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BRITISH COLUMBIA UTILITIES COMMISSION

BRITISH COLUMBIA
UTILITIES COMMISSION

ORDER
NUMBER C-3-03

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IN THE MATTER OF
the Utilities Commission Act, R.S.B.C. 1996, Chapter 473

and

An Application by Aquila Networks Canada (British Columbia) Ltd.
for Approval of a Certificate of Public Convenience and Necessity
for the South Okanagan Supply Reinforcement Project
and Related Agreements with British Columbia Hydro and Power Authority

and

An Application by British Columbia Hydro and Power Authority
to amend the General Wheeling Agreement and the Power Purchase Agreement
with Aquila Networks Canada (British Columbia) Ltd.

BEFORE: P. Ostergaard, Chair)
R.D. Deane, Commissioner) April 17, 2003

O R D E R

WHEREAS:

A. On December 16, 2002, Aquila Networks Canada (British Columbia) Ltd. ("Aquila") applied to the British Columbia Utilities Commission ("the Commission"), pursuant to Sections 41, 45, 46 and 52 of the Utilities Commission Act ("the Act"), for a Certificate of Public Convenience and Necessity ("CPCN") to construct the Vaseux Lake Terminal Station near Oliver, B.C., as well as related transmission improvements between the substation site and Aquila's nearby Line 40, upgrades to certain Okanagan and Boundary area terminal stations, telecommunication equipment, and modifications to the British Columbia Hydro and Power Authority ("B.C. Hydro") 500 kV line (collectively called "the Project") and for the approval of certain agreements with B.C. Hydro ("the Aquila Application"); and

B. In consideration of the terms of supply from B.C. Hydro, once the Project is commissioned, Aquila will assign ownership of the 500 kV substation facilities and attendant future obligations to B.C. Hydro pursuant to the provisions of the Vaseux Lake Terminal Station Agreement; and

C. On December 17, 2002, B.C. Hydro applied to the Commission, pursuant to Section 60 of the Act, for amendments to the General Wheeling Agreement and the Power Purchase Agreement between B.C. Hydro and Aquila ("the B.C. Hydro Application") and for approval to amend Rate Schedule 3817 when the Vaseux Lake Terminal Station goes into service; and

D. These Applications have been preceded by the following events:

- Filing of the Aquila draft Master Plan for the Period 1999–2018 in November 1998;
- Filing of the Aquila Master Plan for the Period 1999–2018 in April 1999;

…/2

- Review of the Aquila Master Plan in Penticton on May 27, 1999, followed by a Commission letter dated June 15, 1999, indicating that the plan provides the basis for Aquila to submit an application for a Certificate of Public Convenience and Necessity;
- Draft Joint System Impact Studies, prepared in association with B.C. Hydro in 1999, previously filed with the Commission;
- Review of South Okanagan Supply Reinforcement planning at the Aquila's Annual Review in December 2000; and

E. Aquila held two public information and public input sessions in the area on July 18 and September 5, 2002; and

F. The Commission established a regulatory review of the Aquila Application and the B.C. Hydro Application by Order No. G-100-02; and

G. A workshop on the matter was held in Penticton on January 15, 2003; and

H Aquila and B.C. Hydro responded to Information Requests on January 31, 2003; and

I. Several parties filed submissions regarding the Project. Aquila and B.C. Hydro responded on February 21, 2003; and

J. The Commission has considered the submissions and other evidence, and has reviewed the costs, timing, impacts and justification for the Project, and finds that approval of the Aquila Application and the B.C. Hydro Application are required for the reasons set out in the Reasons for Decision attached as Appendix A to this Order.

NOW THEREFORE the Commission orders as follows:

1. A CPCN is approved for Aquila for the South Okanagan Supply Reinforcement Project as set out in the Aquila Application.

2. Aquila must file final cost estimates for the Project before commencement of construction.

3. Aquila must file the Environmental Management Plans with the Commission when completed and must acquire all other necessary land use and building permits.

4. Aquila must file monthly progress reports on the Project commencing with the start of construction and a final Project report after circuit energization. The progress and final reports are to describe and explain any significant budget or schedule variations and public concerns.

5. The Vaseux Lake Terminal Station Agreement (including the Facilities Transfer Agreement) between Aquila and B.C. Hydro is approved.

6. The Amended General Wheeling Agreement, the Amended Power Purchase Agreement and the South Okanagan Supply Reinforcement Project Letter Agreement between Aquila and B.C. Hydro are approved.

7. B.C. Hydro is to amend Rate Schedule 3817 to incorporate the Wheeling rate set out in the South Okanagan Supply Reinforcement Project Letter Agreement when the Vaseux Lake Terminal Station goes into service.

DATED at the City of Vancouver, in the Province of British Columbia, this 17th day of April, 2003

BY ORDER

Original signed by:

Peter Ostergaard
Chair

AQUILA NETWORKS CANADA (BRITISH COLUMBIA) LTD.
APPLICATION FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY
FOR SOUTH OKANAGAN SUPPLY REINFORCEMENT PROJECT

REASONS FOR DECISION

1.0 INTRODUCTION

1.1 Applications and Project

Aquila Networks Canada (British Columbia) Ltd. ("Aquila") applied for a Certificate of Public Convenience and Necessity ("CPCN") to build and operate a number of projects, collectively termed the South Okanagan Supply Reinforcement Project (the "Project"), on December 16, 2002 ("Aquila Application"). The Aquila Application also requested approval of a cost containment incentive, the amendments to the General Wheeling Agreement ("GWA") and the Power Purchase Agreement ("PPA"), the Vaseux Lake Terminal Station Agreement and the South Okanagan Supply Reinforcement Project Letter Agreement, all between British Columbia Hydro and Power Authority ("B.C. Hydro") and Aquila.

At the same time, B.C. Hydro applied to the Commission for approval of amendments to the GWA and the PPA with Aquila ("B.C. Hydro Application"). The B.C. Hydro Application is a necessary supplement to the Aquila Application.

The Project consists of:

- a 500/161/(230) kV substation ("the Vaseux Lake Terminal Station") at an estimated cost of $42.454 million;
- two 161 (230) kV lines to connect the substation to the present north-south Line 40 from Penticton to Oliver at an estimated cost of $1.446 million;
- modifications to B.C. Hydro's 500 kV line, 5L98 at an estimated cost of $4.560 million;
- telecommunications equipment, including fiber optic or microwave communications between Aquila's system control center and B.C. Hydro's protection equipment, and a remedial action scheme to isolate the impact of B.C. Hydro's 500 kV system contingencies on Aquila's system, at an estimated cost of $5.512 million; and
- an upgrade of the R.G. Anderson Terminal Station (in Penticton), the Oliver Terminal Station, the A.S. Mawdsley Terminal Station (in Warfield), and the Grand Forks Terminal Station at an estimated cost of $12.796 million.

Aquila's estimated total cost for the Project is $69.875 million, including $3.107 million for administration. The new facilities are scheduled to be in service in September 2005.

As per the Vaseux Lake Terminal Station Agreement, B.C. Hydro will be responsible for the design and engineering of the Vaseux Lake Terminal Station and Aquila will be responsible for the construction of the Project. All engineering, design and construction costs will be to Aquila's account and Aquila will transfer ownership and operating responsibility of the 500 kV portion of the Vaseux Lake Terminal Station to B.C. Hydro.

2.0 BACKGROUND

Aquila [at the time West Kootenay Power Ltd. ("WKP")] first identified the need for supply reinforcement to the South Okanagan area in the mid 1980's and, in 1988, WKP acquired land at a location near Vaseux Lake in anticipation of building the South Okanagan Substation ("SOK"). In 1988, WKP applied to the government for an Energy Project Certificate to construct and operate a gas turbine generation plant to be located at Oliver. At that time, WKP stated that one of the benefits of the plant would be to defer the need for the substation reinforcement by ten years. The Commission, in its review of the Energy Project Certificate Application, subsequently recommended that the application should be denied.

In 1994, WKP submitted an Okanagan Bulk Supply Transmission Plan which identified a number of alternatives to supply the increasing load of the Okanagan. These alternatives included:

- the SOK, a new 500/230/161 kV substation which tapped into B.C. Hydro's line 5L98;
- a North Alternative [rebuild of existing Line 46 from Vernon to Kelowna to 230 kV and the staged additions of a new 230 kV line from Ashton Creek to Vernon and a new 138 kV line from Kelowna to Naramata (Penticton)];
- a new 230 kV line from Waneta to Penticton;
- a rebuild of existing Line 11 from Oliver to Warfield at 230 kV; and
- several other 230 kV options from B.C. Hydro including a 230 kV line from Nicola to Penticton and a 230 kV line from Nicola to Princeton, with upgrades to the line from Princeton to Oliver.

These alternative strategies were tested against a number of resource options within the service area.

This 1994 Plan concluded that the North Alternative was the most economic solution and that a CPCN should be submitted to rebuild Line 46 to 230 kV standards. In the 1994 Rate Decision, the Commission concurred with the conclusions of the study and noted that the rebuild of Line 46 (together with the upgrade of Line 43 from Princeton to Oliver) could defer reliability shortfalls to the Okanagan for ten years. Line 43 was upgraded to 138 kV standards in 1993. In 1995, the Commission approved a CPCN to rebuild Line 46 and this project was completed in 1996.

In 1999, WKP submitted the WKP 20-year Transmission System Plan ("the 1999 Master Plan") that included transmission supply options for the Okanagan and Kootenay Areas. This report was reviewed in a workshop in Penticton in 1999 and, subsequently, the Commission by Letter No. L-28-99 accepted these filings as the basis for CPCN applications as and when required. The 1999 Master Plan identified two feasible options for significantly increasing the supply to the Okanagan. One was the SOK and the other was a 230 kV East-West Line, 195 km in length from Waneta to Penticton. The choice between the two options depended on WKP's ability to negotiate a wheeling agreement with economically favorable rates with B.C. Hydro.

In 2000, Aquila made improvements to the Penticton sub-transmission system to increase reliability and capacity for the South Okanagan supply and, in 2001, Aquila added a 40 MVAR Capacitor to B.C. Hydro's Vernon substation to increase the power transfer capabilities to the Okanagan.

Subsequent to the filing of these studies, WKP applied for a CPCN for the Kootenay 230 kV System Development Project and, in 2000, the Commission approved the CPCN by Order No. C-10-00. This project is expected to be completed in the spring of 2003. It is required to increase the capacity and reliability for the Kootenay region and was determined to be compatible with the two options for the supply to the Okanagan.

Aquila resumed discussions with B.C. Hydro and was able to conclude negotiations for a wheeling agreement in 2002. The successful conclusion of agreements related to the substation subsequently enabled Aquila to submit a CPCN application for the Project as the preferred alternative.

In response to the Aquila Application and the B.C. Hydro Application, by Order No. G-100-02 the Commission established a workshop on January 15, 2003 and a written hearing process culminating with Aquila's and B.C. Hydro's final submissions on February 21, 2003.

3.0 PROJECT JUSTIFICATION

Aquila identified three load/reliability reasons for this project. The first is that capacity limitations at B.C. Hydro's Vernon terminal will require load shedding on the Aquila system during peak demand periods after 2004/2005. The second is that by 2004/2005, under the contingent loss of Line 73 (from Kelowna to Penticton), a portion of the load in Penticton could not be served by Line 11 and Line 43 as their capacities would be exceeded. The third reason is that after 2007, in the event of a loss of Line 11 or 40, Penticton would suffer a loss of load.

Aquila's forecast of load growth and supply capability for the Okanagan is stated in Tables 4.1 and 4.2 of the Application and in summary show that:

	2003	**2007**	**2021**
Forecast Load	430 MW	460 MW	610 MW
Supply Capability	475 MW	420 MW	

3.1 Load Growth

Aquila included an October 2002 feasibility study report entitled "Okanagan System Impact Studies Update" ("2002 Update") in the Application (Appendix A). The study was based on Aquila's load forecast study (2000-2004) submitted for the 2000 revenue requirements application. This load forecast does not differ materially from subsequent forecasts including the forecast in Aquila's 2003 Revenue Requirements Application. Future load scenarios for the B.C. Hydro system were obtained from B.C. Hydro.

A summary of the aggregate peak load forecast indicated forecast load growth of approximately 1.8 percent per year for Aquila's overall customer load and approximately 1.9 percent per year for Aquila's Okanagan load.

The B.C. Public Interest Advocacy Centre representing the Consumers' Association of Canada (B.C.) *et al*. ("CAC") argued that, according to B.C. Stats, the population growth in the Okanagan in recent years would not support the load growth estimates that Aquila is forecasting.

Aquila noted that these projections are not based on historical analysis and that while population growth may be low, electric load growth does not follow the same percentage as the population growth.

The Commission considers that many factors affect electricity load growth including weather, provincial economic cycles and relative cost of natural gas and electricity. The Commission accepts Aquila's forecast of load growth.

3.2 Reliability/Planning Criteria

The North American industry standard for reliability criteria is defined by the North American Electricity Reliability Council ("NERC") and has been adopted by various interconnected transmission regions. Aquila, as a member of the Western Electricity Coordinating Council ("WECC") is required to follow these standards in order to benefit from the interconnection to a larger system. The reliability criteria are defined by the NERC/WECC Planning Standards as revised on August 9, 2002. In simplistic terms, these standards require that Aquila design and operate its meshed system such that a loss of a single transmission or generation element does not result in an unstable system or a loss of load. This criteria is commonly referred to as N-1 criteria. NERC/WECC recognize that some loss of load may occur in some areas without impacting overall security and N-1 criteria does not apply to localized areas that are supplied by a radial feed system. Aquila has stated that their planning criteria are consistent with the requirements of the above standards.

The Commission considers that a safe, reliable system and the benefits of an interconnected system are vital for the economic well being and safety of a utility's customers. The Commission accepts Aquila's peak load forecasts which indicate that significant additional capacity to supply the Okanagan is needed, beginning about 2005, to comply with N-1 criteria.

CAC suggested an aggressive maintenance program for the existing lines, with some deviations from N-1 criteria, as an alternative to new transmission solutions. However, the Commission does not consider this suggestion to be a viable alternative as it does not address capacity shortfalls and thus a line failure for any reason would result in a loss of load even under a well-maintained system.

4.0 ALTERNATIVE SOLUTIONS

4.1 Options

Aquila's 1999 Master Plan included four options including:

O1 a new 500kV/230/161 kV South Okanagan Substation ;
O2 a North-South Transmission Reinforcement, including a 95 km 230 kV line from Ashton Creek terminal station to F.A. Lee terminal station (Kelowna), a 60 km 230 kV line from F.A. Lee terminal station to R.G. Anderson terminal station and related terminal station work;
O3 an East-West Transmission Reinforcement, including a new 195 km 230 kV transmission line from Waneta to Penticton) and related terminal station work; and
O4 South Okanagan Generation Supply, including either 25 or 40 MW combustion turbines at various location in the South Okanagan (this option was considered as a means of delaying the capital cost

of major transmission projects).

These options were evaluated in conjunction with options for the redevelopment of the Kootenay 230 kV System.

The Northern Reinforcement option was rejected because of very high capital costs over a long term and no provincial or regional benefits from loss reductions. It should also be noted that this option differed from the one studied in the 1994 plan in that it considered loads past 2017 and required more system elements.

The Resource Development option considered several turbines at various locations in the South Okanagan, but was rejected as technically inferior and uneconomic. Similar options were evaluated in the context of the 1994 integrated resource plan and rejected.

The 2002 Update re-evaluated a slightly modified O1 South Okanagan Substation ("Substation") and a slightly modified, O3 172 km East-West 230 kV transmission line ("Line") (Aquila Application, Appendix A). The O1 option was modified to include two 250 MVA transformers instead of one 300 MVA transformer, and O3 was modified to originate from the Warfield terminal station instead of Waneta.

The 2002 Update also considered the feasibility of project deferral by Demand Side Management ("DSM"), including distributed generation and temporary voltage control measures. It concluded that the demand could be reduced by 8 to 10 MW with a $2 to $4 million expenditure on DSM and distributed generation and by 4 to 5 MW by temporary voltage measures. Aquila stated that the voltage control measures were already in place and may be needed to manage peak loads during the winter of 2004/2005.

CAC suggested a number of other system improvements to improve the load transfer capability to the Okanagan. These included an upgrade of Line 11 to 230 kV and an extension of the line to Warfield, plus upgrades at various substations. Aquila responded that these options would be more expensive than the Substation and would not address the planning criteria to maintain a reliable system.

CAC also suggested that a more aggressive DSM program and distributed generation acquisition may defer the need for the Project. Aquila has replied that an additional 30 MW of DSM may be optimistically obtainable for $69 million and Aquila was unaware of any distributed generation opportunities that could approach the capacity benefits of the Substation.

Aquila's load in the Okanagan is growing by about 8 MW per year, while supply to this area is declining by about 14 MW per year.

The Commission does not believe there is sufficient DSM or distributed generation capacity available at an economic cost to be able to defer the need for the reinforcement project by any significant period. The Commission concurs with the conclusion that the Substation and Line transmission options are the only two options that would meet system requirements in a cost-effective manner.

4.2 Comparisons of the Line and Substation Alternatives

4.2.1 Economic Comparisons

The 2002 Update considered total capital expenditures through 2013 under the two alternatives. It estimated the total projected capital cost on a discounted basis for the Substation to be $54.392 million, and the Line to be $78.571 million.

However, a complete comparison must consider the cost of wheeling and loss savings for the Substation and the potential cost of wheeling due to loop flows and loss savings for the Line. These comparisons were presented at the public workshop held on January 15, 2003 in slide 31 of the handout material shown below. The analysis represents costs and benefits through 2045.

PROJECT COMPARISON

Revenue Requirements Analysis Net Present Value (NPV) ($'000s)	**Line "Low Case"**	**Substation**	**Line "High Case"**
System Costs (Benefits)			
System Losses	-18,142	-28,530	-24,702
Wheeling	-64,597	-11,339	-10,579
Subtotal	-82,739	-39,869	-35,281
Project Costs			
Depreciation	16,404	11,455	16,404
Project O&M	9,401	5,720	9,401
Property Taxes	11,568	11,629	11,568
Financing Cost	57,862	39,837	57,862
Income Tax	13,126	9,182	13,126
Subtotal	108,361	77,823	108,361
Total	**25,622**	**37,954**	**73,080**

The wheeling costs for the Substation (O1) were negotiated between B.C. Hydro and Aquila and thus are known for given values of power transferred. No equivalent comparison could be performed for the Line (O3). However, the wheeling volumes and system losses would vary for different assumptions about load flows on the 500 kV system and how wheeling amounts would be determined by the GWA when loop or inadvertent flows are accounted for. Aquila, therefore, considered a range of assumptions that were possible outcomes. The major difference between the High and Low Case scenarios is the way in which loop flows are costed. In the Line Low Case, loop flows did not attract wheeling costs, while in the Line High Case all loop flows were costed at Wholesale Transmission Service ("WTS") rates.

These calculations yielded a total NPV cost of $25.622 million for the Line Low Case scenario and $73.080 million for the Line High Case scenario. These NPV's were compared to the Substation at $37.954 million.

Mr. Wait presented an analysis that indicated that the Line option would be less expensive than the Substation. His analysis appears to be similar to the assumptions used in Aquila's Line Low Case scenario.

Based on his analysis, Mr. Wait stated that there is not much difference between the cost of the two alternatives through about 2021 but that future ratepayers are being excessively charged in the Substation option and therefore the Substation creates an intergenerational inequity. He concluded that the Line is clearly better over the longer term.

Aquila stated that B.C. Hydro can cancel the GWA contract on five years notice and that the WTS would then become the applicable tariff. Aquila noted that Mr. Wait focused on only one scenario out of a wide range of possible assumptions about the wheeling costs and system loss savings. Aquila considered that its analysis addressed Mr. Wait's concern about intergenerational inequity by using a discount rate of 10 percent nominal (8 percent real).

4.2.2 Reliability Comparisons

Aquila performed reliability impact studies for various scenarios under both the Substation and the Line alternatives and concluded that for N-1 contingencies the Line was favored and for N-2 contingencies the Substation was favored. However, both options were able to meet the NERC/WECC and Aquila's reliability criteria.

4.2.3 System Losses

The analysis of system losses was conducted for the two alternatives and Aquila concluded that both alternatives would reduce system losses. However, the Substation reduced system losses by a much greater amount (i.e., by the year 2021 the Substation reduced system losses by 27 percent compared to the Line which reduced system losses by 15 percent).

4.2.4 Environmental and Social Impacts

Although the Line would be constructed along existing corridors, a number of sections would have to be built on new rights-of-way. In 1999, Aquila commissioned an Environmental Screening Report and identified a number of potential impacts, including areas of vegetation removal with the potential loss of animal habitat. Visual and other socio-economic impacts were also identified. The Line has many non-quantifiable detriments related to rights-of-way, visual impacts, and environmental and reliability considerations which would result from the construction and operation of a new 172 km 230 kV transmission line through the West Kootenay, Boundary and South Okanagan Areas.

In comparison, the Substation has a very small footprint and has a much smaller impact on the environment.

4.2.5 Commission Determination

The Commission recognizes that there is a high degree of uncertainty with regard to wheeling and loop flow costs under the Line alternative. There is also a degree of uncertainty with regard to the volumes deemed to be wheeled; however, the Commission believes that a more likely outcome for the Line lies in the higher range of calculations, making the Substation more viable. In addition, there may be costs associated with environmental and socio-economic factors related to siting the Line, which have not been fully factored into these comparisons and which would further improve the results for the Substation.

The Commission accepts Aquila's assessment that the Substation is likely to be preferable on an economic comparison. The Commission also believes that the Substation is preferable on an environmental and provincial system benefits basis.

5.0 SUBSTATION SITE ISSUES

In its Environmental Screening Report for the Substation, Aquila identified a number of moderate to high

environmental impacts including the loss of antelope brush grassland and visual resources. At community workshops a number of additional concerns were raised with regard to light pollution, and electro-magnetic fields ("EMF"). The Ministry of Water, Land and Air Protection also identified that the loss of antelope brush was a serious concern. Aquila has committed to produce an Environmental Management Plan and to mitigate adverse affects. Aquila identified that the nearest resident is approximately 210 meters from the south substation fence and EMF levels at this residence were calculated to be approximately two milligauss. Noise levels at this residence were calculated to be in the range of 38 to 43 decibels without vegetation screening.

McIntyre Bluff Ranch Ltd., owners of the land purchased by Aquila for the Substation, raised an objection that Aquila has failed to fulfill its contractual obligations by not maintaining a ponderosa pine tree screen as stipulated in the Land Purchase Agreement. Aquila has acknowledged this failure and, by a letter dated March 25, 2003 from Aquila to McIntyre Bluff Ranch Ltd., has committed to repair the existing irrigation system, replant the ponderosa pines and maintain both.

Mr. Barisoff, a resident adjacent to the proposed substation, expressed concerns regarding EMF and trespass issues for his land. In regards to the trespass issues, Aquila stated that it will use its best efforts to prevent public access or use of the property. In response to EMF concerns, the Commission has previously stated that it believes the preponderance of scientific evidence on this subject does not support the theory that EMF from power lines is a health hazard. The Commission has maintained its policy of "prudent avoidance" and recognizes that the EMF levels at the closest residence are very low.

Aquila must also apply to rezone a portion of the land, which is south of the proposed substation, in order to allow a future expansion of the 500 kV substation. This rezoning is not expected to be problematic.

No other environmental or land issues have been raised. However, the Osoyoos Indian Band objected to what they view as a lack of consultation on the Project.

6.0 REVENUE REQUIREMENTS ANALYSIS

Appendix I of the Aquila Application contained a revenue requirement analysis that calculated the net present value of project rate impacts to be 2.8 percent. This has been calculated over a 50-year period, which is the amortized life of the project. On a yearly basis, the largest rate impact occurs in 2007 and is 5.27 percent. Rate impacts diminish each year thereafter. In response to a Commission Staff question, Aquila noted that if the benefits from reduced system losses were applied to this analysis the effective net present value rate impact would be 1.4 percent with a maximum impact of 3.42 percent occurring in 2006.

7.0 PROVINCIAL SYSTEM IMPACTS

Improvements to the Aquila transmission system can have impacts to the overall transmission reliability and efficiency throughout the B.C. Hydro and Aquila service territories. As early as 1992, WKP and B.C. Hydro prepared a report entitled "Long Term Supply to the Okanagan Valley" that examined alternatives for the long-term bulk transmission supply to the Okanagan from a single utility (provincial) perspective. The study concluded that the Substation was the most economic alternative and a major advantage was the reduction in total system losses. Other benefits included increased reliability due to a closed loop operation. This was confirmed by WKP's 1999 Master Plan and in the draft 1999 System Impact Studies which also examined the bulk supply issues to the Okanagan on a regional and a provincial basis. From a provincial perspective, the least-cost option was clearly the Substation. The 2002 Update concluded that the Line and the Substation alternative would reduce system losses, however the Substation reduced losses by a much greater amount. B.C. Hydro, in its application for the amendment to the GWA, also confirmed that the Substation and associated agreements are in the best interests of B.C. Hydro and the provincial system as a whole.

With regard to losses, Columbia Power Corporation stated that for it to support the Project it required that any third-party losses that may result from the selection of the facility should be to the account of the Applicant.

The Commission recognizes that load flows may change on various parts of the system as a result of the addition of large system elements. However, if increased loop flows are present and one party to the interconnection receives a benefit or cost, these changes should be resolved by reference to the appropriate tariffs or interconnection agreements. For this Project, the large provincial line loss savings are to be shared between Aquila and B.C. Hydro through the amended wheeling rate under the GWA.

8.0 AGREEMENTS BETWEEN AQUILA AND B.C. HYDRO

8.1 Requests for Approval of Agreements

The Aquila Application (pp. 5 and 6; Appendices E, F, G, H) requested approval of the following agreements and amendments:

- amendment of the GWA between Aquila and B.C. Hydro;

- amendment of the PPA between Aquila and B.C. Hydro;
- the Vaseux Lake Terminal Station Agreement between Aquila and B.C. Hydro, including the Facilities Transfer Agreement forming Schedule 3 of that agreement; and
- the South Okanagan Supply Reinforcement Project Letter Agreement.

The agreements and amendments expand the Vernon terminal delivery point under the GWA to be the Okanagan Point of Interconnection and deliveries will be the sum of deliveries at Vernon and the Vaseux Lake Terminal Station. The wheeling rate from South Slocan to the Okanagan Point of Interconnection will be amended to $19,000 per megawatt-year on the in-service date of the Vaseux Lake Terminal Station and will escalate at the British Columbia Consumer Price Index. The term of the GWA will be extended to 2045 plus rolling five-year renewals. Aquila will pay for the entire station but will transfer ownership of the 500 kV facilities to B.C. Hydro.

The B.C. Hydro Application also requested approval of the foregoing amendments to the GWA (Tariff Supplement No. 2) and the PPA (Tariff Supplement No. 3). B.C. Hydro requested Commission approval to amend Rate Schedule 3817 effective from the in-service date of the Vaseux Lake Terminal Station, to reflect the changes to the delivery point and the wheeling rate as set out in the South Okanagan Supply Reinforcement Project Letter Agreement.

Aquila and B.C. Hydro submitted that the agreements were reached through arm's length negotiations, and that it would be inappropriate for the Commission to amend the agreements since such amendments could not reflect the complex trade-offs inherent in the negotiation process. Each applicant stated that, if the Commission could not approve the applications without material modification, they would seek to withdraw the applications.

Three other agreements are necessary to facilitate the construction of the new substation and its interconnection to the Aquila and B.C. Hydro electrical systems. These agreements are the Interconnection Agreement (to describe the responsibilities of the parties at the point of physical interconnection), the License Agreement (to facilitate B.C. Hydro access), and a Right of First Refusal in favour of B.C. Hydro to purchase the Aquila substation lands. These Agreements are being negotiated separately and Aquila has stated that they do not have a material impact on the Project.

8.2 Amended Wheeling Charge

The GWA currently has a wheeling charge that Aquila estimates will be $22,693 per megawatt-year in 2005 (Aquila Response to Staff Information Request 2.7). The Agreement can be terminated by either party on five years notice. If the GWA were terminated, B.C. Hydro's WTS rate of $56,160 per

megawatt-year would apply to transfers of power to the Okanagan.

The negotiated wheeling rate of $19,000 per megawatt-year is the major determinant of how the financial impact of the Project is shared between the ratepayers of the two utilities. The rate is central to the issue of whether the Substation is better than the Line for Aquila ratepayers and determines whether the agreements fairly preserve the interests of the ratepayers of both utilities.

The negotiation of the wheeling rate was intended to identify a rate that would provide a financially equivalent outcome for Aquila's customers, relative to the Line. The analysis supporting the discussions required several assumptions about future circumstances (Aquila Application, pp. 27-33; Aquila Response to Staff Information Requests 2.10 and 2.11). Aquila and B.C. Hydro created a set of assumptions that indicated a wheeling rate of $12,000 per megawatt-year and another set of assumptions that indicated $25,000 per megawatt-year. Aquila and B.C. Hydro agreed to a rate of $19,000 per megawatt-year but there was no mutually agreed set of assumptions that led to this outcome.

Aquila stated that, based on a balance of probabilities and considering all the uncertainties and the risk of significant adverse impacts on customers, the negotiated rate is the best possible outcome for its customers.

B.C. Hydro stated that the amendments to the GWA and the PPA will not result in any adverse rate impact for B.C. Hydro customers. B.C. Hydro also confirmed that the agreements with Aquila are consistent with the WTS Tariff, and that the amended GWA continues as a specifically "grandfathered" pre-WTS contract (B.C. Hydro Response to Staff Information Requests 2, 3).

Mr. Wait's position in favour of the Line implied that the negotiated cost for wheeling was greater than the than that which would have been required to produce the same financial outcomes for both alternatives. Mr. Wait also stated that he was concerned about the escalation clause in the GWA amendment that increased the rate for wheeling at the same rate as the Consumer Price Index for British Columbia. Mr. Wait argued that the wheeling rate should be cost based.

Commission Determination

The agreements and amendments that Aquila and B.C. Hydro filed for approval are reasonably required to proceed with the Project. The amended wheeling rate is the main issue with respect to these agreements.

There is more than usual uncertainty in the analysis of the economic impacts of the Project compared to those of the Line. The wide range of possible wheeling rates indicated by the scenario analysis illustrates

the complexity of the situation. The agreed rate of $19,000 per megawatt-year lies approximately at the mid-point of the range, and compares favourably to the current GWA rate and the WTS rate. While the Commission is concerned with the automatic escalation clause, the Commission also notes that the wheeling rate and agreement were negotiated at arm's length by the two utilities on behalf of their customers, and the economic analysis which was based on the escalating wheeling rate demonstrated that the Substation may be preferable to the Line (depending on the assumptions discussed earlier). Also, the wheeling rate is an essential part of the agreements for the Substation which avoids the environmental and other impacts of constructing a new 230 kV line from Warfield to Penticton. In the circumstances, the Commission accepts the rate.

The Commission determines that the agreements and amendments as requested in the Aquila Application and the B.C. Hydro Application, including the changes to Rate Schedule 3817 when the Vaseux Lake Terminal Station goes into service, are appropriate and necessary for the Project.

9.0 INCENTIVE PROPOSAL

Aquila applied for a Cost Containment Incentive and suggested that it be based on a cost collar of -5 percent to +10 percent of a control estimate to be approved separately, meaning that Aquila's rate base would increase by a minimum of 95 percent and a maximum of 110 percent of the control estimate. In response to Commission Staff information requests, Aquila stated that the control estimate would be submitted in November of 2003 for Commission approval. Aquila anticipates that the control estimate would be based on tendered contracts of a cost-reimbursement type, with incentive targets for schedule and cost. Aquila believes these types of contracts will minimize contractors' bids by reducing the risk premiums associated with complex projects. Aquila has also stated it is willing to discuss a different sharing formula for the incentive mechanism.

The Commission believes that, in principle, an incentive mechanism has merit. However, the Commission is concerned with the lack of symmetry in the present proposal. The proposal is further complicated by the substantial costs that are within the control of B.C. Hydro. The Commission recognizes Aquila's willingness to discuss these matters and invites Aquila to make another proposal when it has completed its control estimate.

10.0 COMMISSION CONCLUSIONS

For the preceding reasons the Commission determines that the South Okanagan Supply Reinforcement Project should be approved and the Commission commends B.C. Hydro and Aquila for coming to a mutually beneficial agreement to allow this Project to proceed.