

SPECIAL REPORT

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THE MARKET BENEFITS OF 'GREEN' CONDOS IN TORONTO

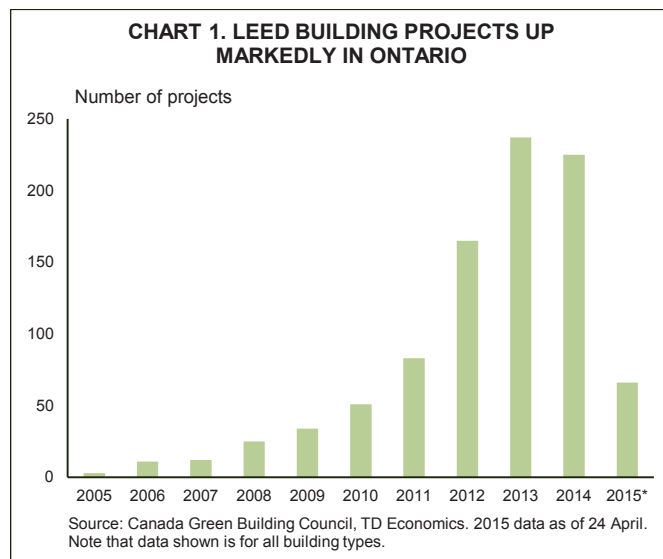
Highlights

- Leadership in Energy and Environmental Design (LEED) certified, or 'green' buildings represent an increasing share of new construction, including the condominium market.
- Limited research exists linking LEED status in residential buildings to market outcomes such as resale price, days on market, maintenance/condo fees, and others.
- Using a novel dataset, we find that LEED certification increases the resale price of Toronto condos by between 5% and 14%. The impact on other metrics, such as time on the market and maintenance fees, is found to be mixed.

The supply of Toronto condos continues to expand, with up to 35, 000 new residential units expected to come on market in 2015. At the same time that the Toronto condo market has been expanding, 'green' building design and construction techniques, exemplified by the Leadership in Energy and Environmental Design (LEED) certification process are also becoming increasingly common (Chart 1). While LEED has been mainly employed for commercial buildings, the LEED principles are making their way into Toronto's condo market, with about 1 in every 15 new condo developments in Toronto currently achieving LEED certification. The relatively recent development of this market means that there is a dearth of research regarding buyer attitudes towards these projects, and their impact on sales price and other variables of interest. Using a dataset of selected Toronto LEED-certified and non-certified developments across several neighbourhoods, this report examines the potential impacts that being green can have on a condo, including selling price, days on the market, and maintenance fees.

What makes a condo 'green'?

In recent years, the term 'green' has been used to describe a plethora of different products, services, and activities. The term has been used so many different ways, it is impossible to assign just one attribute. Fortunately, rather than relying on marketing materials or other sources, there exists for construction projects a green building certification program - the Leadership in Energy and Environmental Design (LEED) program. Buildings that receive LEED certification



must satisfy the requirements laid out by the Canada Green Building Council, a national oversight body.

LEED certification relies on a points-based system, and so LEED buildings will not necessarily all share the same features. Instead, designers can choose from a number of features intended to provide enhanced performance in terms of energy and water use, indoor air quality, material use, and reduced environmental impact. Based on a 3rd party review of the design documentation for the building (and a number of other calculations and materials including an energy model), a building can be rated as LEED-certified, LEED-silver, LEED-gold, or LEED-platinum, in ascending order of overall performance. To date, the majority of LEED projects have achieved gold (38% of certified projects) or silver (32% of projects) ratings. A LEED building can be expected to be more efficient in terms of energy and water usage than a similar non-certified building.

Research examining LEED construction projects generally finds that the energy efficiencies modelled in the certification process are observed post-construction.¹ That is to say that LEED-certified buildings tend to live up to expectations regarding energy and water use vis-à-vis equivalent non-certified buildings. For instance, research looking at LEED certified office buildings found that LEED buildings used 11% less electricity and 16% less water on average. In addition to the financial savings, reduced electricity use also translates into reduced emissions of atmospheric pollutants.

One area where research is lacking is in regards to how this affects the selling price of these buildings, or in the case of condo developments, the units within these buildings. Buyers may be willing to pay more to live in a 'greener' building and take advantage of the potential monthly cost savings associated with energy efficiency. Conversely, they may be worried that the new technology used in some developments could fail sooner and be more costly to fix, and thus be less willing to pay a premium for a LEED-certified unit/building, reducing the selling price. A 2012 study conducted in California suggests that the former theory may outweigh the latter, finding that homebuyers were willing to pay a 9% premium for a home with some form of 'green' certification.²

There are other ways that certification could affect the condo market, such as through days on the market or maintenance fees. For instance, units in LEED buildings may sell faster, due to higher demand, or slower due to difficulty in explaining the unit features. Similarly, LEED buildings tend to employ the latest building equipment, such as improved

boilers and HVAC equipment. Maintenance of this equipment is expected to cost less than similar, less efficient equipment. At the same time, replacing the equipment is usually more expensive, but occurs less often. Due to the new nature of some of the technology, long term performance has yet to be observed. As a result, it is not yet clear what impact LEED certification might have on condo maintenance fees.

Analysis approach and dataset

It can be difficult to make an 'apples to apples' comparison when looking at the condo market. Units can differ in many different ways, including not just size and number of bedrooms, but also building amenities, unit exposure, and neighborhood. All of these characteristics will have an impact on the perceived value of the unit, and by extension the sale price and potentially on other relevant variables such as maintenance fees.³ For this reason, a descriptive approach, such as comparing average sale prices, will not provide a useful measure of the benefits or detriments that 'green' condos provide.⁴

Fortunately, a statistical technique known as *hedonic regression*, common in the real estate industry, allows us to address this issue. In simple terms, this approach captures the value of as many condo/building features as possible, to ensure that an accurate representation of an individual characteristics impact is achieved.⁵

To perform the analysis, data covering approximately 4000 anonymous Toronto condo sales transactions was used.⁶ The dataset covers transactions for 36 condo buildings constructed by 18 different developers, in 5 neighbourhood 'clusters', between 2006 and 2014. While the dataset is clearly not an exhaustive accounting of all condo sales, it is relatively large and covers a wide variety of buildings, developers and neighbourhoods, making it representative of the broader Toronto condo market.⁷

Regression analysis results

Taking statistical software to the data, three variables of interest were focused on: sale price in the secondary market, the number of days it takes to sell a unit and the maintenance fees for each unit.⁸ Detailed results of this analysis are reported in the appendix.⁹

Selling Price

The results of our analysis suggest that resale condo units in LEED-silver certified buildings tend to sell for around 5.7% to 6.2% more than non-certified building units and the

Variable	Estimated Impact
Resale Price	+5.7% to +14.9%
Days on Market	None
Maintenance/Condo Fees	0% to +4.7%

Source: TD Economics

selling prices is between 12.2% and 14.9% more in the case of LEED-gold certified developments. The midpoint of the overall range is 10.3% - similar to the premium estimated for Californian homes. That units in LEED certified sell for higher prices on average is somewhat intuitive. Potentially reduced operating costs via energy efficient design should translate into a higher selling price, as sellers seek to capitalize on the competitive edge these savings provide. Similarly, buyers may be willing to pay a premium upfront to receive energy savings over the lifetime of the unit.

There is one important limitation to this analysis however. Due to limited data availability, we are unable to state whether the estimated premium for LEED units is accruing to re-sellers of condos, or if it is captured by the condo developer during the initial sales period, as we do not currently have data on the initial selling price of units. It is possible that developers may charge more for these types of units during initial sales, and that the premium identified in the resale market is just a reflection of higher initial costs.

Days on Market

The LEED certification status of a building has no statistically or economically meaningful impact on the length of time it takes for a unit to sell. The estimated impact of LEED status of between 0.06 and 0.12 additional days on market is not statistically different from zero (suggesting that no real relationship exists). Moreover, with an overall by-unit average of 30 days on the market, the impact of LEED status (if the estimates were statistically significant) is so small as to be economically meaningless.

Why LEED status should have effectively no impact on selling time is unclear. It is possible that the characteristics of condo buyers who are interested in LEED-certified units and those that are not are similar. That is to say that these potentially different groups of buyers nevertheless take a similar amount of time when considering the purchase of a condo. Given the large sums of money involved in real

estate purchases, this is perhaps unsurprising.

Maintenance Fees

Results for the impact of LEED status on assessed maintenance fees are somewhat mixed. For buildings with LEED gold certification, fees are found to be around 0.5% lower on average, controlling for unit characteristics, but this impact is not statistically different from zero. For LEED silver buildings, fees are found to be between 4.5% and 4.7% higher relative to units in non-certified buildings, and the estimates are statistically different from zero at standard confidence levels.

The estimated impact of LEED status on fees is somewhat surprising. The efficiency features typically included in these designs should tend to reduce overall building operating costs (such as heating/cooling common areas, lighting, etc.), which would be expected to be passed on in the form of reduced fees. Similar arguments could be made regarding other aspects of construction, including construction materials and the expected life of equipment.

One aspect that does appear logical is that gold-certified buildings, maintenance fees are relatively lower than for silver buildings (albeit not different from non-certified buildings). As LEED uses a point-based system, developers building a silver level building may focus on non-energy related aspects of the building in achieving certification. Once gold level has been targeted however, the more stringent requirements should tend to result in increased efficiency taking a larger share of the overall LEED features of the development.

A potential explanation for the estimated impact on maintenance fees relates to how these fees are assessed. Maintenance fees are used to pay building utility costs, day-to-day operations such as snow removal and cleaning, and contribute to the condo reserve fund to cover long-term replacement costs. A condo board may choose to keep fees low initially, which could lead to significant repair charges later due to an underfunded reserve fund, regardless of the efficiency characteristics of the building. These characteristics are more difficult to capture in the data. Thus, a low maintenance fee may not necessarily be an indicator of a better performing building – more research along this avenue is clearly warranted.

Bottom line

LEED-certified condo units provide consumers with additional housing choice, promising better energy efficiency and other features. To date, the impact of these buildings on consumer preferences has been limited. Examining a subset of Toronto condo buildings, we find that resale condo consumers appear willing to pay a premium for ‘green’ certification, although it is unclear if this additional spending accrues to condo developers through a higher initial sale price and/or individuals in the resale market. The impact of LEED certification on other metrics is mixed. A larger

dataset that includes pre-construction unit sale prices would enable further examination of these issues. With LEED projects remaining popular, and Energy Star for Buildings certification (similar to LEED in requiring an increased level of energy performance relative to the building code) coming to Canada, the effect these projects have on real estate markets is likely to remain a topic of interest.

Brian DePratto, Economist
416-944-5069

ENDNOTES

1. See for instance “LEED buildings outperform market peers according to research” <http://www.usgbc.org/articles/leed-buildings-outperform-market-peers-according-research>
2. See Kok and Kahn, 2012
3. Many of these variables have a direct relationship. For instance, larger units are typically assessed larger maintenance/condo fees.
4. An example of this issue may be that LEED-certified buildings contain larger units, as the certification could be part of a larger “premium” marketing campaign. Prices in the LEED building may be higher simply due to the (theoretical) larger unit sizes, rather than the LEED certification itself.
5. To expand further, in this approach, a statistical model is estimated that takes into account all features/characteristics that may have an effect on the variable of interest. In effect, the variable of interest is modeled as a function of all a units characteristics:

$$\text{variable of interest}_j = f(\text{unit and building characteristics}_j),$$

where j represents an individual condo unit. By controlling for the impacts of all features, the model allows us to examine the impact of an individual feature without the bias that can be introduced in a simple descriptive analysis. In addition to our key variable of interest, LEED status, building amenities, unit characteristics and a number of other variables are considered. Amenities included in the analysis are whether the building has a gym, and/or a concierge. Unit characteristics include the age of the building when the unit was sold, whether the unit has granite countertops, presence and type of balcony (terrace, Juliette, etc), the number of bedrooms, whether parking is included (and if so, how many spots), and the size of the unit in square feet. Cost variables include monthly fees, as well whether air conditioning, heating, electricity, and/or water are included in the monthly fee. Other control variables include the neighborhood in which the building is located, as well as the exposure of the unit, and the age of the builder. The age of the builder is included to approximate the impact of builder reputation. Typically distance to external amenities (such as grocery stores, subway stops, etc.) would be included. To account for the impact these would have had, buildings within the dataset have been grouped by neighborhood, and are generally within very close distance of each other (less than 500m typically). This feature of the data allows us to control for the impacts these amenities have by controlling for the neighborhood the building is within, based on the assumption that the close proximity of buildings to each other results in a distance to external amenities that is close enough between buildings in a given neighborhood to be rendered meaningless on a within-neighborhood-between-building basis.

6. We thank The Minto Group for providing this data.
7. Moreover, to our knowledge this is a unique dataset, as we are not aware of any previous studies focusing on green condos in the Toronto market.
8. Due to data limitations, we are unable to assess a broader range of market indicators, such as for instance the number of times a unit is sold, or price appreciation by unit.
9. For ease of discussion and presentation, all variables not of interest in a given model are not reported here, although their effects are accounted for by the model.

Appendix: Regression analysis results

Dependent Variable: Sale Price (Log)		
LEED Gold Building?	0.149 (0.020)***	0.122 (0.016)***
LEED Silver Building?	0.057 (0.015)***	0.062 (0.014)***
LEED Mentioned in listing?	-0.021 (0.016)	-0.001 (0.014)
Controls		
Cost characteristics (heat, water, fees, etc)	YES	YES
Size, Balcony Present	YES	YES
Neighborhood	NO	YES
Exposure	NO	YES
Exposure by Neighborhood	YES	NO
Builder Age	YES	YES
Adjusted R ²	0.740	0.761
Observations	3950	3950

Dependent Variable: Days on market		
LEED Gold Building?	0.055 (0.058)	0.121 (0.062)
LEED Silver Building?	0.172 (0.048)***	0.159 (0.047)***
LEED Mentioned in listing?	-0.042 (0.097)	-0.031 (0.099)
Controls		
Cost characteristics (heat, water, fees, etc)	YES	YES
Size, Balcony Present	YES	YES
Neighborhood	NO	YES
Exposure	NO	YES
Exposure by Neighborhood	YES	NO
Builder	YES	YES
Adjusted R ²	0.047	0.044
Observations	3975	3975

Dependent Variable: Fees (Log)		
LEED Gold Building?	-0.005 (0.019)	-0.004 (0.044)
LEED Silver Building?	0.045 (0.018)***	0.047 (0.017)***
LEED Mentioned in listing?	0.002 (0.013)	-0.001 (0.013)
Controls		
Cost characteristics (heat, water, price, etc)	YES	YES
Size, Balcony Present	YES	YES
Neighborhood	NO	YES
Exposure	NO	YES
Exposure by Neighborhood	YES	NO
Builder	YES	YES
Adjusted R ²	0.806	0.801
Observations	3919	3919

Robust standard errors reported in parentheses. ***, **, * represent statistical significance at the 1%, 5% and 10% levels respectively.

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