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**2005 Revenue Requirements Application,**  
**2005-2024 System Development Plan and 2005 Resource Plan**

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**Q60.0 Reference: Volume 1, Tab 8, p. 7**

**“Power generation operations have experienced significant increased requirements to comply with current dam safety, workplace safety and environmental requirements. Examples are dam integrity monitoring and reporting, potable water regulations, oil spill containment measures and training and a continued increase in our involvement with fisheries related issues in the Kootenay and Columbia River systems.”**

**Please provide a description of FortisBC’s efforts in each of the activities noted, and state the incremental expense associated with each.**

**A60.0 Dam Safety:**

The FortisBC own and operate four dams. Three are considered “Low” consequence dams and one dam, (Corra Linn) is considered a “High” consequence dam by the British Columbia Dam Safety Regulation. To be in compliance with the British Columbia Dam Safety Regulations which was enacted into law in February, 2000 all dams must have a once per year formal inspection and a dam safety review every ten years. Corra Linn being a “high” consequence dam, requires additional inspection work as prescribed by the regulation such as weekly site surveillance, piezometer monitoring on a three month interval, and complete spillgate operational checks. (ie. of the 14 spillways at Corra Linn, all must be exercised/operated within a five year period). The estimated annual expense for the three “low” consequence dams is approximately \$2500 each, while the annual expense for Corra Linn is approximately \$5000. The ten year review is completed by a consultant engineer at an approximate cost of \$25,000. This review includes an inspection of the plant, equipment and records. Updating OMS (Operation, maintenance, surveillance) Manuals and the EPP (Emergency preparedness plan) is done annually and/or as required due to plant changes in equipment or operating parameters.

**Potable Water Regulations:**

To be compliant with the “BC drinking water protection act and regulations” each of the four plants requires that potable water treatment facilities be installed and maintained (installation is part of the 2005 Capital plan). Currently bottled water is supplied as “drinking” water as there are no purification facilities at each plant as an alternative until the facilities can be installed. The regulation requires that all water used for domestic purposes (i.e. drinking, washing and showering) be compliant with the regulation. Once installed, the facilities will require ongoing monitoring, maintenance and testing to ensure the required water quality standards are being met. Training for two employees in Small Water Systems must be obtained. Re-certification is required every two years. In order to demonstrate that water quality is being maintained, water samples must be drawn weekly on each facility and delivered to a certified laboratory for analysis. The estimated annual cost is approximately \$105,000 as noted below.

Monitoring water treatment facilities – 3 hours /wk/plant	\$55,000
SWS Operator Training - \$10,000 every two years	5,000

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Maintenance and materials – 4 hours/month/plant	15,000
Water Samples - 2 hours/sample	<u>30,000</u>
Annual Estimate	<u>\$105,000</u>

Oil Spill Containment Measures:

The Upgrade and Life Extension Program condition assessments of the old plant equipment have identified oil spill risks that require management in order to be compliant with both Federal and Provincial environmental regulations. (please also see the response to BCUC IR1 Q98)The awareness and sensitivity of the environmental risks to the waterways has required FortisBC Generation employees to be trained to recognize hazardous material spills, to respond in an effective means to stop the spread of the hazardous material and to report any spill to ensure our reporting obligations to regulatory agencies are met. The estimated annual cost is approximately \$91,000 as noted below.

Hazardous spill response training – 80 persons 1 hour annually	\$ 6,400
Hazardous spill cleanup materials	50,000
Actual hazardous spill cleanup and report - typical	20,000
Maintenance of hazardous spill containment systems	<u>15,000</u>
Annual Estimate	<u>\$91,000</u>

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**61.0 Reference: Volume 1, Tab 8, p. 7**

**“These additional funds are directed towards two key areas: the assumption of centralized distribution system monitoring and control activities, and an increased workload resulting from FortisBC’s participation in real-time power markets.”**

**Q61.1 Please describe the additional human, computer, equipment, and/or other expenses incurred over and above historical values for the additional system monitoring and control activities.**

A61.1 Total System Control and Power Supply costs appear in two separate lines in the table provided in the response to BCUC IR1 Q59.0. These are System Control [under the heading Other Power Supply] and Load Dispatching [under the heading Transmission and Distribution]. The “additional funds” referenced – from the 2002 Actual to the 2005 forecast – are \$156,000. This response addresses the sum of these two line items

Centralized distribution system control was undertaken in order to move the Company towards compliance with the Workers’ Compensation Board Occupational Health & Safety Regulation. In order to direct the distribution station switching and maintain the safety related paperwork, we have filled an additional operating position for regular working days only; this has resulted in a net increase of one full-time employee. There are some additional annual computer software costs (\$1,500 per year) related to the increase in the number of workstations in the control room.

**Q61.2 Please describe the additional human, computer, equipment, and/or other expenses incurred over and above historical values related to participation in wholesale power markets.**

A61.2 Since 2002, there have been changes in the power business in general, such as increased formality in making transmission reservations and in the electronic tagging of energy transactions, that have increased our workload. In addition, FortisBC is using capacity purchases and wholesale wheeling through the BCTC system to meet our load. The position responsible for the load forecasting, scheduling of purchases and sales and the associated accounting has been increased from half-time to full-time to cover this additional work. As well there are some annual costs for the electronic tagging software and for a communication link with BCTC in order to share real-time information (\$12,000 per year).

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**62.0 Reference: Volume 1, Tab 8, p. 7**

**System Control and Power supply costs.**

**Q62.1 Please describe the additional activities and expenses which have occurred from 2002 to 2005.**

A62.1 See responses to BCUC IR1 Q61.1 and BCUC IR1 Q61.2.

**Q62.2 Are any of these additional costs associated with performance bonuses? If so, how much?**

A62.2 None of these additional costs are associated with System Control or Power Supply related performance bonuses.

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**Q63.0 Reference: Volume 1, Tab 8**

**In anticipation of creating appropriate levels of expenditures for baseline PBR incentives, please provide a 5-year history for all maintenance and operation expenses by program accounts. These program accounts should be reconcilable to the normal code of accounts for maintenance activities. (e.g. maintenance of overhead line accounts, etc.).**

## A63.0

	<b>Operation &amp; Maintenance Expenses</b>						
	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004<sup>F</sup></b>
	(\$000s)						
Transmission Station	284	443	800	889	663	659	330
Transmission Line	410	159	156	286	133	129	80
Transmission ROW	568	637	653	555	657	353	853
Distribution Station	1,134	1,084	813	458	1,118	1,060	834
Distribution Line	1,446	2,026	1,784	2,012	1,004	707	1,664
Distribution ROW	1,247	1,259	1,154	1,438	1,172	1,219	950
Meter Expenses	677	635	295	839	970	633	694
Street Lighting	151	109	138	220	256	35	183

Please see the response to BCUC IR1 Q59.0 for additional information on historical expenditures.

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**64.0 Reference: Volume 1, Tab 8, pp. 8-9**

**“FortisBC, along with utilities throughout the industry, faces the challenge of an aging workforce.”**

**Q64.1 Please provide the demographics of the Company’s line forces.**

A64.1 The following table provides the age demographics of FortisBC’s line staff:

<b>Age Group</b>	<b>Power Line Technician</b>	<b>Electrician</b>
<b>20 - 24</b>	0	0
<b>25 - 29</b>	3	0
<b>30 - 34</b>	2	3
<b>35 - 39</b>	7	0
<b>40 - 44</b>	11	5
<b>45 - 49</b>	16	1
<b>50 - 54</b>	15	7
<b>55 - 59</b>	8	1
<b>60 - 65</b>	2	2
<b>TOTAL</b>	64	19

**Q64.2 Please provide attrition statistics for the last five years.**

A64.2 The following table provides the attrition statistics for the last five years

<b>Year</b>	<b>Attrition</b>	
	<b>Power Line Technician (PLT)</b>	<b>Electrician (E)</b>
2000	0	0
2001	0	0
2002	2	1
2003	1	0
2004	6	0

**Q64.3 Please describe any hiring targets and/or incentives that are in place to attract and retain line forces over the next five years. Include an indication of the number of positions that will be available in the apprenticeship program and compare that with numbers from the previous five years.**

A64.3 FortisBC has no specific incentives in place to attract and retain line staff. The Company has historically had a very stable, long-term employee base. Our aging workforce aligns with what our competitors are also facing. As noted in the response to BCUC IR1 Q64.1 above, we have

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employees who are eligible for unreduced pension options in the next five years and as such have recruited Power Line Technicians and Electrician apprentices in the past and are currently recruiting for additional positions for 2005. To ensure maximum success we have expanded our search for these employees into neighboring provinces as well.

The following table shows the number of apprentices hired each year since 2001, as well as the total number of positions filled by apprentices:

Year	Total Positions Filled by Apprentices)		Number of Apprentices Hired	
	PLT	E	PLT	E
2001	0	1	0	1
2002	2	1	2	0
2003	4	1	2	0
2004	4	1	0	0
2005 Plan	8	2	4	2

**Q64.4 Please state the impact of any attraction/retention programs on costs.**

A64.4 As noted above, the Company has no specific incentives in place.

The financial impact is minimal, and is limited to relocation costs for new employees as we have geographically expanded our search for tradespeople.

**Q64.5 What are FortisBC's goals with respect to the apprentice program to combat workforce attrition? How many additional qualified tradesmen does FortisBC expect to generate through this program and how does FortisBC expect to fill the remaining positions (if any)?**

A64.5 FortisBC plans to utilize the apprenticeship program to the extent possible without compromising safety, reliability and cost. The actual number of trades people required in both the short-term and long-term operation of the company is dependent on implementation of the System Development Plan and is presently under review. The 2005 apprenticeship program currently underway is intended to reduce some of the risk identified in the response to BCUC IR1 Q64.3. The Company plans to fill any vacant journey person position by expanding the hiring search both inside and outside of our service territory.

**Q64.6 What additional costs is FortisBC budgeting with respect to the apprentice program? Please compare these costs to previous year's costs.**

A64.6 The majority of the costs associated with the apprenticeship program will be in support of the capital program, as the apprentices will be deployed to capital projects to expedite their development. FortisBC has budgeted an incremental operating expenditure of approximately \$140,000 associated with apprentices. The 2004 cost was approximately \$90,000.

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**65.0 Reference: Volume 1, Tab 8, p. 9**

**Q65.1 Please provide by program type, 5 years of comparative expenditures on Vegetation Management.**

A65.1 The direct costs associated with vegetation management for the previous five years are as follows:

<b>PROGRAM TYPE</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
<b>Transmission</b>	\$535,145	\$463,855	\$409,284	\$354,000	\$439,749
<b>Distribution</b>	797,496	1,277,575	886,765	1,051,000	1,247,153
<b>TOTAL</b>	\$1,332,641	\$1,741,430	\$1,296,049	\$1,405,000	\$1,686,902

**Q65.2 Please describe FortisBC's strategy for its long term vegetation management. Does FortisBC utilize long term strategies such as right of way grooming (i.e. clearing and seeding) and herbicide control? If not please explain why and what programs are being employed.**

A65.2 FortisBC's strategy for long-term vegetation management is to effectively control undesirable vegetation growth by utilizing the most efficient methodology for the site or species while remaining within recognized environmental stewardship guidelines.

FortisBC's strategy does include long-term strategies such as right of way grooming and seeding and herbicide control. However, these methods are undertaken with due consideration to the environment (i.e. soil erosion or slippage following right of way grooming and non-target species mortality or translocation following herbicide application).

When right of way grooming or herbicide control is not used the more common methods of hand slashing or mechanical mowing are utilized. Specific to herbicides, FortisBC has applied herbicides to some very site-specific areas to target noxious weeds and acacia brush.

**Q65.3 How much of the budget for vegetation management is dedicated to catch up work?**

A65.3 The 2005 operating budgets do not include any funds for catch up. FortisBC manages its vegetation program to predetermined brushing cycles. Although the cycles do not change, the growth in any given year can influence that amount of brushing required in the following years. The brushing expenditure levels continue to be assessed on an annual basis.

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**Q65.4 At what point does FortisBC believe it will be in control of its vegetation requirements as opposed to simply reacting to it?**

A65.4 FortisBC believes that it has developed a vegetation management program that has placed it in control of its vegetation management requirements. FortisBC also believes that the cost of vegetation management will see minor increases on an ongoing basis, due in part to increases in the amount of distribution plant required to serve new customers, the corresponding increase in the amount of rights of way that will need to be maintained, and inflationary costs. This will be offset to some degree by the program enhancements described the response to BCUC IR1 Q66.1

Since FortisBC began its first planned cyclical brushing program in 1999 all distribution feeders have been trimmed back to current specifications at least once with 2004 being a return to some of the first feeders done. Generally, three trim cycles are required in order to complete the “training” required on directionally trimmed trees. That is the point in time that the utility begins to see the full economical benefits of directionally trimmed trees. That point in time will, if FortisBC can remain on cycle with its vegetation management program, be 2009. Two years after the final trim of 2009, a long-term steady state predicable O&M expenditure should be achievable.

**Q65.5 How does FortisBC prioritize its vegetation programs?**

A65.5 First priority goes to addressing known and reported hazard trees that may cause an unsafe physical or electrical condition. All urban parks, playgrounds and public school yards are patrolled in July/August and all hazardous situations actioned appropriately prior to the beginning of the school year.

Second priority is to complete scheduled cyclical distribution and transmission trimming as planned in order to remain “on cycle” and in compliance with FortisBC’s clearance standards.

Third priority is to respond appropriately to customer calls regarding tree issues. Sometimes these are FortisBC responsibilities, sometimes not.

Fourth priority is to respond appropriately to both in-house condition assessment reports that reference tree related issues and line outage data that helps identify problem areas.

Fifth priority is to actively pursue new and pro-active vegetation management methods, including such things as herbicide control, public education (right tree, right place), tree replacement programs (currently being done with some municipalities), and investigating the use of growth inhibitor technology for certain species in urban areas.

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**66.0 Reference: Volume 1, Tab 8, p. 9**

**“The Company continues to improve its vegetation management program.”**

**Q66.1 Please describe the recent improvements to the vegetation management program and indicate the effect on costs.**

A66.1 Some improvements are identified as follows:

1. FortisBC has eliminated pre-patrolling and permitting of each feeder by a certified utility arborist prior to cutting. The intent of this activity was to promote cutting efficiencies of the crews; however experience has shown that the cutting efficiency savings have not exceeded the costs of the patrolling activity. Notification in advance is accomplished by newspaper ads to our customers. Dependent on customer density and terrain, this change may result in savings of up to \$75,000, a savings that is embedded in 2005 expenditure levels.
2. FortisBC has developed and will be seeking approval for implementation of a Pest Management Plan from the Ministry of Water, Land and Air Protection. This plan would allow FortisBC to apply herbicide where appropriate throughout its service territory. There will be no efficiency gain or financial savings in the first year, but successive years will verify its effectiveness at retarding regrowth. If approved, the new Pest Management Plan will allow the flexibility needed to efficiently use the herbicide tool wherever required. At the end of the third year of application, the value should begin to be realized at an expected cost savings of \$75,000 per annum.
3. A tree replacement program has been fostered with municipalities wishing to participate. This program targets tree species known to challenge the vegetation management program and replaces them with trees more suitable for the location while maintaining a “no net loss” principle. Several municipalities have expressed interest and FortisBC is currently working with Trees Canada to facilitate the 2005 work. Overall cost savings for FortisBC is minimal; however, the program can be quite beneficial to our customers from an environmental and aesthetics perspective.

**Q66.2 Are statistics available that would indicate that the changes to the program are producing benefits such as lower costs and/or improved reliability?**

A66.2 No, FortisBC has not developed any statistics to evaluate cost savings associated with changes in the program. The company does monitor tree related outages. This could be used in conjunction with the overall vegetation management cost to see if significant variation in overall cost affects reliability. However, it is clear that efficiencies are being realized and the cost impacts are embedded in the annual budgets.

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**67.0 Reference: Volume 1, Tab 8, p. 10**

**FortisBC refers to lower substation maintenance levels in 2004 due to a redeployment of crews to support substations under construction.**

**Q67.1 Please provide tables showing substation maintenance expenditures by program from 1998 to 2004.**

A67.1

	<b>Operation &amp; Maintenance Expenses</b>						
	1998	1999	2000	2001	2002	2003	2004F
	(\$000s)						
Transmission Station	284	443	800	889	663	659	330
Distribution Station	1,134	1,084	813	458	1,118	1,060	834
<b>Total Substation</b>	<b>1,418</b>	<b>1,527</b>	<b>1,613</b>	<b>1,347</b>	<b>1,781</b>	<b>1,719</b>	<b>1,164</b>

Please also see the response to BCUC IR1 Q59.0 for additional information on historical expenditures.

**Q67.2 Please describe the programs which received lower levels of activity.**

A67.2 Certain aspects of preventative maintenance for distribution level breakers, instrument transformers, protection systems and switches received lower levels of activity than planned.

**Q67.3 How much were the costs reduced for these programs?**

A67.3 As provided in the response to BCUC IR1 Q67.1, the overall level of maintenance expenditures was reduced by approximately \$555,000.

**Q67.4 The 2004 settlement earmarked additional funds for vegetation and substation maintenance. Please explain how those additional funds were used if the level of substation maintenance was reduced.**

A67.4 The 2004 settlement did not earmark additional funds for vegetation and substation maintenance. The settlement identified operating and maintenance budgets for vegetation and substation maintenance and a sharing mechanism for expenditures made in excess of the budget targets. The excess spending on substation maintenance was used to ensure the preventative and predictive maintenance cycles for the Transmission high voltage transformers, tap changers and high voltage breakers were completed. Substation maintenance levels in 2004 were lower in previous years but higher than the budgeted amount in the settlement.

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**Q67.5** How much additional expenditure will be required in the 2005 budget to catch up the maintenance not done? If no additional expenditure is required how FortisBC does plan to catch up the work?

A67.5 FortisBC has budgeted an incremental expenditure of approximately \$275,000 over and above the 2004 forecast. This funding will work towards re-establishing the maintenance cycle times of all the substation equipment.

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**68.0 Reference: Volume 1, Tab 8, p. 10**

**“More proactive testing of oil-filled equipment will provide advance warnings of failures that are likely to result in costly outages. This testing along with thermal scanning and completion of the scheduled maintenance plan will enable the Company to repair or replace deteriorating equipment on a planned basis, thereby avoiding more costly emergency repairs while also reducing customer outages.”**

**Q68.1 Please describe any recent changes to the equipment testing and thermal scanning programs, and indicate the effect on costs.**

A68.1 Thermal scanning of substation equipment, where thermal failure would impact reliability, has been used at FortisBC in excess of 20 years. Up to 2002, external contractors conducted this work. In 2003 the work was completed with FortisBC resources. No thermal scanning took place in 2004. Thermal scanning is scheduled to occur on an annual basis from 2005 and beyond. The 2005 planned expenditure is \$31,000.

The condition based oil testing for transformers commenced as early as 1970 and is conducted on an annual basis. The frequency of testing transformers whose test showed gassing in the main tank has been increased to ensure the transformer is rehabilitated prior to failure. A number of transformers tested in 2004 will see more frequent and additional oil testing in 2005 based on the results of the oil test. As a result, the 2005 oil testing program is planned for approximately \$95,000, an increase of \$65,000 over 2004.

**Q68.2 When were these program changes initiated?**

A68.2 The thermal scanning program has been in place for in excess of 20 years. The oil testing program has been in place for over 30 years. In 2003, based on transformer oil tests results, certain transformers have had their test intervals increased to provide more timely information with regards to their condition.

**Q68.3 When should the reliability benefits of these programs begin to show up as improvements in FortisBC’s reliability indices?**

A68.3 The thermal scanning and oil testing program of substation equipment are predictive maintenance tools. Both programs provide valuable information about the health of the equipment. This information allows FortisBC to determine when, if any, maintenance needs to be done. Continuation of these substation programs is intended to prevent reliability degradation at an optimized cost.

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**Q69.0 Reference: Volume 1, Tab 8, p. 10**

**“Also included in Transmission and Distribution expenses are the facility rental charges of approximately \$3.2 million for the Brilliant Terminal Station constructed in 2003.”**

**Would it be possible and beneficial to purchase the facility instead of renting it and what effect would that have on costs?**

A69.0 On June 28, 2002 the Commission issued Order G-46-02 approving the Brilliant Terminal Station Facilities Interconnection and Investment Agreement (“BTS FIIA”) with Columbia Power Corporation, Columbia Basin Trust and affiliated companies. The BTS FIIA provides that Columbia Power Corporation, Columbia Basin Trust and affiliated companies will own the Brilliant Terminal Station (“BTS”), and Aquila (FortisBC) will make lease payments. The Commission found that “Payments by Aquila will be calculated using the methodology in the BPPA which was approved after review in a public hearing. The methodology continues to be reasonable.” (Appendix A, Page 7). The question of ownership of BTS was the subject of intense negotiation over several years culminating in the BTS FIIA. Therefore FortisBC is confident that neither the Columbia Power Corporation or the Columbia Basin Trust would be interested in selling the facility.

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