MEMORANDUM TO COUNCIL

To: Mayor and City Council Members
From: Erin Reinders, City Manager
Date: June 23, 2020
Re: Geothermal Project Analysis

SUMMARY: Mike Hubbard will present his report and cost/benefit/risk analysis regarding a PPA with OCCP for geothermal power at a particular commitment level. This is a complex topic and we are open to feedback and further direction.

PREVIOUS COUNCIL ACTION: The City continues to look to support with reliable and cost effective alternate energy sources, including geothermal. City Council has identified this support as a federal priority. To this end, during the fall lobby trip to Washington DC in 2019, City representatives sat alongside representatives from the Q-tribe and OC in a meeting with Department of Energy demonstrating support for a geothermal project on our island.

November 26, 2019

- Work Session, Presentation from Ounalashka/Chena Power, LLC regarding their Geothermal Project

January 30, 2020

- Special Meeting for a Work Session for an Update on Ounalashka/Chena Power, LLC geothermal project (standalone meeting)

February 25, 2020

- Work Session, Report from Ounalashka/Chena Power, LLC regarding their Makushin geothermal project

March 10, 2020

- Reports, City Attorney conflict of interest opinion related to Ounalashka/Chena Power, LLC
- Executive Session
    - Discussion regarding potential Power Purchase Agreement between City of Unalaska and Ounalashka/Chena Power, LLC
    - Discussion regarding potential Power Sales Agreements between City of Unalaska and local seafood processing facilities

May 26, 2020

- Directive to the Manager: *"Report back to the City Council by June 16, 2020 for possible action committing to a PPA with OCCP at the Council Meeting on June 23, 2020 a cos/benefit/risk analysis for a potential Power Purchase Agreement concept that commits Unalaska for the purchase of 100MkWhr/year, at $0.16/kWh, for 30 years taking into account the probability of securing sufficient load sources by fall of 2023 within the Unalaska City Limits."*

BACKGROUND: City staff began working with the OC/CP LLC team in late 2019 in addressing project planning and development questions and in the drafting of a Power Purchase Agreement. City staff team consisted of City Manager, Assistant City Manager JR Pearson, Public Utilities Director Dan Winters and Deputy Director Steve Tompkins. We have enlisted the support of Mike Hubbard, long time City Consultant with a strong background in public utilities project and analysis. Our attorney was brought on to our City team as well. Both Brooks Chandler and Mike Hubbard have been involved with previous Makushin geothermal efforts. We have the right people engaged to help position this project for success and to develop an agreement that is in the best interests of the citizens of Unalaska.

On January 15 and 16, 2020, the City team met with OCCP representatives for a working meeting in Anchorage. The focus of the meeting was developing framework of general concepts that OCCP can take to its potential lenders to determine if financing can be obtained.

Following this meeting, discussions and work continued. Focus was on the PPA, understanding the project, identifying challenges, mitigating risks, expanding opportunities, identifying what would need to be done should the project move forward, and refining displaced costs. OCCP communicated that they planned to proceed with their fieldwork and research, which will help reduce the number of uncertainties and assumptions. We reached out to processers to garner their interest in the project and encourage them to attend the February 25, 2020 Council meeting, where OCCP would be presenting on their project. The City team, including Brooks Chandler and Mike Hubbard, met with the OCCP team while they were in town that week. Given travel and weather challenges, this meeting was not as in-depth as planned.

City staff met and talked with processers throughout March and April. At that time, processors were unable to make a long term commitment. Mike Hubbard followed up and met with processors to ensure they had an understanding of the overall concept of the project and potential agreements. The City team held a conference call with OCCP on April 24, 2020 and communicated the feedback we were getting from the processors. This was not done in person due COVID related challenges. The next step was for OCCP, along with the City, to meet with the processors.

Those meetings were never held, but OCCP provided a detailed document outlining several concepts for consideration to the City on May 19, 2020. The City responded with some initial thoughts and questions in a timely fashion. Our focus then shifted to the Council Directive issued on May 26, 2020 to provide a report and cost/benefit/risk analysis regarding a PPA at a particular commitment level.

The City Attorney provided the attached Memorandum regarding non-recourse financing.

DISCUSSION: There is much excitement and interest in the potential for a geothermal project and what it might mean for our community. Indeed, this is a very exciting opportunity, but not an opportunity that can be taken lightly. For the past 6 months, your City team has been doing its job in working to come to a tentative agreement to share with Council that we believe would be in the best interest of the community and the rate payers.

On May 26, 2020, City Council issued a directive to provide an analysis of the Makushin Geothermal Power Project for the City of Unalaska. Our long time consultant, Mike Hubbard, has prepared the formal report and analysis. Brooks Chandler, our City Attorney, has provided a memo related to non-recourse financing as another component of the risk assessment. We have made every effort is to provide you with relevant, unbiased, and objective information to help you

in this deliberative process. As always, the City Council's responsibility is to evaluate this information, weigh the potential risks and benefits, and to ultimately make the decision you feel is best for the community as a whole.

Since providing Mike Hubbard's report to Council on June 16, 2020, concerns and questions have been submitted by Council Member Robinson. Our team provides the following responses for your consideration.

Concern that the resource on Makushin is identified as a low temperature resource.

> *Mike Hubbard also clarifies that the report states that the temperature of the resource is 382 degrees Fahrenheit. That equates to 194 degrees Celsius. According to Subir Sanyal (recent author noted in a chart referenced by Council Member Robinson), this puts it along the borderline of Low and Moderate. We should note that this is not a technical feasibility study. OCCP would be the appropriate party to take the temperature into account when performing preliminary design.*

What was the average cost of fuel to the City for the previous 10 years?

> *Just as with any investment, past performance does not predict future results. Mike Hubbard explains that basing the cost of fuel on the previous 10 years would be an assumption based on history with no regard for projections of future consumption, production, etc., which is what Nymex and EIA are based on. The report also provides the breakeven price of fuel so that decision makers can weigh in on their belief if the actual price of fuel will be above or below that amount. Nevertheless, we can make the projection based on the historical average, if directed by Council.*

Has the City offered a price of power to the Processors and if so, what was the price?

> *A price was offered, after much consideration, including the fact that there would be a requirement for them to provide their own spin reserve. There would be no demand charge, a customer charge of $100 per month, a flat rate charge of $0.06 per kWh (increased annually by 1%), plus COPA rate (increased annually by 1%). COPA is either the cost of fuel or purchased power. Based on current rates quoted to City by OCCP, which have not been finalized, COPA would be at $0.16.*

Why were this [sic] costs in this analysis only projected for 20 years when the directive asked for 30 years?

> *The model will be extended to 30 years, this was done in error. Mike Hubbard typically works in 10 to 20-year projections since uncertainty increases and reliability in the projections decreases as the study period is extended. This is based on his experience with lending agencies (bondholders, banks, etc.) that are focused on the initial five or ten years only. Ratepayers typically cannot afford to pay more for a number of years in hopes of lower bills at some point in time in the future.*

What were the reasons the Processors do not want to participate?

> *They have indicated several reasons. First, the projected cost of power would be more expensive than they believe they can produce it for. Second, will not commit to making*

payments over the long-term (20-30 years) when they don't know if they will be in business that long. Finally, when offered that they commit to purchasing power only if they needed it, they were unwilling to lock themselves into that type of arrangement. It is unclear why, but we were told that their Boards would not agree to that. We have suggested to OCCP that they talk directly with the Processors.

If the rate payers are currently paying $0.35 per kwhr and if we kept the rate the same, purchased power at $0.16 per kwhr (leaving the City with $0.19 per kwhr) as well as cutting our production costs, expanding the opportunity for economic diversification. Wouldn't it be good for the City?

The City's NON-PRODUCTION costs are approximately $0.19/kWh. Not all production costs will be eliminated. Some staffing will be required for dispatch. Units cannot be mothballed but instead need to be started and run on a monthly basis. Permits must be maintained. Spinning reserves run. The projections are based on all non-Makushin costs (non-production and the remaining production) being $0.25-$0.26/kWh. Makushin at $0.16/kWh would increase the total rate to over $0.40/kWh.

ALTERNATIVES: There are several next steps that may be considered. Mike Hubbard's presentation notes four primary options, which include:

1. No further work at this time

2. Work in alignment with OCCP in developing agreements, etc.

    a. Council should indicate to staff their risk tolerance (loads, costs, etc.)

3. Request OCCP for a lower rate to reflect Purchasers' (City and self-generators) low cost of fuel and Seller's (OCCP) low cost of capital

4. Sign Power Purchase Agreement now in hopes of securing more loads in near future

ATTACHMENTS:

- Report of Michael D. Hubbard of the Financial Engineering Company (123 pages) regarding the financial feasibility and potential risks/rewards of the proposed Makushin Geothermal Power Project
- PowerPoint Presentation of Michael D. Hubbard of the Financial Engineering Company
- June 17, 2020 Memorandum from City Attorney Brooks W. Chandler regarding Non-Recourse Financing

the Financial Engineering Company

235 Rockland Street, Rockport, Maine 04856

www.FinancialEngineeringCo.com

Phone: (207) 593-9131
Mobile/Text: (207) 691-8347

June 16, 2020

Ms. Erin Reinders, City Manager
City of Unalaska
PO Box 610
Unalaska, AK 99685

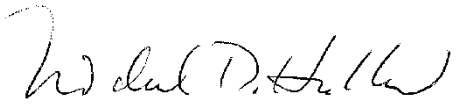
Dear Erin:

Attached hereto is my report regarding the financial feasibility and potential risks/rewards of the proposed Makushin Geothermal Power Project. This report was developed in a relatively short period of time, and I wish to thank the quick responses and reviews by City staff during the process.

If you have any questions, please do not hesitate to contact me.

Very truly yours,

THE FINANCIAL ENGINEERING COMPANY



Michael D. Hubbard

MAKUSHIN GEOTHERMAL PROJECT REVIEW

CITY OF UNALASKA

June 16, 2020

the Financial Engineering Company

www.FinEngCo.com

City of Unalaska
Makushin Geothermal Project Review

Table of Contents

City of Unalaska
Makushin Geothermal Project Review

Table of Contents
(continued)

List of Tables and Figures

I. INTRODUCTION AND PURPOSE OF REPORT

HISTORY OF PROJECT

For more than four decades, the feasibility of developing electric and thermal power from a geothermal resource located near the Makushin volcano has been investigated. Exploratory wells were first drilled by the US Department of Energy in 1982, with one well producing wet steam at 382 degrees F (considered a low temperature in the geothermal industry). Since then, no less than six or seven attempts have been made to develop the resource as an electrical power source for Unalaska.

It is not the intent of this report to focus on why past attempts have not been successful. However, suffice it to say that a resource constructed to produce power from the geothermal fluid would be very capital intensive, and power purchase agreements were sought that would obligate both the City and processors to commit to 20- or 30-year periods to purchase power from the resource. Those commitments could not be obtained.

The title to the land and subsurface materials where the geothermal resource is located has been transferred through various parties over time. Most recently, the title was owned by the Kiigussi Suuluta Land Company, LLC ("KSLC"). With the passing of the majority owner in KSLC, the Ounalashka Corporation ("OC") acquired the title and began investigations into how the resource could be developed. OC, in turn, partnered with Chena Power to form the Ounalashka Corporation/Chena Power, LLC ("OCCP") to develop a resource that could use the geothermal fluid at Makushin and displace not only the diesel used for electric generation but also fuel oil used for space heating (the "Project" or "Makushin").

RECENT HISTORY

In late 2019, OCCP reached out to the City of Unalaska (the "City") to determine its interest in developing the Project. The City and OCCP have met several times to discuss the Project concept and required commitments.

Originally, OCCP based its concept on bringing geothermal fluid via pipeline to the load center where a power plant would be built. The hot fluid could also be piped to the homes and businesses in the community for space heating. However after further review, OCCP believed it to be much more economic to construct the power plant at the resource and transmit power via a transmission line to a substation near the City's powerhouse where it could then be integrated into the current electric grid. The resource could still be used for space heating by installing air-to-air or air-to-water heat pumps.

There are several concepts that set the Project apart from past development attempts. These include:

- OCCP intends to use non-recourse financing from the federal government where if the Project does not work, debt does not have to be repaid. The City has not seen the terms of this financing, but OCCP has indicated that debt forgiveness applies not only to the initial Project construction but also if it fails at a later date.

- When KSLC owned the property, it desired to receive royalties from a project developer for the use of the geothermal fluid. Additionally, the transmission line from the resource to the City would cross OC land, and they, too, would desire some sort of compensation. With the Project now being developed by OCCP, the development is better streamlined.

- Past developments were based on a "stick construction" where a building would be constructed and individual components installed on site. OCCP intends to use a modular approach where the resource would be constructed at a remote location, shipped to Unalaska, and then installed on site with relatively little effort. The modular concept also better allows for future expansion if desired.

As described later in this report, OCCP's offer regarding size and price has evolved. Its latest offer is based on a fixed monthly payment which escalates at 1 percent per year. The annual payment for the initial year is summarized as follows.

Table 1
OCCP Pricing Offer

Project Size (MW)	Annual Cost (millions)
16	$11.84
18	$12.33
22	$13.37
24	$14.24
26	$14.92
30	$16.02

Although the terms of the financing eliminate a great deal of risk to the OCCP and the City, the lender (the federal government) will not approve the loan until a power purchase agreement ("PPA") is completed that demonstrates the debt will be repaid if all works well. Accordingly, OCCP and the City have started to draft a PPA that would obligate the City to purchase power from the Project over a 30-year period. During the development of this draft, it became evident that favorable economics depend on those Processors now self-generating to participate to some extent in the Project. As such, the City met with the Processors to discuss their interest. Knowing that a 30-year commitment by the Processors was a hurdle in the past that could not be overcome, the City suggested a concept where as long as the Processors were in business and operating, they would be required to purchase nearly all of their power requirements from the City.

The Processors did not express an interest in such a commitment, especially given the Project price and current fuel prices.

The City reported this lack of interest to OCCP, and OCCP asked if they could talk directly to the Processors. The City agreed but asked that they be part of those conversations. Instead of initiating these conversations, OCCP sent the City a PowerPoint presentation that made no mention of OCCP meeting with the Processors but instead stated that if there was no PPA by the end of June, OCCP would find alternative investments to enable development of the Project.

It is also worth mentioning that in late 2019 and early 2020, the City has had to deal with the loss of air service due to a flight with a fatality, a second plane crash, a pandemic, and the bankruptcy of the primary airline serving Dutch Harbor/Unalaska. Even so, work continued.

PURPOSE OF REPORT

At its May 26, 2020, meeting, the City Council directed the City Manager as follows:

> "*I move to direct the City Manager to report back to the City Council by June 16, 2020 for possible action committing to a PPA with OCCP at the Council Meeting on June 23, 2020 a cost / benefit / risk analysis for a potential Power Purchase Agreement core concept that commits Unalaska for the purchase of 100 MkWhr / year, at $0.16/kWh, for 30 years taking into account the probability of securing sufficient load sources by the fall of 2023 within the Unalaska City limits.*"

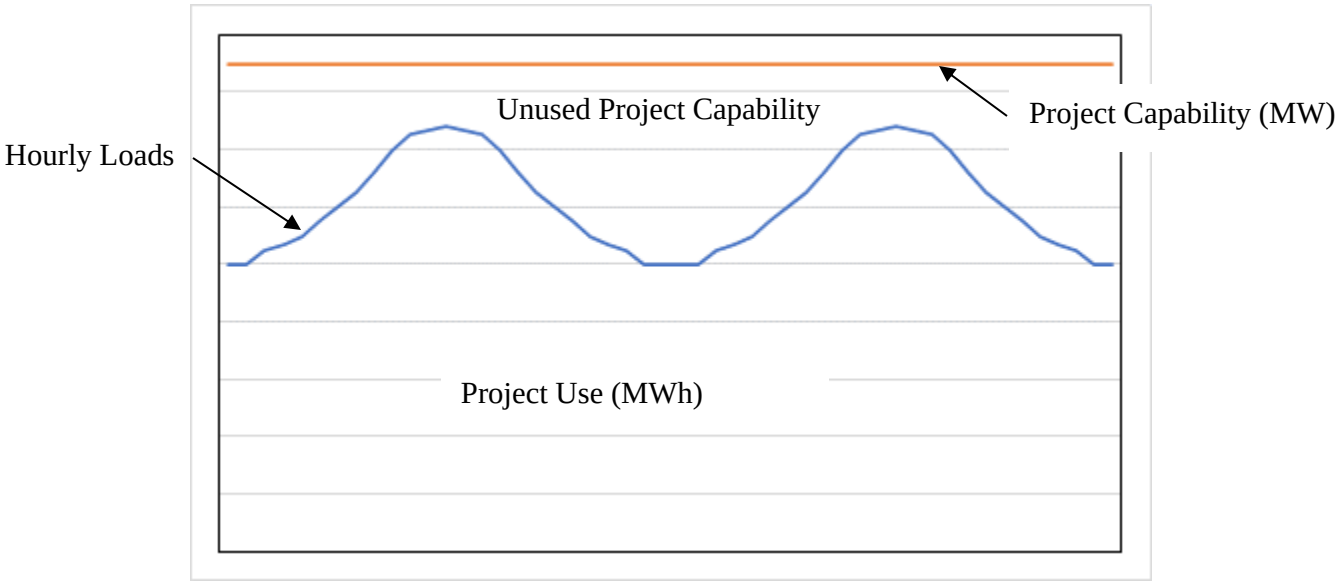
The City has retained the services of the Financial Engineering Company to assist in this report back to the City Council. This report summarizes the analysis and findings of the Financial Engineering Company regarding the potential risks and benefits of the Project.

II. AREA LOADS

GENERAL

The success of Makushin will depend on the amount of power generated and used. Since OCCP's costs will be fixed, the higher the usage, the lower the cost in dollars/kilowatt-hour. The analysis of Makushin must, therefore, begin with an understanding of area loads. Since the resource will be used to provide for all, or nearly all, of the energy requirements of the participants, it must be adequately sized to provide for peak loads. Thus, both energy and peak requirements must be reviewed.

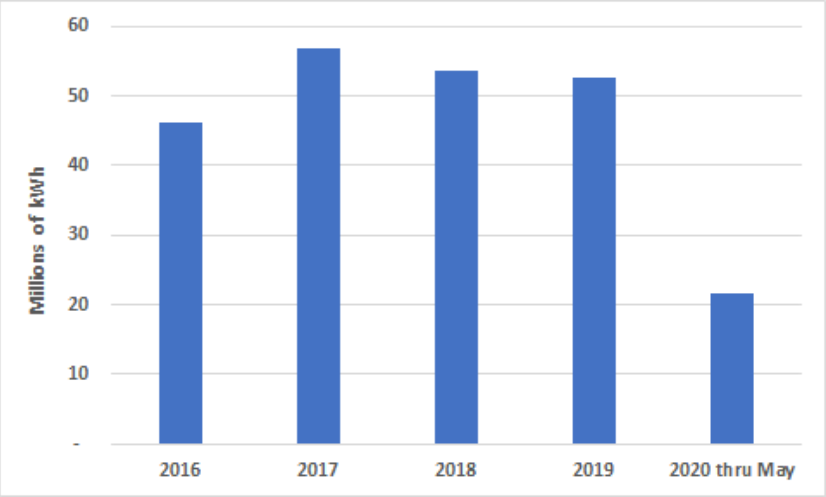
Figure 1
Potential Project Use



CITY

As shown in Figure 2, the City's annual energy sales have been slightly above 50 million kilowatt-hours for the past several years. However, part represents sales to Alyeska Seafoods which is no longer purchasing power from the City for its Industrial account. Those sales totaled approximately 12 million kilowatt-hours, thus a normalized amount of sales by the City closer to 40 million kilowatt-hours. Sales also included approximately 1.4 million kilowatt-hours to Westward Seafoods, who occasionally purchases energy to avoid starting a generating unit. Thus, going forward, it appears to be reasonable to assume 40 million kilowatt-hours of sales by the City while remembering that a small portion of this represents sales to Westward.

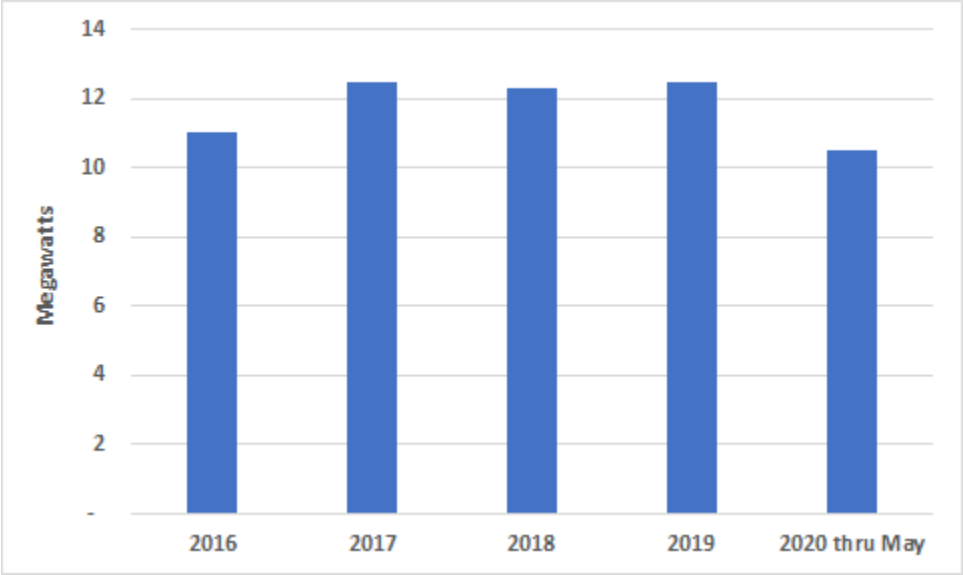
Figure 2
Historical City Sales



Total generating requirements are higher than this to account for distribution losses within the system. Such losses have averaged approximately 3.8 percent over the past several years. Based on an assumed sales level of 40 million kilowatt-hours, total generating requirements would be 41.6 million.

Peak demand on the City system, shown in Figure 3, has exceeded 12 megawatts, but this, too, represents a time with sales to Alyeska. Without those sales, system peak would be expected to be 10 – 11 megawatts

Figure 3
City Peak Demand



PROCESSORS AND OTHER SELF GENERATORS

There are five self-generators in the area, with three representing approximately 85 percent of the energy production. These three, Alyeska Seafoods, Westward Seafoods, and UniSea, are electrically interconnected with the City, although the interconnection between the City and UniSea is limited. The remaining two are not electrically interconnected with the City.

The annual energy requirements of these self-generators prior to any distribution losses are summarized in the following table. The peak demand in the table represents the sum of each individual peak, whereas when the loads are combined on an hourly basis, the combined peak is slightly less. Northland leases their terminal from OSI; and power requirements of the two are, therefore, combined.

Table 2
Summary of Peak and Energy Requirements Prior to Losses

Load	Interconnected With City	Annual Energy (Million kWh)	Annual Peak (MW)
City Sales		40	11
Others			
Westward	Yes	20	7
Alyeska	Yes	12	3
Unisea	Limited	32	4
OSI/Northland	No	8	2
Northern Victor	No	10	4
		122	31

III. PROJECT DESCRIPTION

General Concept

OCCP based its initial Project on a concept similar to that proposed several years ago by Iceland America. Hot water would be gathered from wells at Makushin and then pumped via pipeline to a point near the City's powerhouse. There, the hot water would be used to generate electric power as well as distributed to the area homes and businesses for space heating.

Further review by OCCP led to this concept being abandoned in favor of constructing a powerhouse at Makushin and deliver to the City via a transmission line. Heating could still be accomplished with the use of heat pumps, described later in this section.

Major components of the Project include the wells (production and reinjection), powerhouse, and transmission line.

Due to the relatively low temperature (in geothermal terms) of the resource, the Project will be a binary unit where the hot water will flash a secondary (or binary) fluid to steam. The binary fluid will have a much lower boiling point than water to better harness the energy. OCCP intends to use screw expanders developed and constructed by the Kaishan Group to turn the generators.

Power will be transmitted to the City via an above-ground transmission line to the waters edge at Broad Bay and then via a submarine cable to a point near the City powerhouse. OCCP has verbally stated that it would install two submarine cables with the second for redundancy.

The entire powerhouse will include evaporators, separators, screw expanders, and other miscellaneous items that will be constructed by Kaishan in a modular fashion off-site. The module will then be shipped to the site and interconnected with the well piping and transmission line. The module concept will allow for future expansion if desired, with expansions in 6-megawatt increments.

Load Following

Since the Project will be used to offset most, if not all, of the power requirements of the participants, output must be able to respond quickly to changes in loads. If it does not have that capability, another source of generation must be on-line to respond to load swings. Kaishan has indicated that the Project will be able to sufficiently respond to load changes, but the City has not seen written specifications at this time.

HEAT EXCHANGERS

As described at the beginning of this section, the original concept was to pipe hot fluid to the load center where it could be used for both electric power production and area heating. Since this concept was abandoned in favor of electric production at Makushin, another form of heating must be used.

When discussing electric energy, the unit commonly used in the United States is the watt-hour, with one kilowatt-hour equal to 1,000 watt-hours. When discussing heat energy, we commonly use the British Thermal Unit, or btu. Since both are forms of energy, the two can be compared as:

1 kWh = 3,413 Btu

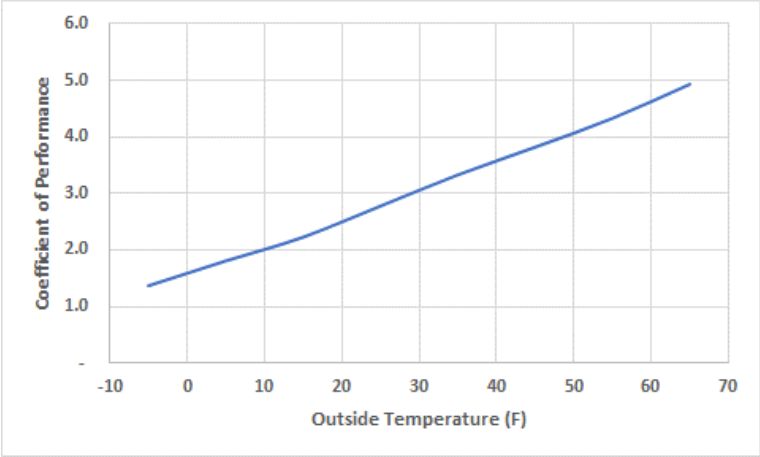
Fuel oil is the typical fuel used for space heating in the area, and one gallon of fuel oil contains approximately 139,000 Btu. Therefore if a house uses 1,000 gallons of fuel oil during the heating season, it would use 139 million Btu's of energy. Actual heating requirements would be something less than that since oil-fired furnaces are not 100 percent efficient with some heat escaping up the chimney, etc. With an efficiency of 85 percent, the actual heating requirements would be approximately 118 million Btu's.

Simply using an electric heater is not economic since that 118 million Btu's would require 34,574 kWh of electricity, a costly amount even at low electric rates.

Air-to-air and air-to-water heat exchangers could provide a solution. Simply put, heat exchangers are the reverse process of a common refrigerator. The outside air is compressed and the heat in that air is extracted for use where it is required. With the air-to-air, the hot air from the heat exchanger is simply blown into a room. With the air-to-water, the hot air is used to heat water (or some fluid) which is then moved through multiple rooms for heating.

Heat exchangers are rated by their Coefficient of Performance (COP) which measures how many kWh of heat is produced from a single kWh of energy use. COP is dependent on the outside air temperature and desired heat extraction. A typical graph is provided below.

Figure 4
COP of Heat Exchanger



The economics of using Makushin for space heating will depend on the end-use rate, cost of heating fuel oil, and the cost of installing and maintaining the heat exchanger system. It is beyond the scope of this report to investigate the feasibility of heat pumps. Even if it were believed to be economic, conversion would occur over several years and would most likely start after Makushin is brought on-line and after the Project has proved itself.

IV. OCCP PRICING OFFER

In late 2019, OCCP provided a pricing offer for Makushin based on the construction of either a 16- or 24-megawatt resource. The price was stated as a rate in $/kilowatt-hour and included a minimum energy purchase amount by the City. Energy usage over the minimum commitment was to be billed at the same rate. Later, the rate for energy delivered over the minimum amount evolved to a lower, but unspecified, rate.

It is important to note that this offer essentially consisted of a fixed price amount (in dollars) for all energy up to the minimum commitment (rate x minimum commitment). OCCP indicated to the City that their costs were primarily fixed, and the incremental cost of producing additional energy is negligible. Therefore, the City suggested a fixed dollar payment regardless of the amount of energy delivered and used. Compared to the initial price offer, the fixed payment could be viewed as rate x minimum commitment with all additional energy at no cost.

OCCP agreed to this concept, and the price now being offered is as follows. The amounts shown in the table are for the initial year and are to escalate at 1 percent per year.

Table 3
Current OCCP Offer

Project Size (MW)	Annual Cost (millions)
16	$11.84
18	$12.33
22	$13.37
24	$14.24
26	$14.92
30	$16.02

OCCP indicated that its offer was tentative, and field work was required to validate its pricing offer. Accordingly, the City included in its draft Power Purchase Agreement a clause that stated the City is not obligated to negotiate a payment structure that increases the fixed payment by more than 5 percent. No obligations were included for OCCP to reduce the price if the costs were less than expected.

The effective rate, in $/kilowatt-hour, of this price offering is dependent on the energy consumed from the Project. As described in Section II, usable energy is dependent not only on the size of the Project but the peak and energy requirements of the various participants. Potential resource sizing and the economics of this offer are explored in detail in the following section.

V. VALUE OF MAKUSHIN

ASSUMPTIONS

The value of Makushin and the savings to energy users will be dependent on a number of future events, none of which can be predicted or forecasted with certainty. Assumptions and considerations used in the analysis summarized in this report are described as follows.

1. *Study Period and Definition of Year.* Although the Project is expected to have a life of 30 or more years, the Study Period is limited to the first 20 years of operation. All years are in calendar years.

2. *Commercial Operation.* The Project is assumed to reach commercial operation at the beginning of 2024.

3. *City Sales.* City sales are assumed to be 40 million kilowatt-hours/year with no increase or decrease over the study period.

4. *Processor Energy Requirements.* Annual energy requirements for all of the self-generators are assumed to total 70 million kilowatt-hours. Although Table 2 indicated this may be as high as 75 million kilowatt-hours, a small portion represented sales to Westward already included in the City sales. Also, energy consumption by the processors fluctuates each year and has been lower in the past.

5. *Losses.* Distribution losses assumed for City sales to its core load are assumed to be 3.8 percent. The average loss factor for energy delivered from the Delivery Point to the Processors is assumed to be 2.0 percent.

6. *Inflation.* Inflation is assumed to be 1.5 percent from 2020 – 2021, 2.0 percent for the next two years, and 2.25 percent thereafter.

7. *Fuel Prices.* The cost of the City's generating fuel dropped to nearly $1.00/gallon early this year but has rebounded to a current price of $1.34/gallon, and this price is used as the average price for 2020. Future prices are escalated based on the forecasted change in price of oil (West Texas Intermediate) using two separate forecasts. Details of these forecasts are provided in Appendix __ and summarized as follows.

   Fuel prices for the Processors are assumed to be 3.0 percent higher than the City to account for taxes.

   a. *Nymex Futures.* The Nymex Futures provides prices for the futures market through the end of February 2031. The assumed rate of general inflation is assumed thereafter.

b. *EIA Forecast.* The US Dept of Energy's Energy Information Administration released a revised Short Term Energy Outlook ("STEO") on June 9, 2020, and provides a forecast of energy prices through the end of 2021. Prices are assumed to quickly increase in 2021 to a price of $50/barrel by the end of the year. The Long-Term Annual Energy Outlook ("AEO") was released in late January 2020, before the effects of the current pandemic were understood (if, indeed, they even are now). Thus, the AEO is not used for long-term pricing, but instead, the 2022 price is assumed to be the end-of-year 2021 price escalated at one half the assumed inflation rate for the year (to gain a mid-year average cost) and escalated at the assumed general inflation rate thereafter.

Table 4
Assumed Fuel Prices

	Nymex		EIA	
	WTI ($/bbl)	Cost of Fuel ($/gal)	WTI ($/bbl)	Cost of Fuel ($/gal)
2020	37.81	1.34	34.25	1.34
2021	40.00	1.42	43.75	1.71
2022	41.60	1.47	50.50	1.98
2023	43.24	1.53	51.51	2.02
2024	44.92	1.59	52.67	2.06
2025	46.62	1.65	53.85	2.11
2026	48.42	1.72	55.07	2.15
2027	50.39	1.79	56.30	2.20
2028	52.39	1.86	57.57	2.25
2029	54.19	1.92	58.87	2.30
2030	55.78	1.98	60.19	2.35
2031	56.71	2.01	61.55	2.41
2032	57.98	2.05	62.93	2.46
2033	59.29	2.10	64.35	2.52
2034	60.62	2.15	65.79	2.57
2035	61.98	2.20	67.27	2.63
2036	63.38	2.25	68.79	2.69
2037	64.80	2.30	70.34	2.75
2038	66.26	2.35	71.92	2.81
2039	67.75	2.40	73.54	2.88
2040	69.28	2.46	75.19	2.94
2041	70.84	2.51	76.88	3.01
2042	72.43	2.57	78.61	3.08
2043	74.06	2.62	80.38	3.14

8. *Generating Efficiency.* The City's generating efficiency is assumed to be 15.7 kilowatt-hours (generated) / gallon, the average attained over the past five years. Efficiency for the Processors is assumed to average 14.0 kilowatt-hours/gallon.

9. *Maintenance Fuel.* Even if all power requirements are provided from the Project, a participant must still maintain its generating units in the event of a Project failure or

curtailment. This requires each unit to be periodically started and run for a period of time. Assumptions of fuel usage for these periodic starts are summarized as follows.

Table 5
Assumed Maintenance Fuel

	City	Westward	Alyeska	UniSea
Hours/Unit/Month	8	8	8	8
Gallons/Hour/Unit	215.6	125	50	125
Number of Units	5	3	6	6

10. *Spinning Reserve.* The responsibility and pricing for spinning reserves could be one of the most complicated issues to be addressed by a joint group of participants. Typically, a utility will operate multiple units at some point less than their maximum capability, with the excess capability representing "spinning reserves" that can quickly provide for part or all of the generation loss in the event of a generation failure. The City is no different, and the Processors may run units dedicated to spinning reserve when certain processing equipment is being operated.

    If the Project is being used to provide for all power requirements of the participants, at least one diesel unit must be on-line for spinning reserves in the event of a transmission or generator failure of the Project. This generator cannot be operated at a high output level where generating efficiency is at its best since it would therefore have no reserve capability. Instead it must be operated at a relatively low level. For purposes of this analysis, it is assumed that the City provides spinning reserve for all participants by operating one unit at its minimum loading which does not curtail Project usage. Spin is assumed to be provided five months of the year during the peak periods of energy usage.

    Specific assumptions regarding spinning reserve is as follows.

    - Number of units: 1
    - Months/year: 5
    - Gallons/Hour: 100

11. *City Costs.* Expenses of the City Electric Utility are based on its draft FY 2021 budget and escalated at the assumed inflation rate thereafter. Makushin is assumed to not affect non-production costs (*i.e.,* such costs are assumed to remain the same with or without the Project). Production costs are adjusted as follows.

    a. *Personnel.* The budget includes $783,859 for Production personnel. These are assumed to decrease by $125,000/year (in 2021 dollars) during years 3, 4, and 5 of Project operation for a total decrease of $375,000. Costs of benefits are assumed to reduce in proportion.

b. *Overtime.* Assumed to be reduced by 50 percent in the first year of Project operations.

c. *Repairs and Maintenance.* Assumed to decrease by 75 percent in the initial year. The amount is not eliminated in its entirety since some of the costs are associated with the powerhouse and other related items.

d. *Supplies.* Assumed to decrease by two thirds in the initial year to account for continued costs of general supplies in the powerhouse.

12. *Processor Variable O&M.* The decremental non-fuel costs of the Processors are assumed to average $0.0275/kilowatt-hour in 2021 and escalate at the assumed rate of inflation thereafter.

Methodology of Analysis

For the participants as a whole, the Project will offset fuel and variable operating costs. Fixed costs will remain the same, although in the long-term, capital expenditures for generating equipment would be reduced.[1] The Project will, however, provide certain opportunities to the City and its ratepayers. If any of the Processors or self-generators participate in the Project, then the City should charge them an additional amount for the use of its distribution infrastructure as well as a portion of its administrative costs. This, in turn, would reduce the base rate charged to the City customers due to more customers paying a portion of these fixed costs.[2]

Therefore, the analysis looks at the Project benefits for three separate groups: 1) the City, 2) the assumed participation by the Processors or self-generators, and 3) the combined City/Processor group as a whole. The rates charged by the City to the Processors/Self-Generators is separated into two components. The first, the Makushin rate, is treated as a pass-through such that the City charges the same rate it is paying for Makushin power. The second, the base rate, is treated as an input variable that is varied based on intermediate interpretation of results. Benefits are projected by comparing the revenue stream without the Project to the revenue stream with the Project. Costs are projected over the first 20 years of Project operations, although the economic life is expected to be 30 or more years.

Scenarios Tested

As described at the beginning of this section, the benefits of the Project will depend on the outcome of numerous factors that cannot be forecasted with accuracy. Accordingly, a number of different scenarios have been investigated to gain a better insight into the potential risks and rewards of the Project. Each scenario is described in this section, and the projected savings for the first ten years are shown. Summaries of all scenarios are provided

[1] Residents and businesses might also benefit from reduced heating costs, but only if the rate is low enough to offset the heating fuel costs and costs of conversion.

[2] Base rates are the portion of the rates that recover all costs that are not associated with fuel or purchased power.

in Table 11 at the end of this section, and details of each projection are provided in Attachments 1 - 5.

Scenario 1. City Only / 16 MW

For this case, it is assumed the Processors do not participate in the Project, leaving only the City loads. Accordingly, the smallest Project size was selected to minimize capital costs. Even at that size, the Project would be capable of providing for the City's peak load.

Table 6
Summary of Results – City Only
16 MW Project

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Nymex Fuel										
Project Savings (000)	$ (7,945)	$ (7,805)	$ (7,656)	$ (7,243)	$ (6,817)	$ (6,394)	$ (6,243)	$ (6,142)	$ (6,014)	$ (5,883)
Change in Retail Rates ($/kWh)	$ 0.199	$ 0.195	$ 0.191	$ 0.181	$ 0.170	$ 0.160	$ 0.156	$ 0.154	$ 0.150	$ 0.147
EIA Fuel										
Project Savings (000)	$ (6,923)	$ (6,813)	$ (6,700)	$ (6,334)	$ (5,954)	$ (5,560)	$ (5,418)	$ (5,274)	$ (5,126)	$ (4,975)
Change in Retail Rates ($/kWh)	$ 0.173	$ 0.170	$ 0.167	$ 0.158	$ 0.149	$ 0.139	$ 0.135	$ 0.132	$ 0.128	$ 0.124
Breakeven Fuel Price ($/gal)	5.24	5.23	5.23	5.11	4.98	4.85	4.84	4.83	4.81	4.80

The projections in the table above show that inclusion of the Project would increase costs by $7 – 8 million above what they would have been without the Project, and retail rates would have to be increased $0.17 – 0.20. Only if generating fuel prices increased to over $5/gallon would the Project show benefits.

Clearly, the success of the Project is dependent on Processor participation or increased loads.

Scenario 2. 100 million kWh sales / 30 MW

This scenario is based on all three of the large Processors participating at full requirements. It is assumed that the City charges the Processors $0.03/kilowatt-hour escalating at 0.75 percent/year in addition to the cost of Makushin. The Project is assumed to be 30 megawatts which would be five or so megawatts over the combined peak.

The results, summarized in Table 7, show that on a combined basis, the Project begins to provide benefits in the seventh or third year, depending on the fuel forecast assumed. However, that is for the combined benefits. The City attains benefits much earlier due to the revenues collected from the $0.03/kilowatt-hour additional charge whereas the Processors benefits are delayed due to the payment of the additional charge. Under the Nymex fuel scenario, any additional charge by the City to the Processors prior to 2030 would result in net

Project losses to the Processors. Under the EIA fuel case, a small fee could be imposed in 2026, the third year of operation. It is noted that any reduction in fee from the assumed $0.03/kilowatt-hour would result in lower savings to the City from that projected in the table.

Table 7
Summary of Results – City Plus Processors
30 MW Project

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Nymex Fuel										
Project Savings (000)										
City	$ (633)	$ (478)	$ (316)	$ 111	$ 551	$ 988	$ 1,154	$ 1,269	$ 1,412	$ 1,557
Processors	(2,947)	(2,665)	(2,366)	(2,040)	(1,710)	(1,408)	(1,138)	(967)	(742)	(513)
Combined	$ (3,580)	$ (3,143)	$ (2,681)	$ (1,929)	$ (1,159)	$ (420)	$ 16	$ 302	$ 669	$ 1,045
Change in Retail City										
Rates ($/kWh)	$ 0.021	$ 0.017	$ 0.013	$ 0.002	$ (0.009)	$ (0.020)	$ (0.024)	$ (0.027)	$ (0.030)	$ (0.034)
EIA Fuel										
Project Savings (000)										
City	$ 389	$ 513	$ 640	$ 1,020	$ 1,414	$ 1,823	$ 1,978	$ 2,137	$ 2,299	$ 2,465
Processors	(944)	(721)	(492)	(258)	(18)	227	478	735	998	1,267
Combined	$ (555)	$ (207)	$ 149	$ 763	$ 1,396	$ 2,050	$ 2,456	$ 2,872	$ 3,297	$ 3,732
Change in Retail										
Rates ($/kWh)	$ (0.005)	$ (0.008)	$ (0.011)	$ (0.021)	$ (0.031)	$ (0.041)	$ (0.045)	$ (0.049)	$ (0.053)	$ (0.057)
Breakeven Fuel Price ($/gal)	2.15	2.14	2.13	2.08	2.04	1.99	1.97	1.96	1.95	1.94

Scenario 3. 100 million kWh sales / 26 MW

Scenario 3 is the same as the previous with the exception the Project is constructed at a smaller size. As compared to the previous scenario, Project benefits are accelerated by approximately two years.

Table 8
Summary of Results – City Plus Processors
26 MW Project

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Nymex Fuel										
Project Savings (000)										
City	$ (196)	$ (41)	$ 121	$ 548	$ 988	$ 1,425	$ 1,591	$ 1,706	$ 1,849	$ 1,994
Processors	(2,284)	(2,002)	(1,703)	(1,377)	(1,047)	(745)	(475)	(304)	(79)	150
Combined	$ (2,480)	$ (2,043)	$ (1,581)	$ (829)	$ (59)	$ 680	$ 1,116	$ 1,402	$ 1,769	$ 2,145
Change in Retail City										
Rates ($/kWh)	$ 0.009	$ 0.006	$ 0.001	$ (0.009)	$ (0.020)	$ (0.031)	$ (0.035)	$ (0.038)	$ (0.042)	$ (0.045)
EIA Fuel										
Project Savings (000)										
City	$ 826	$ 950	$ 1,077	$ 1,457	$ 1,851	$ 2,260	$ 2,415	$ 2,574	$ 2,736	$ 2,902
Processors	(281)	(58)	171	405	645	890	1,141	1,398	1,661	1,930
Combined	$ 545	$ 893	$ 1,249	$ 1,863	$ 2,496	$ 3,150	$ 3,556	$ 3,972	$ 4,397	$ 4,832
Change in Retail										
Rates ($/kWh)	$ (0.016)	$ (0.019)	$ (0.022)	$ (0.032)	$ (0.042)	$ (0.052)	$ (0.056)	$ (0.060)	$ (0.064)	$ (0.068)
Breakeven Fuel Price ($/gal)	1.98	1.97	1.96	1.91	1.87	1.82	1.80	1.79	1.78	1.77

Scenario 4. Effect of Future Load Reduction

Over the years, the Processors have not displayed any indication that they would be willing to commit to long-term payment obligations regardless of their power usage. As a potential compromise, the City suggested an obligation based on a percentage of power requirements. Thus, if there was a bad fishing year or they simply went out of business, there would be no payment obligation. Such a scenario would certainly have to be further reviewed by the City since it would be assuming the risk of future payments.

Scenario 4 investigates that risk by using the same parameters of Scenario 2 (30-megawatt Project; $0.03/kilowatt-hour base rate to Processors) but with a 30 percent reduction in Processor usage.

Table 9
Summary of Results – City Plus Processors @ 70%
30 MW Project

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Nymex Fuel										
Project Savings (000)										
City	$ (2,625)	$ (2,475)	$ (2,316)	$ (1,894)	$ (1,458)	$ (1,025)	$ (864)	$ (753)	$ (614)	$ (473)
Processors	(3,586)	(3,391)	(3,184)	(2,959)	(2,731)	(2,523)	(2,336)	(2,217)	(2,062)	(1,903)
Combined	$ (6,211)	$ (5,865)	$ (5,500)	$ (4,853)	$ (4,189)	$ (3,547)	$ (3,199)	$ (2,970)	$ (2,677)	$ (2,376)
Change in Retail City										
Rates ($/kWh)	$ 0.070	$ 0.066	$ 0.062	$ 0.051	$ 0.041	$ 0.030	$ 0.026	$ 0.023	$ 0.019	$ 0.016
EIA Fuel										
Project Savings (000)										
City	$ (1,603)	$ (1,483)	$ (1,360)	$ (984)	$ (595)	$ (190)	$ (39)	$ 115	$ 273	$ 435
Processors	(2,204)	(2,049)	(1,891)	(1,729)	(1,563)	(1,394)	(1,220)	(1,043)	(861)	(675)
Combined	$ (3,807)	$ (3,532)	$ (3,251)	$ (2,713)	$ (2,158)	$ (1,584)	$ (1,260)	$ (927)	$ (588)	$ (241)
Change in Retail										
Rates ($/kWh)	$ 0.044	$ 0.041	$ 0.038	$ 0.029	$ 0.019	$ 0.009	$ 0.005	$ 0.001	$ (0.003)	$ (0.007)
Breakeven Fuel Price ($/gal)	2.80	2.80	2.79	2.73	2.67	2.61	2.60	2.59	2.58	2.56

As compared to Scenario 2 in Table 7, the reduced load places an additional $0.05/kilowatt-hour onto retail rates.

Scenario 5 – 30 MW Project with No Processors

The directive to the City Manager described in Section I contemplates entering into a power purchase agreement prior to obtaining commitments by the Processors. While Scenario 4 could be viewed as a somewhat reduced commitment, Scenario 5 investigates what would happen if the City entered into a Power Purchase Agreement and the Processors declined to participate.

The results shown in Table 10 show that in such a scenario, $0.28 - $0.30/kilowatt-hour would be added to a retail bill as compared to $0.17 - $0.20/kilowatt-hour in Scenario 1 with the smaller Project. As stated in Scenario 1, the success of the Project is dependent on participation by the Processors, but even that participation does not guarantee Project benefits accrue to the participants.

Table 10
Summary of Results – City Only
30 MW Project

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Nymex Fuel										
Project Savings (000)	$ (12,125)	$ (11,985)	$ (11,836)	$ (11,423)	$ (10,997)	$ (10,574)	$ (10,423)	$ (10,322)	$ (10,194)	$ (10,063)
Change in Retail Rates ($/kWh)	$ 0.303	$ 0.300	$ 0.296	$ 0.286	$ 0.275	$ 0.264	$ 0.261	$ 0.258	$ 0.255	$ 0.252
EIA Fuel										
Project Savings (000)	$ (11,103)	$ (10,993)	$ (10,880)	$ (10,514)	$ (10,134)	$ (9,740)	$ (9,598)	$ (9,454)	$ (9,306)	$ (9,155)
Change in Retail Rates ($/kWh)	$ 0.278	$ 0.275	$ 0.272	$ 0.263	$ 0.253	$ 0.243	$ 0.240	$ 0.236	$ 0.233	$ 0.229
Breakeven Fuel Price ($/gal)	7.65	7.64	7.64	7.51	7.38	7.24	7.23	7.21	7.20	7.18

SUMMARY OF RESULTS

Each of the five scenarios are summarized in Table 11 on the following page. The projections are included for operational years 1 – 5, 10, 15, and 20. Details of these projections and the full 20-year study period are provided in Attachments 1 - 5.

Table 11
Summary of Results

Scenario	Loads	Project Size	Fuel Forecast	Operational Year 1	2	3	4	5	10	15	20
				2024	2025	2026	2027	2028	2033	2038	2043
				Combined Project Savings (000)							
1	City Only	16	Nymex	$ (7,945)	$ (7,805)	$ (7,656)	$ (7,243)	$ (6,817)	$ (5,883)	$ (5,182)	$ (4,398)
			EIA	(6,923)	(6,813)	(6,700)	(6,334)	(5,954)	(4,975)	(4,167)	(3,264)
2	100 million kWh	30	Nymex	(3,580)	(3,143)	(2,681)	(1,929)	(1,159)	1,045	3,053	5,297
			EIA	(555)	(207)	149	763	1,396	3,732	6,056	8,654
3	100 million kWh	26	Nymex	(2,480)	(2,043)	(1,581)	(829)	(59)	2,145	4,153	6,397
			EIA	545	893	1,249	1,863	2,496	4,832	7,156	9,754
4	82 million kWh	30	Nymex	(6,211)	(5,865)	(5,500)	(4,853)	(4,189)	(2,376)	(771)	1,024
			EIA	(3,807)	(3,532)	(3,251)	(2,713)	(2,158)	(241)	1,616	3,692
5	City Only	30	Nymex	(12,350)	(12,217)	(12,077)	(11,675)	(11,258)	(10,359)	(9,693)	(8,948)
			EIA	(11,394)	(11,290)	(11,183)	(10,824)	(10,451)	(9,510)	(8,744)	(7,887)
				Increase (Decrease) to Retail Rate ($/kWh)							
1	City Only	16	Nymex	$ 0.199	$ 0.195	$ 0.191	$ 0.181	$ 0.170	$ 0.147	$ 0.130	$ 0.110
			EIA	$ 0.173	$ 0.170	$ 0.167	$ 0.158	$ 0.149	$ 0.124	$ 0.104	$ 0.082
2	100 million kWh	30	Nymex	$ 0.021	$ 0.017	$ 0.013	$ 0.002	$ (0.009)	$ (0.034)	$ (0.054)	$ (0.075)
			EIA	$ (0.005)	$ (0.008)	$ (0.011)	$ (0.021)	$ (0.031)	$ (0.057)	$ (0.079)	$ (0.103)
3	100 million kWh	26	Nymex	$ 0.009	$ 0.006	$ 0.001	$ (0.009)	$ (0.020)	$ (0.045)	$ (0.065)	$ (0.086)
			EIA	$ (0.016)	$ (0.019)	$ (0.022)	$ (0.032)	$ (0.042)	$ (0.068)	$ (0.090)	$ (0.115)
4	82 million kWh	30	Nymex	$ 0.070	$ 0.066	$ 0.062	$ 0.051	$ 0.041	$ 0.016	$ (0.003)	$ (0.024)
			EIA	$ 0.044	$ 0.041	$ 0.038	$ 0.029	$ 0.019	$ (0.007)	$ (0.028)	$ (0.052)
5	City Only	30	Nymex	$ 0.303	$ 0.300	$ 0.296	$ 0.286	$ 0.275	$ 0.252	$ 0.234	$ 0.214
			EIA	$ 0.278	$ 0.275	$ 0.272	$ 0.263	$ 0.253	$ 0.229	$ 0.209	$ 0.186
				Breakeven Fuel Price ($/gallon)							
1	City Only	16		$ 5.24	$ 5.23	$ 5.23	$ 5.11	$ 4.98	$ 4.80	$ 4.73	$ 4.64
2	100 million kWh	30		$ 2.15	$ 2.14	$ 2.13	$ 2.08	$ 2.04	$ 1.94	$ 1.88	$ 1.80
3	100 million kWh	26		$ 1.98	$ 1.97	$ 1.96	$ 1.91	$ 1.87	$ 1.77	$ 1.70	$ 1.63
4	82 million kWh	30		$ 2.80	$ 2.80	$ 2.79	$ 2.73	$ 2.67	$ 2.56	$ 2.50	$ 2.43
5	City Only	30		$ 7.65	$ 7.64	$ 7.64	$ 7.51	$ 7.38	$ 7.18	$ 7.10	$ 7.01

VI. SUMMARY AND CONCLUSIONS

Based on the assumptions and analysis summarized in this report, a number of conclusions can be made regarding the Project.

1. Participation by only the City with its current loads is not economically feasible. Such a scenario would cause retail rates to increase by up to $0.20/kilowatt-hour over what they would have been at the time.
2. Present loads on the island are large enough to make the Project economic, but short-term losses would result if fuel prices do not rebound to levels exceeding $2.15/gallon.
3. If the City imposes a fee on the Processors for use of the City's distribution system in delivering Project power, even a very small fee could result in overall losses to the Processors as compared to continued operations without the Project.
4. It may not be economic for all loads to participate in the Project due to the relatively small loads of some self-generators and the high capital cost to electrically interconnect them with the system.
5. The analysis has used certain assumptions for the Processors' fuel consumption, avoided operating costs, and maintenance costs. These assumptions must be reviewed and verified by the Processors before they consider participation in the Project. It is also noted that these assumptions may vary by Processor.
6. Even if the Processors agreed to participate in the Project, agreements between the parties could take several months to negotiate and acquire the necessary approvals. The parties must agree on spinning reserve protocols, installed reserve protocols, operating procedures, and cost allocations.
7. There is significant risk if the City enters into a Power Purchase Agreement without a commitment from the Processors. If they ultimately decided not to participate, the cost to the City is projected to add $0.30/kilowatt-hour above what rates would have been at the time.
8. Although the City has experienced load growth in the past, construction of the Project based on speculative loads represents a high degree of risk for the City ratepayers.
9. Previous discussions with the Processors have shown that they will not make long-term commitments for payment obligations. If they did participate and later withdrew from the Project or curtailed operations for whatever reason, the City would have to make up the difference in payments. The effect on a City ratepayer would vary depending on what the Processor curtailment was, but even if the curtailment is limited to 30 percent, City ratepayers would pay an additional $0.05/kilowatt-hour.
10. Heat loads could add to the City load, but the electric rate must be lower than cost of heating fuel and amortization of the conversion cost. These loads, however, would probably not occur until after the Project is operational.

11. If the City participates in the Project, its bond counsel should review the Power Purchase Agreement to ensure the City will be in compliance with its bond ordinances.

Attachment 1A

Load: City Only

Project Size: 16 MW

Fuel Forecast: Nymex

Scenario 1: Nymex Fuel
Makushin Size: 16
Fuel Forecast: Nymex
Sales to Processors: 0

	2021	2022	2023	Geo 2024	Geo 2025	Geo 2026	Geo 2027	Geo 2028	Geo 2029	Geo 2030	Geo 2031	Geo 2032
Inflation		1.50%	2.00%	2.00%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
Price Level	1.000	1.015	1.035	1.056	1.080	1.104	1.129	1.154	1.180	1.207	1.234	1.262
Cost of Fuel ($/gallon)			.									
City	1.42	1.47	1.53	1.59	1.65	1.72	1.79	1.86	1.92	1.98	2.01	2.05
Processor	1.46	1.52	1.58	1.64	1.70	1.77	1.84	1.91	1.98	2.04	2.07	2.12
Processor VOM ($/kWh)	0.028	0.028	0.028	0.029	0.030	0.030	0.031	0.032	0.032	0.033	0.034	0.035
Fuel Efficiency (kWh/gal)												
City	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
Processor	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Fuel Usage With Makushin for Maint/etc. (000 gallons)												
City												
Hours/Unit/Month	-	-	-	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Gallons/Hour	-	-	-	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6
Number of Units	-	-	-	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Processor												
Hours/Unit/Month	-	-	-	-	-	-	-	-	-	-	-	-
Gallons/Hour	-	-	-	-	-	-	-	-	-	-	-	-
Number of Units	-	-	-	-	-	-	-	-	-	-	-	-
Makushin Rate												
Fixed Payment - 16 MW (000)	-	-	-	11,840	11,958	12,078	12,199	12,321	12,444	12,568	12,694	12,821

1	Scenario 1: Nymex Fuel											
2	Makushin Size: 16											
3	Fuel Forecast: Nymex											
4	Sales to Processors: 0											
5												
6												
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
9	Inflation	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
10	Price Level	1.290	1.319	1.349	1.379	1.410	1.442	1.474	1.508	1.541	1.576	1.612
11	Cost of Fuel ($/gallon)											
12	City	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.46	2.51	2.57	2.62
13	Processor	2.16	2.21	2.26	2.31	2.37	2.42	2.47	2.53	2.59	2.64	2.70
14	Processor VOM ($/kWh)	0.035	0.036	0.037	0.038	0.039	0.040	0.041	0.041	0.042	0.043	0.044
15	Fuel Efficiency (kWh/gal)											
16	City	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
17	Processor	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
18	Fuel Usage With Makushin for Maint/etc. (000											
19	City											
20	Hours/Unit/Month	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
21	Gallons/Hour	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6
22	Number of Units	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
23	Processor											
24	Hours/Unit/Month	-	-	-	-	-	-	-	-	-	-	-
25	Gallons/Hour	-	-	-	-	-	-	-	-	-	-	-
26	Number of Units	-	-	-	-	-	-	-	-	-	-	-
27	Makushin Rate											
28	Fixed Payment - 16 MW (000)	12,949	13,079	13,210	13,342	13,475	13,610	13,746	13,883	14,022	14,162	14,304

Scenario 1: Nymex Fuel
Makushin Size: 16
Fuel Forecast: Nymex
Sales to Processors: 0

	2021	2022	2023	Geo 2024	Geo 2025	Geo 2026	Geo 2027	Geo 2028	Geo 2029	Geo 2030	Geo 2031	Geo 2032
Without Makushin (Dollars in Thousands)												
Loads (million kWh)												
City												
Sales												
City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
City Heat	-	-	-	-	-	-	-	-	-	-	-	-
City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-	-
Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Losses												
Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
Processors	-	-	-	-	-	-	-	-	-	-	-	-
Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
Processors	-	-	-	-	-	-	-	-	-	-	-	-
Costs												
City												
Admin/Depr/Int	$ 6,024	$ 6,115	$ 6,237	$ 6,362	$ 6,505	$ 6,651	$ 6,801	$ 6,954	$ 7,110	$ 7,270	$ 7,434	$ 7,601
Line Repair	1,349	1,369	1,396	1,424	1,456	1,489	1,522	1,557	1,592	1,627	1,664	1,701
Vehicles	64	65	67	68	70	71	73	74	76	78	79	81
Facilities	145	147	150	153	157	160	164	168	171	175	179	183
Production												
Personnel	1,444	1,465	1,494	1,524	1,559	1,594	1,630	1,666	1,704	1,742	1,781	1,821
Ops	789	801	817	833	852	871	891	911	931	952	974	995
Fuel	3,754	3,905	4,058	4,216	4,375	4,544	4,729	4,917	5,086	5,235	5,322	5,442
Spinning Reserve Fuel	-	-	-	-	-	-	-	-	-	-	-	-
Makushin												
To OCCP	-	-	-	-	-	-	-	-	-	-	-	-
Payments from Processors												
Makushin	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-
Total City	13,569	13,867	14,220	14,581	14,973	15,381	15,810	16,246	16,670	17,080	17,434	17,826
Processor Costs												
Fuel	-	-	-	-	-	-	-	-	-	-	-	-
Variable O&M	-	-	-	-	-	-	-	-	-	-	-	-
Payments to City												
Makushin	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-
Total Processor	-	-	-	-	-	-	-	-	-	-	-	-
Total Costs	13,569	13,867	14,220	14,581	14,973	15,381	15,810	16,246	16,670	17,080	17,434	17,826
City Costs @ Production Level ($/kWh)												
Production												
Fuel	$ 0.090	$ 0.094	$ 0.098	$ 0.101	$ 0.105	$ 0.109	$ 0.114	$ 0.118	$ 0.122	$ 0.126	$ 0.128	$ 0.131
Makushin	-	-	-	-	-	-	-	-	-	-	-	-
Other Production	0.054	0.054	0.056	0.057	0.058	0.059	0.061	0.062	0.063	0.065	0.066	0.068
Other	0.182	0.185	0.189	0.193	0.197	0.201	0.206	0.210	0.215	0.220	0.225	0.230
Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-	-
Total												
At Production Level	$ 0.326	$ 0.334	$ 0.342	$ 0.351	$ 0.360	$ 0.370	$ 0.380	$ 0.391	$ 0.401	$ 0.411	$ 0.419	$ 0.429
At Sales Level	$ 0.339	$ 0.347	$ 0.355	$ 0.365	$ 0.374	$ 0.385	$ 0.395	$ 0.406	$ 0.417	$ 0.427	$ 0.436	$ 0.446
Processor Costs ($/kWh)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Scenario 1: Nymex Fuel
Makushin Size: 16
Fuel Forecast: Nymex
Sales to Processors: 0

	Geo 2033	Geo 2034	Geo 2035	Geo 2036	Geo 2037	Geo 2038	Geo 2039	Geo 2040	Geo 2041	Geo 2042	Geo 2043
Without Makushin (Dollars in Thousands)											
Loads (million kWh)											
City											
Sales											
City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
City Heat	-	-	-	-	-	-	-	-	-	-	-
City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-
Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Losses											
Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
Processors	-	-	-	-	-	-	-	-	-	-	-
Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
Processors	-	-	-	-	-	-	-	-	-	-	-
Costs											
City											
Admin/Depr/Int	$ 7,772	$ 7,947	$ 8,126	$ 8,309	$ 8,496	$ 8,687	$ 8,882	$ 9,082	$ 9,287	$ 9,496	$ 9,709
Line Repair	1,740	1,779	1,819	1,860	1,902	1,944	1,988	2,033	2,079	2,125	2,173
Vehicles	83	85	87	89	91	93	95	97	99	101	104
Facilities	187	192	196	200	205	209	214	219	224	229	234
Production											
Personnel	1,862	1,904	1,947	1,991	2,036	2,081	2,128	2,176	2,225	2,275	2,326
Ops	1,018	1,041	1,064	1,088	1,113	1,138	1,163	1,189	1,216	1,243	1,271
Fuel	5,565	5,690	5,818	5,949	6,083	6,219	6,359	6,502	6,649	6,798	6,951
Spinning Reserve Fuel	-	-	-	-	-	-	-	-	-	-	-
Makushin											
To OCCP	-	-	-	-	-	-	-	-	-	-	-
Payments from Processors											
Makushin	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-
Total City	18,227	18,637	19,057	19,486	19,924	20,372	20,831	21,299	21,779	22,269	22,770
Processor Costs											
Fuel	-	-	-	-	-	-	-	-	-	-	-
Variable O&M	-	-	-	-	-	-	-	-	-	-	-
Payments to City											
Makushin	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-
Total Processor	-	-	-	-	-	-	-	-	-	-	-
Total Costs	18,227	18,637	19,057	19,486	19,924	20,372	20,831	21,299	21,779	22,269	22,770
City Costs @ Production Level ($/kWh)											
Production											
Fuel	$ 0.134	$ 0.137	$ 0.140	$ 0.143	$ 0.146	$ 0.150	$ 0.153	$ 0.156	$ 0.160	$ 0.163	$ 0.167
Makushin	-	-	-	-	-	-	-	-	-	-	-
Other Production	0.069	0.071	0.072	0.074	0.076	0.077	0.079	0.081	0.083	0.085	0.087
Other	0.235	0.241	0.246	0.252	0.257	0.263	0.269	0.275	0.281	0.287	0.294
Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-
Total											
At Production Level	$ 0.438	$ 0.448	$ 0.458	$ 0.469	$ 0.479	$ 0.490	$ 0.501	$ 0.512	$ 0.524	$ 0.536	$ 0.548
At Sales Level	$ 0.456	$ 0.466	$ 0.476	$ 0.487	$ 0.498	$ 0.509	$ 0.521	$ 0.532	$ 0.544	$ 0.557	$ 0.569
Processor Costs ($/kWh)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Scenario 1: Nymex Fuel
Makushin Size: 16
Fuel Forecast: Nymex
Sales to Processors: 0

	2021	2022	2023	Geo 2024	Geo 2025	Geo 2026	Geo 2027	Geo 2028	Geo 2029	Geo 2030	Geo 2031	Geo 2032
With Makushin (Dollars in Thousands)												
Loads (million kWh)												
City												
Sales												
City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
City Heat	-	-	-	-	-	-	-	-	-	-	-	-
City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-	-
Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Losses												
Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
Processors	-	-	-	-	-	-	-	-	-	-	-	-
Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
Processors	-	-	-	-	-	-	-	-	-	-	-	-
City Costs												
Admin/Depr/Int	$ 6,024	$ 6,115	$ 6,237	$ 6,362	$ 6,505	$ 6,651	$ 6,801	$ 6,954	$ 7,110	$ 7,270	$ 7,434	$ 7,601
Line Repair	1,349	1,369	1,396	1,424	1,456	1,489	1,522	1,557	1,592	1,627	1,664	1,701
Vehicles	64	65	67	68	70	71	73	74	76	78	79	81
Facilities	145	147	150	153	157	160	164	168	171	175	179	183
Production												
Personnel	1,444	1,465	1,494	1,499	1,533	1,568	1,353	1,127	891	911	931	952
Ops	789	801	817	434	443	453	463	474	485	495	507	518
Fuel	3,754	3,905	4,058	165	171	178	185	192	199	205	208	213
Spinning Reserve Fuel	-	-	-	581	603	626	652	678	701	722	734	750
Makushin												
To OCCP	-	-	-	11,840	11,840	11,840	11,840	11,840	11,840	11,840	11,840	11,840
Payments from Processors												
Makushin	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-
Total City	13,569	13,867	14,220	22,526	22,778	23,036	23,053	23,063	23,064	23,323	23,576	23,840
Processor Costs												
Fuel	-	-	-	-	-	-	-	-	-	-	-	-
Variable O&M	-	-	-	-	-	-	-	-	-	-	-	-
Payments to City												
Makushin	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-
Total Processor	-	-	-	-	-	-	-	-	-	-	-	-
Total Costs	13,569	13,867	14,220	22,526	22,778	23,036	23,053	23,063	23,064	23,323	23,576	23,840
City Costs @ Production Level ($/kWh)												
Production												
Fuel	$ 0.090	$ 0.094	$ 0.098	$ 0.018	$ 0.019	$ 0.019	$ 0.020	$ 0.021	$ 0.022	$ 0.022	$ 0.023	$ 0.023
Makushin	-	-	-	0.285	0.285	0.285	0.285	0.285	0.285	0.285	0.285	0.285
Other Production	0.054	0.054	0.056	0.046	0.048	0.049	0.044	0.039	0.033	0.034	0.035	0.035
Other	0.182	0.185	0.189	0.193	0.197	0.201	0.206	0.210	0.215	0.220	0.225	0.230
Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-	-
Total												
At Production Level	0.326	0.334	0.342	0.542	0.548	0.554	0.554	0.555	0.555	0.561	0.567	0.573
At Sales Level	0.339	0.347	0.355	0.563	0.569	0.576	0.576	0.577	0.577	0.583	0.589	0.596
Processor Costs ($/kWh)	-	-	-	-	-	-	-	-	-	-	-	-

Scenario 1: Nymex Fuel
Makushin Size: 16
Fuel Forecast: Nymex
Sales to Processors: 0

	Geo 2033	Geo 2034	Geo 2035	Geo 2036	Geo 2037	Geo 2038	Geo 2039	Geo 2040	Geo 2041	Geo 2042	Geo 2043
With Makushin (Dollars in Thousands)											
Loads (million kWh)											
City											
Sales											
City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
City Heat	-	-	-	-	-	-	-	-	-	-	-
City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-
Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Losses											
Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
Processors	-	-	-	-	-	-	-	-	-	-	-
Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
Processors	-	-	-	-	-	-	-	-	-	-	-
City Costs											
Admin/Depr/Int	$ 7,772	$ 7,947	$ 8,126	$ 8,309	$ 8,496	$ 8,687	$ 8,882	$ 9,082	$ 9,287	$ 9,496	$ 9,709
Line Repair	1,740	1,779	1,819	1,860	1,902	1,944	1,988	2,033	2,079	2,125	2,173
Vehicles	83	85	87	89	91	93	95	97	99	101	104
Facilities	187	192	196	200	205	209	214	219	224	229	234
Production											
Personnel	974	995	1,018	1,041	1,064	1,088	1,113	1,138	1,163	1,189	1,216
Ops	530	542	554	566	579	592	605	619	633	647	662
Fuel	217	222	227	232	238	243	248	254	260	266	272
Spinning Reserve Fuel	767	784	802	820	838	857	876	896	916	937	958
Makushin											
To OCCP	11,840	11,840	11,840	11,840	11,840	11,840	11,840	11,840	11,840	11,840	11,840
Payments from Processors											
Makushin	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-
Total City	24,110	24,386	24,668	24,957	25,252	25,554	25,863	26,178	26,501	26,831	27,168
Processor Costs											
Fuel	-	-	-	-	-	-	-	-	-	-	-
Variable O&M	-	-	-	-	-	-	-	-	-	-	-
Payments to City											
Makushin	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-
Total Processor	-	-	-	-	-	-	-	-	-	-	-
Total Costs	24,110	24,386	24,668	24,957	25,252	25,554	25,863	26,178	26,501	26,831	27,168
City Costs @ Production Level ($/kWh)											
Production											
Fuel	$ 0.024	$ 0.024	$ 0.025	$ 0.025	$ 0.026	$ 0.026	$ 0.027	$ 0.028	$ 0.028	$ 0.029	$ 0.030
Makushin	0.285	0.285	0.285	0.285	0.285	0.285	0.285	0.285	0.285	0.285	0.285
Other Production	0.036	0.037	0.038	0.039	0.040	0.040	0.041	0.042	0.043	0.044	0.045
Other	0.235	0.241	0.246	0.252	0.257	0.263	0.269	0.275	0.281	0.287	0.294
Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-
Total											
At Production Level	0.580	0.586	0.593	0.600	0.607	0.615	0.622	0.630	0.637	0.645	0.653
At Sales Level	0.603	0.610	0.617	0.624	0.631	0.639	0.647	0.654	0.663	0.671	0.679
Processor Costs ($/kWh)	-	-	-	-	-	-	-	-	-	-	-

1	Scenario 1: Nymex Fuel												
2	Makushin Size: 16												
3	Fuel Forecast: Nymex												
4	Sales to Processors: 0												
5													
6													
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
127	**Savings (Losses)**												
128	Dollars (000)												
129	City	-	-	-	(7,945)	(7,805)	(7,656)	(7,243)	(6,817)	(6,394)	(6,243)	(6,142)	(6,014)
130	Processor	-	-	-	-	-	-	-	-	-	-	-	-
131	Combined	-	-	-	(7,945)	(7,805)	(7,656)	(7,243)	(6,817)	(6,394)	(6,243)	(6,142)	(6,014)
132	$/kWh												
133	City	-	-	-	(0.199)	(0.195)	(0.191)	(0.181)	(0.170)	(0.160)	(0.156)	(0.154)	(0.150)
134	Processor	-	-	-	-	-	-	-	-	-	-	-	-
135	Combined	-	-	-	(0.199)	(0.195)	(0.191)	(0.181)	(0.170)	(0.160)	(0.156)	(0.154)	(0.150)
136	Breakeven Fuel Price ($/gallon)	-	-	-	5.24	5.23	5.23	5.11	4.98	4.85	4.84	4.83	4.81

Scenario 1: Nymex Fuel
Makushin Size: 16
Fuel Forecast: Nymex
Sales to Processors: 0

	Geo 2033	Geo 2034	Geo 2035	Geo 2036	Geo 2037	Geo 2038	Geo 2039	Geo 2040	Geo 2041	Geo 2042	Geo 2043
Savings (Losses)											
Dollars (000)											
City	(5,883)	(5,749)	(5,612)	(5,472)	(5,328)	(5,182)	(5,032)	(4,879)	(4,722)	(4,562)	(4,398)
Processor	-	-	-	-	-	-	-	-	-	-	-
Combined	(5,883)	(5,749)	(5,612)	(5,472)	(5,328)	(5,182)	(5,032)	(4,879)	(4,722)	(4,562)	(4,398)
$/kWh											
City	(0.147)	(0.144)	(0.140)	(0.137)	(0.133)	(0.130)	(0.126)	(0.122)	(0.118)	(0.114)	(0.110)
Processor	-	-	-	-	-	-	-	-	-	-	-
Combined	(0.147)	(0.144)	(0.140)	(0.137)	(0.133)	(0.130)	(0.126)	(0.122)	(0.118)	(0.114)	(0.110)
Breakeven Fuel Price ($/gallon)	4.80	4.79	4.77	4.76	4.74	4.73	4.71	4.69	4.68	4.66	4.64

Attachment 1B

Load: City Only

Project Size: 16 MW

Fuel Forecast: EIA

Scneario 1: EIA Fuel
Makushin Size: 16
Fuel Forecast: EIA
Sales to Processors: 0

	2021	2022	2023	Geo 2024	Geo 2025	Geo 2026	Geo 2027	Geo 2028	Geo 2029	Geo 2030	Geo 2031	Geo 2032
Inflation		1.50%	2.00%	2.00%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
Price Level	1.000	1.015	1.035	1.056	1.080	1.104	1.129	1.154	1.180	1.207	1.234	1.262
Cost of Fuel ($/gallon)			.									
City	1.71	1.98	2.02	2.06	2.11	2.15	2.20	2.25	2.30	2.35	2.41	2.46
Processor	1.76	2.04	2.08	2.12	2.17	2.22	2.27	2.32	2.37	2.43	2.48	2.54
Processor VOM ($/kWh)	0.028	0.028	0.028	0.029	0.030	0.030	0.031	0.032	0.032	0.033	0.034	0.035
Fuel Efficiency (kWh/gal)												
City	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
Processor	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Fuel Usage With Makushin for Maint/etc. (000 gallons)												
City												
Hours/Unit/Month	-	-	-	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Gallons/Hour	-	-	-	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6
Number of Units	-	-	-	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Processor												
Hours/Unit/Month	-	-	-	-	-	-	-	-	-	-	-	-
Gallons/Hour	-	-	-	-	-	-	-	-	-	-	-	-
Number of Units	-	-	-	-	-	-	-	-	-	-	-	-
Makushin Rate												
Fixed Payment - 16 MW (000)	-	-	-	11,840	11,958	12,078	12,199	12,321	12,444	12,568	12,694	12,821

1	Scneario 1: EIA Fuel											
2	Makushin Size: 16											
3	Fuel Forecast: EIA											
4	Sales to Processors: 0											
5												
6												
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
9	Inflation	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
10	Price Level	1.290	1.319	1.349	1.379	1.410	1.442	1.474	1.508	1.541	1.576	1.612
11	Cost of Fuel ($/gallon)											
12	City	2.52	2.57	2.63	2.69	2.75	2.81	2.88	2.94	3.01	3.08	3.14
13	Processor	2.59	2.65	2.71	2.77	2.83	2.90	2.96	3.03	3.10	3.17	3.24
14	Processor VOM ($/kWh)	0.035	0.036	0.037	0.038	0.039	0.040	0.041	0.041	0.042	0.043	0.044
15	Fuel Efficiency (kWh/gal)											
16	City	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
17	Processor	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
18	Fuel Usage With Makushin for Maint/etc. (000											
19	City											
20	Hours/Unit/Month	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
21	Gallons/Hour	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6
22	Number of Units	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
23	Processor											
24	Hours/Unit/Month	-	-	-	-	-	-	-	-	-	-	-
25	Gallons/Hour	-	-	-	-	-	-	-	-	-	-	-
26	Number of Units	-	-	-	-	-	-	-	-	-	-	-
27	Makushin Rate											
28	Fixed Payment - 16 MW (000)	12,949	13,079	13,210	13,342	13,475	13,610	13,746	13,883	14,022	14,162	14,304

Scneario 1: EIA Fuel
Makushin Size: 16
Fuel Forecast: EIA
Sales to Processors: 0

	2021	2022	2023	Geo 2024	Geo 2025	Geo 2026	Geo 2027	Geo 2028	Geo 2029	Geo 2030	Geo 2031	Geo 2032
Without Makushin (Dollars in Thousands)												
Loads (million kWh)												
City												
Sales												
City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
City Heat	-	-	-	-	-	-	-	-	-	-	-	-
City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-	-
Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Losses												
Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
Processors	-	-	-	-	-	-	-	-	-	-	-	-
Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
Processors	-	-	-	-	-	-	-	-	-	-	-	-
Costs												
City												
Admin/Depr/Int	$ 6,024	$ 6,115	$ 6,237	$ 6,362	$ 6,505	$ 6,651	$ 6,801	$ 6,954	$ 7,110	$ 7,270	$ 7,434	$ 7,601
Line Repair	1,349	1,369	1,396	1,424	1,456	1,489	1,522	1,557	1,592	1,627	1,664	1,701
Vehicles	64	65	67	68	70	71	73	74	76	78	79	81
Facilities	145	147	150	153	157	160	164	168	171	175	179	183
Production												
Personnel	1,444	1,465	1,494	1,524	1,559	1,594	1,630	1,666	1,704	1,742	1,781	1,821
Ops	789	801	817	833	852	871	891	911	931	952	974	995
Fuel	4,533	5,233	5,337	5,457	5,580	5,706	5,834	5,965	6,100	6,237	6,377	6,521
Spinning Reserve Fuel	-	-	-	-	-	-	-	-	-	-	-	-
Makushin												
To OCCP	-	-	-	-	-	-	-	-	-	-	-	-
Payments from Processors												
Makushin	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-
Total City	14,348	15,195	15,499	15,822	16,178	16,542	16,914	17,295	17,684	18,082	18,489	18,905
Processor Costs												
Fuel	-	-	-	-	-	-	-	-	-	-	-	-
Variable O&M	-	-	-	-	-	-	-	-	-	-	-	-
Payments to City												
Makushin	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-
Total Processor	-	-	-	-	-	-	-	-	-	-	-	-
Total Costs	14,348	15,195	15,499	15,822	16,178	16,542	16,914	17,295	17,684	18,082	18,489	18,905
City Costs @ Production Level ($/kWh)												
Production												
Fuel	$ 0.109	$ 0.126	$ 0.128	$ 0.131	$ 0.134	$ 0.137	$ 0.140	$ 0.143	$ 0.147	$ 0.150	$ 0.153	$ 0.157
Makushin	-	-	-	-	-	-	-	-	-	-	-	-
Other Production	0.054	0.054	0.056	0.057	0.058	0.059	0.061	0.062	0.063	0.065	0.066	0.068
Other	0.182	0.185	0.189	0.193	0.197	0.201	0.206	0.210	0.215	0.220	0.225	0.230
Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-	-
Total												
At Production Level	$ 0.345	$ 0.365	$ 0.373	$ 0.381	$ 0.389	$ 0.398	$ 0.407	$ 0.416	$ 0.425	$ 0.435	$ 0.445	$ 0.455
At Sales Level	$ 0.359	$ 0.380	$ 0.387	$ 0.396	$ 0.404	$ 0.414	$ 0.423	$ 0.432	$ 0.442	$ 0.452	$ 0.462	$ 0.473
Processor Costs ($/kWh)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Scneario 1: EIA Fuel
Makushin Size: 16
Fuel Forecast: EIA
Sales to Processors: 0

	Geo 2033	Geo 2034	Geo 2035	Geo 2036	Geo 2037	Geo 2038	Geo 2039	Geo 2040	Geo 2041	Geo 2042	Geo 2043
Without Makushin (Dollars in Thousands)											
Loads (million kWh)											
City											
Sales											
City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
City Heat	-	-	-	-	-	-	-	-	-	-	-
City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-
Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Losses											
Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
Processors	-	-	-	-	-	-	-	-	-	-	-
Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
Processors	-	-	-	-	-	-	-	-	-	-	-
Costs											
City											
Admin/Depr/Int	$ 7,772	$ 7,947	$ 8,126	$ 8,309	$ 8,496	$ 8,687	$ 8,882	$ 9,082	$ 9,287	$ 9,496	$ 9,709
Line Repair	1,740	1,779	1,819	1,860	1,902	1,944	1,988	2,033	2,079	2,125	2,173
Vehicles	83	85	87	89	91	93	95	97	99	101	104
Facilities	187	192	196	200	205	209	214	219	224	229	234
Production											
Personnel	1,862	1,904	1,947	1,991	2,036	2,081	2,128	2,176	2,225	2,275	2,326
Ops	1,018	1,041	1,064	1,088	1,113	1,138	1,163	1,189	1,216	1,243	1,271
Fuel	6,667	6,817	6,971	7,128	7,288	7,452	7,620	7,791	7,966	8,146	8,329
Spinning Reserve Fuel	-	-	-	-	-	-	-	-	-	-	-
Makushin											
To OCCP	-	-	-	-	-	-	-	-	-	-	-
Payments from Processors											
Makushin	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-
Total City	19,330	19,765	20,210	20,664	21,129	21,605	22,091	22,588	23,096	23,616	24,147
Processor Costs											
Fuel	-	-	-	-	-	-	-	-	-	-	-
Variable O&M	-	-	-	-	-	-	-	-	-	-	-
Payments to City											
Makushin	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-
Total Processor	-	-	-	-	-	-	-	-	-	-	-
Total Costs	19,330	19,765	20,210	20,664	21,129	21,605	22,091	22,588	23,096	23,616	24,147
City Costs @ Production Level ($/kWh)											
Production											
Fuel	$ 0.160	$ 0.164	$ 0.168	$ 0.171	$ 0.175	$ 0.179	$ 0.183	$ 0.187	$ 0.192	$ 0.196	$ 0.200
Makushin	-	-	-	-	-	-	-	-	-	-	-
Other Production	0.069	0.071	0.072	0.074	0.076	0.077	0.079	0.081	0.083	0.085	0.087
Other	0.235	0.241	0.246	0.252	0.257	0.263	0.269	0.275	0.281	0.287	0.294
Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-
Total											
At Production Level	$ 0.465	$ 0.475	$ 0.486	$ 0.497	$ 0.508	$ 0.520	$ 0.531	$ 0.543	$ 0.555	$ 0.568	$ 0.581
At Sales Level	$ 0.483	$ 0.494	$ 0.505	$ 0.517	$ 0.528	$ 0.540	$ 0.552	$ 0.565	$ 0.577	$ 0.590	$ 0.604
Processor Costs ($/kWh)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Scneario 1: EIA Fuel
Makushin Size: 16
Fuel Forecast: EIA
Sales to Processors: 0

	2021	2022	2023	Geo 2024	Geo 2025	Geo 2026	Geo 2027	Geo 2028	Geo 2029	Geo 2030	Geo 2031	Geo 2032
With Makushin (Dollars in Thousands)												
Loads (million kWh)												
City												
Sales												
City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
City Heat	-	-	-	-	-	-	-	-	-	-	-	-
City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-	-
Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Losses												
Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
Processors	-	-	-	-	-	-	-	-	-	-	-	-
Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
Processors	-	-	-	-	-	-	-	-	-	-	-	-
City Costs												
Admin/Depr/Int	$ 6,024	$ 6,115	$ 6,237	$ 6,362	$ 6,505	$ 6,651	$ 6,801	$ 6,954	$ 7,110	$ 7,270	$ 7,434	$ 7,601
Line Repair	1,349	1,369	1,396	1,424	1,456	1,489	1,522	1,557	1,592	1,627	1,664	1,701
Vehicles	64	65	67	68	70	71	73	74	76	78	79	81
Facilities	145	147	150	153	157	160	164	168	171	175	179	183
Production												
Personnel	1,444	1,465	1,494	1,499	1,533	1,568	1,353	1,127	891	911	931	952
Ops	789	801	817	434	443	453	463	474	485	495	507	518
Fuel	4,533	5,233	5,337	213	218	223	228	233	238	244	249	255
Spinning Reserve Fuel	-	-	-	752	769	786	804	822	841	860	879	899
Makushin												
To OCCP	-	-	-	11,840	11,840	11,840	11,840	11,840	11,840	11,840	11,840	11,840
Payments from Processors												
Makushin	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-
Total City	14,348	15,195	15,499	22,746	22,991	23,242	23,248	23,249	23,244	23,500	23,763	24,031
Processor Costs												
Fuel	-	-	-	-	-	-	-	-	-	-	-	-
Variable O&M	-	-	-	-	-	-	-	-	-	-	-	-
Payments to City												
Makushin	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-
Total Processor	-	-	-	-	-	-	-	-	-	-	-	-
Total Costs	14,348	15,195	15,499	22,746	22,991	23,242	23,248	23,249	23,244	23,500	23,763	24,031
City Costs @ Production Level ($/kWh)												
Production												
Fuel	$ 0.109	$ 0.126	$ 0.128	$ 0.023	$ 0.024	$ 0.024	$ 0.025	$ 0.025	$ 0.026	$ 0.027	$ 0.027	$ 0.028
Makushin	-	-	-	0.285	0.285	0.285	0.285	0.285	0.285	0.285	0.285	0.285
Other Production	0.054	0.054	0.056	0.046	0.048	0.049	0.044	0.039	0.033	0.034	0.035	0.035
Other	0.182	0.185	0.189	0.193	0.197	0.201	0.206	0.210	0.215	0.220	0.225	0.230
Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-	-
Total												
At Production Level	0.345	0.365	0.373	0.547	0.553	0.559	0.559	0.559	0.559	0.565	0.571	0.578
At Sales Level	0.359	0.380	0.387	0.569	0.575	0.581	0.581	0.581	0.581	0.588	0.594	0.601
Processor Costs ($/kWh)	-	-	-	-	-	-	-	-	-	-	-	-

Scneario 1: EIA Fuel
Makushin Size: 16
Fuel Forecast: EIA
Sales to Processors: 0

	Geo 2033	Geo 2034	Geo 2035	Geo 2036	Geo 2037	Geo 2038	Geo 2039	Geo 2040	Geo 2041	Geo 2042	Geo 2043
With Makushin (Dollars in Thousands)											
Loads (million kWh)											
City											
Sales											
City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
City Heat	-	-	-	-	-	-	-	-	-	-	-
City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-
Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Losses											
Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
Processors	-	-	-	-	-	-	-	-	-	-	-
Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
Processors	-	-	-	-	-	-	-	-	-	-	-
City Costs											
Admin/Depr/Int	$ 7,772	$ 7,947	$ 8,126	$ 8,309	$ 8,496	$ 8,687	$ 8,882	$ 9,082	$ 9,287	$ 9,496	$ 9,709
Line Repair	1,740	1,779	1,819	1,860	1,902	1,944	1,988	2,033	2,079	2,125	2,173
Vehicles	83	85	87	89	91	93	95	97	99	101	104
Facilities	187	192	196	200	205	209	214	219	224	229	234
Production											
Personnel	974	995	1,018	1,041	1,064	1,088	1,113	1,138	1,163	1,189	1,216
Ops	530	542	554	566	579	592	605	619	633	647	662
Fuel	261	266	272	279	285	291	298	304	311	318	325
Spinning Reserve Fuel	919	940	961	982	1,004	1,027	1,050	1,074	1,098	1,123	1,148
Makushin											
To OCCP	11,840	11,840	11,840	11,840	11,840	11,840	11,840	11,840	11,840	11,840	11,840
Payments from Processors											
Makushin	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-
Total City	24,305	24,586	24,872	25,166	25,465	25,772	26,085	26,406	26,734	27,069	27,411
Processor Costs											
Fuel	-	-	-	-	-	-	-	-	-	-	-
Variable O&M	-	-	-	-	-	-	-	-	-	-	-
Payments to City											
Makushin	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-
Total Processor	-	-	-	-	-	-	-	-	-	-	-
Total Costs	24,305	24,586	24,872	25,166	25,465	25,772	26,085	26,406	26,734	27,069	27,411
City Costs @ Production Level ($/kWh)											
Production											
Fuel	$ 0.028	$ 0.029	$ 0.030	$ 0.030	$ 0.031	$ 0.032	$ 0.032	$ 0.033	$ 0.034	$ 0.035	$ 0.035
Makushin	0.285	0.285	0.285	0.285	0.285	0.285	0.285	0.285	0.285	0.285	0.285
Other Production	0.036	0.037	0.038	0.039	0.040	0.040	0.041	0.042	0.043	0.044	0.045
Other	0.235	0.241	0.246	0.252	0.257	0.263	0.269	0.275	0.281	0.287	0.294
Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-
Total											
At Production Level	0.585	0.591	0.598	0.605	0.612	0.620	0.627	0.635	0.643	0.651	0.659
At Sales Level	0.608	0.615	0.622	0.629	0.637	0.644	0.652	0.660	0.668	0.677	0.685
Processor Costs ($/kWh)	-	-	-	-	-	-	-	-	-	-	-

1	Scneario 1: EIA Fuel												
2	Makushin Size: 16												
3	Fuel Forecast: EIA												
4	Sales to Processors: 0												
5													
6													
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
127	**Savings (Losses)**												
128	Dollars (000)												
129	City	-	-	-	(6,923)	(6,813)	(6,700)	(6,334)	(5,954)	(5,560)	(5,418)	(5,274)	(5,126)
130	Processor	-	-	-	-	-	-	-	-	-	-	-	-
131	Combined	-	-	-	(6,923)	(6,813)	(6,700)	(6,334)	(5,954)	(5,560)	(5,418)	(5,274)	(5,126)
132	$/kWh												
133	City	-	-	-	(0.173)	(0.170)	(0.167)	(0.158)	(0.149)	(0.139)	(0.135)	(0.132)	(0.128)
134	Processor	-	-	-	-	-	-	-	-	-	-	-	-
135	Combined	-	-	-	(0.173)	(0.170)	(0.167)	(0.158)	(0.149)	(0.139)	(0.135)	(0.132)	(0.128)
136	Breakeven Fuel Price ($/gallon)	-	-	-	5.24	5.23	5.23	5.11	4.98	4.85	4.84	4.83	4.81

1	Scneario 1: EIA Fuel											
2	Makushin Size: 16											
3	Fuel Forecast: EIA											
4	Sales to Processors: 0											
5												
6												
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
127	**Savings (Losses)**											
128	Dollars (000)											
129	City	(4,975)	(4,821)	(4,663)	(4,501)	(4,336)	(4,167)	(3,995)	(3,818)	(3,638)	(3,453)	(3,264)
130	Processor	-	-	-	-	-	-	-	-	-	-	-
131	Combined	(4,975)	(4,821)	(4,663)	(4,501)	(4,336)	(4,167)	(3,995)	(3,818)	(3,638)	(3,453)	(3,264)
132	$/kWh											
133	City	(0.124)	(0.121)	(0.117)	(0.113)	(0.108)	(0.104)	(0.100)	(0.095)	(0.091)	(0.086)	(0.082)
134	Processor	-	-	-	-	-	-	-	-	-	-	-
135	Combined	(0.124)	(0.121)	(0.117)	(0.113)	(0.108)	(0.104)	(0.100)	(0.095)	(0.091)	(0.086)	(0.082)
136	Breakeven Fuel Price ($/gallon)	4.80	4.79	4.77	4.76	4.74	4.73	4.71	4.69	4.68	4.66	4.64

Attachment 2A

Load: 100 million kWh

Project Size: 30 MW

Fuel Forecast: Nymex

1													
2	Makushin Size	30											
3	Fuel Forecast	Nymex											
4	Sales to Processors	60,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
9	Inflation		1.50%	2.00%	2.00%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
10	Price Level	1.000	1.015	1.035	1.056	1.080	1.104	1.129	1.154	1.180	1.207	1.234	1.262
11	Cost of Fuel ($/gallon)			.									
12	City	1.42	1.47	1.53	1.59	1.65	1.72	1.79	1.86	1.92	1.98	2.01	2.05
13	Processor	1.46	1.52	1.58	1.64	1.70	1.77	1.84	1.91	1.98	2.04	2.07	2.12
14	Processor VOM ($/kWh)	0.028	0.028	0.028	0.029	0.030	0.030	0.031	0.032	0.032	0.033	0.034	0.035
15	Fuel Efficiency (kWh/gal)												
16	City	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
17	Processor	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
18	Fuel Usage With Makushin for Maint/etc. (000 gallons)												
19	City												
20	Hours/Unit/Month	-	-	-	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
21	Gallons/Hour	-	-	-	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6
22	Number of Units	-	-	-	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
23	Processor												
24	Hours/Unit/Month	-	-	-	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
25	Gallons/Hour	-	-	-	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
26	Number of Units	-	-	-	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
27	Makushin Rate												
28	Fixed Payment - 30 MW (000)	-	-	-	16,020	16,180	16,342	16,505	16,670	16,837	17,006	17,176	17,347

1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
9	Inflation	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
10	Price Level	1.290	1.319	1.349	1.379	1.410	1.442	1.474	1.508	1.541	1.576	1.612
11	Cost of Fuel ($/gallon)											
12	City	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.46	2.51	2.57	2.62
13	Processor	2.16	2.21	2.26	2.31	2.37	2.42	2.47	2.53	2.59	2.64	2.70
14	Processor VOM ($/kWh)	0.035	0.036	0.037	0.038	0.039	0.040	0.041	0.041	0.042	0.043	0.044
15	Fuel Efficiency (kWh/gal)											
16	City	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
17	Processor	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
18	Fuel Usage With Makushin for Maint/etc. (000											
19	City											
20	Hours/Unit/Month	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
21	Gallons/Hour	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6
22	Number of Units	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
23	Processor											
24	Hours/Unit/Month	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
25	Gallons/Hour	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
26	Number of Units	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
27	Makushin Rate											
28	Fixed Payment - 30 MW (000)	17,521	17,696	17,873	18,052	18,232	18,415	18,599	18,785	18,973	19,162	19,354

1													
2	Makushin Size	30											
3	Fuel Forecast	Nymex											
4	Sales to Processors	60,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
29	**Without Makushin (Dollars in Thousands)**												
30	Loads (million kWh)												
31	City												
32	Sales												
33	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
34	City Heat	-	-	-	-	-	-	-	-	-	-	-	-
35	City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-	-
36	Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
37	Losses												
38	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
39	Processors	-	-	-	-	-	-	-	-	-	-	-	-
40	Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
41	Processors	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
42	Costs												
43	City												
44	Admin/Depr/Int	$ 6,024	$ 6,115	$ 6,237	$ 6,362	$ 6,505	$ 6,651	$ 6,801	$ 6,954	$ 7,110	$ 7,270	$ 7,434	$ 7,601
45	Line Repair	1,349	1,369	1,396	1,424	1,456	1,489	1,522	1,557	1,592	1,627	1,664	1,701
46	Vehicles	64	65	67	68	70	71	73	74	76	78	79	81
47	Facilities	145	147	150	153	157	160	164	168	171	175	179	183
48	Production												
49	Personnel	1,444	1,465	1,494	1,524	1,559	1,594	1,630	1,666	1,704	1,742	1,781	1,821
50	Ops	789	801	817	833	852	871	891	911	931	952	974	995
51	Fuel	3,754	3,905	4,058	4,216	4,375	4,544	4,729	4,917	5,086	5,235	5,322	5,442
52	Spinning Reserve Fuel	-	-	-	-	-	-	-	-	-	-	-	-
53	Makushin												
54	To OCCP	-	-	-	-	-	-	-	-	-	-	-	-
55	Payments from Processors												
56	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
57	Other	-	-	-	-	-	-	-	-	-	-	-	-
58	Total City	13,569	13,867	14,220	14,581	14,973	15,381	15,810	16,246	16,670	17,080	17,434	17,826
59	Processor Costs												
60	Fuel	6,257	6,509	6,764	7,027	7,293	7,574	7,883	8,195	8,477	8,726	8,871	9,071
61	Variable O&M	1,650	1,675	1,708	1,742	1,782	1,822	1,863	1,905	1,947	1,991	2,036	2,082
62	Payments to City												
63	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
64	Other	-	-	-	-	-	-	-	-	-	-	-	-
65	Total Processor	7,907	8,183	8,472	8,769	9,074	9,396	9,746	10,100	10,425	10,717	10,907	11,153
66	Total Costs	21,477	22,050	22,692	23,350	24,047	24,777	25,555	26,346	27,095	27,797	28,341	28,979
67	City Costs @ Production Level ($/kWh)												
68	Production												
69	Fuel	$ 0.090	$ 0.094	$ 0.098	$ 0.101	$ 0.105	$ 0.109	$ 0.114	$ 0.118	$ 0.122	$ 0.126	$ 0.128	$ 0.131
70	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
71	Other Production	0.054	0.054	0.056	0.057	0.058	0.059	0.061	0.062	0.063	0.065	0.066	0.068
72	Other	0.182	0.185	0.189	0.193	0.197	0.201	0.206	0.210	0.215	0.220	0.225	0.230
73	Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-	-
74	Total												
75	At Production Level	$ 0.326	$ 0.334	$ 0.342	$ 0.351	$ 0.360	$ 0.370	$ 0.380	$ 0.391	$ 0.401	$ 0.411	$ 0.419	$ 0.429
76	At Sales Level	$ 0.339	$ 0.347	$ 0.355	$ 0.365	$ 0.374	$ 0.385	$ 0.395	$ 0.406	$ 0.417	$ 0.427	$ 0.436	$ 0.446
77	Processor Costs ($/kWh)	$ 0.132	$ 0.136	$ 0.141	$ 0.146	$ 0.151	$ 0.157	$ 0.162	$ 0.168	$ 0.174	$ 0.179	$ 0.182	$ 0.186
78													

		Geo 2033	Geo 2034	Geo 2035	Geo 2036	Geo 2037	Geo 2038	Geo 2039	Geo 2040	Geo 2041	Geo 2042	Geo 2043
1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
29	**Without Makushin (Dollars in Thousands)**											
30	Loads (million kWh)											
31	City											
32	Sales											
33	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
34	City Heat	-	-	-	-	-	-	-	-	-	-	-
35	City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-
36	Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
37	Losses											
38	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
39	Processors	-	-	-	-	-	-	-	-	-	-	-
40	Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
41	Processors	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
42	Costs											
43	City											
44	Admin/Depr/Int	$ 7,772	$ 7,947	$ 8,126	$ 8,309	$ 8,496	$ 8,687	$ 8,882	$ 9,082	$ 9,287	$ 9,496	$ 9,709
45	Line Repair	1,740	1,779	1,819	1,860	1,902	1,944	1,988	2,033	2,079	2,125	2,173
46	Vehicles	83	85	87	89	91	93	95	97	99	101	104
47	Facilities	187	192	196	200	205	209	214	219	224	229	234
48	Production											
49	Personnel	1,862	1,904	1,947	1,991	2,036	2,081	2,128	2,176	2,225	2,275	2,326
50	Ops	1,018	1,041	1,064	1,088	1,113	1,138	1,163	1,189	1,216	1,243	1,271
51	Fuel	5,565	5,690	5,818	5,949	6,083	6,219	6,359	6,502	6,649	6,798	6,951
52	Spinning Reserve Fuel	-	-	-	-	-	-	-	-	-	-	-
53	Makushin											
54	To OCCP	-	-	-	-	-	-	-	-	-	-	-
55	Payments from Processors											
56	Makushin	-	-	-	-	-	-	-	-	-	-	-
57	Other	-	-	-	-	-	-	-	-	-	-	-
58	Total City	18,227	18,637	19,057	19,486	19,924	20,372	20,831	21,299	21,779	22,269	22,770
59	Processor Costs											
60	Fuel	9,275	9,484	9,697	9,915	10,138	10,366	10,600	10,838	11,082	11,331	11,586
61	Variable O&M	2,129	2,177	2,226	2,276	2,327	2,379	2,433	2,488	2,543	2,601	2,659
62	Payments to City											
63	Makushin	-	-	-	-	-	-	-	-	-	-	-
64	Other	-	-	-	-	-	-	-	-	-	-	-
65	Total Processor	11,404	11,660	11,923	12,191	12,465	12,746	13,032	13,326	13,625	13,932	14,245
66	Total Costs	29,631	30,298	30,979	31,676	32,389	33,118	33,863	34,625	35,404	36,200	37,015
67	City Costs @ Production Level ($/kWh)											
68	Production											
69	Fuel	$ 0.134	$ 0.137	$ 0.140	$ 0.143	$ 0.146	$ 0.150	$ 0.153	$ 0.156	$ 0.160	$ 0.163	$ 0.167
70	Makushin	-	-	-	-	-	-	-	-	-	-	-
71	Other Production	0.069	0.071	0.072	0.074	0.076	0.077	0.079	0.081	0.083	0.085	0.087
72	Other	0.235	0.241	0.246	0.252	0.257	0.263	0.269	0.275	0.281	0.287	0.294
73	Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-
74	Total											
75	At Production Level	$ 0.438	$ 0.448	$ 0.458	$ 0.469	$ 0.479	$ 0.490	$ 0.501	$ 0.512	$ 0.524	$ 0.536	$ 0.548
76	At Sales Level	$ 0.456	$ 0.466	$ 0.476	$ 0.487	$ 0.498	$ 0.509	$ 0.521	$ 0.532	$ 0.544	$ 0.557	$ 0.569
77	Processor Costs ($/kWh)	$ 0.190	$ 0.194	$ 0.199	$ 0.203	$ 0.208	$ 0.212	$ 0.217	$ 0.222	$ 0.227	$ 0.232	$ 0.237
78												

1													
2	Makushin Size	30											
3	Fuel Forecast	Nymex											
4	Sales to Processors	60,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
79	**With Makushin (Dollars in Thousands)**												
80	Loads (million kWh)												
81	City												
82	Sales												
83	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
84	City Heat	-	-	-	-	-	-	-	-	-	-	-	-
85	City Sales to Processors	-	-	-	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
86	Total City Sales	40.00	40.00	40.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
87	Losses												
88	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
89	Processors	-	-	-	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22
90	Total Generation	41.58	41.58	41.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58
91	Processors	60.00	60.00	60.00	-	-	-	-	-	-	-	-	-
92	City Costs												
93	Admin/Depr/Int	$ 6,024	$ 6,115	$ 6,237	$ 6,362	$ 6,505	$ 6,651	$ 6,801	$ 6,954	$ 7,110	$ 7,270	$ 7,434	$ 7,601
94	Line Repair	1,349	1,369	1,396	1,424	1,456	1,489	1,522	1,557	1,592	1,627	1,664	1,701
95	Vehicles	64	65	67	68	70	71	73	74	76	78	79	81
96	Facilities	145	147	150	153	157	160	164	168	171	175	179	183
97	Production												
98	Personnel	1,444	1,465	1,494	1,499	1,533	1,568	1,353	1,127	891	911	931	952
99	Ops	789	801	817	434	443	453	463	474	485	495	507	518
100	Fuel	3,754	3,905	4,058	165	171	178	185	192	199	205	208	213
101	Spinning Reserve Fuel	-	-	-	581	603	626	652	678	701	722	734	750
102	Makushin												
103	To OCCP	-	-	-	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020
104	Payments from Processors												
105	Makushin	-	-	-	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)
106	Other	-	-	-	(1,837)	(1,851)	(1,864)	(1,878)	(1,892)	(1,907)	(1,921)	(1,935)	(1,950)
107	Total City	13,569	13,867	14,220	15,214	15,452	15,696	15,699	15,695	15,682	15,926	16,165	16,415
108	Processor Costs												
109	Fuel	6,257	6,509	6,764	224	233	242	252	262	271	279	283	290
110	Variable O&M	1,650	1,675	1,708	-	-	-	-	-	-	-	-	-
111	Payments to City												
112	Makushin	-	-	-	9,656	9,656	9,656	9,656	9,656	9,656	9,656	9,656	9,656
113	Other	-	-	-	1,837	1,851	1,864	1,878	1,892	1,907	1,921	1,935	1,950
114	Total Processor	7,907	8,183	8,472	11,717	11,739	11,762	11,786	11,810	11,833	11,855	11,874	11,895
115	Total Costs	21,477	22,050	22,692	26,930	27,191	27,458	27,484	27,505	27,515	27,782	28,039	28,310
116	City Costs @ Production Level ($/kWh)												
117	Production												
118	Fuel	$ 0.090	$ 0.094	$ 0.098	$ 0.018	$ 0.019	$ 0.019	$ 0.020	$ 0.021	$ 0.022	$ 0.022	$ 0.023	$ 0.023
119	Makushin	-	-	-	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
120	Other Production	0.054	0.054	0.056	0.046	0.048	0.049	0.044	0.039	0.033	0.034	0.035	0.035
121	Other	0.182	0.185	0.189	0.193	0.197	0.201	0.206	0.210	0.215	0.220	0.225	0.230
122	Revenues from Processor Base Rate	-	-	-	(0.044)	(0.045)	(0.045)	(0.045)	(0.046)	(0.046)	(0.046)	(0.047)	(0.047)
123	Total												
124	At Production Level	0.326	0.334	0.342	0.371	0.376	0.382	0.382	0.382	0.382	0.388	0.393	0.399
125	At Sales Level	0.339	0.347	0.355	0.385	0.391	0.397	0.397	0.397	0.397	0.403	0.409	0.415
126	Processor Costs ($/kWh)	0.132	0.136	0.141	0.195	0.196	0.196	0.196	0.197	0.197	0.198	0.198	0.198

		Geo 2033	Geo 2034	Geo 2035	Geo 2036	Geo 2037	Geo 2038	Geo 2039	Geo 2040	Geo 2041	Geo 2042	Geo 2043
79	**With Makushin (Dollars in Thousands)**											
80	Loads (million kWh)											
81	City											
82	Sales											
83	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
84	City Heat	-	-	-	-	-	-	-	-	-	-	-
85	City Sales to Processors	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
86	Total City Sales	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
87	Losses											
88	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
89	Processors	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22
90	Total Generation	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58
91	Processors	-	-	-	-	-	-	-	-	-	-	-
92	City Costs											
93	Admin/Depr/Int	$ 7,772	$ 7,947	$ 8,126	$ 8,309	$ 8,496	$ 8,687	$ 8,882	$ 9,082	$ 9,287	$ 9,496	$ 9,709
94	Line Repair	1,740	1,779	1,819	1,860	1,902	1,944	1,988	2,033	2,079	2,125	2,173
95	Vehicles	83	85	87	89	91	93	95	97	99	101	104
96	Facilities	187	192	196	200	205	209	214	219	224	229	234
97	Production											
98	Personnel	974	995	1,018	1,041	1,064	1,088	1,113	1,138	1,163	1,189	1,216
99	Ops	530	542	554	566	579	592	605	619	633	647	662
100	Fuel	217	222	227	232	238	243	248	254	260	266	272
101	Spinning Reserve Fuel	767	784	802	820	838	857	876	896	916	937	958
102	Makushin											
103	To OCCP	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020
104	Payments from Processors											
105	Makushin	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)
106	Other	(1,964)	(1,979)	(1,994)	(2,009)	(2,024)	(2,039)	(2,055)	(2,070)	(2,086)	(2,101)	(2,117)
107	Total City	16,670	16,931	17,199	17,472	17,753	18,039	18,332	18,632	18,940	19,254	19,575
108	Processor Costs											
109	Fuel	296	303	310	316	324	331	338	346	354	362	370
110	Variable O&M	-	-	-	-	-	-	-	-	-	-	-
111	Payments to City											
112	Makushin	9,656	9,656	9,656	9,656	9,656	9,656	9,656	9,656	9,656	9,656	9,656
113	Other	1,964	1,979	1,994	2,009	2,024	2,039	2,055	2,070	2,086	2,101	2,117
114	Total Processor	11,916	11,938	11,959	11,981	12,003	12,026	12,049	12,072	12,095	12,118	12,142
115	Total Costs	28,586	28,869	29,158	29,454	29,756	30,065	30,381	30,704	31,034	31,372	31,718
116	City Costs @ Production Level ($/kWh)											
117	Production											
118	Fuel	$ 0.024	$ 0.024	$ 0.025	$ 0.025	$ 0.026	$ 0.026	$ 0.027	$ 0.028	$ 0.028	$ 0.029	$ 0.030
119	Makushin	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
120	Other Production	0.036	0.037	0.038	0.039	0.040	0.040	0.041	0.042	0.043	0.044	0.045
121	Other	0.235	0.241	0.246	0.252	0.257	0.263	0.269	0.275	0.281	0.287	0.294
122	Revenues from Processor Base Rate	(0.047)	(0.048)	(0.048)	(0.048)	(0.049)	(0.049)	(0.049)	(0.050)	(0.050)	(0.051)	(0.051)
123	Total											
124	At Production Level	0.406	0.412	0.418	0.425	0.432	0.438	0.446	0.453	0.460	0.468	0.475
125	At Sales Level	0.422	0.428	0.435	0.442	0.449	0.456	0.463	0.471	0.478	0.486	0.494
126	Processor Costs ($/kWh)	0.199	0.199	0.199	0.200	0.200	0.200	0.201	0.201	0.202	0.202	0.202

1													
2	Makushin Size	30											
3	Fuel Forecast	Nymex											
4	Sales to Processors	60,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
127	**Savings (Losses)**												
128	Dollars (000)												
129	City	-	-	-	(633)	(478)	(316)	111	551	988	1,154	1,269	1,412
130	Processor	-	-	-	(2,947)	(2,665)	(2,366)	(2,040)	(1,710)	(1,408)	(1,138)	(967)	(742)
131	Combined	-	-	-	(3,580)	(3,143)	(2,681)	(1,929)	(1,159)	(420)	16	302	669
132	$/kWh												
133	City	-	-	-	(0.021)	(0.017)	(0.013)	(0.002)	0.009	0.020	0.024	0.027	0.030
134	Processor	-	-	-	(0.049)	(0.044)	(0.039)	(0.034)	(0.028)	(0.023)	(0.019)	(0.016)	(0.012)
135	Combined	-	-	-	(0.036)	(0.031)	(0.027)	(0.019)	(0.012)	(0.004)	0.000	0.003	0.007
136	Breakeven Fuel Price ($/gallon)	-	-	-	2.15	2.14	2.13	2.08	2.04	1.99	1.97	1.96	1.95

1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
127	**Savings (Losses)**											
128	Dollars (000)											
129	City	1,557	1,706	1,858	2,013	2,171	2,333	2,498	2,667	2,839	3,015	3,194
130	Processor	(513)	(277)	(37)	210	462	720	984	1,254	1,530	1,813	2,103
131	Combined	1,045	1,429	1,821	2,223	2,633	3,053	3,482	3,921	4,369	4,828	5,297
132	$/kWh											
133	City	0.034	0.038	0.042	0.045	0.049	0.054	0.058	0.062	0.066	0.071	0.075
134	Processor	(0.009)	(0.005)	(0.001)	0.003	0.008	0.012	0.016	0.021	0.026	0.030	0.035
135	Combined	0.010	0.014	0.018	0.022	0.026	0.031	0.035	0.039	0.044	0.048	0.053
136	Breakeven Fuel Price ($/gallon)	1.94	1.93	1.91	1.90	1.89	1.88	1.86	1.85	1.83	1.82	1.80

Attachment 2B

Load: 100 million kWh

Project Size: 30 MW

Fuel Forecast: EIA

1													
2	Makushin Size	30											
3	Fuel Forecast	EIA											
4	Sales to Processors	60,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
9	Inflation		1.50%	2.00%	2.00%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
10	Price Level	1.000	1.015	1.035	1.056	1.080	1.104	1.129	1.154	1.180	1.207	1.234	1.262
11	Cost of Fuel ($/gallon)			.									
12	City	1.71	1.98	2.02	2.06	2.11	2.15	2.20	2.25	2.30	2.35	2.41	2.46
13	Processor	1.76	2.04	2.08	2.12	2.17	2.22	2.27	2.32	2.37	2.43	2.48	2.54
14	Processor VOM ($/kWh)	0.028	0.028	0.028	0.029	0.030	0.030	0.031	0.032	0.032	0.033	0.034	0.035
15	Fuel Efficiency (kWh/gal)												
16	City	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
17	Processor	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
18	Fuel Usage With Makushin for Maint/etc. (000 gallons)												
19	City												
20	Hours/Unit/Month	-	-	-	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
21	Gallons/Hour	-	-	-	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6
22	Number of Units	-	-	-	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
23	Processor												
24	Hours/Unit/Month	-	-	-	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
25	Gallons/Hour	-	-	-	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
26	Number of Units	-	-	-	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
27	Makushin Rate												
28	Fixed Payment - 30 MW (000)	-	-	-	16,020	16,180	16,342	16,505	16,670	16,837	17,006	17,176	17,347

Makushin Size
Fuel Forecast
Sales to Processors
Processor Rate
Rate Esc

	Geo 2033	Geo 2034	Geo 2035	Geo 2036	Geo 2037	Geo 2038	Geo 2039	Geo 2040	Geo 2041	Geo 2042	Geo 2043
Inflation	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
Price Level	1.290	1.319	1.349	1.379	1.410	1.442	1.474	1.508	1.541	1.576	1.612
Cost of Fuel ($/gallon)											
City	2.52	2.57	2.63	2.69	2.75	2.81	2.88	2.94	3.01	3.08	3.14
Processor	2.59	2.65	2.71	2.77	2.83	2.90	2.96	3.03	3.10	3.17	3.24
Processor VOM ($/kWh)	0.035	0.036	0.037	0.038	0.039	0.040	0.041	0.041	0.042	0.043	0.044
Fuel Efficiency (kWh/gal)											
City	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
Processor	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Fuel Usage With Makushin for Maint/etc. (00											
City											
Hours/Unit/Month	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Gallons/Hour	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6
Number of Units	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Processor											
Hours/Unit/Month	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Gallons/Hour	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
Number of Units	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Makushin Rate											
Fixed Payment - 30 MW (000)	17,521	17,696	17,873	18,052	18,232	18,415	18,599	18,785	18,973	19,162	19,354

1													
2	Makushin Size	30											
3	Fuel Forecast	EIA											
4	Sales to Processors	60,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
29	**Without Makushin (Dollars in Thousands)**												
30	Loads (million kWh)												
31	City												
32	Sales												
33	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
34	City Heat	-	-	-	-	-	-	-	-	-	-	-	-
35	City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-	-
36	Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
37	Losses												
38	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
39	Processors	-	-	-	-	-	-	-	-	-	-	-	-
40	Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
41	Processors	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
42	Costs												
43	City												
44	Admin/Depr/Int	$ 6,024	$ 6,115	$ 6,237	$ 6,362	$ 6,505	$ 6,651	$ 6,801	$ 6,954	$ 7,110	$ 7,270	$ 7,434	$ 7,601
45	Line Repair	1,349	1,369	1,396	1,424	1,456	1,489	1,522	1,557	1,592	1,627	1,664	1,701
46	Vehicles	64	65	67	68	70	71	73	74	76	78	79	81
47	Facilities	145	147	150	153	157	160	164	168	171	175	179	183
48	Production												
49	Personnel	1,444	1,465	1,494	1,524	1,559	1,594	1,630	1,666	1,704	1,742	1,781	1,821
50	Ops	789	801	817	833	852	871	891	911	931	952	974	995
51	Fuel	4,533	5,233	5,337	5,457	5,580	5,706	5,834	5,965	6,100	6,237	6,377	6,521
52	Spinning Reserve Fuel	-	-	-	-	-	-	-	-	-	-	-	-
53	Makushin												
54	To OCCP	-	-	-	-	-	-	-	-	-	-	-	-
55	Payments from Processors												
56	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
57	Other	-	-	-	-	-	-	-	-	-	-	-	-
58	Total City	14,348	15,195	15,499	15,822	16,178	16,542	16,914	17,295	17,684	18,082	18,489	18,905
59	Processor Costs												
60	Fuel	7,556	8,722	8,896	9,096	9,301	9,510	9,724	9,943	10,167	10,395	10,629	10,868
61	Variable O&M	1,650	1,675	1,708	1,742	1,782	1,822	1,863	1,905	1,947	1,991	2,036	2,082
62	Payments to City												
63	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
64	Other	-	-	-	-	-	-	-	-	-	-	-	-
65	Total Processor	9,206	10,396	10,604	10,839	11,082	11,332	11,587	11,847	12,114	12,387	12,665	12,950
66	Total Costs	23,554	25,591	26,103	26,661	27,261	27,874	28,501	29,142	29,798	30,469	31,154	31,855
67	City Costs @ Production Level ($/kWh)												
68	Production												
69	Fuel	$ 0.109	$ 0.126	$ 0.128	$ 0.131	$ 0.134	$ 0.137	$ 0.140	$ 0.143	$ 0.147	$ 0.150	$ 0.153	$ 0.157
70	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
71	Other Production	0.054	0.054	0.056	0.057	0.058	0.059	0.061	0.062	0.063	0.065	0.066	0.068
72	Other	0.182	0.185	0.189	0.193	0.197	0.201	0.206	0.210	0.215	0.220	0.225	0.230

Makushin Size
Fuel Forecast
Sales to Processors
Processor Rate
Rate Esc

	Geo 2033	Geo 2034	Geo 2035	Geo 2036	Geo 2037	Geo 2038	Geo 2039	Geo 2040	Geo 2041	Geo 2042	Geo 2043
Without Makushin (Dollars in Thousands)											
Loads (million kWh)											
City											
Sales											
City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
City Heat	-	-	-	-	-	-	-	-	-	-	-
City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-
Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Losses											
Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
Processors	-	-	-	-	-	-	-	-	-	-	-
Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
Processors	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
Costs											
City											
Admin/Depr/Int	$ 7,772	$ 7,947	$ 8,126	$ 8,309	$ 8,496	$ 8,687	$ 8,882	$ 9,082	$ 9,287	$ 9,496	$ 9,709
Line Repair	1,740	1,779	1,819	1,860	1,902	1,944	1,988	2,033	2,079	2,125	2,173
Vehicles	83	85	87	89	91	93	95	97	99	101	104
Facilities	187	192	196	200	205	209	214	219	224	229	234
Production											
Personnel	1,862	1,904	1,947	1,991	2,036	2,081	2,128	2,176	2,225	2,275	2,326
Ops	1,018	1,041	1,064	1,088	1,113	1,138	1,163	1,189	1,216	1,243	1,271
Fuel	6,667	6,817	6,971	7,128	7,288	7,452	7,620	7,791	7,966	8,146	8,329
Spinning Reserve Fuel	-	-	-	-	-	-	-	-	-	-	-
Makushin											
To OCCP	-	-	-	-	-	-	-	-	-	-	-
Payments from Processors											
Makushin	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-
Total City	19,330	19,765	20,210	20,664	21,129	21,605	22,091	22,588	23,096	23,616	24,147
Processor Costs											
Fuel	11,113	11,363	11,619	11,880	12,147	12,421	12,700	12,986	13,278	13,577	13,882
Variable O&M	2,129	2,177	2,226	2,276	2,327	2,379	2,433	2,488	2,543	2,601	2,659
Payments to City											
Makushin	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-
Total Processor	13,242	13,540	13,844	14,156	14,474	14,800	15,133	15,473	15,822	16,178	16,542
Total Costs	32,572	33,305	34,054	34,820	35,604	36,405	37,224	38,061	38,918	39,793	40,689
City Costs @ Production Level ($/kWh)											
Production											
Fuel	$ 0.160	$ 0.164	$ 0.168	$ 0.171	$ 0.175	$ 0.179	$ 0.183	$ 0.187	$ 0.192	$ 0.196	$ 0.200
Makushin	-	-	-	-	-	-	-	-	-	-	-
Other Production	0.069	0.071	0.072	0.074	0.076	0.077	0.079	0.081	0.083	0.085	0.087
Other	0.235	0.241	0.246	0.252	0.257	0.263	0.269	0.275	0.281	0.287	0.294

1														
2	Makushin Size	30												
3	Fuel Forecast	EIA												
4	Sales to Processors	60,000,000												
5	Processor Rate	0.030												
6	Rate Esc	0.75%												
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
73	Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-	-	
74	Total													
75	At Production Level	$ 0.345	$ 0.365	$ 0.373	$ 0.381	$ 0.389	$ 0.398	$ 0.407	$ 0.416	$ 0.425	$ 0.435	$ 0.445	$ 0.455	
76	At Sales Level	$ 0.359	$ 0.380	$ 0.387	$ 0.396	$ 0.404	$ 0.414	$ 0.423	$ 0.432	$ 0.442	$ 0.452	$ 0.462	$ 0.473	
77	Processor Costs ($/kWh)	$ 0.153	$ 0.173	$ 0.177	$ 0.181	$ 0.185	$ 0.189	$ 0.193	$ 0.197	$ 0.202	$ 0.206	$ 0.211	$ 0.216	
78														

Makushin Size
Fuel Forecast
Sales to Processors
Processor Rate
Rate Esc

	Geo 2033	Geo 2034	Geo 2035	Geo 2036	Geo 2037	Geo 2038	Geo 2039	Geo 2040	Geo 2041	Geo 2042	Geo 2043
Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-
Total											
At Production Level	$ 0.465	$ 0.475	$ 0.486	$ 0.497	$ 0.508	$ 0.520	$ 0.531	$ 0.543	$ 0.555	$ 0.568	$ 0.581
At Sales Level	$ 0.483	$ 0.494	$ 0.505	$ 0.517	$ 0.528	$ 0.540	$ 0.552	$ 0.565	$ 0.577	$ 0.590	$ 0.604
Processor Costs ($/kWh)	$ 0.221	$ 0.226	$ 0.231	$ 0.236	$ 0.241	$ 0.247	$ 0.252	$ 0.258	$ 0.264	$ 0.270	$ 0.276

1													
2	Makushin Size	30											
3	Fuel Forecast	EIA											
4	Sales to Processors	60,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
79	**With Makushin (Dollars in Thousands)**												
80	Loads (million kWh)												
81	City												
82	Sales												
83	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
84	City Heat	-	-	-	-	-	-	-	-	-	-	-	-
85	City Sales to Processors	-	-	-	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
86	Total City Sales	40.00	40.00	40.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
87	Losses												
88	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
89	Processors	-	-	-	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22
90	Total Generation	41.58	41.58	41.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58
91	Processors	60.00	60.00	60.00	-	-	-	-	-	-	-	-	-
92	City Costs												
93	Admin/Depr/Int	$ 6,024	$ 6,115	$ 6,237	$ 6,362	$ 6,505	$ 6,651	$ 6,801	$ 6,954	$ 7,110	$ 7,270	$ 7,434	$ 7,601
94	Line Repair	1,349	1,369	1,396	1,424	1,456	1,489	1,522	1,557	1,592	1,627	1,664	1,701
95	Vehicles	64	65	67	68	70	71	73	74	76	78	79	81
96	Facilities	145	147	150	153	157	160	164	168	171	175	179	183
97	Production												
98	Personnel	1,444	1,465	1,494	1,499	1,533	1,568	1,353	1,127	891	911	931	952
99	Ops	789	801	817	434	443	453	463	474	485	495	507	518
100	Fuel	4,533	5,233	5,337	213	218	223	228	233	238	244	249	255
101	Spinning Reserve Fuel	-	-	-	752	769	786	804	822	841	860	879	899
102	Makushin												
103	To OCCP	-	-	-	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020
104	Payments from Processors												
105	Makushin	-	-	-	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)
106	Other	-	-	-	(1,837)	(1,851)	(1,864)	(1,878)	(1,892)	(1,907)	(1,921)	(1,935)	(1,950)
107	Total City	14,348	15,195	15,499	15,433	15,665	15,902	15,894	15,881	15,861	16,104	16,352	16,605
108	Processor Costs												
109	Fuel	7,556	8,722	8,896	290	297	304	310	317	325	332	339	347
110	Variable O&M	1,650	1,675	1,708	-	-	-	-	-	-	-	-	-
111	Payments to City												
112	Makushin	-	-	-	9,656	9,656	9,656	9,656	9,656	9,656	9,656	9,656	9,656
113	Other	-	-	-	1,837	1,851	1,864	1,878	1,892	1,907	1,921	1,935	1,950
114	Total Processor	9,206	10,396	10,604	11,783	11,803	11,824	11,844	11,865	11,887	11,908	11,930	11,952
115	Total Costs	23,554	25,591	26,103	27,216	27,468	27,725	27,738	27,746	27,748	28,012	28,282	28,558
116	City Costs @ Production Level ($/kWh)												
117	Production												
118	Fuel	$ 0.109	$ 0.126	$ 0.128	$ 0.023	$ 0.024	$ 0.024	$ 0.025	$ 0.025	$ 0.026	$ 0.027	$ 0.027	$ 0.028
119	Makushin	-	-	-	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
120	Other Production	0.054	0.054	0.056	0.046	0.048	0.049	0.044	0.039	0.033	0.034	0.035	0.035
121	Other	0.182	0.185	0.189	0.193	0.197	0.201	0.206	0.210	0.215	0.220	0.225	0.230
122	Revenues from Processor Base Rate	-	-	-	(0.044)	(0.045)	(0.045)	(0.045)	(0.046)	(0.046)	(0.046)	(0.047)	(0.047)
123	Total												

Makushin Size
Fuel Forecast
Sales to Processors
Processor Rate
Rate Esc

With Makushin (Dollars in Thousands)	Geo 2033	Geo 2034	Geo 2035	Geo 2036	Geo 2037	Geo 2038	Geo 2039	Geo 2040	Geo 2041	Geo 2042	Geo 2043
Loads (million kWh)											
City											
Sales											
City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
City Heat	-	-	-	-	-	-	-	-	-	-	-
City Sales to Processors	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
Total City Sales	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Losses											
Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
Processors	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22
Total Generation	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58
Processors	-	-	-	-	-	-	-	-	-	-	-
City Costs											
Admin/Depr/Int	$ 7,772	$ 7,947	$ 8,126	$ 8,309	$ 8,496	$ 8,687	$ 8,882	$ 9,082	$ 9,287	$ 9,496	$ 9,709
Line Repair	1,740	1,779	1,819	1,860	1,902	1,944	1,988	2,033	2,079	2,125	2,173
Vehicles	83	85	87	89	91	93	95	97	99	101	104
Facilities	187	192	196	200	205	209	214	219	224	229	234
Production											
Personnel	974	995	1,018	1,041	1,064	1,088	1,113	1,138	1,163	1,189	1,216
Ops	530	542	554	566	579	592	605	619	633	647	662
Fuel	261	266	272	279	285	291	298	304	311	318	325
Spinning Reserve Fuel	919	940	961	982	1,004	1,027	1,050	1,074	1,098	1,123	1,148
Makushin											
To OCCP	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020
Payments from Processors											
Makushin	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)	(9,656)
Other	(1,964)	(1,979)	(1,994)	(2,009)	(2,024)	(2,039)	(2,055)	(2,070)	(2,086)	(2,101)	(2,117)
Total City	16,865	17,131	17,403	17,681	17,966	18,257	18,555	18,860	19,173	19,492	19,819
Processor Costs											
Fuel	355	363	371	379	388	396	405	415	424	433	443
Variable O&M	-	-	-	-	-	-	-	-	-	-	-
Payments to City											
Makushin	9,656	9,656	9,656	9,656	9,656	9,656	9,656	9,656	9,656	9,656	9,656
Other	1,964	1,979	1,994	2,009	2,024	2,039	2,055	2,070	2,086	2,101	2,117
Total Processor	11,975	11,998	12,021	12,044	12,067	12,091	12,116	12,140	12,165	12,190	12,216
Total Costs	28,840	29,128	29,423	29,725	30,033	30,348	30,671	31,001	31,338	31,682	32,035
City Costs @ Production Level ($/kWh)											
Production											
Fuel	$ 0.028	$ 0.029	$ 0.030	$ 0.030	$ 0.031	$ 0.032	$ 0.032	$ 0.033	$ 0.034	$ 0.035	$ 0.035
Makushin	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
Other Production	0.036	0.037	0.038	0.039	0.040	0.040	0.041	0.042	0.043	0.044	0.045
Other	0.235	0.241	0.246	0.252	0.257	0.263	0.269	0.275	0.281	0.287	0.294
Revenues from Processor Base Rate	(0.047)	(0.048)	(0.048)	(0.048)	(0.049)	(0.049)	(0.049)	(0.050)	(0.050)	(0.051)	(0.051)
Total											

1														
2	Makushin Size	30												
3	Fuel Forecast	EIA												
4	Sales to Processors	60,000,000												
5	Processor Rate	0.030												
6	Rate Esc	0.75%												
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
124	At Production Level	0.345	0.365	0.373	0.376	0.381	0.387	0.387	0.387	0.386	0.392	0.398	0.404	
125	At Sales Level	0.359	0.380	0.387	0.391	0.396	0.402	0.402	0.402	0.401	0.407	0.414	0.420	
126	Processor Costs ($/kWh)	0.153	0.173	0.177	0.196	0.197	0.197	0.197	0.198	0.198	0.198	0.199	0.199	

Makushin Size
Fuel Forecast
Sales to Processors
Processor Rate
Rate Esc

	Geo 2033	Geo 2034	Geo 2035	Geo 2036	Geo 2037	Geo 2038	Geo 2039	Geo 2040	Geo 2041	Geo 2042	Geo 2043
At Production Level	0.410	0.417	0.423	0.430	0.437	0.444	0.451	0.458	0.466	0.473	0.481
At Sales Level	0.426	0.433	0.440	0.447	0.454	0.461	0.469	0.476	0.484	0.492	0.500
Processor Costs ($/kWh)	0.200	0.200	0.200	0.201	0.201	0.202	0.202	0.202	0.203	0.203	0.204

1													
2	Makushin Size	30											
3	Fuel Forecast	EIA											
4	Sales to Processors	60,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
127	**Savings (Losses)**												
128	Dollars (000)												
129	City	-	-	-	389	513	640	1,020	1,414	1,823	1,978	2,137	2,299
130	Processor	-	-	-	(944)	(721)	(492)	(258)	(18)	227	478	735	998
131	Combined	-	-	-	(555)	(207)	149	763	1,396	2,050	2,456	2,872	3,297
132	$/kWh												
133	City	-	-	-	0.005	0.008	0.011	0.021	0.031	0.041	0.045	0.049	0.053
134	Processor	-	-	-	(0.016)	(0.012)	(0.008)	(0.004)	(0.000)	0.004	0.008	0.012	0.017
135	Combined	-	-	-	(0.006)	(0.002)	0.001	0.008	0.014	0.020	0.025	0.029	0.033
136	Breakeven Fuel Price ($/gallon)	-	-	-	2.15	2.14	2.13	2.08	2.04	1.99	1.97	1.96	1.95

Makushin Size
Fuel Forecast
Sales to Processors
Processor Rate
Rate Esc

	Geo 2033	Geo 2034	Geo 2035	Geo 2036	Geo 2037	Geo 2038	Geo 2039	Geo 2040	Geo 2041	Geo 2042	Geo 2043
Savings (Losses)											
Dollars (000)											
City	2,465	2,634	2,807	2,983	3,164	3,348	3,536	3,728	3,924	4,124	4,328
Processor	1,267	1,542	1,824	2,112	2,407	2,709	3,017	3,333	3,657	3,987	4,326
Combined	3,732	4,176	4,631	5,095	5,570	6,056	6,553	7,061	7,580	8,111	8,654
$/kWh											
City	0.057	0.061	0.065	0.070	0.074	0.079	0.084	0.088	0.093	0.098	0.103
Processor	0.021	0.026	0.030	0.035	0.040	0.045	0.050	0.056	0.061	0.066	0.072
Combined	0.037	0.042	0.046	0.051	0.056	0.061	0.066	0.071	0.076	0.081	0.087
Breakeven Fuel Price ($/gallon)	1.94	1.93	1.91	1.90	1.89	1.88	1.86	1.85	1.83	1.82	1.80

Attachment 3A

Load: 100 million kWh

Project Size: 26 MW

Fuel Forecast: Nymex

1													
2	Makushin Size	26											
3	Fuel Forecast	Nymex											
4	Sales to Processors	60,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
9	Inflation		1.50%	2.00%	2.00%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
10	Price Level	1.000	1.015	1.035	1.056	1.080	1.104	1.129	1.154	1.180	1.207	1.234	1.262
11	Cost of Fuel ($/gallon)			.									
12	City	1.42	1.47	1.53	1.59	1.65	1.72	1.79	1.86	1.92	1.98	2.01	2.05
13	Processor	1.46	1.52	1.58	1.64	1.70	1.77	1.84	1.91	1.98	2.04	2.07	2.12
14	Processor VOM ($/kWh)	0.028	0.028	0.028	0.029	0.030	0.030	0.031	0.032	0.032	0.033	0.034	0.035
15	Fuel Efficiency (kWh/gal)												
16	City	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
17	Processor	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
18	Fuel Usage With Makushin for Maint/etc. (000 gallons)												
19	City												
20	Hours/Unit/Month	-	-	-	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
21	Gallons/Hour	-	-	-	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6
22	Number of Units	-	-	-	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
23	Processor												
24	Hours/Unit/Month	-	-	-	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
25	Gallons/Hour	-	-	-	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
26	Number of Units	-	-	-	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
27	Makushin Rate												
28	Fixed Payment - 26 MW (000)	-	-	-	14,920	15,069	15,220	15,372	15,526	15,681	15,838	15,996	16,156

1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
9	Inflation	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
10	Price Level	1.290	1.319	1.349	1.379	1.410	1.442	1.474	1.508	1.541	1.576	1.612
11	Cost of Fuel ($/gallon)											
12	City	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.46	2.51	2.57	2.62
13	Processor	2.16	2.21	2.26	2.31	2.37	2.42	2.47	2.53	2.59	2.64	2.70
14	Processor VOM ($/kWh)	0.035	0.036	0.037	0.038	0.039	0.040	0.041	0.041	0.042	0.043	0.044
15	Fuel Efficiency (kWh/gal)											
16	City	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
17	Processor	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
18	Fuel Usage With Makushin for Maint/etc. (000											
19	City											
20	Hours/Unit/Month	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
21	Gallons/Hour	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6
22	Number of Units	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
23	Processor											
24	Hours/Unit/Month	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
25	Gallons/Hour	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
26	Number of Units	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
27	Makushin Rate											
28	Fixed Payment - 26 MW (000)	16,318	16,481	16,646	16,812	16,980	17,150	17,322	17,495	17,670	17,847	18,025

1													
2	Makushin Size	26											
3	Fuel Forecast	Nymex											
4	Sales to Processors	60,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
29	**Without Makushin (Dollars in Thousands)**												
30	Loads (million kWh)												
31	City												
32	Sales												
33	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
34	City Heat	-	-	-	-	-	-	-	-	-	-	-	-
35	City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-	-
36	Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
37	Losses												
38	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
39	Processors	-	-	-	-	-	-	-	-	-	-	-	-
40	Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
41	Processors	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
42	Costs												
43	City												
44	Admin/Depr/Int	$ 6,024	$ 6,115	$ 6,237	$ 6,362	$ 6,505	$ 6,651	$ 6,801	$ 6,954	$ 7,110	$ 7,270	$ 7,434	$ 7,601
45	Line Repair	1,349	1,369	1,396	1,424	1,456	1,489	1,522	1,557	1,592	1,627	1,664	1,701
46	Vehicles	64	65	67	68	70	71	73	74	76	78	79	81
47	Facilities	145	147	150	153	157	160	164	168	171	175	179	183
48	Production												
49	Personnel	1,444	1,465	1,494	1,524	1,559	1,594	1,630	1,666	1,704	1,742	1,781	1,821
50	Ops	789	801	817	833	852	871	891	911	931	952	974	995
51	Fuel	3,754	3,905	4,058	4,216	4,375	4,544	4,729	4,917	5,086	5,235	5,322	5,442
52	Spinning Reserve Fuel	-	-	-	-	-	-	-	-	-	-	-	-
53	Makushin												
54	To OCCP	-	-	-	-	-	-	-	-	-	-	-	-
55	Payments from Processors												
56	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
57	Other	-	-	-	-	-	-	-	-	-	-	-	-
58	Total City	13,569	13,867	14,220	14,581	14,973	15,381	15,810	16,246	16,670	17,080	17,434	17,826
59	Processor Costs												
60	Fuel	6,257	6,509	6,764	7,027	7,293	7,574	7,883	8,195	8,477	8,726	8,871	9,071
61	Variable O&M	1,650	1,675	1,708	1,742	1,782	1,822	1,863	1,905	1,947	1,991	2,036	2,082
62	Payments to City												
63	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
64	Other	-	-	-	-	-	-	-	-	-	-	-	-
65	Total Processor	7,907	8,183	8,472	8,769	9,074	9,396	9,746	10,100	10,425	10,717	10,907	11,153
66	Total Costs	21,477	22,050	22,692	23,350	24,047	24,777	25,555	26,346	27,095	27,797	28,341	28,979
67	City Costs @ Production Level ($/kWh)												
68	Production												
69	Fuel	$ 0.090	$ 0.094	$ 0.098	$ 0.101	$ 0.105	$ 0.109	$ 0.114	$ 0.118	$ 0.122	$ 0.126	$ 0.128	$ 0.131
70	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
71	Other Production	0.054	0.054	0.056	0.057	0.058	0.059	0.061	0.062	0.063	0.065	0.066	0.068
72	Other	0.182	0.185	0.189	0.193	0.197	0.201	0.206	0.210	0.215	0.220	0.225	0.230
73	Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-	-
74	Total												
75	At Production Level	$ 0.326	$ 0.334	$ 0.342	$ 0.351	$ 0.360	$ 0.370	$ 0.380	$ 0.391	$ 0.401	$ 0.411	$ 0.419	$ 0.429
76	At Sales Level	$ 0.339	$ 0.347	$ 0.355	$ 0.365	$ 0.374	$ 0.385	$ 0.395	$ 0.406	$ 0.417	$ 0.427	$ 0.436	$ 0.446
77	Processor Costs ($/kWh)	$ 0.132	$ 0.136	$ 0.141	$ 0.146	$ 0.151	$ 0.157	$ 0.162	$ 0.168	$ 0.174	$ 0.179	$ 0.182	$ 0.186
78													

		Geo 2033	Geo 2034	Geo 2035	Geo 2036	Geo 2037	Geo 2038	Geo 2039	Geo 2040	Geo 2041	Geo 2042	Geo 2043
Makushin Size												
Fuel Forecast												
Sales to Processors												
Processor Rate												
Rate Esc												
Without Makushin (Dollars in Thousands)												
Loads (million kWh)												
City												
Sales												
City Core		40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
City Heat		-	-	-	-	-	-	-	-	-	-	-
City Sales to Processors		-	-	-	-	-	-	-	-	-	-	-
Total City Sales		40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Losses												
Core/Heat		1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
Processors		-	-	-	-	-	-	-	-	-	-	-
Total Generation		41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
Processors		60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
Costs												
City												
Admin/Depr/Int		$ 7,772	$ 7,947	$ 8,126	$ 8,309	$ 8,496	$ 8,687	$ 8,882	$ 9,082	$ 9,287	$ 9,496	$ 9,709
Line Repair		1,740	1,779	1,819	1,860	1,902	1,944	1,988	2,033	2,079	2,125	2,173
Vehicles		83	85	87	89	91	93	95	97	99	101	104
Facilities		187	192	196	200	205	209	214	219	224	229	234
Production												
Personnel		1,862	1,904	1,947	1,991	2,036	2,081	2,128	2,176	2,225	2,275	2,326
Ops		1,018	1,041	1,064	1,088	1,113	1,138	1,163	1,189	1,216	1,243	1,271
Fuel		5,565	5,690	5,818	5,949	6,083	6,219	6,359	6,502	6,649	6,798	6,951
Spinning Reserve Fuel		-	-	-	-	-	-	-	-	-	-	-
Makushin												
To OCCP		-	-	-	-	-	-	-	-	-	-	-
Payments from Processors												
Makushin		-	-	-	-	-	-	-	-	-	-	-
Other		-	-	-	-	-	-	-	-	-	-	-
Total City		18,227	18,637	19,057	19,486	19,924	20,372	20,831	21,299	21,779	22,269	22,770
Processor Costs												
Fuel		9,275	9,484	9,697	9,915	10,138	10,366	10,600	10,838	11,082	11,331	11,586
Variable O&M		2,129	2,177	2,226	2,276	2,327	2,379	2,433	2,488	2,543	2,601	2,659
Payments to City												
Makushin		-	-	-	-	-	-	-	-	-	-	-
Other		-	-	-	-	-	-	-	-	-	-	-
Total Processor		11,404	11,660	11,923	12,191	12,465	12,746	13,032	13,326	13,625	13,932	14,245
Total Costs		29,631	30,298	30,979	31,676	32,389	33,118	33,863	34,625	35,404	36,200	37,015
City Costs @ Production Level ($/kWh)												
Production												
Fuel		$ 0.134	$ 0.137	$ 0.140	$ 0.143	$ 0.146	$ 0.150	$ 0.153	$ 0.156	$ 0.160	$ 0.163	$ 0.167
Makushin		-	-	-	-	-	-	-	-	-	-	-
Other Production		0.069	0.071	0.072	0.074	0.076	0.077	0.079	0.081	0.083	0.085	0.087
Other		0.235	0.241	0.246	0.252	0.257	0.263	0.269	0.275	0.281	0.287	0.294
Revenues from Processor Base Rate		-	-	-	-	-	-	-	-	-	-	-
Total												
At Production Level		$ 0.438	$ 0.448	$ 0.458	$ 0.469	$ 0.479	$ 0.490	$ 0.501	$ 0.512	$ 0.524	$ 0.536	$ 0.548
At Sales Level		$ 0.456	$ 0.466	$ 0.476	$ 0.487	$ 0.498	$ 0.509	$ 0.521	$ 0.532	$ 0.544	$ 0.557	$ 0.569
Processor Costs ($/kWh)		$ 0.190	$ 0.194	$ 0.199	$ 0.203	$ 0.208	$ 0.212	$ 0.217	$ 0.222	$ 0.227	$ 0.232	$ 0.237

1													
2	Makushin Size	26											
3	Fuel Forecast	Nymex											
4	Sales to Processors	60,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
79	**With Makushin (Dollars in Thousands)**												
80	Loads (million kWh)												
81	City												
82	Sales												
83	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
84	City Heat	-	-	-	-	-	-	-	-	-	-	-	-
85	City Sales to Processors	-	-	-	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
86	Total City Sales	40.00	40.00	40.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
87	Losses												
88	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
89	Processors	-	-	-	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22
90	Total Generation	41.58	41.58	41.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58
91	Processors	60.00	60.00	60.00	-	-	-	-	-	-	-	-	-
92	City Costs												
93	Admin/Depr/Int	$ 6,024	$ 6,115	$ 6,237	$ 6,362	$ 6,505	$ 6,651	$ 6,801	$ 6,954	$ 7,110	$ 7,270	$ 7,434	$ 7,601
94	Line Repair	1,349	1,369	1,396	1,424	1,456	1,489	1,522	1,557	1,592	1,627	1,664	1,701
95	Vehicles	64	65	67	68	70	71	73	74	76	78	79	81
96	Facilities	145	147	150	153	157	160	164	168	171	175	179	183
97	Production												
98	Personnel	1,444	1,465	1,494	1,499	1,533	1,568	1,353	1,127	891	911	931	952
99	Ops	789	801	817	434	443	453	463	474	485	495	507	518
100	Fuel	3,754	3,905	4,058	165	171	178	185	192	199	205	208	213
101	Spinning Reserve Fuel	-	-	-	581	603	626	652	678	701	722	734	750
102	Makushin												
103	To OCCP	-	-	-	14,920	14,920	14,920	14,920	14,920	14,920	14,920	14,920	14,920
104	Payments from Processors												
105	Makushin	-	-	-	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)
106	Other	-	-	-	(1,837)	(1,851)	(1,864)	(1,878)	(1,892)	(1,907)	(1,921)	(1,935)	(1,950)
107	Total City	13,569	13,867	14,220	14,777	15,015	15,259	15,262	15,258	15,245	15,489	15,728	15,978
108	Processor Costs												
109	Fuel	6,257	6,509	6,764	224	233	242	252	262	271	279	283	290
110	Variable O&M	1,650	1,675	1,708	-	-	-	-	-	-	-	-	-
111	Payments to City												
112	Makushin	-	-	-	8,993	8,993	8,993	8,993	8,993	8,993	8,993	8,993	8,993
113	Other	-	-	-	1,837	1,851	1,864	1,878	1,892	1,907	1,921	1,935	1,950
114	Total Processor	7,907	8,183	8,472	11,054	11,076	11,099	11,123	11,147	11,170	11,192	11,211	11,232
115	Total Costs	21,477	22,050	22,692	25,830	26,091	26,358	26,384	26,405	26,415	26,682	26,939	27,210
116	City Costs @ Production Level ($/kWh)												
117	Production												
118	Fuel	$ 0.090	$ 0.094	$ 0.098	$ 0.018	$ 0.019	$ 0.019	$ 0.020	$ 0.021	$ 0.022	$ 0.022	$ 0.023	$ 0.023
119	Makushin	-	-	-	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147
120	Other Production	0.054	0.054	0.056	0.046	0.048	0.049	0.044	0.039	0.033	0.034	0.035	0.035
121	Other	0.182	0.185	0.189	0.193	0.197	0.201	0.206	0.210	0.215	0.220	0.225	0.230
122	Revenues from Processor Base Rate	-	-	-	(0.044)	(0.045)	(0.045)	(0.045)	(0.046)	(0.046)	(0.046)	(0.047)	(0.047)
123	Total												
124	At Production Level	0.326	0.334	0.342	0.360	0.365	0.371	0.371	0.371	0.371	0.377	0.383	0.389
125	At Sales Level	0.339	0.347	0.355	0.374	0.380	0.386	0.386	0.386	0.386	0.392	0.398	0.404
126	Processor Costs ($/kWh)	0.132	0.136	0.141	0.184	0.185	0.185	0.185	0.186	0.186	0.187	0.187	0.187

1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
79	**With Makushin (Dollars in Thousands)**											
80	Loads (million kWh)											
81	City											
82	Sales											
83	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
84	City Heat	-	-	-	-	-	-	-	-	-	-	-
85	City Sales to Processors	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
86	Total City Sales	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
87	Losses											
88	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
89	Processors	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22
90	Total Generation	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58
91	Processors	-	-	-	-	-	-	-	-	-	-	-
92	City Costs											
93	Admin/Depr/Int	$ 7,772	$ 7,947	$ 8,126	$ 8,309	$ 8,496	$ 8,687	$ 8,882	$ 9,082	$ 9,287	$ 9,496	$ 9,709
94	Line Repair	1,740	1,779	1,819	1,860	1,902	1,944	1,988	2,033	2,079	2,125	2,173
95	Vehicles	83	85	87	89	91	93	95	97	99	101	104
96	Facilities	187	192	196	200	205	209	214	219	224	229	234
97	Production											
98	Personnel	974	995	1,018	1,041	1,064	1,088	1,113	1,138	1,163	1,189	1,216
99	Ops	530	542	554	566	579	592	605	619	633	647	662
100	Fuel	217	222	227	232	238	243	248	254	260	266	272
101	Spinning Reserve Fuel	767	784	802	820	838	857	876	896	916	937	958
102	Makushin											
103	To OCCP	14,920	14,920	14,920	14,920	14,920	14,920	14,920	14,920	14,920	14,920	14,920
104	Payments from Processors											
105	Makushin	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)
106	Other	(1,964)	(1,979)	(1,994)	(2,009)	(2,024)	(2,039)	(2,055)	(2,070)	(2,086)	(2,101)	(2,117)
107	Total City	16,233	16,494	16,762	17,035	17,315	17,602	17,895	18,195	18,503	18,817	19,138
108	Processor Costs											
109	Fuel	296	303	310	316	324	331	338	346	354	362	370
110	Variable O&M	-	-	-	-	-	-	-	-	-	-	-
111	Payments to City											
112	Makushin	8,993	8,993	8,993	8,993	8,993	8,993	8,993	8,993	8,993	8,993	8,993
113	Other	1,964	1,979	1,994	2,009	2,024	2,039	2,055	2,070	2,086	2,101	2,117
114	Total Processor	11,253	11,275	11,296	11,318	11,340	11,363	11,386	11,409	11,432	11,455	11,479
115	Total Costs	27,486	27,769	28,058	28,354	28,656	28,965	29,281	29,604	29,934	30,272	30,618
116	City Costs @ Production Level ($/kWh)											
117	Production											
118	Fuel	$ 0.024	$ 0.024	$ 0.025	$ 0.025	$ 0.026	$ 0.026	$ 0.027	$ 0.028	$ 0.028	$ 0.029	$ 0.030
119	Makushin	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147
120	Other Production	0.036	0.037	0.038	0.039	0.040	0.040	0.041	0.042	0.043	0.044	0.045
121	Other	0.235	0.241	0.246	0.252	0.257	0.263	0.269	0.275	0.281	0.287	0.294
122	Revenues from Processor Base Rate	(0.047)	(0.048)	(0.048)	(0.048)	(0.049)	(0.049)	(0.049)	(0.050)	(0.050)	(0.051)	(0.051)
123	Total											
124	At Production Level	0.395	0.401	0.407	0.414	0.421	0.428	0.435	0.442	0.449	0.457	0.465
125	At Sales Level	0.410	0.417	0.424	0.430	0.437	0.445	0.452	0.459	0.467	0.475	0.483
126	Processor Costs ($/kWh)	0.188	0.188	0.188	0.189	0.189	0.189	0.190	0.190	0.191	0.191	0.191

1													
2	Makushin Size	26											
3	Fuel Forecast	Nymex											
4	Sales to Processors	60,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
127	**Savings (Losses)**												
128	Dollars (000)												
129	City	-	-	-	(196)	(41)	121	548	988	1,425	1,591	1,706	1,849
130	Processor	-	-	-	(2,284)	(2,002)	(1,703)	(1,377)	(1,047)	(745)	(475)	(304)	(79)
131	Combined	-	-	-	(2,480)	(2,043)	(1,581)	(829)	(59)	680	1,116	1,402	1,769
132	$/kWh												
133	City	-	-	-	(0.009)	(0.006)	(0.001)	0.009	0.020	0.031	0.035	0.038	0.042
134	Processor	-	-	-	(0.038)	(0.033)	(0.028)	(0.023)	(0.017)	(0.012)	(0.008)	(0.005)	(0.001)
135	Combined	-	-	-	(0.025)	(0.020)	(0.016)	(0.008)	(0.001)	0.007	0.011	0.014	0.018
136	Breakeven Fuel Price ($/gallon)	-	-	-	1.98	1.97	1.96	1.91	1.87	1.82	1.80	1.79	1.78

1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
127	**Savings (Losses)**											
128	Dollars (000)											
129	City	1,994	2,143	2,295	2,450	2,608	2,770	2,935	3,104	3,276	3,452	3,631
130	Processor	150	386	626	873	1,125	1,383	1,647	1,917	2,193	2,476	2,766
131	Combined	2,145	2,529	2,921	3,323	3,733	4,153	4,582	5,021	5,469	5,928	6,397
132	$/kWh											
133	City	0.045	0.049	0.053	0.057	0.061	0.065	0.069	0.073	0.077	0.082	0.086
134	Processor	0.003	0.006	0.010	0.015	0.019	0.023	0.027	0.032	0.037	0.041	0.046
135	Combined	0.021	0.025	0.029	0.033	0.037	0.042	0.046	0.050	0.055	0.059	0.064
136	Breakeven Fuel Price ($/gallon)	1.77	1.76	1.74	1.73	1.72	1.70	1.69	1.68	1.66	1.65	1.63

Attachment 3B

Load: 100 million kWh

Project Size: 26 MW

Fuel Forecast: EIA

1													
2	Makushin Size	26											
3	Fuel Forecast	EIA											
4	Sales to Processors	60,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
9	Inflation		1.50%	2.00%	2.00%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
10	Price Level	1.000	1.015	1.035	1.056	1.080	1.104	1.129	1.154	1.180	1.207	1.234	1.262
11	Cost of Fuel ($/gallon)			.									
12	City	1.71	1.98	2.02	2.06	2.11	2.15	2.20	2.25	2.30	2.35	2.41	2.46
13	Processor	1.76	2.04	2.08	2.12	2.17	2.22	2.27	2.32	2.37	2.43	2.48	2.54
14	Processor VOM ($/kWh)	0.028	0.028	0.028	0.029	0.030	0.030	0.031	0.032	0.032	0.033	0.034	0.035
15	Fuel Efficiency (kWh/gal)												
16	City	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
17	Processor	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
18	Fuel Usage With Makushin for Maint/etc. (000 gallons)												
19	City												
20	Hours/Unit/Month	-	-	-	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
21	Gallons/Hour	-	-	-	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6
22	Number of Units	-	-	-	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
23	Processor												
24	Hours/Unit/Month	-	-	-	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
25	Gallons/Hour	-	-	-	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
26	Number of Units	-	-	-	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
27	Makushin Rate												
28	Fixed Payment - 26 MW (000)	-	-	-	14,920	15,069	15,220	15,372	15,526	15,681	15,838	15,996	16,156

1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
9	Inflation	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
10	Price Level	1.290	1.319	1.349	1.379	1.410	1.442	1.474	1.508	1.541	1.576	1.612
11	Cost of Fuel ($/gallon)											
12	City	2.52	2.57	2.63	2.69	2.75	2.81	2.88	2.94	3.01	3.08	3.14
13	Processor	2.59	2.65	2.71	2.77	2.83	2.90	2.96	3.03	3.10	3.17	3.24
14	Processor VOM ($/kWh)	0.035	0.036	0.037	0.038	0.039	0.040	0.041	0.041	0.042	0.043	0.044
15	Fuel Efficiency (kWh/gal)											
16	City	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
17	Processor	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
18	Fuel Usage With Makushin for Maint/etc. (000											
19	City											
20	Hours/Unit/Month	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
21	Gallons/Hour	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6
22	Number of Units	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
23	Processor											
24	Hours/Unit/Month	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
25	Gallons/Hour	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
26	Number of Units	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
27	Makushin Rate											
28	Fixed Payment - 26 MW (000)	16,318	16,481	16,646	16,812	16,980	17,150	17,322	17,495	17,670	17,847	18,025

1													
2	Makushin Size	26											
3	Fuel Forecast	EIA											
4	Sales to Processors	60,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
29	**Without Makushin (Dollars in Thousands)**												
30	Loads (million kWh)												
31	City												
32	Sales												
33	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
34	City Heat	-	-	-	-	-	-	-	-	-	-	-	-
35	City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-	-
36	Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
37	Losses												
38	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
39	Processors	-	-	-	-	-	-	-	-	-	-	-	-
40	Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
41	Processors	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
42	Costs												
43	City												
44	Admin/Depr/Int	$ 6,024	$ 6,115	$ 6,237	$ 6,362	$ 6,505	$ 6,651	$ 6,801	$ 6,954	$ 7,110	$ 7,270	$ 7,434	$ 7,601
45	Line Repair	1,349	1,369	1,396	1,424	1,456	1,489	1,522	1,557	1,592	1,627	1,664	1,701
46	Vehicles	64	65	67	68	70	71	73	74	76	78	79	81
47	Facilities	145	147	150	153	157	160	164	168	171	175	179	183
48	Production												
49	Personnel	1,444	1,465	1,494	1,524	1,559	1,594	1,630	1,666	1,704	1,742	1,781	1,821
50	Ops	789	801	817	833	852	871	891	911	931	952	974	995
51	Fuel	4,533	5,233	5,337	5,457	5,580	5,706	5,834	5,965	6,100	6,237	6,377	6,521
52	Spinning Reserve Fuel	-	-	-	-	-	-	-	-	-	-	-	-
53	Makushin												
54	To OCCP	-	-	-	-	-	-	-	-	-	-	-	-
55	Payments from Processors												
56	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
57	Other	-	-	-	-	-	-	-	-	-	-	-	-
58	Total City	14,348	15,195	15,499	15,822	16,178	16,542	16,914	17,295	17,684	18,082	18,489	18,905
59	Processor Costs												
60	Fuel	7,556	8,722	8,896	9,096	9,301	9,510	9,724	9,943	10,167	10,395	10,629	10,868
61	Variable O&M	1,650	1,675	1,708	1,742	1,782	1,822	1,863	1,905	1,947	1,991	2,036	2,082
62	Payments to City												
63	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
64	Other	-	-	-	-	-	-	-	-	-	-	-	-
65	Total Processor	9,206	10,396	10,604	10,839	11,082	11,332	11,587	11,847	12,114	12,387	12,665	12,950
66	Total Costs	23,554	25,591	26,103	26,661	27,261	27,874	28,501	29,142	29,798	30,469	31,154	31,855
67	City Costs @ Production Level ($/kWh)												
68	Production												
69	Fuel	$ 0.109	$ 0.126	$ 0.128	$ 0.131	$ 0.134	$ 0.137	$ 0.140	$ 0.143	$ 0.147	$ 0.150	$ 0.153	$ 0.157
70	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
71	Other Production	0.054	0.054	0.056	0.057	0.058	0.059	0.061	0.062	0.063	0.065	0.066	0.068
72	Other	0.182	0.185	0.189	0.193	0.197	0.201	0.206	0.210	0.215	0.220	0.225	0.230
73	Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-	-
74	Total												
75	At Production Level	$ 0.345	$ 0.365	$ 0.373	$ 0.381	$ 0.389	$ 0.398	$ 0.407	$ 0.416	$ 0.425	$ 0.435	$ 0.445	$ 0.455
76	At Sales Level	$ 0.359	$ 0.380	$ 0.387	$ 0.396	$ 0.404	$ 0.414	$ 0.423	$ 0.432	$ 0.442	$ 0.452	$ 0.462	$ 0.473
77	Processor Costs ($/kWh)	$ 0.153	$ 0.173	$ 0.177	$ 0.181	$ 0.185	$ 0.189	$ 0.193	$ 0.197	$ 0.202	$ 0.206	$ 0.211	$ 0.216
78													

		Geo 2033	Geo 2034	Geo 2035	Geo 2036	Geo 2037	Geo 2038	Geo 2039	Geo 2040	Geo 2041	Geo 2042	Geo 2043
29	**Without Makushin (Dollars in Thousands)**											
30	Loads (million kWh)											
31	City											
32	Sales											
33	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
34	City Heat	-	-	-	-	-	-	-	-	-	-	-
35	City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-
36	Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
37	Losses											
38	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
39	Processors	-	-	-	-	-	-	-	-	-	-	-
40	Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
41	Processors	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
42	Costs											
43	City											
44	Admin/Depr/Int	$ 7,772	$ 7,947	$ 8,126	$ 8,309	$ 8,496	$ 8,687	$ 8,882	$ 9,082	$ 9,287	$ 9,496	$ 9,709
45	Line Repair	1,740	1,779	1,819	1,860	1,902	1,944	1,988	2,033	2,079	2,125	2,173
46	Vehicles	83	85	87	89	91	93	95	97	99	101	104
47	Facilities	187	192	196	200	205	209	214	219	224	229	234
48	Production											
49	Personnel	1,862	1,904	1,947	1,991	2,036	2,081	2,128	2,176	2,225	2,275	2,326
50	Ops	1,018	1,041	1,064	1,088	1,113	1,138	1,163	1,189	1,216	1,243	1,271
51	Fuel	6,667	6,817	6,971	7,128	7,288	7,452	7,620	7,791	7,966	8,146	8,329
52	Spinning Reserve Fuel	-	-	-	-	-	-	-	-	-	-	-
53	Makushin											
54	To OCCP	-	-	-	-	-	-	-	-	-	-	-
55	Payments from Processors											
56	Makushin	-	-	-	-	-	-	-	-	-	-	-
57	Other	-	-	-	-	-	-	-	-	-	-	-
58	Total City	19,330	19,765	20,210	20,664	21,129	21,605	22,091	22,588	23,096	23,616	24,147
59	Processor Costs											
60	Fuel	11,113	11,363	11,619	11,880	12,147	12,421	12,700	12,986	13,278	13,577	13,882
61	Variable O&M	2,129	2,177	2,226	2,276	2,327	2,379	2,433	2,488	2,543	2,601	2,659
62	Payments to City											
63	Makushin	-	-	-	-	-	-	-	-	-	-	-
64	Other	-	-	-	-	-	-	-	-	-	-	-
65	Total Processor	13,242	13,540	13,844	14,156	14,474	14,800	15,133	15,473	15,822	16,178	16,542
66	Total Costs	32,572	33,305	34,054	34,820	35,604	36,405	37,224	38,061	38,918	39,793	40,689
67	City Costs @ Production Level ($/kWh)											
68	Production											
69	Fuel	$ 0.160	$ 0.164	$ 0.168	$ 0.171	$ 0.175	$ 0.179	$ 0.183	$ 0.187	$ 0.192	$ 0.196	$ 0.200
70	Makushin	-	-	-	-	-	-	-	-	-	-	-
71	Other Production	0.069	0.071	0.072	0.074	0.076	0.077	0.079	0.081	0.083	0.085	0.087
72	Other	0.235	0.241	0.246	0.252	0.257	0.263	0.269	0.275	0.281	0.287	0.294
73	Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-
74	Total											
75	At Production Level	$ 0.465	$ 0.475	$ 0.486	$ 0.497	$ 0.508	$ 0.520	$ 0.531	$ 0.543	$ 0.555	$ 0.568	$ 0.581
76	At Sales Level	$ 0.483	$ 0.494	$ 0.505	$ 0.517	$ 0.528	$ 0.540	$ 0.552	$ 0.565	$ 0.577	$ 0.590	$ 0.604
77	Processor Costs ($/kWh)	$ 0.221	$ 0.226	$ 0.231	$ 0.236	$ 0.241	$ 0.247	$ 0.252	$ 0.258	$ 0.264	$ 0.270	$ 0.276

1													
2	Makushin Size	26											
3	Fuel Forecast	EIA											
4	Sales to Processors	60,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
79	**With Makushin (Dollars in Thousands)**												
80	Loads (million kWh)												
81	City												
82	Sales												
83	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
84	City Heat	-	-	-	-	-	-	-	-	-	-	-	-
85	City Sales to Processors	-	-	-	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
86	Total City Sales	40.00	40.00	40.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
87	Losses												
88	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
89	Processors	-	-	-	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22
90	Total Generation	41.58	41.58	41.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58
91	Processors	60.00	60.00	60.00	-	-	-	-	-	-	-	-	-
92	City Costs												
93	Admin/Depr/Int	$ 6,024	$ 6,115	$ 6,237	$ 6,362	$ 6,505	$ 6,651	$ 6,801	$ 6,954	$ 7,110	$ 7,270	$ 7,434	$ 7,601
94	Line Repair	1,349	1,369	1,396	1,424	1,456	1,489	1,522	1,557	1,592	1,627	1,664	1,701
95	Vehicles	64	65	67	68	70	71	73	74	76	78	79	81
96	Facilities	145	147	150	153	157	160	164	168	171	175	179	183
97	Production												
98	Personnel	1,444	1,465	1,494	1,499	1,533	1,568	1,353	1,127	891	911	931	952
99	Ops	789	801	817	434	443	453	463	474	485	495	507	518
100	Fuel	4,533	5,233	5,337	213	218	223	228	233	238	244	249	255
101	Spinning Reserve Fuel	-	-	-	752	769	786	804	822	841	860	879	899
102	Makushin												
103	To OCCP	-	-	-	14,920	14,920	14,920	14,920	14,920	14,920	14,920	14,920	14,920
104	Payments from Processors												
105	Makushin	-	-	-	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)
106	Other	-	-	-	(1,837)	(1,851)	(1,864)	(1,878)	(1,892)	(1,907)	(1,921)	(1,935)	(1,950)
107	Total City	14,348	15,195	15,499	14,996	15,228	15,465	15,457	15,444	15,424	15,667	15,915	16,168
108	Processor Costs												
109	Fuel	7,556	8,722	8,896	290	297	304	310	317	325	332	339	347
110	Variable O&M	1,650	1,675	1,708	-	-	-	-	-	-	-	-	-
111	Payments to City												
112	Makushin	-	-	-	8,993	8,993	8,993	8,993	8,993	8,993	8,993	8,993	8,993
113	Other	-	-	-	1,837	1,851	1,864	1,878	1,892	1,907	1,921	1,935	1,950
114	Total Processor	9,206	10,396	10,604	11,120	11,140	11,161	11,181	11,202	11,224	11,245	11,267	11,289
115	Total Costs	23,554	25,591	26,103	26,116	26,368	26,625	26,638	26,646	26,648	26,912	27,182	27,458
116	City Costs @ Production Level ($/kWh)												
117	Production												
118	Fuel	$ 0.109	$ 0.126	$ 0.128	$ 0.023	$ 0.024	$ 0.024	$ 0.025	$ 0.025	$ 0.026	$ 0.027	$ 0.027	$ 0.028
119	Makushin	-	-	-	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147
120	Other Production	0.054	0.054	0.056	0.046	0.048	0.049	0.044	0.039	0.033	0.034	0.035	0.035
121	Other	0.182	0.185	0.189	0.193	0.197	0.201	0.206	0.210	0.215	0.220	0.225	0.230
122	Revenues from Processor Base Rate	-	-	-	(0.044)	(0.045)	(0.045)	(0.045)	(0.046)	(0.046)	(0.046)	(0.047)	(0.047)
123	Total												
124	At Production Level	0.345	0.365	0.373	0.365	0.371	0.376	0.376	0.376	0.375	0.381	0.387	0.393
125	At Sales Level	0.359	0.380	0.387	0.379	0.385	0.391	0.391	0.391	0.390	0.396	0.402	0.409
126	Processor Costs ($/kWh)	0.153	0.173	0.177	0.185	0.186	0.186	0.186	0.187	0.187	0.187	0.188	0.188

1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
79	**With Makushin (Dollars in Thousands)**											
80	Loads (million kWh)											
81	City											
82	Sales											
83	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
84	City Heat	-	-	-	-	-	-	-	-	-	-	-
85	City Sales to Processors	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
86	Total City Sales	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
87	Losses											
88	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
89	Processors	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22
90	Total Generation	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58	101.58
91	Processors	-	-	-	-	-	-	-	-	-	-	-
92	City Costs											
93	Admin/Depr/Int	$ 7,772	$ 7,947	$ 8,126	$ 8,309	$ 8,496	$ 8,687	$ 8,882	$ 9,082	$ 9,287	$ 9,496	$ 9,709
94	Line Repair	1,740	1,779	1,819	1,860	1,902	1,944	1,988	2,033	2,079	2,125	2,173
95	Vehicles	83	85	87	89	91	93	95	97	99	101	104
96	Facilities	187	192	196	200	205	209	214	219	224	229	234
97	Production											
98	Personnel	974	995	1,018	1,041	1,064	1,088	1,113	1,138	1,163	1,189	1,216
99	Ops	530	542	554	566	579	592	605	619	633	647	662
100	Fuel	261	266	272	279	285	291	298	304	311	318	325
101	Spinning Reserve Fuel	919	940	961	982	1,004	1,027	1,050	1,074	1,098	1,123	1,148
102	Makushin											
103	To OCCP	14,920	14,920	14,920	14,920	14,920	14,920	14,920	14,920	14,920	14,920	14,920
104	Payments from Processors											
105	Makushin	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)	(8,993)
106	Other	(1,964)	(1,979)	(1,994)	(2,009)	(2,024)	(2,039)	(2,055)	(2,070)	(2,086)	(2,101)	(2,117)
107	Total City	16,428	16,694	16,966	17,244	17,529	17,820	18,118	18,423	18,736	19,055	19,382
108	Processor Costs											
109	Fuel	355	363	371	379	388	396	405	415	424	433	443
110	Variable O&M	-	-	-	-	-	-	-	-	-	-	-
111	Payments to City											
112	Makushin	8,993	8,993	8,993	8,993	8,993	8,993	8,993	8,993	8,993	8,993	8,993
113	Other	1,964	1,979	1,994	2,009	2,024	2,039	2,055	2,070	2,086	2,101	2,117
114	Total Processor	11,312	11,335	11,358	11,381	11,404	11,428	11,453	11,477	11,502	11,527	11,553
115	Total Costs	27,740	28,028	28,323	28,625	28,933	29,248	29,571	29,901	30,238	30,582	30,935
116	City Costs @ Production Level ($/kWh)											
117	Production											
118	Fuel	$ 0.028	$ 0.029	$ 0.030	$ 0.030	$ 0.031	$ 0.032	$ 0.032	$ 0.033	$ 0.034	$ 0.035	$ 0.035
119	Makushin	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147
120	Other Production	0.036	0.037	0.038	0.039	0.040	0.040	0.041	0.042	0.043	0.044	0.045
121	Other	0.235	0.241	0.246	0.252	0.257	0.263	0.269	0.275	0.281	0.287	0.294
122	Revenues from Processor Base Rate	(0.047)	(0.048)	(0.048)	(0.048)	(0.049)	(0.049)	(0.049)	(0.050)	(0.050)	(0.051)	(0.051)
123	Total											
124	At Production Level	0.399	0.406	0.412	0.419	0.426	0.433	0.440	0.447	0.455	0.463	0.470
125	At Sales Level	0.415	0.422	0.429	0.436	0.443	0.450	0.457	0.465	0.473	0.481	0.489
126	Processor Costs ($/kWh)	0.189	0.189	0.189	0.190	0.190	0.190	0.191	0.191	0.192	0.192	0.193

1													
2	Makushin Size	26											
3	Fuel Forecast	EIA											
4	Sales to Processors	60,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
127	**Savings (Losses)**												
128	Dollars (000)												
129	City	-	-	-	826	950	1,077	1,457	1,851	2,260	2,415	2,574	2,736
130	Processor	-	-	-	(281)	(58)	171	405	645	890	1,141	1,398	1,661
131	Combined	-	-	-	545	893	1,249	1,863	2,496	3,150	3,556	3,972	4,397
132	$/kWh												
133	City	-	-	-	0.016	0.019	0.022	0.032	0.042	0.052	0.056	0.060	0.064
134	Processor	-	-	-	(0.005)	(0.001)	0.003	0.007	0.011	0.015	0.019	0.023	0.028
135	Combined	-	-	-	0.005	0.009	0.012	0.019	0.025	0.031	0.036	0.040	0.044
136	Breakeven Fuel Price ($/gallon)	-	-	-	1.98	1.97	1.96	1.91	1.87	1.82	1.80	1.79	1.78

1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
127	**Savings (Losses)**											
128	Dollars (000)											
129	City	2,902	3,071	3,244	3,420	3,601	3,785	3,973	4,165	4,361	4,561	4,765
130	Processor	1,930	2,205	2,487	2,775	3,070	3,372	3,680	3,996	4,320	4,650	4,989
131	Combined	4,832	5,276	5,731	6,195	6,670	7,156	7,653	8,161	8,680	9,211	9,754
132	$/kWh											
133	City	0.068	0.072	0.077	0.081	0.086	0.090	0.095	0.100	0.105	0.110	0.115
134	Processor	0.032	0.037	0.041	0.046	0.051	0.056	0.061	0.067	0.072	0.078	0.083
135	Combined	0.048	0.053	0.057	0.062	0.067	0.072	0.077	0.082	0.087	0.092	0.098
136	Breakeven Fuel Price ($/gallon)	1.77	1.76	1.74	1.73	1.72	1.70	1.69	1.68	1.66	1.65	1.63

Attachment 4A

Load: 82 million kWh

Project Size: 30 MW

Fuel Forecast: Nymex

1													
2	Makushin Size	30											
3	Fuel Forecast	Nymex											
4	Sales to Processors	42,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
9	Inflation		1.50%	2.00%	2.00%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
10	Price Level	1.000	1.015	1.035	1.056	1.080	1.104	1.129	1.154	1.180	1.207	1.234	1.262
11	Cost of Fuel ($/gallon)			.									
12	City	1.42	1.47	1.53	1.59	1.65	1.72	1.79	1.86	1.92	1.98	2.01	2.05
13	Processor	1.46	1.52	1.58	1.64	1.70	1.77	1.84	1.91	1.98	2.04	2.07	2.12
14	Processor VOM ($/kWh)	0.028	0.028	0.028	0.029	0.030	0.030	0.031	0.032	0.032	0.033	0.034	0.035
15	Fuel Efficiency (kWh/gal)												
16	City	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
17	Processor	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
18	Fuel Usage With Makushin for Maint/etc. (000 gallons)												
19	City												
20	Hours/Unit/Month	-	-	-	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
21	Gallons/Hour	-	-	-	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6
22	Number of Units	-	-	-	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
23	Processor												
24	Hours/Unit/Month	-	-	-	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
25	Gallons/Hour	-	-	-	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
26	Number of Units	-	-	-	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
27	Makushin Rate												
28	Fixed Payment - 30 MW (000)	-	-	-	16,020	16,180	16,342	16,505	16,670	16,837	17,006	17,176	17,347

1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
9	Inflation	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
10	Price Level	1.290	1.319	1.349	1.379	1.410	1.442	1.474	1.508	1.541	1.576	1.612
11	Cost of Fuel ($/gallon)											
12	City	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.46	2.51	2.57	2.62
13	Processor	2.16	2.21	2.26	2.31	2.37	2.42	2.47	2.53	2.59	2.64	2.70
14	Processor VOM ($/kWh)	0.035	0.036	0.037	0.038	0.039	0.040	0.041	0.041	0.042	0.043	0.044
15	Fuel Efficiency (kWh/gal)											
16	City	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
17	Processor	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
18	Fuel Usage With Makushin for Maint/etc. (000											
19	City											
20	Hours/Unit/Month	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
21	Gallons/Hour	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6
22	Number of Units	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
23	Processor											
24	Hours/Unit/Month	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
25	Gallons/Hour	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
26	Number of Units	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
27	Makushin Rate											
28	Fixed Payment - 30 MW (000)	17,521	17,696	17,873	18,052	18,232	18,415	18,599	18,785	18,973	19,162	19,354

1													
2	Makushin Size	30											
3	Fuel Forecast	Nymex											
4	Sales to Processors	42,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
29	**Without Makushin (Dollars in Thousands)**												
30	Loads (million kWh)												
31	City												
32	Sales												
33	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
34	City Heat	-	-	-	-	-	-	-	-	-	-	-	-
35	City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-	-
36	Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
37	Losses												
38	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
39	Processors	-	-	-	-	-	-	-	-	-	-	-	-
40	Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
41	Processors	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00
42	Costs												
43	City												
44	Admin/Depr/Int	$ 6,024	$ 6,115	$ 6,237	$ 6,362	$ 6,505	$ 6,651	$ 6,801	$ 6,954	$ 7,110	$ 7,270	$ 7,434	$ 7,601
45	Line Repair	1,349	1,369	1,396	1,424	1,456	1,489	1,522	1,557	1,592	1,627	1,664	1,701
46	Vehicles	64	65	67	68	70	71	73	74	76	78	79	81
47	Facilities	145	147	150	153	157	160	164	168	171	175	179	183
48	Production												
49	Personnel	1,444	1,465	1,494	1,524	1,559	1,594	1,630	1,666	1,704	1,742	1,781	1,821
50	Ops	789	801	817	833	852	871	891	911	931	952	974	995
51	Fuel	3,754	3,905	4,058	4,216	4,375	4,544	4,729	4,917	5,086	5,235	5,322	5,442
52	Spinning Reserve Fuel	-	-	-	-	-	-	-	-	-	-	-	-
53	Makushin												
54	To OCCP	-	-	-	-	-	-	-	-	-	-	-	-
55	Payments from Processors												
56	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
57	Other	-	-	-	-	-	-	-	-	-	-	-	-
58	Total City	13,569	13,867	14,220	14,581	14,973	15,381	15,810	16,246	16,670	17,080	17,434	17,826
59	Processor Costs												
60	Fuel	4,380	4,556	4,735	4,919	5,105	5,302	5,518	5,737	5,934	6,108	6,210	6,350
61	Variable O&M	1,155	1,172	1,196	1,220	1,247	1,275	1,304	1,333	1,363	1,394	1,425	1,457
62	Payments to City												
63	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
64	Other	-	-	-	-	-	-	-	-	-	-	-	-
65	Total Processor	5,535	5,728	5,931	6,139	6,352	6,577	6,822	7,070	7,297	7,502	7,635	7,807
66	Total Costs	19,104	19,595	20,151	20,719	21,325	21,958	22,631	23,316	23,968	24,582	25,069	25,633
67	City Costs @ Production Level ($/kWh)												
68	Production												
69	Fuel	$ 0.090	$ 0.094	$ 0.098	$ 0.101	$ 0.105	$ 0.109	$ 0.114	$ 0.118	$ 0.122	$ 0.126	$ 0.128	$ 0.131
70	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
71	Other Production	0.054	0.054	0.056	0.057	0.058	0.059	0.061	0.062	0.063	0.065	0.066	0.068
72	Other	0.182	0.185	0.189	0.193	0.197	0.201	0.206	0.210	0.215	0.220	0.225	0.230
73	Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-	-
74	Total												
75	At Production Level	$ 0.326	$ 0.334	$ 0.342	$ 0.351	$ 0.360	$ 0.370	$ 0.380	$ 0.391	$ 0.401	$ 0.411	$ 0.419	$ 0.429
76	At Sales Level	$ 0.339	$ 0.347	$ 0.355	$ 0.365	$ 0.374	$ 0.385	$ 0.395	$ 0.406	$ 0.417	$ 0.427	$ 0.436	$ 0.446
77	Processor Costs ($/kWh)	$ 0.132	$ 0.136	$ 0.141	$ 0.146	$ 0.151	$ 0.157	$ 0.162	$ 0.168	$ 0.174	$ 0.179	$ 0.182	$ 0.186
78													

1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
29	**Without Makushin (Dollars in Thousands)**											
30	Loads (million kWh)											
31	City											
32	Sales											
33	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
34	City Heat	-	-	-	-	-	-	-	-	-	-	-
35	City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-
36	Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
37	Losses											
38	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
39	Processors	-	-	-	-	-	-	-	-	-	-	-
40	Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
41	Processors	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00
42	Costs											
43	City											
44	Admin/Depr/Int	$ 7,772	$ 7,947	$ 8,126	$ 8,309	$ 8,496	$ 8,687	$ 8,882	$ 9,082	$ 9,287	$ 9,496	$ 9,709
45	Line Repair	1,740	1,779	1,819	1,860	1,902	1,944	1,988	2,033	2,079	2,125	2,173
46	Vehicles	83	85	87	89	91	93	95	97	99	101	104
47	Facilities	187	192	196	200	205	209	214	219	224	229	234
48	Production											
49	Personnel	1,862	1,904	1,947	1,991	2,036	2,081	2,128	2,176	2,225	2,275	2,326
50	Ops	1,018	1,041	1,064	1,088	1,113	1,138	1,163	1,189	1,216	1,243	1,271
51	Fuel	5,565	5,690	5,818	5,949	6,083	6,219	6,359	6,502	6,649	6,798	6,951
52	Spinning Reserve Fuel	-	-	-	-	-	-	-	-	-	-	-
53	Makushin											
54	To OCCP	-	-	-	-	-	-	-	-	-	-	-
55	Payments from Processors											
56	Makushin	-	-	-	-	-	-	-	-	-	-	-
57	Other	-	-	-	-	-	-	-	-	-	-	-
58	Total City	18,227	18,637	19,057	19,486	19,924	20,372	20,831	21,299	21,779	22,269	22,770
59	Processor Costs											
60	Fuel	6,492	6,638	6,788	6,941	7,097	7,256	7,420	7,587	7,757	7,932	8,110
61	Variable O&M	1,490	1,524	1,558	1,593	1,629	1,665	1,703	1,741	1,780	1,820	1,861
62	Payments to City											
63	Makushin	-	-	-	-	-	-	-	-	-	-	-
64	Other	-	-	-	-	-	-	-	-	-	-	-
65	Total Processor	7,982	8,162	8,346	8,534	8,726	8,922	9,123	9,328	9,538	9,752	9,972
66	Total Costs	26,210	26,799	27,402	28,019	28,649	29,294	29,953	30,627	31,316	32,021	32,741
67	City Costs @ Production Level ($/kWh)											
68	Production											
69	Fuel	$ 0.134	$ 0.137	$ 0.140	$ 0.143	$ 0.146	$ 0.150	$ 0.153	$ 0.156	$ 0.160	$ 0.163	$ 0.167
70	Makushin	-	-	-	-	-	-	-	-	-	-	-
71	Other Production	0.069	0.071	0.072	0.074	0.076	0.077	0.079	0.081	0.083	0.085	0.087
72	Other	0.235	0.241	0.246	0.252	0.257	0.263	0.269	0.275	0.281	0.287	0.294
73	Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-
74	Total											
75	At Production Level	$ 0.438	$ 0.448	$ 0.458	$ 0.469	$ 0.479	$ 0.490	$ 0.501	$ 0.512	$ 0.524	$ 0.536	$ 0.548
76	At Sales Level	$ 0.456	$ 0.466	$ 0.476	$ 0.487	$ 0.498	$ 0.509	$ 0.521	$ 0.532	$ 0.544	$ 0.557	$ 0.569
77	Processor Costs ($/kWh)	$ 0.190	$ 0.194	$ 0.199	$ 0.203	$ 0.208	$ 0.212	$ 0.217	$ 0.222	$ 0.227	$ 0.232	$ 0.237
78												

1													
2	Makushin Size	30											
3	Fuel Forecast	Nymex											
4	Sales to Processors	42,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
79	**With Makushin (Dollars in Thousands)**												
80	Loads (million kWh)												
81	City												
82	Sales												
83	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
84	City Heat	-	-	-	-	-	-	-	-	-	-	-	-
85	City Sales to Processors	-	-	-	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00
86	Total City Sales	40.00	40.00	40.00	82.00	82.00	82.00	82.00	82.00	82.00	82.00	82.00	82.00
87	Losses												
88	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
89	Processors	-	-	-	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
90	Total Generation	41.58	41.58	41.58	83.58	83.58	83.58	83.58	83.58	83.58	83.58	83.58	83.58
91	Processors	42.00	42.00	42.00	-	-	-	-	-	-	-	-	-
92	City Costs												
93	Admin/Depr/Int	$ 6,024	$ 6,115	$ 6,237	$ 6,362	$ 6,505	$ 6,651	$ 6,801	$ 6,954	$ 7,110	$ 7,270	$ 7,434	$ 7,601
94	Line Repair	1,349	1,369	1,396	1,424	1,456	1,489	1,522	1,557	1,592	1,627	1,664	1,701
95	Vehicles	64	65	67	68	70	71	73	74	76	78	79	81
96	Facilities	145	147	150	153	157	160	164	168	171	175	179	183
97	Production												
98	Personnel	1,444	1,465	1,494	1,499	1,533	1,568	1,353	1,127	891	911	931	952
99	Ops	789	801	817	434	443	453	463	474	485	495	507	518
100	Fuel	3,754	3,905	4,058	165	171	178	185	192	199	205	208	213
101	Spinning Reserve Fuel	-	-	-	581	603	626	652	678	701	722	734	750
102	Makushin												
103	To OCCP	-	-	-	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020
104	Payments from Processors												
105	Makushin	-	-	-	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)
106	Other	-	-	-	(1,286)	(1,295)	(1,305)	(1,315)	(1,325)	(1,335)	(1,345)	(1,355)	(1,365)
107	Total City	13,569	13,867	14,220	17,206	17,448	17,697	17,703	17,704	17,695	17,944	18,187	18,441
108	Processor Costs												
109	Fuel	4,380	4,556	4,735	224	233	242	252	262	271	279	283	290
110	Variable O&M	1,155	1,172	1,196	-	-	-	-	-	-	-	-	-
111	Payments to City												
112	Makushin	-	-	-	8,215	8,215	8,215	8,215	8,215	8,215	8,215	8,215	8,215
113	Other	-	-	-	1,286	1,295	1,305	1,315	1,325	1,335	1,345	1,355	1,365
114	Total Processor	5,535	5,728	5,931	9,725	9,743	9,761	9,781	9,801	9,820	9,838	9,852	9,869
115	Total Costs	19,104	19,595	20,151	26,930	27,191	27,458	27,484	27,505	27,515	27,782	28,039	28,310
116	City Costs @ Production Level ($/kWh)												
117	Production												
118	Fuel	$ 0.090	$ 0.094	$ 0.098	$ 0.018	$ 0.019	$ 0.019	$ 0.020	$ 0.021	$ 0.022	$ 0.022	$ 0.023	$ 0.023
119	Makushin	-	-	-	0.192	0.192	0.192	0.192	0.192	0.192	0.192	0.192	0.192
120	Other Production	0.054	0.054	0.056	0.046	0.048	0.049	0.044	0.039	0.033	0.034	0.035	0.035
121	Other	0.182	0.185	0.189	0.193	0.197	0.201	0.206	0.210	0.215	0.220	0.225	0.230
122	Revenues from Processor Base Rate	-	-	-	(0.031)	(0.031)	(0.031)	(0.032)	(0.032)	(0.032)	(0.032)	(0.033)	(0.033)
123	Total												
124	At Production Level	0.326	0.334	0.342	0.418	0.424	0.430	0.430	0.430	0.430	0.436	0.441	0.447
125	At Sales Level	0.339	0.347	0.355	0.434	0.440	0.447	0.447	0.447	0.446	0.453	0.459	0.465
126	Processor Costs ($/kWh)	0.132	0.136	0.141	0.232	0.232	0.232	0.233	0.233	0.234	0.234	0.235	0.235

1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
79	**With Makushin (Dollars in Thousands)**											
80	Loads (million kWh)											
81	City											
82	Sales											
83	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
84	City Heat	-	-	-	-	-	-	-	-	-	-	-
85	City Sales to Processors	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00
86	Total City Sales	82.00	82.00	82.00	82.00	82.00	82.00	82.00	82.00	82.00	82.00	82.00
87	Losses											
88	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
89	Processors	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
90	Total Generation	83.58	83.58	83.58	83.58	83.58	83.58	83.58	83.58	83.58	83.58	83.58
91	Processors	-	-	-	-	-	-	-	-	-	-	-
92	City Costs											
93	Admin/Depr/Int	$ 7,772	$ 7,947	$ 8,126	$ 8,309	$ 8,496	$ 8,687	$ 8,882	$ 9,082	$ 9,287	$ 9,496	$ 9,709
94	Line Repair	1,740	1,779	1,819	1,860	1,902	1,944	1,988	2,033	2,079	2,125	2,173
95	Vehicles	83	85	87	89	91	93	95	97	99	101	104
96	Facilities	187	192	196	200	205	209	214	219	224	229	234
97	Production											
98	Personnel	974	995	1,018	1,041	1,064	1,088	1,113	1,138	1,163	1,189	1,216
99	Ops	530	542	554	566	579	592	605	619	633	647	662
100	Fuel	217	222	227	232	238	243	248	254	260	266	272
101	Spinning Reserve Fuel	767	784	802	820	838	857	876	896	916	937	958
102	Makushin											
103	To OCCP	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020
104	Payments from Processors											
105	Makushin	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)
106	Other	(1,375)	(1,385)	(1,396)	(1,406)	(1,417)	(1,427)	(1,438)	(1,449)	(1,460)	(1,471)	(1,482)
107	Total City	18,700	18,966	19,238	19,516	19,801	20,092	20,390	20,695	21,006	21,325	21,651
108	Processor Costs											
109	Fuel	296	303	310	316	324	331	338	346	354	362	370
110	Variable O&M	-	-	-	-	-	-	-	-	-	-	-
111	Payments to City											
112	Makushin	8,215	8,215	8,215	8,215	8,215	8,215	8,215	8,215	8,215	8,215	8,215
113	Other	1,375	1,385	1,396	1,406	1,417	1,427	1,438	1,449	1,460	1,471	1,482
114	Total Processor	9,886	9,903	9,920	9,937	9,955	9,973	9,991	10,009	10,028	10,047	10,066
115	Total Costs	28,586	28,869	29,158	29,454	29,756	30,065	30,381	30,704	31,034	31,372	31,718
116	City Costs @ Production Level ($/kWh)											
117	Production											
118	Fuel	$ 0.024	$ 0.024	$ 0.025	$ 0.025	$ 0.026	$ 0.026	$ 0.027	$ 0.028	$ 0.028	$ 0.029	$ 0.030
119	Makushin	0.192	0.192	0.192	0.192	0.192	0.192	0.192	0.192	0.192	0.192	0.192
120	Other Production	0.036	0.037	0.038	0.039	0.040	0.040	0.041	0.042	0.043	0.044	0.045
121	Other	0.235	0.241	0.246	0.252	0.257	0.263	0.269	0.275	0.281	0.287	0.294
122	Revenues from Processor Base Rate	(0.033)	(0.033)	(0.034)	(0.034)	(0.034)	(0.034)	(0.035)	(0.035)	(0.035)	(0.035)	(0.036)
123	Total											
124	At Production Level	0.454	0.460	0.467	0.473	0.480	0.487	0.494	0.502	0.509	0.517	0.525
125	At Sales Level	0.472	0.478	0.485	0.492	0.499	0.506	0.514	0.521	0.529	0.537	0.545
126	Processor Costs ($/kWh)	0.235	0.236	0.236	0.237	0.237	0.237	0.238	0.238	0.239	0.239	0.240

1													
2	Makushin Size	30											
3	Fuel Forecast	Nymex											
4	Sales to Processors	42,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
127	**Savings (Losses)**												
128	Dollars (000)												
129	City	-	-	-	(2,625)	(2,475)	(2,316)	(1,894)	(1,458)	(1,025)	(864)	(753)	(614)
130	Processor	-	-	-	(3,586)	(3,391)	(3,184)	(2,959)	(2,731)	(2,523)	(2,336)	(2,217)	(2,062)
131	Combined	-	-	-	(6,211)	(5,865)	(5,500)	(4,853)	(4,189)	(3,547)	(3,199)	(2,970)	(2,677)
132	$/kWh												
133	City	-	-	-	(0.070)	(0.066)	(0.062)	(0.051)	(0.041)	(0.030)	(0.026)	(0.023)	(0.019)
134	Processor	-	-	-	(0.085)	(0.081)	(0.076)	(0.070)	(0.065)	(0.060)	(0.056)	(0.053)	(0.049)
135	Combined	-	-	-	(0.076)	(0.072)	(0.067)	(0.059)	(0.051)	(0.043)	(0.039)	(0.036)	(0.033)
136	Breakeven Fuel Price ($/gallon)	-	-	-	2.80	2.80	2.79	2.73	2.67	2.61	2.60	2.59	2.58

1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
127	**Savings (Losses)**											
128	Dollars (000)											
129	City	(473)	(329)	(181)	(31)	123	280	441	605	772	943	1,118
130	Processor	(1,903)	(1,741)	(1,574)	(1,404)	(1,229)	(1,051)	(868)	(682)	(490)	(295)	(94)
131	Combined	(2,376)	(2,069)	(1,755)	(1,435)	(1,106)	(771)	(428)	(77)	282	649	1,024
132	$/kWh											
133	City	(0.016)	(0.012)	(0.009)	(0.005)	(0.001)	0.003	0.007	0.011	0.015	0.019	0.024
134	Processor	(0.045)	(0.041)	(0.037)	(0.033)	(0.029)	(0.025)	(0.021)	(0.016)	(0.012)	(0.007)	(0.002)
135	Combined	(0.029)	(0.025)	(0.021)	(0.017)	(0.013)	(0.009)	(0.005)	(0.001)	0.003	0.008	0.012
136	Breakeven Fuel Price ($/gallon)	2.56	2.55	2.54	2.53	2.51	2.50	2.48	2.47	2.46	2.44	2.43

Attachment 4B

Load: 82 million kWh

Project Size: 30 MW

Fuel Forecast: EIA

1													
2	Makushin Size	30											
3	Fuel Forecast	EIA											
4	Sales to Processors	42,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
9	Inflation		1.50%	2.00%	2.00%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
10	Price Level	1.000	1.015	1.035	1.056	1.080	1.104	1.129	1.154	1.180	1.207	1.234	1.262
11	Cost of Fuel ($/gallon)			.									
12	City	1.71	1.98	2.02	2.06	2.11	2.15	2.20	2.25	2.30	2.35	2.41	2.46
13	Processor	1.76	2.04	2.08	2.12	2.17	2.22	2.27	2.32	2.37	2.43	2.48	2.54
14	Processor VOM ($/kWh)	0.028	0.028	0.028	0.029	0.030	0.030	0.031	0.032	0.032	0.033	0.034	0.035
15	Fuel Efficiency (kWh/gal)												
16	City	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
17	Processor	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
18	Fuel Usage With Makushin for Maint/etc. (000 gallons)												
19	City												
20	Hours/Unit/Month	-	-	-	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
21	Gallons/Hour	-	-	-	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6
22	Number of Units	-	-	-	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
23	Processor												
24	Hours/Unit/Month	-	-	-	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
25	Gallons/Hour	-	-	-	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
26	Number of Units	-	-	-	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
27	Makushin Rate												
28	Fixed Payment - 30 MW (000)	-	-	-	16,020	16,180	16,342	16,505	16,670	16,837	17,006	17,176	17,347

1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
9	Inflation	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
10	Price Level	1.290	1.319	1.349	1.379	1.410	1.442	1.474	1.508	1.541	1.576	1.612
11	Cost of Fuel ($/gallon)											
12	City	2.52	2.57	2.63	2.69	2.75	2.81	2.88	2.94	3.01	3.08	3.14
13	Processor	2.59	2.65	2.71	2.77	2.83	2.90	2.96	3.03	3.10	3.17	3.24
14	Processor VOM ($/kWh)	0.035	0.036	0.037	0.038	0.039	0.040	0.041	0.041	0.042	0.043	0.044
15	Fuel Efficiency (kWh/gal)											
16	City	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
17	Processor	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
18	Fuel Usage With Makushin for Maint/etc. (00(											
19	City											
20	Hours/Unit/Month	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
21	Gallons/Hour	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6
22	Number of Units	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
23	Processor											
24	Hours/Unit/Month	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
25	Gallons/Hour	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
26	Number of Units	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
27	Makushin Rate											
28	Fixed Payment - 30 MW (000)	17,521	17,696	17,873	18,052	18,232	18,415	18,599	18,785	18,973	19,162	19,354

1													
2	Makushin Size	30											
3	Fuel Forecast	EIA											
4	Sales to Processors	42,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
29	**Without Makushin (Dollars in Thousands)**												
30	Loads (million kWh)												
31	City												
32	Sales												
33	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
34	City Heat	-	-	-	-	-	-	-	-	-	-	-	-
35	City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-	-
36	Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
37	Losses												
38	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
39	Processors	-	-	-	-	-	-	-	-	-	-	-	-
40	Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
41	Processors	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00
42	Costs												
43	City												
44	Admin/Depr/Int	$ 6,024	$ 6,115	$ 6,237	$ 6,362	$ 6,505	$ 6,651	$ 6,801	$ 6,954	$ 7,110	$ 7,270	$ 7,434	$ 7,601
45	Line Repair	1,349	1,369	1,396	1,424	1,456	1,489	1,522	1,557	1,592	1,627	1,664	1,701
46	Vehicles	64	65	67	68	70	71	73	74	76	78	79	81
47	Facilities	145	147	150	153	157	160	164	168	171	175	179	183
48	Production												
49	Personnel	1,444	1,465	1,494	1,524	1,559	1,594	1,630	1,666	1,704	1,742	1,781	1,821
50	Ops	789	801	817	833	852	871	891	911	931	952	974	995
51	Fuel	4,533	5,233	5,337	5,457	5,580	5,706	5,834	5,965	6,100	6,237	6,377	6,521
52	Spinning Reserve Fuel	-	-	-	-	-	-	-	-	-	-	-	-
53	Makushin												
54	To OCCP	-	-	-	-	-	-	-	-	-	-	-	-
55	Payments from Processors												
56	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
57	Other	-	-	-	-	-	-	-	-	-	-	-	-
58	Total City	14,348	15,195	15,499	15,822	16,178	16,542	16,914	17,295	17,684	18,082	18,489	18,905
59	Processor Costs												
60	Fuel	5,289	6,105	6,227	6,367	6,511	6,657	6,807	6,960	7,117	7,277	7,440	7,608
61	Variable O&M	1,155	1,172	1,196	1,220	1,247	1,275	1,304	1,333	1,363	1,394	1,425	1,457
62	Payments to City												
63	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
64	Other	-	-	-	-	-	-	-	-	-	-	-	-
65	Total Processor	6,444	7,277	7,423	7,587	7,758	7,932	8,111	8,293	8,480	8,671	8,866	9,065
66	Total Costs	20,792	22,472	22,922	23,409	23,936	24,474	25,025	25,588	26,164	26,753	27,354	27,970
67	City Costs @ Production Level ($/kWh)												
68	Production												
69	Fuel	$ 0.109	$ 0.126	$ 0.128	$ 0.131	$ 0.134	$ 0.137	$ 0.140	$ 0.143	$ 0.147	$ 0.150	$ 0.153	$ 0.157
70	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
71	Other Production	0.054	0.054	0.056	0.057	0.058	0.059	0.061	0.062	0.063	0.065	0.066	0.068
72	Other	0.182	0.185	0.189	0.193	0.197	0.201	0.206	0.210	0.215	0.220	0.225	0.230

1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
29	**Without Makushin (Dollars in Thousands)**											
30	Loads (million kWh)											
31	City											
32	Sales											
33	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
34	City Heat	-	-	-	-	-	-	-	-	-	-	-
35	City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-
36	Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
37	Losses											
38	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
39	Processors	-	-	-	-	-	-	-	-	-	-	-
40	Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
41	Processors	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00
42	Costs											
43	City											
44	Admin/Depr/Int	$ 7,772	$ 7,947	$ 8,126	$ 8,309	$ 8,496	$ 8,687	$ 8,882	$ 9,082	$ 9,287	$ 9,496	$ 9,709
45	Line Repair	1,740	1,779	1,819	1,860	1,902	1,944	1,988	2,033	2,079	2,125	2,173
46	Vehicles	83	85	87	89	91	93	95	97	99	101	104
47	Facilities	187	192	196	200	205	209	214	219	224	229	234
48	Production											
49	Personnel	1,862	1,904	1,947	1,991	2,036	2,081	2,128	2,176	2,225	2,275	2,326
50	Ops	1,018	1,041	1,064	1,088	1,113	1,138	1,163	1,189	1,216	1,243	1,271
51	Fuel	6,667	6,817	6,971	7,128	7,288	7,452	7,620	7,791	7,966	8,146	8,329
52	Spinning Reserve Fuel	-	-	-	-	-	-	-	-	-	-	-
53	Makushin											
54	To OCCP	-	-	-	-	-	-	-	-	-	-	-
55	Payments from Processors											
56	Makushin	-	-	-	-	-	-	-	-	-	-	-
57	Other	-	-	-	-	-	-	-	-	-	-	-
58	Total City	19,330	19,765	20,210	20,664	21,129	21,605	22,091	22,588	23,096	23,616	24,147
59	Processor Costs											
60	Fuel	7,779	7,954	8,133	8,316	8,503	8,694	8,890	9,090	9,295	9,504	9,718
61	Variable O&M	1,490	1,524	1,558	1,593	1,629	1,665	1,703	1,741	1,780	1,820	1,861
62	Payments to City											
63	Makushin	-	-	-	-	-	-	-	-	-	-	-
64	Other	-	-	-	-	-	-	-	-	-	-	-
65	Total Processor	9,269	9,478	9,691	9,909	10,132	10,360	10,593	10,831	11,075	11,324	11,579
66	Total Costs	28,599	29,243	29,901	30,573	31,261	31,965	32,684	33,419	34,171	34,940	35,726
67	City Costs @ Production Level ($/kWh)											
68	Production											
69	Fuel	$ 0.160	$ 0.164	$ 0.168	$ 0.171	$ 0.175	$ 0.179	$ 0.183	$ 0.187	$ 0.192	$ 0.196	$ 0.200
70	Makushin	-	-	-	-	-	-	-	-	-	-	-
71	Other Production	0.069	0.071	0.072	0.074	0.076	0.077	0.079	0.081	0.083	0.085	0.087
72	Other	0.235	0.241	0.246	0.252	0.257	0.263	0.269	0.275	0.281	0.287	0.294

1														
2	Makushin Size	30												
3	Fuel Forecast	EIA												
4	Sales to Processors	42,000,000												
5	Processor Rate	0.030												
6	Rate Esc	0.75%												
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
73	Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-	-	
74	Total													
75	At Production Level	$ 0.345	$ 0.365	$ 0.373	$ 0.381	$ 0.389	$ 0.398	$ 0.407	$ 0.416	$ 0.425	$ 0.435	$ 0.445	$ 0.455	
76	At Sales Level	$ 0.359	$ 0.380	$ 0.387	$ 0.396	$ 0.404	$ 0.414	$ 0.423	$ 0.432	$ 0.442	$ 0.452	$ 0.462	$ 0.473	
77	Processor Costs ($/kWh)	$ 0.153	$ 0.173	$ 0.177	$ 0.181	$ 0.185	$ 0.189	$ 0.193	$ 0.197	$ 0.202	$ 0.206	$ 0.211	$ 0.216	
78														

1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
73	Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-
74	Total											
75	At Production Level	$ 0.465	$ 0.475	$ 0.486	$ 0.497	$ 0.508	$ 0.520	$ 0.531	$ 0.543	$ 0.555	$ 0.568	$ 0.581
76	At Sales Level	$ 0.483	$ 0.494	$ 0.505	$ 0.517	$ 0.528	$ 0.540	$ 0.552	$ 0.565	$ 0.577	$ 0.590	$ 0.604
77	Processor Costs ($/kWh)	$ 0.221	$ 0.226	$ 0.231	$ 0.236	$ 0.241	$ 0.247	$ 0.252	$ 0.258	$ 0.264	$ 0.270	$ 0.276
78												

1													
2	Makushin Size	30											
3	Fuel Forecast	EIA											
4	Sales to Processors	42,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
79	**With Makushin (Dollars in Thousands)**												
80	Loads (million kWh)												
81	City												
82	Sales												
83	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
84	City Heat	-	-	-	-	-	-	-	-	-	-	-	-
85	City Sales to Processors	-	-	-	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00
86	Total City Sales	40.00	40.00	40.00	82.00	82.00	82.00	82.00	82.00	82.00	82.00	82.00	82.00
87	Losses												
88	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
89	Processors	-	-	-	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
90	Total Generation	41.58	41.58	41.58	83.58	83.58	83.58	83.58	83.58	83.58	83.58	83.58	83.58
91	Processors	42.00	42.00	42.00	-	-	-	-	-	-	-	-	-
92	City Costs												
93	Admin/Depr/Int	$ 6,024	$ 6,115	$ 6,237	$ 6,362	$ 6,505	$ 6,651	$ 6,801	$ 6,954	$ 7,110	$ 7,270	$ 7,434	$ 7,601
94	Line Repair	1,349	1,369	1,396	1,424	1,456	1,489	1,522	1,557	1,592	1,627	1,664	1,701
95	Vehicles	64	65	67	68	70	71	73	74	76	78	79	81
96	Facilities	145	147	150	153	157	160	164	168	171	175	179	183
97	Production												
98	Personnel	1,444	1,465	1,494	1,499	1,533	1,568	1,353	1,127	891	911	931	952
99	Ops	789	801	817	434	443	453	463	474	485	495	507	518
100	Fuel	4,533	5,233	5,337	213	218	223	228	233	238	244	249	255
101	Spinning Reserve Fuel	-	-	-	752	769	786	804	822	841	860	879	899
102	Makushin												
103	To OCCP	-	-	-	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020
104	Payments from Processors												
105	Makushin	-	-	-	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)
106	Other	-	-	-	(1,286)	(1,295)	(1,305)	(1,315)	(1,325)	(1,335)	(1,345)	(1,355)	(1,365)
107	Total City	14,348	15,195	15,499	17,425	17,661	17,902	17,899	17,889	17,874	18,121	18,373	18,631
108	Processor Costs												
109	Fuel	5,289	6,105	6,227	290	297	304	310	317	325	332	339	347
110	Variable O&M	1,155	1,172	1,196	-	-	-	-	-	-	-	-	-
111	Payments to City												
112	Makushin	-	-	-	8,215	8,215	8,215	8,215	8,215	8,215	8,215	8,215	8,215
113	Other	-	-	-	1,286	1,295	1,305	1,315	1,325	1,335	1,345	1,355	1,365
114	Total Processor	6,444	7,277	7,423	9,791	9,807	9,823	9,840	9,857	9,874	9,891	9,909	9,926
115	Total Costs	20,792	22,472	22,922	27,216	27,468	27,725	27,738	27,746	27,748	28,012	28,282	28,558
116	City Costs @ Production Level ($/kWh)												
117	Production												
118	Fuel	$ 0.109	$ 0.126	$ 0.128	$ 0.023	$ 0.024	$ 0.024	$ 0.025	$ 0.025	$ 0.026	$ 0.027	$ 0.027	$ 0.028
119	Makushin	-	-	-	0.192	0.192	0.192	0.192	0.192	0.192	0.192	0.192	0.192
120	Other Production	0.054	0.054	0.056	0.046	0.048	0.049	0.044	0.039	0.033	0.034	0.035	0.035
121	Other	0.182	0.185	0.189	0.193	0.197	0.201	0.206	0.210	0.215	0.220	0.225	0.230
122	Revenues from Processor Base Rate	-	-	-	(0.031)	(0.031)	(0.031)	(0.032)	(0.032)	(0.032)	(0.032)	(0.033)	(0.033)
123	Total												

		Geo 2033	Geo 2034	Geo 2035	Geo 2036	Geo 2037	Geo 2038	Geo 2039	Geo 2040	Geo 2041	Geo 2042	Geo 2043
1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
79	**With Makushin (Dollars in Thousands)**											
80	Loads (million kWh)											
81	City											
82	Sales											
83	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
84	City Heat	-	-	-	-	-	-	-	-	-	-	-
85	City Sales to Processors	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00
86	Total City Sales	82.00	82.00	82.00	82.00	82.00	82.00	82.00	82.00	82.00	82.00	82.00
87	Losses											
88	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
89	Processors	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
90	Total Generation	83.58	83.58	83.58	83.58	83.58	83.58	83.58	83.58	83.58	83.58	83.58
91	Processors	-	-	-	-	-	-	-	-	-	-	-
92	City Costs											
93	Admin/Depr/Int	$ 7,772	$ 7,947	$ 8,126	$ 8,309	$ 8,496	$ 8,687	$ 8,882	$ 9,082	$ 9,287	$ 9,496	$ 9,709
94	Line Repair	1,740	1,779	1,819	1,860	1,902	1,944	1,988	2,033	2,079	2,125	2,173
95	Vehicles	83	85	87	89	91	93	95	97	99	101	104
96	Facilities	187	192	196	200	205	209	214	219	224	229	234
97	Production											
98	Personnel	974	995	1,018	1,041	1,064	1,088	1,113	1,138	1,163	1,189	1,216
99	Ops	530	542	554	566	579	592	605	619	633	647	662
100	Fuel	261	266	272	279	285	291	298	304	311	318	325
101	Spinning Reserve Fuel	919	940	961	982	1,004	1,027	1,050	1,074	1,098	1,123	1,148
102	Makushin											
103	To OCCP	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020
104	Payments from Processors											
105	Makushin	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)	(8,215)
106	Other	(1,375)	(1,385)	(1,396)	(1,406)	(1,417)	(1,427)	(1,438)	(1,449)	(1,460)	(1,471)	(1,482)
107	Total City	18,895	19,166	19,442	19,725	20,014	20,310	20,613	20,922	21,239	21,564	21,895
108	Processor Costs											
109	Fuel	355	363	371	379	388	396	405	415	424	433	443
110	Variable O&M	-	-	-	-	-	-	-	-	-	-	-
111	Payments to City											
112	Makushin	8,215	8,215	8,215	8,215	8,215	8,215	8,215	8,215	8,215	8,215	8,215
113	Other	1,375	1,385	1,396	1,406	1,417	1,427	1,438	1,449	1,460	1,471	1,482
114	Total Processor	9,944	9,963	9,981	10,000	10,019	10,039	10,058	10,078	10,098	10,119	10,139
115	Total Costs	28,840	29,128	29,423	29,725	30,033	30,348	30,671	31,001	31,338	31,682	32,035
116	City Costs @ Production Level ($/kWh)											
117	Production											
118	Fuel	$ 0.028	$ 0.029	$ 0.030	$ 0.030	$ 0.031	$ 0.032	$ 0.032	$ 0.033	$ 0.034	$ 0.035	$ 0.035
119	Makushin	0.192	0.192	0.192	0.192	0.192	0.192	0.192	0.192	0.192	0.192	0.192
120	Other Production	0.036	0.037	0.038	0.039	0.040	0.040	0.041	0.042	0.043	0.044	0.045
121	Other	0.235	0.241	0.246	0.252	0.257	0.263	0.269	0.275	0.281	0.287	0.294
122	Revenues from Processor Base Rate	(0.033)	(0.033)	(0.034)	(0.034)	(0.034)	(0.034)	(0.035)	(0.035)	(0.035)	(0.035)	(0.036)
123	Total											

1														
2	Makushin Size	30												
3	Fuel Forecast	EIA												
4	Sales to Processors	42,000,000												
5	Processor Rate	0.030												
6	Rate Esc	0.75%												
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
124	At Production Level	0.345	0.365	0.373	0.423	0.429	0.434	0.434	0.434	0.434	0.440	0.446	0.452	
125	At Sales Level	0.359	0.380	0.387	0.440	0.446	0.452	0.452	0.451	0.451	0.457	0.463	0.470	
126	Processor Costs ($/kWh)	0.153	0.173	0.177	0.233	0.233	0.234	0.234	0.235	0.235	0.236	0.236	0.236	

1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
124	At Production Level	0.458	0.465	0.472	0.478	0.485	0.492	0.500	0.507	0.515	0.523	0.531
125	At Sales Level	0.476	0.483	0.490	0.497	0.504	0.512	0.519	0.527	0.535	0.543	0.551
126	Processor Costs ($/kWh)	0.237	0.237	0.238	0.238	0.239	0.239	0.239	0.240	0.240	0.241	0.241

1													
2	Makushin Size	30											
3	Fuel Forecast	EIA											
4	Sales to Processors	42,000,000											
5	Processor Rate	0.030											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
127	**Savings (Losses)**												
128	Dollars (000)												
129	City	-	-	-	(1,603)	(1,483)	(1,360)	(984)	(595)	(190)	(39)	115	273
130	Processor	-	-	-	(2,204)	(2,049)	(1,891)	(1,729)	(1,563)	(1,394)	(1,220)	(1,043)	(861)
131	Combined	-	-	-	(3,807)	(3,532)	(3,251)	(2,713)	(2,158)	(1,584)	(1,260)	(927)	(588)
132	$/kWh												
133	City	-	-	-	(0.044)	(0.041)	(0.038)	(0.029)	(0.019)	(0.009)	(0.005)	(0.001)	0.003
134	Processor	-	-	-	(0.052)	(0.049)	(0.045)	(0.041)	(0.037)	(0.033)	(0.029)	(0.025)	(0.021)
135	Combined	-	-	-	(0.046)	(0.043)	(0.040)	(0.033)	(0.026)	(0.019)	(0.015)	(0.011)	(0.007)
136	Breakeven Fuel Price ($/gallon)	-	-	-	2.80	2.80	2.79	2.73	2.67	2.61	2.60	2.59	2.58

1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
127	**Savings (Losses)**											
128	Dollars (000)											
129	City	435	599	768	940	1,115	1,295	1,478	1,665	1,857	2,052	2,252
130	Processor	(675)	(485)	(290)	(91)	113	321	535	753	977	1,206	1,440
131	Combined	(241)	114	477	849	1,228	1,616	2,013	2,419	2,834	3,258	3,692
132	$/kWh											
133	City	0.007	0.011	0.015	0.019	0.024	0.028	0.033	0.038	0.042	0.047	0.052
134	Processor	(0.016)	(0.012)	(0.007)	(0.002)	0.003	0.008	0.013	0.018	0.023	0.029	0.034
135	Combined	(0.003)	0.001	0.006	0.010	0.015	0.020	0.025	0.029	0.035	0.040	0.045
136	Breakeven Fuel Price ($/gallon)	2.56	2.55	2.54	2.53	2.51	2.50	2.48	2.47	2.46	2.44	2.43

Attachment 5A

Load: City Only

Project Size: 30 MW

Fuel Forecast: Nymex

1													
2	Makushin Size	30											
3	Fuel Forecast	Nymex											
4	Sales to Processors	-											
5	Processor Rate	-											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
9	Inflation		1.50%	2.00%	2.00%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
10	Price Level	1.000	1.015	1.035	1.056	1.080	1.104	1.129	1.154	1.180	1.207	1.234	1.262
11	Cost of Fuel ($/gallon)			.									
12	City	1.42	1.47	1.53	1.59	1.65	1.72	1.79	1.86	1.92	1.98	2.01	2.05
13	Processor	1.46	1.52	1.58	1.64	1.70	1.77	1.84	1.91	1.98	2.04	2.07	2.12
14	Processor VOM ($/kWh)	0.028	0.028	0.028	0.029	0.030	0.030	0.031	0.032	0.032	0.033	0.034	0.035
15	Fuel Efficiency (kWh/gal)												
16	City	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
17	Processor	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
18	Fuel Usage With Makushin for Maint/etc. (000 gallons)												
19	City												
20	Hours/Unit/Month	-	-	-	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
21	Gallons/Hour	-	-	-	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6
22	Number of Units	-	-	-	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
23	Processor												
24	Hours/Unit/Month	-	-	-	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
25	Gallons/Hour	-	-	-	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
26	Number of Units	-	-	-	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
27	Makushin Rate												
28	Fixed Payment - 30 MW (000)	-	-	-	16,020	16,180	16,342	16,505	16,670	16,837	17,006	17,176	17,347

1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
9	Inflation	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
10	Price Level	1.290	1.319	1.349	1.379	1.410	1.442	1.474	1.508	1.541	1.576	1.612
11	Cost of Fuel ($/gallon)											
12	City	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.46	2.51	2.57	2.62
13	Processor	2.16	2.21	2.26	2.31	2.37	2.42	2.47	2.53	2.59	2.64	2.70
14	Processor VOM ($/kWh)	0.035	0.036	0.037	0.038	0.039	0.040	0.041	0.041	0.042	0.043	0.044
15	Fuel Efficiency (kWh/gal)											
16	City	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
17	Processor	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
18	Fuel Usage With Makushin for Maint/etc. (000											
19	City											
20	Hours/Unit/Month	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
21	Gallons/Hour	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6
22	Number of Units	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
23	Processor											
24	Hours/Unit/Month	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
25	Gallons/Hour	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
26	Number of Units	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
27	Makushin Rate											
28	Fixed Payment - 30 MW (000)	17,521	17,696	17,873	18,052	18,232	18,415	18,599	18,785	18,973	19,162	19,354

1													
2	Makushin Size	30											
3	Fuel Forecast	Nymex											
4	Sales to Processors	-											
5	Processor Rate	-											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
29	**Without Makushin (Dollars in Thousands)**												
30	Loads (million kWh)												
31	City												
32	Sales												
33	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
34	City Heat	-	-	-	-	-	-	-	-	-	-	-	-
35	City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-	-
36	Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
37	Losses												
38	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
39	Processors	-	-	-	-	-	-	-	-	-	-	-	-
40	Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
41	Processors	-	-	-	-	-	-	-	-	-	-	-	-
42	Costs												
43	City												
44	Admin/Depr/Int	$ 6,024	$ 6,115	$ 6,237	$ 6,362	$ 6,505	$ 6,651	$ 6,801	$ 6,954	$ 7,110	$ 7,270	$ 7,434	$ 7,601
45	Line Repair	1,349	1,369	1,396	1,424	1,456	1,489	1,522	1,557	1,592	1,627	1,664	1,701
46	Vehicles	64	65	67	68	70	71	73	74	76	78	79	81
47	Facilities	145	147	150	153	157	160	164	168	171	175	179	183
48	Production												
49	Personnel	1,444	1,465	1,494	1,524	1,559	1,594	1,630	1,666	1,704	1,742	1,781	1,821
50	Ops	789	801	817	833	852	871	891	911	931	952	974	995
51	Fuel	3,754	3,905	4,058	4,216	4,375	4,544	4,729	4,917	5,086	5,235	5,322	5,442
52	Spinning Reserve Fuel	-	-	-	-	-	-	-	-	-	-	-	-
53	Makushin												
54	To OCCP	-	-	-	-	-	-	-	-	-	-	-	-
55	Payments from Processors												
56	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
57	Other	-	-	-	-	-	-	-	-	-	-	-	-
58	Total City	13,569	13,867	14,220	14,581	14,973	15,381	15,810	16,246	16,670	17,080	17,434	17,826
59	Processor Costs												
60	Fuel	-	-	-	-	-	-	-	-	-	-	-	-
61	Variable O&M	-	-	-	-	-	-	-	-	-	-	-	-
62	Payments to City												
63	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
64	Other	-	-	-	-	-	-	-	-	-	-	-	-
65	Total Processor	-	-	-	-	-	-	-	-	-	-	-	-
66	Total Costs	13,569	13,867	14,220	14,581	14,973	15,381	15,810	16,246	16,670	17,080	17,434	17,826
67	City Costs @ Production Level ($/kWh)												
68	Production												
69	Fuel	$ 0.090	$ 0.094	$ 0.098	$ 0.101	$ 0.105	$ 0.109	$ 0.114	$ 0.118	$ 0.122	$ 0.126	$ 0.128	$ 0.131
70	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
71	Other Production	0.054	0.054	0.056	0.057	0.058	0.059	0.061	0.062	0.063	0.065	0.066	0.068
72	Other	0.182	0.185	0.189	0.193	0.197	0.201	0.206	0.210	0.215	0.220	0.225	0.230
73	Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-	-
74	Total												
75	At Production Level	$ 0.326	$ 0.334	$ 0.342	$ 0.351	$ 0.360	$ 0.370	$ 0.380	$ 0.391	$ 0.401	$ 0.411	$ 0.419	$ 0.429
76	At Sales Level	$ 0.339	$ 0.347	$ 0.355	$ 0.365	$ 0.374	$ 0.385	$ 0.395	$ 0.406	$ 0.417	$ 0.427	$ 0.436	$ 0.446
77	Processor Costs ($/kWh)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
78													

		Geo 2033	Geo 2034	Geo 2035	Geo 2036	Geo 2037	Geo 2038	Geo 2039	Geo 2040	Geo 2041	Geo 2042	Geo 2043
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
29	**Without Makushin (Dollars in Thousands)**											
30	Loads (million kWh)											
31	City											
32	Sales											
33	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
34	City Heat	-	-	-	-	-	-	-	-	-	-	-
35	City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-
36	Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
37	Losses											
38	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
39	Processors	-	-	-	-	-	-	-	-	-	-	-
40	Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
41	Processors	-	-	-	-	-	-	-	-	-	-	-
42	Costs											
43	City											
44	Admin/Depr/Int	$ 7,772	$ 7,947	$ 8,126	$ 8,309	$ 8,496	$ 8,687	$ 8,882	$ 9,082	$ 9,287	$ 9,496	$ 9,709
45	Line Repair	1,740	1,779	1,819	1,860	1,902	1,944	1,988	2,033	2,079	2,125	2,173
46	Vehicles	83	85	87	89	91	93	95	97	99	101	104
47	Facilities	187	192	196	200	205	209	214	219	224	229	234
48	Production											
49	Personnel	1,862	1,904	1,947	1,991	2,036	2,081	2,128	2,176	2,225	2,275	2,326
50	Ops	1,018	1,041	1,064	1,088	1,113	1,138	1,163	1,189	1,216	1,243	1,271
51	Fuel	5,565	5,690	5,818	5,949	6,083	6,219	6,359	6,502	6,649	6,798	6,951
52	Spinning Reserve Fuel	-	-	-	-	-	-	-	-	-	-	-
53	Makushin											
54	To OCCP	-	-	-	-	-	-	-	-	-	-	-
55	Payments from Processors											
56	Makushin	-	-	-	-	-	-	-	-	-	-	-
57	Other	-	-	-	-	-	-	-	-	-	-	-
58	Total City	18,227	18,637	19,057	19,486	19,924	20,372	20,831	21,299	21,779	22,269	22,770
59	Processor Costs											
60	Fuel	-	-	-	-	-	-	-	-	-	-	-
61	Variable O&M	-	-	-	-	-	-	-	-	-	-	-
62	Payments to City											
63	Makushin	-	-	-	-	-	-	-	-	-	-	-
64	Other	-	-	-	-	-	-	-	-	-	-	-
65	Total Processor	-	-	-	-	-	-	-	-	-	-	-
66	Total Costs	18,227	18,637	19,057	19,486	19,924	20,372	20,831	21,299	21,779	22,269	22,770
67	City Costs @ Production Level ($/kWh)											
68	Production											
69	Fuel	$ 0.134	$ 0.137	$ 0.140	$ 0.143	$ 0.146	$ 0.150	$ 0.153	$ 0.156	$ 0.160	$ 0.163	$ 0.167
70	Makushin	-	-	-	-	-	-	-	-	-	-	-
71	Other Production	0.069	0.071	0.072	0.074	0.076	0.077	0.079	0.081	0.083	0.085	0.087
72	Other	0.235	0.241	0.246	0.252	0.257	0.263	0.269	0.275	0.281	0.287	0.294
73	Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-
74	Total											
75	At Production Level	$ 0.438	$ 0.448	$ 0.458	$ 0.469	$ 0.479	$ 0.490	$ 0.501	$ 0.512	$ 0.524	$ 0.536	$ 0.548
76	At Sales Level	$ 0.456	$ 0.466	$ 0.476	$ 0.487	$ 0.498	$ 0.509	$ 0.521	$ 0.532	$ 0.544	$ 0.557	$ 0.569
77	Processor Costs ($/kWh)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

1													
2	Makushin Size	30											
3	Fuel Forecast	Nymex											
4	Sales to Processors	-											
5	Processor Rate	-											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
79	**With Makushin (Dollars in Thousands)**												
80	Loads (million kWh)												
81	City												
82	Sales												
83	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
84	City Heat	-	-	-	-	-	-	-	-	-	-	-	-
85	City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-	-
86	Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
87	Losses												
88	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
89	Processors	-	-	-	-	-	-	-	-	-	-	-	-
90	Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
91	Processors	-	-	-	-	-	-	-	-	-	-	-	-
92	City Costs												
93	Admin/Depr/Int	$ 6,024	$ 6,115	$ 6,237	$ 6,362	$ 6,505	$ 6,651	$ 6,801	$ 6,954	$ 7,110	$ 7,270	$ 7,434	$ 7,601
94	Line Repair	1,349	1,369	1,396	1,424	1,456	1,489	1,522	1,557	1,592	1,627	1,664	1,701
95	Vehicles	64	65	67	68	70	71	73	74	76	78	79	81
96	Facilities	145	147	150	153	157	160	164	168	171	175	179	183
97	Production												
98	Personnel	1,444	1,465	1,494	1,499	1,533	1,568	1,353	1,127	891	911	931	952
99	Ops	789	801	817	434	443	453	463	474	485	495	507	518
100	Fuel	3,754	3,905	4,058	165	171	178	185	192	199	205	208	213
101	Spinning Reserve Fuel	-	-	-	581	603	626	652	678	701	722	734	750
102	Makushin												
103	To OCCP	-	-	-	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020
104	Payments from Processors												
105	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
106	Other	-	-	-	-	-	-	-	-	-	-	-	-
107	Total City	13,569	13,867	14,220	26,706	26,958	27,216	27,233	27,243	27,244	27,503	27,756	28,020
108	Processor Costs												
109	Fuel	-	-	-	224	233	242	252	262	271	279	283	290
110	Variable O&M	-	-	-	-	-	-	-	-	-	-	-	-
111	Payments to City												
112	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
113	Other	-	-	-	-	-	-	-	-	-	-	-	-
114	Total Processor	-	-	-	224	233	242	252	262	271	279	283	290
115	Total Costs	13,569	13,867	14,220	26,930	27,191	27,458	27,484	27,505	27,515	27,782	28,039	28,310
116	City Costs @ Production Level ($/kWh)												
117	Production												
118	Fuel	$ 0.090	$ 0.094	$ 0.098	$ 0.018	$ 0.019	$ 0.019	$ 0.020	$ 0.021	$ 0.022	$ 0.022	$ 0.023	$ 0.023
119	Makushin	-	-	-	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385
120	Other Production	0.054	0.054	0.056	0.046	0.048	0.049	0.044	0.039	0.033	0.034	0.035	0.035
121	Other	0.182	0.185	0.189	0.193	0.197	0.201	0.206	0.210	0.215	0.220	0.225	0.230
122	Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-	-
123	Total												
124	At Production Level	0.326	0.334	0.342	0.642	0.648	0.655	0.655	0.655	0.655	0.661	0.668	0.674
125	At Sales Level	0.339	0.347	0.355	0.668	0.674	0.680	0.681	0.681	0.681	0.688	0.694	0.701
126	Processor Costs ($/kWh)	-	-	-	-	-	-	-	-	-	-	-	-

		Geo 2033	Geo 2034	Geo 2035	Geo 2036	Geo 2037	Geo 2038	Geo 2039	Geo 2040	Geo 2041	Geo 2042	Geo 2043
1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
79	**With Makushin (Dollars in Thousands)**											
80	Loads (million kWh)											
81	City											
82	Sales											
83	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
84	City Heat	-	-	-	-	-	-	-	-	-	-	-
85	City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-
86	Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
87	Losses											
88	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
89	Processors	-	-	-	-	-	-	-	-	-	-	-
90	Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
91	Processors	-	-	-	-	-	-	-	-	-	-	-
92	City Costs											
93	Admin/Depr/Int	$ 7,772	$ 7,947	$ 8,126	$ 8,309	$ 8,496	$ 8,687	$ 8,882	$ 9,082	$ 9,287	$ 9,496	$ 9,709
94	Line Repair	1,740	1,779	1,819	1,860	1,902	1,944	1,988	2,033	2,079	2,125	2,173
95	Vehicles	83	85	87	89	91	93	95	97	99	101	104
96	Facilities	187	192	196	200	205	209	214	219	224	229	234
97	Production											
98	Personnel	974	995	1,018	1,041	1,064	1,088	1,113	1,138	1,163	1,189	1,216
99	Ops	530	542	554	566	579	592	605	619	633	647	662
100	Fuel	217	222	227	232	238	243	248	254	260	266	272
101	Spinning Reserve Fuel	767	784	802	820	838	857	876	896	916	937	958
102	Makushin											
103	To OCCP	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020
104	Payments from Processors											
105	Makushin	-	-	-	-	-	-	-	-	-	-	-
106	Other	-	-	-	-	-	-	-	-	-	-	-
107	Total City	28,290	28,566	28,848	29,137	29,432	29,734	30,043	30,358	30,681	31,011	31,348
108	Processor Costs											
109	Fuel	296	303	310	316	324	331	338	346	354	362	370
110	Variable O&M	-	-	-	-	-	-	-	-	-	-	-
111	Payments to City											
112	Makushin	-	-	-	-	-	-	-	-	-	-	-
113	Other	-	-	-	-	-	-	-	-	-	-	-
114	Total Processor	296	303	310	316	324	331	338	346	354	362	370
115	Total Costs	28,586	28,869	29,158	29,454	29,756	30,065	30,381	30,704	31,034	31,372	31,718
116	City Costs @ Production Level ($/kWh)											
117	Production											
118	Fuel	$ 0.024	$ 0.024	$ 0.025	$ 0.025	$ 0.026	$ 0.026	$ 0.027	$ 0.028	$ 0.028	$ 0.029	$ 0.030
119	Makushin	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385
120	Other Production	0.036	0.037	0.038	0.039	0.040	0.040	0.041	0.042	0.043	0.044	0.045
121	Other	0.235	0.241	0.246	0.252	0.257	0.263	0.269	0.275	0.281	0.287	0.294
122	Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-
123	Total											
124	At Production Level	0.680	0.687	0.694	0.701	0.708	0.715	0.723	0.730	0.738	0.746	0.754
125	At Sales Level	0.707	0.714	0.721	0.728	0.736	0.743	0.751	0.759	0.767	0.775	0.784
126	Processor Costs ($/kWh)	-	-	-	-	-	-	-	-	-	-	-

1													
2	Makushin Size	30											
3	Fuel Forecast	Nymex											
4	Sales to Processors	-											
5	Processor Rate	-											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
127	**Savings (Losses)**												
128	Dollars (000)												
129	City	-	-	-	(12,125)	(11,985)	(11,836)	(11,423)	(10,997)	(10,574)	(10,423)	(10,322)	(10,194)
130	Processor	-	-	-	(224)	(233)	(242)	(252)	(262)	(271)	(279)	(283)	(290)
131	Combined	-	-	-	(12,350)	(12,217)	(12,077)	(11,675)	(11,258)	(10,845)	(10,701)	(10,605)	(10,483)
132	$/kWh												
133	City	-	-	-	(0.303)	(0.300)	(0.296)	(0.286)	(0.275)	(0.264)	(0.261)	(0.258)	(0.255)
134	Processor	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
135	Combined	-	-	-	(0.309)	(0.305)	(0.302)	(0.292)	(0.281)	(0.271)	(0.268)	(0.265)	(0.262)
136	Breakeven Fuel Price ($/gallon)	-	-	-	7.65	7.64	7.64	7.51	7.38	7.24	7.23	7.21	7.20

1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
127	**Savings (Losses)**											
128	Dollars (000)											
129	City	(10,063)	(9,929)	(9,792)	(9,652)	(9,508)	(9,362)	(9,212)	(9,059)	(8,902)	(8,742)	(8,578)
130	Processor	(296)	(303)	(310)	(316)	(324)	(331)	(338)	(346)	(354)	(362)	(370)
131	Combined	(10,359)	(10,231)	(10,101)	(9,968)	(9,832)	(9,693)	(9,550)	(9,405)	(9,256)	(9,104)	(8,948)
132	$/kWh											
133	City	(0.252)	(0.248)	(0.245)	(0.241)	(0.238)	(0.234)	(0.230)	(0.226)	(0.223)	(0.219)	(0.214)
134	Processor	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
135	Combined	(0.259)	(0.256)	(0.253)	(0.249)	(0.246)	(0.242)	(0.239)	(0.235)	(0.231)	(0.228)	(0.224)
136	Breakeven Fuel Price ($/gallon)	7.18	7.17	7.15	7.13	7.12	7.10	7.08	7.07	7.05	7.03	7.01

Attachment 5B

Load: City Only

Project Size: 30 MW

Fuel Forecast: EIA

1													
2	Makushin Size	30											
3	Fuel Forecast	EIA											
4	Sales to Processors	-											
5	Processor Rate	-											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
9	Inflation		1.50%	2.00%	2.00%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
10	Price Level	1.000	1.015	1.035	1.056	1.080	1.104	1.129	1.154	1.180	1.207	1.234	1.262
11	Cost of Fuel ($/gallon)			.									
12	City	1.71	1.98	2.02	2.06	2.11	2.15	2.20	2.25	2.30	2.35	2.41	2.46
13	Processor	1.76	2.04	2.08	2.12	2.17	2.22	2.27	2.32	2.37	2.43	2.48	2.54
14	Processor VOM ($/kWh)	0.028	0.028	0.028	0.029	0.030	0.030	0.031	0.032	0.032	0.033	0.034	0.035
15	Fuel Efficiency (kWh/gal)												
16	City	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
17	Processor	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
18	Fuel Usage With Makushin for Maint/etc. (000 gallons)												
19	City												
20	Hours/Unit/Month	-	-	-	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
21	Gallons/Hour	-	-	-	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6
22	Number of Units	-	-	-	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
23	Processor												
24	Hours/Unit/Month	-	-	-	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
25	Gallons/Hour	-	-	-	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
26	Number of Units	-	-	-	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
27	Makushin Rate												
28	Fixed Payment - 30 MW (000)	-	-	-	16,020	16,180	16,342	16,505	16,670	16,837	17,006	17,176	17,347

1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
9	Inflation	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
10	Price Level	1.290	1.319	1.349	1.379	1.410	1.442	1.474	1.508	1.541	1.576	1.612
11	Cost of Fuel ($/gallon)											
12	City	2.52	2.57	2.63	2.69	2.75	2.81	2.88	2.94	3.01	3.08	3.14
13	Processor	2.59	2.65	2.71	2.77	2.83	2.90	2.96	3.03	3.10	3.17	3.24
14	Processor VOM ($/kWh)	0.035	0.036	0.037	0.038	0.039	0.040	0.041	0.041	0.042	0.043	0.044
15	Fuel Efficiency (kWh/gal)											
16	City	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
17	Processor	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
18	Fuel Usage With Makushin for Maint/etc. (000											
19	City											
20	Hours/Unit/Month	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
21	Gallons/Hour	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6	215.6
22	Number of Units	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
23	Processor											
24	Hours/Unit/Month	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
25	Gallons/Hour	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
26	Number of Units	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
27	Makushin Rate											
28	Fixed Payment - 30 MW (000)	17,521	17,696	17,873	18,052	18,232	18,415	18,599	18,785	18,973	19,162	19,354

1													
2	Makushin Size	30											
3	Fuel Forecast	EIA											
4	Sales to Processors	-											
5	Processor Rate	-											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
29	**Without Makushin (Dollars in Thousands)**												
30	Loads (million kWh)												
31	City												
32	Sales												
33	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
34	City Heat	-	-	-	-	-	-	-	-	-	-	-	-
35	City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-	-
36	Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
37	Losses												
38	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
39	Processors	-	-	-	-	-	-	-	-	-	-	-	-
40	Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
41	Processors	-	-	-	-	-	-	-	-	-	-	-	-
42	Costs												
43	City												
44	Admin/Depr/Int	$ 6,024	$ 6,115	$ 6,237	$ 6,362	$ 6,505	$ 6,651	$ 6,801	$ 6,954	$ 7,110	$ 7,270	$ 7,434	$ 7,601
45	Line Repair	1,349	1,369	1,396	1,424	1,456	1,489	1,522	1,557	1,592	1,627	1,664	1,701
46	Vehicles	64	65	67	68	70	71	73	74	76	78	79	81
47	Facilities	145	147	150	153	157	160	164	168	171	175	179	183
48	Production												
49	Personnel	1,444	1,465	1,494	1,524	1,559	1,594	1,630	1,666	1,704	1,742	1,781	1,821
50	Ops	789	801	817	833	852	871	891	911	931	952	974	995
51	Fuel	4,533	5,233	5,337	5,457	5,580	5,706	5,834	5,965	6,100	6,237	6,377	6,521
52	Spinning Reserve Fuel	-	-	-	-	-	-	-	-	-	-	-	-
53	Makushin												
54	To OCCP	-	-	-	-	-	-	-	-	-	-	-	-
55	Payments from Processors												
56	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
57	Other	-	-	-	-	-	-	-	-	-	-	-	-
58	Total City	14,348	15,195	15,499	15,822	16,178	16,542	16,914	17,295	17,684	18,082	18,489	18,905
59	Processor Costs												
60	Fuel	-	-	-	-	-	-	-	-	-	-	-	-
61	Variable O&M	-	-	-	-	-	-	-	-	-	-	-	-
62	Payments to City												
63	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
64	Other	-	-	-	-	-	-	-	-	-	-	-	-
65	Total Processor	-	-	-	-	-	-	-	-	-	-	-	-
66	Total Costs	14,348	15,195	15,499	15,822	16,178	16,542	16,914	17,295	17,684	18,082	18,489	18,905
67	City Costs @ Production Level ($/kWh)												
68	Production												
69	Fuel	$ 0.109	$ 0.126	$ 0.128	$ 0.131	$ 0.134	$ 0.137	$ 0.140	$ 0.143	$ 0.147	$ 0.150	$ 0.153	$ 0.157
70	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
71	Other Production	0.054	0.054	0.056	0.057	0.058	0.059	0.061	0.062	0.063	0.065	0.066	0.068
72	Other	0.182	0.185	0.189	0.193	0.197	0.201	0.206	0.210	0.215	0.220	0.225	0.230
73	Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-	-
74	Total												
75	At Production Level	$ 0.345	$ 0.365	$ 0.373	$ 0.381	$ 0.389	$ 0.398	$ 0.407	$ 0.416	$ 0.425	$ 0.435	$ 0.445	$ 0.455
76	At Sales Level	$ 0.359	$ 0.380	$ 0.387	$ 0.396	$ 0.404	$ 0.414	$ 0.423	$ 0.432	$ 0.442	$ 0.452	$ 0.462	$ 0.473
77	Processor Costs ($/kWh)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
78													

		Geo 2033	Geo 2034	Geo 2035	Geo 2036	Geo 2037	Geo 2038	Geo 2039	Geo 2040	Geo 2041	Geo 2042	Geo 2043
Makushin Size												
Fuel Forecast												
Sales to Processors												
Processor Rate												
Rate Esc												
Without Makushin (Dollars in Thousands)												
Loads (million kWh)												
City												
Sales												
City Core		40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
City Heat		-	-	-	-	-	-	-	-	-	-	-
City Sales to Processors		-	-	-	-	-	-	-	-	-	-	-
Total City Sales		40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Losses												
Core/Heat		1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
Processors		-	-	-	-	-	-	-	-	-	-	-
Total Generation		41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
Processors		-	-	-	-	-	-	-	-	-	-	-
Costs												
City												
Admin/Depr/Int		$ 7,772	$ 7,947	$ 8,126	$ 8,309	$ 8,496	$ 8,687	$ 8,882	$ 9,082	$ 9,287	$ 9,496	$ 9,709
Line Repair		1,740	1,779	1,819	1,860	1,902	1,944	1,988	2,033	2,079	2,125	2,173
Vehicles		83	85	87	89	91	93	95	97	99	101	104
Facilities		187	192	196	200	205	209	214	219	224	229	234
Production												
Personnel		1,862	1,904	1,947	1,991	2,036	2,081	2,128	2,176	2,225	2,275	2,326
Ops		1,018	1,041	1,064	1,088	1,113	1,138	1,163	1,189	1,216	1,243	1,271
Fuel		6,667	6,817	6,971	7,128	7,288	7,452	7,620	7,791	7,966	8,146	8,329
Spinning Reserve Fuel		-	-	-	-	-	-	-	-	-	-	-
Makushin												
To OCCP		-	-	-	-	-	-	-	-	-	-	-
Payments from Processors												
Makushin		-	-	-	-	-	-	-	-	-	-	-
Other		-	-	-	-	-	-	-	-	-	-	-
Total City		19,330	19,765	20,210	20,664	21,129	21,605	22,091	22,588	23,096	23,616	24,147
Processor Costs												
Fuel		-	-	-	-	-	-	-	-	-	-	-
Variable O&M		-	-	-	-	-	-	-	-	-	-	-
Payments to City												
Makushin		-	-	-	-	-	-	-	-	-	-	-
Other		-	-	-	-	-	-	-	-	-	-	-
Total Processor		-	-	-	-	-	-	-	-	-	-	-
Total Costs		19,330	19,765	20,210	20,664	21,129	21,605	22,091	22,588	23,096	23,616	24,147
City Costs @ Production Level ($/kWh)												
Production												
Fuel		$ 0.160	$ 0.164	$ 0.168	$ 0.171	$ 0.175	$ 0.179	$ 0.183	$ 0.187	$ 0.192	$ 0.196	$ 0.200
Makushin		-	-	-	-	-	-	-	-	-	-	-
Other Production		0.069	0.071	0.072	0.074	0.076	0.077	0.079	0.081	0.083	0.085	0.087
Other		0.235	0.241	0.246	0.252	0.257	0.263	0.269	0.275	0.281	0.287	0.294
Revenues from Processor Base Rate		-	-	-	-	-	-	-	-	-	-	-
Total												
At Production Level		$ 0.465	$ 0.475	$ 0.486	$ 0.497	$ 0.508	$ 0.520	$ 0.531	$ 0.543	$ 0.555	$ 0.568	$ 0.581
At Sales Level		$ 0.483	$ 0.494	$ 0.505	$ 0.517	$ 0.528	$ 0.540	$ 0.552	$ 0.565	$ 0.577	$ 0.590	$ 0.604
Processor Costs ($/kWh)		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

1													
2	Makushin Size	30											
3	Fuel Forecast	EIA											
4	Sales to Processors	-											
5	Processor Rate	-											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
79	**With Makushin (Dollars in Thousands)**												
80	Loads (million kWh)												
81	City												
82	Sales												
83	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
84	City Heat	-	-	-	-	-	-	-	-	-	-	-	-
85	City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-	-
86	Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
87	Losses												
88	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
89	Processors	-	-	-	-	-	-	-	-	-	-	-	-
90	Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
91	Processors	-	-	-	-	-	-	-	-	-	-	-	-
92	City Costs												
93	Admin/Depr/Int	$ 6,024	$ 6,115	$ 6,237	$ 6,362	$ 6,505	$ 6,651	$ 6,801	$ 6,954	$ 7,110	$ 7,270	$ 7,434	$ 7,601
94	Line Repair	1,349	1,369	1,396	1,424	1,456	1,489	1,522	1,557	1,592	1,627	1,664	1,701
95	Vehicles	64	65	67	68	70	71	73	74	76	78	79	81
96	Facilities	145	147	150	153	157	160	164	168	171	175	179	183
97	Production												
98	Personnel	1,444	1,465	1,494	1,499	1,533	1,568	1,353	1,127	891	911	931	952
99	Ops	789	801	817	434	443	453	463	474	485	495	507	518
100	Fuel	4,533	5,233	5,337	213	218	223	228	233	238	244	249	255
101	Spinning Reserve Fuel	-	-	-	752	769	786	804	822	841	860	879	899
102	Makushin												
103	To OCCP	-	-	-	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020
104	Payments from Processors												
105	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
106	Other	-	-	-	-	-	-	-	-	-	-	-	-
107	Total City	14,348	15,195	15,499	26,926	27,171	27,422	27,428	27,429	27,424	27,680	27,943	28,211
108	Processor Costs												
109	Fuel	-	-	-	290	297	304	310	317	325	332	339	347
110	Variable O&M	-	-	-	-	-	-	-	-	-	-	-	-
111	Payments to City												
112	Makushin	-	-	-	-	-	-	-	-	-	-	-	-
113	Other	-	-	-	-	-	-	-	-	-	-	-	-
114	Total Processor	-	-	-	290	297	304	310	317	325	332	339	347
115	Total Costs	14,348	15,195	15,499	27,216	27,468	27,725	27,738	27,746	27,748	28,012	28,282	28,558
116	City Costs @ Production Level ($/kWh)												
117	Production												
118	Fuel	$ 0.109	$ 0.126	$ 0.128	$ 0.023	$ 0.024	$ 0.024	$ 0.025	$ 0.025	$ 0.026	$ 0.027	$ 0.027	$ 0.028
119	Makushin	-	-	-	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385
120	Other Production	0.054	0.054	0.056	0.046	0.048	0.049	0.044	0.039	0.033	0.034	0.035	0.035
121	Other	0.182	0.185	0.189	0.193	0.197	0.201	0.206	0.210	0.215	0.220	0.225	0.230
122	Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-	-
123	Total												
124	At Production Level	0.345	0.365	0.373	0.648	0.653	0.659	0.660	0.660	0.660	0.666	0.672	0.678
125	At Sales Level	0.359	0.380	0.387	0.673	0.679	0.686	0.686	0.686	0.686	0.692	0.699	0.705
126	Processor Costs ($/kWh)	-	-	-	-	-	-	-	-	-	-	-	-

		Geo 2033	Geo 2034	Geo 2035	Geo 2036	Geo 2037	Geo 2038	Geo 2039	Geo 2040	Geo 2041	Geo 2042	Geo 2043
1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
79	**With Makushin (Dollars in Thousands)**											
80	Loads (million kWh)											
81	City											
82	Sales											
83	City Core	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
84	City Heat	-	-	-	-	-	-	-	-	-	-	-
85	City Sales to Processors	-	-	-	-	-	-	-	-	-	-	-
86	Total City Sales	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
87	Losses											
88	Core/Heat	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
89	Processors	-	-	-	-	-	-	-	-	-	-	-
90	Total Generation	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58	41.58
91	Processors	-	-	-	-	-	-	-	-	-	-	-
92	City Costs											
93	Admin/Depr/Int	$ 7,772	$ 7,947	$ 8,126	$ 8,309	$ 8,496	$ 8,687	$ 8,882	$ 9,082	$ 9,287	$ 9,496	$ 9,709
94	Line Repair	1,740	1,779	1,819	1,860	1,902	1,944	1,988	2,033	2,079	2,125	2,173
95	Vehicles	83	85	87	89	91	93	95	97	99	101	104
96	Facilities	187	192	196	200	205	209	214	219	224	229	234
97	Production											
98	Personnel	974	995	1,018	1,041	1,064	1,088	1,113	1,138	1,163	1,189	1,216
99	Ops	530	542	554	566	579	592	605	619	633	647	662
100	Fuel	261	266	272	279	285	291	298	304	311	318	325
101	Spinning Reserve Fuel	919	940	961	982	1,004	1,027	1,050	1,074	1,098	1,123	1,148
102	Makushin											
103	To OCCP	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020	16,020
104	Payments from Processors											
105	Makushin	-	-	-	-	-	-	-	-	-	-	-
106	Other	-	-	-	-	-	-	-	-	-	-	-
107	Total City	28,485	28,766	29,052	29,346	29,645	29,952	30,265	30,586	30,914	31,249	31,591
108	Processor Costs											
109	Fuel	355	363	371	379	388	396	405	415	424	433	443
110	Variable O&M	-	-	-	-	-	-	-	-	-	-	-
111	Payments to City											
112	Makushin	-	-	-	-	-	-	-	-	-	-	-
113	Other	-	-	-	-	-	-	-	-	-	-	-
114	Total Processor	355	363	371	379	388	396	405	415	424	433	443
115	Total Costs	28,840	29,128	29,423	29,725	30,033	30,348	30,671	31,001	31,338	31,682	32,035
116	City Costs @ Production Level ($/kWh)											
117	Production											
118	Fuel	$ 0.028	$ 0.029	$ 0.030	$ 0.030	$ 0.031	$ 0.032	$ 0.032	$ 0.033	$ 0.034	$ 0.035	$ 0.035
119	Makushin	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385
120	Other Production	0.036	0.037	0.038	0.039	0.040	0.040	0.041	0.042	0.043	0.044	0.045
121	Other	0.235	0.241	0.246	0.252	0.257	0.263	0.269	0.275	0.281	0.287	0.294
122	Revenues from Processor Base Rate	-	-	-	-	-	-	-	-	-	-	-
123	Total											
124	At Production Level	0.685	0.692	0.699	0.706	0.713	0.720	0.728	0.736	0.743	0.752	0.760
125	At Sales Level	0.712	0.719	0.726	0.734	0.741	0.749	0.757	0.765	0.773	0.781	0.790
126	Processor Costs ($/kWh)	-	-	-	-	-	-	-	-	-	-	-

1													
2	Makushin Size	30											
3	Fuel Forecast	EIA											
4	Sales to Processors	-											
5	Processor Rate	-											
6	Rate Esc	0.75%											
7					Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
127	**Savings (Losses)**												
128	Dollars (000)												
129	City	-	-	-	(11,103)	(10,993)	(10,880)	(10,514)	(10,134)	(9,740)	(9,598)	(9,454)	(9,306)
130	Processor	-	-	-	(290)	(297)	(304)	(310)	(317)	(325)	(332)	(339)	(347)
131	Combined	-	-	-	(11,394)	(11,290)	(11,183)	(10,824)	(10,451)	(10,064)	(9,930)	(9,793)	(9,653)
132	$/kWh												
133	City	-	-	-	(0.278)	(0.275)	(0.272)	(0.263)	(0.253)	(0.243)	(0.240)	(0.236)	(0.233)
134	Processor	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
135	Combined	-	-	-	(0.285)	(0.282)	(0.280)	(0.271)	(0.261)	(0.252)	(0.248)	(0.245)	(0.241)
136	Breakeven Fuel Price ($/gallon)	-	-	-	7.65	7.64	7.64	7.51	7.38	7.24	7.23	7.21	7.20

1												
2	Makushin Size											
3	Fuel Forecast											
4	Sales to Processors											
5	Processor Rate											
6	Rate Esc											
7		Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo	Geo
8		2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
127	**Savings (Losses)**											
128	Dollars (000)											
129	City	(9,155)	(9,001)	(8,843)	(8,681)	(8,516)	(8,347)	(8,175)	(7,998)	(7,818)	(7,633)	(7,444)
130	Processor	(355)	(363)	(371)	(379)	(388)	(396)	(405)	(415)	(424)	(433)	(443)
131	Combined	(9,510)	(9,363)	(9,214)	(9,060)	(8,904)	(8,744)	(8,580)	(8,413)	(8,241)	(8,066)	(7,887)
132	$/kWh											
133	City	(0.229)	(0.225)	(0.221)	(0.217)	(0.213)	(0.209)	(0.204)	(0.200)	(0.195)	(0.191)	(0.186)
134	Processor	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
135	Combined	(0.238)	(0.234)	(0.230)	(0.227)	(0.223)	(0.219)	(0.214)	(0.210)	(0.206)	(0.202)	(0.197)
136	Breakeven Fuel Price ($/gallon)	7.18	7.17	7.15	7.13	7.12	7.10	7.08	7.07	7.05	7.03	7.01

Makushin Geothermal Project Review

the Financial Engineering Company

June 23, 2020

Brief History

- Project has been studied and pursued for over 40 years
- Exploratory wells drilled in 1982
  - Focus has been on the ST-1 which showed 390 degree F fluid at 1,950 feet
  - Commercial flow tests have not been performed
- Six or seven past attempts for development
- Failed for number of reasons, but lack of load or lack of long-term commitments primary reasons

Is This Time Different?

- OCCP joint venture between Ounalashka Corporation and Chena Power
- With OCCP as developer and owner of the steam rights, no additional royalties for fluid
- Availability of relatively inexpensive non-recourse financing
  - If Project does not work now or in future due to system failure, no payment
  - Eliminates much of capital risk
  - Risk of lower loads in future remains

Pricing Offer

- Original offer was for rate x energy but with minimum energy take
- Modified to fixed payment (equal to minimum energy take x rate)
- Price to escalate at 1%/year
- OCCP responsible for O&M

Project Size (MW)	Annual Cost (millions)	$ Per Installed kW
16	$11.84	$740.00
18	$12.33	$685.00
22	$13.37	$607.73
24	$14.24	$593.33
26	$14.92	$573.85
30	$16.02	$534.00

How Will Makushin Be Used and Effect on Costs?

- Offset most or all of City diesel generation
  - Fuel costs reduced
  - Maintenance overhauls eliminated
  - Supplies, etc., reduced
- City will still have to maintain diesel units in event of Project curtailment
- City may have to have spinning reserves to avoid blackouts in event of Project curtailment

How Will Makushin Change Rates

Customer Charge	→	No Change
Demand/Energy Charge	→	Reduced due to elimination of overhauls, reduced supplies, etc.
COPA	→	Fuel component reduced, purchased power component increased

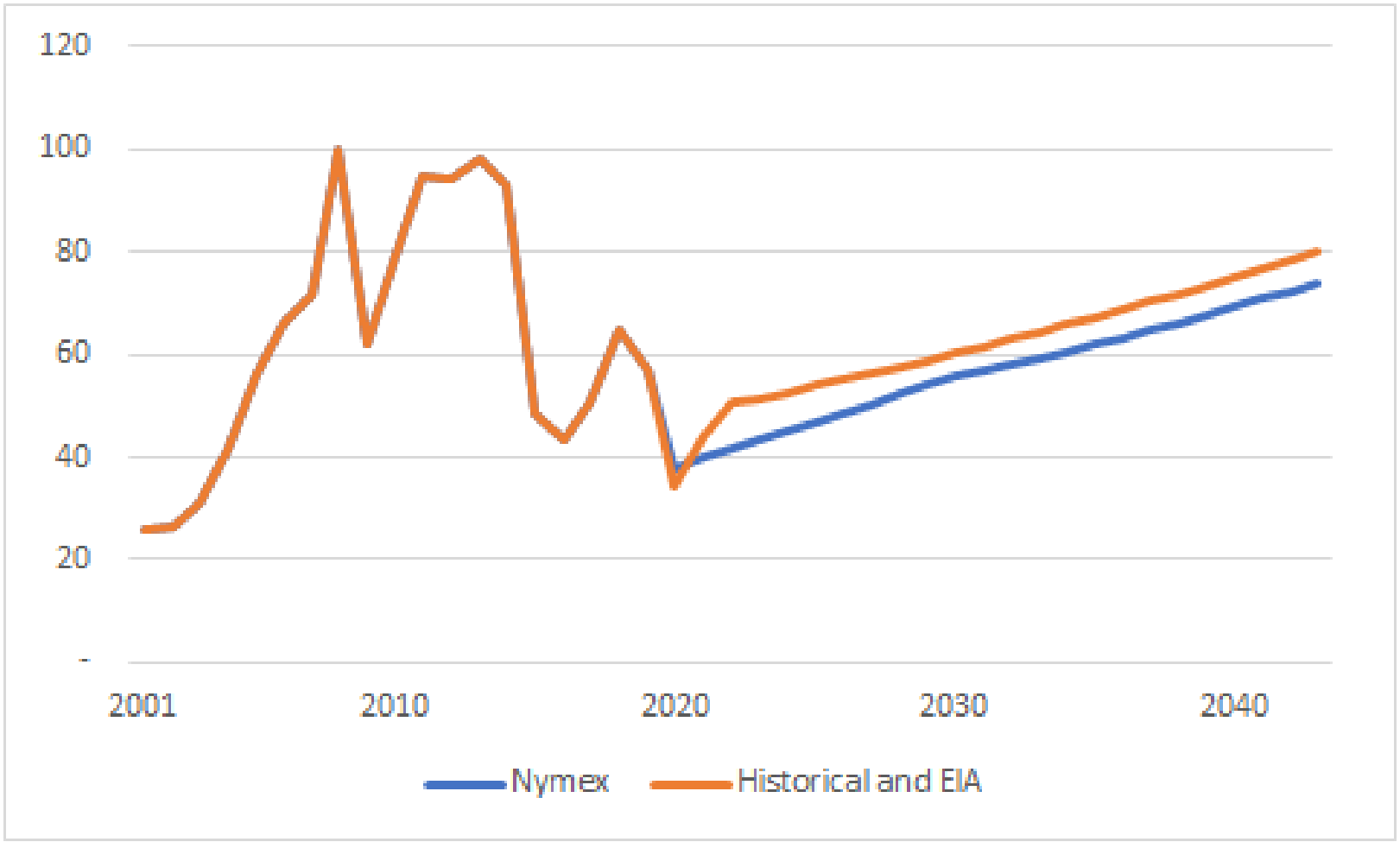
- *As we shall see, the net effect depends on Project usage*

City Loads

- CY 2019 Sales ≈ 52.7 million kWh
- Of this:
  - Slightly under 12 million kWh were sales to Processor that is no longer purchasing power from City
  - 1.4 million kWh to another Processor so they don't have to start a unit at times
- City core load ≈ 40 million kWh

Does Makushin Work With City Core Loads?

- Remember, Project won't be operational for several years, and rate escalates
- Therefore, must make projections over a period of time
- Numerous assumptions, but primary is that of cost of fuel
  - Current fuel cost: $1.34/gallon
  - Nymex Futures:
    - Futures of WTI Oil out to 2031
    - $37.81/bbl average for 2020; $56.71/bbl in 2031 (Assume inflation thereafter)
  - US EIA STEO
    - Oil rebounds to $50/bbl by end of 2021 (Assume inflation thereafter)


120
100
80
60
40
20
-
2001
2010
2020
2030
2040
Nymex
Historical and EIA

City Load Only

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Nymex Fuel										
Project Savings (000)	$ (7,945)	$ (7,805)	$ (7,656)	$ (7,243)	$ (6,817)	$ (6,394)	$ (6,243)	$ (6,142)	$ (6,014)	$ (5,883)
Change in Retail Rates ($/kWh)	$ 0.199	$ 0.195	$ 0.191	$ 0.181	$ 0.170	$ 0.160	$ 0.156	$ 0.154	$ 0.150	$ 0.147
EIA Fuel										
Project Savings (000)	$ (6,923)	$ (6,813)	$ (6,700)	$ (6,334)	$ (5,954)	$ (5,560)	$ (5,418)	$ (5,274)	$ (5,126)	$ (4,975)
Change in Retail Rates ($/kWh)	$ 0.173	$ 0.170	$ 0.167	$ 0.158	$ 0.149	$ 0.139	$ 0.135	$ 0.132	$ 0.128	$ 0.124
Breakeven Fuel Price ($/gal)	5.24	5.23	5.23	5.11	4.98	4.85	4.84	4.83	4.81	4.80

- *With City loads only, would increase City rates by up to $0.20/kWh*
- *Breakeven price of generating fuel well over historical amounts*

What Size Makes Sense?

- The chart below shows the average increase to City rates during the initial five years over what they would have been without Makushin

Does not include additional revenues gained from other customers (i.e., Processors) paying for use of distribution system

Project Size	Fuel Forecast	Sales Over City Core Load (GWh) 10	20	30	40	50	60
16	Nymex	0.130	0.091	0.063	0.042	0.026	0.012
	EIA	0.106	0.067	0.040	0.018	0.002	(0.011)
18	Nymex	0.140	0.099	0.070	0.048	0.031	0.018
	EIA	0.116	0.076	0.047	0.025	0.008	(0.006)
22	Nymex	0.161	0.117	0.085	0.062	0.043	0.028
	EIA	0.137	0.093	0.062	0.038	0.019	0.004
24	Nymex	0.178	0.132	0.098	0.073	0.053	0.037
	EIA	0.155	0.108	0.074	0.049	0.029	0.013
26	Nymex	0.192	0.143	0.108	0.081	0.061	0.044
	EIA	0.168	0.119	0.084	0.058	0.037	0.020
30	Nymex	0.214	0.162	0.124	0.095	0.073	0.055
	EIA	0.190	0.138	0.100	0.072	0.049	0.032

Shaded cells represent Project size is not adequate for expected peak load

- Based on the previous slide, City ratepayers would see a rate increase unless:
  - Additional loads of 40 million kWh/year or more can be added
  - Those additional loads pay the City for the use of the distribution system in delivering Project power
    - Such payments would decrease Project economics to the additional loads

Summary of Results – Combined Systems

- Includes a $0.03/kWh fee imposed by the City which escalates at 0.75%/year

Combined Project Savings (City and Self-Generators)

Scenario	Loads	Project Size	Fuel Forecast	Operational Year 1	2	3	4	5	10	15	20
				2024	2025	2026	2027	2028	2033	2038	2043
				Combined Project Savings (000)							
1	City Only	16	Nymex	$ (7,945)	$ (7,805)	$ (7,656)	$ (7,243)	$ (6,817)	$ (5,883)	$ (5,182)	$ (4,398)
			EIA	(6,923)	(6,813)	(6,700)	(6,334)	(5,954)	(4,975)	(4,167)	(3,264)
2	100 million kWh	30	Nymex	(3,580)	(3,143)	(2,681)	(1,929)	(1,159)	1,045	3,053	5,297
			EIA	(555)	(207)	149	763	1,396	3,732	6,056	8,654
3	100 million kWh	26	Nymex	(2,480)	(2,043)	(1,581)	(829)	(59)	2,145	4,153	6,397
			EIA	545	893	1,249	1,863	2,496	4,832	7,156	9,754
4	82 million kWh	30	Nymex	(6,211)	(5,865)	(5,500)	(4,853)	(4,189)	(2,376)	(771)	1,024
			EIA	(3,807)	(3,532)	(3,251)	(2,713)	(2,158)	(241)	1,616	3,692
5	City Only	30	Nymex	(12,350)	(12,217)	(12,077)	(11,675)	(11,258)	(10,359)	(9,693)	(8,948)
			EIA	(11,394)	(11,290)	(11,183)	(10,824)	(10,451)	(9,510)	(8,744)	(7,887)

Increase (Decrease) to City Rates

Scenario	Loads	Project Size	Fuel Forecast	Operational Year 1	2	3	4	5	10	15	20
				2024	2025	2026	2027	2028	2033	2038	2043
				Increase (Decrease) to Retail Rate ($/kWh)							
1	City Only	16	Nymex	$ 0.199	$ 0.195	$ 0.191	$ 0.181	$ 0.170	$ 0.147	$ 0.130	$ 0.110
			EIA	$ 0.173	$ 0.170	$ 0.167	$ 0.158	$ 0.149	$ 0.124	$ 0.104	$ 0.082
2	100 million kWh	30	Nymex	$ 0.021	$ 0.017	$ 0.013	$ 0.002	$ (0.009)	$ (0.034)	$ (0.054)	$ (0.075)
			EIA	$ (0.005)	$ (0.008)	$ (0.011)	$ (0.021)	$ (0.031)	$ (0.057)	$ (0.079)	$ (0.103)
3	100 million kWh	26	Nymex	$ 0.009	$ 0.006	$ 0.001	$ (0.009)	$ (0.020)	$ (0.045)	$ (0.065)	$ (0.086)
			EIA	$ (0.016)	$ (0.019)	$ (0.022)	$ (0.032)	$ (0.042)	$ (0.068)	$ (0.090)	$ (0.115)
4	82 million kWh	30	Nymex	$ 0.070	$ 0.066	$ 0.062	$ 0.051	$ 0.041	$ 0.016	$ (0.003)	$ (0.024)
			EIA	$ 0.044	$ 0.041	$ 0.038	$ 0.029	$ 0.019	$ (0.007)	$ (0.028)	$ (0.052)
5	City Only	30	Nymex	$ 0.303	$ 0.300	$ 0.296	$ 0.286	$ 0.275	$ 0.252	$ 0.234	$ 0.214
			EIA	$ 0.278	$ 0.275	$ 0.272	$ 0.263	$ 0.253	$ 0.229	$ 0.209	$ 0.186

Breakeven Price of Fuel

Scenario	Loads	Project Size	Fuel Forecast	Operational Year 1	2	3	4	5	10	15	20
				2024	2025	2026	2027	2028	2033	2038	2043
				Breakeven Fuel Price ($/gallon)							
1	City Only	16		$ 5.24	$ 5.23	$ 5.23	$ 5.11	$ 4.98	$ 4.80	$ 4.73	$ 4.64
2	100 million kWh	30		$ 2.15	$ 2.14	$ 2.13	$ 2.08	$ 2.04	$ 1.94	$ 1.88	$ 1.80
3	100 million kWh	26		$ 1.98	$ 1.97	$ 1.96	$ 1.91	$ 1.87	$ 1.77	$ 1.70	$ 1.63
4	82 million kWh	30		$ 2.80	$ 2.80	$ 2.79	$ 2.73	$ 2.67	$ 2.56	$ 2.50	$ 2.43
5	City Only	30		$ 7.65	$ 7.64	$ 7.64	$ 7.51	$ 7.38	$ 7.18	$ 7.10	$ 7.01

Take-Aways

- Participation by self-generators required
- Decreases in City rates shown for Scenarios 2 – 4 are based on City charging for distribution system use.
  - This reduces benefits to self-generator, sometimes to the point where the Project no longer shows benefits to the self-generator
- Negotiating agreements with self-generators will take several months
  - Convincing them it is economic (if it is)
  - Spinning reserve responsibilities/costs
  - Installed reserve responsibilities/costs
  - Approvals

- Potential Risks
  - Project built, oil prices stay below breakeven price
  - City backstops self-generator loads and those loads decrease in the future
  - Project built for loads that do not materialize

- Potential Benefits
  - Cost savings if oil prices consistently above breakeven price
  - More stable cost of power
  - Reduced oil consumption

Paths Forward

1. No further work at this time
2. Work in alignment with OCCP in developing agreements, etc.
   a. Council should indicate to staff what risk tolerance is (loads, costs, etc.)
3. Request OCCP for a lower rate to reflect Purchasers' (City and self-generators) low cost of fuel and Seller's (OCCP) low cost of capital
4. Sign Power Purchase Agreement now in hopes of securing more loads in near future

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MEMORANDUM

TO: **Erin Reinders**

FROM: **Brooks W. Chandler**

DATE: **June 17, 2020**

SUBJECT: **Non-Recourse Financing**

You asked us to examine whether the potential availability of non-recourse financing to OCCP for construction of a geothermal power plant would reduce the City's legal risk in entering into a fixed price thirty year contract to purchase electricity from OCCP. The answer is NO given the current proposed language of the PPA as explained in greater detail below.

Non-Recourse Financing

Non-recourse financing is a type of commercial lending that limits the legal remedies available to the lender in the case of a default. The City has been told OCCP has access to non-recourse financing but has not been provided information as to how the prospective lender would limit its remedies should OCCP default on the loan.

One standard limitation is for a lender to agree that the only source for loan repayment would be the revenues generated by the project. Another possible limitation would be for the lender to agree to secure the loan only with a deed of trust against the plant and the real estate on which it is constructed and to not pursue other assets either of OCCP or the members of OCCP i.e. no personal guarantees. In either case, the city should anticipate that any PPA it signed with OCCP would be assigned to the lender as collateral for the loan. If the PPA is assigned to the lender as collateral, should OCCP default the lender would step into OCCP's shoes and be able to enforce the terms of the PPA against the City and apply that money to reduce the balance owed on the loan.

PPA Obligation of the City

The current draft of the PPA obligates the City to make a fixed payment to OCCP each year for 30 years. Like a mortgage except what is being bought is electricity not real estate. There is no "non-recourse" provision in the PPA. Everything owned by Unalaska- all the city's money; all the city's physical assets is "at risk". If the City failed to make the payments as promised OCCP would be able to obtain a judgment against the City equal to what OCCP was owed and collect that judgment from any available city funds. The City's obligation to pay OCCP under the PPA is not impacted by OCCP's non-recourse financing.

Best Case Scenario

There is one scenario in which risk to the City is potentially impacted by OCCP's non-recourse financing. The City's obligation to pay OCCP for electricity depends on OCCP actually producing electricity. It is theoretically possible that the City's failure to pay OCCP could result in OCCP shutting down the power plant and then defaulting on its loan. In order to continue to generate annual payments from the City the lender would then be obligated to take over operation of the plant (most likely by hiring a third party operator) and continue to generate electricity. If the lender failed to do that the City would be able to claim it was no longer obligated to make the annual payments because no electricity was being produced.

But the lender would have a fairly strong argument that the City's original failure to make payments is what caused the plant to shut down thereby prohibiting the City from using the shutdown of the plant as an excuse for non-payment. Needless to say- the resulting legal mess would take years to resolve with a strong likelihood of an unfavorable outcome for the City. This "best case" scenario should not be considered to significantly reduce the risk to the City of a thirty year commitment to OCCP.

Conclusion

A decision on whether to approve a 30 year contract to buy electricity should not be based on an assumption the city could "get out of" the contract if it did not need or was unable to resell all the electricity it promised to buy. Instead, the decision must be based on how much money the city is obligated to pay by the terms of the contract as written, an assessment of the likelihood the city would be able to use or sell all the electricity it is obligated to purchase and an assessment of the risk to city finances if the city was unable to do so.