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REDEFINING RENTAL

Morguard soars with Toronto's largest
new purpose-built apartment towers

Energy
Issue

Solar panels

Green roofs

Cost-saving tips

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Peter Cook, Robert Fleet, Paula Gasparro, Jessica Green, Derek Lobo, Andy Schwartz, Richard Vilner



Exploring Solar Systems

The Pros and Cons of Rooftop Panels

By Chris Seepe

As a multi-residential rental building ages, maintenance costs rise and landlords are increasingly faced with the challenge of keeping costs down while adhering to the expectations of today's green tenants. One way to reduce energy costs while protecting the environment is solar power generation.

In southern Ontario, a solar photovoltaic (PV) system for a mid-sized building with southern exposure requires about 850 square feet of sloped roof, and a \$30,000 to \$40,000 capital outlay for a 10 kilowatt AC rooftop system (down from \$75,000 only three years ago).

Ontario's FIT (Feed-in Tariff) incentive program received much attention as North America's first comprehensive, guaranteed pricing structure for renewable electricity production. The program offers stable prices under long-term contracts for energy generated from renewable sources, including solar PV, wind, water, biomass, biogas and landfill gas.

The Ontario Power Authority website reports that it received 1,779 FIT applications from Nov. 4 to Dec. 13, 2013, and of those, 1,398 were deemed eligible to move on to the next level of review.

Incentives aside, having a profitable solar system in Canada is directly tied to system performance and the yearly averages for solar radiation in each area. Accurate data on solar system performance is readily available from reliable sources. Managers may be surprised to know which municipalities receive the most sunshine. Between 1981 and 2010, sunshine ranged from 1,567 hours in Sherbrooke, Que., to 2,396 in Calgary, with Toronto landing somewhere in the middle.

There are powerful reasons for considering solar power, but equally compelling reasons to be aware of the potential negatives. While the list of negatives below outweighs the list of positives, the weight of each positive is greater than each negative, particularly in light of skyrocketing energy prices.

Pros

The 20-year income stream and full repayment of the investment in the first half of the contract term remains a major benefit.

In addition, electricity costs have skyrocketed. In Ontario, electricity prices have increased 63.3 per cent over the last five years, from \$0.0545 in May 2008 to \$0.0890 in November 2013. Ontario rate increases have far outpaced Statistics Canada's CPI index, or "inflation rate".

The reason this is a positive consideration is that electricity prices are unlikely to ever decrease, so when a contract expires in 20 years, the system can still supplement the building's energy consumption, reducing operational costs.

No moving parts and low maintenance make solar PV systems reliable and long lasting. Some PV systems are still operating after 40 years. Also, solar panels act as a kind of quasi-second roof that can possibly lengthen the lifespan of a roof.

In addition, management is making a personal and direct contribution to clean sustainable energy for the community and the world by using solar panels, with less reliance on controversial nuclear power and undesirable fossil fuel power.

Finally, solar-generated electricity can't be stored. However, there is a chance that

within 20 years, on-site storable energy will fundamentally transform the solar-generated electricity business model for the better.

Potential cons

If tenants are paying their own electricity costs, the business case for solar panels becomes much less attractive for just the "common area" heating and lighting costs. Also,

tenants will complain to landlords first and seek properties where electricity is inclusive in the rent.

If most of the common area electricity expense is heating water (laundry and/or rent inclusive), then a UV-based solar water heater system is likely a more cost-effective solution.

Another issue is that the lifespan of solar panels exposed to extreme weather elements is not yet well

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understood. And if there is damage, with many young companies in the business, a 20-year warranty is worthless if the company is gone in five years.

Management must also determine whether the building infrastructure can carry the weight and spot loads (e.g. gusts of wind pulling on the panels, heavy snow accumulating on a much larger surface area of panels and rooftop). And repairing the roof after a solar panel system has been installed can be expensive. Therefore, management should consider installing a new roof at the same time as the solar panel installation.

The building must have a dry, covered place that is not exposed to the weather elements in order to install the large inverter device. Management must also make certain that the racking system affixed to the roof is properly installed and doesn't create water and stress-related problems later on.

Management must ensure bolts that breach flat roof membranes are hermetically sealed. Better still, they should find a racking system that doesn't require it to be bolted down onto the roof; maybe it can be simply 'weighted' down, although this factors into stress load considerations.

Another thing to consider is that solar panels are constantly improving. So it is possible that panels made five years from now will be much more efficient. It would be great to replace existing panels with more efficient ones without replacing the racking system that holds them in place.

Finally, solar generation competes with rooftop green initiatives for roof real estate. Solar panels need to find compromise and balance with trees and gardens. Each addresses important environmental concerns and each has distinctive and sometimes material pros and cons. However, green is often a euphemism for increased costs and landlords faced with major capital costs are likely going to give the highest priority to the use that makes the best overall business sense, with return on investment generally being a major factor.

For more information on solar energy, visit

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