



Esquimalt IRM Frequently Asked Questions

The Township of Esquimalt is carrying out a study to look at integrated Resource Management (IRM) through the use of gasification plant. This plant would process municipal solid waste, kitchen scraps and yard/garden waste streams. The study has indicated that there is the potential for heating and cooling opportunities through a district energy system and lower Greenhouse Gases (GHGs). One of the end products from the gasification process is the production of biochar which can be utilized in other processes and sequester carbon. The study also indicates that there is potential revenue stream that may be able to offset tax Requirements. As residents may have questions about the proposal, this document provides a simple summary of common questions and answers, sorted into three main headings as noted below.

- [GENERAL QUESTIONS](#)
- [ENVIRONMENTAL & REGULATORY](#)
- [ECONOMIC AND FINANCIAL](#)

1: Why are we doing this study?

After receiving a presentation about integrated resource management (IRM) at July 6th's council meeting, Esquimalt council tasked staff with reaching out to the community to hear residents' questions and comments about the proposed waste management project.

2: What are we asking the public?

To help residents and businesses get a better understanding of the project and what it means for the township, the public is invited to a live webinar on September 22 where they can ask questions and learn about the potential project. There are also several documents including a technical report [on the Township of Esquimalt website](#). A survey is open until October 9 to help gather input from the Esquimalt community where the public is asked to comment on where they see costs, concerns or benefits to this project.

3: What are the next steps?

Council will review the results from the public engagement activities along with the consultant's final report at a Committee of the Whole meeting later this fall. Council will then decide if further action on IRM will be taken.

4: How might the Township benefit?

In short there are possible net financial and environmental benefits to residents. [Read more about the benefits in the summary report.](#)

5: What is Integrated Resource Management? How does it work?

Integrated Resource Management (IRM) is a process used to maximize resource recovery from wastes. It can reduce costs, greenhouse gas (GHG) emissions and pollution. It integrates financial and environmental goals within a combined business case to plan the best waste management for the community.

6: What is gasification and how does it work? How does it differ from incineration?

Gasifiers are very different from incinerators because rather than burning (combusting) the material, gasification uses high temperatures in a sealed environment to convert wastes into a synthesis gas which is usable to make other products. Because of the sealed system and high temperatures, gasification avoids generating smoke, dioxins, furans, and other toxins that are a concern with incineration. By using waste, it can generate renewable energy with related to natural gas, but is not a fossil fuel.

7: What will the plant process?

The plant will process Esquimalt's municipal solid waste, kitchen scraps and yard & garden wastes. These materials will be processed in a negative pressure building to control odour and the plant will be continually monitored to ensure compliance.

8: What will it look like?

The plant will be contained in a building similar to those surrounding it, so it blends in with existing surrounding uses. The building will likely be lower than the height of the existing Public Works Yard buildings, with an exhaust stack similar to other buildings and systems in the community using natural gas boilers.

9: How much extra truck traffic will the project generate?

No traffic increase is expected as the wastes are already being collected by trucks circulating in the Township. As trucks will have a shorter route, both traffic and GHGs should reduce. Trucks will be diverted to the Canteen Road facility. On average this will total three trucks per day.

10: Why are biosolids (the solids created through secondary wastewater treatment) not a part of this conversation?

The wastewater treatment process and falls under the jurisdiction of the CRD. The CRD has opted to use anaerobic digestion and final disposal through other means.

11: Why hasn't CRD taken the lead on this?

CRD had an [IRM taskforce in recent years and opted not to pursue IRM](#) as a waste solution.

12: Why should this project happen in Esquimalt and not closer to the landfill?

The township is pursuing IRM through gasification and therefore is trying to locate it through the township. The potential gasification plant would then be in close proximity to the township core where heat from the plant could potentially provide energy for nearby buildings.

13: Why do Esquimalt taxpayers have to pay for this?

This is a capital project for the benefit of the township and its residents.

14: Can Esquimalt do this?

The Township is responsible for the management of the various waste streams it controls (solid waste, kitchen scraps, yard/garden). The Province will look at any request to manage these streams and determine if they comply with regulations. Any change to the current methods of dealing with these streams would need to be incorporated into the Regional Plan managed by the CRD.

15: Who is responsible for permits?

The Township will be responsible for obtaining funding and permits unless contractors are made responsible, with oversight. The Ministry of Environment (MoE) is the main approving authority and has approved several gasifiers in BC, so the systems and processes exist and are understood.

16: Is this being done elsewhere?

Similar approaches in Europe and Asia exist, with over 90 operating gasification plants and combined over 1,000 years of combined total operations. Most European countries are using thermal conversion technologies including gasification, as the main way to achieve up to 100 per cent diversion. Scandinavia, in particular, has used an IRM approach to plan and implement systems. It is not a common technology in North America with a limited number of plants in operation.

17: How significant are the GHG reductions?

The recommended project's reductions would eliminate the municipality's corporate GHG target and contribute ≈31% of the community's overall 2030 GHG reduction targets. In addition, biochar will sequester carbon, one of the few ways to extract atmospheric carbon at no extra cost. IRM has the potential to provide an opportunity for GHG reduction

18: Will there be smoke or other airborne emissions?

This is not an incinerator. The gasifier's output is combusted in a specially designed heater to achieve complete combustion, which captures the heat for distribution to the community. Continual emissions control systems will manage the process to prevent pollution. A California plant is approved by California Air Resources Board, who are co-funding plants for further development of the systems.

19: Will there be an odour?

No. There will be no odours because the waste processing will occur indoors in a negative pressure industrial building with an odour control system. Also, there are no odours or unregulated air emissions from the gasification plant.

20: Who regulates garbage in Esquimalt and what criteria must be met?

Solid waste (or garbage) is regulated by Ministry of Environment and Climate Change Strategies (MoE). Systems must meet the following mandatory criteria:

- The waste levels in the Township meets the criteria for energy recovery;
- The technology's energy recovery >60% and emissions meet regulations;
- Amend the regional Solid Waste Management Plan to include IRM gasification;
- The plant must be supported by the community.

21: How will emissions be monitored?

MoE will initially approve the system but will also require ongoing / continual monitoring and reporting of a plant's environmental performance to ensure compliance. This is the standard procedure for all systems that might have emissions.

22: Are there pollutants in garbage?

Yes, there can be, especially chlorides and sulphur. However, the plant will use standard treatment systems to capture and process possible contaminants, to ensure they are not discharged and that Esquimalt can obtain value from them.

<ul style="list-style-type: none"> ▪ Composting ⇒ Sterile biochar Same tonnage but sterile Sequesters carbon ▪ GHGs >100% of corporate target ≈31% of community target ▪ Diversion ≈43% ⇒ ≈91% ▪ Financial & next steps Cost: ≈\$21m at buildout Dividend: ≈\$360/home/yr net Feedback, approvals & testing Financial, contracts & guarantees 	   
&	

23: Will this produce compost?

Gasification produces biochar, which is a sterile, concentrated soil supplement that is easier to distribute than compost, avoids odours and has more uses. The biochar will be continually monitored for compliance with environmental and international standards. Biochar results in higher GHG reduction than compost, sequesters carbon, and may generate revenues that contribute to paying for the system.

24: What about plastics & Styrofoam?

Plastics and Styrofoam (expanded polystyrene and similar products) that can be separated will continue to be recycled. Those that are embedded in composite products or have been missed by residents, will be gasified. This converts the material into usable gasses and eliminates their potential to contaminate the wider environment.

25: What is the impact on local recycling programs?

Recycling will be largely unchanged and Blue Bins will continue to be used. Kitchen scraps and woody yard waste will be converted to energy and biochar – a sterile, high quality soil supplement. Materials that can be extracted from combined wastes either before or after gasification will increase the extent of recycling.

26: Is this green / sustainable energy?

Yes. As local waste is typically over 85 per cent sourced from food, yard and garden wastes and other non-fossil sources, the resulting energy is considered sustainable.

27: What is the temperature of the pyrolysis? Where does the energy come from?

About 600 degrees Celsius and the power to heat the waste comes from the syngas generated by the gasifier.

28: What will it cost?

The IRM recommended option will likely be owned by the community and is expected to cost ≈\$15m initially, rising by ≈\$6m as the community grows. This study predicts revenues to exceed plant costs, reducing the community's tax pressures, or paying an annual dividend. The only increase in cost to taxpayers should be increases in charges to keep in line with inflation. There may be a tax dividend to the community. The initial capital (construction) and operating costs will be paid by the Township.

29: Is the cost of the energy loop included in this study?

The cost of the loop is included but not the cost of hooking up to the system or building modifications to tap into it.

30: What are the risks to the township?

1. Financial: There are significant capital costs that may involve borrowing funding; a long return on investment period; at this time there is no guaranteed revenue stream for energy or by-products; there are continued operating and maintenance costs. Any potential earnings from the plant could be used to offset costs at a later date.
2. Availability of feedstock: at this time we can only assume current municipal collection efforts, however there is a potential to enter into agreements with waste haulers that provide services in Esquimalt.
3. Operational: An operational licence for such a system still requires Ministry of Environment and Capital Regional District approval.

31: How much will taxes be raised?

It's unclear at this time and dependent on a number of variables, including revenue streams, operational and maintenance costs and potential debt servicing.

There is a potential for a positive revenue stream from byproducts from this project, however the study estimates a potential of \$360 savings per household under ideal conditions, i.e. availability of feedstock, pricing of biochar and selling of energy.

This potential savings would be used to offset the operation and maintenance of the facility and assist in payback of the loans for construction.

32: How would Esquimalt pay for this?

The cost of this project has been estimated at approximately \$15M-21M. This is a significant investment for the township and would represent one of its largest capital expenditures. To assist in offsetting the costs, potential sources could include grant funding (provincial and federal cost-sharing), long-term borrowing, or public-private-partnership (concession).

33: What guarantees does the Township have this will work?

One possible way is to create an agreement with the supplier and operator that would include performance bonds to ensure contracted performance is met, or the supplier/operator will be liable for correcting any difference. The gasifier will have a performance and yield guarantee. Tests at an existing plant will prove the system works with Esquimalt's actual wastes, before proceeding.

34: Are there any formal agreements in place to purchase biochar?

This is a conceptual study at this point therefore all potential agreements are only in a discussion phase with suppliers and purchasers.

35: What is the life expectancy of the facility?

Initially 30 years, but with continuous maintenance and upgrades, 50 years or more.

36: Will there be impacts on surrounding businesses or land uses?

The recommended site is adjacent to CFB Esquimalt on two sides, Esquimalt Road and the Public Works Yard on the fourth side. As traffic is expected to be low, with the system contained in a building that will contain any odour, emissions and noise, no significant negative impacts are expected. However, the project will provide benefits for employment and business, and similar European examples have been shown to generate interest and broader employment.

37: Will this help the local economy?

Yes. Similar European examples have stimulated economic development and attracted like-minded businesses, creating new green jobs.

38: Is this being done elsewhere locally?

Not at this scale. Pressure to replace landfills, to reduce GHGs is only now bringing this to the forefront in BC and North America. However, Europe has been leading in this area with thermal conversion approaches since the 1970's. Today, half the EU countries now exceed local diversion rates, some achieving 100% diversion.

39: Is there another local gasifier in the CRD region?

Dockside Green has a gasification system. [Learn more.](#)

You can submit further questions by emailing engineering@esquimalt.ca

More information and the survey are available at Esquimalt.ca/irm or [follow the Township on social media for updates.](#)