



LANDSCAPE PERFORMANCE SERIES

Millennium Park – Chicago, IL Methodology for Landscape Performance Benefit

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Environmental

- ***Retains an estimated 70% of all water accumulated on site; the remaining 30% is cleaned through a filtration system and diverted into the Chicago River.***

According to Matthew Letson, Project Engineer, McDonough Associates, and Terry Guen from Terry Guen Design Associates Inc., the site is capable of managing 70% of stormwater on-site, while the remaining 30% is transported into the nearby Chicago River.

Sources

Matthew Letson, Project Engineer, McDonough Associates

Terry Guen, Terry Guen Design Associates Inc.

Chicago Stormwater Ordinance Manual

- ***Removes 426.9 lbs of air pollutants each year through the addition of 550 trees. This service has an estimated value of \$1,000 per year.***

There are currently 6.5 acres of trees on Millennium Park, which is about a 400% increase from before the installation of Millennium Park. An estimated total of 426.9 pounds of air pollutants are removed each year by trees, a service with an estimate value of \$1083.49 per year:

- 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

The trees also store and sequester carbon, reducing the city's carbon footprint.

Source

Air Quality Calculator - <http://lafoundation.org/research/landscape-performance-series/toolkit/toolkit/26/> ; <http://ftp.americanforests.org/>

- ***Generates 19,840 kilowatt-hours (67,697 MBtu) of electricity and saves \$2,353 in energy costs annually via 920 photovoltaic modules.***

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, utilize 920 photovoltaic modules.

Rather than using traditional glass panels, HBRA designed the pavilions using monocrystalline PV panels, an electrical device that converts light energy into electricity. In addition to creating a black, glazed appearance that contributes to the Pavilion's minimalist design, dark PV cells encased in laminates proved to be a cost-effective alternative building material. According to Frank Laraia, manager of Spire Solar Chicago, solar panels frequently amount to less than 4% of total building cost. At the North Exelon Pavilions, the solar panels cost between \$70 and \$75 per square foot, and generate \$7 to \$14 per watt of power produced.

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." 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 energy annually to power at least 14 star-rated energy-efficient homes in Chicago.

Sources

U.S.Green Building Council <http://www.usgbc.org/DisplayPage.aspx?CategoryID=19>

Frank Laraia, Manager, Spire Solar Chicago

Exelon News Release, *The Millennium Park Welcome Center Opens in the Northwest Exelon Pavilion*, April 30, 2005
<http://web.archive.org/web/20061111045002/http://www.exeloncorp.com/NR/exeres/1DE34685-4FDD-4BF6-97CB-67F360E70EF8.htm>
accessed 5/1/12

Explore Chicago, The City of Chicago's Official Tourism Site
http://explorechicago.org/city/en/things_see_do/attractions/dca_tourism/exelon_pavilions_.html

Wikipedia http://en.wikipedia.org/wiki/Exelon_Pavilions#cite_note-cost-1

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

Social

- ***Offers over 610 free hands-on educational events each year.***

Source

Lacey Capps, Director of Special Programs, Chicago Office of Tourism and Culture
Millennium Park Inc. Calendar of Free Events

Economic

- **Attracts approximately 5 million visitors annually, a 60% increase in a 6-year period, and generates an estimated annual revenue of \$1.4 billion in direct visitor spending and an additional \$78 million in tax revenue.**

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. 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.

Travel Generated Direct Spending		
Total Visitors	39,200,000	
Travelers to Millenium Park	5,000,000	
% of travelers that visit Millennium Park	12.8%	
		From Millenium Park
Travel Generated Direct Spending	Total	Visitors
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
Travel Generated Employment		
Travel Generated Employment	124,400	15,867
Travel Generated Tax Revenue		
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

The 60% increase in visitation was calculated for the 6-year period between 2005 and 2010.

3 million visitors in 2005

As baseline reported in: Goodman Williams Group and URS Corporation (April 21, 2005). "Millennium Park Economic Impact Study" (PDF), p.5. City of Chicago Department of Planning and Development.

5 million visitors in 2010

Attributed to Neal Speers, General Manager, MB Real Estate in: Mikulenska, Ryan (Summer 2011). "Millennium Park Quadruple Net Value Report" (PDF), p.16. Texas A&M University and DePaul University.

(5 million – 3 million) 3 mill = 60% increase

Sources

Travel Industry Association of America
 Ed Uhlir, Executive Director, Millennium Park Inc.
 Chicago Tourism Bureau
 Chicago Travel Statistics
 Choose Chicago http://www.choosechicago.com/media/statistics/visitor_impact/Pages/default.aspx
 Millennium Park Economic Impact Study
 Neal Speers, General Manager, MB Real Estate

- **Increased the number of residential units in an underutilized part of the city by 57%, resulting in a population increase of 71% within a 6-year period. From 2005 to 2015, a total of \$1.4 billion in residential development is projected.**

An analysis of the area immediately adjacent to the park was conducted to determine the increase in residential housing and population growth. 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.

	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

The \$1.4 billion in projected residential development is from the 2005 Millennium Park Economic Impact Study which analyzed the economic impact on Chicago for the 10 year period (2005-2015) directly attributable to the construction of Millennium Park. The report was produced by consultants Goodman Williams Group and URS Corporation for the City of Chicago's Department of Planning and Development in 2005.

Sources

Site To Do Business – www.STDBonline.com
 ESRI 2010 Data US Census
 Chicago Central Area Plan
 2005 Millennium Park Economic Impact Study

- **Creates a 25-40% price per square foot premium on newer residential condominium units that have views of the park, in some cases up to \$125 more per sf than units with views of the city and lake.**

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 versus 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	Sum of Sales Price	S/SF	Sales	SF	Sum of Sales Price	S/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	\$ 140.35	35.7%
2008	5	4,850	\$ 2,174,900	\$ 448.43	18	15,310	\$ 4,468,575	\$ 291.87	\$ 156.56	35.6%
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%
92	103,525	\$ 37,408,355			291	264,046	\$ 68,151,574		\$ 126.43	43.9%

Sales transactions at 400 East Randolph showed a premium for south-facing park views versus 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 to 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

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. (See table on the following page.)

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. Millennium Park has added real estate value to the surrounding area.

Source

Multiple Listing Service of Northern Illinois

Floor	Millennium Park View			No Millennium Park View			Difference	%
	Sum of SF	Sum of Sales Price	\$/SF	Sum of SF	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	-	\$ -			
Total	167,556	\$ 106,388,275	\$ 635	20,749	\$ 10,061,850	\$ 485	\$ 150	31%
Average Price Difference for Lake View vs. No Lake View							\$ 131	29%

Transaction Data from MLSNI

Millennium Park View	88
No Millennium Park View	37
Partial Millennium Park View (Excluded from Sample)	33

- **Increased rents in apartment buildings adjacent to the park by 22% since the park's opening, and has helped them maintain an average occupancy rate of 94%.**

Below is breakdown showing 7 buildings and the rent associated with each one. Three 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%			
Millennium 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%

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.

Sources

Appraisal Research Counselors
Multiple Listing Service of Northern Illinois

Cost Comparison Methodology

The "Lakefront Millennium Project" was originally planned as a 16-acre landscaped greenroof atop a parking garage, designed in the traditional Beaux Arts style of Grant Park. It was to serve as the new home for the Grant Park Music Festival, and would have cost \$150 million (\$120 million from parking revenue bonds and \$30 million from private sources).

With a bold vision for transformative placemaking in a critical urban space, Millennium Park ultimately cost \$475 million, with \$173.5 million coming from the private sector. The project size increased by almost 50%, and required the removal of an existing parking garage and numerous design revisions in order to create the landscape that features a collection of work by world-renowned artists, architects, planners, landscape architects and designers.

Millennium Park became a catalyst for development in the surrounding neighborhood by creating a highly attractive magnet for activity, and by removing a barrier between downtown Chicago, sections of Grant Park, and the City's waterfront. The result is a return on investment of an annual \$1.4 billion in direct visitor spending and \$78 million in tax revenue, and an expected \$1.4 billion in residential development generated over a 10 year period.

Sources

Explore Chicago, The City of Chicago's Official Tourism Site
http://explorechicago.org/city/en/millennium/millennium_park_history.html
accessed 5/1/12

Chicago Public Library Millennium Park Inc. Archives

<http://www.chipublic.org/cplbooksmovies/cplarchive/archivalcoll/mpi.php>

accessed 5/1/12

City Parks Alliance

<http://www.cityparksalliance.org/issues-and-resources/publicprivate-partnerships/case-studies/millennium-park>

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