
Assessment of BC Ferries' PT4 Submissions

*British Columbia
Ferry Commission*

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Executive Summary

PricewaterhouseCoopers LLP ("PwC") was engaged by the British Columbia Ferry Commission (the "Commission") to assess the reasonableness of the following submissions made by the British Columbia Ferry Services Inc.'s ("BC Ferries") under Section 40 of the Coastal Ferry Act for Performance Term Four ("PT4"):

- Performance Term Four Submission to the British Columbia Ferries Commissioner ("PT4 Submission")
- Capital Plan Fiscal Years 2015 through 2026 ("Capital Plan")
- Strategies for Enhanced Efficiency in Performance Term Four and Beyond

Supporting the PT4 Submission is a new Traffic Demand Forecasting methodology which has been assessed separately.

The significant findings of our report are as follows:

- **PT4 Submission and Supporting Documentation**
 - Costs and other financial information included in the PT4 Submission are reasonable and BC Ferries has satisfactorily explained unusual trends or variances between actual and forecasted results;
 - Costs included in the Commissioner's PT4 forecast model as well as the Commissioner's assumptions are reasonable and the forecast model can be relied on to produce reasonable and supportive projections; and
 - Based on the Commissioner's assumptions that include additional traffic growth in Year 4 of PT4, BC Ferries' debt covenants are met with price caps at or below forecasted inflation.
- **Capital Plan**
 - The Capital Plan is designed to meet the requirements of the Coastal Ferry Services Contract ("CFSC"). It is also consistent with the objectives of the Coastal Ferry Act Regulatory Review with regard to pursuing standardization objectives for vessels and terminals. The Capital Plan Submission requirements could benefit from greater integration with the price cap submission and its efficiency plan that includes the potential for submitting development options or alternative plans beyond compliance with the CFSC and that have the potential to improve efficiency and/or better address user needs; and
 - We are satisfied with the responses received and have no concerns with the Capital Planning Processes. We have only a minor concern with the Planned Capital Expenditures with regard to the discount rate used in business case analysis which does not impact the PT4 price cap decision. On an overall basis, we consider the Capital Plan to be reasonable.
- **Strategies for Enhanced Efficiency in Performance Term Four and Beyond**
 - The initiatives identified in the efficiency plan appear to be consistent with the Coastal Ferry Act Regulatory Review. The efficiency plan is considered reasonable. We observe that no specific ASD opportunities and few new revenue enhancement opportunities from vessel or terminal amenities have been identified as part of the plan;
 - The IT projects that are transformational in nature should contribute to a more modern ferry system that is better designed to meet user needs; and
 - The route strategies will require a high degree of internal and external support to be successful. Integrated planning with the provincial transportation network will also be essential. These strategies are worthy of further analysis and public consultations.

- **Traffic Demand Forecasting**

- STSM, the new traffic forecasting method, is a suitable approach to utilize the forecasting of BC Ferries traffic;
- Price elasticity of demand relationships appears to be very reasonable; and
- There are no major concerns with BC Ferries' demand forecasting approach. There is only a minor concern with regard to one of the inputs to estimating commercial traffic which is a small part of overall revenues. The causality of certain variables used to predict BC Ferries' commercial traffic could be revisited. On an overall basis, BC Ferries' demand forecasting methodology and its associated methodologies are considered appropriate for purposes of price cap rate setting. More holistic approaches to forecasting of BC Ferries traffic levels may be of benefit.

Notice to Reader

This Report is issued by PwC for the exclusive use of the Commission in connection with its assessment of PT4 submissions by BC Ferries.

This version is an update of the report posted on the BC Ferry Commission's website on March 18, 2015 with the following changes:

P12. Salaries, Wages & Benefits, Fuel Costs and Other Expenses are shown as a percentage of Operating Expenses and Total Expenses.

P19. The number of new vessels is corrected to 19 from the previously shown total of 14.

Our work did not constitute an audit conducted in accordance with generally accepted auditing standards, an examination of internal controls nor attestation nor review services in accordance with the standards established by the Canadian Institute of Chartered Accountants. Accordingly, we do not express an opinion nor any other form of assurance on the financial or other information, or operating internal controls, of BC Ferries.

PwC did not examine, compile or apply agreed upon procedures to satisfy the requirements of the Canadian Institute of Chartered Accountants to the financial information used in this Report and we therefore are unable to express assurances on such information except where expressly stated in the Report to form part of the scope of our work.

Further this Report does not constitute an opinion as to legal matters, including the interpretation of the Coastal Ferry Act or any other similar matters. The economic impact of the various procurement options is also outside the scope of PwC's work.

Our work is based primarily on the information and assumptions listed in the body of this Report. While we read information from various sources we did not perform checking or verification procedures except where expressly stated in the Report to form part of the scope of our work. Our work and commentary is subject to assumptions, which may change with the benefit of further detailed information. We make no representation regarding the sufficiency of our work and had we been asked to perform additional work, additional matters may have come to our attention that would have been reported to the Commission.

Some of the documents and figures we reviewed were produced by third parties. We did not corroborate or verify these documents and figures with these parties. It is outside the scope of our review to evaluate the methodology used to conduct independent studies; therefore, we have accepted the information as presented, including conclusions. We did review the credentials of external consultants that BC Ferries management relied upon and that we were unfamiliar with.

The outputs of the Report are intended to provide the Commission with information to assist in informing their decision making process pertaining to BC Ferries. PwC accepts no liability in respect of any loss, damage or expense of whatsoever nature caused by any use the reader may choose to make of this Report, or which is otherwise consequent upon the gaining of access to the Report by the reader.

Our Report, including its schedules must be considered in its entirety by the reader. Selecting and relying on specific portions of the analyses, or factors considered by us in isolation may be misleading.

Organization of the Report

This report is organized into four parts:

Part A: Assessment of BC Ferries' PT4 Submission and Supporting Documentation

Part B: Assessment of BC Ferries' 2015-2026 Capital Plan Submission

Part C: Assessment of BC Ferries' Strategies for Enhanced Efficiency in PT4 and Beyond

Part D: Assessment of BC Ferries' Traffic Demand Forecasting

Part A: Assessment of BC Ferries' PT4 Submission and Supporting Documentation

Introduction

This first component of the overall report assesses the reasonableness of BC Ferries' PT4 Submission in relation to the specific requirements of the Coastal Ferry Act. BC Ferries' PT4 submission, dated September 30, 2014, is required under Section 40(1) of the Coastal Ferry Act.

The objective of this assessment is to also determine whether the Commissioner's financial modelling for PT4 is based on reliable data and reasonable assumptions. The results of this analysis are to be used by the Commission in determining the Maximum Allowable Revenues from Fares and Reservations for each year in PT4.

We have analyzed BC Ferries' actual results and forecasts for PT3 as well as BC Ferries' forecasts for PT4. The main purpose of the analysis is to assess the reasonableness of the assumptions and forecasting methodologies underlying BC Ferries' forecast for PT4 and to recommend adjustments where appropriate.

The scope the assessment includes the following key questions:

- Has BC Ferries satisfactorily explained unusual trends or variances between actual and forecasted results?
- Can the forecasting model prepared by BC Ferries be relied upon to produce accurate reasonable and supportive projections?
- Is the information provided by BC Ferries accurate, reasonable and supportive of the forecast for PT4?
- Will the forecasts provided allow BC Ferries to meet their debt covenants?

Overview of the PT4 Submission

The PT4 submission responds to the specific information requirements of the Coastal Ferry Act. It contains information on the ferry services BC Ferries has provided and expects to provide in PT3 in relation to each designated ferry route within the route group for which a price cap is to be set by the Commissioner for PT4. It is structured in six sections as follows:

- Core Ferry Services
 - This section provides information the core ferry service that BC Ferries has provided and reasonably expects to provide on the designated ferry routes in PT3.
- Tariffs for Core Ferry Services
 - This section provides information on the tariffs, including reservations, that BC Ferries has charged and expects to charge on the designated ferry routes in PT3.
- Service Fees
 - This section provides information on the service fees that BC Ferries has received and reasonably expects to receive in PT3.
- Revenues from All Other Services
 - This section provides information on the revenues that BC Ferries has earned and reasonably expects to earn in PT3.
- Expenses
 - This section provides information on the expenses that BC Ferries has incurred and reasonably expects to incur in respect of the provision of service on the designated ferry routes in PT3.
- Alternative Service Providers
 - This section provides information on the actions taken by BC Ferries in the current performance term to seek alternative service providers to provide ferry transportation services on one or more of the designated ferry routes where so ordered by the Commissioner.

PwC has not audited a base forecast model provided by BC Ferries to the Commission. However, we have:

- Correlated the input changes from an original model used in the Coastal Ferry Act Regulatory Review;
- Correlated the price elasticities contained in the Demand Forecasting Analysis to the model;
- Confirmed the opening equity balance in the model based on the fiscal 2015 projected results; and
- Agreed debt amounts and interests rates to the PT4 Submission.

Review of Base Case Forecasts for PT4

In order to assess the reasonableness of the PT4 forecasts, we first examined the variance analysis for the forecasts for FY2015 and FY2016 contained in the PT4 Submission.

The following table compares actual results in FY2014 to the PT4 Submission forecast for FY2015.

Figure 1

(\$ millions)	Actual	Submission	Year Over Year	
	FY2014	FY2015	\$ Change	% Change
Revenue	\$ 800.2	\$ 834.9	\$ 34.7	4.3%
Operating Expenses	577.4	591.9	14.5	2.5%
EBITDA	222.8	243.0	20.2	9.1%
Amortization	136.9	143.4	6.5	4.7%
Net Financing Expense	67.3	62.0	(5.3)	-7.9%
Other Expenses	0.6	(0.8)	(1.4)	-233.3%
Net Earnings	\$ 18.0	\$ 38.4	\$ 20.4	113.3%

Comparison of Actual Fiscal 2014 Results vs. PT4 Submission Fiscal 2015 Budget

Based on the PT4 submission provided by BC Ferries, the largest drivers of change between fiscal 2014 and 2015 are as follows:

- Operating expenses will increase due to:
 - increases in wages and benefits, including wage rate increases, higher benefit costs, increased training costs and feasibility and training costs associated with capital projects offset by savings to be realized from service level adjustments
 - increases in contracted services including IT enhancements and project support
 - increases including utilities, insurance and property tax; credit card service fees; software licenses and computer fees; mail and telecommunications costs; insurance claims recovery recognized in fiscal 2014; travel; feasibility and training costs associated with capital projects; and a number of miscellaneous items offset by training supplies
 - decreases in fuel consumption offset by an increase in price
- Maintenance costs will increase to reflect wage rate increases, higher benefit costs, variations in vessel refit schedule and other vessel and terminal maintenance requirements offset by the effect of savings to be realized from service level adjustments
- Administration costs will increase as a result of increase in wages and benefits including wage rate increase and higher benefit costs as well as legal, consulting and Commissioner fees related to the PT4 submission and travel and training supplies

Fare revenues are expected to increase for fiscal 2015 as a result of fare increase over the period. This increase will be somewhat offset by the combined effect of the Province's service level adjustments and a decrease in senior travel resulting from the fare discount reduction.

The results in Figure 1 agree with the explanations provided by BC Ferries and appear reasonable.

The following table compares forecasted results in FY2015 to the forecast for FY2016.

Figure 2

(\$ millions)	Submission		Year Over Year	
	FY2015	FY2016	\$ Change	% Change
Revenue	\$ 834.9	\$ 834.9	\$ -	0.0%
Operating Expenses	591.9	598.8	6.9	1.2%
EBITDA	243.0	236.1	(6.9)	-2.8%
Amortization	143.4	147.4	4.0	2.8%
Net Financing Expense	62.0	59.1	(2.9)	-4.7%
Other Expenses	(0.8)	(1.0)	(0.2)	0.0%
Net Earnings	\$ 38.4	\$ 30.6	\$ (7.8)	-20.3%

Comparison of PT4 Submission Fiscal 2015 Budget vs. PT4 Submission Fiscal 2016 Budget

Based on the PT4 submission provided by BC Ferries, the largest drivers of change between fiscal 2015 and 2016 are as follows:

- Operating, maintenance and administration expenses will increase due to:
 - Increases in labour costs of 2% according to the collective agreement
 - Increases in non-labour expenses reflecting the forecast increase in the Consumer Price Index
 - Increases associated with operating expense components of capital projects including one-time research, training and feasibility costs
- These increases are partly offset by:
 - Decreases in operation costs as a result of service level adjustments on major routes
 - Decreases in operating costs achieved from investments in capital projects

The results in Figure 2 agree with the explanations provided by BC Ferries and appear reasonable.

Ferry Commissioner's Model Forecasts

The Commissioner has asked PwC to assess a financial model scenario whereby fares are set at slightly below the forecasted Bank of Canada long term rate of inflation of 2%. The key assumptions are summarized in the following table. The model is based on BC Ferries' base forecasts including an opening equity of \$346.6 in FY2015. This figure agrees with the total equity amount per the FY2014 audited financial statements.

	Fiscal 2017	Fiscal 2018	Fiscal 2019	Fiscal 2020
Price Cap	1.90%	1.90%	1.90%	1.90%
Additional Traffic Growth	0.00%	0.00%	0.00%	2.00%
Ferry Transportation Fees	\$155.3m	\$155.3m	\$155.3m	\$155.3m
Diesel Price per Litre	\$0.915	\$0.933	\$0.952	\$0.971
Productivity Target	\$2.0m	\$2.0m	\$2.0m	\$2.0m

The Commissioner's forecasts based on these assumptions are shown in the following table.

Financial Results	Fiscal 2016	Fiscal 2017	Fiscal 2018	Fiscal 2019	Fiscal 2020
Total Revenue	\$834.9	\$857.3	\$877.8	\$896.4	\$931.8
Total Expenses	\$804.3	\$849.6	\$870.0	\$896.3	\$918.0
Net Earnings	\$30.6	\$7.7	\$7.7	\$0.1	\$13.8

Debt Covenants	Fiscal 2016	Fiscal 2017	Fiscal 2018	Fiscal 2019	Fiscal 2020
Debt to Capitalization	78.24%	80.98%	81.55%	82.37%	82.49%
Debt Service Coverage Ratio	2.59	2.32	2.37	2.36	2.46

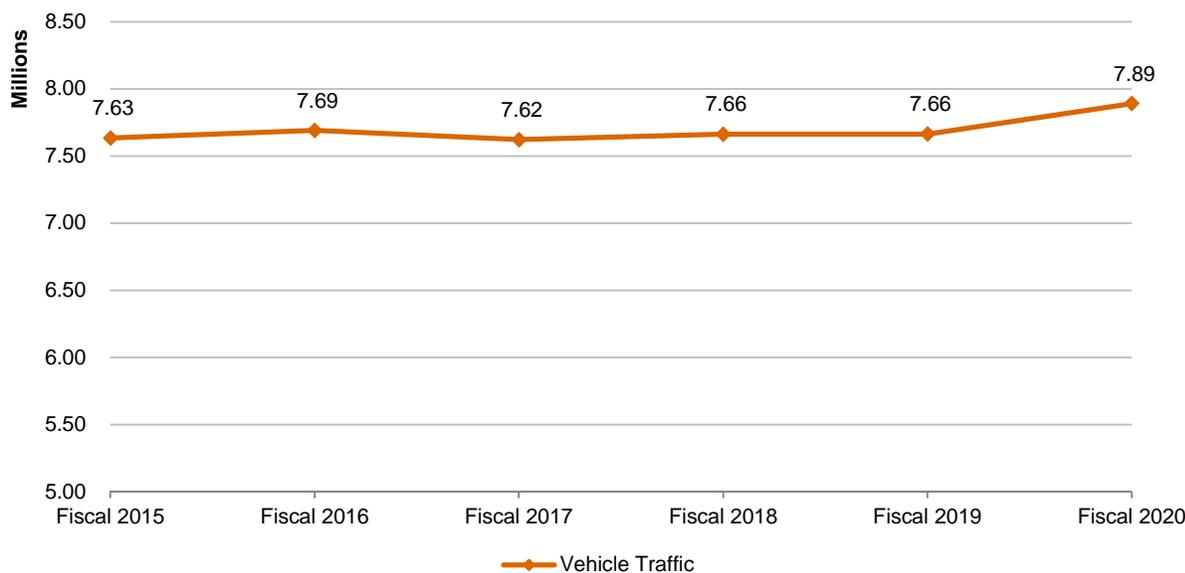
Analysis of Results

Traffic Forecasts based on 1.9% Price Caps

The most significant driver of the financial model is the traffic forecasts. Included in the model is an elasticity mechanism which adjusts traffic projections based on forecasted rates. Figures 3 and 4 illustrate the traffic forecasts for passenger and commercial vehicles, and total passengers, respectively.

Figure 3

Forecasted Total Vehicle Traffic

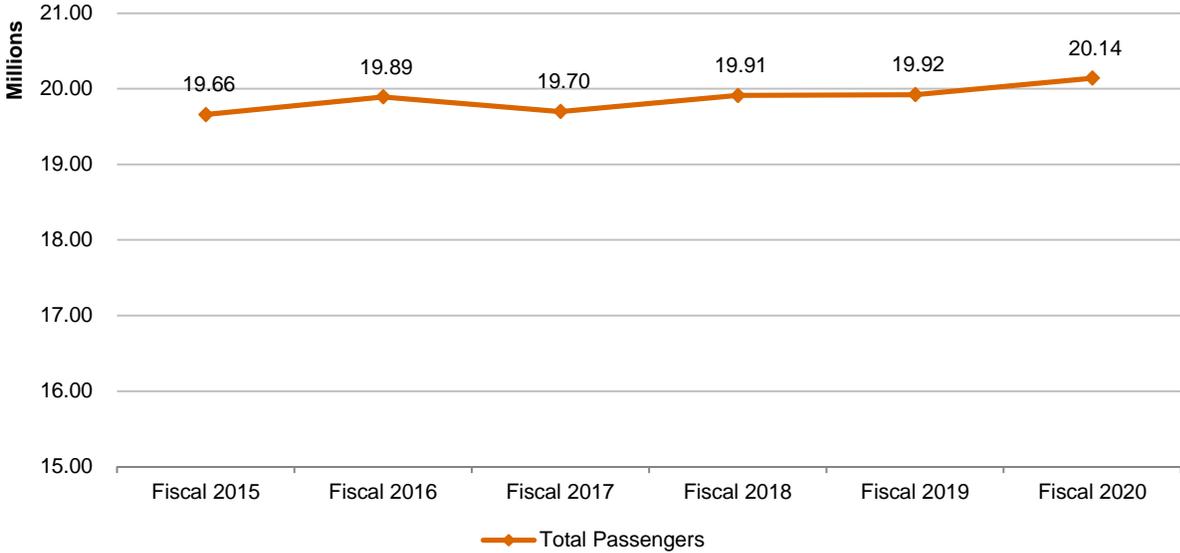


Passenger and commercial vehicle traffic is forecasted to increase between fiscal 2015 and fiscal 2016 due to an additional service day as fiscal 2016 is a leap year and Labour Day is on September 7th which increases the summer break when BC Ferries traffic is higher. Furthermore, fiscal 2016 contains two Easter statutory holidays which will also result in increased traffic. Passenger traffic is projected to decrease between fiscal 2016 and fiscal 2017 as Labour Day will be on September 5th and 2017 is not a leap year and there is no Easter holiday that falls within the fiscal year. Beginning in fiscal 2018 an increase is forecasted due to the planned implementation a new fare system which will increase traffic in fiscal 2019 and fiscal 2020. Commercial vehicle traffic is projected to be relatively

stable over the remainder of PT3 and through PT4 with a slight increase noted between fiscal 2015 and fiscal 2020 due to overall economic improvement.

Figure 4

Forecasted Total Passengers



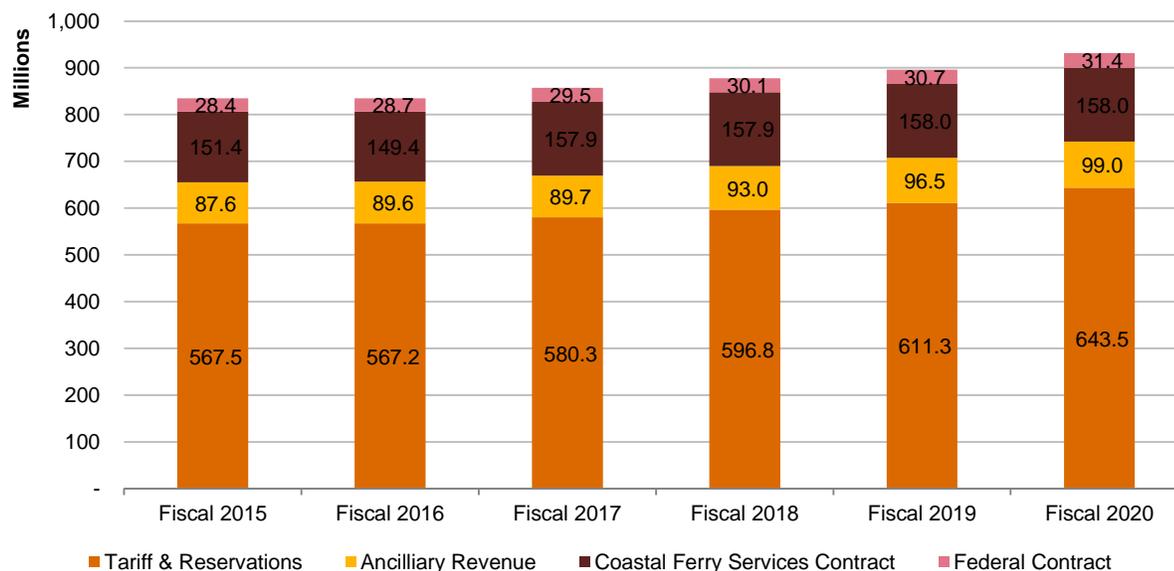
As with total forecasted passenger vehicle traffic, total passengers are forecasted to increase between fiscal 2015 and fiscal 2016 due to an additional service day as fiscal 2016 is a leap year, the presence of the two Easter holidays in the same fiscal year and Labour Day is on September 7th which increases the summer break when BC Ferries traffic is higher. Total passengers are projected to decrease between fiscal 2016 and fiscal 2017 as 2017 is not a leap year, Labour Day will be on September 5th and there is no Easter holiday that falls within the fiscal year. Beginning in fiscal 2018 an increase is forecasted due to the planned implementation a new fare system which will increase traffic in fiscal 2019 and fiscal 2020.

Total Revenue

Figure 5 illustrates the projected composition of total revenue for the remainder of PT3 and for the duration of PT4.

Figure 5

Forecasted Total Revenue Assuming Fixed Service Fees from Government



Tariff & Reservations

The largest revenue source for BC Ferries is vehicles and passenger fares which, in combination with reservation fees, comprise a total of 66% of the forecasted revenue in fiscal 2015. Tariff and reservation revenues are most sensitive to changes in price cap levels, changes in traffic levels, the percentage of traffic on high and low margin routes as well as the implementation of promotional fare programs. Revenue from tariffs and reservations is projected to increase at annual rates ranging from 0.5% to 4.2% in the period between fiscal 2015 and fiscal 2020, and is projected to achieve positive growth in each year assuming a price cap increase of 1.9% annually.

Traffic is expected to increase by the following incremental amounts as a result of the introduction of the new reservation system:

Year	% Incremental Growth
FY2018	0.75
FY2019	1.5
FY2020	3.0

BC Ferries also estimate that at full maturity the new reservation system could generate an additional 2% growth.

Ancillary Revenue

Ancillary revenues represent approximately 11% of the forecasted revenue in fiscal 2015. In addition to fares and reservation revenues for transportation services, BC Ferries earns revenues from non-regulated ancillary goods and services. Catering and retail sales, both on and off the vessels make up approximately 90% of these revenues. Other revenue generating activities include parking, vacation package revenue and hosteling. Although these revenues are not regulated, they reduce upward pressure on fares and are thus an important component of the forecasts used in the financial model for the purposes of setting price caps.

Ancillary revenues increased by 2.3% in fiscal 2016 due to increased catering and retail sales on the major routes as a result of adding White Spot branded salads and entrees and a refresh of the breakfast offering. Some of the increase was due to growth in retail operations. Growth in ancillary revenues is expected to coincide with increases in total passenger traffic over the duration of PT4.

Coastal Ferry Services Contract

Provincial service fees under the Coastal Ferry Service Contract represented 18% of total forecasted revenues in fiscal 2015. Ferry transport fees are paid to BC Ferries in exchange for providing service on each regulated ferry service route. Contract fees are expected to increase to \$157.9m in fiscal 2017 based on a revised commitment from the provincial government and will remain constant over the duration of PT4.

Federal Contract

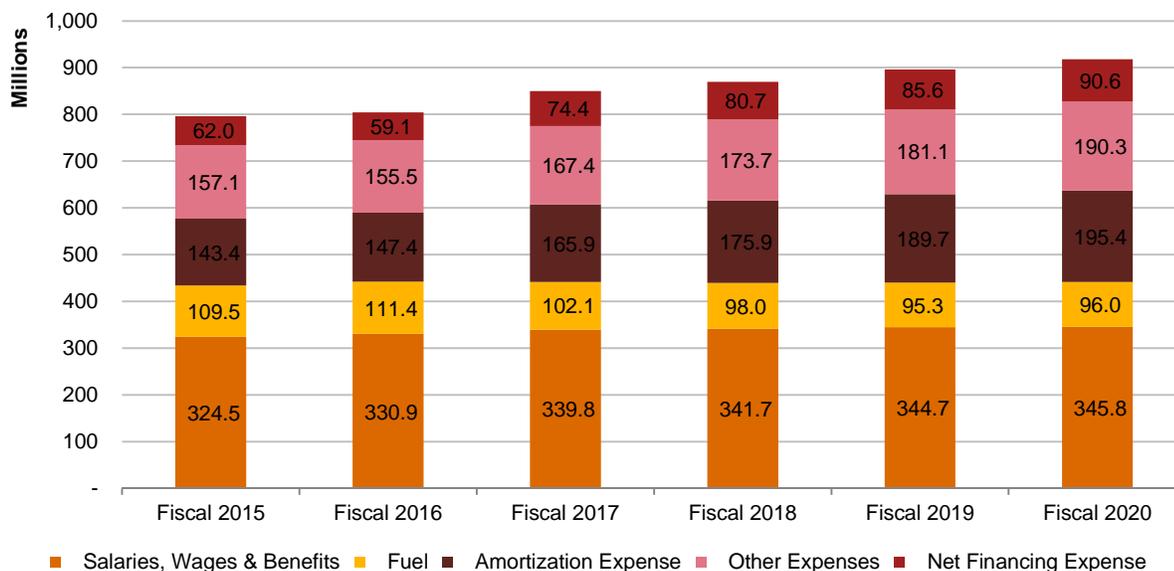
Revenues from the Federal Contract represent 4% of total forecasted revenues in fiscal 2015. The Federal Contract exists in perpetuity for the provision of ferry services in BC. The annual payments are subject to growth at the rate of growth of the Vancouver Consumer Price Index. In the base case model 2.0% per annum increases have been assumed over the duration of PT4.

Expenses

Figure 6 illustrates projected composition of total expenses for the remainder of PT3 and for the duration of PT4.

Figure 6

Forecasted Total Expenses



Salaries, Wages & Benefits

Salaries, Wages & Benefits represent 55% of total operating expenses or 41% of total expenses including amortization and net financing expense. Labour increases are in the range of 2.0% to 2.7% which are consistent with stipulated increases in the collective agreement with the BC Ferry and Marine Workers' Union.

Fuel Costs

Fuel costs represent 19% of total operating expenses or 14% of total expenses including amortization and net financing expense. A comprehensive analysis of fuel costs is provided in PwC's Fuel Management Performance Review. Figure 7 describes the assumptions for fuel prices for PT4:

Figure 7

Diesel Procurement Cost Breakdown: Futures Curve (February 24, 2015)

	Futures Curve FY2017
WTI (USD/bbl) ¹⁾	62.36
CAD/USD ²⁾	1.25
WTI (CAD/bbl)	77.97
Conversion Rate (bbl to L)	159
WTI (CAD/L)	0.49
Vancouver Rack Spread (\$ / litre)	0.25
Net Bridging (Bridging less Total Discounts) ³⁾	(0.009)
Total fixed \$ / Litre taxes ⁴⁾	0.14
Total fixed \$ / Litre added to commodity price	0.38
Diesel Price before GST	0.87
GST Rate	5%
GST	0.04
Diesel Price after GST	0.915

1 Futures curve prices are based on the average WTI NYMEX settlement for February 24, 2015

2 Foreign exchange forward curve is based on the average USD/CAD forward contract for February 24, 2015

3 Weighted Average Bridging Costs less Volume and Pre-payment Discounts

4 Carbon Tax and Excise & Motor Fuel Tax less Trailing Excise Tax Rebate

Other Expenses

Other expenses comprise 27% of total operating expenses or 20% of total expenses including amortization and net financing expense. Other expenses include materials & supplies, contracted services, other expenses, catering cost of goods sold, insurance tax and utilities and forecast / business case adjustments. With the exception of forecast / business case adjustments, these expenses are projected to increase at a rate of 2% annually. Forecast / business case adjustment costs increase in the final years of a performance term due to the additional work required to prepare for the following term.

Amortization

Amortization expense represents 18% of total expenses in fiscal 2015. Amortization expense is expected to increase in fiscal 2017 which coincides with significant capital expenditures planned in that year. This increase tapers off towards the end of PT4 as annual capital expenditures are reduced.

Financing Expense

Financing expense represents 8% of total expenses in fiscal 2015. Financing expense is projected to decrease in fiscal 2016 due to debt refinancing completed during the fiscal year. An increase in finance expense is projected in fiscal 2017 due to additional financing required for significant capital expenditures incurred in that year. This

increase coincides with the increase in amortization during the same year. As with amortization expense, the increase tapers off towards the end of PT4 as annual capital expenditures are reduced.

Debt Covenants

BC Ferries has two key debt covenants: a maximum debt of 85% of total capitalization and a minimum debt service coverage ratio (“DSCR”) of 1.75:1. Significantly, credit rating agencies also base their ratings of BC Ferries on achieving a minimum DSCR of 2.0:1.

Price caps are established with the intention of allowing BC Ferries to achieve by the end of the performance term target debt which is not higher than 82.5% of total capitalization and a debt service coverage ratio which is 2.50:1 or higher.

Figure 8 illustrates the debt to capital and debt service coverage ratios under the Commissioner’s base case model. Based on the input assumptions the total debt target of 82.5% is met. The DSCR is slightly below the target. The actual covenants are met in each year during PT4. Based on the inputs the forecasted debt covenant results are reasonable.

Figure 8

Debt Covenants	Fiscal 2016	Fiscal 2017	Fiscal 2018	Fiscal 2019	Fiscal 2020
Debt to Capitalization	78.24%	80.98%	81.55%	82.37%	82.49%
Debt Service Coverage Ratio	2.59	2.32	2.37	2.36	2.46

Conclusions and Recommendations

The key conclusions of this report are as follows:

- Costs and other financial information included in the PT4 Submission are reasonable and BC Ferries has satisfactorily explained unusual trends or variances between actual and forecasted results;
- Costs included in the Commissioner's PT4 forecast model as well as the Commissioner's assumptions are reasonable and the forecast model can be relied on to produce reasonable and supportive projections; and
- Based on the Commissioner's assumptions that include additional traffic growth in Year 4 of PT4, BC Ferries' debt covenants are met with price caps at or below forecasted inflation.

Part B – Assessment of BC Ferries’ 2015-2026 Capital Plan Submission

Introduction

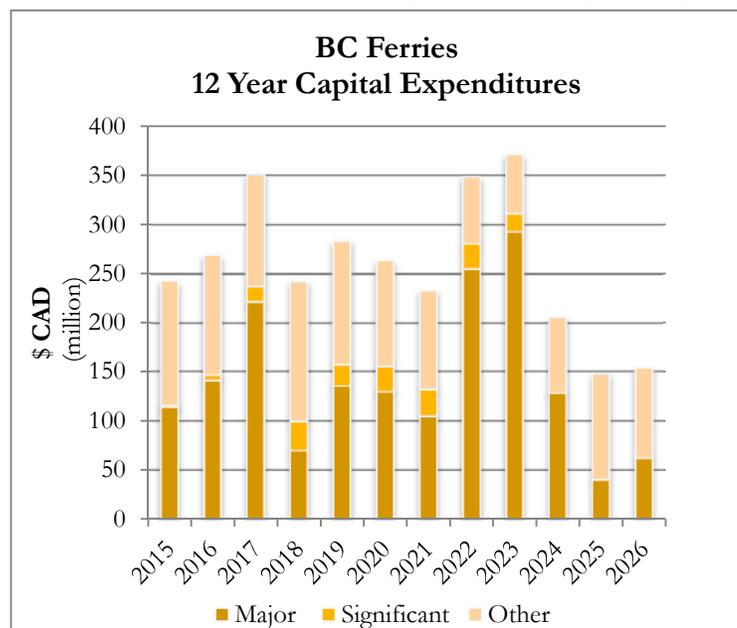
PwC has assessed the BC Ferries’ 2015-2026 Capital Plan Submission to the Commission pursuant to Section 64.1 of the Coastal Ferry Act (the “Capital Plan” or the “Submission”). The review of the Capital Plan has occurred in two stages. The first stage involved a review of an initial plan for public release submitted on September 30, 2014 from which a number of questions and additional analysis were requested of BC Ferries. These were reviewed in a second stage.

As part of the review we have conducted the following:

- Reviewed requirements of Section 64.1;
- Reviewed capital plan submission requirements and sample submissions in a number of regulated industries including those regulated under price cap systems;
- Discussed the Submission with the Commission;
- Reviewed the Submission and the Schedule of Projects (including the public and non-public versions);
- Compared the Schedule of Projects to the content and format of previous 5-year capital plans developed by BC Ferries; and
- Reviewed supplemental analyses developed by BC Ferries.

Capital Plan Summary

- The Capital Plan Submission is based on the current Coastal Ferry Services Contract with the Province of BC for the delivery of ferry services on coastal routes. On this basis it contemplates no changes in capacity.
- The Capital Plan covers the fiscal 2015-2026 period: the last 2 years of PT3, PT4 and PT5.
- The Capital Plan includes replacement of 18 vessels of various classes, the replacement of the Horseshoe Bay Terminal and three major IT projects. Over 700 minor projects are planned.
- The estimated total costs of the Capital Plan are in excess of \$3.1 billion. 54% of expenditures are comprised of major vessel and terminal replacements, 6% are terminal Master Plan upgrades and 40% are other capital projects. Capital expenditures are forecast to peak in 2017, 2022 and 2023.



- Capital projects are categorized between Major, Significant and Other. Major projects are as defined by the thresholds described in the Commission Order 12-04. Significant projects fall below the thresholds but are considered important. Other projects include a large number of projects of a lesser magnitude.
- Generally vessel replacements and mid-life upgrades are based on asset management plans that require replacement/betterment or compliance with regulatory requirements.
- The Capital Plan identifies standardization as a corporate-wide objective with asset replacements.
- Other types of investments for terminals and IT are based on internal payback, expansion and changing business requirements.
- Corporate initiatives also influence the nature of investments. Significant trends include the desire for asset standardization, a move towards LNG as a cheaper source of fuel, and a Customer Experience Modernization Initiative.
- Capital projects are to be completed within BC Ferries' Asset Management Framework. Condition reports and risk classifications also affect the timing of projects and the degree of corporate oversight.
- The Capital Plan identified an alternative for the Horseshoe Bay Terminal replacement that is addressed in its Efficiency Plan.

Jurisdictional Review

Section 64.1 of the Coastal Ferry Act provides little or no guidance on the content of the Capital Plan. The Act does not require the Commission to approve the Capital Plan. In contrast, other jurisdictions have a more integrated approach. We examined the process for capital plan submissions in a number of other regulated industries including four in the UK (rail, aviation, water and gas & electricity) and with BC Hydro and TransLink.

For the most part the capital plans in these systems have requirements to:

- address long term demand for services;
- explain in a comprehensive fashion how they integrate with regulatory submissions affecting the rate base and address certain objectives; and
- seek public input on the plans.

Commentary

A number of good industry practices are observed with BC Ferries' capital planning processes. BC Ferries have developed asset management plans for all vessels and master plans for most terminals. The Company has demonstrated appropriate procurement processes for capital projects. Project Management Framework and Guidelines also have various control mechanisms are also imbedded within the framework.

Previous reviews including a number of S55 reviews have demonstrated that capital projects are supported by robust business cases and appropriate governance.

Analysis requested of BC Ferries

The Capital Plan primarily represents a listing of all projects and a high level description of major projects. It is based on a "bottom up" development approach particularly as it applies to vessel and terminal replacements. Based on the original submission, PwC asked for clarifications and further analysis on a number of issues, including the following:

- a comparison of the actual cost and timing of all capital projects in PT2 and PT3 against those contained in the original price cap submissions.
- more detail on:
 - how vessel and terminal replacements are consistent with standardization objectives and
 - how the reduction in vessel classes it expects from the current 17 and how many vessels it expects in each class
 - the impact of the Capital Plan on the average age of the fleet
- more detail on the approaches taken was requested to identify and assess projects that are not based on regulatory or replacement/betterment. More detail was requested for projects based on internal payback including how incremental revenues or other benefits are to be measured. Risk mitigation approaches for these types of projects were also requested.
- more detail on how BC Ferries plans to address user interests in planning vessel and terminal amenities.
- more detail on the planned approaches to procurement e.g. traditional vs ASD.
- a description of how specific capital projects are part of Efficiency Plans.

The responses by BC Ferries to the questions are considered adequate. Further analysis is provided below.

Capital Expenditure Performance

In order to assess capital expenditure performance, we conducted the following:

- reviewed the actual capital expenditures in PT2 and PT3 and compared these to the respective performance term forecasts; and
- reviewed the changes in fleet age as a result of capital investments in vessels.

Actual vs Forecast Capital Expenditures

Capital expenditures in PT2 and PT3 are summarized in the following tables. Performance against the associated 5-year Capital Plans has been adequate. Capital expenditures in PT2 were \$91m lower than forecast in the PT2 submission, mostly due to lower costs associated with the acquisition of three Super C vessels. Offsetting these lower costs were higher IT, terminal and other costs.

Capital expenditures in PT3 were \$30m higher than forecast, mostly due to higher terminal costs.

Many of the variances are related to timing of when planned projects are implemented and when expenditures are booked for accounting purposes. There was also a delayed effect with duty remissions for the C class vessels and the Northern Expedition.

Based on discussions with BC Ferries management and the experience with S55 Applications, most vessel projects have come in on or under budget. Greater variances appear to have existed with some of the terminal and IT projects.

PT2 Capital Expenditures (\$ millions)

	Forecast	Actual	Difference
Vessel	680.8	543.2	137.6
Terminal	163.0	187.4	(24.4)
FMU	0.5	7.2	(6.7)
Other	1.5	30.8	(29.3)
IT	11.3	58.7	(47.4)
General Allowance	60.0	(1.0)	61.0
Total	917.1	826.3	90.8

PT3 Capital Expenditures (\$ millions)

	Forecast	Actual	Difference
Vessel	110.4	110.7	(0.3)
Terminal	32.5	72.4	(39.9)
FMU	22.1	2.6	1.5
Other	28.4	37.3	(8.9)
IT	3.2	3.7	(0.5)
Total	196.5	226.6	(30.1)

The predictability of the cost and timing of projects lessens the further out in time within the Capital Plan. The differences in the forecasts for PT4 and PT5 between the Coastal Ferry Act Regulatory Review and the PT4 Submission are shown in the following tables. The total values of the two forecasts for PT4 are similar. Higher forecasted vessel and IT costs are offset by lower forecasted terminal costs.

The total values of forecasted capital costs in PT5 are \$431m higher in the PT4 Submission compared to the Coastal Ferry Act Regulatory Review. Higher vessel, terminal and IT costs are forecast. The terminal costs include the replacement of the Horseshoe Bay terminal, for which an alternative is presented in the Efficiency Plan which is addressed separately.

PT4 Capital Expenditures (\$ millions)

	CFA Review Forecast for PT4	PT4 Submission Forecast for PT4	Difference
Vessel	707.4	845.7	(138.3)
Terminal	490.3	257.5	232.8
FMU	18.5	46.9	(28.4)
Other	8.0	10.3	(2.3)
IT	52.4	104.4	(52.0)
General Allowance	2.7		
Total	1,279.2	1,264.8	14.4

PT5 Capital Expenditures (\$ millions)

	CFA Review Forecast for PT5	PT4 Submission Forecast for PT5	Difference
Vessel	570.1	744.6	(174.5)
Terminal	81.6	328.7	(247.1)
FMU	10.0	5.6	4.4
Other	6.2	9.2	(3.0)
IT	60.0	70.6	(10.6)
Total	727.9	1,158.7	430.8

Key Drivers for Capital

Key drivers for capital projects include the following:

- Regulatory
- Replacement / Betterment
- Internal payback
- Expansion
- Corporate Initiatives

The key drivers for Major Capital projects in the Capital Plan are shown in the following table. The Major Projects include 19 new vessels, 2 mid-life upgrades, the redevelopment of the Horseshoe Bay Terminal and 3 IT projects that includes a new reservation system. The main driver with the majority of Major Capital is Replacement/Betterment.

Major Capital Projects	Regulatory	Replacement/Betterment	Internal Payback	Expansion	Corporate Initiatives	Notes
New Minor Vessel - Cable Ferry			x		x	Replaces a minor vessel (tbd); payback based on operational (crew, fuel, maintenance) savings
New Intermediate Vessels (ICFs)		x	x			Replaces Queen of Burnaby & Queen of Nanaimo. The ICFs will have dual fuel (LNG & Diesel) propulsions to significantly reduce operational fuel costs
New Minor Vessel: (NIP)		x	*			Replaces North Island Princess (vessel retired)
New Minor Vessel: (Nimpkish)		x	*			Replaces Nimpkish (vessel retired)
New ICF Vessels - Bowen Class		x	*			Replaces Bowen Queen, Mayne Queen, Powell River Queen, Howe Sound Queen (vessels retired)
New Major Vessel: Replacement #4 (New West)		x	*			Replaces Queen of New Westminster (vessel retired)
New Major Vessel: Replacement #5 (Coquitlam)		x	*			Replaces Queen of Coquitlam (vessel retired)
New Major Vessel: Replacement #7 (Alberni)		x	*			Replaces Queen of Alberni (vessel retired)
New Major Vessel: Replacement #6 (Cowichan)		x	*			Replaces Queen of Cowichan (vessel retired)
New Minor Vessel: (Kwuna)		x	*			Replaces Kwuna (vessel retired)
New INTERMEDIATE Vessel: (Quinsam)		x	*			Replaces Quinsam (vessel retired)
New Minor Vessel: (Kahloke)		x	*			Replaces Kahloke (vessel retired)
New Minor Vessel: (Klitsa)		x	*			Replaces Klitsa (vessel retired)
New Intermediate Vessel: (Quinitisa)		x	*			Replaces Quinitisa (vessel retired)
Spirit of Vancouver Island - Upgrade (Mid life)	x	x	x			Major vessel upgrade to address regulatory items, replace items at end of useful life, and convert to dual fuel (diesel & LNG) propulsion to significantly reduce operational fuel costs
Spirit of British Columbia - Upgrade (Mid life)	x	x	x			Major vessel upgrade to address regulatory items, replace items at end of useful life, and convert to dual fuel (diesel & LNG) propulsion to significantly reduce operational fuel costs
Horseshoe Bay - CP 4 - Vehicle Transfer Road and Deck Improvements			x			Replace assets at end of service life; improve traffic flow at termina
Horseshoe Bay - CP 5 - Berth and Marine Improvements/Replacements			x			Replace various marine structures (ramp towers, dolphins, wing wall) at end of service life at Berths 1, 2 and 3 convert Berths 1, 2, and 3 to active lift.
IT - Transforming the Customer Experience (submitted to Commission as "Fare Flexibility and Digital Experience Initiative" under Section 55 of the CFA)			x	x	x	Implement a new revenue management system to manage fares and improve operational efficiency through better capacity management; and, replace the current out-dated website with a new web platform that will provide commercial strength, multichannel, secure e-commerce software that will offer an intuitive purchase experience through a device of the customer's choosing. The initiative will reduce pressure on future fares by increasing traffic and related revenues, and reducing service delivery costs.
IT - Website Software Major Upgrade			x		x	Estimated cost to replace website in F2024 due to technological changes
IT - BTC Replacement			x			Estimated cost to replace the Booking, ticketing and check-in systems (BTC) in F2026 due to technological changes

* Dual Fuel (LNG & Diesel) will be confirmed for new vessels through the detailed analysis. Investment in Dual Fuel Capability will be classified as 'internal payback'

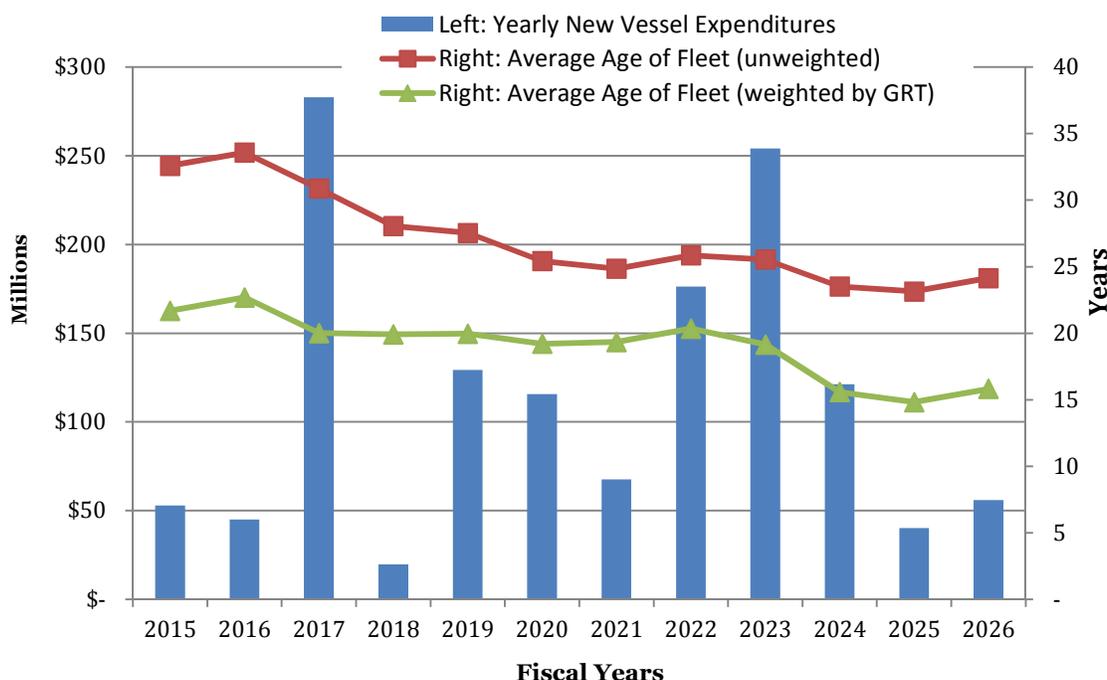
These projects are also described in relation to corporate initiatives in the Efficiency Plan.

Average of the Fleet

The impact of the Capital Plan on the average of the fleet is shown in the following chart. The current average age of the fleet at over 30 years is considered suboptimal. The investments in new vessels and refit upgrades results in

lower average age of the fleet. By 2026, the average age of the fleet is 25 years on an (unweighted) basis which is considered more optimal as most new vessels have a useful life approaching 50 years.

Yearly New Vessel Expenditures vs Average Age of Fleet



Fleet Standardization

The Company’s efforts to standardize terminal berths and vessels appear to be consistent with the objectives of the Coastal Ferry Act Regulatory Review.

Discount Rate

We reviewed the calculation of the discount rate of 7% (rounded from 7.01%) used by BC Ferries in its business case analysis for capital projects. It is based on its weighted average cost of capital calculated prior to the changes to the Coastal Ferry Act which eliminated the regulated rate of return on equity. Under assumptions of a target equity of 17.5% which is used in price cap determinations and its current weighted average cost of debt, the WACC is 6.4%. With a forecasted actual equity level of 21.76%, BC Ferries’ forecasted equity at the end of F2015, the WACC is 6.73%. There may therefore be an argument for a lower discount rate for future section 55 capital project applications.

	Current Discount Rate	Scenario 1 – Target Equity	Scenario 2 – Forecasted Equity
Cost of Equity	12.73%	12.73%	12.73%
Equity %	22.50%	17.50%	21.76%
Cost of Debt	5.35%	5.06%	5.06%
Debt %	77.50%	82.50%	78.24%
WACC	7.01%	6.40%	6.73%

User interests

A number of steps are taken by BC Ferries to seek the input of users in planning vessel and terminal amenities. These appear to be reasonable.

Conclusions and Recommendations

Our main findings are as follows:

The Capital Plan is designed to meet the requirements of the Coastal Ferry Services Contract. It is also consistent with the objectives of the Coastal Ferry Act Review with regard to pursuing standardization objectives for vessels and terminals. The Capital Plan Submission requirements could benefit from greater integration with the price cap submission and its efficiency plan that includes the potential for submitting development options or alternative plans beyond compliance with the CFSC and that have the potential to improve efficiency and/or better address user needs.

We are satisfied the responses received and have no concerns with the Capital Planning Processes. We have only a minor concern with the Planned Capital Expenditures with regard to the discount rate used in business case analysis which does not impact the PT4 price cap decision. On an overall basis, we consider the Capital Plan to be reasonable.

Part C- Assessment of Strategies for Enhanced Efficiency in PT4 and Beyond

Introduction

As part of its PT4 Submission pursuant to section 40(1.1) (a) of the Coastal Ferry Act, BC Ferries is required to submit an Efficiency Plan. It submitted a document describing *Strategies for Enhanced Efficiency in Performance Term Four and Beyond* on September 30, 2014. PwC has assessed this document in relation to the following:

- Consistency with Coastal Ferry Act Regulatory Review objectives;
- Overall Reasonableness;
- Impact on price caps; and
- Relationship with the Capital Plan.

As part of our assessment we have conducted the following:

- Reviewed requirements of the Coastal Ferry Act;
- Reviewed the Submission;
- Discussed the Submission with the Commission;
- Addressed questions to BC Ferries;
- Reviewed S55 Applications to the Commission for Capital Projects; and
- Conducted supplemental analysis.

Summary of the Strategies for Enhanced Efficiency

The plan focuses on four opportunities for further efficiency gains. Two of the opportunities can be realized within the terms and conditions of the CFSC. The remaining two opportunities would require changes to the CFSC.

There will be some efficiency gains in PT4 from these initiatives. Greater gains are expected to be realized in PT5.

The strategies are summarized in the following table.

Strategies	Description
Strategies within the terms and conditions of the CFSC:	
1. Liquefied Natural Gas (“LNG”) efficiencies	In PT3 and PT4, the Company’s efforts centre on two vessel projects: <ul style="list-style-type: none"> • 3 new LNG-fuelled vessels to replace vessels reaching the end of their useful lives • 2 engine conversions of Spirit Class vessels In addition 4 Bowen Class vessels are scheduled to be replaced between F2019 and F2021.
2. Business Transformation Strategies enabled by technology	The Fare Flexibility and Revenue Management Strategy and the Digital Experience Strategy will

	modernize the way BC Ferries sets pricing, sells travel, and manages capacity utilization of sailings.
Strategies requiring changes to the CFSC:	
3. Major Routes Strategy	<p>Three main opportunities drive the strategy:</p> <ul style="list-style-type: none"> • The potential to increase service efficiency to the mid-island corridor and reduce the overall operating cost profile to this corridor • The potential to optimize terminal capital investment between the two Metro Vancouver terminals (Horseshoe Bay and Tsawwassen) and Langdale, Duke Point and Departure Bay • The potential to optimize the number of vessels serving the mid-island corridor
4. Southern Gulf Islands Strategy	Schedule optimization opportunities with the introduction of 2 new ICFs on Route 9/9a that could lower system costs and increased customer satisfaction.

Commentary

Specific comments on each of these initiatives are provided below.

1. Liquified Natural Gas (“LNG”) efficiencies

- The projects are consistent with the recommendations of the Coastal Ferry Act Regulatory Review.
- The 2 LNG projects have been approved by the Commission under S55 applications.
- The business case in the S55 application was based on the price difference between LNG and diesel fuel. The economics of deploying LNG-fuelled vessels are still favourable as the current price differential is in line with sensitivity tests conducted in the assessment.
- The short term savings from the LNG vessels may be less than forecast, as diesel fuel prices have fallen more than LNG prices. However, over the longer term, diesel prices are more likely to rebound from their current low prices.

2. Business Transformation Strategies enabled by technology

- The projects are consistent with the recommendations of the Coastal Ferry Act Regulatory Review.
- The 2 IT projects have been approved by the Commission under S55 applications.
- In terms of increases in demand, the base case forecasts for PT4 assume the lower end of the range suggested by BC Ferries in its S55 application. At this lower level, the values are positive.

3. Major Routes Strategy

- The key driver to the strategy is the required replacement of the transfer decks at the Horseshoe Bay Terminal at a cost of over \$200 million. Most of these costs occur in PT5.
- There is also potential for efficiencies consolidation of terminals in Nanaimo.
- The latter may be accomplished even with the replacement of the Horseshoe Bay Terminal at its current site.
- The strategy appears to offer considerable potential for efficiencies but its full impact, including related traffic and economic impacts, has not been studied. Nor has public consultation occurred.

4. Southern Gulf Islands Strategy

- One of the key drivers to the strategy is the introduction of 2 new ICFs on Route 9/9a and the opportunity this provides to review the service for both Routes 5 and 9, including vessel and terminal requirements to service these interconnected routes.
- The strategy appears consistent with the recommendations of the Coastal Ferry Act Regulatory Review.
- The 2 ICFs have been approved by the Commission under S55 applications.
- These projects appear to offer potential for efficiencies but the full impact of the strategy, including related traffic and economic impacts, has not been studied. Nor has public consultation occurred.

Other comments include:

- Approved projects will impact the PT4 price cap decision through higher yields, lower fuel costs and higher capital charges, particularly towards the latter part of PT4. These impacts are reflected in the forecast model used to assess price caps.
- No specific ASD opportunities or new revenue enhancement opportunities have been identified as part of the efficiency plan.
- The vessel, terminal and IT projects identified in the Efficiency Plan are an integral part of the Capital Plan.

Conclusions and Recommendations

The initiatives identified in the efficiency plan appear to be consistent with the Coastal Ferry Act Regulatory Review. The efficiency plan is considered reasonable. We observe that no specific ASD opportunities and few new revenue enhancement opportunities from vessel or terminal amenities have been identified as part of the plan.

The IT projects that are transformational in nature should contribute to a more modern ferry system that is better designed to meet user needs.

The route strategies will require a high degree of internal and external support to be successful. Integration planning with the provincial transportation network will also be essential. These strategies are worthy of further analysis and public consultations.

Part D – Assessment of BC Ferries' Traffic Demand Forecasting

Introduction

Opus International Consultants (Canada) Limited (“Opus”), was asked by PwC on behalf of the Commissioner to assess a new approach to traffic forecasting undertaken by BC Ferries that forms part of the PT4 Submission. The parameters of its assessment included:

- An examination of the Structural Time Series Modelling (STSM) framework utilized and its appropriateness in the estimation of BC Ferries traffic;
- An examination of the causality link between independent and dependent variables (traffic); and
- A statement on the reasonableness of the results produced especially those concerning price elasticity of demand.

Opus has not performed a STSM forecast, nor has it been provided with the mathematical detail associated with the BC Ferries model.

Structural Time Series Modelling (STSM)

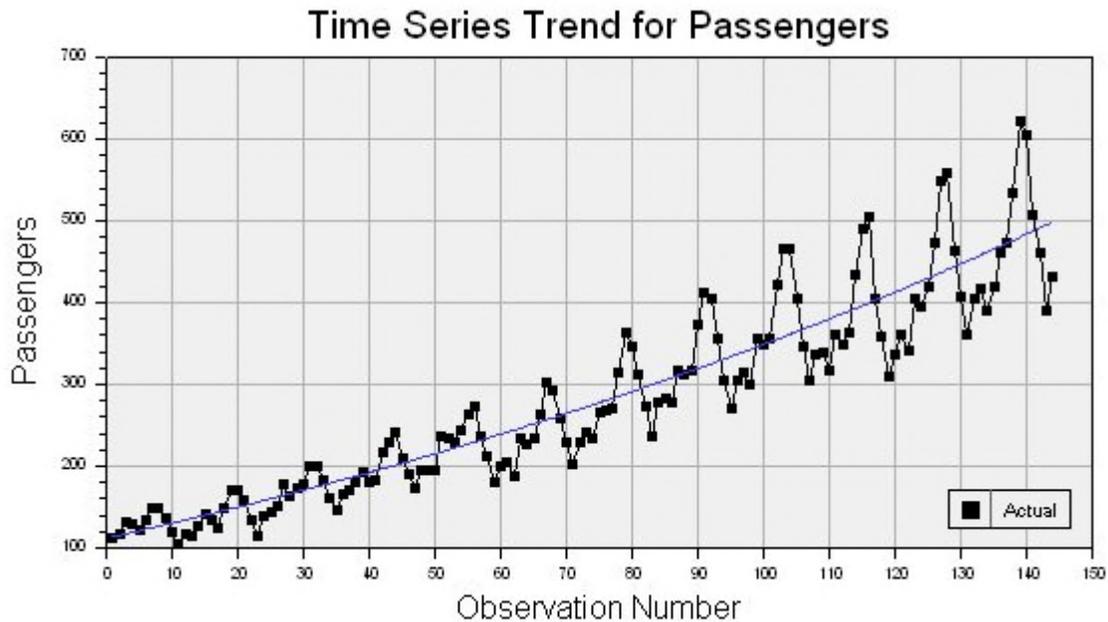
Time series modeling (TSM), in general, deals with the analysis of historical data regarding a variable, in this case traffic, in order to predict a future state of that variable, or perhaps a number of variables.

Time series generally have 4 components:

- **Trend** – this is the overall direction and structural shifts in the long term behavior of the variable. This will be increasing, decreasing or flat;
- **Cycle** – sometimes called “Business Cycle”. A typical variation that could be a result of an industry or general economic swing. These have descriptions of frequency and amplitude. Sometimes removing the effects of the overall trend can expose information about the cycle;
- **Seasonality** – In year predictable variation due to the time of year. A good example of this would be retail increases in revenue and profits for the holiday quarter and dropping on a yearly basis in the quarter following. This is incredibly important for scheduling of sailings in this instance; and
- **Irregular** (Stochastic Variance) – This is variation is seemingly un-predictable, but usually stays in a predictable range.

Each of these components can be estimated in future periods based on past observations. Typically a trend is multiple years. Cycle could be a subset of years within the trend and seasonality could be any period within a year such as daily, weekly, monthly or quarterly. The tighter the time period, the more data is required to support forecasting. It is important that the model be narrowed down to only the required parameters. Also, it is important

An illustration of a time series with seasonal characteristics is included below.

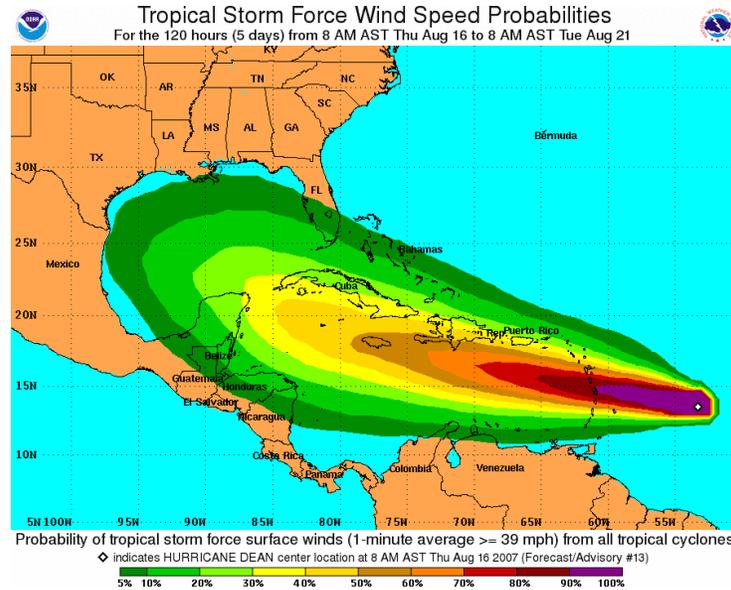


Source: www.dtreg.com

TSM can be univariate (one variable) or multivariate (many). The goal is to make a prediction based on past observations.

The STSM approach allows the model to use additional parameters, such as the price of fuel, economic trends etc. that vary over time and affect the model outcomes, not just previous observations. This allows for other predictors, which in themselves are forecasts to be used, in a sense for sensitivity, and overall effect.

A stochastic element can be introduced where the model is run many times to determine a probability distribution of outcomes. This allows for a range rather than a single value to be the outcome. A good example of this is hurricane forecasting. The probability cone, or cone of uncertainty, that depicts the possible path and in some cases the probability within the cone is based on very similar statistical methods.



Source: National Hurricane Center

The stochastic element can affect all four components within the time series. But the overall trend and longer term forecasts should have a cone that is larger as it gets farther into the future.

In Opus' opinion, the utilization of STSM modelling for the purposes of forecasting BC Ferries traffic is very appropriate.

Causality Links between Dependent and Independent Variables

BC Ferries, in its STSM efforts, has tested a number of independent variables for their impact on various ferry traffic components. These independent variables included:

- Seasonality (Easter, Christmas-day of week, Labour Day and Length of Summer Period);
- Fares;
- Gasoline Prices;
- Long Term Unemployment (long term unemployment as a share of total unemployment);
- Major Events;
- Weather;
- Tourism; and
- Consumer Sentiment.

For vehicle passengers; fares, gasoline prices and long term unemployment were the most common drivers of demand found to be significant. The usage of the long term unemployment variable may be confusing and potentially precarious as a reliable indicator. As noted above, BC Ferries has utilized long term unemployment as a percentage of total unemployment. Long term unemployment is defined as being unemployed for longer than a year. Total unemployment is a combination of short term (less than a year) and long term unemployment. One can envisage an occasion where both short and long term employment are going up but the percentage of long term employment of total employment is going down. From our understanding of the BC Ferries approach, such a circumstance would indicate that passenger traffic should be increasing when in fact a major recession may be ensuing. A converse situation could also occur when both short and long term employment are going down yet the

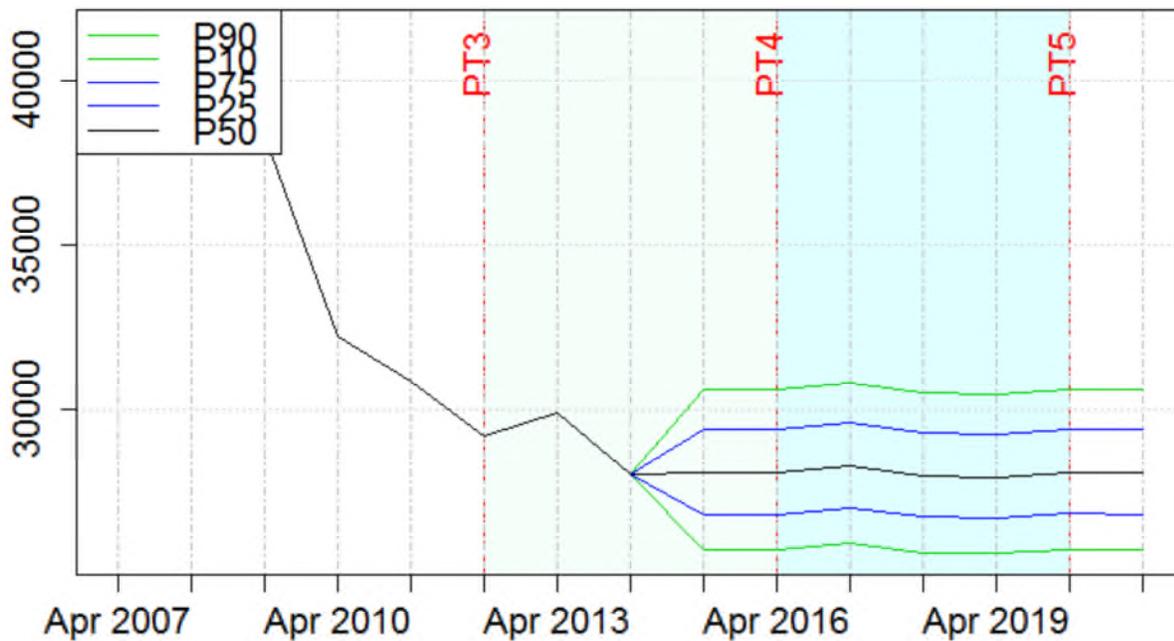
long term unemployment ratio is actually increasing. Again, using the long term unemployment ratio may produce contrary results.

For foot passengers some interesting results were produced when it was shown that there was a positive price elasticity of demand. In other words, when overall ferry rates were increased foot passenger volumes actually rose. It is noted that the availability and supply of transit is a factor in such situations. The positive price elasticity for foot passengers is intuitive - if there is an alternative means of getting to the ferry people tend to leave their cars behind, and travel as a foot passenger, as prices increase.

For major ferry routes (1, 2 and 30) it was found that United States Consumer Sentiment was a strong predictor of commercial traffic. It should be noted that there is a Canadian Consumer Sentiment Index that is prepared by the Conference Board of Canada. It is difficult to rationalize the causality between movements of freight on the BC Ferries routes and the measurement of US Consumer Sentiment. The econometric effort being discussed may have identified a correlation between these commercial traffic levels and US consumer sentiment but this may not represent a true causality. There is the concern that continuation of this approach will eventually produce spurious results.

It was also Opus' expectation that the degree of uncertainty would increase with the passage of time. One can reference the growing width of the hurricane cone above as the time variable is extended. From its examination of traffic forecast plots contained in Appendix J of the document reviewed this does not appear to be the case.

Route 2 Commercial Vehicles Per Year



This may be a case of changes being masked by graph scale but it certainly appears that probability plots (the middle line being the mean) continue in very tight formation even with the passage of several years.

Reasonableness of Results

Notwithstanding the reservations referred to above, the results, particularly surrounding price of elasticity of demand appear to be reasonable. As a point of comparison, the comprehensive effort of Litman, Understanding Transport Demands and Elasticities (Victoria Transport Policy Institute, 2013) are referenced. Litman cites numerous price elasticity of transportation demand studies which place elasticity in the -0.2 to -0.5 range. Therefore the price elasticities for passenger traffic calculated by BC Ferries in the -0.12 to -0.3 range are definitely reasonable. BC Ferries noted that commercial traffic levels did not appear to be sensitive to fare changes. This should not be surprising given the relatively low percentage represented by transportation costs in the final delivered price of goods and that ferry rates would only represent a portion of total transportation costs.

Forecast Approach

The latest traffic forecasting approach by BC Ferries continues to focus on directly relating ferry traffic to observable variables. It is Opus' belief that there may be some benefit in taking a more holistic approach. For example focusing on total passenger and freight movements from the mainland to Vancouver Island may aid considerably in elucidating ferry traffic movements in this area. If aggregate passenger movements can be determined (presumably a combination of conventional air, float plane and ferry traffic) and a causality established between broad economic and demographic variables, then it may be possible to forecast aggregate future values. One can then examine, over time, the market share that ferry traffic has captured and reasons why changes have occurred. Per capita passenger vehicle trips have been observed to be declining throughout North America since 2007 (McGuckin, www.travelbehavior.us). The causes of this trend are multitudinous but may be affecting both total passenger demand and passenger vehicle trips on BC Ferries services. There is no evidence that this trend is reversing and could continue to dampen overall BC Ferries passenger growth prospects.

In much the same fashion, it is possible to document total freight movements to/from Vancouver Island and apportion modal shares to ferry, barge, container and air shipments and the underlining causative factors with respect to modal shares. The latter can be revealed in discussions with both shippers and transportation companies. This sort of approach conducted on an annual or biennial basis would, in our opinion, be superior to the determination of commercial shipments using US Consumer Sentiment measurements.

Conclusions and Recommendations

The assessment reaches the following conclusions:

- STSM is a suitable approach to utilize the forecasting of BC Ferries traffic; and
- Price elasticity of demand relationships appears to be very reasonable.

There are no major concerns with BC Ferries' demand forecasting approach. There is only a minor concern with regard to one of the inputs to estimating commercial traffic which is a small part of overall revenues. The causality of certain variables used to predict BC Ferries' commercial traffic could be revisited. On an overall basis, BC Ferries' demand forecasting methodology and its associated methodologies are considered appropriate for purposes of price cap rate setting. More holistic approaches to forecasting of BC Ferries traffic levels may be of benefit.