



BRITISH COLUMBIA FERRY SERVICES INC.

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Fuel Strategies - Update Report

June 27, 2014

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## INTRODUCTION

This document is submitted by British Columbia Ferry Services Inc. (“BC Ferries” or the “Company”) to the British Columbia Ferry Commission (the “BCFC”) in accordance with the requirements of BCFC Order 12-03A.

On June 21, 2012, BC Ferries submitted an application to the British Columbia Ferries Commissioner pursuant to Section 41.1 of the *Coastal Ferry Act* to establish a fuel price deferral mechanism for the third performance term (“PT3”). On September 30, 2012, the BCFC issued Order 12-03 in response to the application. Order 12-03 requires BC Ferries to update the BCFC annually on its strategies to optimize fuel cost savings, and set out a timeline for the submission by BC Ferries of the required information. By Order 12-03A, issued February 28, 2013, the BCFC amended the timeline set out in Order 12-03 with the result that BC Ferries must provide its annual update on the Company’s fuel strategies within 90 days of its fiscal year end.

BC Ferries filed its Fuel Strategies Report with the BCFC on October 29, 2012 (the “Fuel Strategies Report”). The Fuel Strategies Report described the Company’s plan for reducing fuel consumption and specified fuel consumption targets for the fiscal year ending March 31, 2013 (“2012/13”). Also included was BC Ferries’ plan to transition to alternate fuels and an overview of the Company’s strategies for cost-effective fuel procurement. On June 28, 2013, BC Ferries filed its first update to the Fuel Strategies Report and, therein, reported on the results of the Company’s fuel consumption reduction measures in 2012/13, and set out its target for fuel consumption in the fiscal year ending March 31, 2014 (“2013/14”). In addition, updates were provided on BC Ferries’ plan to transition to alternate fuels and the Company’s strategies for cost effective fuel procurement.

In this second update to the Fuel Strategies Report, BC Ferries reports on the results of the Company’s fuel consumption reduction measures in 2013/14, sets out its target for fuel consumption in the fiscal year ending March 31, 2015 (“2014/15”) and provides further updates on BC Ferries’ plan to transition to alternate fuels and its strategies for cost effective fuel procurement.

## PART 1: FUEL CONSUMPTION REDUCTION PLAN

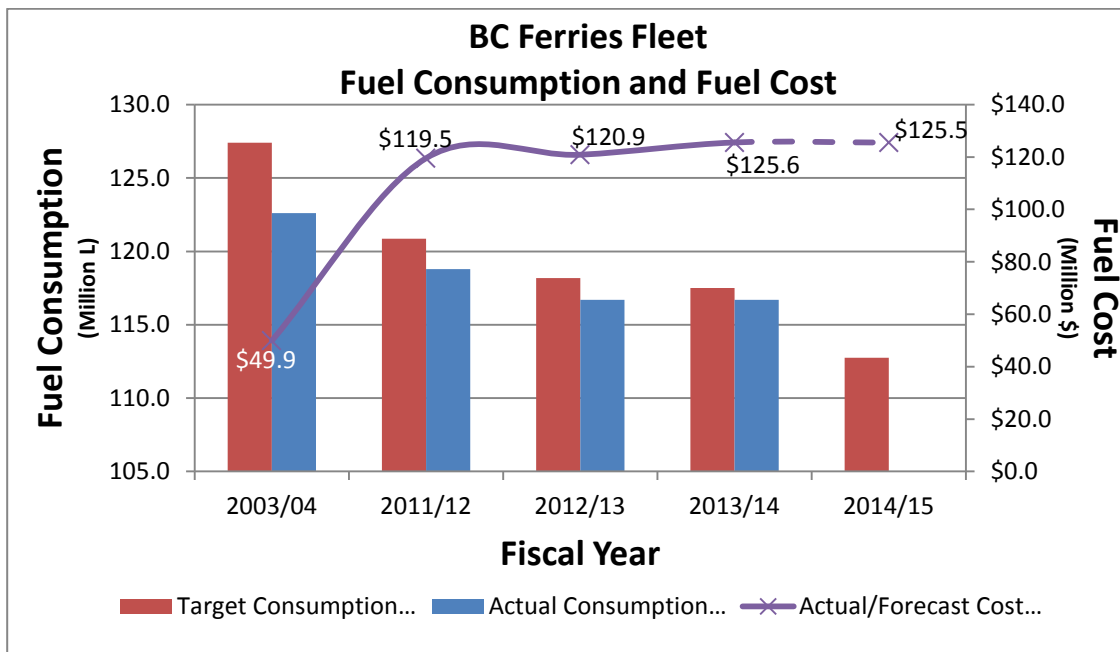
### A. Fuel Consumption Results – 2013/14

Fuel costs currently represent BC Ferries' second largest operating expenditure. BC Ferries' fuel costs are a function of the market price of marine diesel<sup>1</sup> and the volume of this fuel that it consumes. While BC Ferries cannot control the market price of fuel, it has implemented competitive fuel procurement processes, and hedged when appropriate, to ensure the Company receives the best market price for delivered fuel (See *Part 3: Strategies for Cost Effective Fuel Procurement*).

In terms of fuel consumption, BC Ferries has a degree of influence, within limits, over the volume of fuel it consumes. Through continued focus on fuel reduction initiatives, the Company has achieved significant fuel consumption savings over the past years as shown below in Figure 1 and Table 1. In total, BC Ferries has reduced its fuel consumption by over 5.9 million litres or 4.8 percent in the period 2003/04 to 2013/14 (and 8.4 million litres from 2002/03).

In 2013/14, the Company reduced its fuel consumption by 22,400 litres compared to the volume consumed in the prior fiscal year. As compared to its fuel consumption target for the year, the Company achieved savings of 0.8 million litres or 0.7 percent. As a result of higher market prices for fuel, the Company's fuel costs in 2013/14 (\$125.6 million) were \$4.7 million or 3.7 percent higher than in the prior fiscal year. In 2014/15, the Company is forecasting fuel consumption of 112.8 million litres, with a forecast cost of \$125.5 million.

**Figure 1: Fuel Consumption and Fuel Costs**



<sup>1</sup> BC Ferries' fleet runs on marine diesel fuel, and in this document "fuel" or "fuel oil" is a reference to marine diesel.

**Table 1: Fuel Consumption Savings**

|           | Fiscal Year | TARGET<br>(million litres) | ACTUAL<br>(million litres) |                        |                        |                        |
|-----------|-------------|----------------------------|----------------------------|------------------------|------------------------|------------------------|
|           |             |                            | Fuel Consumption           | Variance Actual/Target | Year-over-year Savings | Savings from Base Year |
| Base Year | 2003/04     | 127.4                      | 122.6                      |                        |                        |                        |
|           | 2011/12     | 120.9                      | 118.8                      | 2.1                    | 0.7<br>0.6%            | 3.8<br>3.1%            |
|           | 2012/13     | 118.2                      | 116.7                      | 1.5                    | 2.1<br>1.8%            | 5.9<br>4.8%            |
|           | 2013/14     | 117.5                      | 116.7                      | 0.8                    | 0.0<br>0.0%            | 5.9<br>4.8%            |
|           | 2014/15     | 112.8                      | TBD                        | TBD                    | TBD                    | TBD                    |
|           |             |                            |                            |                        |                        | TBD                    |

Contributing to the 2013/14 fuel consumption savings results against target were the following:

Sailing Reductions

The fuel consumption savings in 2013/14 were realized principally from a reduction in sailings delivered during the year. The number of round trips delivered in 2013/14 was 1,149 (1.45 percent) less than budgeted as a result of various extraordinary factors such as adverse weather, particularly in the month of February, 2014, and operational issues. Fuel consumption savings of 1.0 million litres or 0.9 percent of the target were generated from these sailings reductions. This included savings arising from a reduction against budget of 82 round trips on the major routes (routes 1, 2, 3 and 30), which accounted for 55 percent of the total fuel savings attributable to the sailing reductions.

Fleet Deployment

Partially offsetting the savings realized through sailing reductions were increases in fuel consumption arising from situations where the Company was required, for various operational reasons, to substitute a larger vessel for the one planned to operate on a particular route. As described in the Fuel Strategies Report, the Company continually endeavours to optimize its fleet deployment. When the opportunity exists, BC Ferries may choose to substitute a vessel with a smaller, more fuel-efficient one in order to tailor its service to the demand. Conversely, however, there are times when a less efficient vessel must be used on a route, such as when traffic demand is expected to be greater than planned and a larger vessel is available, or when repairs and maintenance require a vessel substitution. In 2013/14, the net increase in fuel consumption arising from fleet deployment changes was modest at 67,000 litres or 0.06 percent of the fuel consumption target.

### Efficiencies

During 2013/14, the Company continued to focus on enhancing the efficiency of its operations, an important element of which is managing its consumption of energy in all forms. The tactics to realize fuel consumption savings through operational efficiencies set out in the Fuel Strategies Report continued to be pursued in 2013/14. This included continued focus on minimizing fuel burn through various operational procedures and practices, such as targeting constant minimum transit speeds during each voyage, as well as through engineering practices that aim to ensure optimum performance of main engines and ancillary equipment. Other initiatives that received continued focus during the fiscal year included the following:

- **Shore Power Fuel Consumption Tracking**  
Daily shore power consumption tracking through the shipboard meters that were installed in the previous fiscal year on the 15 largest vessels in the fleet commenced during the fiscal year. These meters will enable the ships' crew to monitor and better understand their electrical power consumption when the vessel is connected to shore power. This is expected to enable a reduction in the electrical load and associated electricity costs of the vessels. In turn, this may reduce the power consumption of the vessel while in operation, thereby resulting in savings through less fuel being required for the generators.
  
- **Shipboard Energy Efficiency Management Plans ("SEEMP")**  
On January 1, 2013, the requirement to maintain a SEEMP came into force for all vessels governed by International Maritime Organization ("IMO") standards. BC Ferries' only vessel under IMO standards is the *Northern Adventure*. The *Canada Shipping Act, 2001* has since adopted this IMO standard for vessels of over 400 gross tonnage and now a SEEMP is required for the majority of our vessels (32 vessels). BC Ferries has completed an initial implementation of the SEEMP on the *Northern Adventure* and expects to have implementation complete on each of the other 31 vessels prior to renewal of their annual Air Pollution Prevention Certificates. The SEEMP focuses on the largest sources of energy consumption onboard and serves to monitor and prove that efforts are being made to reduce energy consumption. In essence, during its regular ship inspections, the Classification Society (Lloyd's Register) will ensure all necessary measures are in place to minimize greenhouse gases emitted from each of the vessels.

For each of the 32 vessels an energy efficiency operational index ("EEOI") has been developed and is being tracked on an annual basis as part of the SEEMP requirements. The expected outcomes of successfully managing the vessels' energy efficiency through the EEOI monitoring are reduced fuel consumption and reduced greenhouse gas emissions. Furthermore, a SEEMP target tool has been developed by the Company to assist in estimating the fuel savings for specific (targeted), energy reduction efforts in areas such as:

- engine efficiency (upgrade or renewal);
- energy management (initiatives addressing employee and customer energy consumption awareness, operating procedures, energy/fuel consumption monitoring, waste heat recovery, efficiency upgrades, etc.);
- hull maintenance/low resistance coatings;
- operational tactics (on time performance, fleet traffic coordination, terminal operations optimization, propulsion set-up while in berth, propulsion set-up while on route, weather dependent routing, vessel trim optimization, etc.);
- propeller optimization (RPM - pitch setting, design/modification, etc.).

This tool provides the Company with an enhanced ability to implement, evaluate and share local initiatives for improving vessel operating efficiency and optimizing fuel consumption across the fleet.

While the Company has made significant strides in reducing fuel consumption from its continued focus on pursuing operational efficiencies, it is believed that further reductions of a significant magnitude can be realized only through implementing strategies involving major capital expenditures aimed at replacing vessel propulsion systems with more efficient ones and/or replacing aged vessels altogether. During 2013/14, the Company continued or completed work on

several capital projects that offer the potential to generate fuel consumption savings in future years. These included the following:

#### Tachek

A \$20 million project to extend the life of the *Tachek* by an additional 15 years until retirement in 2029 was completed in 2013/14. The type of engines and propulsion systems installed (two service generators that operate from the main propulsion shafts instead of using diesel engines and a battery-operated bow thruster), as well as the type of hull coating that was applied to the vessel, are expected to result in overall fuel savings of 15 percent compared to the fuel consumption of the vessel prior to the upgrade. BC Ferries may realize further savings through the application of the technology to other vessels due for an upgrade or for those newly constructed.

#### Shore Power Upgrades

BC Ferries has continued to focus during the fiscal year on expanding its shore power program, which involves the connection of a vessel to shore power when in dock overnight as opposed to the vessel running its auxiliary ship service generators using fuel. BC Ferries has identified a further seven terminals where berth shore power infrastructure will be installed and/or upgraded in 2014/15. The Company has been successful in obtaining federal funding support of up to 50 percent of the marine shore power technology costs for five of these projects under Transport Canada's Shore Power Technology for Ports Program, and a contribution agreement with Transport Canada was signed February 4, 2014. These shore power upgrades will be completed as part of the Company's larger capital upgrades planned for its Fleet Maintenance Unit at Deas Dock, and its terminals at Buckley Bay, Denman West, Langdale, and Whaletown. The project timelines at Little River and Tsawwassen terminals fell outside the eligibility period for federal funding; the project at Little River was completed in 2013/14, while the project at Tsawwassen will extend beyond the December 2015 deadline for project completions under the program. A performance measurement strategy in regard to the expected project outcomes, performance indicators (e.g. litres of fuel saved), methodology, and results measurement form part of the Company's commitment under the contribution agreement with Transport Canada.

#### Cable Ferry

The cable ferry project for service on the route connecting Buckley Bay on Vancouver Island and Denman Island is an innovative initiative and is part of our ongoing efforts to identify and pursue opportunities that have the potential to enhance our cost effectiveness in delivering safe, reliable and quality ferry service.

The cable ferry project is now in the execution stage, having received confirmation from the BCFC by Order 14-01 that the proposed expenditures to implement the project are reasonable and prudent. The cable ferry is expected to be in service by the summer of 2015.

Compared to the current service, it is projected that, over 40 years, the cable ferry will provide over \$80 million in cost savings as well as significant environmental benefits including: reduced fuel consumption; lower air emissions; reduced wake; no propeller turbulence; low anti-fouling discharge; low propeller scour; and zero discharge to the marine environment. In terms of fuel consumption, the propulsion system for the cable ferry is expected to consume 50 percent or less power than that of the existing ferry (*Quinitsa*) operating on the same route. The power for the cable ferry propulsion system will be generated using marine diesel. BC Ferries may look at the eventual adoption of natural gas propulsion and/or hybrid electrical propulsion for this ferry in the future, if additional savings could be achieved.

## **B. Fuel Consumption Reduction Target – 2014/15**

For 2014/15 the Company has set a fuel consumption target of 112.8 million litres. This represents a reduction of 4.7 million litres or 4.0 percent from the 2013/14 fuel consumption target of 117.5 million litres. In 2014/15, the Company expects to realize significant fuel consumption savings from core service level reductions set by the provincial government and reflected in the Coastal Ferry Services Contract as amended effective March 31, 2014. In this regard, the 2014/15 target reflects 4,003 (or 5.1 percent) fewer round trips in 2014/15 than were budgeted in 2013/14.

Excluding the projected fuel savings arising from the service level reductions, the 2014/15 fuel consumption target is equal to the 2013/14 target. This represents a modest increase over the actual fuel consumed in 2013/14 of 116.7 million litres and reflects the fact that, as mentioned previously, the Company has, over the past number of years, refined its operating procedures to achieve maximum fuel efficiency, and the opportunity for further significant improvements in the absence of significant capital investments is limited. Further, the fuel consumption target for 2014/15 assumes that all budgeted round trips are delivered. Fuel consumption savings in the order of 1.0 million litres were realized in 2013/14 from sailing cancellations that resulted from extraordinary events such as adverse weather and operational issues. While it is expected that some sailings in 2014/15 will need to be cancelled for weather and other events outside the Company's control, it is not possible to forecast such events and, hence, no fuel consumption savings associated with such cancellations are reflected in the final 2014/15 target. In addition, the 2014/15 target includes a number of supplemental sailings on the major routes ('manager's discretion sailings'), which will be delivered only if required to meet demand. To the extent that such sailings are not required, the Company will realize incremental savings in fuel consumption.



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## PART 2: PLAN TO TRANSITION TO ALTERNATIVE FUELS

BC Ferries actively monitors and pursues innovation and emerging technologies respecting the use of alternatives to conventional fuels. The Fuel Strategies Report set out three key areas of focus by BC Ferries respecting the transition to alternative fuels. The following provides an update on activities undertaken in each of these areas.

### Biodiesel

Since September 2009, BC Ferries' fleet has used 5 percent, or B5, biodiesel to fuel its vessels, making the Company one of the largest consumers of biodiesel in British Columbia. A B5 fuel blend is used in all service areas where the product is available. Currently, 31 vessels in the BC Ferries fleet are fuelled with biodiesel. BC Ferries continues to monitor the availability of the product for opportunities to use this fuel for other vessels in the fleet.

### Liquefied Natural Gas

BC Ferries continues to move forward towards using liquefied natural gas ("LNG") and is convinced that a move to this fuel source would reduce costs and emissions. At this time, LNG is over 50 percent less expensive than the ultra-low sulphur diesel the Company currently uses. Both LNG and the marine diesel the Company uses meet all current domestic and international emissions regulations as well as the new regulations that will be effective January 1, 2015.

BC Ferries is progressing well in its second new build program, which focuses on the minor and intermediate-sized vessels of the fleet. Six to seven of these vessels are expected to be replaced over the next 10 years. The Company believes that LNG is a viable option for future new vessels and has established a policy that, for all new vessel acquisitions, all requests for proposals ("RFP") will require potential proponents to include option pricing for LNG-fuelled engines. This will enable the Company to conduct appropriate business case analysis as to the cost effectiveness of the option. For certain vessel replacements, this may include dual fuel options (LNG and marine diesel fuel).

On July 19, 2013, by Order 13-01, the BCFC approved the Company's application to construct three new intermediate class vessels to replace the 49-year old *Queen of Burnaby* and the 50-year old *Queen of Nanaimo*. In December 2013, BC Ferries issued an RFP to five pre-qualified shipyards, including one Canadian proponent, to participate further in our formal procurement process to design and build these vessels. Both of these vessels are scheduled for retirement in 2016. The Company intends to replace them with three open-deck vessels, each with the capacity to carry 145 automobile equivalents (AEQs). The RFP stipulates that the vessels be designed to operate as dual-fuel capable, so they can run on LNG or marine diesel fuel. BCF is seeking to reduce the fuel consumption from about 3.4 million litres of diesel annually on each route served by the vessels, which equates to 5.4 million equivalent litres of LNG. The RFP requires that the proponent demonstrate the expected fuel consumption and associated savings with its proposed design, with a target reduction of at least 6.5%. The Company is currently reviewing the responses to the RFP. Two of the vessels are expected to enter service in 2016 and the third vessel is expected to join the fleet in 2017. These vessels are expected to set a new standard of efficiency with standardized bridges, engine rooms and lifesaving equipment moving us to a higher safety standard and improving interoperability.

The Company is also continuing to analyse the economic and technical feasibility of converting existing vessels to LNG technology as they are undergoing major retrofits. Potential LNG conversion grants that the industry or governmental agencies may make available are being pursued. The Company has several vessels scheduled for mid-life upgrades beginning in 2015/16, the first of which is the Spirit Class vessels. The possibility of converting the Spirit Class vessels to LNG as part of their mid-life upgrades is currently being analysed.

#### Hybrid Plant Design

As described in the Fuel Strategies Report, innovation and emerging technologies for electric power grid management have the potential to make use of energy sources that are alternatives to diesel fuel. In addition, advanced power grid management can achieve efficiencies in generator loading to optimize fuel consumption. The practicality and cost of this technology is not yet determined. The Company is providing support to the research being done in this knowledge area by providing access to vessels and data to research companies engaged in this type of activity. Most recently, Public Works and Government Services Canada through their Acquisition Branch and Transport Canada's Transportation Technology and Innovation department have entered into a contractual agreement with the Research Operations of the Department of Mechanical Engineering of University of Victoria to conduct research in this field. BC Ferries continues to monitor advancements in this technology.

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## **PART 3: STRATEGIES FOR COST EFFECTIVE FUEL PROCUREMENT**

BC Ferries has been able to achieve significant savings in fuel costs through implementation of innovative fuel procurement strategies.

As described in the Fuel Strategies Report, BC Ferries' approach in the past few years has been to consolidate fuel and marine lubricant volume with fewer suppliers. This has generated a number of positive outcomes for BC Ferries. Where previously BC Ferries had been paying full or marginally-discounted rack pricing, combining all possible volume with a single major supplier generated sufficient volumes to trigger greater volume discounts. The result has been annual savings approaching \$3.0 million per year.

In addition, by accepting a commitment to one major supplier, a previously unavailable pre-payment discount formula was offered that has resulted in additional savings approaching \$0.5 million per year. Complex delivery schedules and associated bridging fees have been managed efficiently and effectively through the supplier distribution networks, and are charged to BC Ferries at cost. Finally, further savings have been achieved by consolidating all marine lubricant purchases with a single supplier and combining them in a single contract with fuel. The combined volume resulted in cost of goods savings of approximately \$0.15 million per year. Bundling of the marine lubricant purchases with the fuel purchases has provided increased efficiencies and other benefits resulting in savings approaching \$0.06 million per year (these savings made up a portion of the volume-based discount off the stated rack rate).

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. The current agreement with BC Ferries' primary supplier is five years, comprised of an initial fixed term of two years expiring March 31, 2013 with three additional one-year extension options. BC Ferries has exercised two one-year extensions with the contract term now set to expire March 31, 2015. BC Ferries must declare its intent to exercise the option for a final, one-year extension by September 30, 2014. If exercised, the final extension would bring the agreement expiry date to March 31, 2016.

While its fuel procurement processes help to ensure that BC Ferries acquires its fuel at competitive prices, no amount of competitive procurement can insulate BC Ferries from market volatility. As explained in the Fuel Strategies Report and as stated in previous years, BC Ferries could, in theory, mitigate the impact of fuel price volatility by entering into fixed-price contracts with its fuel suppliers for the length of each performance term. A fixed cost per litre for the entire performance term could then be used in the calculation of price caps, eliminating any need for fuel surcharges or rebates.

Unfortunately, long-term fixed-price contracts have not been offered to BC Ferries without a prohibitive risk premium built into the price. An alternative strategy for BC Ferries to create fuel cost certainty would be to hedge the commodity cost using derivatives for the duration of a performance term; however this also has challenges. First, with fuel prices based on Vancouver rack and derivatives based in New York Harbor or Cushing, Oklahoma, BC Ferries would retain basis risk that has been significant in recent years. Second, long-term hedging would expose the Company's earnings to significant mark-to-market swings in valuation. Third, the use of hedges may effectively lock in the requirement for fuel surcharges. This would occur if, as is currently the case, the indicative hedge price is greater than the regulatory price.

As in previous years, fuel price volatility continued throughout 2013/14, with prices ranging from a low of \$1.0017 to a high of \$1.1553 per litre (measured at Tsawwassen). The annual average cost of delivered fuel was \$1.073 per litre, exceeding the year's regulatory set price of \$0.952 by more than 12 cents per litre. The unfavourable price variance led to regulatory fuel costs deferred of \$14.5 million over the fiscal year. BCFC Order 2012-03 authorizes BC Ferries to proactively

manage the fuel deferral accounts provided that account balances are within 2 percent of the pre-surcharge tariff revenue. BC Ferries closely monitors fuel prices and forecasts deferral account balances, and proactively manages the deferral account balances in accordance with the terms of BCFC Order 2012-03 to minimize fare volatility due to frequent surcharge and rebate adjustments.

To reduce the combined deferral account balance that had grown throughout the year, on January 17, 2014, the Company applied a 3.5 percent fuel surcharge on all routes except the northern routes. In addition, on March 20, 2014, in response to a request by BC Ferries, the BCFC approved a one-time transfer of the March 31, 2014 balance of tariffs in excess of price cap to reduce the deferred fuel cost account balance. BC Ferries' actions to monitor and manage the fuel deferral account, including the application of the surcharges as required, has enabled the Company to keep the account well within the 2 percent trigger with minimal fare volatility, despite fuel price volatility.

BC Ferries continues to monitor the fuel market and supply landscape. Experts do not expect significant changes over the next year. Global supply and demand is expected to continue to drive crude prices and, in turn, the rack prices in the market. Local supply and demand conditions will also continue to influence rack pricing in the Vancouver market. A sustained adverse movement in the Vancouver rack price would result in an increase in the prevailing fuel surcharge rate.

As BC Ferries moves forward with using LNG, additional research will be performed to assess competitive market conditions, options for security of supply, bunkering methodology and all applicable pricing mechanisms. An important first step in this process involved the issuance of a Request for Expression of Interest to gauge the level of interest among and to identify potential suppliers of LNG. This took place in August and September of 2013 and positive responses were received from several proponents. Follow on steps are expected to include a Request for Prequalification to determine the viability/capacity of potential suppliers followed by a RFP issued to prequalified suppliers. The end result of the RFP process would be the selection of and contracting with the supplier(s) best able to meet BC Ferries' operational and commercial requirements for the supply and delivery of LNG. As LNG fuel usage becomes a reality at BC Ferries, the impact of volume erosion on existing diesel fuel supply agreements, and the associated possible reduction in existing discounts, will have to be carefully assessed.

## CONCLUSION

Through focussed effort, BC Ferries has achieved significant fuel consumption savings. The Company remains committed to pursuing cost effective initiatives to enhance the fuel efficiency of its operations further without compromising safety and operational readiness. For 2014/15, the Company's fuel consumption target is 112.8 million litres, which is 4.7 million litres lower than last year's target. The Company will strive to realize savings in excess of this target. The use of alternate fuels or alternate propulsion technology, forms part of BC Ferries' strategies to minimize fuel cost in future years, and initiatives to further explore opportunities in this area will continue. Finally, fuel procurement strategies are actively employed to capitalize on any cost savings opportunities and will continue to be reviewed to ensure optimization of results.