Limiting the Energy Demands of New Homes in the District of West Vancouver

Improved building codes and equipment efficiencies have advanced the energy performance of new construction. However, new homes are often much larger than the homes that they replace, resulting in limited reductions—or actual increases—in total energy demand. This limits the ability of local governments to meet targets through increased new construction requirements.

The District of West Vancouver is interested in improving its understanding of contemporary building within the jurisdiction and identifying options to ensure that energy demand in the community does not increase despite more efficient construction. Aligning regulation to an energy budget would be a leading approach and would represent a significant shift from typical local government consideration. Lessons learned and strategies identified are applicable to West Vancouver as well as to other communities across British Columbia and Canada.

Goal and Objectives
Reduce energy use in single-family homes
Council Priorities: Natural Environment & Climate Action and Built Form,
Housing & Neighbourhood Character
Community Energy & Emissions Plan (CEE Plan): Housing & Land Use strategies

Scope of Work, Organizational Value and Implementation
The District of West Vancouver is committed to community energy conservation and the reduction of related GHG emissions. The pursuit of these objectives is directed by the District's 2016 CEE Plan and is supported by the proposed adoption of the BC Energy Step Code with the highest community-wide requirements in the Province to date.

The inventory of large residential lots in West Vancouver has generated resident concerns about the scale of some new home construction. In addition, the increasing conditioned area of homes complicates West Vancouver's progress to significantly lower GHG emissions by 2030. The robust market interest in housing development, relatively consistent solar aspect of the urban area, and Council commitment to the natural environment and climate action together create an opportunity for new policy work that advances energy-efficient housing.

The District is interested in exploring the potential to institute an energy budget in alignment with the BC Energy Step Code. This would require single-family homes to be built to increasingly more stringent energy efficiency requirements as the conditioned area increases, so that no home exceeds a budgeted energy use. The scholar's work will support this consideration, and will serve as a leading model for other local government energy conservation initiatives in British Columbia and beyond.

The scholar will:

- Determine the ability to apply a community-wide energy budget for single-family housing utilizing innovative practices from leading jurisdictions;
- Review recent permits and analyze the size, location and estimated energy use of new construction;
- Determine appropriate building thresholds to assign higher minimum step requirements;
- Calculate energy savings over Building Code and minimum Step Code requirements;

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- Identify the opportunity for on-site renewables to augment energy budget and reinforce neighbourhood character in support of ongoing public engagement;
- Consider the effectiveness of different pathways to meet building energy targets and provide a professional recommendation for implementation.

Deliverables

The scholar will complete a final report, executive summary for the UBC Sustainability Scholars online project library, and presentation to key stakeholders that includes:

- Overview of innovative practices;
- Profile of recent single-family construction with estimated energy use;
- Summary of energy budget thresholds and contribution to District conservation goals;
- Assessment of an effective implementation in alignment with the BC Energy Step Code;
- Identification of barriers and further opportunities.

Time Commitment

The project requires 250 hours to be completed between April 20, 2018, and August 10, 2018. Office hours are Monday through Friday, 7:45am to 4:30pm. An average of two complete work days per week are required to meet the total time commitment. This project allows flexibility in the distribution of hours to the mutual agreement of the District and scholar.

Skill set

Required:

- Excellent research and writing skills;
- Familiarity with research methodologies;
- Strong analytical skills and experience with statistical analysis;
- Demonstrated time management skills;
- Project management and organization skills;
- Ability to work independently.

Preferred:

- GIS training or experience;
- Familiarity with building design and construction practices;
- Familiarity with Provincial regulation and code requirements.

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