

**Project Name: Millennium Park, Chicago, IL.**



View of Millennium Park from The Legacy at Millennium Park  
*Ryan Mikulenska*

**Project Video at:**  
<http://www.com>

**Project Overview**

Millennium Park, located in Chicago, Illinois, distinguishes itself through the quality of its conceptualization, design, delivery, and management. World-class design elements have been implemented throughout the park ensuring visitors keep returning to the site. These elements and the resulting popularity of the park have created an uplift in real estate value for the property and those adjacent to it. The Millennium Park site has been transformed from a public eyesore into an international destination as Chicago has risen to its current “world city” status. From the 1850s until construction of Millennium Park began in 1998, the site consisted of a rail yard, a parking lot, and a small strip of green space for public use. The pre-requisite catalyst for change, which cleared the way for Millennium Park’s realization, came when the City of Chicago secured the air rights above the rail yard.

Initial thoughts were that the site should to be used mainly as an above ground parking garage, but Mayor Richard Daley had other ideas. Mayor Daley conceptualized an asset that would transform and brand

Chicago, one that would encompass art, music, and public space, becoming the world's largest green roof. To complete the conceptualization, design, delivery, and management of this new Chicago asset, Mayor Daley hired Ed Uhler to head the Millennium Park team.

Ed Uhler, FAIA, was appointed Director of Design for Millennium Park and was instrumental in carrying out the new plan that grew from the initial 16-acre site to its current area of 24.5 acres. Uhler recognized the importance of high-quality design in creating real estate value and also creating a positive public perception. World-renowned architect Frank Gehry had been sought in the past to design a Chicago music venue, but had declined. Having secured a \$15 million dollar donation to construct the pavilion from the Pritzkers', Uhler persuaded Gehry to accept the commission in part by also offering him the opportunity to design the distinctive BP Bridge across South Columbus Drive—the first Gehry designed bridge in the world. Gehry's stature as a designer attracted other world-class architects and artists and helped elevate the quality of design in the park.

Millennium Park is an example of how a public and private partnership can be effectively formed in order to deliver a high-quality real estate asset. The City of Chicago was responsible for the \$270 million dollars in infrastructure and parking garage costs, which was paid for by the sale of construction bonds and through tax increment financing. John Bryan, former CEO of the Sara Lee Corporation, was appointed by Mayor Daley to be the park's chief fundraiser. Bryan was the catalyst in raising over \$220 million dollars in private donations, which completed the \$490 million dollar budget required to construct the park.

The park opened in 2004 and received high praise from critics and the people of Chicago. Maggie Daley, Mayor Daley's wife, stated then that park had become the "soul of Chicago," and few people now disagree with that statement. There are 5 million visitors annually, and the park maintains a high level of landscape maintenance, security, and cleanliness. Without this level of maintenance and management, the park would not sustain its current value.

But what is it that creates, maintains, and enhances the value of Millennium Park? Our purpose in this research report was to apply the quadruple bottom line methodology detailed in Dennis Jerke's book entitled Urban Design and the Bottom Line: Optimizing the Return on Perception, published by ULI - the Urban Land Institute - in December of 2008. Millennium Park is the thirteenth urban real estate project to be evaluated using quadruple net value metrics. These metrics are used to determine the sustainable, social/cultural, economic, sensory and environmental value of real estate projects. The methodology applies metrics that reveal the comprehensive value of real estate improvements in urban and suburban locations.

This research report is a collaborative effort between the Texas A&M University, Department of Landscape Architecture and Urban Planning's Land Development Program and the DePaul University Department of Real Estate. The research has been funded by the Landscape Architecture Foundation, the College of Architecture at Texas A&M University and the Fairmont Chicago Millennium Park Hotel. The research team included the following members:

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The team sincerely thanks the following people for their support and significant contribution:

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## **Methodology**

The research method was based on Texas A&M College of Architecture, Outstanding Alumni and Adjunct Professor Dennis Jerke's book and the methodology as applied and further developed in the Master of Science in Land Development program at Texas A&M University.

Jerke, D., Porter, D. R., & Lassar, T. J. (2008). *Urban design and the bottom line: Optimizing the return on perception*. Washington, DC: ULI - The Urban Land Institute.

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Summer  
2011

# MILLENNIUM PARK QUADRUPLE NET VALUE REPORT TEXAS A&M UNIVERSITY AND DEPAUL UNIVERSITY

## Site Plan



[www.millenniumpark.org](http://www.millenniumpark.org)

## Consolidated Assessment of Millennium Park's Quadruple Net Value

### 1. SOCIAL/CULTURAL VALUE - (Research member: Christopher Budz)

Millennium Park has been described as the "soul" of Chicago because of its international recognition as a destination for social and cultural activities. Five million annual visitors (Neil Spears, MB Real Estate), world class art and architecture, educational events, internationally-acclaimed musical performances and a brand that is recognized internationally, all create long term sustainable social and cultural value for the City of Chicago. This park is a grand experiment to maximize the social and cultural impact of a 24.5-acre deck park in a densely populated area of Chicago.

a. **Safety and Security:** *% decrease in crime/security incidents*

**% Decrease in crime/security incidents near Millennium Park**

- **Research:** The research area consists of Chicago's District 01, beat 0124. The area spans from the Chicago River to Balbo Drive on the south, and from Michigan Ave. to the edge of Lake Michigan. Crime statistics are shown below.

<b>Beat 0124</b>	<b>January - December 2007-2009</b>				<b>% Change 2007-2009</b>
	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>Total</b>	
Murder	0	0	0	0	-
Criminal Sexual Assault	2	3	1	6	- 50%
Robbery	11	15	19	45	+ 72%
Aggravated Assault	7	4	3	14	- 57%
Aggravated Battery	13	4	1	18	- 92%
<b>Total Violent Crime</b>	33	26	24	83	- 27%
Burglary	9	7	9	25	-
Theft	426	552	383	1,360	- 10%
Motor Vehicle Theft	17	22	22	61	+ 29%
Arson	0	0	0	0	-
<b>Total Property Crime</b>	452	581	413	1,446	- 9%
<b>Total Crime Index</b>	485	607	437	1,529	- 10%

*www.chicagopolice.org*

- **Sources:**
  - <https://portal.chicagopolice.org>
  - Chicago Police Department
  - Neal Spears, General Manager, MB Real Estate
- **Analysis:** Millennium Park is located in The Loop area of Chicago, which mainly consists of businesses operating during typical business hours from 8:00 AM to 5:00 PM. Total violent crime has dropped 27% from 2007-2009. The total crime index has dropped 10% over that same span. The number of incidents is lower than the theft statistics for the city of Chicago and indicates a steady drop in crime due to the increased security and increased number of visitors to the park.
- **Conclusions:** Crime has decreased in the study area since the development of Millennium Park. With more visitors coming to the area, security has been increased. The drop in crime shows the area is becoming safer, which creates more value for the property.

b. **Public Access and Connectivity:** *% increase in public access, number of public transit connections, ridership to and from park, # of facilities/types of alternative modes of transportation*

**% increase in public space**

- **Research:** Before Millennium Park was built, the area was covered with a poorly maintained strip of green space, unsightly railroad tracks and parking lots that were considered an eyesore for Chicago's lakefront throughout the 20<sup>th</sup> century. Millennium Park is a total of 24.5 acres of public space for the City of Chicago. Total green landscaped space in the entire Millennium Park is 528,739.23 square feet. The park space was developed with the following major facilities: Jay Pritzker Pavilion, Cloud Gate, Crown Fountain, Lurie Garden, McCormick Tribune Ice Rink and Plaza, Wrigley Square and Millennium Monument, Boeing Galleries, BP Bridge, McDonald's Cycle Center, Harris Theater, Exelon Pavilions, Chase Promenade, and Nichols Bridgeway (see site plan on p. 6 for locations). These public facilities generate the majority of visitation to Millennium Park.



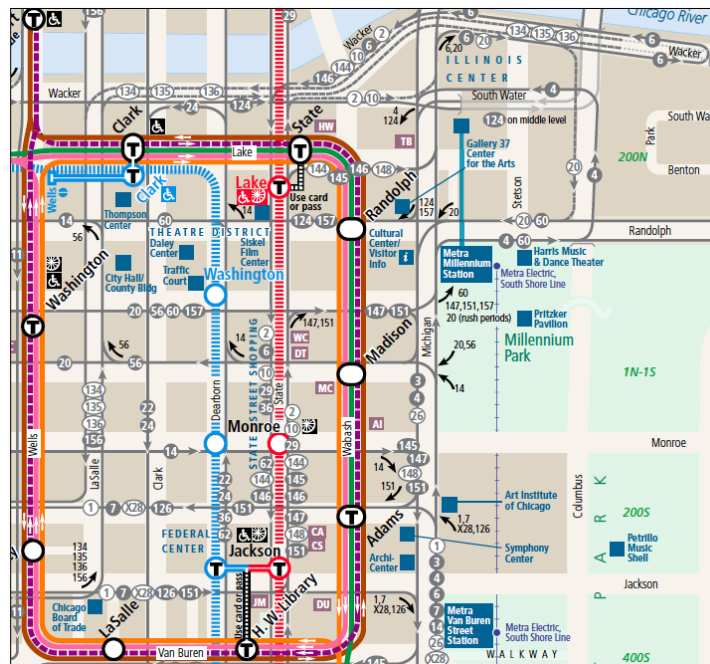
Millennium Park site before park construction began.  
*Millennium Park Inc.*



- **Sources:**
  - Ed Uhlir, Executive Director, Millennium Park Inc.
  - [www.explorechicago.org](http://www.explorechicago.org)
- **Analysis:** The increase in green public space has created a public destination from a space that was once strictly functional and unattractive. Randolph Street, Michigan Avenue and Monroe Street are now incorporated into the Millennium Park phenomenon. Consequently, attention should be given to the health, safety and welfare of pedestrians at intersections and adjacent to these busy traffic corridors. Also, attention should be given to a comprehensive approach to the streetscape development and creation of a consistent image of these corridors that compliment the park.
- **Conclusions:** Millennium Park has increased the public space of the area and provided a space for the people of Chicago and visitors as well. The park development has increased visitation to the area and has created significant value to the city of Chicago.

**Number of public transit connections**

- **Research:** There are five CTA buses and train stops within a five-minute walk to Millennium Park. On the elevated track, the green, orange, brown, purple, and pink trains serve the park from two stations - Madison/Wabash and Randolph/Wabash. Thirteen CTA buses also serve Millennium Park and the surrounding areas with 11 bus stops. There are also two stops on the Metra commuter train serving Millennium Park - Millennium Park and Van Buren Street stations. The South Shore commuter train line servicing northwest Indiana and downtown Chicago is another public transit stop found at Millennium Park.



Map showing public transportation stations near Millennium Park.  
Chicago Transit Authority

- **Source:**
  - Chicago Transit Authority - <http://www.transitchicago.com>
- **Analysis:** Millennium Park is accessible by multiple modes of private and public transportation. Ample parking (over 9,000 spaces) allows people to drive right to the park, and the adjacent business district, and it's accessible from anywhere in The Loop through CTA trains and buses. Residents as far away as northwest Indiana use the South Shore commuter train for work and park visitation purposes.
- **Conclusions:** Accessibility to Millennium Park is very good, creating a place people can reach by any mode of transportation they wish. The cost to use public transportation is low in Chicago. Visitors and Chicagoans visit the park more often because of how easy it is to access. Having such great accessibility adds to the real estate value of the park.

**Ridership to and from Millennium Park**

- **Research:** The purpose of this metric is to measure the amount of increase or decrease in ridership on the major modes of transportation that service Millennium Park. Ridership reports have been gathered for all CTA elevated trains and bus routes serving Millennium Park, South Shore Line Passenger Service, and the Metra Commuter Rail Electric District.

<i>Ridership on Millennium Park Public Transit Routes</i>			
	2004-2010		
<i>CTA Elevated Trains</i>	2004	2010	% Increase/ Decrease
Madison/ Wabash	1,299,648	1,814,613	+ 39.62%
Randolph/ Wabash	1,592,643	2,084,866	+ 30.90%
<i>Total CTA Elevated Train Ridership</i>	2,894,295	3,899,479	+ 34.73%
<i>CTA Bus Routes</i>			
Bus #3 - King Drive	6,543,142	7,006,605	+ 8.00%
Bus #56 - Milwaukee	4,024,800	3,602,159	- 10.5%
Bus #151 - Sheridan	6,116,080	7,112,520	+ 16.29%
<i>Total CTA Bus Ridership on Selected Routes</i>	16,684,022	17,721,284	+ 6.22%
<i>METRA Electric District</i>			
<i>Ridership</i>	814,342	912,497	+ 12.05%
<i>South Shore Line Passenger Service</i>			
<i>Ridership</i>	312,757	333,141	+ 6.52%
<i>Average Total Increase in Ridership from 2004-2010</i>			<i>+ 10.38%</i>

Chicago Transit Authority

- **Sources:**
  - [http://www.transitchicago.com/news\\_initiatives/ridershipreports.aspx](http://www.transitchicago.com/news_initiatives/ridershipreports.aspx)
  - <http://www.rtams.org/rtams/ridershipSummary.jsp?month=4&year=2011&dataset=metraRail>

- **Analysis:** Ridership for CTA el-trains has increased by 34.72% since the park was built in 2004. Ridership was calculated based on the number of customers that enter the station to board the train. The figures for CTA bus routes were calculated by the number of passengers that utilized each specific route, and its ridership increased by 6.22% since the park was built. Metra ridership (increase of 12.05%) and South Shore Line ridership (increase of 6.52%) were calculated by overall ridership on the route.
- **Conclusions:** The transit routes near Millennium Park have experienced an increase in ridership by 10.38% on average from 2004 to 2010. There is a correlation between when the park was built and how ridership has increased. The accessibility to these modes of transportation has added to the value created by Millennium Park.

#### # of Facilities/types for alternative modes of transportation

- **Research:** Two major alternative modes of transportation at Millennium Park are the McDonald's Cycle Center and the I-Go Car sharing program. The McDonald's Cycle Center offers 300 secure bicycle parking spaces, lockers, showers, towel service to its members, 250 bicycle rentals, a full-time bicycle repair shop, guided bicycle tours, and 5 Segway companies that offer about 200 Segways for rent. The McDonald's Cycle Center is pictured below.

I-GO provides the convenience and flexibility of using a car without owning one. Members have 24-hour access to a fleet of I-GO cars in reserved parking spaces in 25 city neighborhoods and four suburbs. I-GO pays for the gas, premium insurance, maintenance, and 24-hour assistance. There are also 9,176 parking spaces in close proximity to Millennium Park, which creates convenient automobile access.



Some of the 250 rental bikes are shown outside of the McDonald's Cycle Center.  
*Ryan Mikulenska*

- **Sources:**

- [http://explorechicago.org/city/en/things\\_see\\_do/attractions/tourism/mcdonald\\_s\\_cycle\\_center.html](http://explorechicago.org/city/en/things_see_do/attractions/tourism/mcdonald_s_cycle_center.html)
  - <http://www.igocars.org/how/>
  - **Analysis:** The McDonald's Cycle Center promotes cycling, which has a positive impact on health and the environment. Also, research shows that employees who bike to work are more productive and take fewer sick days. The cycle center contributes to Millennium Park as a destination that offers multiple recreational and leisure services.
  - **Conclusions:** There are many options to get to and from Millennium Park within the city of Chicago and the surrounding suburbs. These alternative modes of transportation improve the health of park visitors and add to the sustainable real estate value of Millennium Park.
- c. **Health:** *miles of walks and trails for healthy activity, exercise-related facilities and annual activities*

#### **Miles of walks and trails for healthy activity**

- **Research:** Millennium Park sits on 24.5 acres of land and is connected by walkways, trails, and bridges from all areas surrounding the park. Millennium Park has 450,471.43 square feet of hard surface area, which includes 15,225 linear feet of walkways for healthy activity. Also, easily accessible from Millennium Park is an 18-mile lakefront path along Lake Michigan for cyclists and runners, 33 beaches, tennis courts, athletic fields, and one of eight Chicago Park District golf courses.
- **Sources:**
  - Information gathered from site plans
  - [http://explorechicago.org/city/en/things\\_see\\_do/recreational\\_activities.html](http://explorechicago.org/city/en/things_see_do/recreational_activities.html)
- **Analysis:** There are abundant trails, walks and hard surface areas that can be used for healthy activities. Millennium Park is connected by the BP Bridge to Grant Park, which offers a variety of recreational opportunities. Joggers and walkers use Millennium Park grounds for healthy activities and to access other recreational opportunities located near the park.
- **Conclusions:** The park has created a destination for people to exercise by walking, jogging, riding, or whatever form they choose. People visit the park and often frequent the surrounding area, which drives the neighboring locations' value up. Connectivity and accessibility is key in achieving this value creation.

#### **Exercise related facilities and annual activities**

- **Research:** Millennium Park has a number of exercise-related facilities and activities that promote health and well being. The major exercise facility is the McDonald's Cycle Center, which is a 16,448 square foot structure housing 300 bicycle parking spots, 250 rental bicycles, bicycle repair services, as well as showers and suit-sized lockers that are available on a membership basis. All 200 available memberships were sold in less than two weeks of the facility opening, and there

is a waiting list when memberships become available. The 300 lockers provide space for 100 men and 100 women; the other 100 are reserved for the public.

During the summer months, workouts are available on the Great Lawn at Millennium Park. The workouts feature live music during yoga and Pilates exercises. The Saturday morning workouts start at 8:00 AM with yoga. Pilates starts at 9:00 AM, and at 10:00 AM the Zumba® program begins. There are also Summer Strolls where visitors can explore the garden in the evening light by taking a walk led by Lurie Garden staff. The ice skating rink attracts over 100,000 annual visitors, and the skating activities generate healthy winter recreational opportunities.



Park visitors enjoying yoga on the Great Lawn.  
*Millennium Park Inc.*

- **Sources:**
    - “Walking Through Chicago’s Millennium Park” – Editorial
    - 2011 Millennium Park Summer Events Guide
  - **Analysis:** Millennium Park offers active programs to improve health and well being. These activities are sponsored by organizations, such as McDonald’s, that believe health and wellness are essential to the well being of Chicago residents. The wide variety of healthy activities gives people of all ages and backgrounds the opportunity to become involved in ways that suit their own needs. The bicycle and Segway rental center gives tourists a great alternative to exploring Chicago in a healthy, sustainable way, and the exercise programs offered on the Great Lawn give people a healthy start to their morning and weekends.
  - **Conclusions:** Millennium Park has multiple sources of healthy activities and lifestyle-altering improvements for park visitors. These activities draw people to the park and add to the visitor count. Because of this, these healthy activities create real estate value for the park itself, along with the businesses that benefit from the increase in visitation numbers.
- d. **Education:** # of activities/exhibits related to education at the park, # of/types of educational exhibits (health, environment, history, etc.)

# of activities/exhibits related to education at the park

- **Research:** The goal of Millennium Park Inc. and The Chicago Office of Tourism and Culture is for every activity and exhibit displayed in Millennium Park to be educational. In 2011 there will be a total of 610 concerts, events, rehearsals, and tours held at Millennium Park. Tourists can get daily tours by Millennium Park guides on the history and meaning of the Park. Guided audio tours are also available in 5 languages.

The “Family Fun Festival” which is sponsored by Target© is located in the Chase Promenade all summer long and it generates 229,693 annual visitors. In 2011 there will be 280 Family Fun Festival performances and events held. These events are full of fun and interactive activities and musical games for kids of all ages.

The primary educational events planned for the rest of 2011 include:

- Music Without Borders – explore the world and discover music from cultures spanning the entire globe, from Asia to South America and the Middle East
- Made in Chicago: World Class Jazz – an opportunity to hear jazz with a uniquely different sound featuring Chicago’s leading musicians from across the spectrum of Jazz
- Greeter Tours – guided tours with a Millennium Park greeter and a chance to learn more about the dazzling art and architecture of the Park
- “Ask Me” Days – Millennium Park volunteers can answer any questions tourists have about plants and design of the garden
- Design for a Living World Photo Essay – stunning display of images by award-winning photographers showcasing landscapes in Alaska, China, Mexico, and Illinois



Family Fun Festival tent (left). Children and parents enjoying a book reading (right). There are 280 events held each year in the Family Fun Festival tent.

*Ryan Mikulenko*

- **Sources:**
  - Lucas Antony Cowan, Senior Curator of Exhibits, Chicago Office of Tourism and Culture
  - Lacey Capps, Director of Special Programs, Chicago Office of Tourism and Culture
- **Analysis:** There are numerous educational exhibits and events held year round at Millennium Park, with each element of the Park revealing some history and a story. The artwork throughout the park provides an educational opportunity, as well as the events held in the “Family Fun

Festival” tent. Learning about different cultures and people is the goal of the Chicago Office of Tourism and Culture, and these educational displays assist in achieving that goal.

- **Conclusions:** Millennium Park is an outdoor urban center for historical and cultural educational opportunities. These free educational events draw in visitors to the park, and that enhances the social and cultural impact the park has had. The park draws in visitors with all of the educational programming, and this adds to the value of the park.

# of/types of education exhibits (health, environment, history, etc.)

- **Research:** The primary sources of educational opportunities in Millennium Park are concerts, educational events, open rehearsals, tours, workouts, Family Fun Festival, and theater presentations. In 2011 there will be 119 free Pritzker Pavilion concerts, 90 Pritzker Pavilion noontime events, 51 open rehearsals, 74 tours, 45 free workouts, 280 Family Fun Festival Performances and Programs, 18 Theater presentations, and 19 days of the Red Kite Project Theater.



One of the 119 free concerts held each year at the Jay Pritzker Pavilion.  
*Ryan Mikulenska*

- **Source:**
  - Lacey Capps, Director of Special Programs, Chicago Office of Tourism and Culture
- **Analysis:** All events held at Millennium Park are tailored to the goal of educating visitors of all age groups and cultural preferences.
- **Conclusions:** Millennium Park is a primary destination for social interaction and cultural experiences. People come to the park to experience the different cultures the park offers through various events and exhibits. The more people that come to the park for these events, the more real estate value is created.

e. **Visitation:** # of annual visitors, # of annual events (art, music, health, etc.)

#### # of annual visitors

- **Research:** The number of annual visitors to Millennium Park has been on a steady increase since the park opened. In 2005 the park attendance was estimated at 3 million, and it was estimated that in 2010 the attendance reached 5 million park visitors (Neal Spears, MB Real Estate). The attendance figures for the 2010 summer season for the Lurie Garden were also calculated. As of August 15, 2010, there were 6 daily private walking tours held with an average daily attendance of 138 guests. The “Ask Me” Days, during which volunteers are on hand to answer visitor questions about the Lurie Garden, brought in 790 guests over 27 separate dates. Finally, the Sunday walking tours in the Lurie Garden brought in 1,103 guests in 15 separate walks. The Millennium Park summer tours also brought in 1,859 people in 2008, 1,451 people in 2009, and 1,356 people in 2010. The morning workouts in 2010 brought 10,080 people, and the Family Fun tent brought 229,693 people.
- **Source:**
  - Ed Uhlir, Executive Director, Millennium Park Inc.
  - Neal Spears, General Manager, MB Real Estate
- **Analysis:** Millennium Park is a regional, national and international destination. Based on the data, there has been a steady increase in park visitation every year, and it continues to trend upward.
- **Conclusions:** Millennium Park is programmed for optimal use. The park was built as a cultural and arts center for the city of Chicago, as envisioned by Mayor Richard Daley. It has increased the social and cultural value of Chicago as well as becoming an internationally known tourist destination. The number of free activities, world-class art and architecture, accessibility, and appeal to the general public and generate increased attendance.

#### # of annual events

- **Research:** As the total park attendance continues to rise annually, the number of park events is on the same upward curve. The number of free programmed events tripled from 2006 to 2007. In 2007, there were 144 days of free programming. In 2011, there are 179 days of free programming scheduled and there will be a total of 610 concerts, events, rehearsals, and tours.
- **Sources:**
  - Ed Uhlir, Executive Director, Millennium Park Inc.
  - Lacey Capps, Director of Special Programs, Chicago Office of Tourism and Culture
- **Analysis:** From the data gathered above, visitation is increasing as more events are held. The increased attendance and number of events held are directly related. There is a 67% increase in attendance and a 24% increase in the days of free programming and a 165% increase in total concerts, events, rehearsals, and tours from 2007 to 2011. These events attract visitors to the Park all summer long and visitors have access to a variety of musical, environmental, artistic, exercise and entertainment events. Events are held every day throughout the season at different times, and some are seasonal such as the workouts on the Great Lawn.



- **Conclusions:** The goal of Millennium Park is to host as many quality events as possible and encourage increased attendance, while continuing proper maintenance of the park. These events draw in park visitors, and the visitors are an integral part of the park's real estate value creation.

f. **Residential Proximity:** # of residential units adjacent to and in close proximity to Millennium Park, estimated populations that live adjacent to and in close proximity to Millennium Park

**# of residential units adjacent to and in close proximity to Millennium Park**

- **Research:** There is an increase in residential construction in the East Loop study area near the park. In 2005 there were 6,313 total residential units in the area. In 2010 there were 9,900 units for an increase of 57%.



The Legacy at Millennium Park is the tallest building in the picture and it houses 355 of the 9,900 residential units in the East Loop area.  
*Mesa Development, LLC.*

- **Sources:**
  - <http://factfinder.census.gov>
  - ESRI

- Loop Alliance Economic Study and Impact Report, February 2011
- Mesa Development, LLC.
- **Analysis:** There has been a 57% increase in housing units in the study area from year 2000-2010.
- **Conclusions:** There has been a demand for housing units in the East Loop area since Millennium Park was opened. The park has increased the desire of people to live in the East Loop area, as evidenced by the increase in housing units. The park offers views and a large public space for the people living in the housing units near the park. Real estate value creation is shown by this increase in housing units near the park.

#### **Estimated population adjacent to and in close proximity to Millennium Park**

- **Research:** The population of the East Loop area has grown from 5,877 in the year 2000 to 10,047 in 2010 for a 71% increase, compared to central Chicago, which grew by 66%.
- **Sources:**
  - ESRI
  - U.S. Census
  - Loop Alliance Economic Study and Impact Report, February 2011
- **Analysis:** The East Loop area is an appealing living environment with new residential and commercial development being proposed and built. Millennium Park and The Loop district create a place to live, work and play. Millennium Park has elevated the quality of life for residents in this study area.
- **Conclusions:** The East Loop around Millennium Park has become a desirable place to live, work and play. The park has added value to the East Loop by offering events for residents to take part in. Living close to the park gives residents a convenient greens pace in the heart of The Loop area. Population in the East Loop has outpaced the rest of the city, and the park contributed to that increase.

#### **g. Demographics: Changes in population make-up adjacent to Millennium Park**

##### **Changes in population make-up adjacent to Millennium Park**

- **Research:** Data on the total population in close proximity to the park has been gathered from the U.S. Census Bureau website. New residential construction is attracting permanent residents with significantly higher spendable income, which generates additional retail and commercial development. The construction of Millennium Park, along with the development of the Millennium Park Legacy and Heritage residential developments, brought 712 world-class residential units to the East Loop, which has positively impacted the economy of this area.
- **Source:**
  - <http://factfinder.census.gov>

- **Analysis:** This area of Chicago is also located in the business district and close to many attractions, making it an ideal community to live in. For more about development in the study area please refer to the Economic Value Section on page 38.
- **Conclusions:** The development of Millennium Park and the surrounding area has attracted more residents to the East Loop area, which creates a stronger economy in the immediate area. The influx of permanent residents creates a demand for places to eat, shop and spend money. This adds jobs to the city and adds to the local economy of Chicago.

h. **Public Art:** *# of permanent and revolving pieces, annual exhibits/shows, # of tours for art, art visitation demographics*

**# of permanent and revolving art pieces**

- **Research:** There are currently two permanent pieces of art located in Millennium Park. These include Cloud Gate and the Crown Fountain in Millennium Park. Cloud Gate is British artist Anish Kapoor's first public outdoor work installed in the United States. The 110-ton elliptical sculpture is forged of a seamless series of highly polished stainless steel plates. The 12-foot-high arch provides a "gate" to the concave chamber beneath the sculpture.

Spanish artist Jaume Plensa designed the Crown Fountain. The fountain consists of two 50-foot glass block towers at each end of a shallow reflecting pool. The towers project video images from a broad social spectrum of Chicago citizens, a reference to the traditional use of gargoyles in fountains, where faces of mythological beings were sculpted with open mouths to allow water to flow out.

Since the park opened in 2004, there have also been 9 revolving art exhibitions displayed in the galleries of Millennium Park. The majority of these exhibitions ranged from 6 months to 18 months in length. Currently on display in the Boeing Galleries at Millennium Park are large-scale sculptures by Yvonne Domenge, a Mexican artist, titled, "Interconnected: The Sculptures of Yvonne Domenge." Also, a permanent/temporary piece of art is the 200-ft. picnic table located across from Cloud Gate. This is a long, linear sitting table constructed out of recycled milk jugs, and it will stay at Millennium Park until a new home is found for it.



One of the nine major art exhibits that has been on display since the park opened in 2004.  
*Millennium Park Inc.*

- **Sources:**
  - Explore Chicago Millennium Park website
  - Lucas Antony Cowan, Senior Curator of Exhibits
- **Analysis:** The goal of Millennium Park is to host a wide variety of artistic displays. Millennium Park was built as a cultural and art center for the city of Chicago, so it is serving its purpose. Cloud Gate and the Crown Fountain are firsts of their kind in the United States, so the rarity of these pieces of art bring residents and tourists to the Park.
- **Conclusions:** The public art displays draw people to the park. The visitors are coming to see the permanent pieces as well the temporary pieces. These high-quality designs and sculptures create value because people are drawn to them. If the park were just green space, people wouldn't be so inclined to visit. High quality design has created a high return on investment in Millennium Park.

#### Annual Exhibits/ Shows

- **Research:** Since Millennium Park opened in the summer of 2004, 9 major art exhibits have been on display to the public. The list of the art exhibits is as follows:
  - “*Earth From Above*” by Yann Arthus Bertrand – June – Sept 2002
  - “*Family Album*” by Uwe Ommer – June – Sept 2004
  - “*Revealing Chicago*” by Terry Evans – June – Oct 2005
  - “*In Search of Paradise: Great Gardens of the World*” by Chicago Botanic Garden – May-Oct 2006

- “Abstract Expressionism Sculptures” by Mark di Suvero – April 2007 – Oct 2008
- “Museum of Modern Ice: Painting Below Zero” by Gordon Hollaran – Feb 2008
- “A conversation with Chicago: Contemporary Sculptures from China” by Chicago Cultural Center – Apr- Oct 2009
- “Design for a Living World” – Ami Vitale – Apr – Nov 2011
- “Interconnected: The Sculptures of Yvonne Domenge” by Yvonne Domenge – Apr2011 – Oct 2012



Interconnected: The Sculptures of Yvonne Domenge, by Yvonne Domenge.  
Ryan Mikulenska

- **Sources:**
  - Lucas Antony Cowan, Senior Curator of Exhibits
  - Explore Chicago Millennium Park website
- **Analysis: N/A**
- **Conclusions:** Millennium Park’s strong reputation attracts high quality artists and exhibitions. Millennium Park and the Chicago Office of Tourism and Culture are encouraging a shorter turnaround period for art exhibits to bring more artists and exhibits to the park on a more frequent basis.

**# of art tours**

- **Research:** Lucas Antony Cowan, Senior Curator of Exhibits at the Chicago Office of Tourism and Culture, stated that in a given season through the five months of May through September, anywhere between 50 and 100 art exhibit tours take place. Depending on the days and weather, anywhere between 10 people and 100 people attend these tours. The Chicago Office of Tourism and Culture also offered downloadable audio tours for tourists in 5 different languages.
- **Source:**

- Lucas Antony Cowan, Senior Curator of Exhibits, Chicago Office of Tourism and Culture
- **Analysis:** Millennium Park and The Chicago Office of Tourism and Culture strive to provide residents and tourists the opportunity to understand the history and meaning of the art. Their goal is to inform the public of the art, why it is important, and why they chose the pieces of art to be displayed.
- **Conclusions:** The art exhibit tours add to the educational value the park has created, along with increased visitation numbers.

#### Art visitation demographics

- **Research:** Millennium Park Inc. and the Chicago Office of Tourism and Culture organize art exhibits and events that will satisfy a variety of interests. They do not bring exhibitions that are targeted to a specific group of people; they bring art to the people of all different cultures. The arts attract people to the park. In order to maximize visitation among residents and tourists, the exhibitions have to interest and please a wide range of demographics.
  - **Source:**
    - Lucas Antony Cowan, Senior Curator of Exhibits, Chicago Office of Tourism and Culture
  - **Analysis:** N/A
  - **Conclusions:** Art exhibits and events at Millennium Park are designed to appeal to the diversity of Chicago. Because Chicago is a diverse city, the displays of art cater to that. The variety of the art creates a reason for visitors to return to the park. The social and cultural value is clearly enhanced, along with visitation numbers, which tie in to the economic value the park has created.
- i. **History:** # of historical exhibits/activities (permanent and temporary)

#### # of historical exhibits/activities (permanent and temporary)

- **Research:** Because Millennium Park was built in 2004 as a modern state-of-the-art cultural center for concerts, exhibitions, tours, and family activities, it does not boast many historical pieces of art. The only permanent historical piece of art is Wrigley Square and Millennium Monument, located on the corner of Michigan Ave. and Randolph Street. The tree-lined area of Wrigley Square is an open space that is inviting for visitors to relax on the lawn. The square's main attraction is the Millennium Monument, a nearly full-sized replica of the original peristyle that stood in the same location between 1917 and 1953. With the nearly 40-foot semi-circular row of columns, the Millennium Monument ties the past to the present and supports the designation of Michigan Avenue as a landmark district. Etched in stone on the base of the Millennium Monument are the names of the founders of Millennium Park. These individuals, corporations, and foundations provided generous contributions for the creation and conservation of the Park.



The Millennium Monument shown here has the names of the park founders etched into the base of the structure.  
*Ryan Mikulenska*

- **Sources:**
  - Lucas Antony Cowan, Senior Curator of Exhibits, Chicago Office of Tourism and Culture
  - Explore Chicago Millennium Park Website
- **Analysis:** N/A
- **Conclusions:** Millennium Park preserves the history of Chicago with a dedicated monument, Wrigley Square, which was one of Chicago's historic landmarks.

j. **Public Involvement:** *Increase in social/cultural activities since the park was dedicated, #of clubs and social organizations that use the park*

#### **Increase in social/cultural activities since the park was dedicated**

- **Research:** When Millennium Park opened for a portion of 2004, 35 free programs were offered. In 2011, 610 free programs and activities will take place in the park, which is a 1,642% increase. The Family Fun Tent and Activity Zone also opened in 2006, offering hands-on art projects and garden activities with some of the region's most popular museums and cultural organizations.
- **Sources:**
  - Lucas Antony Cowan, Senior Curator of Exhibits, Chicago Office of Tourism and Culture
  - 2011 Millennium Park Summer Events Guide
- **Analysis:** The park's popularity has grown steadily and the demand for more events continues to increase. The free events offer a cost-effective way for visitors to spend time in the city of Chicago.
- **Conclusions:** Millennium Park continues to expand and increase the number of annual events that are free to the public. The park management must determine the optimum level of event

scheduling in order to preserve the quality experience. This balance is important in retaining and/or increasing real estate value.

**# of clubs and organizations that use the park**

- **Research:** Since Millennium Park does not charge admission to enter and use the park's facilities, tracking the number of clubs and organizations that use the park is not feasible. There are 14 organizations that sponsor and host events. The 2010 Family Fun Activity Zones brought many community partners. They include: The Lurie Garden, Chicago Wilderness, Chicago Architecture Foundation, Chicago Department of Cultural Affairs Culinary Arts and Events, Chinese-American Museums of Chicago and Springfield, Garfield Park Conservatory Alliance, The Art Institute of Chicago, Chicago Office of Tourism, Emerald City Theatre, Museum of Science and Industry, Chicago History Museum, Chicago Park District, Oriental Institute of Chicago, North Park Village Nature Center, and Swedish American Museum.
- **Source:**
  - Ed Uhler, Executive Director, Millennium Park Inc.
- **Analysis:** These organizations continually demonstrate their commitment and dedication to the park and the region. Millennium Park provides a venue for their significant contributions to the social and cultural life of the city.
- **Conclusions:** Tracking an exact number of social clubs and organizations that use the Park is not feasible. There are hundreds of organizations that use the park and facilities without registering with the Millennium Park office, but that is an indication of the popularity of the park. There are 14 highly committed organizations that contribute to the park's success.

k. **Community Pride/Brand:** *#of organizations that claim Millennium Park in their brand/identity*

**# of organizations that claim Millennium Park for their brand/identity**

- **Research:** Putting an exact number on the number of organizations that use Millennium Park as part of their brand/identity is not possible. The reason for this is that organizations located outside the East Loop that are not in close proximity to the Park use Millennium Park for their identity. These organizations include residential developments, hotels, restaurants, schools, office buildings, retail stores, medical facilities, and parking garages. The major organizations located on Michigan Ave. and Randolph Street that use Millennium Park in their name and identity are as follows:
  - Millennium Garages
  - Intelligentsia Coffee & Tea
  - Millennium Park Medical Associates, S.C.
  - McDonald's Cycle Center
  - Chiropractic Care Millennium Park
  - Millennium Park Eye Center
  - Millennium Park Orthodontics
  - Millennium Park Medical Spa
  - Alphagraphics Millennium Park



- Dentistry at Millennium Park
- Millennium Park Dermatology
- Heritage at Millennium Park - Residence
- Legacy at Millennium Park – Residence
- The Fairmont Chicago Millennium Park
- Park Grill Restaurant
- 6 N. Michigan Ave. Residences
- 55 E. Monroe Residences
- 310 S. Michigan Ave Residences
- Millennium Park Plaza (formerly Doral Plaza)



The Fairmont Chicago Millennium Park hotel is one example of a business that uses Millennium Park as part of their identity.  
*Ryan Mikulenska*

- **Sources:**
    - Ed Uhlir, Executive Director, Millennium Park Inc.
    - Personal research
  - **Analysis:** Millennium Park adds to the identity of many organizations. The popularity of Millennium Park in Chicago is a plus to organizations and developments. The organizations can associate themselves with the park and draw people to their businesses.
  - **Conclusions:** Businesses do not usually associate themselves with an undesirable product. Because many businesses use Millennium Park as part of their branding efforts, clearly the park is a positive in people's eyes.
1. **Pedestrian Comfort:** *#of seating facilities, sq. ft. of shaded areas in summer and sun exposure areas in the winter, # of parking spaces, ADA compliance*
- # of seating facilities**
- **Research:** The number of seating facilities at Millennium Park are as follows:
    - 4,000 fixed seats at the Jay Pritzker Pavilion

- 7,000-person accommodation on the Great Lawn.
- 74 four-person benches
- 400-ft wooden bench adjacent to Crown Fountain
- 200-ft recycled picnic table adjacent to Cloud Gate
- 20 picnic tables
- 300 restaurant seats at Park Grille
- Low walls to sit on



Permanent benches are located throughout the park (left). A 200-ft bench made out of recycled milk jugs is shown in front of “Cloud Gate” (right).

Ryan Mikulenko

- **Source:**
  - Ed Uhlir, Executive Director, Millennium Park Inc.
- **Analysis:** The park provides a significant amount of seating for visitors. The seating list does not include linear feet of seat walls and additional grassy areas that are used frequently throughout the summer. These low-lying walls are located throughout the park and offer many more seating areas.
- **Conclusions:** Millennium Park must provide seating to park visitors or people would stop coming to the park. If the park weren't a comfortable space, visitation numbers would not increase each year. Pedestrian comfort is critical in creating value in park.

#### **Square feet of shaded areas in the summer and sun exposure areas in the winter**

- **Research:** The angle of the sun impacts the areas for shade throughout the day, but approximately 40% of Millennium Park is shaded on summer days. Approximately 70% of the park is exposed to the sun during clear winter days. The percent of the park being shaded will continue to increase as the trees mature.



A tree is shown shading a portion of the sidewalk in the Lurie Garden. 40% of the park is shaded on summer days.  
*Ryan Mikulenska*

- **Source:**
  - Ed Uhlir, Executive Director, Millennium Park Inc.
- **Analysis:** The trees, shrubs, and structures located throughout Millennium Park provide shade and comfort to visitors of the park during the summer.
- **Conclusions:** Millennium Park provides shade to park visitors and adds to the pedestrian comfort level of the park. The trees are not only aesthetically pleasing, but they also provide shade to park visitors. If people are comfortable when they visit the park, they will return more frequently.

#### # of parking spaces

- **Research:** The number of parking spaces located at Millennium Park and adjacent to the Park are as follows:
  - The Grant Park North Garage – 3-level facility for 1,850 cars
  - The Grant Park South Garage – 4-level facility 1,350 cars
  - The East Monroe Street Garage – 3-level facility for 3,850 cars
  - The Millennium Park Garage – 7 –level facility for 2,126 cars

#### Total parking spaces in and adjacent to Millennium Park: 9,176

- **Source:**
  - Chicago Downtown Public Parking System Request for Qualifications
- **Analysis:** This parking system is the largest downtown underground public parking system in the United States and is one of the largest underground parking system in the world.

- **Conclusions:** There many parking spaces within walking distance to the park, creating a convenience during events at Millennium Park. The underground spaces provide protection from the weather during the winter months, and this adds to the park visitors' experience in a positive way. The accessibility of the parking creates a more desirable pedestrian experience. The convenience of parking under the garage is yet another way the park has created value.

### ADA Compliance

- **Research:** What sets Millennium Park apart from many other large-scale, civically-minded public facilities is the park's accessibility. Ed Uhlir and the Chicago MOPD went to great lengths to ensure all visitors to Millennium Park have equal access to its numerous attractions. Accessibility highlights include switchback ramps and no physical barriers hindering wheelchair users from enjoying the Crown Fountain. The Jay Pritzker Pavilion has two gently sloping ramps – no stairs - that lead to the pavilion's stage. The Great Lawn, which spans 95,000 square feet, is fully accessible. Beneath the sod is a structural mesh system that firms and strengthens the ground and allows wheelchairs to navigate across its great expanse. The BP Bridge is serpentine-shaped to allow for a 1:20 slope, much shallower than the American with Disabilities Act Accessibility Guidelines maximum allowable slope of 1:12. The 2,126 parking spaces below Millennium Park provide ample accessible parking near the elevators to ground level. Ceiling heights had to be raised in certain sections of the garage to accommodate conversion vans. Lurie Garden has accessible paths throughout for wheelchair access. The Paralyzed Veterans of America recognized Ed Uhlir in 2005 with the Barrier-Free America Reward. PVA introduced the award in 2001 to recognize individual leadership in making our country more accessible for all Americans.
- **Source:**
  - "Chicago's New Class Act" by: Joshua Deyer, Paraplegia News, July 2005, vl. 59 #7
- **Analysis:** All parts of Millennium Park are ADA accessible. Access features in the Park have been integrated into the park's design and truly set the standard for full inclusion of people with disabilities. The park has proven this by winning a prestigious award for being barrier free.
- **Conclusion:** Millennium Park complies with ADA regulations and is one of the best examples of a barrier-free park in America. Because the park is barrier free it gives all kinds of people with disabilities a chance to experience the place the same way non-disabled people do. The park was designed from the outset to be barrier free and this has added to the draw of the park.

**2. ECONOMIC VALUE - (Research member: Naveed Nabavi)**

The Millennium Park economic return on investment is explained in the following section. Property values, rental rate increases, increased occupancy, new construction in the area and general improvement in the economy of the East Loop is documented in this section.

a. **Adjacent Property Rents:** *% increase in property rents adjacent to the project*

- **Research:** Below is breakdown showing 7 buildings and the rent associated with each one. 3 buildings show a comparison from 2004 to 2011. The data can be analyzed to determine whether or not there has been an increase in property rents adjacent to the park.

Name	Address	Units	Avg SF	Luxury	Quality	Q1 2011			Q3 2004		
						Quoted	Net Rent	Occupancy	Quoted	Net Rent	Occupancy
Aqua	225 N Columbus	474	758	Yes	A	\$2.91	\$2.67	92.0%			
Columbus Plaza	233 E Wacker	534	834		B	\$1.92	\$1.92	97.0%	\$1.65	\$1.65	94.0%
MDA City Apartments	63 E Lake St	190	871	Yes	A	\$2.39	\$2.39	92.1%			
Millenium Park Plaza	151 N Michigan	550	819		B	\$2.25	\$2.25	97.1%	\$2.01	\$1.86	96.0%
North Harbor Tower	175 Harbor Drive	600	938		A	\$2.02	\$2.02	97.0%	\$2.08	\$1.75	88.0%
The Shoreham	400 E South Water	548	806	Yes	A	\$2.46	\$2.11	90.1%			
The Tides	360 East South Water	608	803	Yes	A	\$2.58	\$2.21	91.8%			
		3,504			Unit WAvg	\$2.35	\$2.20	94.1%	\$1.92	\$1.75	92.5%

- **Sources:**
  - Appraisal Research Counselors
  - MLS of Northern Illinois
- **Analysis:** Rents in apartment buildings adjacent to the park increased 22.4% since the park opened in 2004. The East Loop has maintained higher than average occupancy at 94.1% vs. 93.9% despite having several older buildings.
- **Conclusions:** Millennium Park has helped maintain high rents while significantly increasing the rental stock in the area. The increase in rent can be attributed to the desire of people to live next to parks.

b. **Office Rents:** *% increase in office rents in subject area*

- **Research:** The completion of Millennium Park has created a significant change in the East Loop. Various sources were analyzed to determine the influence of the park on the office rents. The office vacancy rate and asking rents is listed below.

Office Vacancy and Asking Rents						
	Vacancy			Asking Rents		
	East Loop	Downtown	Difference	East Loop	Downtown	Difference
YE 2010	16.34%	14.61%	1.73%	\$ 26.42	\$ 28.42	-7.04%
YE 2009	15.38%	13.80%	1.58%	\$ 25.92	\$ 29.11	-10.96%
YE 2008	11.66%	10.91%	0.75%	\$ 28.63	\$ 31.51	-9.14%
YE 2007	11.92%	11.28%	0.64%	\$ 26.76	\$ 29.84	-10.32%
YE 2006	16.42%	15.06%	1.36%	\$ 24.43	\$ 26.74	-8.64%
YE 2005	18.94%	16.98%	1.96%	\$ 24.27	\$ 26.81	-9.47%

Appraisal Research Counselors

- **Sources:**
  - Appraisal Research Counselors
  - Ashely Devick, Director, Newmark Knight Frank
  - Steve Smith, Director, Jones Lang LaSalle
  - Lauren Alexander, Senior Associate, J.F. McKinney and Associates
  
- **Analysis:** An analysis of rental rates and vacancy trends of the East Loop compared to the rest of the downtown market did not yield any significant trends. This was confirmed in conversations with active office leasing brokers in the East Loop. They unanimously felt the park has a positive influence, but the distance from the main transportation hubs on the west side of The Loop will continue to hinder demand. East Loop landlords have been forced to provide considerable concessions to attract tenants to the East Loop. The Park has created an energy and livelihood that is not present in the West Loop. The views also provide a unique marketing opportunity. Lauren Alexander, who has been leasing space at Two Prudential Tower for 5 years, referred to it as a “\$500 million view,” and unlike other spaces that risk future development hindering their view, Millennium Park offers a “forever view” that has added value for tenants.
  
- **Conclusions:** Millennium Park has provided greater marketability to adjacent office properties, bringing views that tenant’s desire. However, the park has not significantly impacted office rents and vacancy due to general office market factors that overcome the added benefit Millennium Park provides.
  
- c. **Residential Units and Population:** *% increase in residential housing and population growth adjacent to the property*
  - **Research:** An analysis of the area immediately adjacent to the park was conducted to determine the increase in residential housing and population growth.

	2005	2006	2007	2008	2009	2010
Residential Housing Units Delivered	1,305	494	647	1,153	1,284	9
Total Residential Units	6,313	6,807	7,454	8,607	9,891	9,900

	2000	2010	
East Loop Population	5,877	10,047	71% Increase
Chicago Central Area	111,742	185,844	66% Increase

• **Sources:**

- Site To Do Business – [www.STDBonline.com](http://www.STDBonline.com)
- ESRI 2010 Data US Census
- Chicago Central Area Plan

- **Analysis:** Since the park opened, over 4,800 apartment and condo units have been completed, resulting in a population increase of 71%. The development of new units was comprised of 64% of units being new construction and 36% being adaptive reuse of class B and C office space.

- **Conclusions:** There has been an increase in the population in the East Loop immediately surrounding the park. The population in the area immediately adjacent to the park outpaced the population growth in central Chicago.

d. **Residential Value Created by Park Views:** % increase in residential housing value due to Millennium Park views

- **Research:** Two residential condominium buildings with views of the park were analyzed to determine if there is a premium placed on units sold with a park view vs. units sold without park views. Below is the sales breakdown of 400 East Randolph and The Legacy at Millennium Park.

400 East Randolph

	Millennium Park View				Other View				Difference	%
	Sales	SF	Price	\$/SF	Sales	SF	Price	\$/SF		
2005	15	20,405	\$ 7,919,555	\$ 388.12	26	28,905	\$ 8,984,700	\$ 310.84	\$ 77.28	24.9%
2006	11	9,915	\$ 4,161,400	\$ 419.71	32	31,220	\$ 8,681,150	\$ 278.06	\$ 141.64	50.9%
2007	7	5,820	\$ 2,604,000	\$ 447.42	27	26,945	\$ 8,273,900	\$ 307.07	\$ 140.36	45.7%
2008	5	4,850	\$ 2,174,900	\$ 448.43	18	15,310	\$ 4,468,575	\$ 291.87	\$ 156.56	53.6%
2009	6	5,500	\$ 2,218,500	\$ 403.36	17	14,163	\$ 3,970,500	\$ 280.34	\$ 123.02	43.9%
2010	5	5,350	\$ 2,087,500	\$ 390.19	19	15,525	\$ 4,199,400	\$ 270.49	\$ 119.69	44.3%
	<b>92</b>	<b>103,525</b>	<b>\$ 37,409,355</b>		<b>291</b>	<b>264,046</b>	<b>\$ 68,151,574</b>		<b>\$ 126.43</b>	<b>43.9%</b>

Multiple Listing Service of Northern Illinois

The Legacy at Millennium Park

Floor	Millennium Park View			No Millennium Park View			Difference	%
	Sum of SF	Sum of Sales Price	\$/SF	Sum of SF	Sum of Sales Price	\$/SF		
15	4,497	\$ 2,429,040	\$ 540	-	\$ -	-		
16	5,061	\$ 2,888,911	\$ 571	1,376	\$ 386,552	\$ 281	\$ 290	103%
17	1,342	\$ 642,845	\$ 479	2,725	\$ 1,051,261	\$ 386	\$ 93	24%
18	2,829	\$ 1,352,920	\$ 478	1,850	\$ 764,262	\$ 413	\$ 65	16%
19	-	\$ -	-	875	\$ 365,816	\$ 418		
20	-	\$ -	-	1,850	\$ 806,781	\$ 436		
21	1,487	\$ 752,807	\$ 506	975	\$ 419,900	\$ 431	\$ 76	18%
22	-	\$ -	-	875	\$ 394,517	\$ 451		
23	5,061	\$ 3,186,418	\$ 630	1,850	\$ 889,035	\$ 481	\$ 149	31%
24	1,342	\$ 706,987	\$ 527	1,850	\$ 879,379	\$ 475	\$ 51	11%
25	3,456	\$ 2,394,493	\$ 693	975	\$ 530,313	\$ 544	\$ 149	27%
26	3,311	\$ 2,273,515	\$ 687	975	\$ 417,453	\$ 428	\$ 258	60%
27	3,092	\$ 2,234,188	\$ 723	975	\$ 507,615	\$ 521	\$ 202	39%
28	1,487	\$ 797,689	\$ 536	-	\$ -	-		
29	2,829	\$ 1,424,900	\$ 504	975	\$ 454,900	\$ 467	\$ 37	8%
30	5,206	\$ 3,051,055	\$ 586	975	\$ 400,900	\$ 411	\$ 175	43%
31	3,237	\$ 2,285,159	\$ 706	975	\$ 521,769	\$ 535	\$ 171	32%
32	1,969	\$ 1,200,000	\$ 609	-	\$ -	-		
33	5,206	\$ 3,071,200	\$ 590	975	\$ 562,106	\$ 577	\$ 13	2%
34	1,969	\$ 1,238,569	\$ 629	-	\$ -	-		
35	6,285	\$ 3,640,458	\$ 579	1,850	\$ 916,905	\$ 496	\$ 84	17%
36	3,092	\$ 1,883,584	\$ 609	875	\$ 418,236	\$ 478	\$ 131	27%
37	6,548	\$ 4,308,267	\$ 658	1,850	\$ 916,322	\$ 495	\$ 163	33%
38	3,092	\$ 1,834,271	\$ 593	1,850	\$ 948,681	\$ 513	\$ 80	16%
39	4,579	\$ 2,689,663	\$ 587	1,904	\$ 1,098,398	\$ 577	\$ 11	2%
40	6,548	\$ 4,165,571	\$ 636	975	\$ 489,333	\$ 502	\$ 134	27%
41	3,429	\$ 2,352,606	\$ 686	-	\$ -	-		
42	2,816	\$ 2,473,491	\$ 878	997	\$ 487,500	\$ 489	\$ 389	80%
43	1,999	\$ 1,571,207	\$ 786	1,189	\$ 611,953	\$ 515	\$ 271	53%
44	-	\$ -	-	-	\$ -	-		
45	3,093	\$ 1,525,100	\$ 493	-	\$ -	-		
46	4,659	\$ 2,384,652	\$ 512	1,189	\$ 611,119	\$ 514	\$ (2)	0%
47	1,584	\$ 807,000	\$ 509	1,189	\$ 584,104	\$ 491	\$ 18	4%
48	3,075	\$ 1,917,733	\$ 624	1,189	\$ 549,195	\$ 462	\$ 162	35%
49	1,479	\$ 958,807	\$ 648	-	\$ -	-		
50	5,092	\$ 3,596,008	\$ 706	-	\$ -	-		
51	1,596	\$ 950,000	\$ 595	-	\$ -	-		
52	1,497	\$ 912,015	\$ 609	-	\$ -	-		
53	-	\$ -	-	1,189	\$ 580,000	\$ 488		
54	1,596	\$ 975,293	\$ 611	-	\$ -	-		
55	1,596	\$ 1,182,698	\$ 741	1,189	\$ 564,218	\$ 475	\$ 267	56%
56	2,405	\$ 2,092,861	\$ 870	-	\$ -	-		
57	1,596	\$ 919,900	\$ 576	1,189	\$ 734,448	\$ 618	\$ (41)	-7%
58	1,596	\$ 879,151	\$ 551	-	\$ -	-		
59	3,902	\$ 3,035,271	\$ 778	-	\$ -	-		
60	2,436	\$ 1,684,900	\$ 692	-	\$ -	-		
61	1,999	\$ 2,497,333	\$ 1,249	-	\$ -	-		
62	-	\$ -	-	-	\$ -	-		
63	1,999	\$ 1,357,076	\$ 679	-	\$ -	-		
64	2,930	\$ 2,362,320	\$ 806	-	\$ -	-		
65	5,366	\$ 4,148,386	\$ 773	-	\$ -	-		
68	7,365	\$ 6,550,836	\$ 889	-	\$ -	-		
<b>Total</b>	<b>167,556</b>	<b>\$ 106,388,275</b>	<b>\$ 635</b>	<b>20,749</b>	<b>\$ 10,061,850</b>	<b>\$ 485</b>	<b>\$ 150</b>	<b>31%</b>
<b>Average Price Difference for Lake View vs. No Lake View</b>							<b>\$ 131</b>	<b>29%</b>
<b>Transaction Data from MLSNI</b>								
Millennium Park View						88		
No Millennium Park View						37		
Partial Millennium Park View (Excluded from Sample)						33		

*Multiple Listing Service of Northern Illinois*



- **Source:**
  - MLS of Northern Illinois
  
- **Analysis:** Sales transactions at 400 East Randolph showed a premium for south-facing park views against north-facing lake and city views. There were not enough transactions per year to make a floor-by-floor comparison, so some of the premium may be attributed the units being on different floors. After 2005, there was consistently a 40%+ premium price per square foot paid for Millennium Park views, an average \$126/square foot. The Legacy at Millennium Park is a new construction development. As most of the units closed upon the completion of the building, a floor-by-floor comparison could be done to eliminate the premium paid for which floor the unit is on. In addition, units with partial Millennium Park views were eliminated from the sample. On floors that had transactions for both Millennium Park views and non-Millennium Park views, the average premium paid was \$131/square foot, a 29% premium.
  
- **Conclusions:** Millennium Park clearly adds value to residential real estate with views of the property. Though there are many variables which factor into the sales price of condo units, it is clear that an excess of \$125 per square foot premium is paid for units with a park view. This further illustrates people’s desire to live close to parks and other activities. Millennium Park has added real estate value to the surrounding area.

e. **Hotel Development:** *% increase in hotel units adjacent to the park*

- **Research:** Historically there been a significant number of hotel rooms in the area adjacent to the park. The chart below shows the number of units that have opened since the park was constructed in 2004.

1 Palmer House	1639	1925
2 Hotel 71	454	1958
3 Monaco	192	1958
4 Hyatt Regency	2019	1974
5 Fairmont Hotel	692	1987
6 Swissotel Chicago	661	1988
7 J. Ira & Nikki Harris Family Host	500	1996
8 The Silversmith Hotel	143	1998
9 Burnham	122	1999
Opened Before Millennium Park		6422
10 Hard Rock Hotel	381	2004
11 the Wit Hotel	298	2009
12 Comfort Suites Hotel	119	2009
13 Raddison Blu (Planned)	334	2011
Opened After Millennium Park		1132
2011 Total		7554
% Increase		18%

*Appraisal Research Counselors*

- **Source:**
  - Appraisal Research Counselors
  
- **Analysis:** The number of hotel rooms increased 18% since Millennium Park was opened. The Hard Rock Hotel opened just months after the opening of Millennium Park. Even though the

recession greatly reduced leisure travel, three additional hotels were built between 2009 and 2011. The park spurred hotel growth that otherwise would have never existed, as no hotels were built between 1999 and 2003.

- **Conclusions:** The demand for hotels generated by Millennium Park overcame the financial challenges of the recent recession and added 18% more units since the park’s inception. With 5 million annual visitors going to the park each year, it’s clear that these people need places to stay. The park spurred hotel development boom, and that can be attributed to the number of people the park attracts.

f. **Construction Cost of Development and Resulting Job Creation:** *Increase in construction adjacent to Millennium Park and estimated job creation*

- **Research:** An analysis was conducted to review the construction cost of new developments adjacent to the park and estimate job creation associated with the construction spending. According to the Associated General Contractors of America (AGC), for every \$1 billion spent on construction, GDP increases \$1.1 billion, 9,700 direct construction jobs are created, 4,600 indirect construction supply and material jobs and 14,300 induced jobs would be created by the additional spending of the direct and indirect construction jobs. The chart shown below explains the construction cost estimation.

New Constuction Residential/Office/Hotel adjacent to Millenium Park

New Condos	Year	Units	Estimated Constuction Cost	Square Footage	Cost Estimate Source
1 The Heritage at Millenium Park	2005	356	\$ 160,192,754	572,800	Mesa Development
2 The Shoreham at Lakeshore East	2005	548	\$ 243,800,000	920,000	RSMeans Estimate
3 The Regatta at Lakeshore East	2006	324	\$ 112,715,100	425,340	RSMeans Estimate
4 340 On the Park	2007	344	\$ 328,600,000	1,240,000	RSMeans Estimate
5 The Chandler at Lakeshore East	2007	304	\$ 152,397,525	575,085	RSMeans Estimate
6 Tides at Lakeshore East	2008	608	\$ 200,231,615	755,591	RSMeans Estimate
7 Aqua at Lakeshore East	2009	476	\$ 447,055,000	1,687,000	RSMeans Estimate
8 The Legacy at Millennium Park	2010	355	\$ 164,807,246	589,300	Mesa Development
9 Parkhomes at Lakeshore East	2010	24	\$ 35,245,000	133,000	RSMeans Estimate
<b>New Office Space</b>					
10 Sullivan Center	2008		\$ 192,000,000	740,000	TheSullivanCenter.com
11 Blue Cross Blue Shield	2010		\$ 270,000,000	900,000	Chicago Loop Alliance
<b>New Hotels</b>					
12 the Wit Hotel	2009	298	\$ 57,707,910	281,502	RSMeans Estimate
13 Comfort Suites Hotel	2009	119	\$ 20,812,830	101,526	RSMeans Estimate
14 Raddison Blu (Planned)	2011	334	\$ 61,500,000	300,000	RSMeans Estimate
			\$ 2,447,064,980	9,221,144	

- **Sources:**
  - Chicago Loop Alliance
  - Appraisal Research Counselors
  - CoStar
  - Construction Cost: Mesa Development for data on Legacy and Shoreham
  - RSMeans
  - Associated General Contractor of America

- **Analysis:** There has been a significant amount of construction surrounding Millennium Park. Nine new residential buildings, two office buildings and three hotels have been built adjacent to the park. The \$2.45 billion in construction is estimated to create 70,000 jobs. This is illustrated below.

Jobs Created per \$2.45 billion of construction spending	
Direct	23,765
Indirect	11,270
Induced	35,035
Total Jobs Created	70,070

- **Conclusions:** The draw of Millennium Park helped generate \$2.45 billion of construction spending, which is estimated to create 70,000 jobs. The park has created a revival in the East Loop area and the construction spending is evidence of that.

g. **Construction Cost of Millennium Park and Resulting Job Creation:** *Construction cost of Millennium Park and estimated job creation*

- **Research:** Millennium Park was funded by a combination of public funds and private and corporate donations. \$490 million dollars was required to construct the park.
- **Sources:**
  - Ed Uhlir, Executive Director, Millennium Park Inc.
- **Analysis:** The funding for the project was comprised of:
  - \$270 million from the City of Chicago for the park's infrastructure
    - \$175 million in construction bonds that were repaid after the sale of the 2,200-space Millennium Garage built beneath the park
    - \$95 million in tax increment financing bonds provided by the Central Loop TIF.
  - \$220 million in private donations
    - \$160 million from private sector donations, 105 individuals, foundations, and corporations
    - \$60 million as a separate campaign for the Harris Theater for Music and Dance.
    - Using AGC's job creation multipliers, the \$490 million of spending would create 14,014 jobs.

Jobs Created from \$490 million construction spending for Millenium Park	
Direct	4,753
Indirect	2,254
Induced	7,007
Total Jobs Created	14,014

- **Conclusions:** The \$490 million spent to create Millennium Park created 7,000 direct and indirect construction jobs, along with 7,000 induced jobs.

h. **Tourism/Visitation:** *Direct spending and tax revenue generated from tourism and visitation*

- **Research:** Tourism to Chicago generates billions in revenue to the city. An analysis was conducted to estimate the financial impact the tourists visiting the park have on the city.

<b>Travel Generated Direct Spending</b>		
Total Visitors	39,200,000	
Travelers to Millenium Park	5,000,000	
% of travelers that visit Millennium Park	12.8%	
		<b>From Millenium Park</b>
<b>Travel Generated Direct Spending</b>	<b>Total</b>	<b>Visitors</b>
Direct Domestic Spending	9,749,800,000	1,243,596,939
Direct International Spending	1,348,100,000	171,951,531
Total Direct Spending	11,097,900,000	1,415,548,469
<b>Travel Generated Employment</b>		
Travel Generated Employment	124,400	15,867
<b>Travel Generated Tax Revenue</b>		
Sales Tax Revenue	343,300,000	43,788,265
Local Tax Revenue	203,000,000	25,892,857
Domestic Traveler Total Tax Revenue	546,200,000	69,668,367
International Traveler Total Tax Revenue	70,000,000	8,928,571
Total Tax Revenue	616,200,000	78,596,939

- **Sources:**
  - Travel Industry Association of America
  - Ed Uhlir, Executive Director, Millennium Park Inc.
  - Chicago Tourism Bureau
  - Chicago Travel Statistics
  - [http://www.choosechicago.com/media/statistics/visitor\\_impact/Pages/default.aspx](http://www.choosechicago.com/media/statistics/visitor_impact/Pages/default.aspx)
- **Analysis:** Chicago hosted 39.2 million domestic and overseas visitors in 2010, including 28.0 million domestic leisure travelers, 10.1 million domestic business travelers and 1.13 million overseas visitors. These visitors contributed more than \$11.1 billion to Chicago's economy in 2010, creating 124,400 jobs and \$616 million of tax revenue. Twelve percent of Chicago tourists visit Millennium Park. These visitors of the park account for \$1.4 billion of direct spending and \$78 million in tax revenue.
- **Conclusions:** Tourism is an important part of Chicago's economy and Millennium Park plays a significant role in attracting visitors. Visitors of the park spend \$1.4 billion. The park attracts 5 million visitors annually, and without them, none of the direct spending discussed above exists. The park has created a huge amount of economic value for Chicago.

i. **Revenue Generated by Project:** *Increase in revenue generated by the improvements (rents, leases, sales)*

• **Research:**

- i) Park Grill – The Park Grill is located in Millennium Park and generates jobs, revenue, and has a positive impact on the economic value of the park. The annual financial statements for the Park Grill were not made available for this research.
- ii) Harris Theater – The Harris Theater generates revenue through their ticket sales. On average, the venue hosts 129 performances a year, with an average attendance of 600 people per show. The average ticket price from July 2011-March 2012 was \$40. Thus the estimated revenue generated from ticket sales is currently \$2.98 million.
- iii) Millennium Park Ice Skating – Over 70,000 people rent ice skates from the park. The average revenue from 2010 and 2011 was \$793,929, with average net income of \$349,755.
- iv) Bike Rental – Bike rental financial statement not provided for this research.
- v) Concessions – Concessions are operated by the Park Grill management team and financial statements were not made available for this research.

• **Sources:**

- The Harris Theater
- Millennium Park Inc.

- **Analysis:** Even though not all of the financial statements could be obtained for this portion of the research, it's still clear that the park generates revenue from the Harris Theater and ice skate rentals. Harris Theater and the ice skating rink generate \$2.98 million and \$793,929 in revenue respectively.

- **Conclusions:** As the overall park visitation numbers continue to rise, it's safe to say that revenue will continue to increase. The more visitors to the park, the more money they spend on park activities and food. This creates tax revenue for the city and helps businesses in and adjacent to the park profit.

j. **Park Expenses:** *Increase in median income of the occupants of the project*

- **Research:** The cost of maintaining Millennium Park directly increases economic activity in Chicago. The cost of maintenance and park management was compiled to measure that impact.

	2005	2006	2007	2008	2009	2010	2005-2010
<b>TOTAL ANNUAL EXPENSES</b>	4,902,315	5,258,625	5,549,630	6,771,254	5,982,051	5,922,119	34,385,993

*Neal Spears, MB Real Estate*

• **Source:**

- Neal Spears, General Manager, MB Real Estate

- **Analysis:** Maintaining the park creates additional value for the city. \$35 million has been spent in the first six years the park has been open.

- **Conclusions:** The maintenance of the park continues to add value to the city by providing close to \$6 million in salaries, materials and contract services to the local economy. Maintenance and management of the park is critical in maintaining a clean and inviting environment.

### 3. ENVIRONMENTAL - (Research member: Serena Conti)

The conversion of a brownfield rail site, parking lot and neglected strip of green space adjacent to Michigan Avenue into a 24.5-acre deck park with over 12 acres of well-maintained green space has had a major environmental return on investment. The park has improved air quality, water quality, energy conservation, botanical and biological diversity and environmental education in this dense urban environment.

- a. **Green Space:** % increase in green space (includes roof gardens, landscape, parks, & planted areas)

#### % Increase in green space

- **Research:** According to conversations with landscape architect Terry Guen, and project engineer Matthew Letson, as well as reviews of the site plans, Millennium Park increased green space by 61.5%. Not including Lurie Garden, a total of 550 trees, 90,454 plants, and 39 plant varieties were added to the park. Lurie Garden, located in the southeast corner of the project, contributes over 35,000 perennial plants in 240 varieties, 120,000 bulbs, and 5,200 “woody” plants in 14 varieties. The Lurie Garden is 2.5 acres. There are 2.2 acres of lawn in the Pritzker Pavilion and 7.6 acres of garden area, and this results in 528,740 square feet, or 12.14 acres, of green space.



The park site was once a small strip of green space, a parking lot, and a rail yard (left). Millennium Park site shown after construction was completed in 2004 (right).  
*Millennium Park Inc.*

- **Sources:**
  - Harley Ellis Devereaux Site Plans
  - Millennium Park, Inc.
  - Terry Guen Design Associates, Inc.
  - McDonough Associates, Inc.
  - Millennium Park Chicago, by Cheryl Kent
  - Lurie Garden Fact Sheet (03.07.10)
- **Analysis:** The percent increase in green space and plant material is a large contributor to creating the sense of place and separation between park and city. Different textures and colors create depth and are visually stimulating. Users can connect with nature, enjoy the movement of leaves, the smell of damp earth, and the feel of soft grass beneath their feet. Trees provide shade

and comfort and reduce the urban heat. Large shrubs provide sound and visual barriers to busy, congested streets and loud cars, all increasing the sites environmental quality.

- **Conclusions:** The increase in green space to a city like Chicago is critical to the environmental quality, education, and health of the community. Children play in the parks, couples picnic on the Great Lawn, and others enjoy the shaded areas on a hot day or bask in the sun during their lunch break. People enjoy participating in outdoor activities and spending time in a lush environment. Millennium Park would not be the successful destination it is today without as much green space conceptualized and delivered.

- b. **Environmental Certifications or Recognitions:** *Any environmental certifications, recognitions, or initiatives such as SSI or LEED Certification*

**Any environmental certifications, recognitions, or initiatives for programs, such as the LEED program or SSI program incorporated in the project**

- **Research:** The Exelon Pavilions are four of the five buildings in Millennium Park that generate electricity from solar energy. On the north side of the site, the Northeast Exelon Pavilion and the Northwest Exelon Pavilion, jointly named the North Exelon Pavilions, border Harris Theater, while the South Exelon Pavilions, the Southeast Exelon Pavilion and Southwest Exelon Pavilion, are located on the southern edge of the park along Monroe Street. In addition to producing electricity, one pavilion serves as the park's welcome center while the other three supply access to the parking garage below.

In 2005, the North Pavilions received the Leadership in Energy and Environmental Design (LEED) Silver rating from the United States Green Building Council (USGBC). In the "Alternative and/or Renewable Energy Use – New Construction" category, they were awarded the Technology Award Honorable Mention by the Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). Also in 2005, the city of "Chicago was ranked fourth among U.S. cities in solar installations, and the Exelon Pavilions took the city to a total of 1 MW of installed photovoltaic systems," which is enough energy to power 150 homes. Together, "the pavilions generate 19,840 kilowatt-hours or 67,697 MBtu's of electricity annually, [which is] worth \$2,353 per year at 2010 average electricity prices." Also, according to the city of Chicago, the pavilions provide enough annual energy to power at least 14 star-rated energy-efficient homes in Chicago.





The two North Exelon Pavilions, one of which can be seen here, received a LEED Silver rating from the United States Green Building Council.  
*Ryan Mikulenska*

Restoration of the site is also an important feature. Before Millennium Park was built, the railroads underneath the site were visible. In 1997, the city gained airspace rights over the tracks and decided to build a parking facility over them, on the northwest side of Grant Park. In time, the city realized the properties true potential, thus stimulating efforts to create Millennium Park. The park is now the largest green roof in the world while serving the public and visitors with exciting events. Once a brownfield, Millennium Park is now a global destination, bringing in 5 millions visitors annually, world-class art and architecture and year round community activities.

Other initiatives implemented in the design of Millennium Park include the use of local materials as often as possible, composting all clippings and recycling tree branches trimmings for mulch, using high velocity hand dryers rather than paper towels, sustainable landscape design, incorporating plants that do not need to be replanted each year, and the use of recycled materials. In the Lurie Garden alone, there is 4,300 square feet of recycled permeable paving. Also, visitors can find a bench made of recycled material, such as the long bench by Cloud Gate, which is made of recycled milk jugs.



Recycled countertop walkway in the Lurie Garden.  
*Ryan Mikulenska*

- **Sources:**

- <http://www.sustainablesites.org/>
- <http://www.usgbc.org/DisplayPage.aspx?CategoryID=19>
- [http://en.wikipedia.org/wiki/Exelon\\_Pavilions#cite\\_note-cost-1](http://en.wikipedia.org/wiki/Exelon_Pavilions#cite_note-cost-1)
- [http://explorechicago.org/city/en/things\\_see\\_do/attractions/dca\\_tourism/exelon\\_pavilions\\_.html](http://explorechicago.org/city/en/things_see_do/attractions/dca_tourism/exelon_pavilions_.html)
- <http://web.archive.org/web/20061111045002/http://www.exeloncorp.com/NR/exeres/1DE34685-4FDD-4BF6-97CB-67F360E70EF8.htm>

- **Analysis:** The entire site is not eligible for official LEED or SSI certifications, as the proper designations didn't exist at the time the park was built, but the project was developed with many sustainable features that include the same conservation efforts that LEED and SSI encourage. For instance, the design incorporates numerous systems of pedestrian walkways while providing access to a number of mass transit connection points. Using native plant material and designing the landscape with the intent for it to last 10-12 years cuts down on maintenance and landscaping costs. The redevelopment of the site from brownfield to green roof has added value for the community, as well as the overall environment. Also, the LEED-rated buildings on site conserve energy while providing educational opportunities and demonstrate smart building initiatives.

- **Conclusions:** The project was designed to be environmentally conscious, supporting many of the LEED and SSI systems values and benefiting from their implementation. These sustainable initiatives added value to the bottom line by using energy-efficient building methods, making the site more accessible by foot, thus creating a universally accessible park. Through these additions, the community can utilize space that was otherwise used for parking or hardscape.

c. **Water Management:** *Stormwater and other water runoff managed on site*

**Water management and incorporated programs for site stormwater and runoff**

- **Research:** Millennium Park's parking structure is the largest green roof in the world, providing opportunity to reduce stormwater runoff. A green roof refers to a roof that is partially or completely covered with vegetation. In this system, runoff is absorbed and retained by living vegetation and is contained in shallow soil as well as a waterproofing membrane. Since greenroofs generally utilize shorter plants with shallower root systems, an intensive system was designed to carry the weight of Millennium Park's green roof. Matthew Letson, Project Engineer at McDonough Associates, and Terry Guen from Terry Guen Design Associates Inc. both estimate that Millennium Park's green roof retains about 70% of all water accumulated on site. The remaining water is filtered through the soil, which catches pollutants and other contaminants, and is then transferred to the Chicago River.

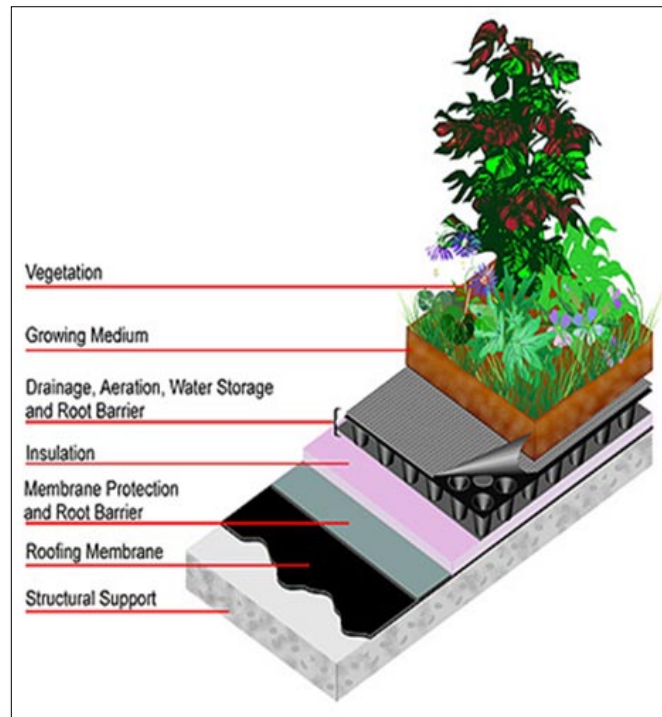


Diagram depicting a green roof.  
[www.soilfreeplants.com](http://www.soilfreeplants.com)

• **Sources:**

- Matthew Letson, Project Engineer, McDonough Associates
- Terry Guen, Terry Guen Design Associates Inc.
- Chicago Stormwater Ordinance Manual
- [http://en.wikipedia.org/wiki/Green\\_roof](http://en.wikipedia.org/wiki/Green_roof)
- [http://soilfreeplants.com/attachments/Image/green\\_roof\\_diagram.jpg](http://soilfreeplants.com/attachments/Image/green_roof_diagram.jpg)

- **Analysis:** There are six key components of a green roof: plant material, growing medium, geotextile fabric and/or foam, drainage layer, membrane protection and root barrier, and structural support. A green roof system provides insulation, prolonging the life of a roof, and also improves air quality by reducing heat island effect. Plant material is carefully chosen for green roofs because they are designed to retain and utilize most of the water that falls on the roof. Plant selection is also very important to the sustainability of the roof, and roughly 50% of the vegetation on a green roof should be drought tolerant. Plant material can also collect air pollutants and dust, create oxygen, release moisture, and provide evaporative cooling. According to Matthew Letson from McDonough Associates, the site is capable of managing 70% of stormwater on-site, while the remaining 30% is transported into the nearby Chicago River.

- **Conclusions:** Since water captured on site is filtered through soil, it is cleaner than outgoing stormwater. By diverting the cleansed water back into the river, the water goes through a cyclic process rather than flowing into a stormdrain, which would contaminate the water.

d. **Air Quality:** *Carbon footprint of landscape (tons of reduction), number of alternative sources of transportation, types of impact on air quality*

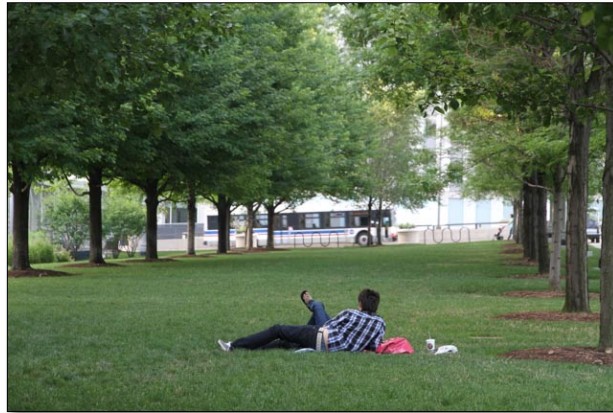
### Applied air quality initiatives implemented on site

- **Research:** Millennium Station, formerly known as Randolph Street Terminal, is located underneath Millennium Park. Being a major commuter rail terminal in Chicago's downtown, Millennium Station serves the Metra Electric Line, Blue Island, South Chicago, South Shore Line, and South Bend, Indiana. The project area is 49,950 square feet and was designed by Skidmore, Owings & Merrill LLP (SOM) in 2005. Not including the South Shore Line, on average, over 18,000 people board the Metra trains at Millennium Station each day. From here, pedestrians can walk to work, take a variety of CTA bus routes connected to the station, use the CTA elevated subway lines (which are only a short walk away), or rent an I-GO car.

I-GO is a car sharing organization providing the convenience and flexibility of having a car without the daily hassles and stress of owning a car. For members, there is a "fleet" of I-GO cars that are available 24-hours a day. Benefits include, saving money, and helping the environment. I-GO reported that, "each I-GO car replaces about 17 cars on the road, resulting in an estimated reduction of more than 3,200 vehicles in Chicago since I-GO opened for business in 2002." Also, when those figures were combined with their "fuel-efficient and low-emission fleet", half of which are hybrid and/or plug-in electric cars, I-GO estimates their members have reduced CO<sub>2</sub> emissions by nearly 25,000 tons each year. Millennium Park has two I-GO spaces in the garage underneath the park.

Other energy conserving measures utilized are the use of solar waste collectors. BigBelly Solar, a waste collection provider, offers one of the first integrated systems of its kind. The waste collectors use renewable power and information technology, dramatically lowering operating costs, fuel consumption, and greenhouse gas emissions connected with the waste collection process. BigBelly solar reports their consumers will reduce operating costs associated with collection by up to 80%. They attribute this figure to the, "solar-powered trash compaction, efficient recycling solution, and network management software and services" that the BigBelly Solar intelligent waste collection system provides. Amie Zander, Executive Director of West Ridge Chamber of Commerce, Chicago, remarked, "We are thrilled with our BigBelly units. We have been able to go from 2 trash pick-ups per day to once every 3 days, indicating that they hold 6 times as much as our regular trash receptacles. We are ordering more BigBelly units for next year with a goal of replacing all our trash receptacles with the BigBelly in the next few years." Fortunately for Millennium Park, these innovative collectors border two sides of the site.

Along with the increase of fuel reducing waste collectors there is an increase in acres of trees to Chicago's downtown. There are currently 6.5 acres of trees on Millennium Park, which is about a 400% increase from before the installation of Millennium Park. The addition of trees helps with the reduction of the city's carbon footprint. There is a total of 426.9 pounds of air pollutants removed per year due to the addition of trees, which saves \$1083.49 per year.



There are 6.5 acres of trees in Millennium Park and the newly planted trees have helped reduce the city's carbon footprint.  
*Ryan Mikulenka*

These figures attribute to:

- 191.4 pounds of ozone removed per year, saving \$587.43.
- 128.7 pounds of particulate matter removed per year, saving \$263.77.
- 67.2 pounds of nitrogen dioxide removed per year, saving \$206.30.
- 28.1 pounds of sulfur dioxide removed per year, saving \$21.07.
- 11.5 pounds of carbon monoxide removed per year, saving \$4.92.

• **Sources:**

- Air Quality Calculator - <http://ftp.americanforests.org/>
- I-GO Car Sharing Company - <http://www.igocars.org/>
- Millennium Park Station - [http://www.som.com/content.cfm/millennium\\_station](http://www.som.com/content.cfm/millennium_station)
- [http://en.wikipedia.org/wiki/Millennium\\_Station#cite\\_note-0](http://en.wikipedia.org/wiki/Millennium_Station#cite_note-0)
- BigBelly Solar - <http://bigbellysolar.com/overview/>

- **Analysis:** Less fuel usage and vehicle emissions, reduction of litter, and improved recycling are a few of the benefits that BigBelly Solar waste collectors provide the City of Chicago. With the enclosed design there is a reduction of odor, keeping litter contained and reducing the amount of pests. The reduction of collection trips also means a decrease in the amount of fuel needed and, consequently, lower CO<sub>2</sub> emissions. The BigBelly system automatically compacts trash prior to collection reducing the amount of collections needed. At an average of 3 MPG, trash trucks are one of the most inefficient and costly vehicles. Also, the recycling containers encourage users to properly separate trash and recycling materials, reducing cross-contamination and therefore increasing the value of recyclables. By using 100% solar energy, a free, abundant, and non-polluting renewable resource, the BigBelly system can promote responsible trash separation while reducing overall energy consumption.

Through the use of I-GO cars rather than personal vehicles, Chicago can begin to reduce the amount of CO<sub>2</sub> emissions from cars. I-GO stated that it is "Chicago's only non-profit home-town car sharing company," and that "widespread sustainable transportation [should be] the rule throughout the metro area." With more alternative transportation and group sharing programs offered, the demand for a personal vehicle will decrease.

The addition of trees has greatly benefited the community through the removal of pollutants and subsequent cost reductions. There is less smog, fewer allergic reactions and medical occurrences, such as asthma, with a decrease in air pollutants. Not only does Millennium Park beautify downtown, but also cleans the air around it.

- **Conclusions:** These BigBelly Solar waste collectors create value for the city because they no longer need to have ongoing waste collection or as many collector trucks. There are 400+ collectors in Chicago's inner loop.

Since one-third of the U.S. CO<sub>2</sub> greenhouse gas emissions come from transportation, car sharing can potentially reduce environmental impacts through the reduction of car ownership. The drop in CO<sub>2</sub> emissions produced from cars, combined with the addition of trees, is a valuable step for a greener Chicago. Millennium Park contributed to this effort by partnering with I-GO and planting 6.5 acres of trees.

- e. **Irrigation Technology and Plant Maintenance:** *Automated water management program in place for irrigation, drip system incorporated to maximize efficiency, % of native plants used, and plant maintenance initiatives*

**Automated water management program in place for irrigation and plant maintenance programs**

- **Research:** In keeping with the United States New Wave Planting style, a relaxed and natural style, planting design that is less controlled and geometric, was implemented in Millennium Park's 2.5-acre garden. Lurie Garden, designed by Gustafson Guthrie Nichol Ltd, Piet Oudolf, and Robert Israel, used 250 varieties of perennial plants native to the prairie. There are over 160,200 plants and 65% of them are native to North America and/or Illinois. No pesticides or herbicides are used on the garden for the health and safety of plants and users.

The large number of native plants require very little water. Lurie Garden director, Jennifer Davit, says the garden is watered on an "as-needed" basis. Also, the garden is only watered at night, maximizing efficiency, and is never watered two days in a row. The rest of the park is also watered as needed, but due to the plant varieties, it requires watering more frequently. Other water conserving methods are utilized in the three water features on site. Crown Fountain, Wrigley Fountain, and the Lurie Garden Boardwalk are all on circulated pump systems, meaning that the water is constantly recycled.



A Cone Flower shown in the Lurie Garden is an example of flower that was selected because they require little maintenance and watering.

*Ryan Mikulenska*

- **Source:**
    - Jennifer Davit, Director of The Lurie Garden
    - Ed Uhler, Executive Director, Millennium Park Inc.
  
  - **Analysis:** The native plant material reduces maintenance and water costs. By only watering when necessary, Millennium Park avoids over watering the plants. Also, since the garden is watered at night, less water evaporates, conserving the total amount of water used and reducing costs and waste.
  
  - **Conclusions:** Native plant materials and environmentally-conscious watering create cost savings as well as environmental educational opportunities. The native gardens provide long-term savings and an urban laboratory for environmental education and research.
- f. **Permeable Surfaces:** *% increase in the amount of permeable surfaces in the project (green space and permeable paving), amount of impermeable surface*

**% Increase in the amount of permeable surfaces in the project**

- **Research:** Originally, there were 324,690 square feet, or 7.45 acres, of permeable space before Millennium Park was constructed. Through the addition of a 2.2 acre Great Lawn, a 2.5 acre garden, 550 trees, thousands of plants, and 4,300 square feet of permeable paving, Millennium Park now has increased the amount of permeable surfaces by 64.2%. The 12.24 acres of permeable space on site contributes to almost 50% of the parks total surface area.



The Lurie Garden is 2.5 acre garden located in Millennium Park.  
Ryan Mikulenska

- **Sources:**
  - Ed Uhlir, Executive Director, Millennium Park Inc
  - Harley Ellis Devereaux Site Plans
- **Analysis:** The addition of green space and permeable surfaces reduces stormwater runoff. Permeable surfaces, including green space, are important for drainage and the health of the site.
- **Conclusions:** The 533,039 square feet, or 12.24 acres, of permeable surfaces improves stormwater quality and reduces stormwater runoff. This increase not only benefits users, but also local flora and fauna, future generations, and the greater Chicago area.

g. **Environmental Education:** *Environmental education medium added to educate about the project's environmentally sensitive components*

#### **Environmental education medium added to the project**

- **Research:** Over 15 environmental education programs enjoy the Lurie Garden throughout the spring and summer months. Visitors can enjoy the "Summer Strolls in Lurie Garden" and watch how evening light can change a landscape. Other park users can enjoy the Lurie Garden Spring Festival and Plant Sale, where they can purchase the garden's top perennials observed and learn which ones are best suited for Midwest soils and climate. While parents learn about root systems and how to determine if a tree has a healthy and viable root system in Connor Shaw's "Root, Roots, and More Roots" talk, children can enjoy an afternoon creating environmentally-themed projects in Ellen Lupton's "Design for a Kid's Living World" class.

From time to time, professionals such as Piet Oudolf, Lurie Garden planting designer, and Roy Diblick, owner of Northwind Perennial Farm and the official plant grower of Lurie Garden, will travel to Lurie Garden. They come to share their knowledge of plants and landscape design, as well as secrets on how to have the most successful plantings. Daily tours of Lurie Garden are given by staff and volunteers, and on Thursday's "Ask Me" day, volunteers are available to answer



questions about Lurie Garden. Staff will also discuss the garden's most vibrant plantings, significant plant communities, and how to apply these concepts in a personal garden.

If visitors want to connect with local wildlife, they can learn how to use binoculars to watch migratory bird in Sheryl DeVores' "Spring Birding for Beginners and Families" tour. "Wild About Insects" will teach parents and children the facts about bugs and which ones to avoid. There is also a unique opportunity to learn and discuss the importance of bees and how they participate in the health of a garden, in the "Bee Walk and Talk" discussion. Or if that is not hands-on enough, "Dig It: Wiggle Worms and Super Soil" offers a chance for parents and children to dig up worms and learn about why they are so important to the soil and success of a garden.

Seasonal internships are offered to students through the Lurie Garden management team. Here, urban design, landscape architecture, and horticulture students can learn in the parks changing and dynamic environment. Local residents can also participate through club activities. In June 2011, Lurie Garden welcomed back garden designer Piet Ouldolf for a free workshop sponsored by the Winnetka Garden Club. Garden enthusiasts enjoyed the iconic "Salvia River" that flows through the Light Plate. Guests were exposed to how the Dutch garden designer chose the unconventional plants used and also discussed his travels in search of new plants.



Visitors enjoying one of the many guided informational tours in the Lurie Garden.  
[www.explorechicago.org](http://www.explorechicago.org)

- **Sources:**
  - Millennium Park Inc. Calendar of Free Events
  - Lurie Garden – [www.lurigarden.org](http://www.lurigarden.org)
  - Jennifer Davit, Director of The Lurie Garden
  - <http://triblocal.com/winnetka-northfield/community/stories/2011/05/lurie-garden-welcomes-back-garden-designer-in-free-workshop-sponsored-by-winnetka-garden-club/>
- **Analysis:** The availability of programs, clubs, and internships for Chicago's visitors, students, and community members adds significant value to environmental education. An abundance of learning opportunities help educate community members so that they can enjoy the environment on their own. Children learning about plants and animals, as well as understanding how an ecosystem works, is enlightening and exposes urban dwellers to the benefits urban green space.

Students can apply skills and theories learned at school, making a lasting impression. They can “test-drive” a career, establish relationships with mentors, network with professionals, and gain real-world experience. Accumulating these new skills helps build confidence while gaining an introduction to a field’s culture and etiquette. In addition, the public can involve themselves in community activities, providing networking opportunities and skill enhancement.

- **Conclusions:** The addition of the park and garden space created an abundance of environmental learning opportunities that would not otherwise be available. Community members and visitors now have access to information, and can gain a sense of contribution through park and garden involvement, as well as participate in solving community problems.

- h. **Energy Conservation:** # of programs associated with energy savings, types of energy saving programs, alternative energy generating facilities, and \$ amount energy savings resulting from alternative sources of energy

#### Energy conservation methods added to the project

- **Research:** Through conversations with Ed Uhlir, Design Director for Millennium Park, and information gained from Millennium Park Chicago by Cheryl Kent, there are five facilities on site utilizing alternative energy. The McDonald’s Cycle Center and the four Exelon Pavilions implemented energy saving programs.

Janet Attarian, an architect with the Chicago Department of Transportation, collaborated with David Steele from Muller+Muller to design the McDonald’s Cycle Center. Inspired by a green European building, Attarian decided that solar cells, left exposed to create a visible pattern, would have a positive impact on the Cycle Center. In the climate-controlled building, there are 120 solar panels that produce about 6.5% of the electricity supply required. These photovoltaic cells were applied in a pattern, casting an elegant shadow inside.



120 solar panels on the roof of the McDonald’s Cycle Center produce about 6.5% of the electricity supply required.

Ryan Mikulenska

Steele also devised a system for the exterior of the building that supports plants growing through the spring and summer. These plants block direct sunlight during warm months, and in the

winter when plants are dormant, sun penetrates through the building, keeping the building warm. Any additional energy created by the building is then added to the city's power grid, crediting value to the station. There are 300 bike parking stations, lockers, an Internet station, a café, private stalls for showering, bike rentals, and bike repairs. During regular business hours there are 100 spaces available on a first-come, first-served bases, and after hours the center is limited to members only.

The Exelon Pavilions, designed by Hammond Beeby Rupert Architects (HBRA) and located on Randolph Street, accommodate the elevators leading to the underground Millennium Park Parking Garage and the Millennium Park Information Center. Rather than using traditional glass panels, HBRA designed the pavilions using monocrystalline PV panels, an electrical device that converts light energy into electricity. By using dark PV cells encased in laminates, the designers created a black, glazed appearance contributing to the Pavilion's minimalist concept.

Frank Laraia, manager of Spire Solar Chicago, explained that photovoltaics is a "semiconductor technology that slightly converts light energy to direct current electricity with no moving parts, burning no fuel and creating no pollution." Laraia noted that polished stone installed on the building's skin would cost around \$225 per square foot, but the solar panels would only cost between \$70 and \$75 per square foot. Also, \$7 to \$14 per watt of power is generated and solar panels frequently amount to less than 4% of total building cost. Laraia also said, "the 80 kilowatts of solar power generated by Millennium Park raises Chicago's solar power generation, within city limits, to one megawatt. And to our knowledge, there is no other major metro area that has that much solar power within city limits."



Photovoltaic panels are shown here on the Exelon Pavilions.  
*Ryan Mikulenska*

Along with photovoltaics, the Exelon Pavilions implemented other green features as energy-saving sources. Throughout the buildings there are "double cavity wall systems" helping with thermal issues and conservation. The building is about 35% above local code for similar structures. Other sustainable features include an assortment of manual switches, occupancy sensors for lighting systems, efficient plumbing fixtures, and a white thermoplastic membrane on the roofs. Also, the outermost layers of the pavilions exteriors are curtain walls made from recycled aluminum

- **Sources:**
  - Millennium Park, Inc.
  - Millennium Park Chicago, Cheryl Kent
  - Walking Though Chicago's Millennium Park, a special editorial supplement to the October issue of *Midwest Construction*, a publication of the McGraw-Hill Construction Regional Publications Group
  - Solar Panel Information - [http://www.sebane.org/news\\_room/news\\_releases\\_viewer.asp?id=58](http://www.sebane.org/news_room/news_releases_viewer.asp?id=58)
  - [http://en.wikipedia.org/wiki/McDonald's\\_Cycle\\_Center](http://en.wikipedia.org/wiki/McDonald's_Cycle_Center)
  
- **Analysis:** The McDonald's Cycle Center and the Exelon Pavilions add value to the quadruple net bottom line through simple and creative measures. Both structures give back to the community and can be used as educational displays of sustainable architecture. Through the use of recycled materials, state-of-the-art engineering, and innovative design, all five structures are energy efficient as well as aesthetically pleasing. As the city of Chicago becomes more bike friendly, the McDonald's Cycle Center serves as a demonstration to encourage the community to lobby for additional similar bicycle accommodations in the city's downtown and surrounding areas. The Cycle Center is designed to promote bicycle commuting to Millennium Park as well as surrounding downtown locations.
  
- **Conclusions:** The Cycle Center represents two initiatives: first to promote cycling, and second, to create a greener city. By encouraging cycling as an alternative form of transportation, traffic congestion will be reduced, air quality will be improved, and health benefits of cycling will be promoted. Innovative technology reduces the impact that McDonald's Cycle Center and the Exelon Pavilions would have had on the environment. Not only do these site features provide an example of smart growth, but they also remind users to make environmentally-conscious choices on a daily basis.

#### 4. Sensory Value - (Research member: Ryan Mikulenka)

Frank Gehry's design of the pavilion and the bridge to Grant Park was a major factor in elevating the park to its current international status. World-class designers were interested in being a part of a project that Gehry was involved in. The world-class art and architecture stimulate the senses to levels not experienced in most other parks, and this has helped lead to high real estate value creation. Though difficult to measure, the impact of the park design on the sight, sound, smell, feel and taste of the park experience are reflected in the extensive visitation, worldwide recognition as a destination, economic stimulus and overall positive influence on the citizens of Chicago.

##### Visual Impact

a. Iconic Visual Elements: # of notable architectural elements and # of notable designers

- **Research:** Millennium Park offers four notable architectural elements. These elements include a sculpture, water fountain, music pavilion, and pedestrian bridge. Each of the elements was created by world-class designers, and more details are listed below.

##### **Cloud Gate**

By: Anish Kapoor

Cost: \$23 Million

Specs: 66' long, 42' wide, 33' tall, 110 tons, 27' high mirrored indentation, 168 steel plates weighing up to 2000 pounds each, 1/4" to 3/16" thick.

Location: AT&T Plaza in the middle of the park, near Michigan Avenue.



"Cloud Gate" also known as "The Bean" has become the face of Millennium Park.  
*Ryan Mikulenka*

Cloud Gate is commonly referred to as "The Bean" by park visitors due to its bean-like shape. The seamless, shiny sculpture was created from a series of 168 steel plates welded together. The structure touches the ground in only two places and gives visitors the feeling that the structure is floating. The sculpture shows reflections of the historic Chicago skyline and the surrounding park area and offers onlookers a unique view of themselves as if they are looking into a rounded mirror.



A rare moment where only a few people are in the general vicinity of "Cloud Gate".

*Ryan Mikulenska*

Cloud Gate has become what park users consider the face of the park. Its cloudlike, dreamy appearance draws in visitors from around the city and the world. 19 tables and a 200-foot long bench made from recycled milk jugs surround the sculpture. It's a popular spot for photographs, people watching, movie filming, and other special events.

### **The Crown Fountain**

By: Jaume Plensa

Cost: \$17 million

Specs: Two 50' tall towers, 16' thick, 230' long plaza, 48' wide rectangular pool, 22,500 glass blocks, water is < 1" in a pool paved with black African granite, 1,000 Chicago faces rotating every 5 minutes.

Location: Corner of Michigan Avenue and Monroe Street.



One of the two towers that make up the Crown Fountain is shown. Facial images are displayed using LED technology.

*Ryan Mikulenska*

The Crown Fountain consists of two 50' tall glass towers that spill water from the top. Along with the constant flow of water from the tops of the towers, each tower also sprays water from the side

every 10-13 minutes. A unique attribute of the Crown Fountain is that images are displayed on the faces of the towers using LED technology. The rotating images consist of face shots of people from different ethnic groups that reside in the Chicago area, and the faces spray water from their mouths. Between the two fountain towers, there's a pool of water that is less than an 1" in depth that was designed to create an effect as if you are walking on water. Due to temperatures dropping below freezing in the winter, the fountain is drained. The projections on the screens remain.

Plensa didn't foresee the level of physical interaction between the fountain towers and the users, but the Crown Fountain has created a destination for kids and their parents on hot summer days. Not only is the fountain used as a cooling mechanism, but it also offers a glimpse into who Chicagoans really are. The faces of the people shown on the fountains are the very same faces of the users of the park. These faces offer visual confirmation of the cultural diversity Chicago possesses.



A child plays in the shallow pool that connects the two Crown Fountain towers.  
*Ryan Mikulenska*

**Jay Pritzker Pavilion**

By: Frank Gehry

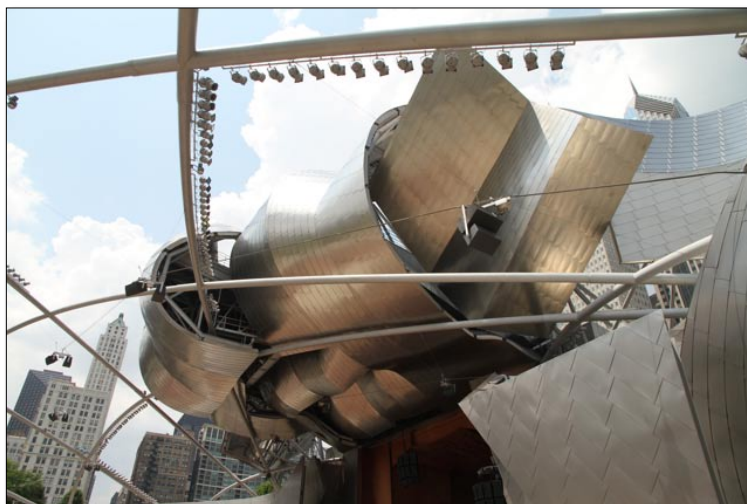
Cost: \$50,000,000+ million

Specs: 120' Tall, 4,000 fixed seats, 7,000 lawn seats, 625'X325' of great lawn space for crowds.



The Jay Pritzker Pavilion designed by Frank Gehry.  
*Ryan Mikulenska*

The Jay Pritzker Pavilion, with its high quality acoustical system and seating for more than 11,000 people, is a world-class venue for symphonic music. The venue is not only a place to listen to music, but it's also a visually stunning structure designed by one of the world's most accomplished architects. The steel ribbons of the structure reach 120' into the air and reflect the sun and artificial light in an eye catching manner. The lighting at night is especially stunning to park visitors. The stark contrast between the metallic structure and wooden stage area is also worth noting from a visual standpoint.



The trellis system that is above the Great Lawn can be seen here.  
*Ryan Mikulenska*



Not only did Gehry design an aesthetically pleasing pavilion, but he also created an outdoor lawn area that is covered entirely by a trellis system. The trellis system supports lighting and speakers, but it's also a key visual design element. The trellis system has 22 steel tube arches, and at their greatest length they span more than 400' across the lawn. The lawn has turned out to be a space that people use to sit and admire the design quality of the pavilion, the park as a whole, and the Chicago skyline.

**BP Bridge**

By: Frank Gehry

Cost: \$14,500,000

Specs: 925' in length

Location: Extends over Columbus Drive, creating a connection to Grant Park



The BP Bridge is shown spanning Columbus Drive. The bridge connects Grant Park and Millennium Park.  
*Ryan Mikulenska*

The BP Bridge is a pedestrian bridge that connects the lawn of the pavilion with Grant Park. In creating this link, the meandering bridge spans over the top of the recessed Columbus Drive. The BP Bridge has a “metal-like” skin made of thin steel plates. The walkway of the bridge is made of wood, and, similar to the Jay Pritzker Pavilion, it creates a contrast between metal and wood. Visually, the bridge can be described as a snaking, reflective structure. Buildings, cars, and trees are all reflected off the bridge, but in a more subdued manner when compared to Cloud Gate’s mirror-like images.



Steel plates form the exterior "skin" of the BP Bridge.  
*Ryan Mikulenska*

- **Sources:**
  - Ed Uhler, Executive Director, Millennium Park Inc.
  - Millennium Park Chicago, by Cheryl Kent
  - Site observations
- **Analysis:** The visionaries of Millennium Park chose to incorporate world class designers and sculptors in the park. There are 4 iconic elements in the park that have been constructed by three different designers. Each of the four iconic elements creates a separate section of the park for people to visit.
- **Conclusions:** Choosing famous designers for the park created a unique urban park that is not only public parkland, but can also be considered public art space. The four iconic visual components of Millennium Park are unique from one another, yet they all attract visitors in their own way. In a sense, the four iconic elements have become an image of the city of Chicago, as many city brochures and marketing materials showcase the four iconic park elements. Quality of design directly impacts the value of real estate, and without good design, a project will never be as successful as it should. Millennium Park spared no expense on hiring world-class designers, and the park has reaped the benefits of that initial investment.

b. **Water Features:** # and types of water features that impact the visual character of the park

- **Research:** There are three water features that add to the visual value in Millennium Park, and it consists of two fountains and a boardwalk. There are 19,197 square feet of water area, or 2% of the park area.

The Crown Fountain is made up of two glass block towers that display images and incorporate water. The fountain towers spill water from the top and also the side. The water shooting out from the side is meant to mimic the faces spraying water from their mouths. There is a shallow pool of water located between the two fountain towers that reflect the images from the towers, surrounding trees, and the Chicago skyline.



Children playing in the Crown Fountain.  
*Millennium Park Inc.*

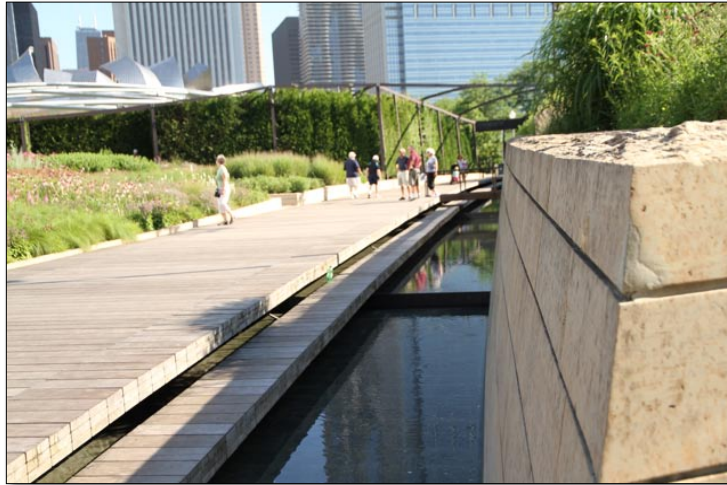
The second fountain located in the park is the fountain at Wrigley Square. The traditionally designed fountain is part of the park's Millennium Monument, which pays tribute to the donors that made the construction of Millennium Park possible. The circular fountain is 40' in diameter and offers seating areas all the way around the edge. The water feature adds to the classic feel of the Millennium Monument, which was constructed to pay homage to Chicago's past.



The Millennium Monument.  
*Ryan Mikulenska*

The last water feature in the park is the boardwalk area in the Lurie Garden. This area is one of the four sections of the garden, and it's known as The Seam. The Seam is narrow strip of water that divides the Dark and Light plates. A boardwalk has been constructed and covers a portion of

the water. The water is at its widest point when it runs into a collection area near the sidewalk on Monroe Street. The reflections of buildings and plants can be seen on top of the water, and it offers a tranquil transition from one portion of the garden to another.



The Seam located in the Lurie Garden is shown. This water feature divides the Dark and Light plates.  
*Ryan Mikulenska*

- **Sources:**
    - Ed Uhlir, Executive Director, Millennium Park Inc.
    - Millennium Park Chicago, by Cheryl Kent
    - Site Observations
  
  - **Analysis:** Each of the three water features adds a different type of visual appeal. The Crown Fountain, with rotating video images of the Chicagoans, is statement that resonates globally. The falling water and streams that shoot from the side of the fountain offer a pleasant visual experience. The fountain at the Millennium Monument offers park visitors a sight that harkens back to Chicago's past. The traditional styling is a statement in itself. Lastly, The Seam from the Lurie Garden is a strip of water that physically and visually divides portions of the garden. It creates a clear visual dividing line between the Dark and Light plates.
  
  - **Conclusions:** The three water features in Millennium Park offer three distinct designs, and each feature positively impacts the visual character of the park. The quality of design and visual uniqueness of the water features draw people to the park. Once someone is in the park taking the features in, each person reacts differently to them. The changing faces of the Crown Fountain, for example, offer a variety of different faces. Visitors can see something new each visit, and that creates a visual desire to come back to the park. Getting repeat visitors to the park enhances the park's real estate value.
- c. **Maintenance:** *Levels of maintenance and dollars spent to maintain park*
- **Research:** With 5 million visitors coming to the park yearly, a large maintenance staff is required for proper park upkeep. The following is breakdown of the dollar amount spent on maintenance.

Maintenance Costs	
Type	Cost (\$)
Crown Fountain	185,456.00
Electrical	285,727.00
Landscaping	340,000.00
Wrigley, Lurie, Seep Wall	160,368.00
Ice Rink	424,161.00
McCormick Tribune Plaza	87,661.00
Kobotech	287,743.00
Lurie Garden Electrical	15,786.00
Cleaning	725,923.00
<b>Total</b>	<b>\$ 2,512,825.00</b>

Neal Spears, MB Real Estate

Millennium Park won the 2010 Excellence in Landscape in Landscape Award given out by the Illinois Landscape Contractors Association. This award recognizes excellence in landscape maintenance.

- **Sources:**
  - Neal Spears, General Manager, MB Real Estate
- **Analysis:** Over \$100,000 dollars per acre is spent annually to maintain the park exhibits and keep the park clean.
- **Conclusions:** Millennium Park places a premium on park maintenance and cleanliness, and park visitors have come to expect quality upkeep of the park. This, in turn, creates a more pleasant park environment for the users. The visual component of maintenance is often overlooked in other public parks, but it's critical in maintaining a quality space.

d. **Adjacent Streetscape:** *Enhancement and maintenance required to compliment park*

- **Research:** Michigan Avenue, the street adjacent to the park's main features, was a depressed street that offered no sidewalk plantings prior to the park being constructed. Planters were added to Michigan Avenue, and the ramps to the underground parking were relocated from the sides of the street to the center of the street. These improvements occurred during and after the construction of Millennium Park. When the ramps were relocated, plants were added to the median to beautify the street.



Streetscape improvements have been made on Michigan Avenue since the park was constructed.  
*Ryan Mikulenska*

- **Source:**
  - Ed Uhlir, Executive Director, Millennium Park Inc.
  - Historic Photos
- **Analysis:** Because the park was constructed, the city of Chicago decided to change the design of the ramps and the median. This created a safer environment for pedestrians, as the cars were no longer entering and exiting ramps on the sides of the streets near the sidewalks. The ramps were moved to the middle for better traffic flow and safety. Lastly, the planter boxes on Michigan Avenue are a direct result of the park, which adds to the visual character of the adjacent street.
- **Conclusions:** Adjacent streetscape improvements were made as a direct result of the construction of Millennium Park. With 5 million visitors coming to the park each year, the city of Chicago decided to invest funds into the area to create a better experience getting to and from the park. When traveling to a destination, visitors often remember the journey. The adjacent streetscape improvements in the case of Millennium Park add to the visual appeal of approaching Millennium Park.

### **Smell**

a. **Restaurants:** # of food vendors in the park and # of adjacent restaurants

- **Research:** There are 18 restaurants adjacent to the park. Of those 18 restaurants, 8 of those restaurants have patios that look out onto the park. Also, there is a restaurant and outdoor grill located in the park.
- **Sources:**
  - Neal Spears, General Manager, MB Real Estate
  - Observations from walking adjacent streets
- **Analysis:** Restaurants have a positive impact on the smells and sensory value of the park.

- **Conclusion:** The park has spurred the development of restaurants, some with street patios, which impact the sensory value of the park. As you walk to and through the park, you are able to smell the food being cooked. The smell of food can promote the desire to eat, and park goers often succumb to that urge and purchase food. The park creates value for the restaurants by providing a destination where people will walk by the restaurants and potentially become patrons.

b. **Landscaping:** # of flower beds and sq. ft. of garden areas in the park

- **Research:** There are 51 different planting areas located throughout the park, separate from the 2.5 acres of planting area in the Lurie Garden. In the garden alone there are over 160,000 plants and 250 different plant varieties.



A planting area shown at one of the park's entrances. The planting areas positively impact the smell of the park.  
*Ryan Mikulenska*

- **Sources:**
  - Site plan takeoffs from as-built plans
  - Millennium Park Chicago by: Cheryl Kent
  - Lurie Garden Handout
- **Analysis:** With the large portion of the park being covered by flowers and plants, it's impossible to walk through the park without smelling the different types of flora. Some park visitors go out of their way to smell the flowers and plants, while others get the scents as they walk around.
- **Conclusion:** The natural smell of plant life is considered a positive experience and plays a key role in adding to the sensory value of the park. The positive scents create a pleasant environment for park goers to spend time in. When people visit the park and with frequency and stay in the area longer, the value of the park increases.

c. **Trash Facilities:** # of trash facilities and frequency of trash collection

- **Research:** There are 42 trash receptacles in the park, including 15 recycling receptacles. All of Millennium Park's trash is processed underground, meaning there is no above ground trash storage areas.



The ramp that leads to the underground trash storage facility can be seen here. Storing the trash underground helps enhance the park's smell.  
*Ryan Mikulenska*

- **Sources:**
  - Ed Uhlir, Executive Director, Millennium Park Inc.
  - Site Visits
- **Analysis:** The key element in eliminating undesirable odors from Millennium Park is the underground trash storage. The dumpsters are located underground in the parking garage, so the smells aren't permeating through the park.
- **Conclusions:** With the elimination of trash storage above ground, park visitors are able to enjoy the scents from the 250 different plant varieties or enjoy the smell from the restaurants located in and around the park. Reducing the negative feelings people have about a place creates a more positive experience.

### **Touch**

a. **Water:** # of and surface area sq. ft. of water features

- **Research:** There are three water features in the park. The Crown Fountain has a surface area of 11,040 sf and allows park visitors to feel the falling water coming from the two towers. Also, many park visitors elect to walk through the shallow pool of water, as it offers a cooling sensation during the warmer months. A faint, cooling feeling can be felt as you walk in the general vicinity of the fountain.







People can be seen dipping their feet in the water at The Seam in the Lurie Garden.  
*Ryan Mikulenko*

- **Sources:**
  - Takeoffs from as-built plans.
  - Observations from site visits.
- **Analysis:** With three water features located in the park, visitors have these spots to dip their feet and hands, or in the case of the Crown Fountain, soak their whole body with fountain water.
- **Conclusion:** The water features give the park users a place to cool off and feel the water. It adds to the sensory value of the park by giving users a place to feel different sensations. The Crown Fountain has become an interactive display for park visitors. People sit in the fountain, dip their feet in, or even splash the water around. Again, Plensa didn't foresee this interaction taking place, but the fountain has become a key element in adding to the touch component of sensory value.

b. **Accessibility:** # of and types of facilities for disabled people

- **Research:** The Park has many features that assist people with disabilities in navigating and enjoying the park. There are switchback ramps at the two main entrances of the park. The Crown Fountain is a barrier-free exhibit, so it allows wheelchair users to spend time in the fountain. The Pritzker Pavilion, with no stairs leading to the stage, also offers great wheelchair access. The Great Lawn is fully accessible, due to the slope and system below the ground that strengthens the lawn for wheelchairs. The BP Bridge offers a 5% slope, which is far less than the allowable 8.3% maximum slope the ADA allows. The parking garage offers 2,000 accessible spaces, and if a car isn't available for use, the park offers both bus stops and train stations adjacent to or in the park.

Ed Uhler, the Design Director of Millennium Park, won the 2005 Barrier-Free America Award. This award is given out to an individual for outstanding contributions toward a barrier-free environment for people with disabilities, which Millennium Park has showcased.



Millennium Park has won awards for its accessibility. People in wheelchairs can be seen in the middle of the Crown Fountain.  
*Ryan Mikulenska*

- **Sources:**
    - “Chicago’s New Class Act” by: Joshua Deyer, Paraplegia News, July 2005, vl. 59 #7
    - Ed Uhlir, Executive Director, Millennium Park Inc.
  - **Analysis:** Many design and construction measures were taken to create a park that is considered to be barrier free. People with disabilities visit the park knowing their experience will be similar to everyone else’s.
  - **Conclusion:** The park is meant to be enjoyed by all people from the city of Chicago and people from around the world. The barrier-free environment that has been created allows people with disabilities to use the park in the same manner as someone without a disability. Creating a place where everyone is equal and eligible to use the park creates real estate value. Every type of person visits the park, which adds to the real estate value of the park.
- c. **Textures:** # of paving types and textures that change the pedestrian experience
- **Research:** There are seven different types of paving surfaces in place on the Millennium Park grounds: concrete, stone, riveted stone, granite, wood, recycled counter top walkways, and gravel. The Lurie Garden contains bits of recycled counter top that have been placed close together to create a walkway through the garden.



The recycled counter top walkway is one of several different paving surfaces located throughout the park.

*Ryan Mikulenska*

- **Sources:**
  - Site Visits
- **Analysis:** With so many different paving types, the park offers a lot of different feelings under your feet or under a wheel chair. The granite used in The Crown Fountain is a smooth surface to the touch, but the recycled counter top walkway in the Lurie Garden offers the greatest difference between it and standard concrete.
- **Conclusions:** The changes you can feel from the paving textures add to the complexity and depth the park offers. If the park were lined with standard concrete, you wouldn't get the same feeling from walking through the park. The amount of paving types is a microcosm of the park itself. The goal was to create a culturally diverse park, and the multiple paving types add to that goal and enhance the value.

## **Sound**

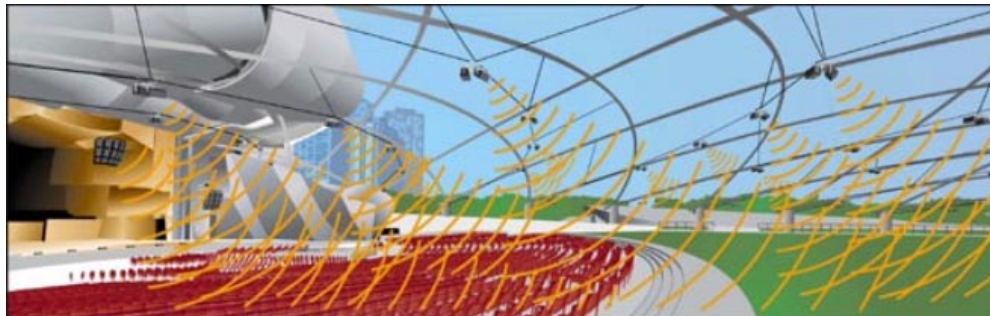
### a. **Sound Venues:** *# of sound venues and frequency of music events*

- **Research:** The Jay Pritzker Pavilion is the only official sound venue of Millennium Park, although there are various other events with sound held every day throughout the park. The latest numbers show that in 2009, the venue held 266 public events. By comparison, the pavilion held 116 public events in 2006. The Grant Park Music Series and The Lunchbox Music Series are two events that add to the large number of events held per year. The number of events is projected to grow in 2011, and an important reason the pavilion has been so well received by park users and critics alike is the world-class acoustic system that has been put in place.



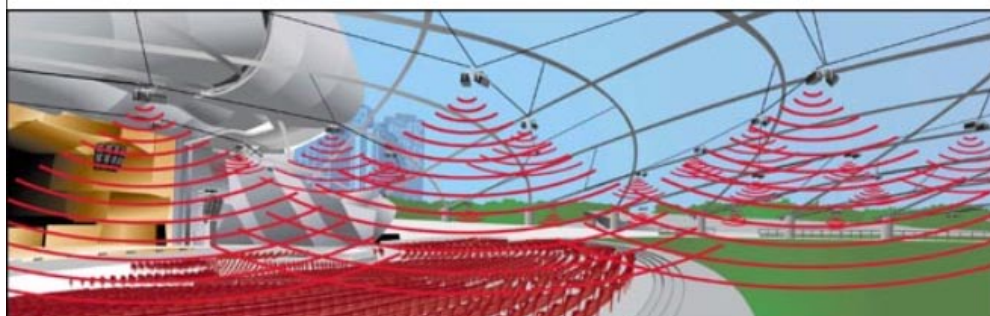
View from the stage of the Jay Pritzker Pavilion.  
*Ryan Mikulenska*

The sound designers utilized the trellis over the Great Lawn to house speakers, in order to allow even those people farthest from the stage to enjoy a high quality acoustical experience. The system that was implemented in the pavilion is an Acoustic Enhancement System, which is programmed to achieve running liveliness during performances. The system has multiple channels programed to achieve a reverberant environment for classical music. The system and pavilion were specifically designed to achieve peak performance during symphonic concerts. It's the only one its kind in North American outdoor music venues.



#### REINFORCEMENT SYSTEM

A carefully designed music reinforcement system provides clarity and loudness of music so the detail of the music can be heard by the entire audience of 11,000 people. The concentric arrangement of loudspeakers and the use of digital delays create the impression that sound is arriving from the stage, even when most of the sound arrives to distant patrons from nearby loudspeakers.



#### ACOUSTIC ENHANCEMENT SYSTEM

Downward-facing loudspeakers deliver sound that is enhanced by specialized LARES electronics to simulate sound reflections typical of the world's finest indoor concert halls. Patrons are immersed in sound that arrives from all directions, resulting in a three-dimensional sound experience. Laterally-arriving sound also serves to mask the noises of the city, allowing listeners to focus on the music experience.

The sound system in the Pritzker Pavilion is the only one of its kind in a North American outdoor venue. A speaker diagram and explanation is shown.

*DOXA*

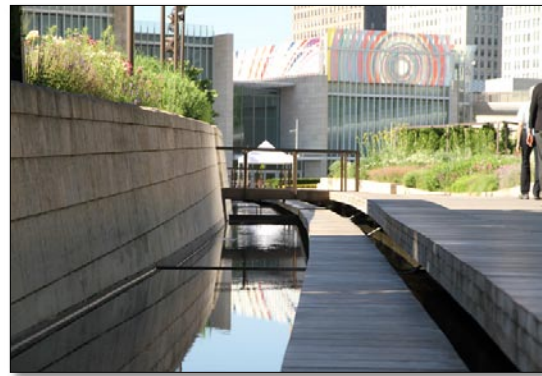
- **Sources:**
  - Rick Talaske, President and Principal Acoustics Consultant, Talaske
  - Site Visits
- **Analysis:** The number of performances held at the pavilion has increased by 129% from 2006 to 2009. People enjoy the quality of programming that is provided to them, along with the high-quality sound system. You do not have to be right next to the stage to enjoy the symphony because the sound system allows you to have the same feeling as you would sitting close to the stage, only further away.
- **Conclusions:** With no other system of its kind in North America, Millennium Park visitors are treated to a unique sound experience. The quality of sound is not lost as you get further away from the stage, so everyone in the pavilion is experiencing high-quality sounds. These sounds, and the quality of them, have created a venue where people desire to go hear music. All concerts at the Pavilion are free, so it exposes different types of music to the people of Chicago. Because of this,



- **Conclusions:** Noise from the roads that surround the perimeter of the park are barely noticeable as you walk around the park. The sounds of the park visitors is what you notice as you walk around. As you listen to the show, your attention is focused on the sounds from the pavilion and not the road noise on the surrounding streets. This has helped create a world-class outdoor music pavilion that people visit time and time again.

c. **Other Sound Generators:** *Sounds from the park that add to the experience*

- **Research:** The park offers many types of sounds that add to the experience of the place. As you walk across the boardwalk in the Lurie Garden, you can hear the water running underneath your feet. The sound the Crown Fountain generates is a unique but soothing sound as the water crashes onto the ground. The sounds of kids playing in the park are often prevalent, especially when the faces of the Crown Fountain spray water. The Lurie Garden attracts many types of birds that can be heard when they are present.



Children playing and falling water can be heard near the Crown Fountain (left). Water can be heard running underneath the boardwalk in the Lurie Garden (right).  
*Millennium Park Inc. and Ryan Mikulenska*

- **Sources:**
  - Ed Uhlir, Executive Director, Millennium Park Inc.
- **Analysis:** Some sounds the park produces on a daily basis weren't planned, but do occur. For example, Plensa never envisioned the Crown Fountain being such an interactive fountain for the children and their parents. Different people focus on different aspects of the park, so it's difficult to list all of the sounds the park produces. The sounds coming from the park are different everyday.
- **Conclusions:** The sounds you hear from the park are a personal experience, and the number and types are endless. Some sounds are more pleasant to people than others, and it is up to each visitor to determine what resonates with them. A reason people are attracted to the park from a sound perspective is that different sounds can be heard throughout the day. No minute is the same, and that creates an anticipation that draws people to visit the park.

**Taste**

a. **Food Vendors:** *# of food vendors in the park*



- **Research:** There are 3 food and drink stands in the park during normal park hours, but the park has the capacity to add an additional stand during peak park usage. During concerts at the pavilion, another food and drink vendor is set up near the Pritzker Pavilion. Lastly, there is a permanent restaurant and bar on the west side of the park. Snacks, drinks, and meals are available to the park visitors.



The Park Grill in Millennium Park.  
Ryan Mikulenska

- **Sources:**
    - Neal Spears, General Manager, MB Real Estate
  - **Analysis:** The food and drink stands throughout the park aren't in the park every day, so the permanent restaurant serves the visitors most of the year. There is never a shortage of refreshments and food for park visitors.
  - **Conclusions:** Park visitors have several different options to satisfy their taste buds. The park visitors can snack while walking around the park, or sit down and enjoy a full lunch or dinner. The food has become a part of the park, and people come to the park just to visit the restaurant. This has created an uplift in real estate value.
- b. **Drinking Station:** # of water fountains located in the park
- **Research:** There are 14 water fountains spread all around the park. Along with the fountains, beverages can be purchased from the mobile stations and the restaurant that is located in the park.
  - **Sources:**
    - Site Visits
  - **Analysis:** Summers in Chicago can offer high temperatures and humidity, and it's important for park visitors to stay properly hydrated. The 14 fountains are located in all parts of the park and can be easily located. Also, with its close proximity to the Lake Shore trails, many runners stop by the park to quench their thirst.

- **Conclusions:** The park offers free water to the public, but many people opt to purchase bottled water from vendors. The water from the vendors is ice cold, and some people prefer the taste of it compared to the taste of the water from the fountains. Either way, it's a necessity for survival, and the thirst-quenching taste of water can create a more positive park going experience.

## 5. CONCLUDING STATEMENT

This report is based on the book Urban Design and the Bottom Line: Optimizing the Return on Perception, published by ULI and authored by Dennis Jerke, and on the methodology applied in the Master of Science in Land Development program at Texas A&M University. The results are based on thorough research, credible sources, data analysis and conclusions for the four categories of quadruple net value (social/cultural, economic, environmental and sensory). The two Texas A&M University graduate students in the Land Development Program and the two students from the Department of Real Estate at DePaul University have examined the quadruple net value of Millennium Park within a short eight-week time frame.

Millennium Park is an example of real estate value creation through proper conceptualization, design, delivery and management. Mayor Daley, Ed Uhlir, John Bryan and the rest of the Millennium Park team spent countless hours recruiting artists and designers, raising interest and soliciting donations to create an inviting public space that serves as the cultural center of Chicago. Millennium Park is now an internationally recognized symbol of the city on a site that could have easily become a parking garage. The research demonstrates that the return on investment and “return on perception” of Millennium Park have impacted the City of Chicago with significant quadruple net returns. These returns are summarized as follows:

### **Social/Cultural Return**

Real estate value is created in part by people visiting a site again and again. The programming at Millennium Park has been integral in successfully drawing visitors for their first or return visits. The park generates the following social/cultural returns: 610 annual free concerts, tours, workouts, theatrical performances, exhibitions and family events per year; 5 million annual visitors; a 10% increase in public transit ridership; 300 bicycle parking spaces, 250 rental bikes, 200 Segways; daily yoga, Pilates and Zumba classes in the summer (10,080 annual participants); ice skating in the winter months (70,000 +annual participants); 24.5 acres of parkland; a 71% increase in population (5,877 residents) near the park; 15,225 linear feet of walkways; world class architecture and art at nine primary venues; 9 revolving art exhibitions; 50-100 annual art tours in five languages (depending on weather conditions); 14 registered organizations committed to programming annual events; over 19 private development projects or facilities that claim the Millennium Park brand; 12.14 acres of green space; and 287 events and programs at the Family Fun tent that generates 229,693 participants.

### **Economic Return**

The economic downturn in 2008, along with the historic landmark designation of Michigan Avenue buildings adjacent to the park, has created recent property tax assessment challenges for the park and its nearby properties. Despite these circumstances, it is clear that Millennium Park has generated the following economic impact on the City of Chicago: \$490M in total park construction; \$ 2.45 Billion in new construction near the park; 70,070 direct, indirect and induced jobs created by new construction in the area; a 57% increase in new residential units near the park (3,587 units since 2005); 29% premium on park units sold with views of the park; five million annual visitors which generate \$1.29B in tourism dollars; \$5.9M in annual operations costs that feed the local economy; 2,126 new underground parking spaces at Millennium Park; an 11% increase in hotel rooms (751 rooms) near the park; \$173.5M donated by 115 founders to specific projects within the park; and 11 fortune 500 companies that donated to the park.

### **Environmental Return**

The transformation of a small green space, parking lot, and rail yard into Millennium Park, with its many acres of natural landscaping, has had many positive affects on the environment. The environmental return on investment is evident in the following ways: 2.5 acres at the Lurie Garden; 2.2 acres of lawn at the Pritzker Pavilion; 7.6 acres of additional gardens in the park; a total of 12.14 acres of green space; a 61.5% increase in green space from the previous park on Michigan Avenue; the addition of 550 trees, 90,454 plants (39 varieties) outside of the Lurie Garden; the Lurie Garden has 35,000 perennial plants (240 varieties), 120,000 bulbs, 5,200 woody plants (14 varieties); the Exelon Pavilions are four of the five buildings with solar generated electricity (19,840 annual Kilowatt Hours); 70% retention of annual rainfall at the park; 50% drought tolerant plants in the park; 426.9 pounds of air pollutants removed annually; 4,300 square feet of walkway comprised of recycled granite counter tops; two I-GO cars at Millennium Park (car sharing program); 64.2% increase in permeable surfaces; Big Belly solar trash compactors adjacent to the park which minimize trash collection pollution; 15 annual environmental education programs; and 250 rental bicycles and 200 Segways that provide alternative modes of transportation for the region.

### **Sensory Return**

A variety of carefully planned sights, sounds, textures, smells and tastes have been implemented in the Millennium Park. Other sensory elements occur naturally through day-to-day activities, further enhancing the sensory value of the park. While each person will react differently to the sensory aspects of the space, the five senses are impacted by Millennium Park in the following positive ways: four iconic architectural/artistic elements in the park designed by world class designers that impact the image and visual value of the park; three major water features that cover 2% of the park area for visual, sound and touch value; \$2.5 M in annual maintenance to the park to ensure its continued sensory value to the community; Columbus Avenue depressed roadway and the BP Bridge sound barriers; \$3M world class sound system for the Pritzker Pavilion performance area; 18 adjacent restaurants and thousands of flowering plants that positively impact visitors olfactory nerves; 5 million annual visitors that generate visual and sound value from social activity; underground trash collection which positively impacts the visual, sound and smell value of the park.

The subjective value of the park can't be calculated, but the added value from the following items illustrate a greater return on perception: world class design has added value to the brand and image of Chicago; international visitation is an indicator of the park's international reputation; building frontage on the park is more valuable but not calculated because typical office space covers the entire floor plate of the buildings; there is generally over \$100 per square foot increase in value for residential units that have views of the park; the Millennium Park brand provides additional value to over 19 businesses; the park view from Michigan Avenue restaurants has stimulated the development of outdoor patios; generally, rental rates for retail space near the park has gone up; the brand value of Millennium Park has strengthened Chicago's reputation as a tourist destination; an increasing number of suburban residents visit downtown Chicago to enjoy Millennium Park activities; and Chicago's reputation as a world-class art destination has been enhanced by the permanent and rotating art and architecture at the park.

The research team is grateful to Ed Uhler, Executive Director of Millennium Park, Inc.; Elizabeth Edwards, Director of Special Projects, Millennium Park, Inc.; and Dr. Susanne Cannon, Douglas and Cynthia Crocker Endowed Director of the Real Estate Center at DePaul University for their dedication of

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time, knowledge and data sources during this process. The contributions by a variety of civic, corporate, political, university, and city staff leaders have made the results of this study relevant and accurate.

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