

Fuel Management Plan Outcomes in Performance Term Four



British Columbia Ferry Services Inc.
September 28, 2018



Caution Regarding Forward-Looking Statements

British Columbia Ferry Services Inc. ("BC Ferries") advises that this report may contain certain forward-looking statements which relate to future events or future performance. These forward-looking statements are based upon management's expectations and assumptions as to a number of factors, and BC Ferries believes that it has a reasonable basis for making such forward-looking statements. If management's expectations and assumptions prove to be incorrect, or factors change, then actual results could differ materially from the forward-looking statements contained in this report. In addition, forward-looking statements, by their nature, involve risks and uncertainties which could cause actual results to differ materially from those contemplated by the forward-looking statements. The risks and uncertainties include those risks and uncertainties described in BC Ferries' Annual Management's Discussion & Analysis, which is available under BC Ferries' company profile at www.sedar.com.

Executive Summary

With a vision of being trusted and valued, the mission of British Columbia Ferry Services Inc. (“BC Ferries” or the “Company”) is to connect communities and customers to the people and places important in their lives. BC Ferries strives to be a leader in the transition to a lower carbon future and to build a resilient ferry system to provide reliable and affordable service for its customers and the communities it serves.

As is the case for other transportation providers, fuel represents one of the largest inputs to the Company’s business, in terms of both cost and environmental impact. The Company is working hard to develop and implement innovative and cost-effective ways to migrate its operations to low-carbon energy sources, while optimizing fuel consumption and procurement, and enhancing environmental stewardship.

Since BC Ferries submitted its Performance Term Four Fuel Management Plan (“PT4 Fuel Management Plan”) in fiscal 2016,¹ traffic levels have grown significantly and are now at all-time highs. The Company’s response has been multi-faceted, and has included increasing the number of sailings, increasing vessel speeds to partially mitigate the negative impact higher traffic has had on on-time performance, and where possible adding more capacity by deploying larger vessels. While the Company has continued to realize fuel efficiencies in the performance term, these measures to address traffic demand and meet the expectations of customers have resulted in overall increases in fuel consumption. Despite the higher levels of fuel consumption, the Company’s overall fuel expense has declined. This is due, in part, to a reduction in fuel prices, but also to the significant progress the Company has made in implementing its strategy to move to cleaner and lower-cost alternative fuels.

Reducing the Company’s environmental footprint through continued investment in leading-edge practices related to environmental stewardship is a top priority for BC Ferries and a key element of the Company’s Clean Technology Adoption Plan. BC Ferries has become a leader in the marine industry in North America when it comes to lowering emissions and adopting clean marine technology. In fiscal 2018, BC Ferries became the first passenger ferry operator in North America to adopt liquefied natural gas (“LNG”), pioneering “made in British Columbia” technologies in the process. Notable are the four, soon to be five, LNG-fueled vessels in the Company’s fleet (Salish class and Spirit class). LNG-fueled vessels substantially outperform diesel-fueled vessels in reduced emissions and costs.

¹ Fiscal years run April 1 through March 31.

BC Ferries also has two Island class vessels under construction. These battery-hybrid vessels will use advanced clean marine technology, and when delivered, the Company believes they will be the most efficient and quietest electric-hybrid ferries of their size in the world.

Looking ahead, BC Ferries is planning for the next major vessel program. The Company is exploring options for the propulsion systems for these vessels, with a view to adopting a lower carbon technology to reduce emissions and increase fuel efficiency. These vessels may also feature very large energy storage systems, which could allow departure and arrival in port, as well as in-port operations, to be performed on battery power. The goal is ultra-clean emissions with ultra-low fuel consumption. This leads to both a lessening of the operational impact on the environment and lower fuel costs, which helps to keep fares affordable.

The adoption of new clean energy technology as part of the Company's fleet renewal program is just one way the Company focuses on enhancing its fuel efficiency and environmental stewardship. The Company also carefully manages its complex ship deployment plans to optimize fuel efficiency, and continually hones its operational policies and practices to promote a greater emphasis Company-wide on energy efficiency and conservation.

With fuel costs being a significant component of overall cost, BC Ferries places a considerable emphasis on ensuring its strategies and practices for procuring fuel and managing fuel price risk are effective. BC Ferries cannot control commodity prices; however, the Company's fuel procurement processes have, over time, generated significant fuel price savings, while the Company's fuel hedging program and its management of the fuel deferral accounts have helped reduce fare volatility. These are positive outcomes for ferry users.

BC Ferries manages its fuel choices, consumption and cost within an overarching objective of ensuring the ferry system remains financially and environmentally sustainable. This report provides an update on the significant progress the Company has made to date in the performance term on the initiatives and strategies set out in the PT4 Fuel Management Plan to optimize fuel consumption, evolve the fuel mix toward lower carbon and more cost-effective sources, and procure fuel and manage fuel price risk effectively. The actions the Company has taken in these areas represent important accomplishments in its journey towards sustainability.

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Introduction

On March 30, 2016, BC Ferries submitted a fuel management plan for the four years of performance term four (“PT4”), April 1, 2016 to March 31, 2020 in accordance with the requirements of Order 15-03 *Final Decision on Price Caps for the Fourth Performance Term Pursuant to the Coastal Ferry Act*, dated September 16, 2015. The Order states:

BC Ferries is required to submit a fuel management plan prior to the start of PT4 setting out strategies for fuel procurement, minimizing fuel consumption and the transition to alternate fuels during PT4. BC Ferries must provide a report on the outcomes of their fuel management plan as part of their submission for performance term five.

This report fulfills the requirement of Order 15-03 to report on the outcomes of the PT4 Fuel Management Plan. Section 1 focuses on fuel consumption management at BC Ferries and explains the key drivers of fuel consumption and the impact that increased traffic has had on fuel consumption since March, 2016. Section 2 provides an update on the significant progress the Company has made, and continues to make, in its planned transition to alternative fuels. Updates are also provided on other ongoing strategies and initiatives positively impacting fuel efficiency and consumption. Section 3 focuses on the Company’s continued actions to manage the price it pays for fuel as effectively as possible, including strategies for cost-effective fuel procurement and addressing fuel price volatility.

Fuel Consumption Overview

Fuel is BC Ferries’ second-largest operating expense. In fiscal 2018, the Company spent \$102.5 million on ultra-low sulphur diesel (“ULSD” or “diesel”) and LNG combined, which represented approximately 12 percent of operating expenses.

Since the submission of the PT4 Fuel Management Plan, BC Ferries’ traffic has grown to record levels. While fuel efficiency has continued to be at the forefront of the Company’s focus in PT4, with traffic levels having reached all-time highs, overall fuel consumption has increased.

To meet customer expectations within this environment of strong traffic demand, the Company has responded in a variety of ways, including adding more sailings, increasing vessel speeds to partially mitigate the negative impact higher traffic has on on-time performance and, where possible, adding capacity by deploying larger vessels which burn more fuel. These actions have put pressure on fuel consumption.

Fuel consumption and total annual fuel expense by fiscal year since the start of performance term three (April 1, 2012 to March 31, 2016) (“PT3”) is shown in Figure A, while the corresponding average annual price of fuel by fiscal year is shown in Table 1.

Figure A: Fuel Consumption and Fuel Cost^{2,3}

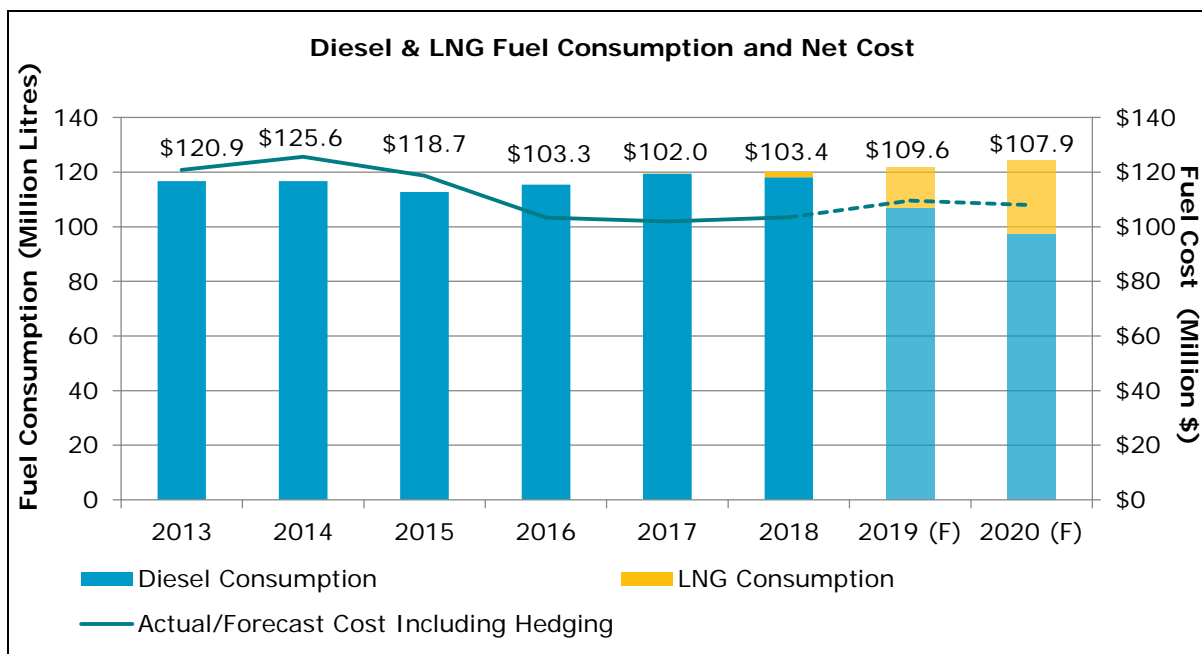


Table 1: Average Fuel Procurement Price after Hedging³

Average Fuel Price	PT3				PT4			
	2013	2014	2015	2016	2017	2018	2019 (F)	2020 (F)
Diesel (Litres)	\$1.04	\$1.08	\$1.05	\$0.89	\$0.85	\$0.86	\$0.96	\$0.97
LNG (DLEs)						\$0.45	\$0.48	\$0.49

As shown above, to date in PT4, fuel consumption on a year-over-year basis increased by 4.0 million litres in fiscal 2017 and 0.8 million litres in fiscal 2018. During the same period, the net cost per litre of diesel on a year-over-year basis decreased to 85 cents per litre in fiscal 2017 and 86 cents per litre in fiscal 2018. In addition, in fiscal 2018, the Company began its transition to lower-cost LNG with the introduction of three new LNG-fueled Salish class vessels. As a result, while total fuel consumption increased in the first two years of PT4, the overall net cost of fuel on a year-over-year basis declined in fiscal 2017 and rose modestly in fiscal 2018.

² BC Ferries converts LNG to diesel litre equivalents (“DLE”), an energy equivalency measure that allows LNG consumption to be compared directly to diesel consumption in litres.

³ Fuel price for fiscal 2020 is based on the regulatory set price. Actual price performance will vary. If the actual price is above/below the regulatory set price, then a fuel surcharge/rebate may be implemented.

The Company is anticipating further benefits with the conversion of its Spirit class vessels to dual-fuel LNG and diesel propulsion. In the summer of 2018, the *Spirit of British Columbia* re-entered service after its successful conversion, and the *Spirit of Vancouver Island* was removed from service in September, 2018 to undergo an equivalent upgrade and return to service in 2019.

BC Ferries has made significant strides towards the use of alternate fuels, principally the use of LNG by its three new Salish class vessels and the first of two Spirit class vessels. Use of ULSD is expected to decline in fiscal 2019, and again in fiscal 2020 as all three Salish class vessels are transitioned to operate primarily on LNG, and the Spirit class vessels are reintroduced into service after their conversions to dual-fuel propulsion, enabling them to operate on LNG. The transition to LNG is expected to continue to contribute positively to reducing fuel cost, which helps reduce upward pressure on fares.

Section 1: Fuel Consumption

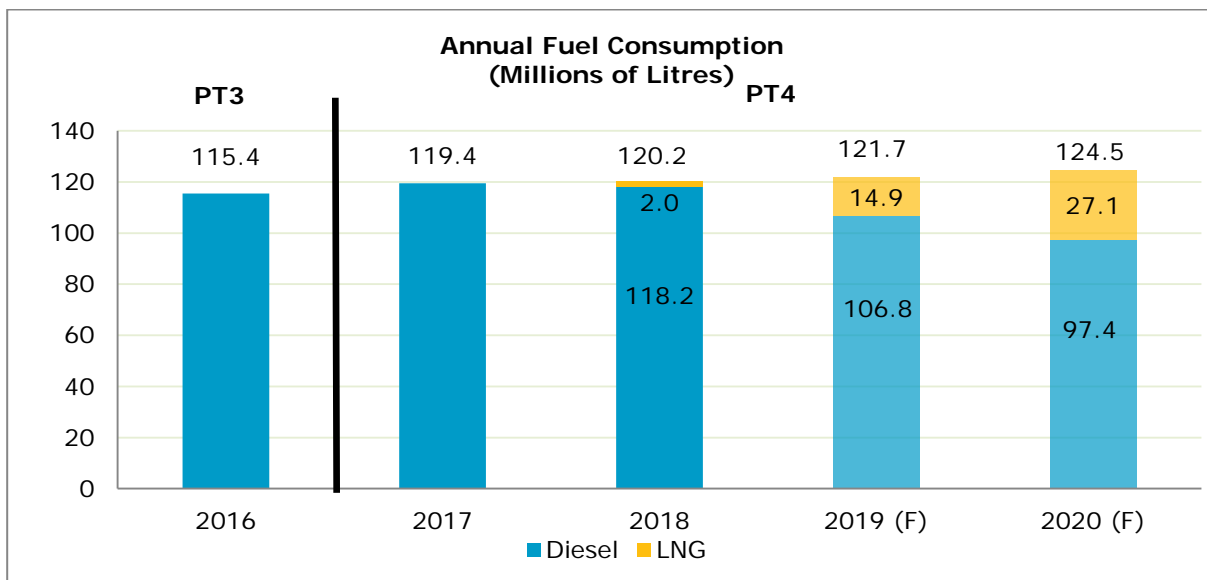
1.1 Fuel Consumption Management

At BC Ferries, fuel consumption is a closely managed expense: it is budgeted annually, forecasted quarterly, tracked/reported monthly and managed daily by those in vessel operations. As described above, fuel costs currently represent 12 percent of the Company’s operating expense. With fuel representing such a significant component of BC Ferries’ cost base, and ultimately its impact on fares, it is important to the Company and ferry users alike that fuel consumption is managed effectively.

In fiscal 2015, BC Ferries’ fuel management policies and practices were independently reviewed by PricewaterhouseCoopers LLP (“PwC”) for the Commissioner. In its report, *Performance Review of BC Ferries’ Fuel Management*, March, 2015 PwC concluded that: “BC Ferries’ efforts to manage and minimize consumption of fuel have been effective” and “BC Ferries have [sic] defined procedures in place to manage consumption and costs and are [sic] compliant with these policies and procedures.” In PT4, BC Ferries has continued to ensure its fuel consumption management policies and procedures are robust.

Figure B depicts actual fuel consumption for fiscal 2016 through 2018 and forecast consumption for fiscal 2019 and 2020.

Figure B: Fuel Consumption



BC Ferries' fuel consumption is primarily influenced by three factors:

- **Service (or round trips) provided**, which reflects the round trips the Company is required to provide under the Coastal Ferry Services Contract between the Company and the Province of British Columbia, as well as the additional round trips the Company provides to meet traffic demand;
- **Vessel speed**, as it impacts fuel efficiency; and
- **Vessel deployment**, consisting of the cost-effective system-wide deployment of the Company's fleet of vessels to meet its service plan and provide for substitutions associated with vessel refits.

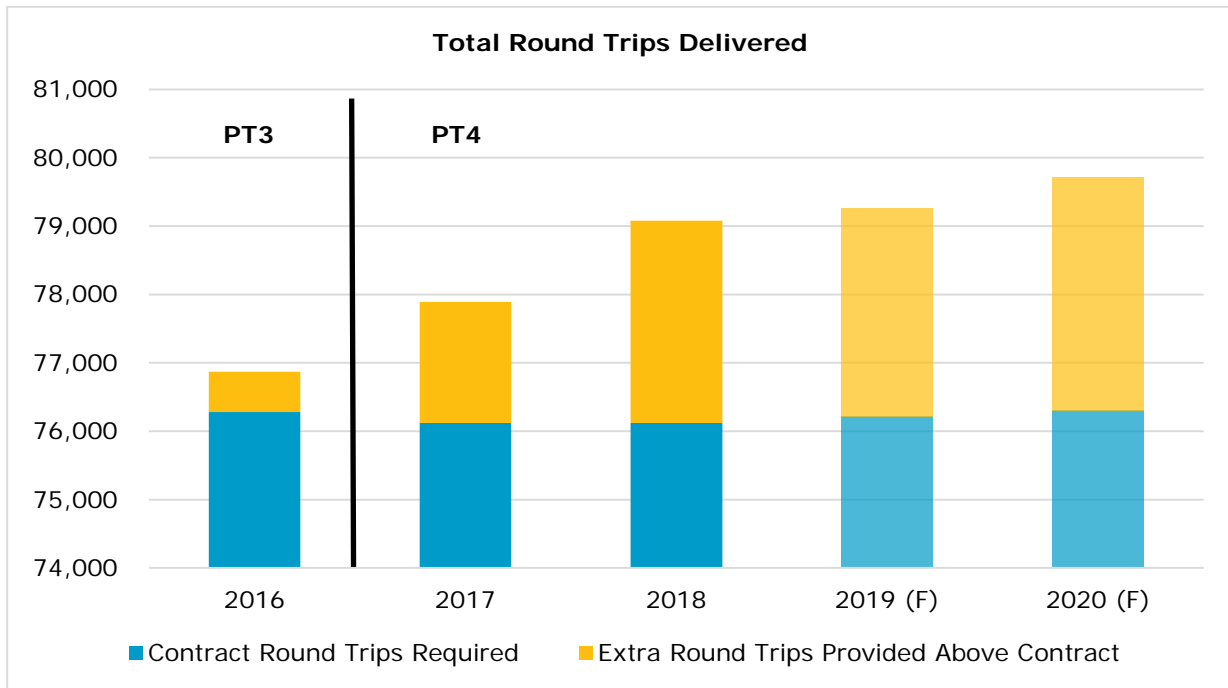
Each of these three factors can have a significant impact on fuel consumption performance, and not all are controllable. The largest contributing factor to fuel consumption is the round trip requirements under the Coastal Ferry Services Contract.

Traffic levels can have an impact on all three of these factors. In response to higher traffic levels, the Company often provides more sailings than is required under the Coastal Ferry Services Contract and, in order to maintain on-time performance, vessels may be operated at higher speeds. As well, larger vessels that typically burn more fuel may be deployed. Other factors such as hull coatings/cleanliness, the availability of shore power, and onboard services (heating, lighting, etc.), can also have an impact on fuel efficiency and consumption, but typically to a lesser degree.

1.2 Service Level Increases

The Coastal Ferry Services Contract stipulates the minimum service level the Company must provide for every regulated route. Adjusting the number of round trips to minimize fuel expense is a viable option only to the extent that the Company is able to continue to meet minimum contact requirements. As shown in Figure C, during PT4, BC Ferries has been adding round trips to accommodate growing traffic demand.

Figure C: Round Trips Delivered



Fuel consumption has increased in each year of PT4 primarily due to the need to respond to higher levels of traffic. Traffic levels began a recovery towards the end of PT3 and between fiscal 2016 and 2018, the Company increased service by over 2,200 round trips, with over 570 of those round trips being on the major routes⁴. These round trips added capacity in response to high traffic demand. Even with the additional round trips, total capacity utilization increased from less than 63 percent in fiscal 2016 to over 65 percent in fiscal 2018.

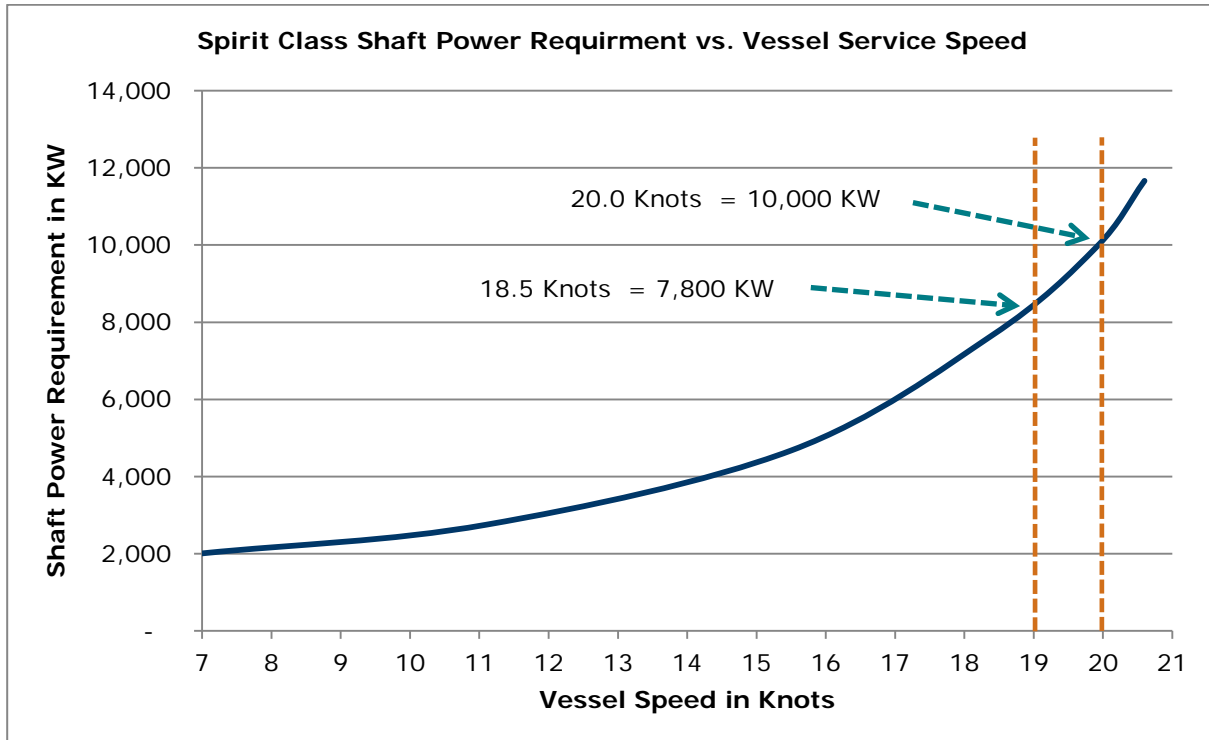
1.3 Vessel Speed/Rate of Fuel Consumption

At higher traffic levels, it takes longer to safely load as many vehicles as possible on each sailing, leading to more time spent in port and less time to complete the crossing on schedule.

Fuel consumption typically rises as vessel speed is increased to meet the sailing schedule, and rises dramatically when engines are operating near peak power output. BC Ferries' crews manage speed to conserve fuel whenever possible; however, delays and heavy traffic loads can at times make it challenging to optimize fuel efficiency.

⁴ The major routes comprise the routes connecting Swartz Bay - Tsawwassen, Departure Bay - Horseshoe Bay, Duke Point-Tsawwassen, and Langdale-Horseshoe Bay.

Figure D: Spirit Class Fuel Consumption Vessel Speed Curve



BC Ferries understands the importance to customers of sailing on time. When vessels are operated at higher speed to maintain or improve schedule performance, the cost of the increased fuel consumption for those sailings can potentially be offset by avoided overtime labour cost.

As shown in Table 2, despite increased service speeds and higher associated fuel consumption, on-time performance has remained a challenge with the record traffic levels the Company has been experiencing in PT4.⁵

Table 2: Fleet-Wide On-Time Performance

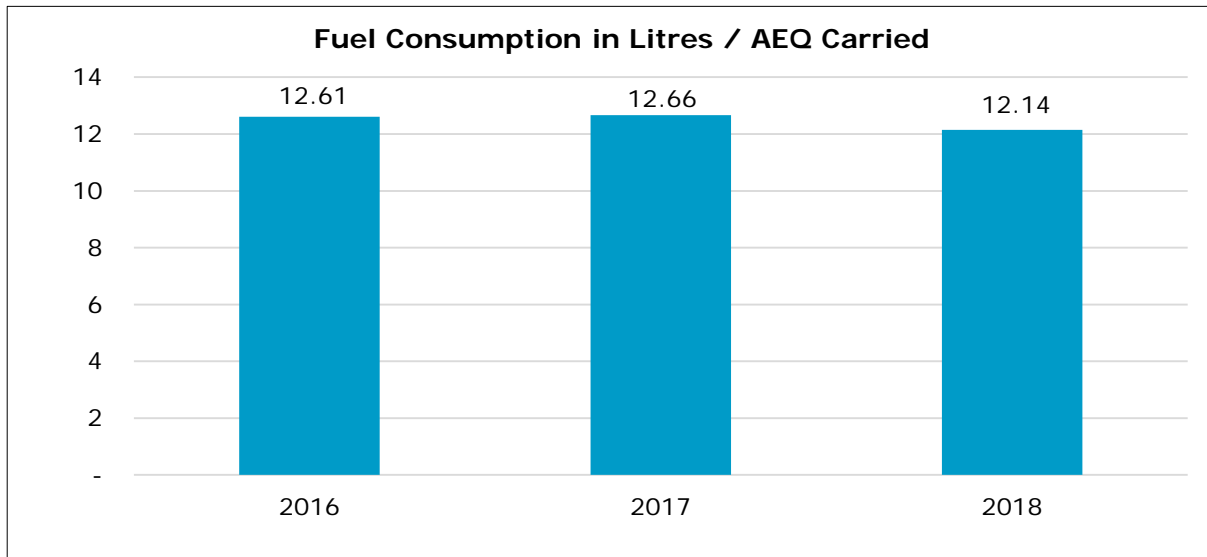
On-time Performance	PT3	PT4		
	2016	2017	2018	2019
Actual	90.8%	89.5%	89.0%	TBD
Target	91.0%	91.0%	91.0%	91.0%

⁵ On-time performance indicates the percentage of sailings departing within 10 minutes of scheduled departure for the major and inter-island routes, and arriving within 10 minutes of scheduled arrival for the northern routes.

1.4 Fuel Efficiency

As shown in Figure E, while fuel consumption has increased to date in PT4, the Company has become more fuel efficient on an automobile equivalent (“AEQ”)⁶ per-unit carried basis.

Figure E: Fuel Consumption per AEQ Carried



1.5 Vessel Deployment

BC Ferries continually evaluates the use of vessels to ensure the most cost-effective deployment while meeting customer needs. The deployment of new and/or upgraded vessels to maximum benefit is a key focus for the Company, with recent examples being the introduction of the three Salish class vessels and the return of the *Spirit of British Columbia* from its mid-life upgrade in fiscal 2019. The planned refit schedule will also impact the vessel deployment plan and thereby annual fuel consumption. Specific examples of how the Company optimizes vessel deployments are provided in Section 2.3.

1.6 Fuel Consumption Forecast

Looking forward, the service plan, which sets out the sailings BC Ferries will need to provide to meet traffic demand and the requirements of the Coastal Ferry Services Contract, vessel speed and the deployment of the fleet, including the new and upgraded vessels operating on alternative fuels, will continue to be the factors that contribute most strongly to overall fuel consumption. Table 3 sets out actual and forecast fuel consumption for PT4 (see also Figure B).

⁶ AEQ or automobile equivalent is BC Ferries’ standard unit of measure for an approximation of one car length.

Table 3: PT4 Fuel Consumption

Fuel Consumption	PT4			
	2017	2018	2019 (F)	2020 (F)
Diesel (Litres)	119.4	118.2	106.8	97.4
LNG (DLEs)	-	2.0	14.9	27.1
Total Litres	119.4	120.2	121.7	124.5

For fiscal years 2019 and 2020, consumption of diesel is forecast to decrease significantly as the Company transitions to operating the three Salish class vessels and two Spirit class vessels primarily on LNG. By fiscal 2020, the last year of PT4, LNG is forecast to represent approximately 22 percent of overall fuel consumption, with diesel consumption dropping below 100 million litres per year.

Overall consumption of diesel and LNG combined is forecast to increase in fiscal 2019 and 2020. Increased service is a key factor, as additional round trips are included in the service plans to respond to continued strong traffic and provide for the new service on the route connecting Bella Coola with Port Hardy. Another driver is the return of both of the Spirit class vessels to year-round service in fiscal 2020, following two years when only one of the vessels was in service for the majority of the year, while the other was undergoing its mid-life upgrade and conversion to dual-fuel propulsion. While BC Ferries expects that both of these vessels will be primarily operating on lower-cost LNG in fiscal 2020, they remain the largest vessels in the fleet and have the highest rate of fuel consumption on a DLE basis.

Section 2: Fuel Consumption Reduction Strategies

2.1 Responsible Energy Management

BC Ferries' focus on finding ways to enhance the overall fuel efficiency of its operations reflects its commitment to progressive and responsible energy management. The intent is to ensure the highest practicable energy efficiencies in the Company's overall operations and the sustainable growth of its business. As described in the PT4 Fuel Management Plan, this commitment is enshrined in the Company's Energy Management Policy, which has as its objectives:

- Delivering an energy awareness program, through the existing internal energy management team, to all employees;
- Providing continual education for employees on how to conserve energy and how to recognize and minimize unnecessary consumption in their work area;
- Setting targets to reduce energy consumption and, at a minimum, not exceeding baseline levels;
- Establishing regular reporting of energy use to key operating area personnel;
- Reducing expenditures on energy by understanding rate structures and managing consumption accordingly;
- Identifying savings opportunities by conducting energy studies or audits at appropriate facilities;
- Implementing cost-effective facility and equipment upgrades that will achieve energy savings;
- Participating in incentive programs for energy conservation and/or greenhouse gas deferral projects;
- Establishing energy-efficiency targets as design specifications in major retrofits of facilities or vessels and in purchasing guidelines; and
- Providing guidance for best practices in energy management, including equipment selection, operation and maintenance, as well as monitoring, targeting, and reporting energy usage.

These objectives also underpin the Company's Clean Energy Adoption Plan, which has as its goals: *carbon reduction* through migrating operations to low-carbon energy sources while maximizing energy-consumption efficiencies; and *environmental stewardship* through striving to eliminate avoidable environmental contaminants and improve at every step of operational activity.

In support of these goals, the Company is an active member of Green Marine, an environmental certification program dedicated to sustainable marine operations. BC Ferries is only one of three Green Marine members certified in marine, terminal and shipyard operations. Emission reduction is

one of the focus areas of Green Marine. In addition to practices to reduce fuel consumption, Green Marine encourages the use of higher-quality fuel and technologies to achieve emission reductions.

BC Ferries' SeaForward program showcases the Company's commitment to environmental stewardship. This program combines existing environmental conservation projects and community investment activities with new and innovative endeavours to reduce BC Ferries' environmental footprint, improve the sustainability of its operations and support coastal communities. BC Ferries' energy and fuel management programs are important elements of this program, as are its strategies to transition to alternative fuels.

2.2 Transition to Alternative Fuels

Strategies to transition BC Ferries to lower carbon and more efficient fuel sources were central to BC Ferries' PT4 Fuel Management Plan. BC Ferries actively monitors and pursues innovation and emerging technologies respecting the use of alternatives to conventional fuels, and has made significant progress in moving towards this objective.

Diesel

Since 2007, BC Ferries' vessels have been burning diesel with ultra-low sulphur content (15 ppm). Additionally, across the fleet, the Company's diesel-powered vessels burn 5 percent, or B5, biodiesel. BC Ferries is, in fact, one of the largest consumers of biodiesel in British Columbia. B5 fuel blend is a mix of 5 percent canola-based biodiesel with 95 percent low sulphur petroleum diesel. Biodiesel burns cleaner with significantly less unburned hydrocarbon, carbon monoxide and particulate matter in emissions.

Transition to Lower Carbon Fuel Sources

BC Ferries is the first passenger ferry system in North America to adopt LNG. To date in PT4, the Company has introduced four dual-fuel vessels (capable of running on LNG or diesel) into service, with a fifth expected to be operating on LNG by the end of the performance term:

- **Salish Class**

The *Salish Orca*, *Salish Eagle*, and *Salish Raven* were brought into service in fiscal 2018. The three vessels have the capability to run primarily on LNG or entirely on diesel, and have replaced the diesel-powered *Queen of Burnaby* and *Queen of Nanaimo* on the Comox to Powell River and Tsawwassen to Southern Gulf Islands routes. The Salish class vessels are smaller in size than the vessels they replaced, and have a unique hull form and new modern engine technology, all of which will contribute positively to optimizing fuel consumption and reducing greenhouse gas emissions. These were the first vessels in the fleet to operate on LNG and the transition to this fuel source has been gradual. The *Salish Orca* and *Salish Raven* are now operating primarily on LNG. The *Salish Eagle* is

currently operating approximately half of the time on LNG due to scheduling challenges with bunkering LNG in Tsawwassen while the vessel is home ported at Long Harbour on Salt Spring Island. The Company is working to address these scheduling challenges, and expects that they will be resolved and the vessel will be operating primarily on LNG by the end of fiscal 2019.

- **Spirit Class**

A mid-life upgrade of the *Spirit of British Columbia* was completed in PT4. The vessel returned to service on the Swartz Bay to Tsawwassen route for the summer of 2018 following a comprehensive upgrade that involved conversion to dual-fuel propulsion. The Company was able to return the vessel to service with the immediate use of LNG as its primary fuel source. The *Spirit of Vancouver Island* was removed from service in September, 2018 to undergo the equivalent upgrade and is expected to return to service in the spring of 2019.

Significant diesel consumption will be displaced when the three Salish class and two Spirit class vessels all operate primarily on LNG. The two Spirit class vessels together have historically consumed an average of approximately 20 million litres of diesel per year. The recently-retired *Queen of Burnaby* and *Queen of Nanaimo* together consumed an average of over 6 million litres of diesel per year. These four vessels previously accounted for approximately 23 percent of total annual diesel consumption. The diesel will not be completely displaced, as the dual-fuel ships consume some diesel as a pilot fuel and as part of normal operations, but diesel is expected to represent less than 10 percent of the total energy consumed by each of these vessels.

As part of the two initiatives above, BC Ferries pioneered two “world firsts” in clean technology: the Salish class are the first in the world to fuel LNG by tanker truck on the vehicle deck of a passenger ship; and the Spirit class are the first in the world to fuel LNG by tanker truck on a totally-enclosed vehicle deck. Both of these innovations were conceived by BC Ferries and designed, engineered and built by BC Ferries and its partners. These innovations saved ferry users infrastructure costs and have unlocked significant environmental performance gains. The expertise the Company has gained in this area is now being sought by other ferry operators.

The Company has actively pursued LNG conversion grants made available by the industry and has entered into two agreements with FortisBC Energy Inc. as part of the Natural Gas for Transportation incentive funding initiative. The first agreement is for up to \$6 million in funding, which partly offsets the incremental capital cost of choosing LNG as the primary fuel source for the Salish class vessels. Under the second agreement, BC Ferries will receive up to \$10 million to partially offset the capital cost of converting the two Spirit class vessels to dual-fuel capability. Payments to BC Ferries are made upfront, and earned over time as the Company procures LNG from FortisBC. The agreements do not obligate BC Ferries to purchase LNG from FortisBC, but to

earn the full amount of the funding contributions, BC Ferries is expected to purchase at least 3 million gigajoules of LNG from FortisBC over 10 years for the Salish class and 7 million gigajoules over 10 years for the Spirit class. While LNG is financially attractive as a result of its price being significantly lower than diesel, these funding contributions help further improve the economics of its adoption.

The Company believes that adopting LNG is a significant step towards sustainable transportation for coastal British Columbia. LNG is not only a less expensive fuel source, but it is greener and a much cleaner fuel source with very favourable environmental impacts compared to diesel. Compared to diesel, LNG consumption lowers carbon emissions by about 25 percent, SO_x (sulphur oxides) by almost 100 percent and NO_x (nitrogen oxides) by 85 percent, which translates to significantly cleaner exhaust emissions than the ULSD fuel the Company currently uses.

Looking forward, the Company envisages the replacement of 19 aged vessels over the next 14 years with newer, more fuel-efficient vessels. With each retiring vessel, the Company has an opportunity to put in place a new, technologically-advanced and fuel efficient replacement.

Innovation and emerging technologies for electric power grid management have the potential to make use of energy sources that are alternatives to LNG and diesel. BC Ferries currently has the first two of potentially 13 new Island class ferries under construction. These vessels will have hybrid-diesel propulsion and utilize some of the most advanced and efficient clean marine technology in the world. BC Ferries expects these vessels to be the most efficient and quietest electric-hybrid ships of their size in the world. They will be built capable of conversion to all-electric propulsion as the technology permits and the necessary electrical infrastructure is in place to support it. BC Ferries is in discussions with BC Hydro to further this conversion prospect.

The most significant opportunity on the horizon to realize fuel efficiencies and lessen the Company's environmental footprint is the next major vessel program, which involves the replacement of six large ships. Planning has commenced in PT4 toward the replacement of the first four vessels: *Queen of Alberni*, *Queen of Coquitlam*, *Queen of Cowichan*, and *Queen of New Westminster* in the mid 2020's. These four vessels combined represent approximately 22 percent of total fleet-wide fuel consumption. The *Queen of Oak Bay* and *Queen of Surrey*, which are scheduled to be replaced several years later, consume another 12 percent of the total. Various propulsion options are being considered for these vessels, including dual-fuel, which would enable the vessels to operate on LNG. The Company is also considering fitting the vessels with very large stored energy systems, which could, as technology permits, allow departure and arrival in port, as well as in-port operations, to be performed on battery power. Overall, this major vessel program is expected to offer a further significant reduction in diesel consumption. Added to measures taken to date, the Company has the potential with this program to displace nearly 50 percent of historical

fleet diesel consumption with cleaner and more affordable fuel sources by the mid-2020s and nearly 60 percent by the early 2030s.

The adoption of alternative propulsion systems for its fleet makes BC Ferries a leader in clean technology in the North American marine sector. Reliability of service is important to BC Ferries' customers, and there are engineering, technical and other issues that must be resolved as the Company progresses further in its journey towards a lower carbon operation. The Company is committed to pursuing new fuel sources and clean technologies in a methodical and prudent manner, with the ultimate goal to bring sustainable and cleaner operations to the coastal ferry system.

2.3 Additional Fuel Consumption Savings Initiatives

Beyond fleet renewal and the transition to alternative fuels, the PT4 Fuel Management Plan set out a number of other initiatives the Company proposed to undertake in PT4 in an effort to achieve further fuel savings. These reflected a continuation of focus by the Company on optimizing fleet deployment and enhancing scheduling and operational efficiencies. As noted in Section 1, with the need for the Company to respond to traffic levels that have reached all-time highs, overall fuel consumption has increased in PT4. Nevertheless, actions taken to optimize fleet deployment and pursue scheduling and operational efficiencies continued and have helped to keep fuel consumption at a level lower than what it would have otherwise been.

Fleet Deployment Optimization

As described in Section 1, BC Ferries is required by the Coastal Ferry Services Contract to provide a minimum level of service on each of the regulated routes. Within these constraints, BC Ferries endeavours to optimize the deployment of its fleet, where possible, by substituting a vessel with a smaller, more fuel-efficient one in order to tailor its service to traffic demand. BC Ferries is limited in these opportunities as it must sometimes use less fuel-efficient vessels when traffic demand is greater than expected or when repairs and maintenance require vessel substitution.

The two Spirit class vessels are the largest ships in BC Ferries' fleet and, as such, they have the highest rate of fuel consumption, as well as the highest crew costs. Historically, in periods of lower traffic demand, the Company often substituted a Spirit class vessel with a smaller Coastal class vessel to save fuel and labour costs. A Coastal class vessel uses approximately 1,500 fewer litres per round trip than a diesel-powered Spirit class vessel. In PT4, the Company continued to make these substitutions, although at a reduced rate due to high traffic demands. To date in PT4, the Company made the following substitutions of a Coastal class vessel for a Spirit class vessel:

- Fiscal 2017:
 - Mid-October to mid-December out of Swartz Bay;
 - January to mid-March out of both Swartz Bay and Tsawwassen.

- Fiscal 2018
 - January to February out of Swartz Bay;
 - September to May out of Tsawwassen, during the *Spirit of British Columbia* mid-life upgrade.

For fiscal 2019, the *Spirit of Vancouver Island* will be out of service from September until the following spring to undergo a mid-life upgrade and conversion to dual-fuel propulsion. During this time, it will be replaced with a Coastal class vessel. The *Spirit of British Columbia*, now operating primarily on LNG, will be deployed year-round on the route connecting Swartz Bay with Tsawwassen as it is now more economical and environmentally preferable compared to a Coastal class vessel. When the *Spirit of Vancouver Island* returns from its mid-life upgrade, it will also operate year round on that route. With the fleet expected to continue to operate at full capacity due to high traffic demand, no other substitutions that would significantly affect fuel savings are currently contemplated in fiscal 2019.

Beyond fiscal 2019, the Company will continue to seek efficiencies from fleet redeployment opportunities when practicable. Should the current traffic trend reverse, BC Ferries would consider scaling back the extra round trips it has put in place above the minimums required by the Coastal Ferry Services Contract, and the potential to substitute smaller vessels to save fuel and other operating expenses, as appropriate.

Revised Schedules for Routes Serving Horseshoe Bay

In the last quarter of fiscal 2018, and after significant consultation with customers, communities and other stakeholders, the Company revised the year-round sailing schedules for the three routes operating out of Horseshoe Bay⁷ with the intention of significantly improving the on-time performance of those routes. While there is an incremental labour cost resulting from a longer operating day under the revised schedules, it is partially offset by fuel savings as the revised schedules enable the vessels to reduce speed and operate more fuel-efficiently during less busy times. In total, the revised schedules are expected to result in fuel savings of more than one million litres per year when compared to providing the same level of service under the old schedules.

Operational Efficiencies

The PT4 Fuel Management Plan identified operational and engineering policies and practices, as well as other tactics that the Company has developed over a number of years to enhance energy efficiency. The majority of these initiatives have been incorporated into the fabric of BC Ferries' operations and the Company has continued to refine and pursue them in PT4.

⁷ Departure Bay – Horseshoe Bay; Langdale – Horseshoe Bay; and Bowen Island – Horseshoe Bay

Section 3: Strategies for Cost-Effective Fuel Procurement

3.1 Overview

BC Ferries has been able to achieve significant savings in fuel costs through the implementation of its fuel procurement strategies. The Company has also reduced the impact of volatile fuel prices on its customers through the combined use of fuel deferral accounts and its fuel hedging program.

3.2 Commodity Prices

Diesel

The price BC Ferries pays to procure ULSD is subject to global supply and demand market dynamics which drive the price of crude oil and the refined products derived from crude, including diesel. Over the past 10 years, the price of crude oil has been quite volatile, largely due to macro events causing dramatic shifts in supply and demand.

Diesel price is composed of crude oil, refiner margins, delivery, and taxes. The price volatility is largely driven by the commodity portion and refiner margins, which make up approximately 80 percent of the current overall price. Over the past five years, the price of crude oil has ranged from a low of US\$26 per barrel to a high of US\$111 per barrel and is currently at about US\$70 per barrel. Global supply and demand will continue to drive crude prices, and local supply and demand will also continue to influence wholesale pricing in the Vancouver market. BC Ferries does not have influence over either the commodity component or the refiner margin which makes up the Vancouver wholesale price for ULSD.

Liquefied Natural Gas

LNG price is composed of natural gas, liquefaction costs, delivery, and taxes. The price volatility is largely driven by the natural gas component, which makes up approximately 25 percent of the current overall price. Over the past five years, the price of natural gas has ranged from a low of US\$1.64 MMBTU to a high of US\$6.15 MMBTU, and is currently at about US\$2.84 per MMBTU. BC Ferries does not have influence over the price of natural gas, the commodity component of LNG.

3.3 Procurement

Diesel

BC Ferries currently purchases more than 100 million litres of ULSD annually. As described in the PT4 Fuel Management Plan, to obtain best overall value, BC Ferries consolidates the procurement of both its diesel and marine lubricant requirements with a single major supplier, selected through a competitive procurement process. Combining all procurement with a single major supplier,

selected through a competitive procurement process, has enabled the Company to obtain discounts; the result of which has been significant annual fuel cost savings. Complex delivery schedules and associated bridging fees have been managed efficiently and effectively through the supplier distribution networks.

Formal competitive procurement processes for the supply of fuel and marine lubricants are, and will continue to be, conducted by BC Ferries in order to achieve best overall value for the Company. BC Ferries' fuel and marine lubricant contracts are set over a fixed initial term with options to extend. In the PT4 Fuel Management Plan, the Company indicated that a competitive tender process for procurement of ULSD was underway. The result of that process was a new contract with the incumbent fuel supplier extending from April, 2016 to March, 2019. BC Ferries holds two 1-year extension options which could extend the term as far as March, 2021.

Liquefied Natural Gas

Although there are many options for procuring the natural gas commodity, there is only one supplier currently capable of economically managing the liquefaction, delivery, and bunkering logistics to the locations where BC Ferries needs it.

FortisBC is able to supply BC Ferries with LNG in Metro Vancouver and on Vancouver Island. As described in Section 2.2, since the start of PT4, BC Ferries has entered into two 10-year agreements to procure LNG from FortisBC. FortisBC is regulated by the British Columbia Utilities Commission, as are the pricing mechanisms for LNG. The regulated price is based on the Sumas Monthly Index Price, which is a variable cost that fluctuates along with the price of natural gas, plus fixed charges such as liquefaction and delivery.

The all-inclusive price of LNG has been on average less than half the price of ULSD per unit of energy in PT4. As noted previously, to track the relative prices, BC Ferries converts the cost of LNG into a price per DLE. Since BC Ferries has been procuring LNG, the delivered price has averaged approximately 42 cents per DLE. Over the same period, delivered diesel prices have averaged approximately 92 cents per litre.

Should the supply infrastructure grow as anticipated on the west coast of British Columbia, and as the Company's fleet of LNG-powered vessels continues to grow, more supply options and, therefore more competition for the supply of LNG, is expected to occur in the marketplace. This should benefit LNG consumers in British Columbia, including BC Ferries.

Going forward, the Company will continue to use competitive procurement processes to ensure BC Ferries' operational and commercial requirements for the supply and delivery of LNG are met in a cost-effective manner.

3.4 Fuel Hedging

The use of fuel surcharges and rebates can have an effect on traffic and, thereby, the revenue and earnings of the Company. Surcharges increase the cost of ferry service to BC Ferries' customers, which can negatively impact traffic levels due to price elasticity. Changes in surcharges and rebates create an environment of price uncertainty that can also negatively impact traffic levels. Fuel hedging complements the use of fuel deferral accounts, increasing price certainty and thereby mitigating the potential negative impacts of fuel price volatility on customers, traffic levels and revenue. As described in the PT4 Fuel Management Plan, the Company's current hedging strategy is to undertake hedge transactions when those transactions are reasonably expected to reduce the potential for fuel surcharges.

Market prices in fiscal 2017 allowed BC Ferries to selectively layer in ULSD hedges. Specifically, during fiscal 2017, BC Ferries entered into ULSD hedges primarily covering the 12-month period extending from January 2018 to December 2018 at prices below the indicative regulatory set price. Against the backdrop of an improving commodity outlook, the Company entered into additional ULSD hedges in early fiscal 2018 for consumption periods extending as far out as December 2019. By March 31, 2018, the Company had locked in fixed-price swaps for approximately 64 percent of forecast fiscal 2019 diesel consumption, as well as an additional 31 percent of projected fiscal 2020 consumption at prices below the indicative regulatory set price.

As BC Ferries moves forward with using LNG, it will evaluate the economics of hedging LNG commodity pricing and the effectiveness of a hedging program for LNG.

3.5 Fuel Cost Deferral Accounts

As described in Section 1.1, fuel represents approximately 12 percent of BC Ferries' operating expenses; therefore, it is a key input into the price cap determination. As the cost of fuel is highly dependent on market conditions, the Commissioner establishes a fuel set price for each year of a performance term which seeks to represent the expected price of fuel over that performance term.

The fuel cost deferral account mechanism is the primary means by which BC Ferries mitigates fuel price risk. It allows BC Ferries to recover from its customers fuel costs that are higher than the set price established by the Commissioner through the implementation of fuel surcharges, or to return to customers lower fuel costs through fuel rebates. Order 15-03A *Establishment of Fuel Deferral Accounts Pursuant to Section 41.1 of the Coastal Ferry Act*, dated September 28, 2014, authorizes BC Ferries to use deferral accounts in PT4, one for the northern routes and one for the non-northern routes, and sets out the terms and conditions for their management. BC Ferries closely monitors fuel prices and forecast deferral account balances. With a goal of minimizing fare changes, the Company proactively manages the deferral account balances in accordance with the terms of Order 15-03A.

By Order 15-03A, the Commissioner established the set price for diesel at 91.5 cents per litre and for LNG at 46.4 cents per litre effective the first year of PT4, with both values to be inflated by 2 percent per year for the balance of the performance term. The set prices are shown in Table 4.

Table 4: PT4 Regulatory Set Prices

Set Price	PT4			
	2017	2018	2019	2020
Diesel (per Litre)	\$0.915	\$0.933	\$0.952	\$0.971
LNG (per DLE)	\$0.464	\$0.473	\$0.483	\$0.492

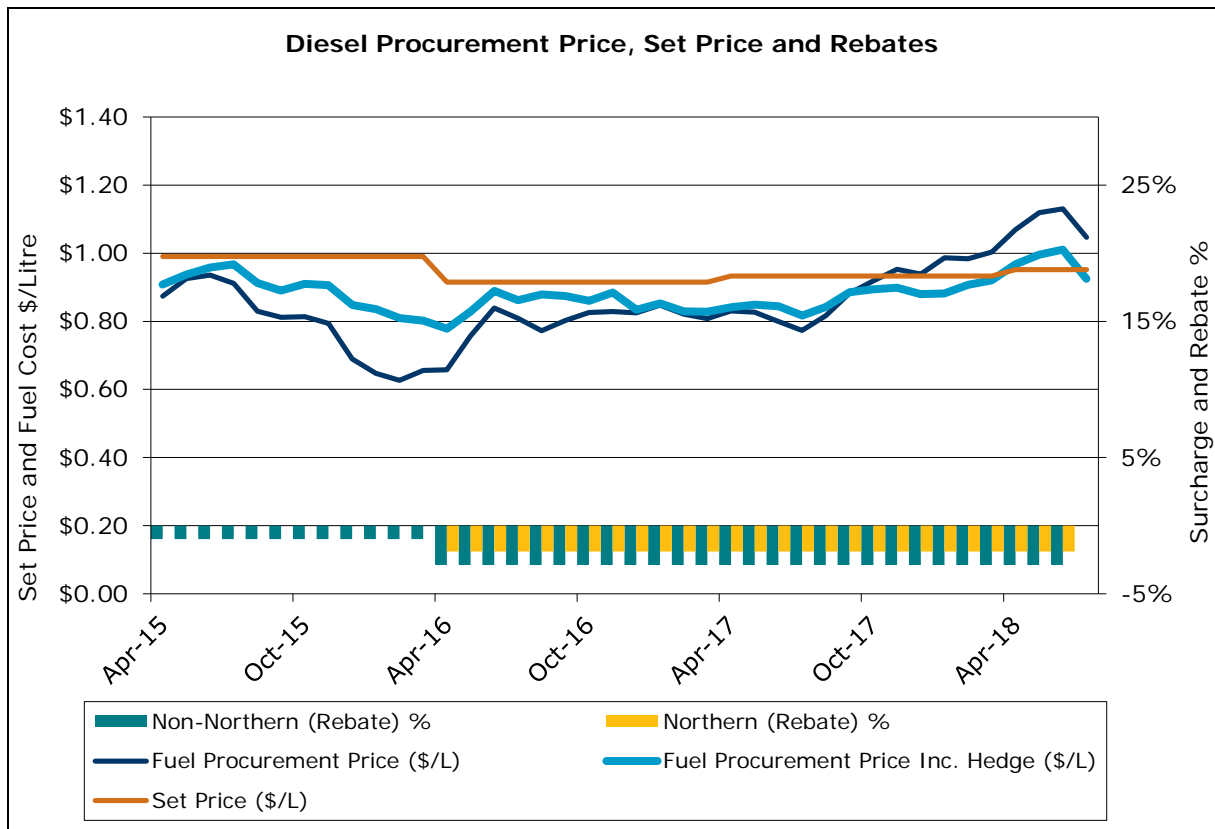
3.6 Historical Fuel Price and Rebate Activity

With LNG not being a fuel source for the Company before PT4, the price of ULSD has accounted for nearly all costs that have historically affected the fuel cost deferral accounts and associated surcharge and rebate activity.

Figure F shows how procurement prices have deviated from the set price for diesel and resulting fuel rebates.

BC Ferries experienced net diesel procurement prices below the set price from the beginning of PT4 until May 2018. At the beginning of PT4, there was a fuel rebate of 1.9 percent on the northern routes and 2.9 percent on all other routes. In October 2017, the oil market shifted and prices increased to current levels. At the end of fiscal 2018, the fuel deferral account for the non-northern routes carried a total debit balance to be recovered from customers of \$15.7 million. Typically in response to a large debit balance, the Company would reduce or eliminate rebates, or apply surcharges. Instead, to the benefit of its customers, BC Ferries voluntarily eliminated the deferral account balance for the non-northern routes, foregoing \$15.7 million of potential surcharge revenue. As a result of high diesel prices, all rebates were discontinued in June, 2018.

Figure F: Diesel Procurement Price, Set Price and Rebates



Conclusion

BC Ferries manages its fuel choices, consumption and cost within an overarching objective of ensuring the ferry system remains financially and environmentally sustainable while meeting the needs of its customers. The Company has made significant progress to date in PT4 on the initiatives and strategies set out in the PT4 Fuel Management Plan to optimize fuel consumption, evolve the fuel mix to toward lower carbon and more cost-effective sources, and procure fuel and manage fuel price risk effectively. The actions the Company has taken in these areas represent important accomplishments in its journey towards sustainability. In the process, BC Ferries has become a leader in the marine industry in North America when it comes to lowering emissions and adopting clean marine technology.
