

Vancouver Airport
Fuel Facilities Corporation



Vancouver Airport Fuel Delivery Project





Vancouver Airport Fuel Facilities Corporation (VAFFC) is a not-for-profit company owned by a consortium of commercial airlines representing most of the domestic and international carriers serving Vancouver International Airport (YVR). VAFFC owns and operates fuel storage and distribution facilities at YVR. These facilities are shared among the airlines, allowing them to avoid duplication and minimize costs. Similar fuel facility corporations operate at all of the major international airports across Canada.

VAFFC is proposing a new fuel delivery system to meet the long-term needs for aviation fuel at YVR and support future economic growth in the region.

YVR is a major economic contributor to our community, our region, our province and our country. It supports some 50,000 direct and indirect jobs and hundreds of businesses, generating significant tax revenue for all levels of government. An efficient airport supported by a safe and reliable fuel delivery system helps keep these benefits flowing.

We welcome your input, your insights and your questions regarding the proposed new fuel delivery system.

An efficient airport supported by a safe and reliable fuel delivery system is vital for our economy

The need

The need for a safe and reliable fuel delivery system for YVR's future.

A safe and reliable fuel delivery system is critical to the continued success of YVR and the benefits it brings to our economy and community. However, the existing aviation fuel delivery network does not have the capacity to meet the long-term requirements at YVR, especially during peak demand periods. The situation is expected to reach a critical point as early as 2011.

Much of YVR's current supply of aviation fuel is delivered by a 40 kilometre pipeline owned by Trans Mountain (Jet Fuel) Inc. (TMJ). The pipeline was built in the 1960s, when four refineries operated in the area. Now a single refinery in Burnaby, operated by Chevron Canada, remains in operation. The Chevron refinery provides the pipeline with roughly half of its supply, with the other half arriving by tanker or barge at the Westridge Marine Terminal in Burrard Inlet.

However, this pipeline is unable to meet the peak fuel demand periods at YVR. To make up the shortfall, YVR now depends on deliveries of fuel by tanker trucks from the BP/ARCO refinery at Cherry Point in Washington State. After passing through the border, these trucks travel on Highway 91 to Richmond, along Highway 99 and onwards to YVR. Currently, YVR receives an average of 25 truck deliveries daily, and as many as 35 daily during peak periods such as summer and holidays.

Although we are currently experiencing an economic downturn, long-range forecasts show a 4% average annual increase in passenger and airline traffic at YVR and an average increase of 3% to 5% in fuel consumption. Without a new fuel delivery infrastructure, some 200 tanker truck deliveries from the US could be required to meet this fuel supply gap within 20 years. These heavy duty trucks contribute to safety concerns, wear and tear and traffic congestion on our highways and roads, as well as greenhouse gas emissions.

In the meantime, a shutdown or emergency at either the Burnaby or Cherry Point refineries would have a significant impact on the airport in a matter of days.



A shutdown at one of the refineries servicing YVR would have a significant impact on the airport and the public it serves

YVR's existing fuel system



Project overview

Various options to secure a more reliable long-term fuel supply for YVR were evaluated. The best consists of a marine terminal and fuel receiving facility on the south arm of the Fraser River connected to YVR by a new 15 kilometre pipeline.

Marine terminal: In 2007, VAFFC purchased a wharf facility in Richmond on the south arm of the Fraser River, at the foot of Williams Road, about two kilometres east of Highway 99. Located 15 kilometres upstream of the mouth of the river at one of its deepest and widest sections, this wharf was built in the late 1990s to handle vessels up to 30,000 tonnes.

The facility requires upgrades to serve a range of vessel types to ensure a flexible supply. For example, by accommodating barges, fuel can be delivered from local supply sources. By also accommodating Panamax class vessels, fuel can be delivered from more distant sources, such as the western US and Asian markets.

This new terminal will eliminate the need for vessels to travel north and enter Burrard Inlet to deliver fuel to the Westridge Marine Terminal.

Fuel receiving facility: A new fuel receiving facility will be constructed near the marine terminal at the foot of Williams Road. The facility will accommodate six steel above-ground storage tanks with a total capacity of about 80 million litres. At approximately five hectares, the property is big enough to accommodate two additional storage tanks if needed in the future.

Pipeline to YVR: A new pipeline connecting the fuel receiving facility to YVR will be about 15 kilometres long and about 300 millimetres in diameter.

Where significant road and waterway crossings are unavoidable (e.g. Highway 99 and Moray Channel) the pipeline will be directionally drilled to mitigate potential environmental impacts and avoid disruption of vehicle and vessel traffic.

At present, the pipeline corridor follows a series of existing transportation corridors, with several alignment options under consideration. The public, stakeholders and regulatory bodies are invited to provide their input on each of these options.

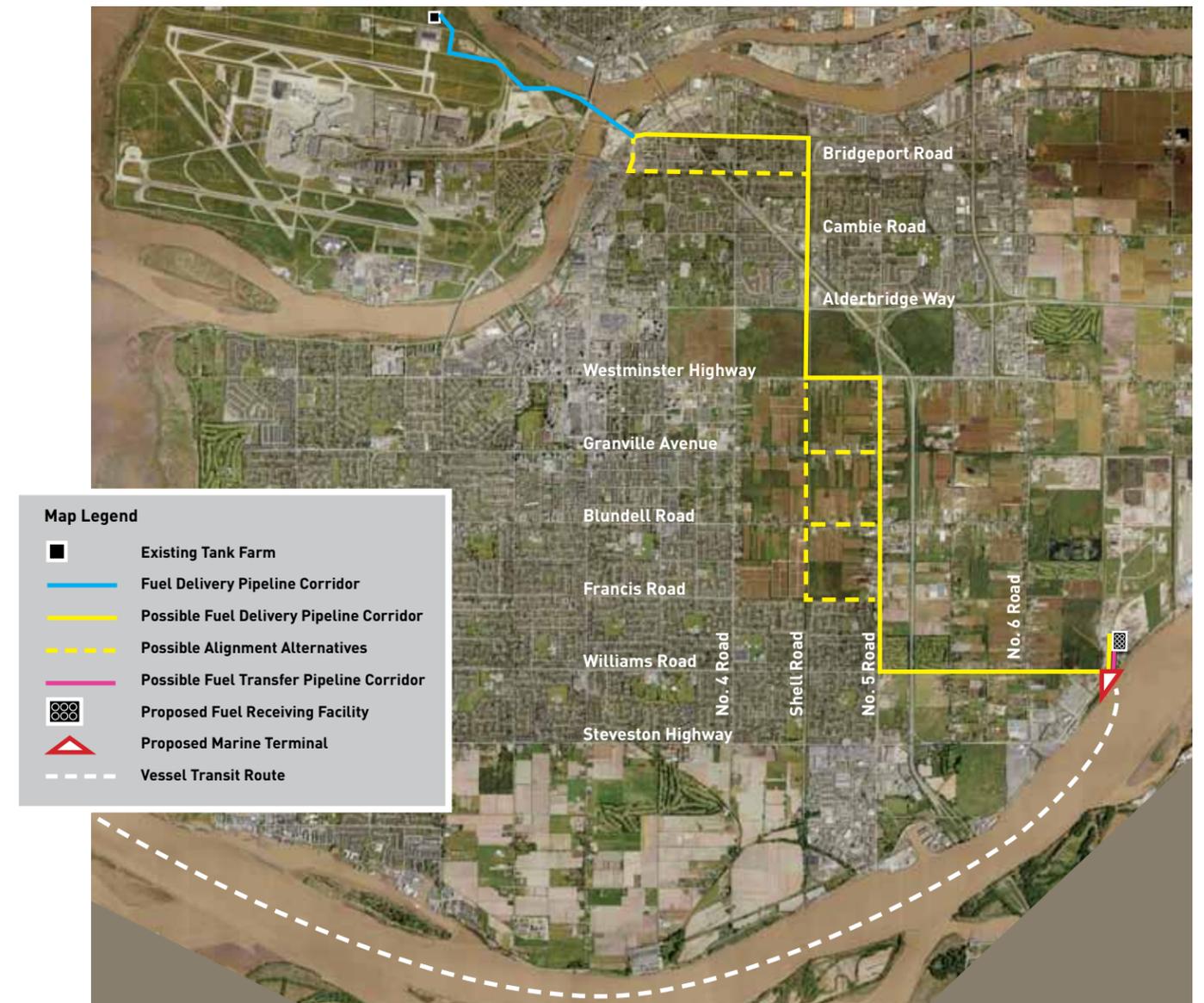


Proposed Marine Terminal and Fuel Receiving Facility

Our proposed new delivery system

The pipeline will use existing transportation and utility corridors

Several alignment alternatives are under consideration for your input



A new, shorter pipeline will transport fuel to YVR from a new fuel receiving facility located on the south arm of the Fraser River at the foot of Williams Road.

Safety and protecting the environment



Best management practices and state-of-the-art technologies will be used to protect the safety of the public and the environment

Public safety and the protection of the environment are fundamental priorities of VAFFC.

Marine terminal safety features: The new marine terminal will be located on the north shore of the south arm of the Fraser River, at one of the widest and deepest sections of the river. An upgrade of an existing wharf, in an area that is already zoned for heavy industrial use, will be based on best practice designs and incorporate state-of-the-art mooring and off-loading technologies.

Vessels will be double-hulled for optimal safety. Through BC coastal waterways, a government-certified BC marine pilot from the Fraser River Pilots Association will provide guidance to the ship's command, adding another layer of safety. VAFFC will also develop a Spill Prevention and Emergency Response Plan and implement best practices with all vessels.

The new terminal will be designed to handle small barge shipments as well as large overseas shipments. The off-loading of vessels will be short in duration and will occur only a few times a month, based on projected YVR fuel demand. A barge could be expected to deliver fuel once every two weeks with an unloading time of around 12 hours, while a Panamax class vessel could be expected once a month with an unloading time of around 36 hours.

Marine transportation of aviation fuel and other petroleum products within the Lower Mainland is not a new practice. This new terminal will be receiving the vessels that are currently making deliveries to the Westridge Marine Terminal in Burrard Inlet. In addition, barges are currently transporting bunker fuel on the Fraser River.

Pipeline safety features: Regulated by the BC Oil and Gas Commission, the pipeline will incorporate a number of important safety features. All pipeline infrastructure will employ a modern corrosion protection system and computerized leak detection technology. Its walls will be sufficiently thick and strong to guard against seismic events and other potential damage.

The pipeline will be well marked and electronically located for reference by municipal and private contractors performing other work in the vicinity.

Fuel receiving facility safety features: The storage tanks will be enclosed within secure chain-link fencing and monitored through closed-circuit television. It will include:

- computerized leak detection monitoring
- tank overfill protection systems
- emergency shut-off valves
- tank vapour suppression technology
- a secondary containment area surrounding the tanks

Aviation fuel properties

Commercial aviation fuel is commonly referred to as jet fuel. It is a kerosene based liquid that pours like water. The type of jet fuel used by airlines served by VAFFC is called Jet-A, an internationally standardized product that is used by almost all of the world's commercial airlines. Jet-A is a clear, straw-coloured liquid, very similar to diesel fuel in its composition. It is relatively safe to handle at room temperature. A lit match dropped in a bucket of jet fuel will simply go out. Because it is a product of distillation, jet fuel exposed to the atmosphere will evaporate completely over time.

Fourteen alternatives evaluated

VAFFC has been examining various options to secure a reliable long-term fuel supply for YVR. Over the past few years, 14 different options have been evaluated. These alternatives included combinations of fuel delivery by marine routes, rail, tanker trucks and pipeline to bring fuel from its source to YVR. Each option was evaluated according to a range of criteria including safety, environmental and economic factors. It is critical that the new system provide YVR with a safe and reliable fuel delivery system, access to a broad range of competitive offshore fuel supply sources, and the ability to meet YVR's growing demand.

Project benefits

The benefits of a new system using marine and pipeline delivery are significant.

A reliable long-term fuel supply: The new system will be able to reliably meet the future needs of YVR with increased capacity from a greater number of fuel sources. This project will supply YVR's fuel needs for the next 60 to 100 years.

An environmentally responsible fuel delivery system: All aspects of our operations will follow best practices and meet the most rigorous environmental and safety standards.

Safer roads: Taking tanker trucks off the road will enhance public safety. The potential of up to 200 trucks on our streets, each travelling 150 kilometres per day, is a significant safety concern that the project will eliminate.

Less traffic congestion: Eliminating tanker truck deliveries will reduce congestion on our crowded highways and roads, and lessen the wear and tear on our infrastructure.

Cleaner air: Truck deliveries produce greater greenhouse gas (GHG) and other environmental emissions compared with bulk transport modes, such as a pipeline and marine vessels. Eliminating heavy duty truck traffic will reduce harmful air pollutants.

A smaller environmental footprint: The marine terminal will allow for larger, less frequent deliveries of aviation fuel. Combined with a shorter pipeline and the elimination of tanker trucks, the system will have a comparatively smaller environmental footprint.

Keeping jobs and economic benefits at YVR: Dependable, diverse, viable and competitive offshore fuel supply sources means that YVR will remain a "gateway of choice" for airlines over other West Coast airports, and that means continued jobs and economic benefits for our community, our region and our province.



A new delivery system will take trucks off our roads

Daily Fuel Truck Deliveries from the US to YVR

25 to 35
TODAY

200
20-YEAR FORECAST

Increasing fuel truck deliveries from Washington State is not an efficient solution to YVR's fuel needs. Eliminating truck deliveries means:

- ✓ Safer roads
- ✓ Less GHG emissions
- ✓ Less traffic

Please give us your input

Project Definition Consultation Phase: The pipeline is expected to travel under existing transportation and utility corridors, and industrially and commercially zoned lands. At present, the 15 kilometre pipeline corridor is preliminary. Several alignment options are under consideration, and they will require input from the public, First Nations, stakeholders and regulatory bodies.

How you can provide feedback: VAFFC plans to conduct Project Definition Consultation in 2009 prior to submitting an application to the BC Environmental Assessment Office for an Environmental Assessment Certificate.

During this period, the public, First Nations and stakeholders are invited to learn more about the project and provide feedback. Open houses and a variety of other consultation tools will be employed to gather input.

Feedback will be accepted by mail, email, or through an online feedback form on the project website, www.vancouverairportfuel.ca.

In addition to the BC Environmental Assessment process, the proposed project will be subject to review under other regulatory and legislative requirements that will include:

- Port Metro Vancouver Environmental Assessment Process
- Vancouver Airport Authority Development Permit and Facility Permit Processes
- Fraser River Estuary Management Program
- BC Oil and Gas Commission – Pipeline Act
- City of Richmond Development Permit Process

The project may also be reviewable under the Canadian *Environmental Assessment Act*.

The proposed pipeline corridor is preliminary and its routing will require further refinement

Timeline

	2009	2010	2011	2012
Pre-application consultation	[Yellow bar]			
Work studies and environmental assessment application	[Red bar]			
Government review and ongoing consultation		[Teal bar]		
Construction (subject to regulatory approval)			[Orange bar]	
In operation				[Blue circle]



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