

Evaluation of Public Housing Authority  
Efficient Living Program  
June 2014 through May 2015

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Prepared for:  
Illinois Department of Commerce Economic Opportunity

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## Executive Summary

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This report presents the results of the impact and process evaluations for electric program year seven and natural gas program year four (EPY7/GPY4) of the Public Housing Authority Efficient Living Program (Efficient Living Program) offered by the Illinois Department of Commerce and Economic Opportunity (hereinafter referred to as the “Department of Commerce”). EPY7/GPY4 is defined as the period June 2014 through May 2015.

The main features of the approach used for the evaluation are as follows:

- An engineering desk review of program measures to verify gross savings estimates.
- Data for the study were collected through review of program materials and interviews with Department of Commerce staff members.

The gross and net ex post kWh savings of the Efficient Living Program during the period June 2014 through May 2015 are summarized in Table ES-1. Because the Efficient Living Program targets low-income resident housing, the net ex post savings are assumed to equal the gross ex post savings. For EPY7/GPY4, net ex post electricity savings total 2,364,172 kWh for the period. For electricity savings, the program gross realization rate is 103%. Gross and net ex post natural gas savings are shown in Table ES-2. Net ex post natural gas savings total 301,236 therms. The gross realization rate is 100%.

*Table ES-1 Summary of kWh Savings for Efficient Living Program*

Utility	Ex Ante kWh Savings	TRM-Calculated		TRM-Calculated (Errata Corrected)		ADM-Calculated			
		Gross Ex Post kWh Savings	Net Ex Post kWh Savings	Gross Ex Post kWh Savings	Net Ex Post kWh Savings	Gross Ex Post kWh Savings	Gross Realization Rate	Net Ex Post kWh Savings	Net-to-Gross Ratio
Ameren	575,900	534,848	534,848	535,178	535,178	559,223	93%	559,223	100%
ComEd	1,716,129	1,801,228	1,801,228	1,801,228	1,801,228	1,804,949	105%	1,804,949	100%
Total	2,292,029	2,336,076	2,336,076	2,336,405	2,336,405	2,364,172	103%	2,364,172	100%

Table ES-2 Summary of Therm Savings for Efficient Living Program

Utility	Ex Ante Therm Savings	TRM-Calculated		TRM-Calculated (Errata Corrected)		ADM-Calculated			
		Gross Ex Post Therm Savings	Net Ex Post Therm Savings	Gross Ex Post Therm Savings	Net Ex Post Therm Savings	Gross Ex Post Therm Savings	Gross Realization Rate	Net Ex Post Therm Savings	Net-to-Gross Ratio
Ameren	36,062	32,816	32,816	32,816	32,816	36,282	101%	36,282	100%
Nicor	71,715	71,891	71,891	71,891	71,891	71,891	100%	71,891	100%
North Shore	6,035	6,035	6,035	6,035	6,035	6,035	100%	6,035	100%
Peoples	187,028	126,644	126,644	126,644	126,644	187,028	100%	187,028	100%
Total	300,840	237,386	237,386	237,386	237,386	301,236	100%	301,236	100%

The gross and net ex post peak kW reductions of the Efficient Living Program during the period June 2014 through May 2015 are summarized in Table ES-3. The gross and net ex post peak demand reductions total 398.14 kW for the period.

Table ES-3 Summary Peak kW Savings for Efficient Living Program

Utility	TRM-Calculated		TRM-Calculated (Errata Corrected)		ADM-Calculated		
	Gross Ex Post kW Savings	Net Ex Post kW Savings	Gross Ex Post kW Savings	Net Ex Post kW Savings	Gross Ex Post kW Savings	Net Ex Post kW Savings	Net-to-Gross Ratio
Ameren	206.88	206.88	207.27	207.27	210.02	210.02	100%
ComEd	188.12	188.12	188.12	188.12	188.12	188.12	100%
Total	395.00	395.00	395.39	395.39	398.14	398.14	100%

The following presents a selection of key findings from EPY7/GPY4:

- Therm savings nearly doubled compared to EPY7 while kWh savings decreased by about 13%.
- Methodologies used to calculate ex ante savings were generally consistent with the Illinois Statewide TRM specifications. The most common difference between ex ante and ex post savings was due to the use of site-specific data where the TRM does not direct the use of site-specific inputs. Examples of measures where this occurred are CFL and LED lighting.
- Overall, the program design or implementation process did not change from the prior program year. Staff noted that key decision makers at public housing authorities are generally aware of the program. Due to budget constraints, outreach activity was curtailed during the program year but this did not impact the number of units where measures were installed. Although awareness of the program is generally high among PHA decision makers, some PHA's have not participated in the program.

- Contractors could benefit from more outreach and education related to program guidelines and participation requirements. Knowledge gaps are related to the unique procurement procedures that guide decision making and payment within the PHA community. Additionally, contractors have mistakenly submitted incorrect program application forms for PHA projects.
- As noted in prior years, the single year grant cycle continues to be a constraint on the program and may restrict program activity.

The following recommendations based on the review of the program are offered for the Department of Commerce's consideration.

- Consider requiring all participants to submit substantiating documentation of expenses in all cases in order to aid and expedite the verification process.
- Consider submitting documentation such specification sheets and software outputs used for measure specific custom inputs into TRM algorithms.
- Consider fewer general outreach activities to PHAs and more targeted outreach to PHAs that have not participated or are less familiar with the program. Staff resources may be better utilized by focusing on providing assistance to these PHAs and trying to identify ways of getting non-participant PHAs to complete projects through the program.
- Additional education and outreach to contractors may improve their understanding of program processes and improve the efficiency of program delivery. Moreover, further engagement of contractors that work with public housing authorities may improve the programs ability to reach public housing authorities that have not participated in the program.
- Consider allowing grants to span multiple years in order to facilitate project completion. One challenge that would need to be addressed is balancing incentive payments with energy savings of completed projects. Currently the program allows participants to receive 50% of incentive payments prior to completing the project. If grants span multiple years, these prepayments may create a misalignment between program expenditures and energy savings that could adversely affect the program and portfolio cost effectiveness testing.

# 1. Introduction

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This report presents the results of the impact and process evaluations of the Department of Commerce's Public Housing Authority Efficient Living Program. This report presents results for activity during electric program year seven and natural gas program year four EPY7/GPY4, the period June 2014 through May 2015.

## 1.1 Description of Program

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The Efficient Living Program was designed to help improve the energy efficiency of public housing in Illinois. Applicants requesting grant funds for electricity conservation measures must do so for sites serviced by the Department of Commerce.

The Efficient Living Program is operated in partnership with the School of Architecture-Building Research Council located at the University of Illinois at Urbana-Champaign (UIUC). The program provides grants to Illinois Public Housing Authorities to fund energy efficiency improvements for public housing buildings. The program includes retrofit, new construction, and gut / rehab projects. The program is available to applicants that manage public housing authorities located in Illinois.

Eligible energy efficiency measures can be installed in common areas or in residential units. A wide variety of measures are eligible for incentive funds including exit signs, exterior and interior lighting, controls, ENERGY STAR® appliances and HVAC equipment.

Grant awards include both standard and custom components described as follows:

- The standard component incentivizes the installation or use of energy efficient lighting equipment, HVAC equipment, water heaters, motors and variable frequency drives, appliances, insulation, and duct sealing.
- The custom component incentivizes qualifying energy measures at a rate of \$0.20 per projected kWh or \$3.00 per projected therms saved during the first program year of operation.

Grants are capped at \$450,000 and cover up to, but do not exceed, 100% of the total project cost.

### 1.1.1 Ex Ante kWh and Therm Savings

Ex ante kWh and therm savings for each utility are shown in Table 1-1 and Table 1-2. Nineteen authorities participated in the program during the period June 2014 through May 2015. The projects completed by these housing authorities were expected to provide annual savings of 2,292,029 kWh and 300,840 therms.

*Table 1-1 Ex Ante kWh Savings for Efficient Living Program by Utility*

<i>Utility</i>	<i>Ex-Ante kWh Savings</i>
Ameren	575,900
ComEd	1,716,129
Total	2,292,029

*Table 1-2 Ex Ante Therm Savings for Efficient Living Program by Utility*

<i>Utility</i>	<i>Ex Ante Therm Savings</i>
Ameren	36,062
Nicor	71,715
North Shore	6,035
Peoples	187,028
Total	300,840

## 1.2 Overview of Evaluation Approach

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The overall objective for the impact evaluation of the Efficient Living Program was to determine the net electric savings, net natural gas savings, and peak demand (kW) reductions resulting from program projects implemented during EPY7/GPY4.

The impact evaluation approach included the following main features:

- Available documentation (e.g., invoices, savings calculation) was reviewed for projects, with particular attention given to the calculation procedures and documentation for savings estimates.
- Gross savings were verified via analytical desk review.

The process evaluation approach involved the following:

- Review of program documentation and prior evaluation reports;
- Interviews with program staff members discussing program operations, successes, challenges, and future plans.

## 1.3 Organization of Report

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The evaluation report for the Efficient Living Program is organized as follows:

- Chapter 2 presents and discusses the analytical methods and results of estimating program savings.
- Chapter 3 presents and discusses the analytical methods and results of the process evaluation of the program.

## 2. Estimation of Gross Savings

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This chapter presents the results of the impact evaluation of the Public Housing Authority Efficient Living Program offered by the Department of Commerce. The overall objective of the impact evaluation was to determine the net electricity and natural gas savings, as well as peak demand (kW) reductions resulting from program projects during the period June 2014 through May 2015. Section 2.1 describes the methodology used for estimating gross savings. Section 2.2 presents the results from the effort to estimate savings for all projects.

### 2.1 Methodology for Estimating Gross Savings

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The methodology used for calculating program savings is described in this section.

#### 2.1.1 Review of Documentation

Department of Commerce's program implementation contractor, the School of Architecture-Building Research Council, provided documentation for the projects completed during the program year. The first step in the evaluation effort was to review this documentation and other relevant program materials.

Available documentation (e.g., invoices, savings calculation work books, ECRM forms, etc.) was reviewed for projects, with particular attention given to the calculation procedures and documentation for savings estimates. In cases where project documentation was incomplete or unclear, evaluation staff contacted the Building Research Council to seek further information. This ensured the development of accurate realized energy savings estimates.

#### 2.1.2 Analytical Desk Review

ADM evaluation staff reviewed the energy savings algorithms to verify that the assumptions were reasonable, the algorithms were correct for assigning gross ex ante savings per measure, and the procedures used aligned with the methodologies outlined in the Illinois Statewide Technical Reference Manual (TRM) Version 3.0.

When possible, ADM calculated annual energy savings for each measure per the formula given in the Illinois Statewide TRM. For measures where an engineering review determined that savings could be more accurately estimated using methodology not described in the TRM, an alternative savings (ADM-Calculated) was also calculated. Table 2-1 displays each program measure, applicable section of the TRM, and which that was used to estimate savings.

Table 2-1 Illinois TRM Sections by Measure Type

<i>Measure</i>	<i>Section in Illinois TRM</i>	<i>TRM</i>	<i>Errata-Corrected</i>	<i>ADM-Calculated</i>
A/C covers	-			•
Boiler Reset Controls	4.4.4	•		
Boiler Tune-up	4.4.2	•		
CFLs	4.5.1, 5.5.1	•	•	
Duct Sealing	5.3.4	•	•	
Refrigerators with Recycling	5.1.6, 5.1.8	•	•	
Furnace Blower Motor	5.3.5	•		
High Efficiency Air Conditioners	5.3.3	•		
High Efficiency Boilers	4.4.10, 5.3.6	•		
High Efficiency Furnaces	5.3.7	•		
High Efficiency Window A/C Units	5.1.7, 5.1.9	•		
LED Exit Signs	5.5.7	•		
LEDs	4.5.4, 5.5.8	•	•	
Low-Flow Aerators	5.4.4	•	•	
Low-Flow Shower Heads	5.4.5	•		
Miscellaneous Lighting	4.5.8	•		
Occupancy Sensors	4.5.10	•		
Package Terminal Heat Pumps	4.4.13	•	•	
Pipe Insulation <sup>1</sup>	4.4.14	•		•
Programmable Thermostats	5.3.11	•		
Steam Trap Replacement	4.4.16	•		
T8 Delamping	4.5.2	•	•	
T8s	4.5.3	•		
Variable Speed Drives for HVAC	4.4.17	•		
Vending Machine Controls	4.6.2	•		
Window Replacements	-			•

## 2.2 Results of Gross Savings Estimation

This section presents the results of the impact evaluation for the Efficient Living Program during the period of June 2014 through May 2015.

### 2.2.1 Gross Ex Post kWh and Therm Savings

This subsection presents the gross and net savings for the Efficient Living Program. A net-to-gross factor of 100% was used because the Efficient Living Program targets low income residents. The

<sup>1</sup> ADM submitted an item into VEIC's TRM Request Tracker on September 11, 2015, regarding updating the Illinois Statewide TRM to allow for heat loss estimates developed using 3E Plus v4.0 software for all pipe insulation projects. ADM also submitted an item into the VEIC's TRM Deviation Tracker on November 11, 2015.

gross and net ex post electricity savings of the Efficient Living Program during the period June 2014 through May 2015 are summarized by utility in Table 2-2. Net ex post electricity savings total 2,364,172 kWh for the period.

*Table 2-2 Summary of kWh Savings for Efficient Living Program by Utility*

Utility	Ex Ante kWh Savings	TRM-Calculated		TRM-Calculated (Errata Corrected)		ADM-Calculated			
		Gross Ex Post kWh Savings	Net Ex Post kWh Savings	Gross Ex Post kWh Savings	Net Ex Post kWh Savings	Gross Ex Post kWh Savings	Gross Realization Rate	Net Ex Post kWh Savings	Net-to-Gross Ratio
Ameren	575,900	534,848	534,848	535,178	535,178	559,223	93%	559,223	100%
ComEd	1,716,129	1,801,228	1,801,228	1,801,228	1,801,228	1,804,949	105%	1,804,949	100%
Total	2,292,029	2,336,076	2,336,076	2,336,405	2,336,405	2,364,172	103%	2,364,172	100%

Measure level savings and realization rates are presented in Table 2-3. Explanations for differences between ex ante and ex post savings are provided for measures with realization rates not equal to 100%.

Table 2-3 Summary of kWh Savings for Efficient Living Program by Measure Type

<i>Measure</i>	<i>Ex Ante kWh Savings</i>	<i>Gross Ex Post kWh Savings</i>	<i>Gross Realization Rate</i>	<i>Source of Discrepancy</i>
A/C covers (electric heating)	3,721	3,721	100%	
CFLs	137,739	188,598	137%	Customer hours used in ex ante calculation and different ISR
Duct Sealing	9,633	9,963	103%	Fan savings added in errata calculation
Refrigerators with Recycling	106,738	106,738	100%	
High Efficiency Air Conditioners	190,484	190,484	100%	
Furnace Blower Motor	175,192	175,192	100%	
High Efficiency Window A/C Units with Recycling	8,603	8,603	100%	
LED Exit Signs	44,792	44,792	100%	
LEDs	769,523	762,030	99%	Customer hours used in ex ante calculation and different ISR
Low-Flow Aerators	1,436	1,436	100%	
Low-Flow Shower Heads	12,352	12,352	100%	
Miscellaneous Lighting	3,403	3,403	100%	
Occupancy Sensors	56,426	56,426	100%	
Package Terminal Heat Pumps	73,594	104,249	142%	Discrepancy in EFLH
Programmable Thermostats	337,938	346,309	102%	10 additional measures ex post
T8 Delamping	15,336	15,336	100%	
T8s	195,512	199,815	102%	Different ISR
Variable Speed Drives for HVAC	103,886	103,886	100%	
Vending Machine Controls	6,795	6,795	100%	
Window Replacements	38,927	24,045	62%	Different calculation
Total	2,292,029	2,364,172	103%	

The gross and net ex post therm savings of the Efficient Living Program during the period June 2014 through May 2015 are summarized by utility in Table 2-4. Net ex post natural gas savings total 301,236 therms for the period.

Table 2-4 Summary of Therm Savings for Efficient Living Program by Utility

Utility	Ex Ante Therm Savings	TRM-Calculated		TRM-Calculated (Errata Corrected)		ADM-Calculated			
		Gross Ex Post Therm Savings	Net Ex Post Therm Savings	Gross Ex Post Therm Savings	Net Ex Post Therm Savings	Gross Ex Post Therm Savings	Gross Realization Rate	Net Ex Post Therm Savings	Net-to-Gross Ratio
Ameren	36,062	32,816	32,816	32,816	32,816	36,282	101%	36,282	100%
Nicor	71,715	71,891	71,891	71,891	71,891	71,891	100%	71,891	100%
North Shore	6,035	6,035	6,035	6,035	6,035	6,035	100%	6,035	100%
Peoples	187,028	126,644	126,644	126,644	126,644	187,028	100%	187,028	100%
Total	300,840	237,386	237,386	237,386	237,386	301,236	100%	301,236	100%

Measure level savings and realization rates are presented in Table 2-5. Explanations for differences between ex ante and ex post savings are provided for measures with realization rates not equal to 100%.

Table 2-5 Summary of Therm Savings for Efficient Living Program by Measure Type

Measure	Ex Ante Therm Savings	Gross Ex Post Therm Savings	Gross Realization Rate	Source of Discrepancy
Boiler Reset Controls	76,254	76,254	100%	Differences in furnace load table
Boiler Tune-up	34,657	34,657	100%	
High Efficiency Boilers	52,732	52,705	100%	
High Efficiency Furnaces	36,000	37,255	103%	
Low-Flow Aerators	5	5	100%	
Low-Flow Shower Heads	21	21	100%	
Pipe Insulation	78,934	78,934	100%	
Programmable Thermostats	15,736	15,736	100%	
Steam Trap Replacement	2,203	2,203	100%	
Window Replacement	4,298	3,466	81%	
Total	300,840	301,236	100%	

The gross and net ex post peak kW reductions of the Efficient Living Program during the period June 2014 through May 2015 are summarized in Table 2-6. The achieved net peak demand savings total 398.14 kW.

*Table 2-6 Summary of Peak kW Savings for Efficient Living Program by Utility*

Utility	TRM-Calculated		TRM-Calculated (Errata Corrected)		ADM-Calculated		
	Gross Ex Post kW Savings	Net Ex Post kW Savings	Gross Ex Post kW Savings	Net Ex Post kW Savings	Gross Ex Post kW Savings	Net Ex Post kW Savings	Net-to-Gross Ratio
Ameren	206.88	206.88	207.27	207.27	210.02	210.02	100%
ComEd	188.12	188.12	188.12	188.12	188.12	188.12	100%
Total	395.00	395.00	395.39	395.39	398.14	398.14	100%

### 2.2.2 Discussion of Gross Savings Analysis

The impact analysis identified few issues with project documentation and reported savings. Below is a list of key findings and issues that pertain to the PHA impact analysis:

- Therm savings nearly doubled compared to EPY7 while kWh savings decreased by about 13%.
- Methodologies used to calculate ex ante savings were generally consistent with the Illinois Statewide TRM specifications. The most common difference between ex ante and ex post savings was due to the use of site-specific data where the TRM does not direct the use of site-specific inputs. Examples of measures where this occurred are CFL and LED lighting.

The following recommendations based on the review of the program are offered for the Department of Commerce's consideration.

- Consider requiring all participants to submit substantiating documentation of expenses in all cases in order to aid and expedite the verification process.
- Consider submitting documentation such as specification sheets and software outputs used for measure specific custom inputs into TRM algorithms.

## 3. Process Evaluation

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This chapter presents the results of the process evaluation for the Department of Commerce's Efficient Living Public Housing Authority Program EPY7/GPY4. The process evaluation focused on program changes that have occurred or are planned for EPY8/GPY5, as well as program strengths and challenges. The scope of the process evaluation in the evaluated program year is narrower than in previous years. The process evaluation includes feedback from program staff regarding the program operations and outcomes.

Chapter 3 begins with a discussion of the overall progress of the program, followed by a summary of key findings that were developed from the Department of Commerce's program managers and with the Department of Commerce's implementation partner, the School of Architecture-Building Research Council located at the University of Illinois at Urbana-Champaign (UIUC).

### 3.1 Methodology for Process Evaluation

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The purpose of the process evaluation was to examine program operations and results, and to identify potential program improvements that may increase program efficiency or effectiveness in terms of levels of participation and program satisfaction.

Key research questions addressed by this evaluation included:

- Does the program meet the needs of public housing authorities?
- What share of housing authorities has participated? Are there barriers to additional participation?
- How effective are the outreach efforts?
- How effective are internal communications and administrative processes?
- Do the documentation and project tracking systems and procedures support reporting, monitoring, and evaluation needs?
- How satisfied are participants?

The research activities undertaken to answer the research questions are described below.

#### 3.1.1 Review of Program Documentation

ADM staff reviewed available program documentation including materials on the website such as applications, informational notices, and marketing collateral; grant awards to program partners; and program reporting. The purpose of this review will be to identify the key activities undertaken by the program, determine which entity is engaged in the activity, and to identify purposes and objectives of the activities.

### 3.1.2 Program Staff Interviews

Interviews with Department of Commerce and program partner staff were completed. During these interviews, staff discussed any changes in program operations or materials as well as future directions. Other topics of discussion included assessments of ongoing market potential and the role of contractors in the program.

### 3.1.3 Review of Program Tracking Data

ADM reviewed the program tracking data provided by the program administrator. Due to budget constraints, program staff was unable to enter the majority of program activity into the Department of Commerce's EEPS database. As a result, planned evaluation activities involving the review of this data and staff's assessments of the system were not completed.

## 3.2 Summary of Findings and Recommendations

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- Overall, the program design or implementation process did not change from the prior program year. Staff noted that key decision makers at public housing authorities are generally aware of the program. Due to budget constraints, outreach activity was curtailed during the program year but this did not impact the number of units where measures were installed. Although awareness of the program is generally high among PHA decision makers, some PHA's have not participated in the program.
- Contractors could benefit from more outreach and education related to program guidelines and participation requirements. Knowledge gaps are related to the unique procurement procedures that guide decision making and payment within the PHA community. Additionally, contractors have mistakenly submitted incorrect program application forms for PHA projects.
- As noted in prior years, the single year grant cycle continues to be a constraint on the program and may restrict program activity.

The following recommendations based on the review of the program are offered for the Department of Commerce's consideration.

- Consider fewer general outreach activities to PHAs and more targeted outreach to PHAs that have not participated or are less familiar with the program. Staff resources may be better utilized by focusing on providing assistance to these PHAs and trying to identify ways of getting non-participant PHAs to complete projects through the program.
- Additional education and outreach to contractors may improve their understanding of program processes and improve the efficiency of program delivery. Moreover, further engagement of contractors that work with public housing authorities may improve the programs ability to reach public housing authorities that have not participated in the program.

- Consider allowing grants to span multiple years in order to facilitate project completion. One challenge that would need to be addressed is balancing incentive payments with energy savings of completed projects. Currently the program allows participants to receive 50% of incentive payments prior to completing the project. If grants span multiple years, these prepayments may create a misalignment between program expenditures and energy savings that could adversely affect the program and portfolio cost effectiveness testing.

### 3.3 Program Participation

During EPY7/GPY4, twenty public housing authorities received grant funds through the Efficient Living Program. In total thirty-one sub grants were awarded including twenty- electric grants and eleven natural gas grants.

As shown in Table 3-1 a variety of building types received energy efficiency measures during EPY7/GPY4. Unlike EPY6/GPY3, the majority of sites were multifamily housing and measures were implemented at relatively few single family homes and duplexes, 3-plexes, and 4-plexes.

*Table 3-1 Building Types Receiving Energy Efficiency Measures*

<i>Building Type</i>	<i>Number of Buildings</i>	<i>Total Units</i>
High-Rise (7+ Floors), Mid-Rise (4-6), Low-Rise (2-3)	50	9,374
Row Homes, Garden Apts.	16	1,038
Duplexes, 3-Plexes & 4-Plexes	16	763
Scatter Sites (Single Family)	10	465
Offices, Community Centers., Warehouses	4	-
Total	96	11,640

*Source: Efficient Living: Illinois Public Housing Authority Energy: Program Year Seven Final Reports*

Table 3-2 displays the age of the housing stock that received efficiency upgrades through the Efficient Living Program. The buildings that received upgrades were generally older. The majority of residences were older than 40 years.

*Table 3-2 Housing Age for Buildings Receiving Energy Efficiency Measures*

<i>Housing Age (Years)</i>	<i>Number of Buildings</i>	<i>Total Units</i>
0 – 20	0	0
21 – 30	4	160
31 – 40	28	2,064
41 +	64	9,416
Total	96	11,640

*Source: Efficient Living: Illinois Public Housing Authority Energy: Program Year Seven Final Reports*

Table 3-3 presents the ex ante kWh and therm savings for projects completed by each of the PHAs that participated in the Efficient Living Program during EPY7/GPY4.

*Table 3-3 Ex Ante kWh and Therm Savings by Participating Public Housing Authority*

<i>Public Housing Authority</i>	<i>Ex Ante kWh Savings</i>	<i>Ex Ante Therm Savings</i>
CHA	220,065	187,028
City of Freeport	300,240	0
City of Pekin	11,864	0
City of Rockford	240,592	0
Cook County	434,466	57,780
Decatur	215,344	18,191
DeKalb County	251,833	7,814
Fulton County	19,482	3,257
Kankakee County	192,601	0
Knox County	38,927	4,298
Lee County	29,144	5,837
Logan County	38,956	0
Macoupin County	58,116	7,842
North Chicago	9,026	6,035
Richland County	41,204	0
Saline County	119,568	0
St. Clair County	22,805	2,475
Whiteside County	10,061	0
Winnebago County	37,734	284
Total	2,292,029	300,840

### 3.4 Program Design and Implementation/

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The Public Housing Authority Efficient Living Program (Efficient Living Program) is operated in partnership with the School of Architecture-Building Research Council (BRC) located at the University of Illinois at Urbana-Champaign (UIUC). The program provides grants to Illinois Public Housing Authorities to make energy efficiency improvements to public housing buildings. The program includes retrofit, new construction, and gut / rehab projects.

#### 3.4.1 Participant and Measure Eligibility Requirements

Program eligibility requirements have not changed since the previous evaluation report was published. The program is available to Illinois PHAs that house residents at 30%, 50% or 80% of the average median income. Income requirements are based on the median income in the counties where the properties are located.

The program covers a wide variety of energy saving measures including efficient appliances, lighting, and HVAC equipment. Grant funds may not be used for fuel switching, personnel expenses, purchase of property, operating expenses, projects that repair existing equipment or to replace existing equipment with the same equipment, used equipment, or custom projects with simple paybacks greater than the equipment life.

#### 3.4.2 Program Incentives

Grant awards include standard and custom components described below:

- Standard incentives, which are payments for the installation or use of energy efficient lighting equipment, HVAC equipment, water heaters, motors and variable frequency drives, appliances, insulation, and duct sealing;
- Custom incentives, which are payments for qualifying energy measures at a rate of \$0.30 per projected kWh saved or \$3.00 per projected therm saved during the first program year of operation.
- Grants are capped at \$450,000.
- Grants cannot exceed 100% of the total project cost.

Fifty-percent of incentives are payable to grantees up-front and the remainder are paid based on submission of final invoices.

### 3.5 Program Staff Feedback

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This section summarizes the core findings of the assessment of the PHA Program operations. This assessment is primarily informed by interviews completed with the program staff at the BRC (the program implementer), and the Department of Commerce's program manager.

### 3.5.1 Program Marketing and Market Potential

During EPY7/GPY4 the PHA program, like all other Department of Commerce Programs, was faced with uncertainty regarding its operating budget. Until the Illinois state budget is approved, program operations have been reduced to the activities necessary to complete and close out EPY7/GPY4 grants. All other funds are frozen at this time and have been since January 2015. The budget issues primarily affected program outreach activities during EPY7/GPY4. Due to the funding freeze, outreach activities were reduced during the program year. Table 3-4 below summarizes the PHA outreach events that occurred during the program year. The events were targeted to Illinois PHA's with the intent to inform them of energy savings opportunities and program offerings. Under a normal operating budget the program would continue to participate in the statewide and regional PHA events.

*Table 3-4 EPY7/GPY4 PHA Program Outreach Events*

<i>Date</i>	<i>Event Title</i>
11/6/2015	Northern Illinois Council of Housing Authorities (NICHA)
8/5/2015	Illinois Energy Now TA Rally
8/12/2015	Illinois Energy Now TA Rally
8/13/2015	Chicago Housing Authority (CHA)
12/10/2015	Illinois Energy Now TA Rally

Program staff was asked to comment on the market potential and how the program will continue to achieve its energy savings goals; in anticipation of the budget being reinstated. Staff mentioned several opportunities. In Illinois there have been trends in new construction and gut rehab projects being implemented within the PHA community. Staff indicated that program grants could support these larger scale projects that are occurring around the state.

Staff also indicated that BRC continues to maintain and strengthen its relationship with the Illinois Department of Housing and Urban Development (HUD). HUD's Multi Family Division has an inventory of properties that could benefit greatly from PHA program assistance. There are approximately 809 properties with 23,565 units that are classified as section 515, 811, and 202 properties. Although, they are not classified as public housing, these federally assisted housing programs support low to extremely low income residents around the state.

In previous years, the PHA program has had challenges utilizing ComEd and Peoples Gas utility funds. By expanding its mission to include the federally assisted programs mentioned above, the program could make an impact on the living conditions of residents in northern Illinois who do not live in public housing.

### 3.5.2 Barriers to Participation

Staff was asked to comment on the existing barriers to program participation. It was noted that program awareness is good due to the multiple years of program continuity and outreach that has

occurred thus far. The primary barrier to participation continues to be program utility budget limitations. The Ameren dollars tend to go fast in central and southern Illinois where the energy savings potential exceeds the budget.

### 3.5.3 Program Administration and Communication

The BRC continues to implement the PHA program from its offices in Champaign-Urbana Illinois. The Department of Commerce has one primary staff member that provides oversight of the program implementation. The Department of Commerce staff member is responsible for grant oversight, including project approval and payment of grant funds. Department of Commerce staff also supported outreach efforts during EPY7/GPY4 by attending regional PHA events. BRC staff is responsible for day-to-day program operations, the calculation of ex ante gross energy savings, project oversight, verification, and reporting.

Implementation procedures have remained generally the same since last reporting cycle. Staff has begun to enter program data into the new Department of Commerce database for tracking purposes; however, the database was not fully utilized during the program year. The database will allow for the Department of Commerce to have access to program data including expenditures, project scopes and statuses. Savings reported in the database continue to be based on calculations made in project spreadsheets outside of the database.

As in previous years, the program continues to require projects to be completed in one grant year. Staff indicated that this requirement tends to restrict the scope of projects and creates a constrained timeline for both contractors and program staff. Staff pointed out that other EEPS funded Department of Commerce programs allow for projects to span multiple years; therefore it would make sense for PHA projects to have that option as well.

During EPY7/GPY4 communication continued to occur on an ad hoc basis, as needed. Discussions with the Department of Commerce tend to focus on sub-grant approval and/or any project issues that arise. Staff was asked to comment on the nature and level of communication with PHAs and contractors. Program staff has established relationships with most PHA contacts and communicate with them on an ongoing basis. PHAs that are newer to the program need more project management support and assistance interpreting the guidelines. Past participants have accumulated considerable knowledge about the program and tend to need less support. Staff indicated that communication with contractors that serve PHAs is limited and that these relationships are not as strong as those with the PHA staff. Staff indicated that the knowledge gaps are related to the unique procurement procedures that guide decision making and payment within the PHA community. It was noted that contractors could benefit from more outreach and education related to program guidelines and participation requirements.