

**PHILADELPHIA ENERGY AUTHORITY
PHILADELPHIA MUSEUM OF ART
AND CITY OF PHILADELPHIA**

REQUEST FOR QUALIFICATIONS

For

**A Guaranteed Energy Savings Agreement Project at the
Philadelphia Museum of Art**

Attachment A

Facility Profiles

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1 BUILDING DESCRIPTIONS

Main Building

Opened in 1928, the Philadelphia Museum of Art is one of Pennsylvania's most iconic buildings. It is a designated Commonwealth Treasure and is a registered landmark. The Museum's world class collection of more than 227,000 works of art includes major holdings of European, American and Asian origin. The various classes of artwork include sculpture, paintings, prints, drawings, photographs, armor, and decorative arts. As a result of this vast collection, the Museum receives between 750,000 – 1 million visitors annually. The Museum plays a central role in the civic life of the city. The Museum is often called upon to play a central role in major city events including, the annual Welcome America and Made in America concerts, the 2015 Pala Visit, 2016 Democratic National Convention and next year's NFL Draft.

The museum's Main Building (2600 Benjamin Franklin Parkway) was completed in 1928 at the northwest end of Philadelphia's Benjamin Franklin Parkway. The Museum stands on the site of the former city reservoir. It marks the easterly entry into the Fairmount Park system and the westerly end of the Benjamin Franklin Parkway, the first diagonal boulevard in the city, which terminates at City Hall. The intention was to replicate the Champs-Élysées with Philadelphia's cultural institutions placed along the boulevard.

The Main Building is five floors (three above grade) comprising 631,000 square feet. In 2013, a new Art Handling facility was constructed at the south side the building to enhance the Museum's ability for shipping and receiving works of art. This new addition added an additional 38,000 square feet of new space.

Perelman Building

The Museum's campus also includes the Ruth and Raymond G. Perelman Building (2525 Pennsylvania Avenue), a lavishly decorated with sculpture, color, and gilding building that is regarded as one of the finest Art Deco structures in Philadelphia. The sculptor Lee Lawrie (1877–1963), whose work adorns such notable American public buildings as Rockefeller Center, the Library of Congress, and the National Academy of Sciences, is principally responsible for its decorative scheme. In style, the building reflects the moment of transition from early twentieth-century historicism to the geometric Art Deco design of the 1920s and 1930s. Completed in 1927 by one of three architectural firms that built the Main Building, the building originally served as the headquarters for the Franklin Mutual Life Insurance Company until 1972. The building was listed on the National Register of Historic Places in 1973.

The Museum purchased the Perelman Building in 2004 and opened it to the public as part of the Museum in 2008 after a full renovation and expansion of the facilities. When purchased, the building was 125,000 square feet and through the renovation, the Museum reclaimed an additional 59,000 square feet of space. The building was renovated and a 59,000 square feet addition was built to accommodate new galleries, art storage, offices, and public services.

Rodin Museum

Philadelphia's historic Rodin Museum and Garden ranks among the jewels of the City's cultural institutions. Administered by the Philadelphia Museum of Art (PMA) since 1939, it is renowned for the beauty of its grounds and architecture, and for the importance of its holdings—one of the largest collections of works by Auguste Rodin in the world.

Film magnate Jules Mastbaum first saw the sculptor's work in Paris in 1923, and immediately began an avid career as a collector. On May 12, 1926, the Commissioners of Fairmount Park formally accepted Mastbaum's proposal to create a museum for his great monographic collection. The opening of the Rodin Museum and Garden in 1929 made a gift of the building and the collection, to the citizens of Philadelphia—for their enjoyment and for "the cultural improvement" of the city.

The building was designed by the French architect Philip Cret, a professor of architecture at the University of Pennsylvania, who also designed the Benjamin Franklin Bridge, the Federal Reserve Building, the Detroit

Institute of Arts, and the Barnes Foundation. The grand entrance gate is a replica of Rodin's tomb in Meudon, France. The Garden was designed by landscape architect Jacques Gréber, who had conceived the overall design of the Benjamin Franklin Parkway. The collaboration between Gréber and Cret on the Rodin Museum and Garden created a gem of Beaux-arts style at its best, a serene enclave on the vibrant cultural corridor of the Benjamin Franklin Parkway.

Core Project

The Museum is currently in the mid stages of realizing our Facilities Master Plan, developed in 2006 by Frank Gehry. The first significant project to be executed under the Master Plan is the Core Project, which will begin construction in January 2017. The Main Building of the Museum will be renovated on Levels A, B, and C to reconfigure and revitalize historic public spaces, recapture underutilized areas as expanded gallery space, and enhance the visitor experience in the lower levels of the building. In addition, the Core Project includes an essential upgrade to the building systems, which will result in a major reduction in energy usage in the museum. The scope of work for the Core Project is summarized as follows:

- Improve Visitor Experience and Orientation
 - Creates a central Forum, opening up the heart of the Museum
 - Transforms Lenfest Hall
 - Restores and reopens historic Kelly Drive entrance and Vaulted Walkway
 - Clarifies visitor circulation and orientation
 - Places new retail spaces in optimal locations
 - Creates new fine dining and food services
- Activate Collection
 - Adds 23,000 square feet of gallery space on Level A
- Address Critical Infrastructure Improvements and Upgrades
 - Renovates Central Utility Plant
 - New gas and water services
 - New electrical service
 - New emergency power system
 - New lighting control system
 - New automatic temperature and humidity control system
 - New cistern under the southwest terrace for improved storm water management
 - Addresses code compliance, fire and life safety issues, and ADA access
 - Provides additional and accessible public restrooms on Levels B & C
 - Installs fiber optics on Level C with a distribution system to the new server room
 - Upgrades security systems with CCTV, motion sensors, etc.
 - Improves lighting and A/V systems for lectures/special events in Lenfest Hall and central Forum

2 SYSTEM DESCRIPTIONS

Electrical, Lighting and Backup Energy Systems

The Main Building and the Perelman Building both receive HT power on two 13,200 volt PECO lines; Parrish 142 and Westmorland 1067. The feeds enter the Main Building where it is metered, with a utility trench providing connectivity to the Perelman Building. The main switchgear is located within the Main Building, section C4, however construction is currently underway which will change the switchgear location to the B3 section of the building.

Lighting at both buildings consist of a mix of fluorescent, incandescent, MR16, as well as LED fixtures. An ongoing project to convert additional spaces to LED lighting has been undertaken by the museum and is accelerating as the LED technology advances. The Main Building's lighting automation system is an outdated Microlite system. The Perelman lighting automation is a Lutron system.

The Main Building currently has two emergency generators. The primary generator is a 140 kW generator which operates security and life safety systems, as well as emergency lighting. A selector switch allows operation of one elevator at a time when under emergency power. The second generator is a 15kW unit which is a backup to the primary emergency generator. This unit, if needed, supplies the security systems and life safety systems only.

The Perelman Building has its own 500kW emergency generator. This generator supplies emergency power to (7) AHU's, security, and life safety systems, as well as emergency lighting.

HVAC Systems, Chilled Water Plant, Steam, Building Automation System

The main building has a total of (20) AHU's with (1) additional ERU. The Perelman Building has a total of (13) AHU's, (7) of which are backed up with emergency power.

The main chiller plant resides in section C6 of the Main Building. The Main Building and the Perelman Building both receive chilled water from the chiller plant. The chiller plant is made up of (1) 1000-ton McQuay chiller and (1) 800-ton York unit. Modifications to the existing chiller plant are planned to accommodate the increased demand at the conclusion of the Core Project.

Steam is supplied via the Veolia steam loop. The steam enters the Main Building at 150 psi where it is reduced through two reducing stations. The Main Building operates its internal steam loop at 7 psi. Similar to the electric service, the Perelman Building is fed from the supply entering the Main Building. The Perelman Building receives its steam at 150 psi where it is reduced and operates its internal steam loop at 15 psi.

The Rodin Museum has a 40-ton split system, along with a gas-fired hot water boiler that were replaced in an interior renovations project in 1999.

Water and Plumbing System

The Main Building receives the water supply at the north entrance, via a 6" domestic water line. This location will change as part of the Core Project to the B level, Section 7 with corresponding upgrades to the main chiller plant.

The Perelman Building receives the water supply at the east side of the Fairmount Ave wing, via its own 6" domestic water line.

Building Envelope- Wall, Roof and Window Systems

The Main Building exterior façade is Minnesota Dolomite Limestone (MDL). The roof is made up of terracotta, glazed poly chromed roof tiles covering 2.2 acres of roof. The windows are steel framed, single pane glass throughout.

The Perelman Building features a polychrome Indiana limestone facade with steel framed, single pane windows with a retrofit storm window system on the interior side. The roof over the existing portion of the building was replaced in the 2007 renovation to a modern system of salvaged historic tiles reinstalled atop a new membrane and rigid insulation board. The roof system over the addition to the building is a built-up, ballasted flat roof.

3 AVAILABLE ENERGY AUDITS AND STUDIES

This information will be provided in the RFP phase of procurement.

4 ENERGY CONSERVATION MEASURE OF INTEREST

ECM	Building(s)
Lighting Retrofits	Both
Lighting Control System	Main

Commissioning	Perelman
Retro-commissioning	Main
Water Conservation	Both
Energy Education Program/Signage	Main
Controls Expansion	Main Building
Steam Electricity Generator	Main
Heat Recovery of Condensate	Both
Window Replacement	Main
Duct Replacement to lower SP	Main
Fan Walls or new AHUs	Main
Roof Insulation	Main

5 BUILDINGS ENERGY USE PROFILE

The Philadelphia Museum of Art and Perelman Buildings share one main electric and steam service line. The information below summarizes the utility use at the facility.

2014		Use	Demand	Cost
Electricity		kWh	kW	
Jan	2014	1,584,918.0	Not Available	\$125,743.67
Feb	2014	1,209,481.0	Not Available	\$102,007.53
Mar	2014	1,289,450.0	Not Available	\$108,270.44
Apr	2014	1,155,979.0	Not Available	\$98,035.64
May	2014	1,376,815.0	Not Available	\$115,495.85
Jun	2014	1,608,224.0	2,838.6	\$133,489.48
Jul	2014	1,554,961.0	3,039.6	\$33,996.94
Aug	2014	1,799,032.0	2,975.7	\$169,484.47
Sep	2014	1,490,625.0	2,952.8	\$142,630.05
Oct	2014	1,466,130.0	2,937.6	\$140,415.87
Nov	2014	1,334,729.0	2,871.0	\$133,603.29
Dec	2014	1,390,687.0	2,451.4	\$137,188.15
Total:		17,261,031.0	Max 3,039.6	\$1,440,361.38
Natural Gas		MCF		
Jan	2014	64.3		\$733.68
Feb	2014	65.9		\$780.56
Mar	2014	71.7		\$875.73
May	2014	76.7		\$931.30
Jun	2014	78.6		\$971.57
Jul	2014	64.8		\$823.52
Aug	2014	82.2		\$1,045.17
Sep	2014	71.9		\$875.41
Oct	2014	78.5		\$906.11
Nov	2014	83.1		\$958.10
Dec	2014	72.9		\$833.75
Total:		810.6		\$9,734.90
Steam		MLB	lbs/hr	
Jan	2014	8,098.6	Not Available	\$186,457.81

Feb	2014	8,880.4	Not Available	\$456,598.64
Mar	2014	7,666.0	Not Available	\$217,080.68
Apr	2014	6,354.7	Not Available	\$302,567.55
May	2014	5,704.5	12,983.0	\$116,256.46
Jun	2014	5,907.0	9,121.0	\$102,058.73
Jul	2014	5,095.2	Not Available	\$87,657.49
Aug	2014	5,295.4	7,806.0	\$94,298.68
Sep	2014	4,981.7	9,752.0	\$86,851.31
Oct	2014	5,418.1	12,983.0	\$108,372.44
Nov	2014	6,052.6	12,983.0	\$127,529.47
Dec	2014	7,042.5	12,983.0	\$152,835.81
Total:		76,496.7	Max 12,983.0	\$2,038,565.07

2015		Use	Demand	Cost
Electricity		kWh	kW	
Jan	2015	1,139,392.0	2,399.9	\$114,252.88
Feb	2015	818,007.0	1,646.9	\$82,605.27
Mar	2015	857,452.0	2,339.7	\$88,513.71
Apr	2015	1,131,577.0	2,595.4	\$114,221.92
May	2015	1,409,906.0	2,875.8	\$140,344.17
Jun	2015	1,637,974.0	3,065.4	\$163,610.04
Jul	2015	1,866,835.0	3,182.4	\$176,614.16
Aug	2015	1,734,897.0	3,132.6	\$165,053.76
Sep	2015	1,815,998.0	3,203.7	\$172,274.36
Oct	2015	1,393,061.0	3,043.0	\$135,217.12
Nov	2015	1,253,277.0	2,753.0	\$119,786.89
Dec	2015	1,056,135.0	2,581.3	\$102,534.96
Total:		16,114,511.0	Max 3,203.7	\$1,575,029.24
Natural Gas		MCF		
Jan	2015	76.1		\$854.31
Feb	2015	82.8		\$922.00
Mar	2015	65.9		\$702.68
Apr	2015	73.2		\$733.50
May	2015	80.5		\$804.49
Jun	2015	60.7		\$602.87
Jul	2015	80.3		\$778.98
Aug	2015	72.0		\$699.48
Sep	2015	76.6		\$734.15
Oct	2015	71.2		\$680.68
Nov	2015	81.7		\$785.49
Dec	2015	74.3		\$690.20
Total:		895.3		\$8,988.83
Steam		MLB	lbs/hr	
Jan	2015	7,956.0	13,827.0	\$167,360.65
Feb	2015	8,595.7	14,119.0	\$186,710.14
Mar	2015	8,717.5	14,646.0	\$214,594.64
Apr	2015	6,686.0	13,181.0	\$145,249.34

May	2015	6,097.0	13,181.0	\$118,672.11
Jun	2015	5,434.0	8,729.0	\$88,825.37
Jul	2015	4,823.0	10,131.0	\$78,596.74
Aug	2015	5,447.0	9,274.0	\$86,590.82
Sep	2015	4,769.3	8,393.0	\$70,531.09
Oct	2015	5,491.9	13,181.0	\$116,267.55
Nov	2015	5,565.4	13,181.0	\$115,476.25
Dec	2015	6,187.9	13,181.0	\$129,496.20
Total:		75,770.7	Max 14,646.0	\$1,518,370.90

2016		Use	Demand	Cost
Electricity		kWh	kW	
Jan	2016	1,415,692.0	2,733.8	\$135,787.45
Feb	2016	1,214,776.0	2,507.8	\$119,819.76
Mar	2016	1,105,644.0	2,423.8	\$110,200.37
Apr	2016	954,678.0	2,266.6	\$96,733.77
May	2016	919,774.0	1,889.9	\$92,024.15
Jun	2016	1,430,871.0	2,864.6	\$139,128.01
Jul	2016	1,651,063.0	3,136.0	\$148,862.84
Aug	2016	1,755,287.0	3,243.8	\$149,058.27
Sep	2016	1,777,787.0	3,172.4	\$136,180.47
Oct	2016	1,637,602.0	2,806.4	\$111,184.87
Total:		13,863,174.0	Max 3,243.8	\$1,238,979.96
Natural Gas		MCF		
Jan	2016	68.3		\$613.78
Feb	2016	61.9		\$561.93
Mar	2016	63.7		\$585.97
Apr	2016	67.6		\$624.57
May	2016	71.0		\$655.01
Jun	2016	61.0		\$561.52
Jul	2016	68.5		\$623.76
Aug	2016	56.8		\$520.53
Sep	2016	61.5		\$594.08
Oct	2016	67.1		\$686.17
Total:		647.4		\$6,027.32
Steam		MLB	lbs/hr	
Jan	2016	6,982.7	13,181.0	\$142,376.71
Feb	2016	7,902.4	13,204.0	\$178,060.70
Mar	2016	7,276.3	13,325.0	\$166,489.18
Apr	2016	6,146.2	11,993.0	\$135,642.45
May	2016	6,413.8	11,693.0	\$67,025.78
Jun	2016	5,636.4	Not Available	\$99,420.02
Jul	2016	4,921.4	Not Available	\$82,908.83
Aug	2016	10,376.3	Not Available	\$173,917.19
Oct	2016	6,196.9	11,693.0	\$116,813.70
Total:		61,852.4	Max 13,325.0	\$1,162,654.56