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## Jim Harris: Cutting costs, a step at a time

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Savings rise with efficient escalator control

**Jim Harris, Financial Post**



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Most of the world's 480,000 escalators offer significant electricity savings through retrofits. About 100 billion people use escalators in North America each year, which consume three billion kilowatt hours of electricity -- at a cost of US\$300-million. Here are three strategies: - Shut off escalators on weekends and evenings. GM recently announced it would shut off escalators on weekends and evenings between 7 p. m. and 6 a. m. at its corporate headquarters. Why did GM wait until bankruptcy before deciding to achieve an immediate savings of 50% of electricity costs with no capital

outlay? - Install efficient motor controllers. The vast majority of escalators use single-speed motors, which are designed to perform when escalators are fully loaded (imagine two 250-pound men on each step). But with light loads or when no one is on them, escalators are inefficient. Power Efficiency Corp.'s controllers sample the load weight 120 times a second and vary the voltage and current to the motors so that the escalator speed stays constant but the electricity use drops drastically. This also prolongs motor life by reducing operating temperatures. For new installations, the payback for upgrading from standard motor controllers to variable ones is less than one year (an internal rate of return (IRR) of 100%), while retrofitting existing escalators gives a payback of two to three years (an IRR of 50% to 33%).

The Denver Airport retrofitted 110 escalators and 54 moving walkways with variable-speed motor controllers, saving 1.75 million kilowatt-hours (kWh) a year and cutting operating costs by \$105,000 a year (based on 6¢ per kWh). This is giving the facility a three-year payback (a 33% IRR) and cutting electricity use by 40% for escalators and 11% in walkways -- and cutting CO<sub>2</sub> emissions by 3.6 million pounds a year. - Slow escalators when no one is on them in working hours. Installing variable-speed motors and an eye beam at the mouth of the escalator allows it to slow to a crawl when no one is on it. Retrofitting an escalator requires installing new motors as well as new motor controllers, so the capital costs are higher than in the second strategy but the electricity savings are greater. For new escalator installations, upgrading to this option gives fantastic paybacks. Escalators that slow down are installed in Canada and Europe, but domestic standards have not been modernized to allow for them in the United States.

--- - Jim Harris is the author of *Blindsided*, an international bestseller, and the former leader of the Green Party of Canada. He can be reached at [jimh@jimharris.com](mailto:jimh@jimharris.com).

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