

The Market for Commercial Property Energy Retrofits in the Philadelphia Region

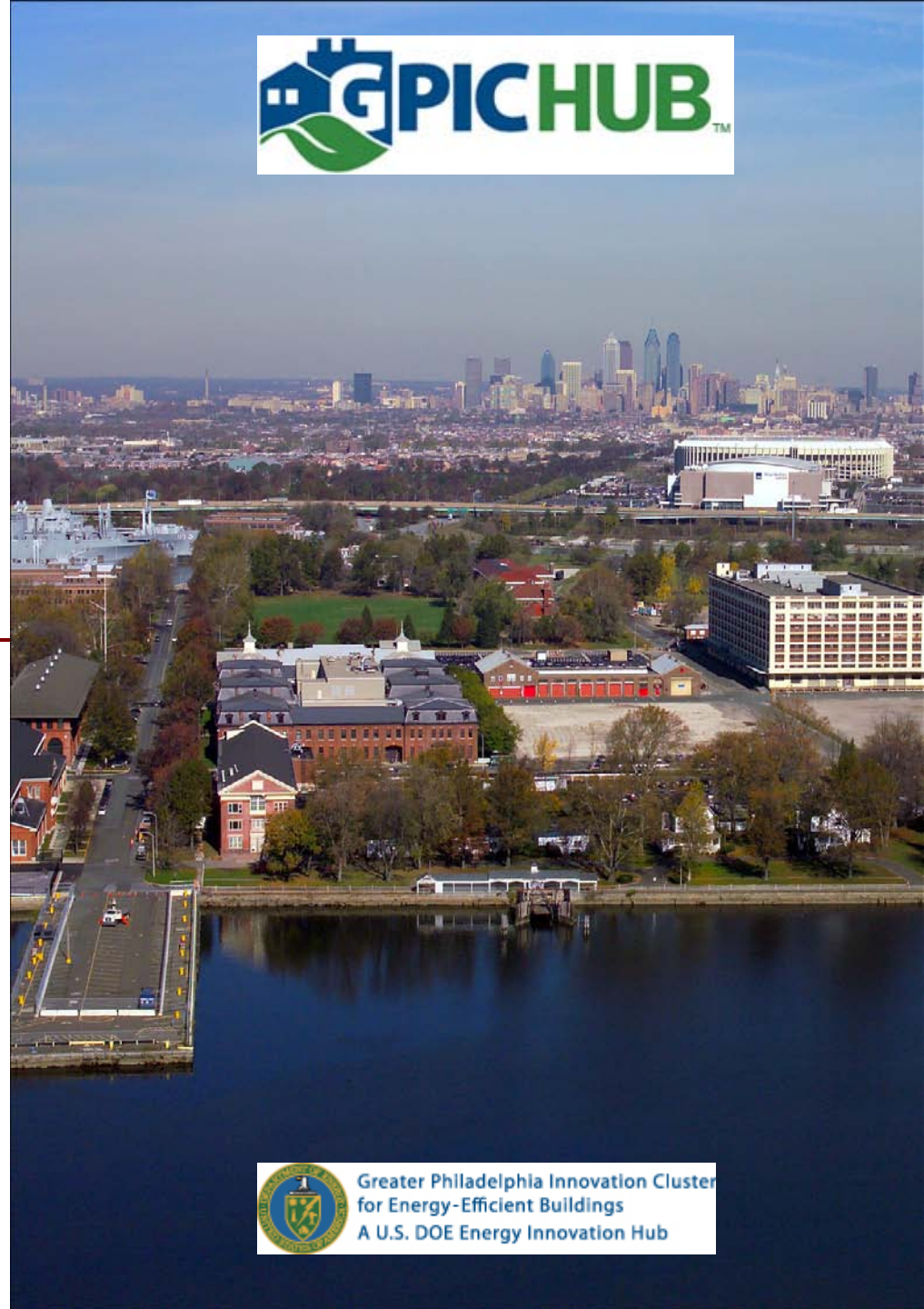
ECONSULT
CORPORATION[®]

Member of the Econsult/Fairmount Group

Kevin C. Gillen, PhD

Brian Uher, MSE, CPHC, LEED AP

November, 2011

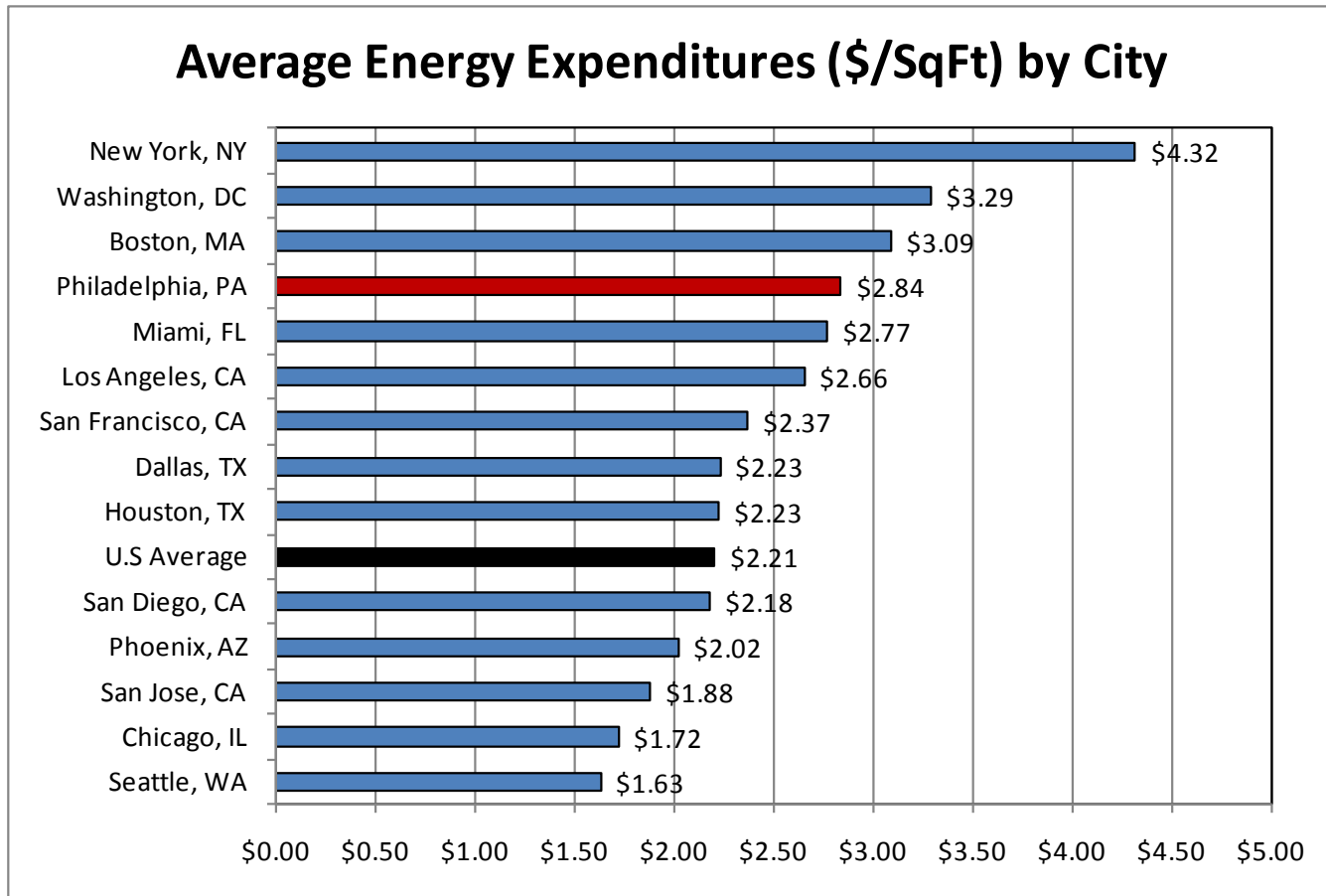


Project Objectives

- Deliver a description of the region's commercial and institutional building stock.
- Deliver a description of the region's market activity in building retrofits: firms, jobs, # of retrofits, etc.
- Undertake an assessment of how these two might combine to provide an estimate of the potential market for future commercial and institutional building energy efficient retrofits.



Motivation



Philadelphia's energy expenditures for commercial buildings is 29% above the national average.

Source: BOMA International, [The Experience Exchange Report 2010](#), 2010

Current Market for Energy-Efficient Properties

Commercial Stock: U.S. v. Philadelphia Region

	U.S.	Philadelphia Region
Total Stock: SqFt (m)	77,900	399
Total Stock Eco-Labeled*: SqFt (m)	1,764	72
Pct of Stock Eco-Labelled	2.3%	18.1%

- Philadelphia is well above the national average in the percent of its stock that is “Green”.
- But, this stock is concentrated in a few, relatively large buildings.

*Eco-labeled is defined as having LEED or Energy Star certification

Sources: McGraw-Hill Construction, USGBC

ECONSULT
CORPORATION*

Member of the Econsult/Fairmount Group

Current Market for Energy-Efficient Properties

Key Facts about the Philadelphia Region's Market:

- 72.2m square feet of existing buildings are Eco-labeled*.
- 26% located in Philadelphia, 74% located in suburbs,
- Average Spending/Sqft for Eco-Labeled properties is \$4.01.
- \$290 bn in spending to obtain Eco-label status
- 24 major firms specializing in energy-efficient retrofits
- 11,000 people employed in this market (many part-time)
- Nearly 8,000 people in PA and NJ are LEED certificate holders

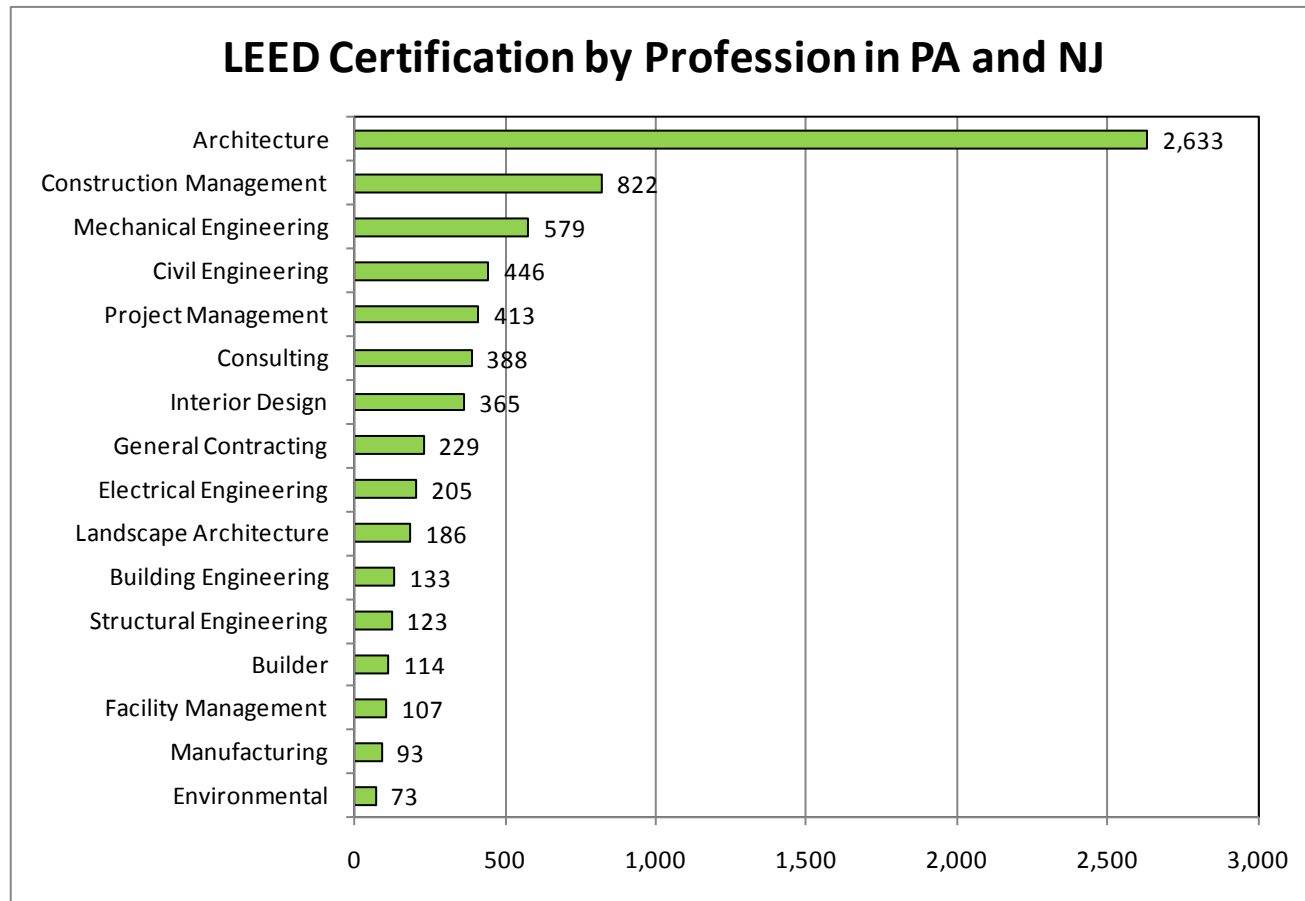
*Eco-labeled is defined as having LEED or Energy Star certification

Sources: McGraw-Hill Construction, USGBC, US BLS,

ECONSULT
CORPORATION*

Member of the Econsult/Fairmount Group

Jobs with LEED Certification



Just 40% of Job Categories account for nearly 90% of LEED jobs.

*Eco-labeled is defined as having LEED or Energy Star certification

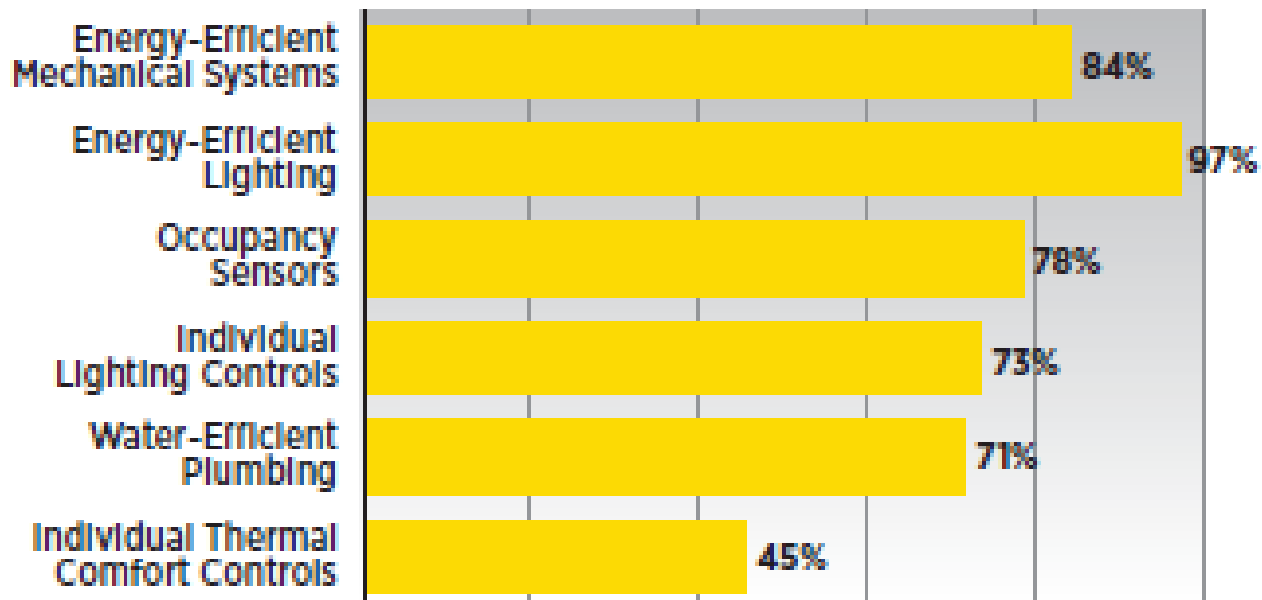
Sources: McGraw-Hill Construction, USGBC, US BLS,

ECONSULT
CORPORATION*

Member of the Econsult/Fairmount Group

Current Market for Energy-Efficient Properties

Figure 32
Popular Products for Building Owners Conducting Retrofit/Renovation of Existing Buildings



Source: *Green Building Retrofit & Renovation SmartMarket Report*, McGraw-Hill Construction, 2009

*Eco-labeled is defined as having LEED or Energy Star certification

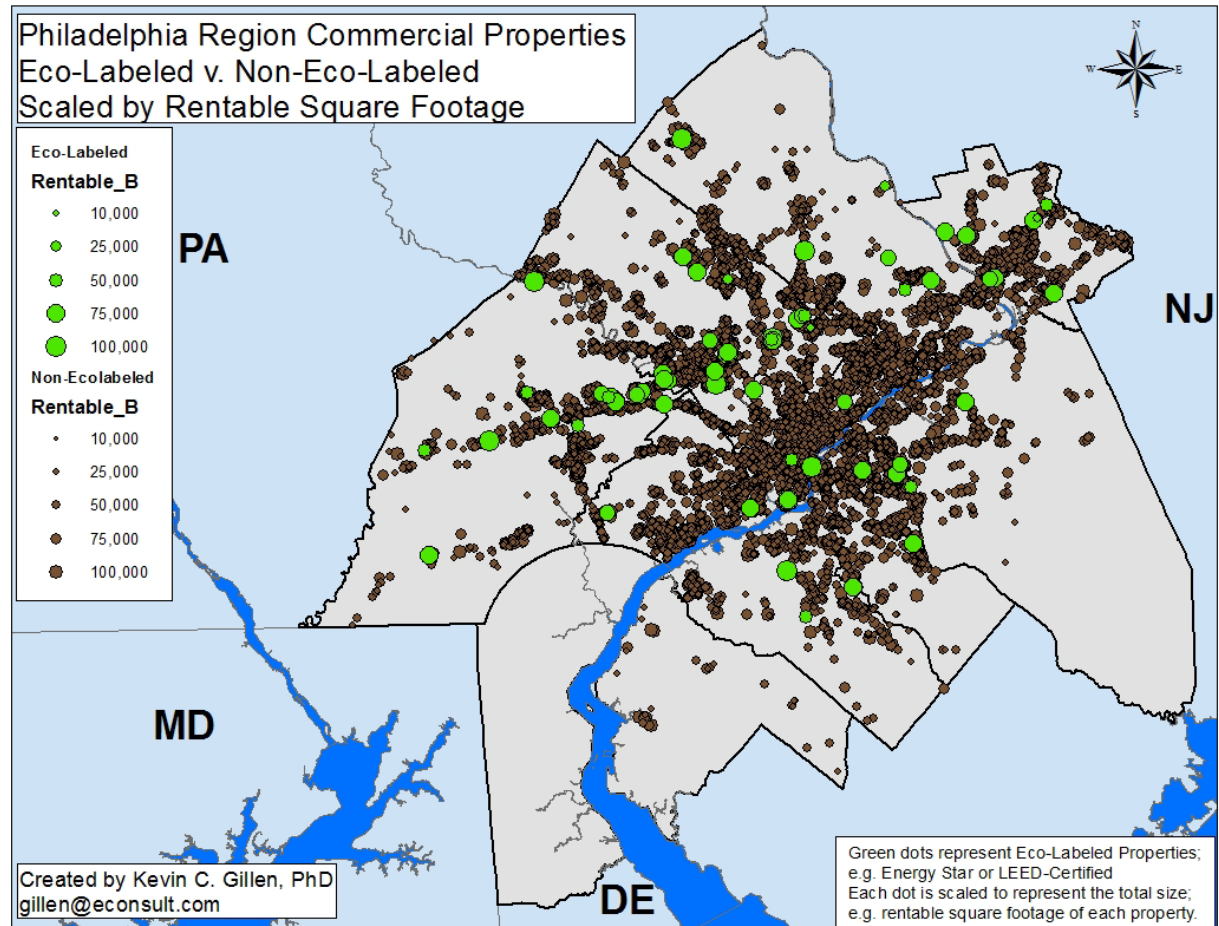
Sources: McGraw-Hill Construction

ECONSULT
CORPORATION*

Member of the Econsult/Fairmount Group

Potential Market for Retrofits

- A file provided by CoStar which contained property-level information on the region's stock of commercial properties that are between 20,000 and 100,000 square feet.
- The data covers all categories of property types except single-family residential, multifamily residential (e.g. apartment buildings) and government-owned properties.
- 9,058 properties in the data, 71 eco-labeled.

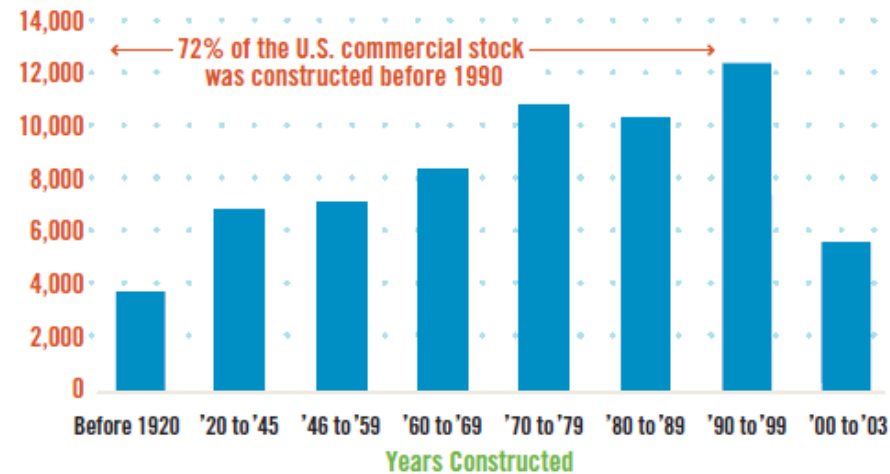


Metrics for Retrofit Candidacy

- **Age Index:** Older buildings are likelier candidates for improvements.
- **Property Type Index:** Different property types have different levels of energy consumption.
- **Enclosure Index:** Shorter buildings are more cost-effective candidates for improved energy efficiency via improvements to their envelope or enclosure.
- **Materials Index:** Buildings with masonry exteriors, rather than steel and/or glass, are likelier to have more gaps in their envelope and hence benefit from improvements to their exterior.
- **Internal Load Index:** Buildings in which daylight is unable to penetrate to interior spaces must use greater amounts of synthetic light, which increases their energy consumption.
- **Owner-Concentration Index:** Multiple buildings which are owned by a single entity are easier to retrofit for the purely practical reason that it is logistically and legally easier to deal with one owner rather than several.

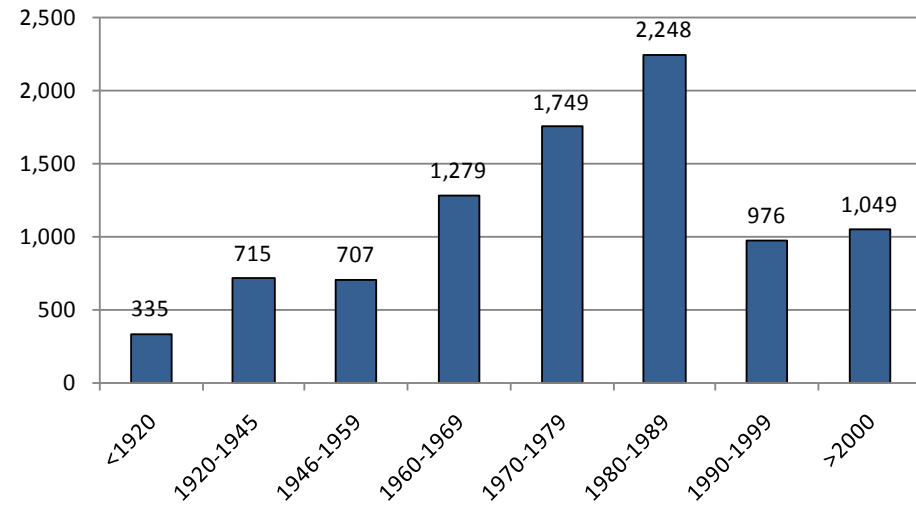
Age Index

Nearly 75% of U.S. Commercial Buildings are 20+ yrs old — Ready for Retrofit



Source: EIA data - Table 12.2: eia.doe.gov/emeu/aer/envir.html

Number of Commercial Properties by Year Built



- 77% of Philadelphia's commercial stock was built prior to 1990, compared to 75% nationwide.
- This amounts to 6,962 properties with a total of 304m square feet of space.

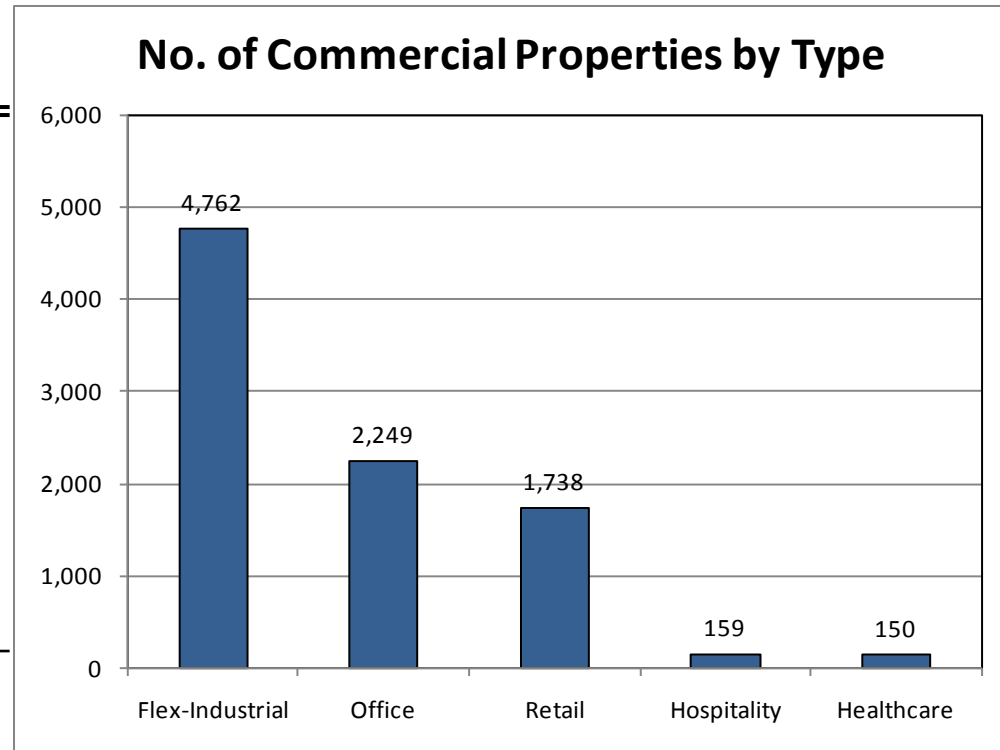
Source: CoStar; Real Estate Roundtable 2011 Annual Report, page 24.

ECONSULT
CORPORATION*

Member of the Econsult/Fairmount Group

Property Type Index

Type	Energy Consumption*	No. of Properties
Flex-Industrial	45	4,762
Office	93	2,249
Retail	99.5	1,738
Hospitality	100	159
Healthcare	188	150
Average	91	



- 22% of Philadelphia's commercial stock has energy consumption that is significantly above average.
- This amounts to 2,047 properties with a total of 86.3m square feet of space.

*Energy consumption is defined as 000s of BTUs/SqFt consumed annually

Source: CoStar; Buildings Energy Data Book, Dept. of Energy
<http://buildingsdatabook.eren.doe.gov/ChapterIntro3.aspx>

Retrofit Index

Define Retrofit Index as sum of the three energy-related indices:

- $\text{Retrofit Index} = \text{Enclosure Index} + \text{Materials Index} + \text{Internal Load Index}$

Retrofit Score	Percent of Properties	Number of Properties	Square Footage of Properties
0	0.41%	37	1,598,680
1	2.60%	233	10,191,583
2	17.57%	1,579	68,943,059
3	79.42%	7,138	311,642,610

- Nearly 80% of properties in the Philadelphia region's stock of commercial properties meet the candidacy requirements for consideration of an energy retrofit.
- This amounts to 7,138 properties containing 312m square feet of space.

Ownership-Concentration Index

- Ownership of commercial real estate in the Philadelphia metro area is very diversified:
- Barely 10% of all space is owned by the 25 largest owners.
- 877 properties covering 45m sqft of space.
- Even the two largest and most well-recognized owners only own 3% of all space.

Top 25 Largest Owners of Commercial Space in the Philadelphia Region

<u>Owner Name</u>	<u>Number of Properties</u>	<u>Total SqFt (m)</u>
Hilton Realty	16	0.7
The Korman Company	15	0.7
Philadelphia Industrial Development Corp.	17	0.8
HCP, Inc.	13	0.8
Cedar Shopping Centers, Inc.	15	0.8
SEB Immobilien-Investment Group GMBH	13	0.8
Sant Properties	17	0.9
Endurance Real Estate Group, LLC	18	0.9
Philadelphia Industrial Development Financing Corp	14	0.9
Developers Diversified Realty	15	0.9
Keystone Property Group	17	1
Condos Individually Owned	33	1
Gambone Development Co.	26	1.1
Industrial Investments, Inc.	21	1.2
Cobalt Capital Partners, LP	22	1.3
Centro Properties Group	23	1.3
Kimco Realty Corporation	28	1.6
The Henderson Group	37	2
Nappen & Associates	51	2.1
Public Storage, Inc.	42	2.5
The Bloom Organization	73	2.8
Whitesell Construction Company Inc.	55	2.9
Mack-Cali Realty Corporation	51	3
Brandywine Realty Trust	105	5.9
Liberty Property Trust	140	7.1
Total	877	44.9

Composite Index

The Composite Index is computed as the cross-tabulation of all the previous indices, and hence identifies those properties which qualify as a retrofit candidate in all of the indices.

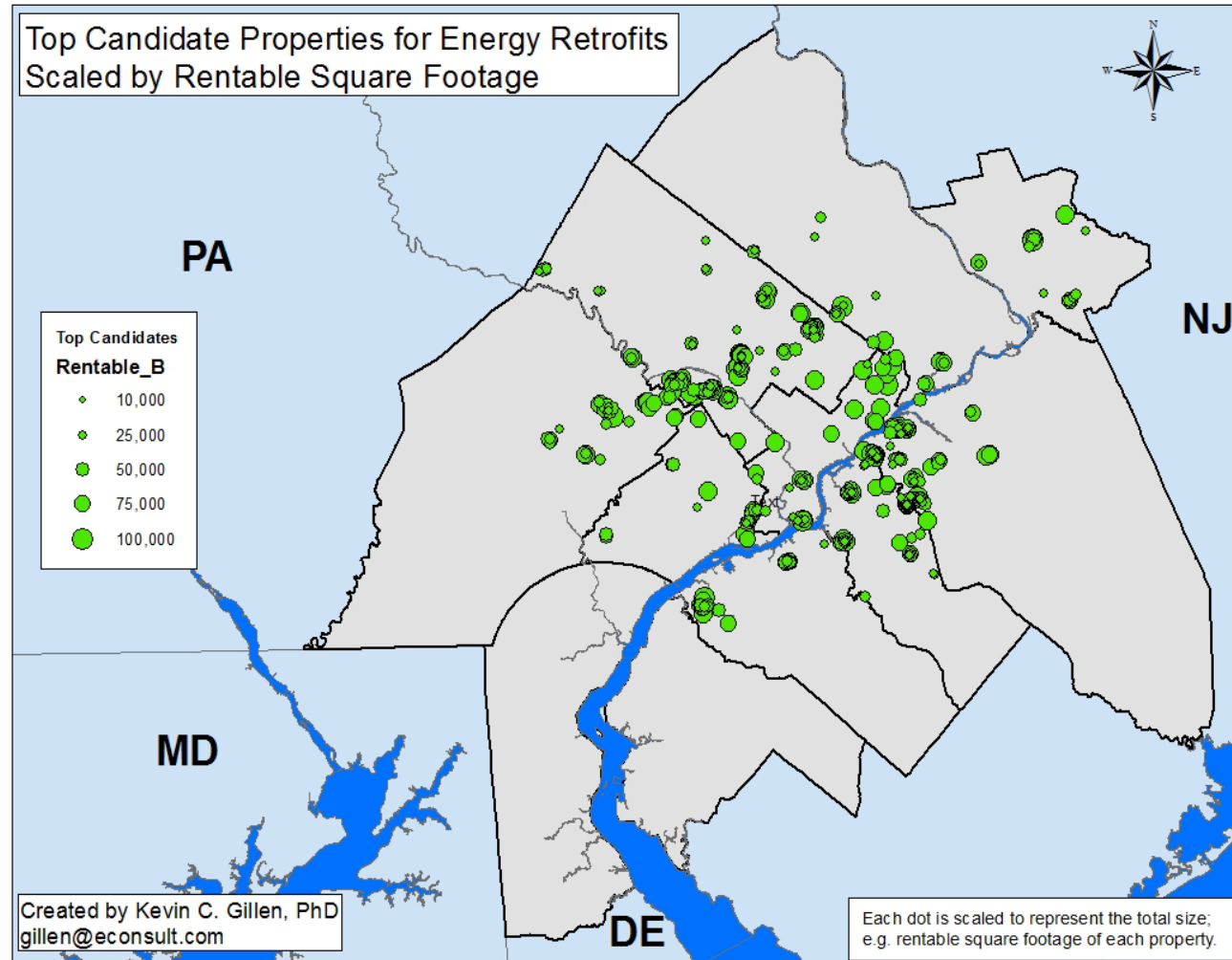
Because it is the most stringent of the indices, it identifies the top candidates for a retrofit, since a property must simultaneously meet all of the component criteria for consideration.

<u>Index</u>	<u>Pct. Candidates</u>	<u>No. of Properties</u>	<u>Total Square Footage (m)</u>
Age Index	77%	6,962	304.0
Property Type Index	22%	1,976	86.3
Retrofit Index	79%	7,138	311.6
Owner-Concentration Index	10%	877	44.9
Composite Index	3%	232	49.1

- Only 3% of properties meet the rigorous requirements of the Composite Index.
- This amounts to 232 properties containing nearly 50m square feet of space.
- But, this covers 12.5% of sqft, indicating that these buildings are larger than average.
- Since there are presumably economies of scale in retrofits, this is a positive thing.

Composite Index

The map indicates that most of these properties are located in the commercial corridors of older, inner-ring suburbs.



Summary

The Market for Energy Retrofits in the Philadelphia Region appears to be substantial:

<u>Index</u>	<u>Pct. Candidates</u>	<u>No. of Properties</u>	<u>Total Square Footage (m)</u>
Age Index	77%	6,962	304.0
Property Type Index	22%	1,976	86.3
Retrofit Index	79%	7,138	311.6
Owner-Concentration Index	10%	877	44.9
Composite Index	3%	232	49.1

- Currently, 18% of Commercial space is Eco-labeled
 - Generated nearly \$288m in spending, supporting 11,000 jobs.
- An average of 47% of the remaining Commercial space is identified as potential candidates for energy retrofits.
 - If done, 4,201 buildings with 154m square feet of space would be retro-fitted
 - Estimated to generate \$618m in spending, supporting 23,500 jobs

*Eco-labeled is defined as having LEED or Energy Star certification

Sources: McGraw-Hill Construction, USGBC, US BLS,

ECONSULT
CORPORATION*

Member of the Econsult/Fairmount Group

In Conclusion

Thus, compared to the existing stock of eco-labeled space, the potential stock for future retrofitted space:

- is 10 times the number of properties that are currently eco-labeled;
- is 2.1 times the total square footage of space that is currently eco-labeled;
- is estimated to generate 2.2 times the amount of local spending than what was spent on the existing stock of space that is currently eco-labeled; and
- the retro-fitting of this stock would support just over twice as many jobs as the construction/conversion of the existing stock of space that is currently eco-labeled.

Since, by any metric, the potential market for energy retrofits is substantially larger than the current stock of energy-efficient space, we conclude that the potential market for energy-efficient to commercial and industrial properties in the greater Philadelphia area is substantial.

Questions?