PROJECT EXECUTIVE SUMMARY

Corporate Building Energy Benchmarking

City of Surrey

Sze Ting Tam, M.Eng. Environmental Engineering

Working in collaboration with

Rory Tooke, PhD, Community Energy Planner, City of Surrey

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The City of Surrey has set goals to reduce corporate greenhouse gas (GHG) emissions by 20% before 2020 from 2009 levels. In 2009, total GHG emission from City Operation was 14,500 tCO2e with corporate facilities contributing a total of 8,533 tCO2e. Building energy benchmarking encourages organizations to track energy use and compare it with similar buildings, helping to make energy a more salient issue for building owners and operators and to potentially identify opportunities for savings.

This project consisted of benchmarking 44 buildings using Energy Star Portfolio Manager (ESPM) to obtain building energy performance ratings. Since ESPM is still relatively new in Canada, only K-12 schools, commercial office buildings and hospitals can obtain the 1-100 Energy Star scores at this time. However, Natural Resources Canada (NRCan) is working to provide additional scores for other building types. Out of all the benchmarked corporate buildings at the City, only the Surrey New City Hall can obtain an Energy Star score. The rest of the buildings were analyzed and compared within the same building property use category using site weather normalized energy use intensity (EUI), site EUIs, and total GHG emissions.

However, several issues have been raised:

- Number of buildings within an individual property use category at the City is often quite small. Comparison result from small sample size might not be representable.
- Overall building energy comparison is not informative enough for certain audiences, such as facilities managers.
- Buildings under the same property use category do not always operate similarly, and are therefore difficult to compare.

Recommendations for building energy benchmarking:

- Compare buildings based using emissions intensity.
- Build a local BC building database with other municipalities to increase number of building stock available for building performance comparison
- Track water consumption
- Perform a more detailed energy audit/ analysis after identifying a poorer energy performing building
- Publically disclose energy performance rating of buildings on an existing online dashboard
- Surrey City Hall should install energy sub-meter for underground parking lot

Based on discussions with City of Surrey staff, occupants of fire halls have been identified as a potential target audience for communicating energy benchmarking results because of the following reasons:

- Fire Halls has the largest number of benchmarked buildings available at the City of Surrey

- Fire Halls operates 24 hours a day, 7 days a week
- Firefighters already have a strong understanding of building construction and design
- Firefighters can provide a direct link with homeowners and can therefore can help to disseminate key messages
- Major savings can be gained from behaviour change without mechanical upgrades or renovations, due to for example:
    - Leaving bay doors open
    - Heating open bays
    - Leaving lights on overnight
    - Prolonged hot water usage for shower and cleaning
- Firefighters may have access to thermal cameras to help locate thermal leakage across building envelopes.