

DISTRICT ENERGY CENTER

TCH Regent Park

Creating a modular silencer solution to stop cooling tower noise from disrupting the surrounding community.

Under pressure from the surrounding community, the Toronto Community Housing District Energy & Residential complex at Regent Park required a sound attenuation solution for the evaporative cooling towers on top of their 26-story tower. While the sound generated by the equipment did fall close to compliance with provincial and municipal guidelines, the sensitized surrounding community necessitated further mitigation measures.

Project Facility

District Energy Center

Noise Source

Evaporative Cooling Towers (1300T)

The Solution

Custom Modular Intake

Silencer Banks

Project Team

Owner – Toronto Community Housing

Acoustic Engineer – HGC

Reason for Mitigation

Disruption to the surrounding community. Compliance with provincial noise ordinances.

Project Challenges

Installation Challenges

The large, induced draft cooling towers for the Energy Center were on the roof of the 26-story Regent Park building, which resulted in limited access to the installation site. Furthermore, the height from the top of the roof to the top of the equipment was approximately 30', requiring a very tall and very slender solution. Working within the structural and spatial constraints of the existing facility, therefore, required a modular solution to limit the amount of site time during installation.



Available Space

The facility design included an aesthetic screen installed around the cooling towers, leaving approximately 36" of clearance between them. Attenuation solution options were therefore limited as acoustic performance and pressure drop limitations needed to be balanced with the incredibly narrow clearance available to install noise control.

Project Challenges

Community Sensitivity

The Cabbagetown Residents' Association listed sound emissions from the Regent Park Complex as one of their top five issues list for five years, filing several petitions and formal complaints to City Bylaw officers. While the city's readings showed that the facility was very close to the provincial and municipal decibel limit, residents insisted that those in a direct line-of-site with the Energy Center recorded readings well in excess of the regulations. What started as a series of isolated complaints eventually cascaded into a large community sensitivity problem. An acoustic consultant was eventually engaged to conduct a formal assessment of the facility's noise emissions, which later concluded that the tonal noise emanating from the cooling tower intakes was the primary culprit that was disrupting the nearby community.

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Issues

Noise From Regent Park Community Energy Centre – Update

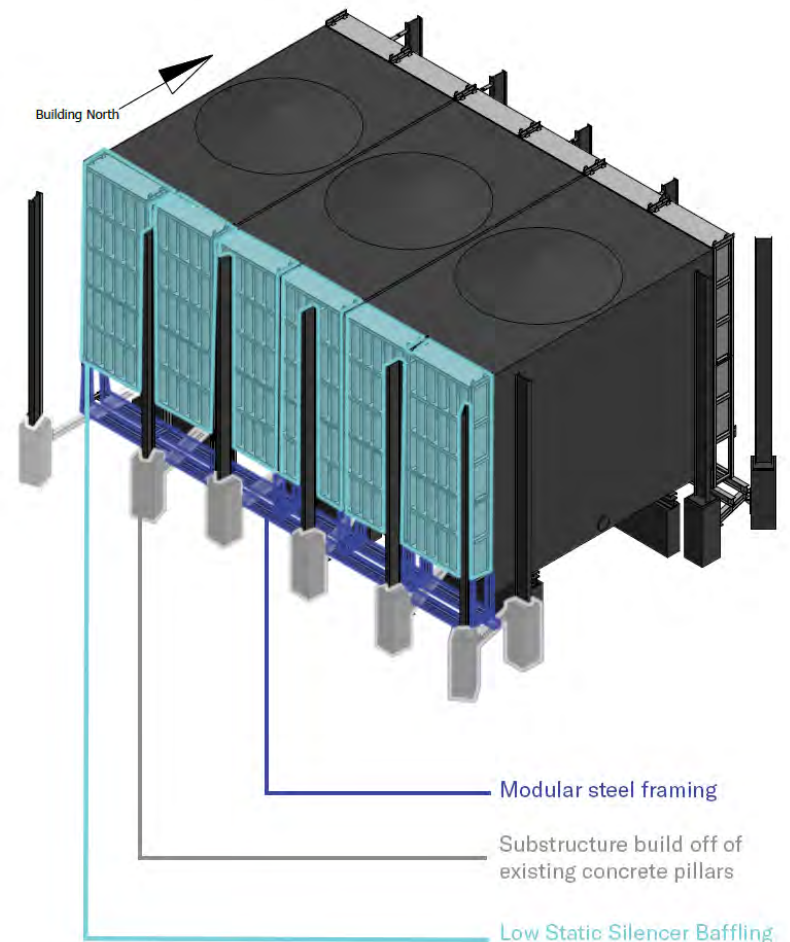
Many of you, especially in the southern part of the neighbourhood, will have been plagued by the droning hum from the Community Energy Centre in Regent Park. The noise seems to be particularly loud during the summer months. It began 5 years ago, and despite repeated complaints to our councillor, 311, TCHC and Daniels...the noise has continued. Since the Community Energy Centre is intended for use for the entire Regent Park development, it is likely that as development continues, the noise will become louder or more persistent and further negatively impact on many residents' enjoyment of their property.

One resident was finally able to convince the city to do proper testing in the fall of 2012, and a reading of 45db was determined (the provincial and municipal limit is 45db) at the east end of Carlton St. near Merdale Park. Residents closer to the Energy Centre, in a direct line from that location, have recorded readings of 50db however

Solutions

Design

The resultant sound attenuation design was a series of low-static intake silencer baffles nested into modular steel tube frames. 24 modular silencer banks were uniquely designed to fit within the space between the six dual-cell cooling tower intakes and the aesthetic screen. A substructure was built, spanning the existing concrete supporting pillars for both the aesthetic screen and the cooling towers themselves to provide a foundation for each of the modular silencer assemblies. Parklane's structural engineering team conducted an analysis of the existing piers and roof frame to confirm there was sufficient capacity. All the steel and silencer elements were galvanized to prevent rust from forming, guaranteeing that the solution would operate for many years.





Installation

The Parklane Site Services Team provided complete onsite management and installation services for the project. This included the supply of a 350T crane for hoisting the silencer banks into place, in addition to managing all required traffic permits and road closures. The modular system design limited the onsite crane time to two working days, dramatically reducing disruption to both the facility and local traffic.



Community Response

As the project began in response to rising community pressure, the response of the surrounding community during the project cycle is a testament to the idea of audio-visual congruency (i.e., if you can see it, you often perceive to hear it). Community residents began to report relief from the noise as soon as the silencer installation began. The noticeable shift in public perception was evident in the online community groups that had been protesting the noise. As the facility owners found, full compliance was not enough to placate a sensitized community, but by working with acoustic consultants and specialists like Parklane, a solution could be developed that matched the full scope of regulatory requirements and mitigated the issue for those affected.

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Issues

Resolved: Noise From Regent Park Community Energy Centre

Great news for lovers of peace and quiet in the neighbourhood!



As previously reported, cranes were seen lifting equipment on to the roof of 252 Sackville Street in late June. The parts were assembled the week prior to Canada Day, and the silencers seem to be doing their job since even under high heat and humid conditions, the noise from the Energy Centre has been largely reduced. It is still audible outdoors when running at full speed, but the level blends into background noise such as traffic from TCHC sent us this photo of part of the silencer on

This issue has been on our **Top 5 Issues List** for the past few years (it started during the summer of 2010). Our

Results

By employing our signature, full-service approach, Parklane successfully devised a solution that achieved compliance with provincial guidelines while also addressing the needs of the local community. We meticulously managed the physical and logistical challenges presented by the rooftop location, creating an integrated solution that seamlessly blended into its surroundings. Throughout the entire process, we maintained an open and collaborative dialogue with both the building owners and Toronto Community Housing to ensure a smooth experience for all parties involved. The success of the Regent Park project serves as a shining example of how impactful it can be when owners, acoustic consultants, and suppliers come together to meet regulations and address community concerns appropriately.

Frequency Band (Hz)	63	125	250	500	1000	2000	4000	8000
Required Insertion Loss (dB)	5	7	13	17	19	12	8	6
Q (cfm)	907740							
PD (in.wg)	0.054							



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We're dedicated to your success. Whether working with industry, acoustic engineers and consultants, or contractors, we're committed to providing effective solutions to noise and vibration challenges—no matter the size or scope.

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