

INDUSTRY SPOTLIGHT

STANTEC ready to help DND achieve Net Zero Carbon Future

Meeting the Paris Accord's climate goals with respect to DND's existing facilities will be a complex process. Engineering consulting firm Stantec has the knowledge and experience to help make this happen.

BY JAMES CARELESS

Canada's Greening Government Strategy (GGS) outlines how the federal government will reduce emissions from operations to support climate change commitments under the Paris Accord. It includes reducing greenhouse gases (GHGs) from federal facilities and commercial light-duty vehicles 40% by 2025 compared to 2005 levels. GHG emissions from these facilities must be reduced by at least 90% by 2050 in order to meet the government's goal of net-zero emissions.

In addition, the GGS calls for federally owned facilities to use 100% clean electricity by 2022 (where available), and by 2025 at the latest, to be producing and/or purchasing renewable electricity as part of their energy mix. As well, existing heating, ventilation, and air conditioning and refrigeration (HVAC-R) systems using high global warming potential refrigerants, ozone depleting refrigerants and hydrofluorocarbons (HFCs) will have to be converted or replaced by 2030.

Given the wide variety of federal infrastructure across Canada, complying with the GGS will be an incredibly complex task. This is where the engineering consulting firm Stantec can help, and in fact is already helping to make the GGS a reality.

Founded in 1954 in Edmonton, Stantec now has offices around the globe. More relevantly for the Canadian government and the GGS, this firm has already worked closely with federal facilities manager BGIS to develop GGS-compliant carbon neutral retrofit plans for buildings in every region of the country. "As is often the case with large portfolios, the majority of emissions from federal facilities

are generated by a relatively small number of buildings." said Graham Twyford-Miles, Principal with Stantec's Carbon Impact Group in Vancouver. "By developing detailed models for reducing operational emissions at more than 40 of the most emissions intensive properties, Stantec has established a clear pathway toward deep and cost effective GHG reductions for the entire Public Services and Procurement Canada (PSPC) portfolio."

DND's GHG CHALLENGE

According to DND, its portfolio is the single largest contributor to the federal Green House Gas emissions from real property, accounting for 50% of the GHG emissions to be reduced. This means that any effort to meet Canada's climate commitments

must include a comprehensive strategy to decarbonize the DND portfolio.

For its part, DND is taking action. Under the department's updated Green Building Directive (v.3.0 March, 2021), DND has established GHG reduction as a main focus for its real estate portfolio, while still covering sustainability and energy efficiency in support of the Greening Government Strategy. As well, the department's Assistant Deputy Minister (Infrastructure & Environment) has recently published DND's Defence Energy and Environment Strategy 2020-23. The three-year strategy renews DND's commitment to evolve as a sustainable organization and supports the objectives in the Federal Sustainable Development Strategy for 2019-2022.

Still, such initiatives require accurate assessments of DND's environmental impact based on its buildings/properties, along with tangible, actionable recommendations to reduce this impact. Stantec can assist the process through a mixture of onsite GHG emission and equipment audits, an experience-based understanding of government procedures and funding cycles, and a solid scientific base in climate change technological solutions and approaches.

ALREADY MAKING A DIFFERENCE

Stantec is already assisting DND in meeting the GGS' targets through new building construction. Specifically, this firm is the prime consultant for the DND's new multi-purpose building in Yellowknife, providing full Architecture and Engineering design services for this new 7,500 square metre



We understand the pressures that DND and other federal departments are facing in complying with the GGS, says Twyford-Miles



By bringing a whole building design approach to these studies, we maximize the potential for carbon savings and energy reduction, said Chatfield

oil, the government is buying clean electricity sources such as solar and wind power, as well as using clean types of local biomass (renewable organic material that comes from plants and animals) and CHP (Combined Heat and Power). As well, existing buildings need to replace oil-fired generators with green options such as electric boilers, ground source heat exchange and ground source heat pumps.

This is just the beginning: For the GGS' goals to be realized, DND and other federal departments need to consider a portfolio based emissions reduction approach to existing building retrofits. This means evaluating every aspect of a DND building/property to see what can be done to reduce its carbon footprint, covering everything from better insulation, reduced water consumption and energy-efficient lighting to moving to a

and reducing/eliminating the use of plastics wherever possible.

"Building retrofits can present design teams with complex challenges," said Melanie Chatfield, Stantec's Associate Energy Management Engineer. "But retrofits can result in a renewed asset that also produces less carbon, uses less energy, improves occupant health and well-being, and reduces costs to own and operate."

ACTIONABLE IDEAS

"We understand the pressures that DND and other federal departments are facing in complying with the GGS," Twyford-Miles said. "The requirements mean rethinking the business as usual approach to planning and renewal of federal assets. We're here to provide some meaningful, tangible solutions to this challenge."

The proof of this claim can be found in Stantec's previous work for the federal government through facilities manager BGIS. After completing detailed audits and performance modeling for more than 40 buildings across Canada, Stantec developed design strategies to bring each building closer to Net Zero carbon operations. In line with government and GGS requirements, these strategies included 40-year life cycle cost analysis of the buildings and recommendations for improving performance, which are essential for moving towards carbon neutrality. "By bringing a whole building design approach to these studies, we maximize the potential for carbon savings and energy reduction over the life of the building," said Chatfield.

It is this kind of results-oriented expertise that Stantec has already provided to the Canadian government in support of the GGS. It is exactly the kind of aid that DND will need, if the department is to match its Paris Accord commitments. ■

facility through Stantec's local office in this location. DND's building is targeting LEED Silver certification and will contain classrooms, offices, meeting spaces, maintenance facilities, and common areas for the 1st Canadian Ranger Patrol Group, and the Joint Task Force (North) Technical Support Group. The design will represent the values of the community and local Indigenous groups, while delivering benefits back to local residents.

CUTTING GHGS

Even the most energy-efficient of LEED-certified buildings can be a serious GHG emitter if its electricity isn't clean. This is because the means used to create power can have a negative impact on the environment if they use 'dirty' fuel sources like coal or oil. The same problem exists if the building uses fuel oil to heat its steam boilers.

This is why Stantec advocates the use of 'decarbonization strategies' for the GGS, to ensure that its clients fulfill their energy needs from 'clean' sources. In jurisdictions where electricity is generated using coal or

Why retrofit for carbon?

Reducing greenhouse gas emissions is critical to mitigating the effects of climate change. Existing buildings are responsible for a significant portion of Canada's emissions.

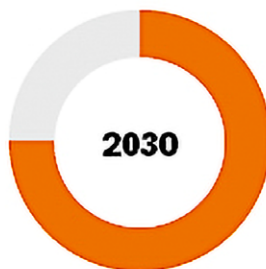
Canadian GHG Emission Sources:



The buildings industry has an important role to play in reducing Canada's carbon emissions.

- Industrial
- Buildings
- Electricity
- Agriculture
- Other
- Transportation

Canadian Building Stock:



New building energy codes alone won't be sufficient to meet our emission reduction targets. Retrofitting existing buildings is a key piece of achieving Canada's climate targets.

- New Construction
- Already built in 2019

true paperless work environment, choosing environmentally sustainable office fixtures,

James Careless is CDR's Ottawa Bureau Chief