

**Local Law 86 of 2005**

**Annual Report**

**The City of New York**

**Mayor's Office of Operations**

**Office of Environmental**

**Coordination**



**November 2008**



# Table of Contents

## **02 Introduction**

Background

Summary of Local Law 86 of 2005 Provisions

Synopsis of Report

## **06 Projects Subject to LL86 of 2005**

Summary

Projects Subject to LEED® Rating Provisions Only

Projects Subject to both LEED® Rating and Energy Cost Reduction Provisions

Projects Subject to System Specific Energy Cost Reduction Provisions

Projects Subject to Potable Water Use Reduction Provisions

Completed Projects

Exempted Projects

## **19 Benefits and Costs of LL86 of 2005**

Projected Benefits and Costs of LEED® Rating and Energy Cost Reduction Provisions

Projected Benefits and Costs of System Specific Energy Cost Reduction Provisions

## **20 Conclusions**

## Introduction



**P.S. 276-M, Battery Park City, Manhattan**  
**DattnerArchitects**

## Background

Mayor Michael R. Bloomberg signed Intro 324 into law on October 3, 2005. Known as Local Law 86 of 2005 (LL86) and developed in conjunction with the New York City Council, it was implemented starting in 2006 at the Department of Design and Construction and took effect on January 1, 2007 for all other city agencies and non-city entities. By requiring the design of more efficient buildings, the law supports the goals of PlaNYC to reduce greenhouse gas emissions 30% by 2017, as well as its goals to reduce energy costs, decrease the use of potable water, and reduce the amount of stormwater that enters the City's water treatment systems

and surface water bodies. It will also produce other significant benefits such as improving both indoor and outdoor air quality, as well as increasing the amount of waste material recycled in the process of constructing and operating buildings.

On November 20, 2006 the Mayor issued Executive Order 97, which authorized the Director of the Mayor's Office of Environmental Coordination (MOEC) to exercise the powers and duties of the Mayor in conjunction with the implementation of LL86.

Rules to implement LL86 were published in draft form for public comment on December 1, 2006 and, following a public comment period and hearing, became effective on April 2, 2007. The rules can be found at Title 43 of the Rules of the City of New York, Chapter 10.

In 2007, as allowed by the law, the New York City School Construction Authority (SCA) and Department of Education (DOE) requested that the New York City Green Schools Rating System they had developed be reviewed as a not less stringent alternative to the U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED®) green building rating system. Based on an independent third party analysis, the Director of the Mayor's Office of Environmental Coordination found the Green Schools system to be no less stringent than LEED® New Construction, version 2.2, for the achievement of the required LEED® Certified rating.

The texts of LL86, Executive Order 97, the final Rules and the NYC Green Schools Guide may all be viewed on the MOEC website at [www.nyc.gov/oec](http://www.nyc.gov/oec).

## Summary of Local Law 86 of 2005 Provisions

Local Law 86 applies to capital building projects of city agencies and to those of non-city entities that receive capital funding from the city treasury. Most building occupancies encountered in such projects are covered by the law, with the exception of residential, high hazard, or industrial occupancies and open-air structures. For covered projects, the law's requirements fall into four basic categories. First, they require that capital building projects with over \$2,000,000 in construction costs achieve a rating according to the LEED® green building standard developed by the USGBC or according to an equivalent, approved standard. A LEED® Certified rating is required for health and educational facilities and a LEED® Silver rating is required for all other types of occupancy. Second, they require that projects with a green building rating requirement and construction costs over \$12,000,000 also reduce energy cost by 20 to 30%. Third, for certain projects that involve the replacement or installation of specific systems including boilers, lighting, and HVAC comfort controls, a 5 to 10% energy cost reduction is required. Fourth, a 20 to 30% potable water use reduction is required for some projects that involve the replacement or installation of plumbing systems.

The law also requires the preparation of an annual report for ten years after the law takes effect, commencing in 2008. This first annual report provides the information requested in the law and, in some instances, expands upon it.

## Synopsis of Report

The law requires a report of the projects subject to LL86 that completed construction in the prior calendar year. However, due to the recent implementation date of the law and the length of time generally needed for design and construction, only one project subject to LL86 has completed construction. Nonetheless, this first report includes all projects that have started design since the law took effect, not only those that have been completed. A summary of Fiscal Year 2008 (FY08) capital allocations by agency for LL86 projects is also provided.

For the relatively few projects that have completed design, this report also documents projected reductions in energy cost and potable water use, as well as estimates of additional costs related to achieving the required LEED® or the Green Schools standard. Available agency findings regarding the payback of investments in building energy efficiency are also described.

Note that the conclusions and totals in this report are based on data supplied to the Mayor's Office of Environmental Coordination by the agencies responsible for the expenditure of city funds on covered projects. Also note that, as designs and construction proceed toward completion after publication of this report, the current estimated costs, dates, and project sizes included are subject to change and will be updated in subsequent reports.

# Summary

A total of 83 projects subject to LL86 have commenced design since January 2007, or in the case of projects managed by the Department of Design and Construction, since January 2006. These account for total combined project costs of \$4,784,738,731; with \$3,976,105,204 due to construction costs for those parts of projects that are subject to LL86 provisions. In FY08, \$706,882,724 were allocated to LL86 projects.

Thirteen of these 83 projects, each with construction costs from \$2,000,000 to \$12,000,000, are subject to the LEED® or Green Schools requirement only. These have a combined construction value of \$104,383,900 and a FY08 allocation of \$47,550,484. An additional 43 projects, each with construction costs over \$12,000,000, are subject to both the LEED® or Green Schools requirement and the 20–30% energy cost reduction requirement. These have a construction value of \$3,694,982,653 and a FY08 allocation of \$609,772,910. The combined floor area of all projects subject to the LEED® related provision in the law totals 6,423,823 square feet (s.f.).

There are also 27 projects with aggregate construction costs of \$113,211,965 and a FY08 allocation of \$48,978,035 that are subject to the various system specific energy cost reduction requirements.

Thirty-four of the 43 LEED® projects with construction costs over \$12,000,000 are also subject to the water use reduction provisions and one additional project is subject to the water use reduction provisions only. The aggregated construction costs of the plumbing portion of all projects subject to the plumbing provision totals \$236,962,933.

Table 1: “Summary of Costs and Floor Area for Projects Subject to all LL86 Provisions” summarizes the above findings by client agency. Following Table 1 are four sections that list the projects that are subject to the four basic LL86 provisions described previously. The first section provides the names and key attributes of those projects that are subject only to the LEED® or Green Schools requirement and the second describes such projects that are also subject to the 20–30% energy cost reduction requirement. The third includes projects subject to energy cost reduction requirements for work that involves specific systems, and the fourth describes projects subject to the potable water use reduction provision. Following these four sections is a brief discussion of the one project that has been completed and the one that has been exempted.

Each section provides the following information for each project by agency: the name and type of project, total project cost, construction cost, the year of expected completion and, where applicable, the project floor area subject to the LEED® or Green Schools requirement.

**Table 1: Summary of Costs and Floor Area by Agency for  
Projects Subject to all LL86 Provisions**

Client Agency(s) <sup>1</sup>	Reporting Agency(s) <sup>2</sup>	Total Project Costs (\$) <sup>4</sup>	Total Construction Costs (\$) <sup>5</sup>	Floor Area Subject to LEED (s.f.) <sup>7</sup>	FY08 Capital Allocation (\$) <sup>6</sup>
<b>Criminal Justice Coordinator</b>	DDC	37,586,000	32,253,000	168,500	404,952
1 project					
<b>Department of Citywide Administrative Services</b>	DCAS	25,300,000	3,606,094	0	0
1 project					
<b>Department of Cultural Affairs</b>	DDC	135,201,150	108,912,551	216,000	13,668,000
13 projects					
<b>Department of Environmental Protection</b>	DDC	14,293,198	13,000,000	117,027	0
1 project					
<b>Department of Homeless Services</b>	DDC	66,342,000	54,638,084	75,000	43,719
1 project					
<b>Department of Education</b>	SCA	1,759,213,310	1,461,277,382	1,902,685	548,678,298
49 projects					
<b>Department of Correction</b>	DDC	420,000,000	315,000,000	175,000	0
1 project					
<b>Department of Health &amp; Mental Hygiene</b>	DDC	67,739,896	55,337,974	96,583	2,255,451
3 projects					
<b>Department of Parks and Recreation</b>	EDC, DPR	175,220,494	107,186,386	217,534	10,446,627
4 projects					
<b>Economic Development Corporation</b>	EDC	210,626,000	46,935,000	127,200	38,768,795
2 projects					
<b>Health and Hospitals Corporation</b>	HHC	6,000,000	392,7000	0	953,000
1 project					
<b>New York City Police Department</b>	DDC	1,059,543,683	962,341,000	2,492,800	57,382,000
2 projects					
<b>New York City Police Department, New York City Fire Department, Department of Information Technology &amp; Telecommunications</b>	DDC	746,736,000	678,213,000	695,000	33,035,000
1 project					
<b>New York Public Library</b>	DDC	7,700,000	5,000,000	10,000	240,672
1 project					
<b>Queens Borough Public Library</b>	DDC	53,237,000	33,294,365	44,735	1,006,210
2 projects					
	Total	4,784,738,731	3,976,105,204	6,423,823	706,882,724

**Notes for Table 1 and Key to Agency Acronyms:** See Page 15

## **Projects Subject to LEED® Rating Provisions Only**

Table 2 (*page 7*) lists those projects that have started design and that are subject only to the LEED® or Green Schools requirement, *i.e.* city-funded new buildings, building additions or reconstructions in covered occupancy groups that agencies anticipate will have construction costs from \$2,000,000 to \$12,000,000.



**Table 2: Projects Subject to LEED® Rating Provisions Only  
(New Buildings, Additions, and/or Reconstruction Projects  
with Construction Costs from \$2M to \$12M)**

Client Agency(s) <sup>1</sup>	Reporting Agency(s) <sup>2</sup>	Project <sup>3</sup>	Project Cost (\$) <sup>4</sup>	Construction Cost (\$) <sup>5</sup>	Floor Area Subject to LEED (s.f.) <sup>7</sup>	Year of Completion
DCLA	DDC	Snug Harbor Cultural Center	8,977,000	7,115,625	30,000	2011
		Reconstruction				
	DDC	Afrikan Poetry Theatre	4,000,000	3,408,000	6,500	2011
		Reconstruction				
	DDC	Mind-Builders Creative Arts Center	4,706,000	3,600,000	13,424	2011
		Reconstruction				
	DDC	The 52nd Street Project	14,300,000	10,900,000	17,000	2009
		New Building				
DCC	Downtown Art & Alpha Omega	3,289,000	2,659,000	5,395	2011	
	Reconstruction					
DDC	Bronx River Art Center Building	6,794,000	6,000,000	4,540	2010	
	Reconstruction					
DDC	Lorillard Snuff Mill -The New York Botanical Garden	9,825,000	8,790,000	8,900	2010	
	Reconstruction					
DOE	SCA	PS 188 - K Gymnasium Building	7,555,106	7,228,726	6,550	On Hold
		New Building				
DOHMH	DCC	Chelsea Health Center	10,550,000	9,600,000	28,400	2013
		Reconstruction				
DPR	EDC	Steeplechase Plaza	30,810,000	7,260,000	8,000	2010
		New Building				
EDC	EDC	East River Waterfront Esplanade	147,680,000	10,320,000	17,200	2010
		Reconstruction				
NYPL	DDC	Mariners Harbor Branch Library	7,700,000	5,000,000	10,000	2010
		New Building				
QBPL	DDC	Glen Oaks Branch Library	13,411,000	11,251,274	18,000	2010
		New Building				
TOTAL			269,597,106	104,383,899	259,668	

Notes for Table 2 and Key to Agency Acronyms: See Page 15

## **Projects Subject to both LEED® Rating and Energy Cost Reduction Provisions**

In Table 3 (*page 9*) projects are described that have started design and that are subject to both the LEED® or Green Schools requirement as well as to the 20–30% energy cost reduction requirement, *i.e.* city-funded new buildings, building additions or substantial reconstruction of existing buildings in covered occupancy groups with construction costs over \$12,000,000.

**Table 3: Projects Subject to both LEED® Rating and Energy Cost Reduction Provisions (New Buildings, Additions, and/or Reconstruction Projects with Construction Costs over \$12M)**

Client Agency(s) <sup>1</sup>	Reporting Agency(s) <sup>2</sup>	Project <sup>3</sup>	Project Cost (\$) <sup>4</sup>	Construction Cost (\$) <sup>5</sup>	Floor Area Subject to LEED (s.f.) <sup>7</sup>	Year of Completion
<b>CJC</b>	DDC	<b>Kings County Criminal Court</b>	37,586,000	32,253,000	168,500	2011
		Reconstruction				
<b>DCLA</b>	DDC	<b>Museum of the City of New York</b>	24,163,150	19,942,000	54,640	2009
		Reconstruction				
	DDC	<b>122 Community Center</b>	19,955,000	15,743,000	44,225	2012
		Reconstruction				
	DDC	<b>Brooklyn Museum MPIV Stage 4A</b>	21,392,000	15,054,926	15,000	2009
		Addition				
DDC	<b>Staten Island Institute of Arts and Sciences Bldg A</b>	17,800,000	15,700,000	16,376	2011	
	Reconstruction					
<b>DEP</b>	DDC	<b>DEP Shaft Maintenance Building</b>	14,293,198	13,000,000	117,027	2012
		Reconstruction				
<b>DHS</b>	DDC	<b>DHS Family Center</b>	66,342,000	54,638,084	75,000	2010
		New Building				
<b>DOE</b>	SCA	<b>Young Women's Business</b>	42,185,928	36,775,872	114,983	2009
		Addition				
	SCA	<b>All City Leadership School-K</b>	39,827,893	34,701,408	52,549	2011
		New Building				
	SCA	<b>PS/IS 276-M Battery Park City</b>	106,765,712	91,516,320	127,700	2010
		New Building				
	SCA	<b>Community Health Academy (CLOTH)</b>	68,117,089	59,037,921	82,548	2011
		New Building				
	SCA	<b>ECC 361 @ PS94X</b>	46,419,303	40,269,320	52,766	2010
		New Building				
SCA	<b>HS 585(Maspeth HS)- Q</b>	130,763,951	99,582,548	149,938	2012	
	New Building					
SCA	<b>IS 230-Q @ 74th Street</b>	28,549,311	22,708,666	35,721	2011	
	Addition					
SCA	<b>IS 259-K</b>	52,838,545	45,853,444	51,228	2010	
	Addition					
SCA	<b>Jill Chaifetz Transfer School- X</b>	16,934,049	14,759,976	24,180	2009	
	Addition					

**Notes for Table 3 and Key to Agency Acronyms:** See Page 15

**Table 3 (cont'd): Projects Subject to both LEED® Rating and Energy Cost Reduction Provisions (New Buildings, Additions, and/or Reconstruction Projects with Construction Costs over \$12M)**

Client Agency(s) <sup>1</sup>	Reporting Agency(s) <sup>2</sup>	Project <sup>3</sup>	Project Cost (\$) <sup>4</sup>	Construction Cost (\$) <sup>5</sup>	Floor Area Subject to LEED (s.f.) <sup>7</sup>	Year of Completion
DOE	SCA	PS 42-Q	60,403,696	52,442,208	52,499	2011
		Addition				
	SCA	PS 196-Q	32,911,480	28,565,882	35,526	2011
		Addition				
	SCA	PS 133-K @ Butler Street	92,027,560	78,074,880	75,426	2012
		New Building				
	SCA	Settlement Housing PS/IS-X	113,020,000	94,080,000	148,393	2011
		New Building				
	SCA	Manhattan Eye, Ear and Throat Hospital	47,245,591	41,160,000	50,786	2008
		Addition/Reconstruction				
	SCA	PS 89 Cypress Hill-K	42,320,786	36,883,628	56,087	2010
		New Building				
	SCA	PS 95-X	66,982,573	58,154,304	60,201	2010
		Addition				
	SCA	PS 971 @4th Avenue-K	41,334,981	30,492,020	43,338	2010
New Building						
SCA	PS/IS @ PS 163-K	82,469,009	71,561,464	101,560	2010	
	New Building					
SCA	PS/IS 264-K	65,259,289	50,537,287	73,000	2012	
	New Building					
SCA	PS 277-Q (aka PS/IS @ 153rd Street)	86,263,081	62,664,999	96,747	2012	
	New Building					
SCA	PS/IS 312-Q	73,027,556	63,339,526	97,265	2012	
	New Building					
SCA	PS/IS 48	72,398,717	62,776,844	94,023	2010	
	New Building					
SCA	PS/IS 79-X	67,891,322	58,910,176	65,141	2010	
	Addition					
SCA	IS/HS @ Spring Creek-K	128,868,282	111,883,408	154,530	2012	
	New Building					
DOC	DDC	Brooklyn Detention Center	420,000,000	315,000,000	175,000	2014
		Addition & Reconstruction				

**Notes for Table 3 and Key to Agency Acronyms:** See Page 15

**Table 3 (cont'd): Projects Subject to both LEED® Rating and Energy Cost Reduction Provisions (New Buildings, Additions, and/or Reconstruction Projects with Construction Costs over \$12M)**

Client Agency(s) <sup>1</sup>	Reporting Agency(s) <sup>2</sup>	Project <sup>3</sup>	Project Cost (\$) <sup>4</sup>	Construction Cost (\$) <sup>5</sup>	Floor Area Subject to LEED (s.f.) <sup>7</sup>	Year of Completion
DOC	DDC	Brooklyn Detention Center	420,000,000	315,000,000	175,000	2014
		Addition & Reconstruction				
DOHMH	DDC	Richmond Health Center	24,590,370	19,776,700	29,639	2012
		Reconstruction				
	DDC	Riverside Health Center Renovation	32,599,526	25,961,274	38,544	2011
		Reconstruction				
DPR	EDC	City of NY/EDC- Building J	16,360,494	12,346,386	28,248	2009
		Reconstruction				
	DPR	McCarren Pool & Bathhouse	50,050,000	41,580,000	47,286	2011
		Reconstruction				
	DPR	Multi-Purpose Indoor Athletic Facility in Ocean Breeze Park, Staten Island	78,000,000	46,000,000	134,000	2010
New Building						
EDC	EDC	Sephardic Community Center	62,946,000	36,615,000	110,000	2008
		Addition				
NYPD	DDC	121 Police Precinct	58,981,683	46,302,000	48,800	2011
		New Building				
	DDC	Police Academy, College Point	1,000,562,000	916,039,000	2,444,000	2012
		New Building				
NYPD FDNY DoITT	DDC	PSAC II	746,736,000	678,213,000	695,000	2012
		New Building				
QBPL	DDC	Children's Library Discovery Center and Central Library	39,826,000	22,043,091	26,735	2009
		Reconstruction				
TOTAL			4,337,009,106	3,694,982,653	6,164,155	

**Notes for Table 3 and Key to Agency Acronyms:** See Page 15

## **Projects Subject to System Specific Energy Cost Reduction Provisions**

Table 4 lists projects in covered occupancy groups that are subject to the various system specific energy cost reduction requirements. These include projects that involve the installation or replacement of boilers or HVAC comfort controls with construction costs over \$2,000,000 and lighting systems with such costs over \$1,000,000.

**Table 4: Projects Subject to System Specific Energy Cost Reduction Provisions**

Client Agency(s) <sup>1</sup>	Reporting Agency(s) <sup>2</sup>	Project <sup>3</sup>	Project Cost (\$) <sup>4</sup>	Construction Costs (\$) <sup>5</sup>	Year of Completion
DCLA	DDC	NY Public Theatre	22,793,000	1,431,158	2011
		Lighting Renovation			
DCLA	DDC	American Museum of Natural History	10,184,000	1,100,000	2010
		Lighting Renovation			
DCAS	DCAS	60 Centre St.	25,300,000	3,606,094	2013
		HVAC Comfort Controls			
HHC	HHC	Coler-Goldwater Specialty Hospital and Nursing Facility	6,000,000	3,927,000	2012
		Low Pressure Steam Boiler Plant			
DOE	SCA	Gompers Vocational H.S.-X	8,123,042	5,246,064	2009
		Boiler Conversion			
	SCA	P.S. 246 X (Poe Center)	5,158,691	4,762,800	2009
		Boiler Conversion			
	SCA	P.S. 178-Q	4,698,721	3,748,800	2009
		Boiler Upgrade			
	SCA	J.H.S. 10 Q	8,176,853	6,596,080	on hold
		Boiler Replacement			
	SCA	P.S. 57 M	3,483,243	3,142,776	2008
		Boiler Replacement			
	SCA	P.S. 36-M	6,015,590	3,537,600	2010
		Boiler Conversion			
	SCA	John Jay H.S.- K	6,823,972	6,156,967	on hold
		Boiler Upgrade			
	SCA	P.S. 377-K	8,397,008	5,197,200	2009
		Boiler Conversion			
SCA	P.S. 120-K	5,418,600	3,838,800	2010	
	Boiler Conversion				
SCA	P.S. 52 K	3,886,564	3,048,576	2008	
	Boiler Upgrade				
SCA	J.H.S. 45 M	7,510,457	3,570,336	2009	
	Boiler Upgrade				
SCA	P.S. 56-K	5,719,000	3,720,000	2010	
	Boiler Conversion				
SCA	P.S. 81-K	5,750,215	3,820,000	2010	
	Boiler Conversion				

Notes for Table 4 and Key to Agency Acronyms: See Page 15

**Table 4 (cont'd): Projects Subject to System Specific Energy Cost Reduction Provisions**

Client Agency(s) <sup>1</sup>	Reporting Agency(s) <sup>2</sup>	Project <sup>3</sup>	Project Cost (\$) <sup>4</sup>	Construction Costs (\$) <sup>5</sup>	Year of Completion
DOE	SCA	W.E.B. DuBois H.S.	7,022,400	5,299,920	2009
		Boiler Upgrade			
	SCA	P.S. 194-M	4,788,000	3,720,000	not scheduled
		Boiler Conversion			
	SCA	P.S. 188 Q	10,554,915	3,947,580	2009
		Boiler Upgrade			
	SCA	P.S. 23-R	4,346,440	3,240,000	2010
		Boiler Conversion			
	SCA	P.S. 32-R	3,105,118	2,801,610	on hold
		Boiler Conversion			
	SCA	P.S. 108-X	5,750,215	4,070,394	2010
		Boiler Conversion			
SCA	I.S. 115 (@ X115)-X	7,043,680	4,857,600	2010	
	Boiler Conversion				
SCA	P.S. 122 (@ X 122)	6,348,090	4,304,916	2008	
	Boiler Upgrade				
SCA	I.S. 180 N.E. Bronx Ed. Park	3,060,393	2,761,256	on hold	
	HVAC Comfort Controls				
SCA	Taft H.S-X	11,704,000	9,227,280	2010	
	Boiler Conversion				
		TOTAL	240,139,207	113,211,965	

**Notes for Table 4 and Key to Agency Acronyms:** See opposite page.



## Notes:

### Key to agency acronyms:

<b>CJC</b>	Criminal Justice Coordinator
<b>DCAS</b>	Department of Citywide Administrative Services
<b>DCLA</b>	Department of Cultural Affairs
<b>DEP</b>	Department of Environmental Protection
<b>DOC</b>	Department of Corrections
<b>DOE</b>	Department of Education
<b>DOHMH</b>	Department of Health and Mental Hygiene
<b>DoITT</b>	Department of Information Technology and Telecommunications
<b>DHS</b>	Department of Homeless Services
<b>DPR</b>	Department of Parks and Recreation
<b>EDC</b>	New York City Economic Development Corporation
<b>FDNY</b>	New York City Fire Department
<b>HHC</b>	Health and Hospitals Corporation
<b>NYPD</b>	New York City Police Department
<b>NYPL</b>	New York Public Library
<b>QBPL</b>	Queens Borough Public Library

### Notes for tables:

1. The client agency is the agency that either will occupy the project or will sponsor another occupant.
2. The reporting agencies are those that have provided data for this report and are responsible for the expenditure of city funds on the project indicated. Note that, in some cases, the reporting agency may also be the client agency.
3. The projects in this report are limited to those that have started design. Note that, while there are a number of city-funded projects currently underway or completed that targeted or achieved a LEED® rating before the law took effect, the projects included in this report are limited to those that received funds from the city treasury after January 1, 2007, or, in the case of projects managed by DDC, after January 1, 2006.
4. Project cost is the sum of all costs associated with an entire capital project regardless of funding source. It includes costs related to site acquisition, furniture, fittings and equipment, as well as to design and construction costs. Note that project cost also covers work on all portions of the project including portions that may not be subject to the provisions of LL86.
5. Construction costs indicated are only for the portion of the project that is subject to the relevant LL86 provisions. For example, for a project that has a large landscaping component as well as a building component over \$2,000,000, the construction cost reflects only the building portion of the project that is subject to the LEED® related provisions of the law. Alternatively, for a project subject to a system specific energy cost reduction requirement, the construction cost reflects only the portion of the project subject to such requirement. Construction costs include all mark-ups such as general conditions, contractor overhead and profit, contingencies and construction management fees, if any.
6. Since projects typically take several years to complete and the city budget process runs on an annual cycle, each project is allocated a portion of the total project funds over several of the City's annual fiscal years until a project is complete and total project funds are expended. Note that the FY08 allocations indicated here represent the amounts allocated during the most recent fiscal year that ended June 30, 2008. Note also that the amounts indicated in this column represent an annual allocation toward the total project cost, not only to the construction cost of the portion of the project that is subject to the provisions of LL86.
7. Floor areas indicated refer to the portion of the project that is subject to the LEED® related provisions in the law. For example, for a project that involves the substantial reconstruction of only a portion of a building, the floor area indicated refers only to that area, not to the area of the entire building.

## Projects Subject to Potable Water Use Reduction Provisions

Projects involving work on domestic plumbing systems with a construction cost of \$500,000 or more are required to reduce potable water usage by a minimum of 20–30%. Most of the projects in Table 3 “Projects Subject to both LEED® Rating and Energy Cost Reduction Provisions” are also subject to the system specific potable water use reduction requirement for domestic plumbing. Of the projects listed in Table 4 (*page 13*), only the following seven projects are not subject to this additional provision: 122 Community Center, DEP Shaft Maintenance, IS 230–Q 74th Street, Jill Chaifetz School, PS 196-Q, PS 971@ 4th Avenue-K, Staten Island Institute of Arts and Sciences and the Sephardic Community Center. Note that the portion of work related to domestic plumbing is included in both the construction and project costs indicated in Table 3.

One project, the DOE P.S. 335 Student Toilet Room Upgrade project, with a total project cost of \$3,947,292, is not listed in Tables 2, 3 or 4 since it was subject to the potable water use reduction provision only. The portion of this DOE project subject to this provision has a construction cost of \$700,000, an FY08 allocation of \$13,295, and a completion date of 2010.

None of the projects with construction costs from \$2,000,000 to \$12,000,000 that are subject only to the LEED® or Green Schools requirement was also subject to the potable water use reduction provisions.



**121 Precinct Stationhouse, Staten Island**  
**Rafael Viñoly Architects PC**

## Completed Projects

Due to the recent effective date of the law and the time needed for design and construction, a relatively small percentage of projects that are covered have completed design and only one, the Manhattan Eye, Ear, and Throat Hospital Reconstruction/Addition described in Table 3, has finished construction.

## Exempted Projects

One project to date, the Sephardic Community Center in Brooklyn, described in Table 3, has received an exemption.

Because the Center would receive funds from the city treasury after January 1, 2007, it is subject to the law. However, since it had completed design and started construction using private funding in 2005, prior to the effective date of the law, compliance with the applicable LL86 provisions would have created considerable delay and added cost for the project, an outcome that was found to not be in the public interest.

The law allows the Mayor to exempt from each provision of the law up to 20% of the capital dollars in each fiscal year subject to the same provision. With a FY08 allocation of \$8,000,000, the total capital dollars allocated in FY08 for this one exempted project account for approximately 1.3% of \$612,022,910, the amount allocated in FY08 for those LEED® projects subject to the same LL86 provisions as the Center and substantially less than the 20% allowable by the law.

## **Projected Benefits and Costs of LEED® Rating and Energy Cost Reduction Provisions**

Due to the amount of time required to complete design and construction, the relatively brief period that the law has been in effect, and the fact that calculations cannot be finalized until a project design is completed, only limited data are available on which to base any conclusions with regard to the benefits and costs of the law. Nonetheless, using data from those projects that have completed design, several findings can be reported.

The findings below are based on data that are available for the two projects that have completed design: the New DHS Family Center and the DPR Building J Reconstruction, as well as the one completed DOE project, the Manhattan Eye Ear and Throat Hospital Annex Addition/Reconstruction. The first two projects are subject to the LEED® rating requirement as well as the 20–30% energy cost reduction requirement. The completed DOE Addition/ Reconstruction project has met the requirements of the NYC Green Schools Rating System. All three are described in Table 3.

In the aggregate, the first two building projects above have total project costs of \$82,702,000 and construction costs of \$66,984,000. The additional construction costs to implement the energy efficiency measures that are necessary to achieve the law's requirements is estimated for both of these projects to be \$407,490. This represents the sum of the incremental construction or "hard" costs incurred by both projects to achieve the required energy cost reductions. The projected annual energy savings<sup>1</sup> total \$58,263, yielding a simple payback of about 7 years. The total estimated professional fees for commissioning, energy analysis, as well as the extra services and fees incurred to achieve the required LEED® Silver rating on both projects were estimated to be \$372,000 or less than 0.5% of the construction costs. The greenhouse gas reductions<sup>2</sup> for the two projects are estimated to be 330 metric tons annually and the potable water use reductions<sup>3</sup> are projected to be 738,000 gallons per year. Reported storm water runoff and waste water annual reduction<sup>3</sup> estimates total 885,750 and 232,500 gallons, respectively.

The DOE addition/reconstruction project has a total project cost of \$47,245,000 and construction costs of \$41,160,000. Annual energy cost savings and greenhouse gas emissions reductions are projected to be \$30,761 and 207 metric tons respectively. Potable water use reduction relative to the baseline defined in the law is projected to be 261,000 gallons annually.

### **Footnotes:**

1. The calculations for energy cost savings are based on estimated 2008 energy rates used by the City's energy providers for electricity, natural gas, and purchased steam. In accordance with the LL86 Rules, savings are relative to a baseline of the New State Energy Conservation Code or the ASHRAE 90.1 -1999 standard, whichever is more stringent.
2. The calculations for reductions of greenhouse gases are based upon the Greenhouse Gas Emissions Calculator developed by the Mayor's Office of Long Term Planning and Sustainability.
3. In accordance with the LL86 Rules, potable water, stormwater runoff, and wastewater reductions are calculated relative to the baselines defined in the appropriate sections of the LEED® NC-2.1 or 2.2 rating systems.

# Projected Benefits and Costs of System Specific Energy Cost Reduction Provisions

Again, due to the amount of time required for design and the relatively brief period since the law has been in effect, any conclusions drawn from the findings reported here are necessarily limited by the small sample of projects that have finished design. Those findings that follow are for projects subject to the system specific requirements in the law and are based on projections of energy cost savings and incremental construction costs that the SCA has reported for 9 DOE boiler projects with complete designs. These are the projects at P.S. 57 M, Gompers Vocational H.S. – X, P.S. 377 - K, P.S. 246 - X, P.S. 188 – Q, P.S. 178 – Q, J.H.S. 45 – M, P.S. 122, and P.S. 52 – K.

In order to achieve the required minimum 10% energy cost reductions, two basic measures were adopted in these projects. The first measure involved the purchase of more efficient boilers and the second involved the replacement of steam traps. The estimated annual savings in energy costs from the two measures combined total \$1,300,300, with \$1,275,700 coming from the steam trap replacements and the balance from increased boiler efficiency. The construction costs for the steam trap replacements total \$2,234,000 yielding a payback, for the steam trap work alone, of less than 2 years.



**Glen Oaks Library, Queens**  
**Marble Fairbanks Architects**

## Conclusions

Prior to the enactment of LL86, it was estimated that \$12 billion worth of construction projects would be subject to the law in the first ten years after its enactment. From the early data that are available, it is conceivable that, considering that more than \$4.7 billion of project costs have already been captured by the law, the amount of construction subject to LL86 in the first ten years after the law took effect may exceed twice the amount that was originally estimated.

In addition to finding that more capital dollars than anticipated will be covered by the law, a second preliminary finding is that the cost of investments related to the LEED® provisions is on the order of 1%, with roughly half of that amount dedicated to construction costs for energy efficiency that will be recovered in less than 10 years through energy savings and the other half dedicated to the professional fees associated with energy analysis, commissioning of mechanical systems, and filing with the USGBC.

And finally, it was found that the replacement of steam traps in the 9 DOE/SCA boiler projects, having a payback of less than two years, likely represents one extremely cost effective means of reducing energy costs and greenhouse gas emissions across much of the City's existing building portfolio.

Therefore, LL86, less than two years after its effective date, has demonstrated that building green in New York City can be a cost-effective endeavor with the potential for significant energy savings and environmental benefits, such as reduction in greenhouse gas emissions, potable water use, and storm water runoff. With its continued application, LL86 should continue to provide increasing benefits in the future as more projects subject to its provisions are completed.



**Queens Central Library, Queens  
1100: Architect PC**





The City of New York  
Michael R. Bloomberg, Mayor

Prepared by:  
Mayor's Office of Operations  
Office of Environmental Coordination

[www.nyc.gov/oec](http://www.nyc.gov/oec)