

High fives, facepalms, and a body blow: Energy efficiency retrofits at the City of Guelph

Clean Air Council Municipal Corporate Energy Efficiency Workshop, September 16, 2016

Coming up:

- Background: Guelph's Corporate Energy Management Plan
- Facepalms: What bombed
- High fives: What rocked
- Duck and weave: How to take a body blow and keep on swinging
- Our next big thing

Background

Guelph's Corporate Energy Management Plan

- Major tax-supported facilities were audited in 2011-12
- Needed policy basis to implement audit recommendations
- Plan was developed, accepted by Council in October 2012
- Key points:
 - Improve energy management discipline
 - Improve financial underpinnings for energy work
 - Implement energy efficiency retrofits
- Footnote: Served as our CDM plan under O.Reg.397/11

Background (continued)

Facility energy efficiency retrofit program

Facilities included:

- Transit garage
- Public works building
- OHL arena
- Combined community centre/fire hall complex
- Seniors' community centre
- Performing arts centre

Retrofits included:

- Lighting
- HVAC
- Controls
- Ice plant refrigeration equipment

Guelph Transit Garage



Guelph Transit retrofits



Big-Ass Fan
(Yes, really)



High-bay fluorescent lighting

...and exterior LED lighting

| Site | Description | Capital cost | Utility incentives | Annual avoided cost | NPV |
|----------------|------------------------------------------------------------------|--------------|--------------------|---------------------|----------|
| Transit garage | Lighting, unit heaters, destratification fans, occupancy sensors | \$224,200 | \$1,735 | \$27,334 | Positive |

Public Works: 45 Municipal



45 Municipal retrofits



Heat Recovery Ventilator



Unit heaters

...also controls and LED lighting

| Site | Description | Capital cost | Utility incentives | Annual avoided cost | NPV |
|---------------------|----------------------------------|--------------|--------------------|---------------------|----------|
| 45 and 50 Municipal | Lighting, occupancy sensors, HRV | \$167,200 | \$295 | \$6,812 | Negative |

Sleeman Centre



Sleeman Centre retrofits


THU, SEP 15, 2016 | 15 °C
 Partly cloudy
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Guelph brightens up the Sleeman Centre

Guelph Mercury
By Tony Saxon

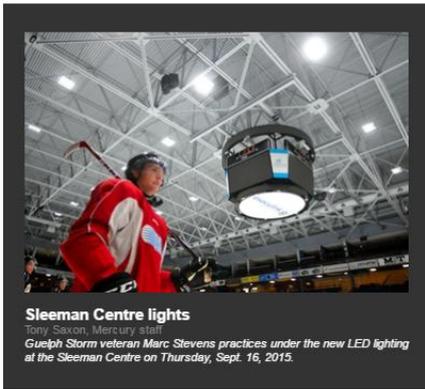
GUELPH — Things are looking a little brighter at the Sleeman Centre these days.

In fact, they will look a little brighter at all city rinks in the near future as the city replaces old lighting with new LED lighting.

Installing the new lighting at the Sleeman Centre was done over the summer at a cost of \$112,000, explains Alex Chapman, the city's Facilities Management, Infrastructure, Development and Enterprise.

But the benefits should more than make up for the cost, he said. The quality of the light is cleaner and brighter, the new lights will last much longer, are cheaper to replace and are much more energy efficient.

"The savings in year one of just the lighting over the Sleeman Centre ice pad will be about \$13,000," Chapman said. "We also estimate that the maintenance savings will be around \$2,500 a year as well."



...also refrigeration plant compressors and controls; LED lighting in mezzanine, stands, and executive boxes

High-bay LED lighting over ice pad

| Site | Description | Capital cost | Utility incentives | Annual avoided cost | NPV |
|----------------|-------------------------------------------------|--------------|--------------------|---------------------|----------|
| Sleeman Centre | Lighting (incl. ice pad); ice plant compressors | \$507,607 | \$45,107 | \$53,684* | Positive |

West End Community Centre



West End Community Centre retrofits



LED library lighting



Ice pad lighting



LED pool lighting

*...occupancy sensors
and refrigeration
controls are still to
come.*

Evergreen Seniors' Centre



Evergreen Centre retrofits



Air Pear
destratification
fans



High-bay LED
lights

*...HVAC and other lighting
upgrades still to come*

River Run Centre

*LED lights, more LED lights,
and yet more LED lights*



Facepalms: What bombed

- Lowest bid isn't always the best bid (surprise, surprise)
 - HRV at 45 Municipal has been a major PITA
 - Open the kimono: Be up front with the higher-ups when things haven't gone well
- Review project scope with facility staff early, explain (W5), and listen, **listen, listen**
 - Some lighting at 45 Municipal had been replaced just a couple of years before
- Review project scope with building performance experts early, explain (W5), and listen, **listen, listen**
 - Took a long time to de-scope rooftop VFD retrofits

High fives: What rocked

- Collaborate with other projects (e.g. life cycle replacement) to get the most value from project overhead/mobilization
 - AC at 45 Municipal
 - Exterior lighting at Transit
 - Pool lighting at West End (also ice pad)
- Adapt your approach to realities on the ground
 - Single contract per site works in some cases, but may not in others
 - May have to adopt single contract per technology (e.g. low-E ceilings)
- Figure out your M&V approach before the project starts, and integrate into the project scope

Duck and weave

Take a body blow and keep on swinging

- Funding source was Capital Asset Renewal Reserve
 - Created from monetization of interest in Guelph Hydro
 - 10-year payback criterion
 - Original plan was \$1M/year for three years
 - Reserve was depleted for other demands
- Necessity is ~~a real mother~~ the mother of invention
 - LED street lighting project offers significant savings opportunity
 - Executive is supporting idea of using savings to make Corporate Energy self-funding

That's all folks!

