- Targeted program outreach continued to focus on key residential programs such as Assisted Home Performance with ENERGY STAR®, EmPower New York and Home Performance with ENERGY STAR®, with 305, 285 and 131 opportunities generated this quarter, respectively. As of December 31, 2019, there are 1,537, 1,277 and 1,188 opportunities for these residential programs, respectively. Community Energy Advisors also continued targeted outreach on the Solar for All

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Program for low-income residential customers with 73 opportunities generated in Q4 2019, for a total of 286 opportunities as of December 31, 2019.

- Targeted program outreach for small commercial and nonprofit customers on the GJGNY Energy Study Program continued by engaging Chambers of Commerce, Rotary clubs and other organizations geared towards local businesses. For Q4 2019 there were 8 new small businesses or nonprofits assisted by Community Energy Advisors through this program, bringing the total number of small businesses and nonprofits assisted through Q4 2019 to 77.
- Community Energy Advisors with the Cornell Cooperative Extension of Dutchess County
 participated in the Middletown Energy Fair, a NYSERDA Community Blitz pilot event targeted to
 low-to-moderate (LMI) income residents. The Advisors assisted by providing information and
 signing up customers for NYSERDA low income programs (e.g., EmPower New York, Solar for
 All) and related services to help them save energy and money.
- The Cornell Cooperative Extension Tompkins County continued coordination with partners, the Broome County Lead Abatement program and Tioga Opportunities, a local Weatherization Assistance Program (WAP) provider in the Southern Tier, to assist homeowners that have properties with lead hazards to also take advantage of home energy efficiency services (e.g. energy assessment, Solar for All, etc.).
- Leveraging private investment from other sources to support implementation of clean energy projects continued through CEEP. In Q4 2019, the Community Energy Advisors reported a total of approximately \$335,000 in non NYSERDA private investment was leveraged for projects completed that quarter. This brings the reported, cumulative total of private investment leveraged by the Community Energy Advisors to approximately \$3,897,000 for implementation of clean energy projects. This includes but is not limited to funding from the NYS HOME program, Weatherization Assistance Program (WAP), Affordable Housing Corporation (AHC), Rochester Safe and Efficient Homes Initiative (RSEHI), Utility Energy Affordability Programs, etc.

¹ Opportunities are customer referrals to NYSERDA or non NYSERDA programs that are self-reported by the Community Energy Advisors. Opportunities include customers assisted with clean energy applications.

3 One- to Four-Family Residential Buildings Program

GJGNY provides home assessments and financing to support energy efficiency and renewable energy improvements to one-to-four family homes.

NYSERDA's Home Performance with ENERGY STAR® (HPwES) program offers homeowners in New York State a comprehensive approach to improving energy efficiency and home comfort while saving money. Participating Building Performance Institute (BPI) Gold Star contractors conduct energy assessments and upgrades. Income-qualified homeowners are eligible for additional incentives to make energy improvements.

The GJGNY loan also supports deployment of solar photovoltaic (PV) through the NY-Sun program, solar thermal (hot water) systems, and certain wood and pellet stove replacements through Renewable Heat NY.

3.1 Home Performance with ENERGY STAR® Assessments

In the fourth quarter of 2019, 4,334 free/reduced-cost comprehensive home energy assessment applications were received. The program to date conversion rate from assessment to energy retrofit remains strong at 32%. The conversion rate for the period between December 2018 and December 2019 was 47%. The average cycle time between assessment completion to project completion for the period between December 2018 and December 2019 was 74 days.

Table 3-1. Home Performance with ENERGY STAR Assessments.

Timeframe	GJGNY Totals since 11/15/10 a	
	ns	
Q4 2019	4,334	
Program to Da	te	193,290
Average # of Applications Received		1,816
	pproved Audit Application	ons
	Free	
Q4 2019		4,217
Program to Da	te	173,078
	Reduced Cost	
Q4 2019	308	
Program to Da	14,116	
Total Approved Audit Applications	187,194	
Average # of Applications Approved	l Per Month	1,759
	Scheduled Audits	
Scheduled Audits as of End of Curre	nt Month	644
	Completed Audits ^b	
		Free
	Q4 2019	2,966
Goal: (77,500-Audits)	Program to Date	130,766
Godi. (77,500 Madits)		Reduced Cost
	Q4 2019	202
	Program to Date	10,075
Total Completed Audits		140,841
Audit Funds Invoiced to Date		\$35,857,780

 $^{^{\}rm a}\,\text{GJGNY}\,$ totals since 11/15/10 are inclusive of CBO initiated $\,$ activities.

^b Reported data includes all audits offered through the Residential Free/Reduced-Cost Energy Audit Program. In mid-2016, NYSERDA began using CEF funds for audits in CEF electric utility territories.

3.2 One- to Four-Family Residential Buildings Financing

New York residents can apply for a loan to finance energy efficiency work, including, but not limited to, upgrading insulation, air sealing, and replacing outdated appliances with ENERGY STAR® certified products that may render savings on their monthly utility bill. Green Jobs-Green New York (GJGNY) financing has also expanded to net-metered technologies, such as solar electric systems and solar thermal systems, that have attracted many customers statewide.

GJGNY provides two loan options for consumers: On-Bill Recovery (OBR) loans, which enable customers to make payments through their utility bills; and Smart Energy loans, unsecured loans that are paid back directly to NYSERDA's loan servicing contractor. Both loans offer expanded credit qualification criteria (Tier 2) enabling some applicants who would not qualify for a loan based on more traditional criteria (Tier 1) to qualify for GJGNY loans.

Table 3-3. Green Jobs-Green New York Financing, Summary by Loan Purpose and Loan Type.

EE= energy efficiency only. PV = PV only. EE & PV = a loan incorporating both energy efficiency and PV. RHNY = renewable heat (pellet or wood stoves). GSHP = ground source heat pump. ST = solar thermal. ASHP = air source heat pump.

GJGNY Loan Type	Loans Issued (Number)	Loans Issued (Dollars)
EE Smart Energy Loan	13,851	\$122,338,384
EE On-Bill Recovery Loan	4,090	\$45,639,219
Total	17,941	\$167,977,603
PV Smart Energy Loan	3,838	\$62,961,887
PV On-Bill Recovery Loan	4,495	\$75,142,806
Total	8,333	\$138,104,693
EE & PV Smart Energy Loan	26	\$473,301
EE & PV On-Bill Recovery Loan	10	\$218,011
Total	36	\$691,313
RHNY Smart Energy Loan ¹	51	448,738
RHNY On-Bill Recovery Loan	7	\$37,920
Total	58	\$486,658
GSHP Smart Energy Loan	10	\$210,835
GSHP On-Bill Recovery Loan	8	\$160,715
Total	18	\$371,550
ASHP Smart Energy Loan ²	50	\$653,800
ASHP On-Bill Recovery Loan	3	\$30,175
Total	53	\$683,975
ST Smart Energy Loan	9	\$64,039
ST On-Bill Recovery Loan	2	\$11,510
Total	11	\$75,549
Grand Total 1. Includes an EE & RHNY loan	26,450	\$ 308,391,341

^{1.} Includes an EE & RHNY loan.

^{2.} Includes an EE & ASHP loan.

Table 3-4. Green Jobs-Green New York Financing, Summary by Loan Type and Underwriting.

Loan Type Summary									
	Sr	mart Energy		C	On-Bill Recovery				
	Tier 1	Tier 2	Total	Tier 1	Tier 2	Total			
Loans Issued	14,123	3,712	17,835	7,263	1,352	8,615	26,450		
Value (Dollars)	\$150,776,500	\$36,374,485	\$187,150,985	\$102,744,024	\$18,496,332	\$121,240,356	\$308,391,341		
Average Loan	10,676	9,799	10,493	14,146	13,681	14,073			
Average Term (Years)	13.6	14.3	13.8	14.6	14.7	14.6			

Table 3-5. Green Jobs-Green New York Financing, Energy Efficiency Loans, by Market Indicator and Underwriting

Energy Efficiency Loans (Assisted vs. Market Rate)									
		Assisted			Grand Total				
	Tier 1	Tier 2	Total	Tier 1	Tier 2	Total			
Loans Issued	4,934	2,419	7,353	9,266	1,316	10,582	17,935		
Value (Dollars)	\$33,836,032	\$17,338,667	\$51,174,699	\$101,677,034	\$15,048,080	\$116,725,114	\$167,899,812		
Tier % (Loan Count)	67%	33%	100%	88%	12%	100%			
% of Total Loans issued			41%			59%	100%		
% of Total Funds Issued			30%			70%	100%		
Average Loan Amount		\$6,952			\$9,363				

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Table 3-6. Green Jobs-Green New York Financing, Photovoltaic Loan Summery, by Market Indicator and Underwriting

Photovoltaic Loan Summary (Affordable Solar vs. Market Rate)									
	Aff	fordable Sc	lar		Grad Total				
	Tier 1	Tier 2	Total	Tier 1	Tier 1 Tier 2 Total				
Loans Issued	177	62	239	6,900	1,226	8,126	8,365		
Value (Dollars)	\$2,438,783	\$927,916	\$3,366,699	\$114,202,202	\$21,146,888	\$135,349,090	\$138,715,788		
Tier % (Loan Count)	74%	26%	100%	85%	15%	100%			
% of Total Loans Issued			3%			97%	100%		
% of Total Loans Issued			2%			98%	100%		
Average Loan Amount	¢44.007				\$16,656				

Figure 3-1. Green Jobs-Green New York Financing, Residential Applications Received and Approved by Year (Program to Date).

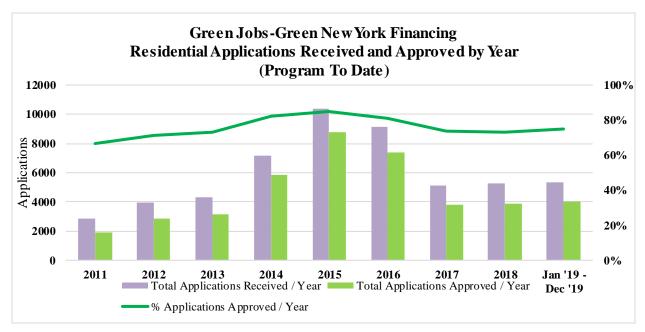


Figure 3-2. Green Jobs-Green New York Financing, Smart Energy and On-Bill Recovery Loans Issued per Quarter.

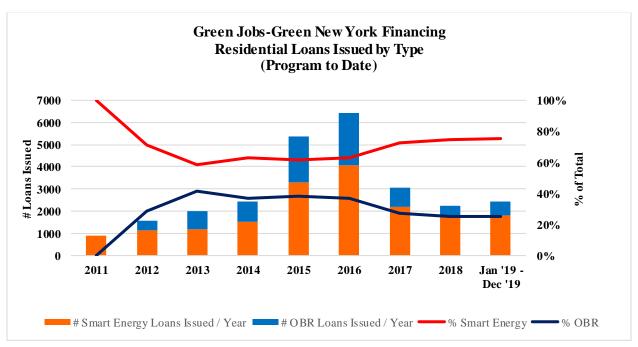




Figure 3-3. Green Jobs-Green New York Financing, Loans Issued by Tier, per Quarter.

Table 3-7. Green Jobs-Green New York Financing, Residential Energy Efficiency Loans Issued for Applications Received on or after 9/01/16.

Green Jobs-Green New York Financing (Energy Efficiency Only) Residential Loans Issued for Applications Received on or after 9/01/16							
Income Category		# Loans	% of Loans				
<80% AMI *		3,336	70%				
80-120% AMI*		448	9%				
>120% AMI* (Tier 1)		846	18%				
>120% AMI* (Tier 2)		130	3%				
Total Loans Issued		4,760	100%				

^{*} AMI = Area Median Income, which is the greater of the State or County Median Income. Households with incomes greater than 120% AMI are further grouped by underwriting Tier, with different interest rates applying to each group.

Table 3-8. Green Jobs—Green New York Financing, Residential Renewables and Combined Technologies Loans Issued for Applications Received on or after 9/01/16.

Green Jobs-Green New York Financing (Renewables & Combined Technologies Only) Residential Loans Issued for Applications Received on or after 9/01/16							
Income Category	# Loans	% of Loans					
<80% AMI*	530	29%					
80-120% AMI*	320	17%					
>120% AMI* (Tier 1)	891	48%					
>120% AMI* (Tier 2)	112	6%					
Total Loans Issued	1,853	100%					

^{*} AMI = Area Median Income, which is the greater of the State or County Median Income. Households with incomes greater than 120% AMI are further grouped by underwriting Tier, with different interest rates applying to each group.

4 Multifamily Energy Performance Portfolio

NYSERDA offers a portfolio of programs and incentives for owners, facility managers, developers, and condo/co-op boards of multifamily buildings with five or more units in the State. NYSERDA's programs facilitate assessments, funding, and implementation of energy efficiency upgrades that improve building performance and save money. Implementation of the GJGNY Multifamily Buildings initiative began in the third quarter of 2010. The GJGNY audit funds were expended in 2018 and the pipeline was closed. NYSERDA continues to support audits for the multifamily sector through its offerings under the Clean Energy Fund These programs include the continuation of the Multifamily Performance Program (MPP) and Flextech. Description of the GJGNY audit implementation approach can be found in previous GJGNY quarterly reports.

4.3 Multifamily Energy Performance Financing

Through December 2019, the Multifamily Performance Program has closed 22 loans with a total value of \$12,099,798. NYSERDA's share of that total loan value is \$3,834,685.

Table 4-3. Multifamily Energy Performance Financing.

Loan Status		Q4 2019		Cumulative			
	Number	NYSERDA Share of Total Loan Value	Total Loan Value	Number	NYSERDA Share of Total Loan Value	Total Loan Value	
Participation Agreements Approved	0	\$0	\$0	22	\$3,834,685	\$12,099,798	
Loans Closed	0	\$0	\$0	22	\$3,834,685	\$12,099,798	

5 Small Commercial Energy Efficiency Program

NYSERDA's Small Commercial Energy Efficiency Program offers financial assistance to help small businesses and not-for-profit organizations improve their energy efficiency and reduce their energy costs. ² This program offers two market rate interest loan options to finance energy efficiency projects. On-Bill Recovery Financing offers eligible small businesses and not-for-profit customers up to \$50,000 for a maximum 10 years. Borrowers use the savings on their energy bills to pay for their energy efficiency upgrades by repaying the loan through a monthly assessment on the organization's electric utility bill. The second loan option is a Participation Loan. NYSERDA partners with lenders across New York State to help small businesses and not-for-profit organizations access below-market financing. NYSERDA provides 50% of the loan principal, up to \$50,000, for not more than 10 years. The lender provides the remaining principal of the loan at market rate. The interest rate for both loan options is the Wall Street Journal Prime Rate of Interest + 2.00%, fixed at closing. In addition, eligible small business and not-for-profit customers participating in NYSERDA's NY-Sun Solar PV Incentive Program can access GJGNY financing to install solar PV systems of up to 200 kW. Financing is also available for the purchase of solar thermal systems, pellet stoves, and advanced cord wood boilers as approved under NYSERDA's Renewable Heat NY Program.

5.1 Small Commercial Energy Efficiency Assessments

Through December 2019, the Small Commercial Energy Efficiency Program completed 4,289 assessments. The previous assessment program closed in December 2016, and in March 2019, NYSERDA began offering subsidized energy studies (assessments) for GJGNY-eligible small businesses and not-for-profit organizations.

Table 5-1. Small Commercial Energy Efficiency Assessments

Metric	Q2 2019	Q3 2019	Q4 2019	Program Cumulative		
	GJGNY	GJGNY	GJGNY	GJGNY	ARRA*	Program Total
Received Assessment Applications	35	27	42	3,678	934	4,612
Completed Assessments	6	35	32	3,440	849	4,289

Visit https://www.nyserda.ny.gov/All-Programs/Programs/Small-Commercial-Energy-Assessments for information about NYSERDA's subsidized audits for Small Commercial/Not-For-Profits

5.2 Small Commercial Energy Efficiency Projects

Through December 2019, the Small Commercial Energy Efficiency Program estimates 1,855 project completions as a result of GJGNY funded assessments.

Table 5-2. Small Commercial Energy Efficiency Projects

Metric	Q2 2019	Q3 2019	Q4 2019	GJGNY Program Cumulative
Estimated Projects Completed*	0	0	0	1855

^{*}The 2015 Small Commercial Energy Efficiency Program Impact Evaluation found that 44 percent of the energy savings recommended through program audits were reported to be implemented. Estimated projects completed are inclusive of those that used ARRA funds referenced in Table 5-1 above.

5.3 Small Commercial Energy Efficiency Financing

Through December 31, 2019, the Small Commercial Energy Efficiency Program has closed 77 loans with a total value of \$3,737,090. NYSERDA's share of that total loan value is \$2,458,081.

Table 5-3. Small Commercial Energy Efficiency Financing.

Loan Status	Q4 2019			Program Cumulative		
	Number	NYSERDA Share of Total Loan Value	Total Loan Value**	Number	NYSERDA Share of Total Loan Value	Total Loan Value**
Applications Approved*						
Participation Loans	0	\$0	\$0	154	\$3,211,086	\$6,834,846
On-Bill Recovery	0	\$0	\$0	91	\$2,851,504	\$3,551,619
Loans Closed						
Participation Loans	0	\$0	\$0	32	\$1,024,325	\$2,304,334
On-Bill Recovery	0	\$0	\$0	45	\$1,433,756	\$1,433,756
Total	0	\$0	\$0	77	\$2,458,081	\$3,737,090

The Small Commercial Energy Efficiency Financing Program has 16 participating lenders.

^{*} Customer applications are assessed for both Participation Loan and On-Bill Recovery Loan eligibility prior to approval. Approved application values are inclusive of loans that have moved forward to closure.

^{**}The total loan value represents the total value of the loan issued by the lender to the borrower. The total loan value may include financing for non-energy efficiency projects. NYSERDA's share of the total loan value represents 50% of the total energy project cost or \$50,000, whichever is less.

6 Evaluation

The overarching goals of Evaluation are to provide objective and credible information that supports optimum program operation and outcomes, as well as program accountability. Three major types of evaluation are implemented for the GJGNY program. Process evaluation provides information to support program operations by addressing program efficiency and effectiveness, satisfaction and barriers to participation, among other issues. Impact evaluation provides information to help understand actual program impact and improve energy impact estimates, including economic, environmental, and non-energy benefits; in doing so it supports program accountability. Market evaluation also provides information to support program operations and accountability by characterizing and assessing target markets for programs.

Evaluation Activities

In the third quarter of 2019, NYSERDA launched the evaluation of GJGNY-funded audit-only projects for studies completed between 2014 and 2017. The objective of this evaluation is to estimate energy savings resulting from measures recommended in the energy audit and installed outside of a NYSERDA program. Results from this evaluation are anticipated in Q3 2020.

A billing analysis of Home Performance with Energy Star on-bill recovery projects was completed in Q4 2019. The key findings include the observation that the evaluated savings as a percent of pre-install use are high in comparison to evaluated savings from other, similar programs, particularly for natural gas, indicating that the program is achieving substantial savings. Additionally, the program reported thermal savings represented a substantially higher percent of pre-install consumption (47% for thermal, non-electric fuels) than the highest evaluated savings of other, similar programs in the Northeast (about 22%). A comprehensive report of the impact evaluation finding will be available on the NYSERDA website and, as appropriate, results will be summarized in future reports to the Advisory Council. GJGNY evaluation reports can be found on NYSERDA's website.