



Kyuquot Power Ltd.
4248 Broughton Avenue
Niagara Falls, Ontario L2E 3K6
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By mail and email

**RESOURCE ASSESSMENT REPORT (2023)
NOTICE TO CUSTOMERS**

On October 26, 2023, Kyuquot Power Ltd. (“KPL”) submitted a Resource Assessment Report (2025) (the “Application”) to the British Columbia Utilities Commission (“BCUC”) as required by Directive 7 of Order G-302-22 which stated;

7. Within one year of this Order, KPL is directed to file a long-term resource plan with a 10 year forecast and plan setting out how it will meet the forecasted load that supports KCFN’s community aspirations.

On December 7, 2023, the BCUC issued Order G-333-23 including a regulatory timetable and public notice of the Application.

Attached is a copy of BCUC Order G-333-23 including Appendix A – Regulatory Timetable and a copy of the Application.

If you would like to participate, please refer to the enclosures for instructions.

If you have any questions or wish clarification, the undersigned can be contacted at your convenience by mail or email at gregsunell@gmail.com or 604-992-3850. Alternatively, please contact Tanya DeAngelis at tdeangelis@synex.com.

Your truly
KYUQUOT POWER LTD.

Original signed by:

Greg Sunell
Consultant to Kyuquot Power Ltd.
December 8, 2023



bcuc
British Columbia
Utilities Commission

Patrick Wruck
Commission Secretary

Commission.Secretary@bcuc.com
bcuc.com

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December 7, 2023

Sent via efile

KPL RESOURCE ASSESSMENT REPORT EXHIBIT A-2

Greg Sunell
Consultant
c/o Kyuquot Power Ltd.
4248 Broughton Avenue
Niagara Falls, Ontario L2E 3K6

Re: Kyuquot Power Ltd. – Resource Assessment Report – Project No. 1599633 – Regulatory Timetable with Notice

Dear Mr. Sunell:

Enclosed is BCUC Order G-333-23 establishing a regulatory timetable and public notice.

Sincerely,

Original signed by:

Patrick Wruck
Commission Secretary

/lb



ORDER NUMBER
G-333-23

IN THE MATTER OF
the *Utilities Commission Act*, RSBC 1996, Chapter 473

and

Kyuquot Power Limited
Resource Assessment Report

BEFORE:

M. Jaccard, Panel Chair
C. M. Brewer, Commissioner
E. A. Brown, Commissioner

on December 7, 2023

ORDER

WHEREAS:

- A. On May 15, 2020, by Order G-115-20A, the British Columbia Utilities Commission (BCUC) established a hearing to review the safety and reliability of the Kyuquot Power Limited (KPL) system, following a complaint by the Ka:'yu:'k't'h'/Che:k'tles7et'h' First Nations (KCFN);
- B. On October 27, 2022, by Order G-302-22, the BCUC closed the complaint and issued several directives. Directive 7 states: "Within one year of this Order, KPL is directed to file a long-term resource plan with a 10-year forecast and plan setting out how it will meet the forecasted load that supports KCFN's community aspirations;"
- C. On October 26, 2023, KPL filed with the BCUC a Resource Assessment Report (Application) to comply with Directive 7 Order G-302-22; and
- D. The BCUC has commenced the review of the Application and considers that establishing a regulatory timetable is warranted.

NOW THEREFORE the BCUC orders as follows:

- 1. The regulatory timetable for the review of the Application is established, as set out in Appendix A to this order.
- 2. KPL must provide a copy of the Application and this order, electronically where possible to all interveners in the Investigation into the Safety and Reliability of the KPL System proceeding by Wednesday December 13, 2023.

3. KPL must make the Application available on its website at <https://kyuquotpower.com/> by Wednesday, December 13, 2023.
4. Any party wishing to actively participate in this proceeding must submit the [Request to Intervene Form](https://www.bcuc.com/forms/RequestToIntervene), available on the BCUC's website at <https://www.bcuc.com/forms/RequestToIntervene>, by Friday, January 5, 2024.
5. KPL customers and stakeholders are invited to submit Letters of Comment relating to the Application. Letters of Comment must be received by the last date included in the proceeding's regulatory timetable before final arguments, unless the BCUC directs otherwise. Letters of Comment that are received late will not be considered by the BCUC in the proceeding. Letters of Comment must be in the [Letter of Comment Form](https://www.bcuc.com/Forms/LetterOfComment) available on the BCUC's website at <https://www.bcuc.com/Forms/LetterOfComment>, and submitted by email to commission.secretary@bcuc.com or by mail to the British Columbia Utilities Commission, Suite 410, 900 Howe Street, Vancouver, BC, V6Z 2N3.

DATED at the City of Vancouver, in the Province of British Columbia, this 7th day of December 2023.

BY ORDER

Original signed by:

M. Jaccard
Commissioner

Attachment

Kyuquot Power Limited
Resource Assessment Report

REGULATORY TIMETABLE

Action	Date
KPL notice of Application	Wednesday, December 13, 2023
Deadline to submit request to intervene	Friday, January 5, 2024
Further process	TBD

KYUQUOT POWER LTD.

RESOURCE ASSESSMENT REPORT (2023)

Prepared for
Kyuquot Power Ltd.

For Order G-320-22 Directive 7
by British Columbia Utilities Commission

Report Prepared by

GREG SUNELL CONSULTING
1923 ESQUIMALT AVE, WEST VANCOUVER, BC
DATED OCTOBER 26, 2023

KYUQUOT POWER LTD
Resource Assessment Report (2023)

TABLE OF CONTENTS

1. INTRODUCTION	2
2. SYSTEM LOAD FORECASTS.....	3
2.1 General	3
2.2 System Load Forecasts using Historical Data	3
2.2.1 Forecast Energy Consumption in kilowatt-hours (“kWh”) using Historical Data	3
2.2.2 Forecast Energy Demand in kilowatts (“kW”) using Historical Data	7
2.3 System Load Forecast Changes based on Community Planning.....	9
2.3.1 Recent Historical Changes in Infrastructure affecting System Electrical Loads	9
2.3.2 Forecast Changes in Community Infrastructure affecting System Electrical Loads	10
2.3.3 Forecast Changes due to New Electrification in British Columbia	11
2.3.4 Forecast Changes due to Increases in Electricity Rates.....	12
2.4 KPL System Load Projections over a 10-year term	13
3. POTENTIAL UPGRADES AND SYSTEM CAPACITY	15
3.1 Existing Demand (kW) Capacity.....	15
3.2 Increase in the demand (kW) capacity at the BC Hydro POI.....	15
3.3 Potential customer capabilities to limit peak demand (kW).....	16
3.2.1 Enhanced Monitoring of Peak Demand of KPL System	16
3.2.2 Identification and Monitoring of High Demand Customer Facilities.....	17
3.2.3 Consultation regarding limitations on high electrical demand facilities	18
3.2.4 Consultation regarding partial or full self-generation during short periods of demand loads	19
4. FINANCIAL and other impacts	20
4.1 Costs of an increase in the demand (kW) capacity at the BC Hydro POI	20
4.2 Costs of Enhanced Peak Demand Monitoring.....	20
4.3 Costs of Limitations on High Electrical Demand Facilities	21
4.4 Financial costs of Customer Self-Generation to offset Peak Demand.....	21
5. SUMMARY AND conclusions	22
5.1 Summary of Peak Demand Projections	22
5.2 Long Term Plan for Demand Capacity.....	22

KYUQUOT POWER LTD

Resource Assessment Report (2023)

1. INTRODUCTION

Kyuquot Power Ltd. (“KPL”) owns and operates an electrical distribution system located in the Kyuquot area on Vancouver Island. KPL is regulated by the British Columbia Utilities Commission (“BCUC” or “Commission”) and provides electricity to about forty-two (42) small residential or commercial accounts and one (1) larger account of the Ka:’yu:’k’t’h’ / Che:k’tles7et’h’ First Nations (“KCFN”). The KPL system includes 44km of overhead 14.4kV single phase distribution powerline and 8km of single phase submarine cable (“KPL System”). The KPL System is interconnected to the BC Hydro overhead distribution system at Oucliche (“BC Hydro POI”) and extends to Kyuquot.

In February 2020, the BCUC received a complaint from the KCFN regarding the safety, reliability, service and maintenance of the KPL System (“Complaint”). On May 15, 2020, the BCUC established a hearing to investigate the safety and reliability of the KPL System (“Hearing”).

The Complaint was closed as of October 27, 2022 with the BCUC issuing the final Order G-302-22 (“Final Order”) on October 27, 2022. Directive #7 of the Final Order states:

7. *Within one year of this Order, KPL is directed to file a long-term resource plan with a 10 year forecast and plan setting out how it will meet the forecasted load that supports KCFN’s community aspirations.*

This Resource Assessment Report (2023) (“Assessment Report”) is to complete the requirements of the Directive. The Assessment Report includes the forecasted loads for both KCFN and non-KCFN customers as the resource plan is not exclusive to the KCFN community aspirations.

2. SYSTEM LOAD FORECASTS

2.1 General

The KPL System provides both electrical energy, measured in kilowatt-hours (“kWh”) and electrical demand in kilowatts (“kW”). The electrical demand is measured at any point in time with metered peak demand being the average kW over a 15 minute interval.

The KPL System was designed for delivery of peak demand. The three potential limits regarding the provision of this peak demand are:

- a) the maximum peak demand that BC Hydro can deliver at the BC Hydro POI;
- b) the capacity of the KPL System; and
- c) the capacity of the individual transformers and service connections to customers.

The current limitation for the KPL System is the maximum peak demand electricity (kW) that BC Hydro can provide at the BC Hydro POI. The capacity of the KPL electrical conductors and cables exceeds a value of 1000kW of peak demand. The capacity of the individual KPL transformers and service connections exceeds current needs and can be increased incrementally as required.

During the winter of 2019/2020, BC Hydro was approached regarding the peak demand that BC Hydro could provide at the BC Hydro POI without alterations to the BC Hydro system. The culmination of the approaches was a memo dated June 5, 2020 from Prime Engineering to BC Hydro¹ which included for the use of a standard speed 30A “T” fuse at the BC Hydro POI and allows for a peak demand load of 561kW. On June 9, 2021, BC Hydro issued a renewed electrical service agreement to KPL (“ESA 2022”)² which allows for a peak demand load of 500kW and the installation of the 30A T fuse at the BC Hydro POI.

2.2 System Load Forecasts using Historical Data

The KPL System has been operational since 2006. This Assessment Report has primarily utilized a historical 11-year period from July 1, 2012 to June 30, 2023. The data is organized by fiscal years and monthly time intervals. The fiscal year is July 1 to June 30. The 11-year period allows for consideration of trends in electricity consumption and demand and also matches the duration of available monthly peak demand data from BC Hydro.

2.2.1 Forecast Energy Consumption in kilowatt-hours (“kWh”) using Historical Data

The historical energy consumption of KPL customers for the fiscal years 2011 to 2023 is shown in MWh in Table 2A below.

¹ Hearing – Exhibit D-1 KPL response to BCUC IR1 Appendix A

² Electricity Service Agreement dated 9 June 2021 between BC Hydro and Kyuquot Power Ltd.

KYUQUOT POWER LTD
Resource Assessment Report (2023)

Table 2.1 A – Historical Energy use in MWh for Four (4) main Customer Groups

Fiscal Year	Houpsitas	School	Commercial	Residential	Total	MWh/yr Change
11/12	1,085.4	174.9	198.7	42.2	1,501.2	
12/13	1,020.0	158.6	242.1	40.6	1,463.1	(42.2)
13/14	979.2	168.2	186.9	45.2	1,379.5	0.3
14/15	1,110.6	156.2	188.5	43.4	1,498.7	97.9
15/16	1,044.6	180.4	171.1	39.4	1,435.5	(78.1)
16/17	1,146.6	174.7	215.9	45.5	1,582.6	12.7
17/18	1,206.6	157.4	236.2	44.2	1,644.3	81.6
18/19	1,175.4	176.9	245.0	61.3	1,658.6	(32.3)
19/20	1,243.2	142.8	210.4	54.9	1,652.2	67.7
20/21	1,284.6	160.1	234.2	57.6	1,736.6	17.8
21/22	1,289.4	152.6	226.3	67.5	1,735.9	(0.7)
22/23	1,236.6	153.4	229.4	85.4	1,704.9	(31.0)

The forecast energy consumption for the Total Customers using the regression modelling embedded in the forecast function of Microsoft Excel is shown in MWh in Table 2B and the associated graph below.

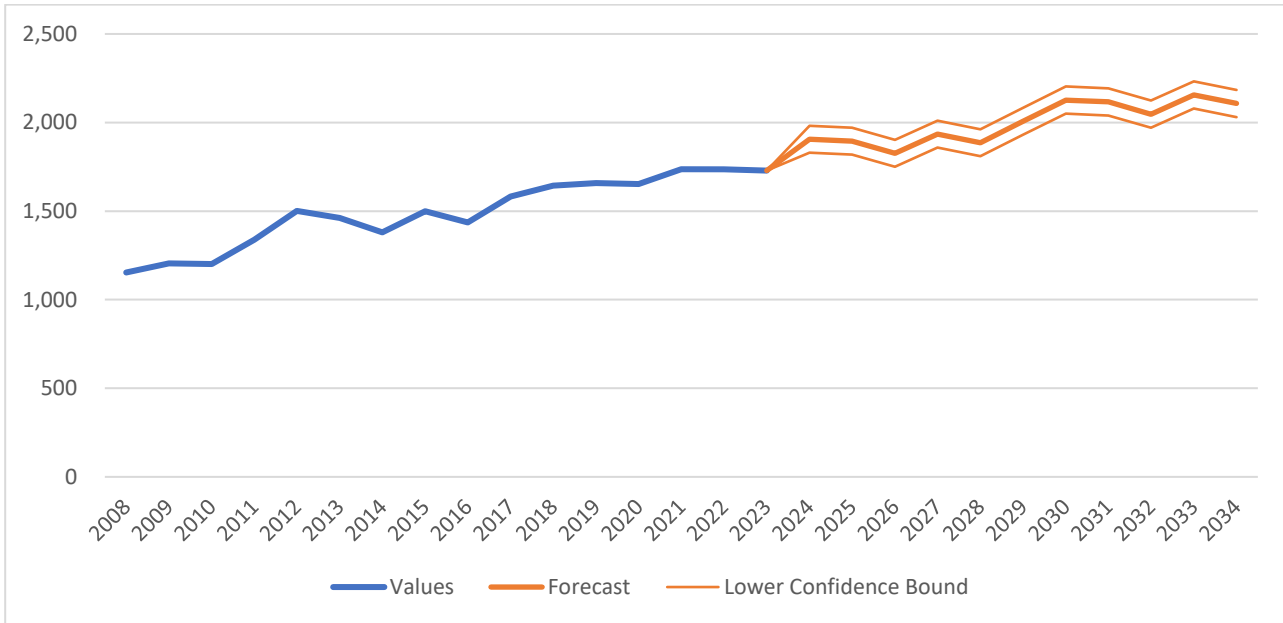
Table 2.1 B - Forecast Energy use in MWh for Total of All Customers (KPL System)

Timeline	Values	Forecast	Lower Confidence Bound	Upper Confidence Bound
2008	1,154			
2009	1,204			
2010	1,202			
2011	1,338			
2012	1,501			
2013	1,461			
2014	1,380			
2015	1,499			
2016	1,436			
2017	1,583			
2018	1,644			
2019	1,659			
2020	1,652			
2021	1,737			
2022	1,736			

KYUQUOT POWER LTD

Resource Assessment Report (2023)

2023	1,705	1,705	1,705	1,705
2024		1,899	1,817	1,982
2025		1,887	1,804	1,970
2026		1,819	1,736	1,902
2027		1,928	1,845	2,010
2028		1,878	1,796	1,961
2029		1,997	1,914	2,080
2030		2,119	2,035	2,202
2031		2,106	2,023	2,190
2032		2,038	1,955	2,122
2033		2,147	2,063	2,230
2034		2,098	2,014	2,181



The Compound Average Growth Rates for All Customers over the Historical period is 2.64% and over the Forecast Period is 1.90%.

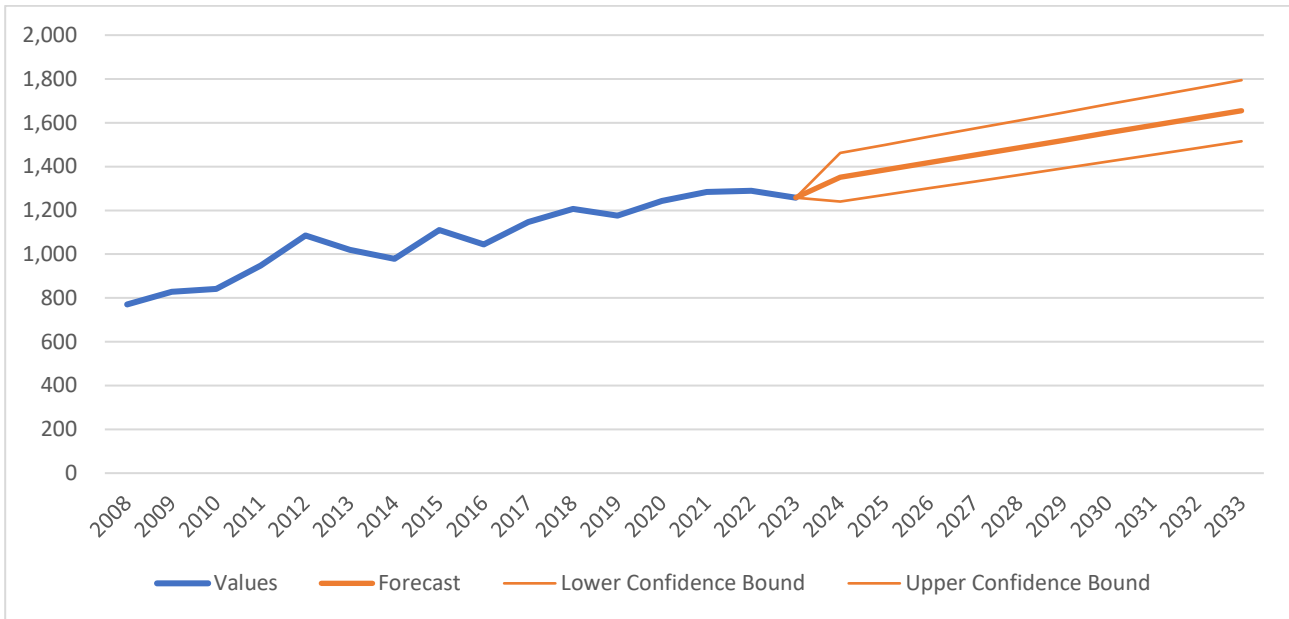
Energy use in Houpsitas represents over 70% of total energy use in kWh for the KPL System. Accordingly, a forecast energy consumption for Houpsitas is provided as additional information. The forecast energy consumption for Houpsitas alone using the regression modelling embedded in the forecast function of Microsoft Excel is shown in MWh in Table 2.1 C and the associated graph below.

KYUQUOT POWER LTD
Resource Assessment Report (2023)

Table 2.1 C - Forecast Energy use in MWh for Houpsitas only

Timeline	Values	Forecast	Lower Confidence Bound	Upper Confidence Bound
2008	770			
2009	828			
2010	841			
2011	948			
2012	1,085			
2013	1,020			
2014	979			
2015	1,111			
2016	1,045			
2017	1,147			
2018	1,207			
2019	1,175			
2020	1,243			
2021	1,285			
2022	1,289			
2023	1,237	1,237	1,237	1,237
2024		1,344	1,229	1,459
2025		1,377	1,258	1,496
2026		1,410	1,288	1,533
2027		1,444	1,318	1,569
2028		1,477	1,348	1,606
2029		1,510	1,378	1,642
2030		1,543	1,408	1,679
2031		1,577	1,438	1,715
2032		1,610	1,468	1,752
2033		1,643	1,498	1,788

KYUQUOT POWER LTD
Resource Assessment Report (2023)



The Compound Average Growth Rates over the Historical period is 3.21% and over the Forecast period is 2.87%.

2.2.2 Forecast Energy Demand in kilowatts (“kW”) using Historical Data

The monthly peak demand for the KPL System as measured by a BC Hydro demand meter located at the BC Hydro POI for the historical period is shown in Table 2.2 A.

Table 2.2 A – Monthly Peak Demand in kW by fiscal year.

Fiscal Year	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	Annual
11/12	276	276	276	272	297	295	314	297	265	262	244	265	314
12/13	253	253	215	265	287	287	269	292	278	272	272	252	292
13/14	225	246	252	244	292	292	292	269	262	288	239	222	292
14/15	219	222	292	295	259	343	342	330	356	289	212	260	356
15/16	272	238	280	291	331	331	279	279	279	279	241	285	331
16/17	233	259	262	279	279	328	279	325	309	280	241	273	328
17/18	255	237	237	315	328	412	420	324	320	281	241	273	420
18/19	315	266	237	266	349	447	379	379	310	327	317	285	447
19/20	301	269	318	334	423	489	475						489
20/21		303	357	375	367	388	399	349	341	310	306	270	399
21/22	241	258	305	350	350	411	388	364	342	367	333	283	411
22/23	274	249	214	352	369	379	384	397	386	366	264	261	397

Notes

- a) No data is included for Feb 2020 to July 2020 inclusive due to the failure of the BC Hydro meter
- b) BC Hydro billing period is approximately from the 15th day of one month to the 15th day of the following month. The month in the table is the start month, e.g. the Jul 15 – Aug 15 period is tabulated under the month of July

KYUQUOT POWER LTD

Resource Assessment Report (2023)

The historical annual peak demand has occurred during the winter months of November to February (“Winter Months”) in all years except for fiscal 14/15. The annual peak demand is expected to occur during the Winter Months due to the conditions being darker and colder.

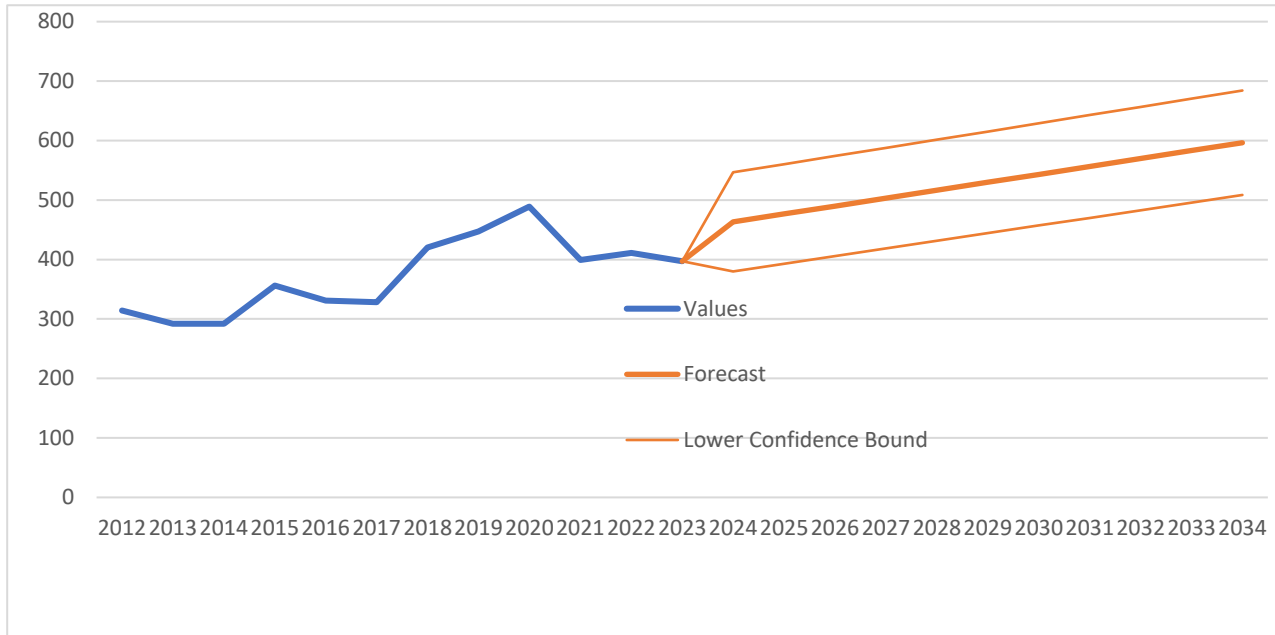
The historical and forecast annual peak demand is shown on Table 2.2 B and graphically below:

Table 2.2 B – Forecast Peak Demand in kW by fiscal year

Timeline	Values	Forecast	Lower Confidence Bound	Upper Confidence Bound
2012	314			
2013	292			
2014	292			
2015	356			
2016	331			
2017	328			
2018	420			
2019	447			
2020	489			
2021	399			
2022	411			
2023	397	397	397	397
2024		463.2	379.95	546.55
2025		476.6	392.83	560.29
2026		489.9	405.71	574.03
2027		503.2	418.58	587.77
2028		516.5	431.45	601.52
2029		529.8	444.31	615.28
2030		543.1	457.16	629.05
2031		556.4	470.01	642.82
2032		569.7	482.85	656.59
2033		583.0	495.69	670.37
2034		596.3	508.52	684.16

The compound average growth rates of peak demand over the historical period is 2.16% and over the forecast period is 3.77%

KYUQUOT POWER LTD
Resource Assessment Report (2023)



2.3 System Load Forecast Changes based on Community Planning

2.3.1 Recent Historical Changes in Infrastructure affecting System Electrical Loads

The number of KPL customer accounts has been relatively stable since commencement of operations in 2006. There has been an increase over the last ten years from 39 accounts in 2011 to 41 accounts in 2023. Further, the population in the Kyuquot area³ and school enrollment has also been relatively constant over the past 12 years.

Over the 11 year period from Fiscal 2012 to Fiscal 2023, total annual electricity consumption increased 14% from 1501 MWh to 1705 MWh and annual peak demand increased 26% from 314 kW to 397 kW. Accordingly, the increases in electricity use is believed to largely reflect changes in local infrastructure, including an increase in the use of electric heating and electric hot water.

The historical changes in infrastructure over the past 11 years includes the following;

- a) The facilities at Fair Harbour have been upgraded to include new cabin accommodation, new water/sewerage supply and an upgraded/new convenience store and marine fueling capability. From 2012 to 2023, the annual electrical consumption at Fair Harbour increased 96% from 28 MWh to 57 MWh
- b) For Houpsitas, a number of residential housings, community buildings and infrastructure facilities (eg new barge landing) have been constructed. In addition, upgrading of existing residential housing has

³ Statistics Canada Census 2016

KYUQUOT POWER LTD

Resource Assessment Report (2023)

included for provision of electric hot water and electric heat. From 2012 to 2023, the annual electrical consumption for Houpsitas increased 14% from 1085 MWh to 1237 MWh.

- c) The school and teacherages operated by School District 84 (“SD84”) is the second largest KPL customer account and represents about 10% of the total electrical consumption. SD84 has undertaken significant upgrades to its facilities including new electric boilers, an electrical service upgrading (from two to one electrical service connections), installation of new backup generation capabilities including battery storage and solar power installation. The school and teacherage buildings have been continuously expanded and/or renewed. From 2012 to mid 2020, the annual electrical consumption was relatively steady and averaged about 172 MWh. Since the completion of the latest electrical upgrades, including the solar power installation in the spring of 2020, the annual electricity consumption has decreased to an average of 153 MWh.
- d) Residential and Commercial customers on and around Walters Island have increased their electrical consumption mostly through some new residential buildings and an increase in electrical consumption by the fishing resorts. Higher electricity consumption has resulted from increased cooling in summer (such as new freeze packing) and increased heating/occupancy loads in winter. In terms of decreased electricity consumption, the largest decrease has been the relocation of Walters Cove Resort, previously the largest commercial user of electricity, to a floating facility located outside KPL’s service area. From 2012 to 2023, the annual electrical consumption of Residential and Commercial customers combined has increased 31% from 241 MWh to 315 MWh.
- e) The logging camp at Chamiss Bay has continued to utilize self-generation using diesel generators and has purchased nominal electricity from KPL. The forestry tenure and special use permits for the Chamiss Bay camp are in the process of being purchased by the KCFN from Interfor. Interfor has been the holder since before the commencement of KPL operations in 2006.

2.3.2 Forecast Changes in Community Infrastructure affecting System Electrical Loads

The forecast changes in community infrastructure affecting KPL System electrical loads for the next 10 years is as follows;

- a) Houpsitas: KPL has contacted the KCFN on a number of occasions requesting to be updated on community plans for Houpsitas for new residential/commercial/institutional facilities over the next ten years. In addition, KPL requested information regarding any planned electrical generation facilities, planned demand side management, if any, and other potential actions which would affect electricity use. KCFN have not provided any information to KPL.
- b) SD84: Correspondence between SD84 and KPL in 2022 indicated plans for a new primary service connection to the school which would enable the two existing electric boilers to be operated concurrently as well as provide additions heating for the school air exchangers. There was also consideration of providing additional electric heating/hot water availability to the teacherages. Subsequently, SD84 decided on an alternative plan to relocate the service connections to the teacherages to be directly connected to the KPL system (from the SD84 distribution system). SD84 has stated that the relocation is due to capacity constraints on the SD84 distribution system and not due to anticipated increases in electricity consumption.

KYUQUOT POWER LTD

Resource Assessment Report (2023)

KPL recently contacted SD84 regarding longer term plans regarding potential upgrading of the school and teacherage facilities as well as any projections of changes, if any, to the number of students or staffing levels for the school. The response was that current plans include for a stable level of students and staff and for some infrastructure improvements such as a renewed gymnasium and substitution of new classrooms for the existing portables. SD84 did not provide any information regarding longer term planning.

- c) Residential and Commercial: Most of the available lot parcels on Walters Island and the surrounding islands incorporate existing buildings with the exception of the lots held by a corporation involved in commercial fisheries. The provincial government has a long standing policy not to sell or lease any additional land on Walters Island to the general public. Over the past 10 years, there has been a few houses/cabins/lodges constructed which resulted in the two additional residential customer accounts between 2012 and 2023. KPL is not aware of any residential development plans for Walters Island, although KPL has not canvassed the local community. Further, KPL is not aware of any existing fishing lodge or other businesses which expect to cease or commence operations.

KPL has contacted KCFN Marina and Campground Ltd. which previously operated the largest fishing lodge on Walters Island. In 2020, due to structural deficiencies in the lodge, the business was relocated to a floating facility located outside KPL's service area. KPL was advised that there are no current plans to cease the floating facilities and re-instate the business on Walters Island.

- d) Chamiss Bay: KPL understands that KCFN and its limited partnership, Tiicma Enterprises ("Tiicma"), upon completing the purchase of Interfor forestry tenures/assets/operations, intends to continue operations at/from Chamiss Bay. The existing scale of logging operations for the next few years is expected to continue. The existing camp facilities at Chamiss Bay are anticipated to be partly renewed/updated/replaced. The expected logging sub-contractor for Tiicma has previously stated a preference for utilizing electricity from KPL which was not followed through by Interfor. KPL believes that electricity from the KPL System would be less expensive and more convenient than remaining with the existing diesel generation. KCFN and Tiicma can be expected to be assessing all of their current and future electricity needs prior to Tiicma making an application for electrical service to connect the Chamiss Camp to the KPL System and utilizing electricity from KPL.

2.3.3 Forecast Changes due to New Electrification in British Columbia

The government of British Columbia has been embarking on a provincial electrification program. Two of the main focal points of the program for communities are electrification of transportation and electrification of heating load.

Regarding electrification of transportation, the community of Kyuquot is largely unaffected. Water transportation predominates with vehicles primarily used for transportation from Winter Harbour to elsewhere on Vancouver Island. The conversion of marine engines from fuel to electricity is not expected to be widespread in remote locations in the foreseeable future.

Regarding electrification of heating load, the cost of heating by electricity for the Houpsitas community has been competitive with other heating fuels for a number of years. Accordingly, much of the heating load (including hot water) within Houpsitas is electrified and electricity use for heating has been increasing since commencement of KPL operations in 2006. KPL understands that over 70% of houses within

KYUQUOT POWER LTD

Resource Assessment Report (2023)

Houpsitas are utilize electric hot water tanks. Forecast increases in electricity use for Houpsitas based on historical energy consumption is anticipated to account for increases in use of electrical heating. No allowance has been made for the potential decrease in electricity use should resistive heating be replaced by heat pumps.

The provincial electrification program is not considered to be a likely cause of an abnormal increase in electricity consumption in Kyuquot over the next 10 years.

2.3.4 Forecast Changes due to Increases in Electricity Rates

KPL has two electricity rate schedules, namely: Rate Schedule 1101 – All customers except those on Schedule 1102; and Rate Schedule 1102 – KCFN served through the electric meter at Houpsitas. The difference in rates is due to a substantial contribution in aid of construction provided by the KCFN between 2008 and 2012. The electricity rates over the KPL operating period are as shown in Table 2.3 A.

TABLE 2.3 A – KPL Electricity Rate Table in 2 year increments

Fiscal Year	Schedule 1101 Average Rate	Schedule 1101 Average Annual % Increase	Schedule 1102 Average Rate	Schedule 1102 Average Annual % Increase
2007	35.00		35.00	
2009	35.00	0.0 %	22.94	-17.2 %
2011	37.58	3.7 %	20.85	-4.6 %
2013	39.05	2.0 %	18.88	-4.7 %
2015	39.65	0.8 %	19.30	1.1 %
2017	39.70	0.1 %	19.30	0.0 %
2019	39.70	0.0 %	19.30	0.0 %
2021	39.70	0.0 %	19.30	0.0 %
2023	40.26	0.7 %	22.70	8.8 %
2025	42.3 (Projected)	2.5 %	25.2 (Projected)	6.2 %

For the calendar years 2007 to 2020, the annual change in the Canadian Consumer Price Index (“CCPI”) varied from 0.733% to 2.377% and averaged about 1.9%. For calendar 2021 and 2022, the change in CCPI was 4.80% and 6.32% respectively.

The latest annual increases in Schedule 1101 rates of 0.7% and 2.5% do not appear to be at a level to cause a change in the longer-term growth of electricity use of Schedule 1101 accounts.

The latest annual increases in Schedule 1102 rates of 8.8% and 6.2% may be at a level to cause a decrease in the longer-term growth of electricity use by the Schedule 1102 account. The Houpsitas residents pay

electricity rates as determined by the KCFN and may not mirror changes in KPL electricity rates. If the KPL electricity costs and increases were to be fully recouped from Houpsitas residents, there could be a decrease in electricity consumption, particularly for electric heating.

2.4 KPL System Load Projections over a 10-year term

Historically, KPL has a relatively consistent number and mix of customers. The number of accounts include about 23 residential, 17 commercial, one school district and one community of Houpsitas. The accounts do not include a large industrial account.

Historically, electricity use on the KPL System has increased at an annual average of about 2.7% with an annual average increase in kW demand of about 2.1%. Average annual increases in electricity of the largest customer, Houpsitas, representing more than 70% of total electricity use have been about 3.3%. Historically, there has been significant year to year variation in electricity use including a maximum increase of 97.9 MWh per year (7%) and a maximum decrease of 78.1 MWh per year (5%).

With due consideration to available information, KPL is unaware of near term plans or community aspirations which would markedly increase or decrease the electricity use on the KPL System (within the existing cost of service expectations). However, KPL does consider it likely that a significant increase in electricity use could be requested for the logging camp operations at Chamiss Bay. However, the extent of the increase of a Chamiss Bay operations to peak demand on the KPL System is not determinable at this time due to the seasonal nature of current operations (which may change under new ownership) and the current existence and use of diesel generation (historically used during times of camp occupation). A couple years ago, KPL and Interfor estimated that a 75kVa pole-mounted transformer would suffice to meet the projected loads for Chamiss Bay, assuming only nominal diesel generation.

KPL considers that the most reasonable forecast of system load projections over the next 10 years is by utilizing historical information. However, the very small size of the KPL loads has historically resulted in significant annual changes from individual customer actions/inactions and KPL anticipates that any long-term forecast is inherently unreliable.

The KPL system load projections, for this report, uses algorithms based on historical data to calculate a energy and energy demand.

The KPL system load projection over the longer-term ending June 30, 2034 is as follows:

a) For Energy Consumption in MWh

Forecast MWH for Fiscal 2034 is 2,098 MWh or 240 kW average consumption. The actual MWH for Fiscal 2023 is 1,705 MWh. The average compound growth rate from fiscal 2023 to fiscal 2034 is 1.90% which is comparable but less than the average compound growth rate from fiscal 2008 to fiscal 2023 of 2.64%.

b) For Energy Demand in MW

Forecast annual peak demand for Fiscal 2034 is 596 MW. The actual peak demand for Fiscal 2023 was 397 MW, although a prior peak demand of 489 MW was recorded in Fiscal 2020. The average compound growth rate from fiscal 2023 to fiscal 2034 is 3.77% which is comparable but

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Resource Assessment Report (2023)

higher than the average compound growth rate from fiscal 2012 to fiscal 2023 of 2.16%. The growth rate of 3.77% exceeds the projected MWh growth rate of 1.77% as well as the historical demand (kW) growth rate of 2.16% and may be due to a “low” starting value of 397 kW in 2023.

The system load projection at fiscal 2034 for energy consumption of 2,098 MWh does not have an impact on the existing KPL system design.

The system load projection at fiscal 2034 for annual demand (kW) of 596 kW exceeds the existing demand capacity as measured by the maximum kW demand permitted by BC Hydro under either the ESA (maximum 500 kW) or the design limit of the 30T fuse (maximum 550 kW). Further, the upper confidence bound (95 percentile) in fiscal 2025 of 560 kW equals the fuse capacity maximum. Accordingly, the system load projection in kW demand does need to be addressed.

3. POTENTIAL UPGRADES AND SYSTEM CAPACITY

3.1 Existing Demand (kW) Capacity

The current limitation on the KPL System demand (kW) capacity is limiting of the BC Hydro system to supply the demand (kW) as provided in the current Electricity Supply Agreement between KPL and BC Hydro (“ESA”). The stated capacity in the ESA is 500kW of demand using a 30T fuse at the BC Hydro POI. The 30T fuse can be expected to fail at a demand of about 550kw.

The 2006 design parameters for the KPL System included for a maximum demand from BC Hydro of about 750 kW using a 40T fuse at the BC Hydro POI. At that time, BC Hydro proposed a significant fee to upgrade to its system to be able to provide a demand capacity of 750 kW. Based on cost savings, KPL elected to reduce the maximum demand available from BC Hydro and entered an Electricity Supply Agreement with BC Hydro at a reduced demand (kW) capacity. In 2020, BC Hydro reviewed its system capacity and the current ESA was offered to and accepted by KPL. There was no BC Hydro fee required for the current ESA.

To meet the 10 year forecast increases in demand (kW) from KPL customers, the following alternatives are available:

- a) Increase in the demand (kW) capacity to about 700 kW at the BC Hydro POI, and/or
- b) Limit the demand (kW) capacity to about 550kW through reliance on KPL customer actions.

A demand capacity of 700 kW exceeds the forecast annual peak demand in 2034 of 596 kW and exceeds the upper confidence level in 2034 of 684kW.

3.2 Increase in the demand (kW) capacity at the BC Hydro POI

The capability of the BC Hydro system to additional demand (kW) at the BC Hydro POI can only be determined by BC Hydro.

KPL made an application to BC Hydro in July 2021 to increase the maximum demand (kW) of electrical supply to the KPL System to 750kW (“2021 Application”). The 2021 Application was for prospective energy loads within the KPL system.

BC Hydro made an initial recommendation that the configuration of the BC Hydro system from Zeballos and the KPL system should be upgraded to three phase from single phase. KPL advised BC Hydro that an upgrade of the BC Hydro and KPL Systems to three phase was previously studied by BC Hydro in 2008 and was not financially feasible. KPL requested BC Hydro to review alternatives and, if required, to reduce the requested demand capacity of 750 kW.

BC Hydro has advised that there were delays in their studies in the summer of 2022 but that the alternative of increasing electrical capacity at the BC Hydro POI using the existing single phase configuration is continuing. Early verbal indications are that an increase of more than nominal capacity is possible, although no determination of the costs has been provided.

3.3 Potential customer capabilities to limit peak demand (kW)

The current maximum BC Hydro system demand kW capability based on the 30T fuse is about 550kW. The 10-year load forecast includes for 550kW to be exceeded by 2025 on an upper confidence (95% likelihood) scenario and 2031 based on the most probable (50% likelihood) scenario.

The historical KPL System demand in kW has been highly variable including for an annual peak of 489 kW in fiscal 2020 followed by an annual peak of 411 kW over the three fiscal years period of 2021 to 2023. The forecast annual peak demand for fiscal 2024 based on historical peak demand analysis is about 463 kW, an increase of 16% from fiscal 2023.

The limiting of annual peak demand (kW) on KPL's system would eliminate the risk of outages caused by peak demand exceeding the capacity at the BC Hydro POI. Such an outage, is caused by the failure of the 30T fuse at the BC Hydro POI. A 30T fuse failure would be expected to result in an outage duration of 6 hours to 24 hours. KPL customers experience on average, about 8 power outages per year, with outages originating about equally on the KPL system or the BC Hydro system

The planning for KPL with respect to potential limiting future annual peak demand (kW) on KPL's system includes the following:

- a) Enhanced monitoring of peak demand of the KPL System to provide additional peak demand information including near real time results.
- b) Identification and monitoring of high electrical demand customer facilities in use.
- c) Consultation regarding limitations on high electrical demand customer facilities during short annual peak demand (kW) times.
- d) Consultation regarding capacity for customer partial or full self-generation during short annual peak demand (kW) times.

3.2.1 Enhanced Monitoring of Peak Demand of KPL System

The peak demand of the KPL System is measured at the BC Hydro meter located at the BC Hydro POI. The monthly meter readings are manually downloaded and there is no remote communication capability. Further on occasion, usually during winter periods, BC Hydro will skip the monthly meter reading. The BC Hydro meter uses a maximum demand toggle which is reset manually at the time of reading. Accordingly, the available demand meter information is the single maximum kW between each resetting of the toggle switch.

The monthly peak demand in kW for the fiscal years 2012 through 2023 are provided in Table 2.2 A. The annual peak demand occurs most commonly during the November 15 to March 15 period. The available demand data is very limited. A more comprehensive analysis of peak demand on the KPL System could be provided by using an enhanced meter that provides continuous interval readings (often 15 min intervals to match BC Hydro billings) in digital form. The enhanced meter needs to be accessed remotely to provide timely, cost-effective information.

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Resource Assessment Report (2023)

It is assumed that BC Hydro could provide enhanced metering at the BC Hydro POI in much the same manner as provided for Independent Power Producers (“IPP”). BC Hydro provided enhanced metering involves a significant capital cost as well as higher operating costs. The operating costs include a monthly lease and information access cost of about \$3,000 per month plus the cost of the communication provider (at the IPP’s expense). The BC Hydro nominated communication provider fees are estimated at about \$300 per month.

Alternatively, KPL could arrange for its own enhanced metering at a lower capital and operating cost. To facilitate lower communication costs, the meter would be located at Fair Harbour, just prior to the Fair Harbour electrical loads. Based on other completed installations, Primary Engineering and Construction have estimated the capital cost of purchase and installation of an enhanced meter option to be less than \$10,000 and operating costs of about \$100 per month (assuming reasonable costs and access to Wi-Fi currently available at Fair Harbour).

Enhanced monitoring of peak demand would enable KPL to better understand the nature and duration of high demand periods as well as potentially being able to identify the timing of significant single customer loads.

It is recommended that KPL proceed with enhanced metering that can be remotely interrogated.

3.2.2 Identification and Monitoring of High Demand Customer Facilities

KPL customers are mostly small residential or commercial customers with electrical service connections rated for 120 volt and either 50, 100 or 200 amperes. KPL has three larger capacity service connections, namely;

- a) KCFN Marina and Campground account at Fair Harbour.

This service connects to a 600-ampere main breaker. The Fair Harbour facilities include a convenience store, three cabins for overnight guests, freshwater pumping, sanitary sewerage facilities and marine fuelling facilities. Currently, the facilities do not include an ice plant. This account typically uses about 5,000 kWh per month in the winter season (average use of 7 kW).

KPL is unaware of any high demand facilities of this customer.

- b) School District 84 (“SD84”) account for the Kyuquot Elementary Secondary School and associated Teacherages

This service connects to a 400-ampere main breaker. KPL has been advised that a current of 350 amperes has been measured at the main breaker on a few occasions. Further, KPL understands that the school heating facilities include two electric boilers, each of which is connected to an individual 200 ampere breaker. The boilers are configured such that only one boiler can be operated using KPL electricity at any time. The second boiler can be operated concurrently using self-generated electricity. The peak demand of each boiler is understood to be about 40 kW.

- c) KCFN account at Houpsitas

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Resource Assessment Report (2023)

KPL provides a primary service at 14.4kv to the KCFN electrical distribution system located at Houpsitas. The KCFN distributes electricity at 14.4kV and provides overhead service to over 60 metered buildings. In most cases, pole mounted transformers are used to lower the voltage to the building service level of 120/240 volts.

The KCFN account at Houpsitas represents over 70% of the total KPL electricity use. The annual electricity use is about 1,300 MWh or an average of 148 kW. The peak monthly winter electricity use is about 160 Mwh or an average of 222kW. The KPL meter for Houpsitas includes for peak demand (kW) data based on monthly readings.

KPL does not have a listing of the KCFN accounts or their individual demand load requirements. As a part of submissions to the BCUC, the KCFN included updated drawings of their distribution system. The drawings listed ten (10) non-houses, namely an Administration office, Motel, Community Centre, Public Works shop, Medical Clinic, Kindergarten, Trailer site, water pump (at storage tank), Quarry site and water wellhead. As a better measure of potential high demand loads, the following transformers larger than 50kVa were listed, one (1) only 100kVa and four (4) only 75kVa transformers. The 100kVa transformer appeared to service the Kindergarten, Administration office and Medical Clinic. The 75kVa transformers appeared to service single and multiple housing units.

KPL intends to consult with the KCFN to determine the presence and use of any large electrical demand loads and the capability of manually isolating those loads at specific times.

KPL is anticipating the installation of advanced metering for the KPL system. The advanced metering would include for continuous data of electrical demand and for remote monitoring. The electrical demand data would be compared to the data from the BC Hydro meter at the BC Hydro POI and the data from the Houpsitas meter to determine if there is a casual relationship between the peak demands on each of the meters.

3.2.3 Consultation regarding limitations on high electrical demand facilities

Depending on the rate of escalation of peak demand on the KPL system and the potential increase in peak capacity at the BC Hydro POI, KPL and specific customers (likely the KCFN and SD84) should engage in consultation to consider the feasibility of restricting or limiting the use of high electrical demand facilities during anticipated annual peak demand periods.

For escalation of peak demand and based on the forecast peak demand listed in Table 2.2 B, the need for limitations on high demand facilities would commence in about year 2031. The peak demands shown in the upper confidence values in Table 2.2 B would most likely occur due to the installation of some new high demand facilities in the KPL service area. It is expected that these facilities would be disclosed to KPL at the time of installation.

An initial limitation target of 60kW would provide over a 10% decrease in the peak demand. The peak demand in year 2034 would then be less than the 30T rating of 350kW.

3.2.4 Consultation regarding partial or full self-generation during short periods of demand loads

The KCFN maintain and operate standby generation to cover 100% electrical supply to Houpsitas. The standby generation is fully automated and provides rapid start-up at times of outage occurrences on the KPL system.

SD84 maintains and operates standby generation for a portion of the school loads. The standby generation can operate in isolation and be used for heating load from the second boiler and auxiliary sources. The standby generation is not used to maintain school operations during outages on the KPL System.

As an alternative to limitations on high electrical demand facilities, KPL, KCFN and SD84 could engage in consultation regarding the ability to manually interconnect existing standby generation to the KPL system for use during times of peak demand on the KPL system.

With regard to operating costs, the fuel cost of operating the self-generation facilities approximates the tariff cost of electricity supplied by KPL.

4. FINANCIAL AND OTHER IMPACTS

4.1 Costs of an increase in the demand (kW) capacity at the BC Hydro POI

The feasibility, potential changes and costs for increasing the demand capacity at the BC Hydro POI are unknown at this time.

If feasible, BC Hydro will likely require payment of upfront fees from KPL for changes to the BC Hydro system to increase the demand capacity at the BC Hydro POI. In addition, costs may be incurred to make changes to the KPL system (to be compatible with the BC Hydro changes).

If feasible, KPL expects to propose the BC Hydro upfront fees be a regulatory asset, amortized over the approximate 25 years of remaining service life of the overhead powerline with a return based on KPL's weighted average cost of capital ("WACC"). Any changes to the KPL system would likely be fixed asset additions with the service life depending on the asset but not greater than the service life of the BC Hydro regulatory asset.

KPL's current weighted average cost of capital is expected to be about 7.0%. The annual cost to customers per \$150,000 of the costs for changes to the BC Hydro and KPL systems would approximate \$17,000 in the first year. Based on the current total annual electricity sales of 1,800,000 kWh, the increase in electricity rates in year one for KPL customers would be under \$0.01 per kWh.

If financially feasible, KPL would seek approval of the BCUC of the costs of an increase in the demand (kW) capacity at the BC Hydro POI prior to proceeding with the expenditures.

4.2 Costs of Enhanced Peak Demand Monitoring

The cost of enhanced peak demand monitoring is highly dependent on the metering provided.

For standard revenue metering purposes which provides kWh, KW and kVa, the cost of BC Hydro supply and installation of a meter at 14.4volt primary single phase service is about \$20,000. BC Hydro typically can provide a customer a summary of 5 minute readings daily assuming that the customer provides the remote data transmission. The monthly cost from BC Hydro is about \$300 per month for meter lease and provision of data. The cost to provide remote data transmission is about \$50-\$200 per month depending on the availability of cell service. Currently, there is no cell service availability at the BC Hydro POI. Accordingly, the monthly cost to KPL of procuring demand data from the BC Hydro POI once daily, would cost about \$500 per month or \$6,000 per year of operating costs.

The cost of peak demand monitoring could be reduced by KPL installing its own enhanced metering near Fair Harbour where internet service is available, although service is less reliable than in larger communities. The cost of an enhanced meter installation is estimated at \$10,000 per installation with data acquisition costs estimated as \$200 per month, although no data is required for the 6 months annually that demand peaks are subdued. The annual operating cost would be less than \$2,000 per enhanced meter.

The regulatory cost of enhanced metering located near Fair Harbour based on 15 year amortization and WACC is about \$1,700 for the initial year. The annual operating expense is about \$6,000 per year. Based on the current total annual electricity sales of 1,800,000 kWh, the increase in electricity rates in year 1 for customers would be \$0.002 per kWh. For the BC Hydro supplied meter at the BC Hydro POI and applying

the same cost parameters the resulting increase in electricity rates in year 1 for customers would be \$0.005 per kWh.

4.3 Costs of Limitations on High Electrical Demand Facilities

KPL may be able to identify high electrical demand facilities that could be isolated or turned off during short-term peak demand periods. For the purposes of this report, KPL is assuming that the duration and frequency of short-term demand periods would be less than 4 hours for each event and that occurrences would be less than on 4 consecutive days and less than 10 days in total in any year. Further, the isolation or shutdown of the electrical load would be inconvenient but would not result in the closing of the affected building. For instance, the isolation of the second boiler at the school would mirror the existing arrangement of facilities such that while heating times and air exchanges may be reduced, the school remains open with classes unchanged.

It is anticipated that there would be a small number of high electrical demand facilities that could be isolated or turned off during short-term demand periods. Further, the facilities would likely be under the control and administration of the KCFN or SD84. There would be cost incurred by the owner of the facilities for the administration of potential or actual isolation events, which costs may be difficult to quantify. KPL would likely propose for a fixed payment to the facility owner for each occasion of isolation. For example, KPL could make a payment of \$500.00 for each isolation.

There would be no regulatory cost of the limitations as there would only be an informal agreement between KPL and KCFN or SD84. The annual operating cost, excluding isolation payments, would be expected to be less than \$1,000 and unlikely to be an identifiable operating expense for setting of electricity rates.

4.4 Financial costs of Customer Self-Generation to offset Peak Demand

The potential ability and costs of customer self-generation to offset peak demands on the KPL System has not been discussed between KPL and any of its customers including the KCFN and SD84. Without knowledge of the capacity or willingness to consider customer self-generation, the financial costs of customer self-generation to offset peak demands cannot be estimated.

5. SUMMARY AND CONCLUSIONS

5.1 Summary of Peak Demand Projections

The KPL System peak demand as measured by BC Hydro at the BC Hydro POI in fiscal 2023 was 397 kW. The maximum and minimum historical peak demand over the period of record of fiscal 2012 to fiscal 2023 was 489 kW in fiscal 2020 and 292 kW in fiscal 2013. A projection of peak demands over the period fiscal 2024 to fiscal 2034 includes for a compound annual rate of increase of 3.77% resulting in a probable forecast peak demand in fiscal 2034 of 596 kW. The analysis of peak demands is limited by the length of existing record, the annual variability in peak demand and the lack of physical understanding of the causes in annual changes to peak demand. Accordingly, there are some apparent anomalies in the projections such as the compound growth rates over the historical and projected periods for consumption in kWh of 2.74% and 1.82% respectively and for demand in kW of 2.16% and 3.77% respectively. The projections for fiscal 2024 to 2034 also includes upper and lower confidence bounds which are understood to be about 5% / 95% probability limits (subject to data limitations).

The KPL System limitation is the peak demand that can be supplied by BC Hydro at the BC Hydro POI. The stated contractual capacity in the BC Hydro Electricity Supply Agreement with KPL is 500kW of demand using a 30T fuse. The physical limit of capacity of the 30T fuse is about 550 kW.

The probable forecast peak demand is 503 in fiscal 2027 and 556 in fiscal 2031. The upper confidence boundary of peak demand is 560 in fiscal 2025.

5.2 Long Term Plan for Demand Capacity

KPL is a very small utility which uses cost effective methodologies to provide electricity to customers at affordable rates. The KPL distribution plant is essentially unchanged since commencement of operations in 2006, except for some customer transformer upgrading and conductor realignment.

Based on the forecast projections, the KPL system may reach the existing limit of demand capacity (kW) available from BC Hydro at the BC Hydro POI over a planning horizon extending to 2034. The limit of demand capacity could be reached within the next few years should a step increase in customer consumption occur due to new/increased electrical loads in the Kyuquot area. The Chamiss Bay camp, assuming new ownership by the KCFN is finalized, is an example of a potential significant electrical load increase.

There are a number of financially feasible alternatives for KPL to resolve the demand capacity (kW) issue which could include the following:

- a) Increasing the supply capability from BC Hydro at the BC Hydro POI.
- b) Decreasing the future winter peak demand (kW) by limiting use of specific customer facilities.
- c) Decreasing the future winter peak demand (kW) by utilizing self-generation by customers during winter peak demand periods

In 2021, KPL made an application to BC Hydro for an increase in demand capacity at the BC Hydro POI to 750kW. BC Hydro is continuing to review the application for a financially feasible solution, albeit that

KYUQUOT POWER LTD

Resource Assessment Report (2023)

the demand capacity may be less than 750kW. If a feasible solution is determined, KPL anticipates seeking BCUC approval through a Certificate of Public Convenience or similar application. The approval would include the rate impacts.

KPL is expecting to engage its customers regarding the potential for limiting use of specific customer facilities and/or utilizing self-generation by customers during winter peak demand periods, if necessary, after the completion of the review by BC Hydro of the KPL application for an increase in demand capacity at the BC Hydro POI.

KPL system demand (kW) data is currently limited to the single peak demand reading occurring each month during the BC Hydro billing cycle. KPL will be installing advanced metering capable of providing real-time demand (kW) on the KPL system with remote interrogation capability. The advanced metering will be installed near Fair Harbour and will provide real time data of the demand (kW) during winter peak demand periods.