

LIFE CYCLE ASSESSMENT PROGRAM



CASE STUDY

NYSP21 Performs Environmental Impact of Sustainable Winter Management (SWiM™) Program in Parking Lots

Located in Delanson, New York, WIT Advisers develops sustainable solutions for landscape and winter management. Their Sustainable Winter Management program (SWiM™), is an alternative to traditional snow removal methods. SWiM™ combines the implementation of best practices, real time monitoring and efficient use of salt to provide a cost-effective alternative to typical snow and ice management approaches while maintaining the necessary standards for public safety.

Challenge

WIT Advisers needed assistance in quantifying the cost and environmental impacts of the SWiM™ program compared to traditional snow and ice management methods in order to better communicate the value of SWiM™ to current and potential customers.

Solution

New York State Pollution Prevention Institute (NYSP21) performed a streamlined life cycle assessment (LCA) to quantify the cost and environmental impacts of SWiM™ at seven Syracuse, New York area grocery stores. Five of the stores utilized the SWiM™ program and two stores utilized traditional deicing methods. The goal was to quantify mass and cost of salt, energy and greenhouse gas emissions, and the impact to water quality as a result of parking lot salt runoff.

Results

The analyses suggest the SWiM™ program more efficiently services the parking lot, as seen by a 50% reduction in salting trips on average, as compared to stores serviced by traditional plowing and salting methods. This results in a reduction of energy usage and global warming potential between 7% and 71%, depending on the store (Figure 1).

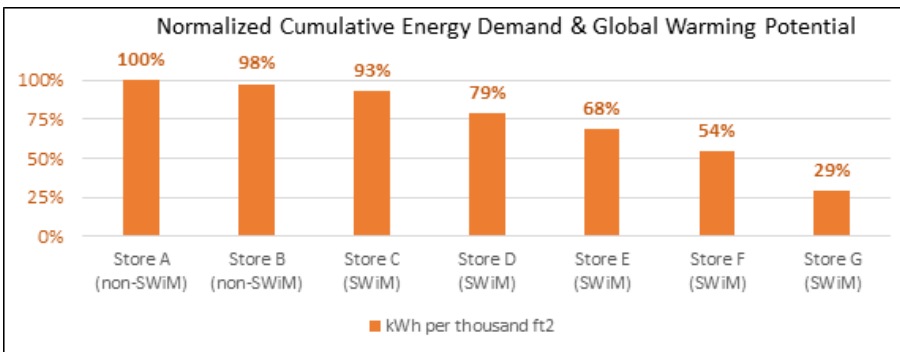


Figure 1: Normalized Cumulative Energy Demand & Global Warming Potential.

Note: kWh = kilowatt hour; ft² = square feet

CHALLENGE

- WIT Advisers needed assistance in quantifying the cost and environmental impacts of their SWiM™ program compared to traditional snow and ice management methods

SOLUTION

- NYSP21 performed a streamlined LCA to quantify the cost and environmental impacts of SWiM™ at seven Syracuse, New York area grocery stores

RESULTS

- Analyses suggests the SWiM™ program more efficiently services the parking lot, as seen by a 50% reduction in salting trips on average, as compared to stores serviced by traditional plowing and salting methods



TESTIMONIAL

“The collaboration of NYSP2I, with WIT Advisers, to assess the benefits of SWiM™, provides a very valuable and unbiased set of results we could have never achieved on our own. The clear environmental and economic benefits of SWiM™, are validated by a high caliber of research professionals at NYSP2I, with whom we are grateful to be partners.”

– Phill Sexton, Founder & CEO;
WIT Advisers

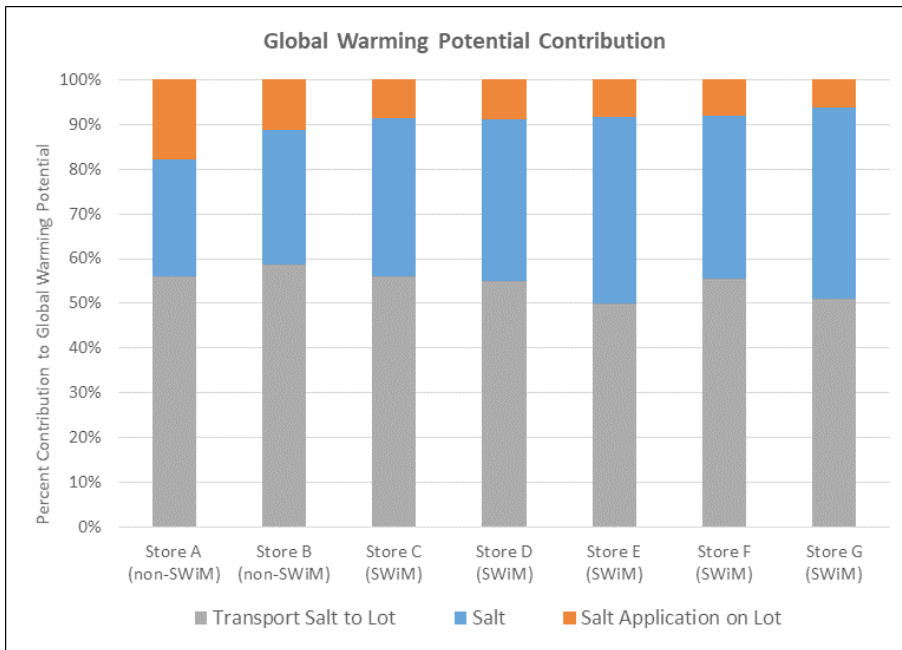


Figure 2: Global Warming Potential Contribution

Figure 2 shows at least half of the global warming potential (GWP) contribution is due to traveling from the contractor to the store. Non-SWiM™ stores had 50% more service trips on average compared to the SWiM™ stores. This may be due to the SWiM™ program’s control over service trips, where many non-SWiM™ stores request salting and plowing on a subjective basis. Reducing the number of service trips may have the most significant reduction in energy and greenhouse gases, followed by reducing the amount of total salt used per season. It cannot be concluded whether SWiM™ or non-SWiM™ stores use less salt, until further salt application data is collected and assessed.

Results of the LCA suggest that the SWiM™ program provides a more efficient approach to snow and ice management removal than typical methods.

NYSP2I PARTNERS

R·I·T

Rensselaer

UB

University at Buffalo
The State University of New York

Clarkson
UNIVERSITY

New York Manufacturing Extension Partnership

Funding provided by the Environmental Protection Fund as administered by the New York State Department of Environmental Conservation. © 2018 Rochester Institute of Technology. Any opinions, results, findings, and/or interpretations of data contained herein are the responsibility of Rochester Institute of Technology and its NYS Pollution Prevention Institute and do not represent the opinions, interpretation or policy of the State.

For more information please contact us:

111 Lomb Memorial Drive, Bldg. 78
Rochester, NY 14623

Tel: 585-475-2512
Web: nysp2i.rit.edu
E-mail: nysp2i@rit.edu

