



SEM HELPS YVR NAVIGATE THE COVID-19 PANDEMIC

Vancouver International Airport (YVR), along with partners BC Hydro and Prism Engineering, quickly adapted their energy modeling and baseline using resources from the SEMHub.



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Occupying more than 3,300 acres and servicing more than 26.4 million passengers in 2019, YVR is one of Canada's largest and busiest airports. For more than two decades, YVR's management has partnered with BC Hydro to employ SEM principles to reduce the airport's energy use and carbon footprint even as the airport grew increasingly busy year after year. YVR achieved carbon neutrality in 2020 and committed to achieving net zero emissions by 2030. Led by a BC Hydro-funded Energy Manager, the YVR Energy Optimization team implements the airport's SEM plan to target, deliver and monitor energy-saving opportunities including capital projects, operational improvements and behavior-change initiatives.

Despite a finely tuned plan based on the latest SEM principles and techniques, everything changed when the COVID-19 pandemic struck. In 2020, YVR's passenger total dropped to 7.3 million passengers—a 72% reduction that rendered obsolete all of the energy models and projections that had informed their detailed SEM plan. To understand the pandemic's impact on their energy plan and their progress toward aggressive energy efficiency and sustainability goals, YVR's Energy Manager turned to BC Hydro and consultant, Prism Engineering, to help YVR adapt their modeling and baseline to account for these seismic operational changes. BC Hydro and Prism Engineering knew that SEMHub was their best bet to find the resources they needed to make it happen.

Guidance and collaboration to weather the unprecedented

Supported by the NW SEM Collaborative, SEMHub is a free and continually updated collection of resources that help commercial and industrial energy efficiency program administrators understand and adopt the latest SEM strategies and tactics. SEM tactics and technologies are constantly evolving, so many utilities and energy managers rely on SEMHub to stay updated, share ideas and keep the SEM conversation going. This dynamic exchange of SEM data and ideas was perhaps never more important than when the COVID-19 pandemic hit.

“For years, BC Hydro has valued the shared resources and collaboration offered by the



NW SEM Collaborative,” said Kevin Wallace, Senior Program Manager at BC Hydro. “It has been so important to our team and our customers receiving continual SEM input and education. When YVR needed to update their energy model, the tools developed by the SEM Collaborative and available on SEMHub was top of mind.”

Prism Engineering soon found a recently posted energy modeling selection guide created by the NW SEM M&V Workgroup. The selection guide offered the insight they needed to help YVR's Energy Manager adjust their SEM model and baseline to track energy savings during the pandemic, and it was written in an accessible manner that made it immediately useful for energy managers at any level.

“The guide was a great tool because of its comprehensive offering and accessibility,” said Juan Mani, Energy Management Engineer, Prism Engineering. “All available methods were in one place, allowing us to easily choose which ones were applicable and the methodology to follow.”

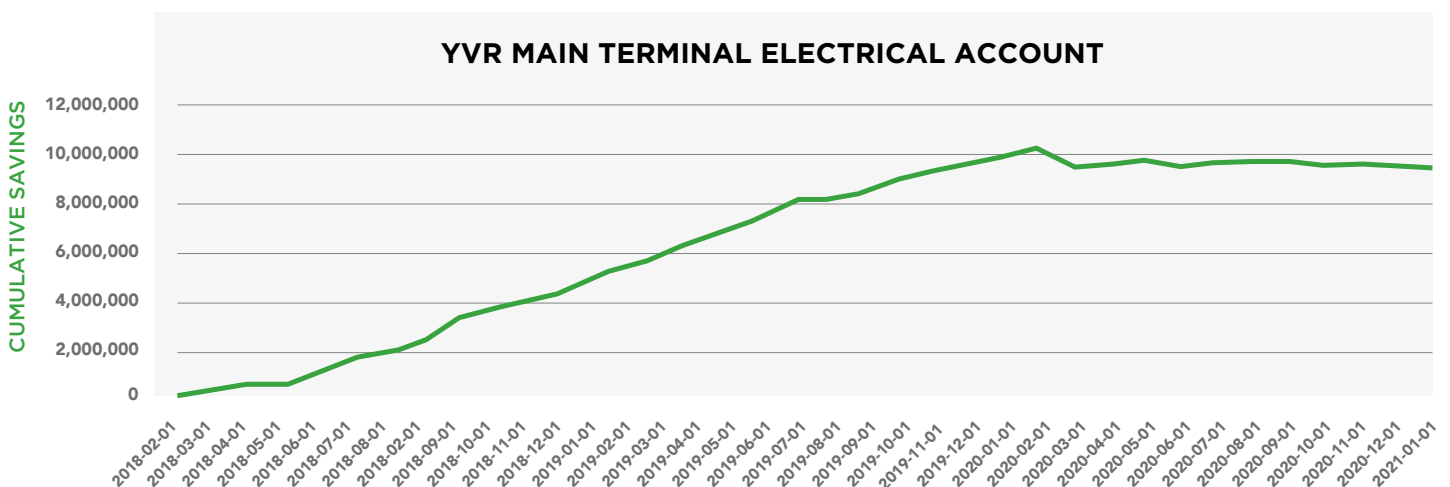
Though the guide itself was not created with COVID-19 in mind, it offered a variety of modeling alternatives to traditional multivariate linear regression forecast models, as well as a method selection decision tree to provide guidance on selecting the appropriate M&V method for a variety of circumstance. By consulting this guide, BC Hydro, Prism Engineering and YVR's Energy Manager were able to revise their methodology and create a new energy model that uses the original baseline up to February 2020 and a COVID-impacted model from March 2020 onwards. With a new energy baseline, YVR can confidently track operational savings while the airport remains impacted by COVID-19.

As demonstrated in the chart below, the cumulative electricity savings from the start of 2018 to March 2020 is 9,638,938 kWh, and the total cumulative electricity savings from the start of 2018 to January 2021 is 10,062,969 kWh. While the relatively flat trendline beginning in March 2020 might imply there have been no savings during the COVID-impacted period, this flat trendline is better

described as a new energy baseline against which operational savings can be tracked while the airport remains impacted by COVID-19.

“SEM is not something that we can effectively accomplish in a vacuum. It takes constant communication, learning, and collaboration to make sure we’re staying on top of the latest insights and employing the smartest tools. SEMHub allows us to achieve this cross-pollination, and it was never more important than when we were all working hard to find ways to adjust to a post-COVID world.”

- KEVIN WALLACE,
Senior Program Manager, BC Hydro





Pictured above: In 2017, YVR completed the largest LED apron lighting project in Canada with support from BC Hydro. It improved apron safety and is saving 715,000 kWh/year.

Achieving certainty amid uncertain times

Despite the disruption and uncertainties of COVID-19, YVR's Energy Manager now has a strong understanding of the airport's pandemic-era energy usage and savings. With a new baseline and energy model, YVR knows that despite the lockdown, they were still saving energy, though not at the same rate as before the lockdown. This insight allows them to continue withstanding the pandemic with the energy-use clarity required to maintain their commitment to ambitious energy and sustainability goals.

"Being strategic, using established energy management best practices and making data driven decisions is key to achieving energy efficiency at YVR and will be essential as we strive for net zero emissions by 2030," said David McPhie, Senior Environmental Specialist and Energy Manager at Vancouver Airport Authority. "The support that BC Hydro has provided to YVR over the years in this regard has been invaluable. Though the pandemic was an unprecedented event that made rebaselining and forecasting a challenge, the adjustments we made have demonstrated that savings are still traceable in this period of change and uncertainty."



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To view the SEM Energy Modeling Method Selection Guide, visit:

<https://semhub.com/resources/sem-energy-modeling-method-selection-guide>

To view all SEMHub tools and resources, visit:
[SEMHub.com](https://semhub.com).

Learn more about BC Hydro's SEM program:
bchydro.com/powersmart/business/programs/partners.html