

Saanich Peninsula: Wastewater Heat Recovery

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The Project

The Saanich Peninsula Wastewater Treatment Centre Project is a thermal heat recovery system located in the Capital Regional District (CRD) (population 376,222) on Southern Vancouver Island. After nearly three years of planning, design and construction, it was completed in the spring of 2011. The recovery system recycles heat from treated wastewater for use by the nearby CRD Panorama Recreation Centre. The system is designed to be large enough to heat several buildings with the Panorama Recreation Centre representing the first phase of the project.

Project Motivation

CRD staff and decision-makers recognize that climate change and rising energy costs are significant risks for the region. Therefore, the CRD was motivated to maximize the use of existing infrastructure in way that reduces regional vulnerability to increasing fossil fuel prices, while at the same time reducing greenhouse gas (GHG) emissions and improving energy resiliency.

By recycling energy to heat the swimming pool, the Panorama Recreation Centre has decreased its use of natural gas, is paying less carbon tax and helping to reduce the corporation's carbon footprint.

BY THE NUMBERS

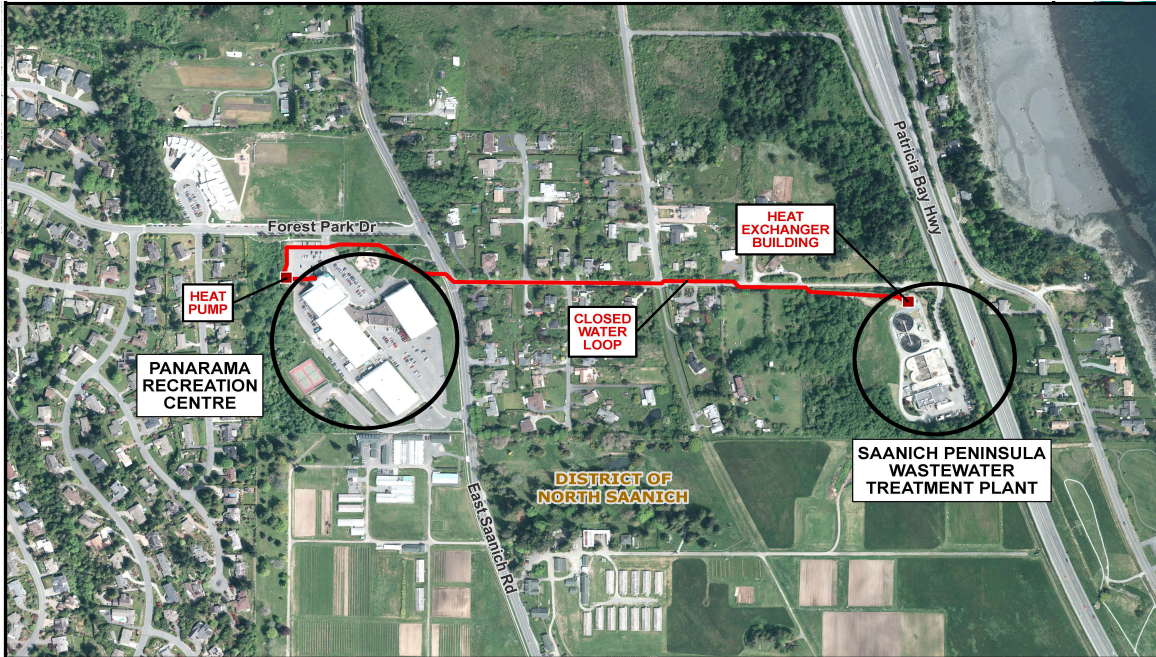
Project type: Wastewater heat recovery
Year of implementation: 2011
Project lifespan: 30 years
Cost: \$3.3 million
GHG savings: 286 tonnes CO₂e/year (in CRD corporate emissions)
Financial savings: \$77,000 in operating costs at the Panorama Recreation Centre

Overcoming Barriers

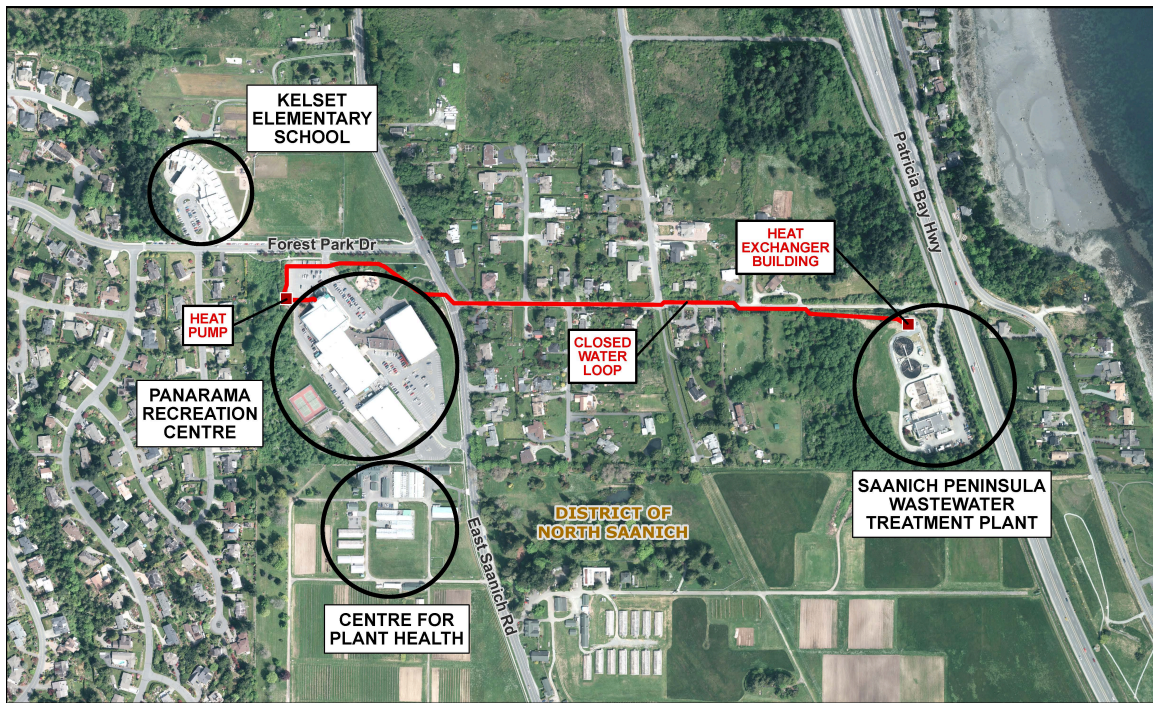
The CRD is a service provider to municipalities, meaning they had to convince municipal decision-makers that a heat recovery project was worth the investment of tax dollars. By using recovered heat, they will save money on operating costs, have reduced payments through the carbon tax and have a more viable investment overall as they are using recovered heat for a swimming pool that they own and operate.

A bigger challenge was ensuring the successful design, construction and operation of the heat recovery system without affecting treatment centre or recreation centre operations. The project team therefore had to work cooperatively with in-house staff and external consultants to ensure the success of the project – not just on paper but in reality.

The CRD reports that one of the most significant barriers that had to be overcome was the public's perception of reusing waste as energy. It was important to tell the story about how district energy systems, combined with heat recovery technologies, could use something "dirty" like heat from effluent as a "clean" energy source. The CRD used open houses, their website and social media tools such as blog posts and Twitter to foster community support and understanding.



Saanich Peninsula Wastewater Treatment Plant supplying thermal heat to the nearby Panorama Recreation Centre. Source: CRD.



Planned expansion of thermal heat from the Saanich Peninsula Wastewater Treatment Plant to Kelset Elementary School and Centre for Plant Health. Source: CRD.

Another barrier was the tension between short-term investments, long-term decision-making and innovation. One staff member from the CRD remarked,

“When you are asking politicians to support a substantial investment in infrastructure, it can be difficult to make the case. We were lucky to have the support of elected officials who recognized the value and benefits of the heat recovery project now and in the future.”

Building Community Support for Projects

Building support for these types projects is dependent on communicating the community benefits and calculating the business case. While the heat recovery project had an immediate benefit of serving the recreation centre swimming pool, it was designed with enough capacity to serve a nearby federal greenhouse and elementary school in the future.

It was important for the CRD to use a triple bottom line lens, and to show measureable benefits from the project. As a signatory to the BC Climate Action Charter, the CRD measures their corporate energy use and emissions each year. Now that the project is operational, they are able to directly measure how much fuel this project is saving. This helps constituent taxpayers understand the positive impact of the project on the environment *and* on the bottom line.

Impact of Provincial Policies, Programs and Grants

The carbon tax and carbon neutral obligations acted as strong financial incentives for this project. The carbon neutral requirements, in particular, helped make the business case by accounting for the avoided cost per tonne of carbon-offset payments to achieve neutrality

each year starting in 2012.

According to Sarah Webb, climate action program manager for the CRD,

“The carbon tax was included in the financial analysis and helped the staff understand the potential savings associated with displacing natural gas and using a renewable source of energy instead. The tax was an external mechanism that helped us quantify the economic differences between ‘business as usual’ and green infrastructure innovation. While we recognize there are some limitations of the carbon tax, it is a step in the right direction to more holistic accounting.

“There are a number of ways to improve the carbon tax policy. First, we need some certainty and understanding of where the carbon tax is going beyond 2012. Second we need to look at creative ways to put the carbon tax to work in our communities. I think that local governments would jump at the chance to access tax revenues in order to re-invest them into corporate and community climate action projects. There are hundreds, if not thousands, of projects like ours that can create jobs, reduce emissions and improve energy security.”

Summary

The Saanich Peninsular Heat Recovery Project has opened up new possibilities for clean energy in the capital region, and the lessons learned have inspired a vision to establish a network of district energy systems across Southern Vancouver Island. Staff members are now working to identify schools, campuses, hospitals and provincial buildings that would provide ideal clusters for heat recovery technologies using water and wastewater infrastructure.