

GREENEST CITY SCHOLARS PROGRAM
UBC Sustainability Scholars Program, Summer 2018

Research project title

Solar Energy Farm – Organizational Framework and Business Case Research

Research supports the following policies

Renewable City Action Plan

Zero Emissions Building Plan

Purpose:

The Zero Emissions Building (ZEB) Plan has set a 2030 target to require all new buildings to generate zero operational greenhouse gases (GHG's) but electricity in British Columbia is not currently required to have no associated GHG emissions. Therefore, for a new building to achieve zero emissions, it may need to make up a portion of its power usage with locally available renewable energy such as biogas, neighborhood energy utilities, or solar photovoltaics (PV).

In high density urban neighbourhoods, roof space may limit the capacity for installing solar PV. To better enable adoption of this technology and have new high density buildings use 100% renewable energy, the City wishes to explore utility structures and the business case to establish solar farms on large under-utilized roof spaces in Vancouver that could be rented to a solar utility or cooperative. The aim is to explore opportunities to attach ownership of PV panels and energy production to buildings, businesses or individuals while benefiting from lower costs through scale purchasing, installation, and maintenance/management.

Scope of work:

This project seeks a Greenest City Scholar to lay the groundwork and identify steps needed to launch a Rooftop Solar Energy Utility program. The three priority tasks:

1. Literature review

- a) Investigate the administrative and legal structure of existing, successful rooftop solar utilities and co-operatives in North America. This may include interviews with existing operators.
- b) Specifically explore mechanisms to attach “ownership” of panels (or at least the clean power they generate) to individuals, businesses, but also to specific properties such as new developments seeking to achieve zero emissions in a different location from where the panels are physically installed. Also explore consequences of local electricity utility regulatory conditions (e.g., BC Utilities Commission).
- c) For conventional rooftop photovoltaic (PV) arrays, complete a high level review of:
 - Current trends in PV panels purchase costs and power output per unit size
 - Cost savings that can be achieved due to bulk panel purchasing (locally or by other scale procurement initiatives in North America)
 - The characteristics of viable roof spaces (area and layout flexibility, safe access, structural stability, etc.)
 - Grid connection requirements and costs
 - Amount of clean power generation that would be required to satisfy the City’s zero emissions requirements
 - Rate(s) that BC Hydro would likely pay for power generated
 - Panel mounting approaches that optimize tradeoffs between mounting costs and power production potential;
 - Ease of relocating equipment (at roof lease termination)

2. Project manage a rooftop PV feasibility study

Submit applications here: <http://bit.ly/2DC2jpP>

GREENEST CITY SCHOLARS PROGRAM
UBC Sustainability Scholars Program, Summer 2018

- a) identify types of businesses and organizations that control suitable roof spaces that might be receptive to renting these spaces to a solar utility or cooperative
- b) Interview three potential rooftop owners to determine conditions under which they may consider renting their rooftop space for a PV array (such as rent amount, term, maintenance access, tour access, etc.)
- c) Interview three large socially responsible corporations to gauge interest in buying solar panels or shares in or at a Vancouver based solar farm/utility
- d) Select most likely roof/owner and explore viability (with the support of external engineering firm) of establishing initial solar farm location including installation costs (including panel purchase, install, and grid intertie), maintenance costs, power generation capacity and anticipated revenues, operations/maintenance and future equipment replacement costs. Evaluate full life-cycle costs and determine amount of subsidy required to break even

3. Recommendations

Based on learnings from tasks 1 and 2, provide clear, concise steps that are recommended to effectively launch and operate a successful rooftop PV utility/cooperative farm in Vancouver.

Deliverables

The Greenest City Scholar will deliver a final report containing a summary of their completed work with recommendations, complemented by a final presentation to key stakeholders. The report should include:

- The literature review and feasibility study results and analysis, as well as recommendations for steps to effectively launch the solar energy utility program
A public facing final report (or executive summary) for the UBC Sustainability Scholars online project library

Time Commitment

- This project will take **250*** hours to complete.
- This project must be completed between *April 27 and August 10th 2018*
- The scholar is to complete hours between 9am and 5pm, Monday to Friday, approximately 20 hours per week.

Skill set/background required/preferred

- Excellent time and organizational management
- Excellent technical research and writing skills
- Demonstrates keen interest and knowledge of clean energy technology
- Ability to perform cost estimating and lifecycle cost analysis
- Familiarity with community-scale programs or businesses is an asset
- Previous project management experience is an asset
- Comfortable conducting effective phone calls and interviews
- Considerable experience with Microsoft Excel is an asset

Work location: Engineering Crossroads Building - 507 W Broadway

Submit applications here: <http://bit.ly/2DC2jpP>