



BRITISH COLUMBIA FERRY SERVICES INC.

Fuel Strategies - Update Report

June 24, 2016

Table of Contents

Introduction	3
Independent Review Of Fuel Management	4
Part 1: Fuel Consumption Reduction Plan	5
Part 2: Plan to Transition to Alternative Fuels	9
Part 3: Strategies for Cost-Effective Fuel Procurement	12
Conclusion.....	15

INTRODUCTION

This document is submitted by British Columbia Ferry Services Inc. (“BC Ferries” or the “Company”) to the British Columbia Ferry Commission (the “BCFC” or the “Commission”) 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 (“the Commissioner”) pursuant to Section 41.1 of the *Coastal Ferry Act* to establish a fuel price deferral mechanism for the third performance term (“PT3”) ending March 31, 2016. On September 30, 2012, the BCFC issued Order 12-03 in response to that application. Order 12-03 requires that for each year of PT3, BC Ferries update the BCFC on its strategies to optimize fuel cost savings. By Order 12-03A, issued February 28, 2013, 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 for PT3 with the BCFC on October 29, 2012 (the “PT3 Fuel Strategies Report”). This is the fourth and final update to the PT3 Fuel Strategies Report. As with the three previous annual updates, this report highlights BC Ferries’ fuel consumption performance in the preceding fiscal year (ending March 31, 2016) (“fiscal 2016”), and sets out the Company’s target for fuel consumption in the current fiscal year (ending March 31, 2017) (“fiscal 2017”).

BC Ferries’ strategies to transition to alternate fuels and its strategies for cost-effective fuel procurement are also addressed in this report. Updates on these matters were recently provided to the Commission as part of the Performance Term Four Fuel Management Plan (“PT4 Fuel Management Plan”) submitted on March 30, 2016 in accordance with Order 15-03. This report contains those strategies and provides further updates on them.

INDEPENDENT REVIEW OF FUEL MANAGEMENT

BC Ferries seeks to minimize fuel costs and fuel price volatility through strategies that include:

- Initiatives and capital projects directed at reducing consumption;
- Transitioning to more efficient and lower-cost alternative fuels, principally liquefied natural gas (“LNG”);
- Running competitive procurement processes; and
- Using the fuel deferral account mechanism and financial derivative hedging programs.

In the year ended March 31, 2015, the Company’s performance in each of the above areas was independently reviewed by PricewaterhouseCoopers LLP (“PwC”), as part of the review conducted by the BCFC of BC Ferries’ fuel management policies and practices.

In its report, *Performance Review of BC Ferries’ Fuel Management*, released by the BCFC on March 18, 2015, PwC concluded that:

- BC Ferries’ efforts to manage and minimize consumption of fuel have been effective;
- BC Ferries has defined procedures in place to manage consumption and costs and are compliant with these policies and procedures; and
- The current deferral account mechanism in place that acts as a hedge against fuel price volatility is considered appropriate.

BC Ferries’ fuel management strategies and results are discussed in the following sections of this report.

PART 1: FUEL CONSUMPTION REDUCTION PLAN

BC Ferries has and continues to exert significant effort to manage its operations efficiently and to reduce its consumption of energy in all forms. BC Ferries recognizes that not only does a more fuel-efficient operation mean lower costs, which helps lessen the upward pressure on fares, but it also results in a smaller environmental footprint of the Company's operations. These are both important objectives of the Company, its customers and the communities BC Ferries serves.

BC Ferries endeavours to minimize fuel consumption principally through initiatives aimed at optimizing fleet deployment and achieving operational efficiencies.¹ Through focussed efforts to identify and pursue all viable fuel savings initiatives, BC Ferries has achieved significant fuel consumption savings. Since fiscal 2004, BC Ferries has reduced its consumption of marine diesel fuel by 7 million litres or 6 percent (see Figure A and Table 1). This represents a reduction in CO₂ emissions of approximately 19,000 tonnes or the equivalent of taking approximately 3,500 cars off the road for a year.

The Company's success in this area reflects its commitment to progressive and responsible energy management, which is intended to ensure the highest practicable energy efficiencies in the Company's overall operations and the sustainable growth of its business.

These objectives are the cornerstone of the Company's SeaForward program. This new 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 (see *Part 2: Plan to Transition to Alternative Fuels*).

While the Company has made significant strides and continues to focus its efforts in all areas of energy and fuel management, the ability to extract future savings from fuel consumption reduction initiatives at levels comparable to those achieved historically is challenged by the practicality and cost-effectiveness of the technologies available, BC Ferries' aged fleet and the service level constraints within which the Company operates.

¹ See BC Ferries' PT3 Fuel Strategies Report and PT4 Fuel Management Plan for information on the Company's specific fuel savings initiatives.

Fuel Consumption Results – Fiscal 2016

In fiscal 2016, BC Ferries consumed 115.4 million litres of marine (ultra-low sulphur) diesel. This was 2.3 percent higher than in the prior fiscal year and 1.7 percent above the target the Company had set for the year, largely as a result of higher traffic levels.

The Company's fuel consumption target for fiscal 2016 of 113.5 million litres had been set in expectation that the volume of fuel consumed would be higher on a year-over-year basis as a result of various factors, principally a forecast growth in traffic levels. In fiscal 2016, traffic levels exceeded forecast. During the fiscal year, BC Ferries carried 20.7 million passengers and 8.1 million vehicles, which represented a 4.5 percent increase in the number of passengers carried and a 4.9 percent increase in the number of vehicles carried as compared to the prior fiscal year. Higher traffic levels resulted in heavier loads for the Company's vessels, as well as an increase in the number of sailings provided to carry the traffic², both of which contributed to higher fuel consumption on a year-over-year basis. Higher vehicle traffic levels also contributed to delays in vessel loading which, together with increased enroute marine cross-traffic, affected the on-time performance of the fleet. This was mitigated, at times, through sailing the vessels at higher, less-economical speeds, when and where it was safe to do so, with a further resulting negative impact on fuel consumption.

Despite the increase in the volume of fuel consumed in fiscal 2016, BC Ferries realized significant year-over-year savings in fuel cost as a result of lower realized prices for diesel fuel. Fuel is the Company's second largest operating expense. In fiscal 2016, fuel cost was \$103.3 million or \$15.3 million less than in the prior fiscal year. Lower fuel prices, coupled with the fact that BC Ferries has through its fuel hedging program locked in pricing for a significant portion of its forecast fuel consumption to the end of 2017, enabled the Company to increase the fuel rebate by 1.9 percent across the system effective April 1, 2016. This completely offset the 1.9 percent average tariff increase effective that date, resulting in no net increase to BC Ferries' customers at the beginning of PT4. Fuel rebates were increased from 1.0 percent to 2.9 percent on the non-northern routes and a fuel rebate of 1.9 percent was implemented on the northern routes³.

² The major routes (consisting of three routes connecting Metro Vancouver with mid and southern Vancouver Island, and one route connecting Horseshoe Bay and Langdale) and the Southern Gulf Island routes, where the Company's largest and highest fuel consuming vessels operate, saw an increase of approximately 8,000 nautical miles covered in fiscal 2016 compared to the previous year.

³ The northern routes comprise two routes connecting Port Hardy with the mid-Coast and Prince Rupert, and Prince Rupert with Haida Gwaii.

Figure A: Fuel Consumption and Fuel Costs

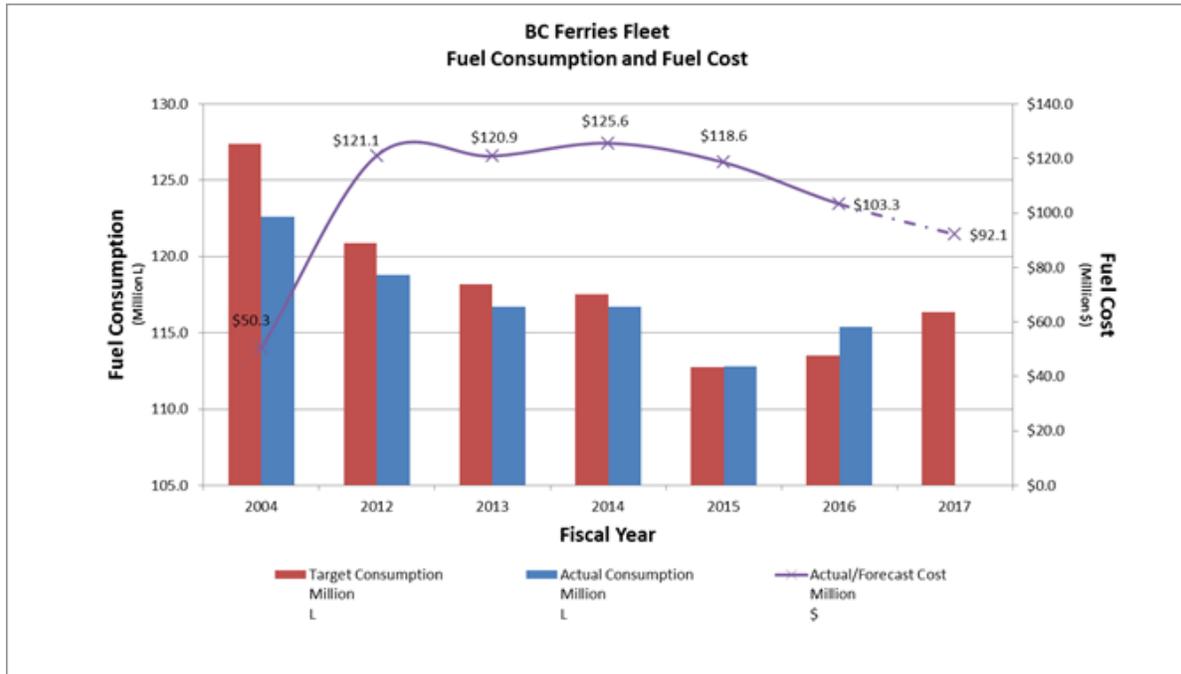


Table 1: Fuel Consumption Savings

	Fiscal Year	TARGET Fuel Consumption (million litres)	ACTUAL (million litres)			
			Actual Fuel Consumption	Variance Actual / Target	Year-over-year Savings	Savings from Base Year
Base Year Fuel Consumption	2004	127.4	122.6			
	2012	120.9	118.8	2.1	0.7	3.8
	2013	118.2	116.7	1.5	0.6%	3.1%
	2014	117.5	116.7	0.8	2.10	5.9
	2015	112.8	112.8	0.0	1.8%	4.8%
	2016	113.5	115.4	-1.9	0.00	5.9
	2017	116.4	TBD	TBD	3.90	9.8
					3.3%	8.0%
					-2.60	7.2
					-2.3%	5.9%
					TBD	TBD
					TBD	TBD

Fuel Consumption Target – Fiscal 2017

For fiscal 2017, the Company has set a fuel consumption target of 116.4 million litres⁴, which represents an increase of 1.0 million litres or 0.9 percent from the volume consumed in fiscal 2016.

The factors contributing to this modest increase include continued forecast growth in traffic on the major routes leading to additional round trips and more use of the larger Spirit class vessels, as well as additional sailings arising from the planned Langdale berth 1 upgrade project. During the closure of berth 1, additional round trips will be required on the route connecting Langdale and Horseshoe Bay to meet the projected traffic, as only the lower vehicle decks will be used by the vessels serving this route given that berth 2 does not have an upper vehicle deck ramp. The incremental fuel expected to be consumed as a result of this unique event is estimated to be approximately 780,000 litres.

The increase in forecast fuel consumption for fiscal 2017 reflects the overarching fact that having successfully maximized fuel efficiency over the past few years, the Company has now reached a plateau in terms of its ability to reduce fuel consumption further without additional investments in new technologies (which are already on the horizon - see *Part 2: Plan to Transition to Alternative Fuels*).

⁴ The fuel consumption target is set on the basis that all budgeted round trips are delivered and there are no incidental/weather related sailing cancellations. Also assumed are a number of supplemental sailings ('manager's discretion sailings') on the Major Routes which will be delivered only if required to meet demand.

PART 2: PLAN TO TRANSITION TO ALTERNATIVE FUELS

Introduction

BC Ferries actively monitors and pursues innovation and emerging technologies respecting the use of alternatives to conventional fuels. The Company's focus on transitioning to alternative fuels reflects its commitment to ensuring sustainable and cost effective operations. BC Ferries' initiatives in this area are set out in the PT3 Fuel Strategies Report and were updated in the PT4 Fuel Management Plan. They are repeated with further updates here.

BC Ferries has been a proud member of Green Marine since 2014. Green Marine is a globally-recognized, voluntary industry sustainability initiative for ship operators, ports, terminals, the seaway and shipyards. This program is aimed at reducing the environmental footprint of marine operations by promoting a culture of continuous improvement and exceeding regulatory compliance. BC Ferries received its Green Marine certification in May 2015. Like all participants, BC Ferries must demonstrate year-over-year improvement in measurable ways to maintain its Green Marine certification; a challenge BC Ferries welcomes. In May 2016, BC Ferries was recognized at Green Marine's annual GreenTech conference as a top performer in terms of having demonstrated measurable year-over-year improvements.

As a member of Green Marine, BC Ferries embraces the goals of the initiative, which comprise:

- Demonstrating corporate leadership in the search for best environmental practices in accordance with a sustainable development approach;
- Carrying out its activities in a responsible manner with a view to minimizing its environmental impacts;
- Aiming for continuous improvement of its environmental performance;
- Developing and promoting voluntary protection measures;
- Integrating sustainable development practices that are technically and economically achievable; and
- Collaborating with governments and citizen groups in the progressive implementation of the action plans arising from the Green Marine Environmental Program.

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. These objectives are at the heart of BC Ferries' strategies to transition to alternative fuels, the key initiatives of which are set out below.

Alternatives to Conventional Fuels

Renewable Fuels

Since 2007, BC Ferries' vessels have been burning diesel fuel with ultra-low sulphur content (15ppm). Additionally, where supply is available, the Company's 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 hydrocarbons, carbon monoxide and particulate matter in emissions. Hydrogenation derived renewable diesel (HDRD), a relatively new renewable fuel and considered a second generation biofuel, is on the horizon for possible introduction as a fuel supply for the fleet, provided quality and performance requirements can be met.

Liquefied Natural Gas

BC Ferries continues to move forward towards using LNG as a fuel source for its fleet. LNG is a greener and much cleaner fuel source with very favourable environmental impacts compared to diesel fuel. LNG adoption cuts 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 much cleaner exhaust emissions than diesel fuel. In addition to the benefits of lower emissions, LNG continues to be less expensive than the ultra-low sulphur diesel currently used by the Company, which translates to lower overall fuel expense, which in turn helps lessen the upward pressure on fares.

BC Ferries believes that LNG is a viable option for future new vessels and the Company's three new Salish class vessels, which will operate on the Southern Gulf Island routes as well as between Comox and Powell River, will have the capability to run on it. BC Ferries has also analyzed LNG as an option for existing vessels undergoing major retrofits, and intends to pursue this option where it is economically and technically feasible. The Company's two largest vessels, the *Spirit of Vancouver Island* and the *Spirit of British Columbia*, operating between Swartz Bay and Tsawwassen, will be undergoing mid-life upgrades in PT4, which will include the conversion of their main propulsion systems to dual-fuel capable, such that they will use LNG as their primary fuel.

The Company actively pursues LNG conversion grants made available by the industry and/or governmental agencies. Early in 2016, BC Ferries signed an agreement to receive up to \$10 million contribution from FortisBC Energy Inc. as part of the Natural Gas for Transportation incentive funding initiative. This funding will be used to partially offset the capital cost of converting the two Spirit class vessels to dual-fuel capability. While this agreement does not obligate BC Ferries to purchase LNG from FortisBC, the funding is conditional upon a number of factors including a long-term LNG procurement contract for these vessels.

Alternative Fuels, Electrical and Hybrid Propulsion

Innovation and emerging technologies for electric power grid management have the potential to utilize energy sources that are alternatives to diesel fuel. BC Ferries plans to consider hybrid power generation concepts for future vessel acquisition programs, such as its minor vessel replacement project, as well as possibly for the *Baynes Sound Connector*. The hybrid propulsion system recently installed on the *Tachek* has proven to be reliable and has generated efficiencies in fuel consumption as well as reduced the total cost of ownership of the new asset.

BC Ferries has engaged in a research partnership with the federal government and the University of Victoria to evaluate stored energy solutions (e.g. batteries or capacitors) for short duration routes. As part of this research, BC Ferries has been collecting field data from one of the Company's vessels, the *Klitsa*, which operates on the route connecting Mill Bay and Brentwood Bay. The outcome of this initial research is expected to be complete in the summer of 2016, with the potential for further collaboration in this area.

The Company also plans to continue tracking the introduction of purely electrical driven ferries by other operators, particularly in the Norwegian and Scottish ferry sectors, with a view to the potential adoption of this type of technology for new ferries that operate (shuttle) on short duration routes.

Furthermore, BC Ferries will continue to monitor global marine ferry industry trends and investigate and study other alternate fuels, such as methanol, with an aim to reducing Company's operating costs as well as its environmental footprint.

PART 3: STRATEGIES FOR COST-EFFECTIVE FUEL PROCUREMENT

Introduction

BC Ferries has been able to achieve significant savings in fuel costs through implementation of innovative fuel procurement strategies. BC Ferries' initiatives in this area are set out in the PT3 Fuel Strategies Report and were updated in the PT4 Fuel Management Plan. They are repeated with further updates here.

Procurement Approach

As discussed in Part 1 of this report, BC Ferries currently purchases in the order of 115 million litres of marine (ultra-low sulphur) diesel annually to fuel its ships. To obtain best overall value, BC Ferries consolidates the procurement of both its diesel and marine lubricant requirements with a single major supplier. Historically, when BC Ferries relied on multiple suppliers, it had been subject to full or marginally discounted rack pricing. Combining all possible volume with a single major supplier has triggered greater volume discounts, resulting in significant annual fuel cost savings and helping to lessen the upward pressure on fares.

In addition, by accepting a commitment to one major supplier, the Company achieved pre-payment and volume discounts. 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.

Formal competitive procurement processes for the supply of marine fuel and lubricants are, and will continue to be, conducted by BC Ferries to achieve best overall value for the Company. BC Ferries' marine fuel and lubricant contracts are set over a fixed initial term with extension options. The previous agreement with BC Ferries' primary supplier was five years, comprised of an initial fixed term of two years, with three additional one-year extension options, the last of which expired March 31, 2016. In accordance with BC Ferries' policy, a public tender process was undertaken to select a supplier for the next contract term. The new five year contract (three year initial term with two available one-year extension terms) went into effect April 4, 2016.

Fuel Deferral Accounts

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. 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 include a prohibitive risk premium.

The fuel cost deferral account mechanism is the key to BC Ferries' ability to mitigate 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 give back lower fuel costs through fuel rebates. BC Ferries was authorized in PT3 by Order 12-03 and in PT4 by Order 15-03A to use deferral accounts, one for the major and minor routes and one for the northern routes, as defined in the Coastal Ferry Services Contract. BC Ferries closely monitors fuel prices and the forecast deferral account balances, and continues to proactively manage the deferral account balances in accordance with the terms of the applicable Order to minimize fare volatility due to frequent surcharge and rebate adjustments.

Fuel Hedging

The use of fuel surcharges and rebates has an impact on cost to passengers, which in turn affects traffic and ultimately the Company's earnings. Surcharges increase the cost of ferry service to BC Ferries' customers, which negatively impacts traffic levels. Surcharges and rebates also create an environment of price uncertainty that can further negatively impact traffic levels. Fuel hedging can complement 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.

The Company's current hedging strategy is to undertake hedge transactions when those transactions are reasonably expected to reduce the potential for fuel surcharges. The strategy augments the use of fuel deferral accounts in hedging fuel price risk and the resulting negative impacts of surcharges on traffic, and improves price certainty for BC Ferries' customers.

Hedging the commodity cost using derivatives has challenges. First, with fuel prices based on Vancouver rack and derivatives based in New York Harbour or Cushing, Oklahoma, BC Ferries retains some residual basis risk. Second, long-term hedging may expose the Company's earnings to significant mark-to-market swings in valuation. Nevertheless, hedging is effective at protecting customers from the negative effects of fuel price volatility; to this end, when the Company has the opportunity to lock in prices at or below the regulatory set price, it has done so.

In December 2014, the price of New York Harbour ultra-low sulphur diesel dropped to a level lower than the regulatory set price for fuel, a position it retained for the remainder of fiscal 2015 and all of fiscal 2016. As a result, BC Ferries layered in a number of ultra-low sulphur diesel hedges representing approximately 70 percent of the Company's forecast diesel consumption for the 15 month period from January 2015 through to the end of March 2016 (the end of PT3). With 70 percent of consumption hedged at below the regulatory set price, BC Ferries removed all fuel

surcharges in December of 2014. Subsequently, the Company implemented a 1 percent fuel rebate starting April 1, 2015. Fuel swap prices persisted below the regulatory set price for PT4 throughout fiscal 2016. By December 31, 2015, BC Ferries had locked in fixed price swaps for approximately 70 percent of its forecast diesel fuel consumption through the end of December 31, 2017. This allowed the Company to further increase its fuel rebate by 1.9 percent effective April 1, 2016.

BC Ferries continues to monitor the fuel market and supply landscape. Generally, experts expect fuel prices to recover slightly and remain within the current range of highs and lows in the next few years. 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. Any sustained movement in the Vancouver rack price would impact the delivered price of fuel to BC Ferries.

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

Liquefied Natural Gas Supply

Based on the response to a request for expressions of interest issued by BC Ferries in September 2013, an LNG supplier was selected for the first group of BC Ferries' dual-fuelled vessels (the Salish class vessels). As LNG fuel usage becomes a reality at BC Ferries, the impact of volume erosion on the economics of diesel fuel supply agreements will have to be carefully assessed.

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, which should generate benefits to LNG consumers, 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.

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.

The use of alternative fuels or alternate propulsion technology (particularly those enabling the use of LNG), 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 optimized results.