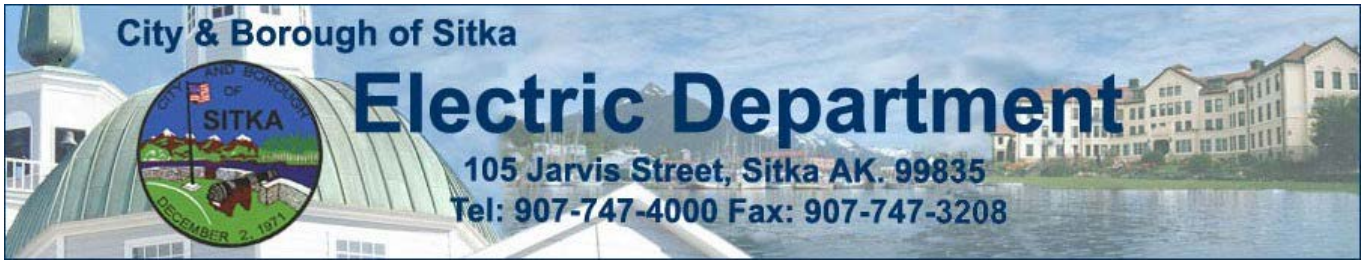
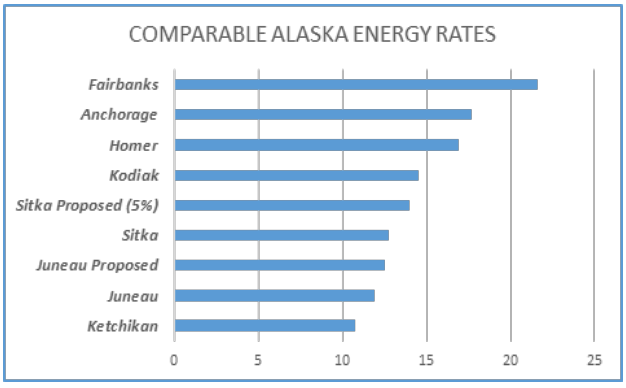


ELECTRIC DEPARTMENT FACTS

***FACT** - "When you buy $1 of fuel oil you send over 90 cents* out of Sitka as oil company revenues. When you buy a dollar of electricity 100% stays in our community helping to lower the price of energy for all of us while at the same time reducing pollution. **Buy Electricity, it is a WIN for our community.**"...says Bryan Bertacchi, Sitka Electric Utility Director*

Note *: Based on benchmark pricing versus management fee = $1.60/(1.60+.35) [not all of the management fee goes to the Sitka office]
http://doa.alaska.gov/dgs/cam/docs/08-Heating-Oil.pdf
https://www.eia.gov/dnav/pet/pet_pri_wfr_dcus_nus_w.htm

1. Are Electric Rates cheaper elsewhere? –



Recently, a new rate increase was approved (October 2016). Even with the recent rate increase our Sitka rates remain some of the lowest in the State of Alaska (see the chart below).

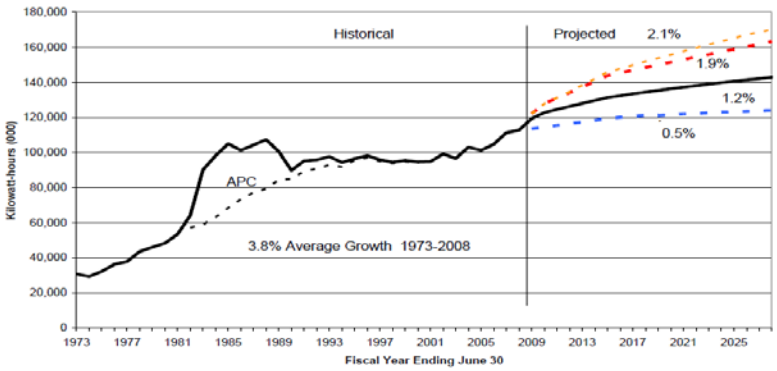
In our community the electric utility is "not for profit" meaning that we only charge enough from rates to cover our community costs of operating the utility. The Assembly and city staff work together to establish rates that are fair to all of our community.

2. Why was Blue Lake Dam Expansion Built? –

Back in 2008 the price of fuel oil had trended from $46/barrel to upwards of $140/barrel. In addition, the load growth in Sitka from 1981 to 2009 had been over 2% per year and was projected to continue at that rate. At that 2% rate the City of Sitka would need to increase electric capability from 60 million whrs/yr in 1981 to over 150 million whrs/yr in 2017. Blue Lake was a clear answer and the project was approved by the Assembly.

In our current reality the price of oil has decreased to historic lows impacting not only Sitka and the State of Alaska but the entire industry worldwide. In addition, load growth has actually declined in Sitka to approximately 104 million whrs/yr versus the anticipated 150 million whrs/yr. This alone would have provided an approximate $8M in revenue which would have led to a large RATE DECREASE.

Figure 3
Historical and Projected Total Energy Requirements (1973-2029)



3. How are the Electric Rates determined –

In our community the electric utility is "not for profit" meaning that we only charge enough from rates to cover our community costs of operating the utility. The Assembly and city staff work together to establish rates that are fair to all of our community members. Recently, a new rate increase was approved. During that discussion the rate structure was reviewed. Currently, in Sitka, the industrial and the commercial rates decline as you use more, the residential rates increase as you use more. These are referred to as declining block rates and inclining block rates. As a community, we took our first step toward eliminating the inclining block structure on residential rates.

4. What are the upcoming projects and how much do they cost -

Although Blue Lake dam was rebuilt, all the other existing infrastructure was in need of evaluation and planned replacement or repairs. The electric department spent a good portion of the last year evaluating our major equipment and the result was the creation of a detailed 10 year plan which was approved by the Assembly in October 2016. This plan utilizes the remaining working capital from the blue lake expansion combined with the annual collection of $1.5M in working capital and will be used to fix our aged infrastructure.

Below is from the Assembly Approval:

"The Electric Department respectfully requests Assembly approval of a revised and consolidated ten year capital plan. This ten year plan includes expending a total of $22M in capital over the ten year period while maintaining an emergency reserve of $2.5M and a liquidity reserve of $1.0M. These reserve requirements are based on industry best practice as recommended by the CBS CFAO. The currently available Electric Department total working capital of $15,881,204 will be increased by a

$1.5M/year due to the bond covenants. This request includes a revision to all Electric Department existing capital projects ("re-appropriation") as well as newly identified projects to provide a complete consolidation. This recommendation comes after an eight month long process within the Electric Department which included detailed reviews coupled with 3rd party engineering studies. These projects are lengthy and interrelated, thus approval of the complete revision is requested.

Background:

The electrical infrastructure of the Electric Department required a thorough review to ensure that efficient and reliable operation will be sustained at the lowest reasonable cost. After review, it was identified that the available working capital was not sufficient to support the total number of capital projects identified. However, after an intensive and long process, staff is able to recommend a series of projects which can be completed within the existing capital constraints and that have the highest probability of ensuring reliability at low cost to our citizens and customers.

Highlights:

- N-1 Project ($3.9M): This term is used in our industry to describe redundancy and emergency backup. As we have often described, 80% of our citizens and customers are served from the Marine Street Substation. A back-up for this substation is imperative and necessary as the existing equipment is now over 35 years old. A new substation north of town would be ideal (Kramer Ave area) however the cost was identified as being too high (>$13M of the available capital would be consumed). Alternatively, we are proposing to install a 2nd bay at the existing Marine Street Substation at a cost of approximately $3.9M. This second bay would still utilize a portion of the older equipment, but the overall cost is substantially lower. This modification would also increase the amount of power that can be delivered from the Jarvis Substation to Marine Street customers in the event of an emergency. While not ideal, this provides the greatest increase in emergency backup at the lowest cost.
- Green Lake Power Plant Overhaul ($4.8M): The Green Lake Power Plant is a very valuable asset for the community and has not been overhauled since the early 1990's. A major pre-inspection is scheduled for 2018 which will help to further define and identify the costs of a major overhaul. Similar plants have had overhauls in the cost range of $8M when a full rewind of the generators was required. We are currently recommending a reserve of 4.8M for this item. Numerous small inspections during the last twelve months have clearly demonstrated specific needs to return this overhaul to the list of required capital items.
- Jarvis Fuel System Repairs/Storage ($1.5M) & Thimbleberry Bypass ($3.8M): These two items are directly related. In August 2015 the fuel release demonstrated a need for extensive repairs and redesign to the Jarvis Street fuel storage system. Presently, the system was designed for over seven days of fuel storage. This period was defined by the time needed to repair the worst case scenario on the electrical transmission line….the Thimbleberry portion of the transmission line. The existing Thimbleberry portion of our 69kv backbone transmission line is installed in difficult and dangerous terrain and is subject to outages from fallen trees and extensive degradation of transmission poles. Presently, a repair during winter months has demonstrated to be dangerous and time-consuming (on the order of seven days), thus setting the amount of fuel storage required. This plan, proposes to permit and install a bypass to the existing transmission line from the Whale park area to the Blue Lake Switchyard. This line would be planned on the inside of the roadway to minimize the impacts to the viewshed. This line will reduce the cost of annual diesel fuel burned, reduce the redesign costs of the Jarvis fuel system ($2M saved), likely eliminate the need to replace the very old diesel generation units at the Jarvis facility ($10M saved) , and eliminate the costly and dangerous maintenance required on the existing transmission line.

- Feeder Improvements ($1.6M): A host of miscellaneous feeder improvements are planned and required. Extensive aging and environment requires sufficient engineering, planning, inventory and lead time.
- Blue Lake 3rd Turbine ($2.48M): A significant host of items are needed to close out this project and are required for compliance with the FERC permit including but not limited to: the dam overlook project, the campground, modifications to the safety ladders on the dam, rock removal, etc.
- SCADA System ($230,000): A significant amount of work has already been performed to remove the Electric Department control system from the interface with commercial carriers thus making the system significantly more secure. Additionally, the Green Lake power house and many of the system field breakers have only very limited control capability making outages more frequent and longer with extensive personnel overtime. These changes will improve safety and reliability and will bring old systems up to date significantly extending the life of the equipment (which lowers overall costs).
- Capital for Fuel Conversions ($1.2M): With the assistance of Siemens Engineering, a number of facilities have been identified for conversion to dual fuel (Electric Interruptible boilers). These projects have a three year return on the invested capital and will subsequently improve revenue for the department and reduce the need for rate increases to all citizens.
- Harbor Meters ($75,000): The revised electric rates will include an increase to the monthly rate for harbor meters which was reviewed and supported by the Harbor

5. How do interruptible rates work -

Interruptible users get disconnected during times of limited electricity availability. This service is confined to large customers and customers must have an approved alternative system. Interruptions are unusual but when interrupted, these customers are required to switch to their alternate system.

The newly revised electric ordinance includes a revised pricing structure based on publicly posted fuel oil benchmark prices (a common business practice and in this case the ordinance language came right out of the Regulatory Commission of Alaska approved AELP rate structure). The calculated interruptible price reflects a "no more than 90%" of that benchmark fuel oil price "paid by the state of Alaska" and is adjusted on a monthly basis. This is meant to ensure that, with fluctuations in oil price, that the current interruptible customers remain in a financially beneficial position when using interruptible heat (especially discounted considering that they are defined as "interruptible" and may have to switch to back-up oil at any time). This discount also encourages customers to convert to interruptible electric heat by providing a means to amortize the capital cost of the conversion.

With regard to new potential customers our current approved Electric Department capital plan has us moving forward with conversions to interruptible electric heat for both Keet and Community hospital, both of which are public entities (approved budget approximately 1.2M with an estimated three-five year payback). As a reminder, any new interruptible customer must be approved and must be larger than 100kw. Other customers (which we are not providing ANY funding for at this time) who are considering a change to electric based interruptible heat are: SEARHC, the new Swimming pool, USCG, and others. Again, the 10% discount above is an effort to help those customers amortize the cost of the electric heat systems.

In all of these cases the switch to electricity reduces the total amount of revenue in the community which is LEAVING the island. This interruptible revenue directly reduces electric rates for all customers and further significantly reduces fossil emissions for the community providing a cleaner and safer environment for all of our citizens.

Note : AELP Rates, https://www.aelp.com/tariff/Schedule%20of%20Fees%20and%20Charges.pdf

6. Service Disconnects for NON Payment –

We value ALL of our customers including those challenged to pay the monthly bill. Notices of disconnection ***have not*** been eliminated only replaced with electronic notification (phone call or email). So as a customer, make sure the City Utility Office (747-1818) has your up-to-date method of contact. If you are unable to pay, contact the City Utility Office to arrange a payment plan.

In the past door hangers were used to notice customers of non-payment. This was an old and costly process and required our electric department employees to travel to each location and hang a door hanger prior to a disconnect. Rather than having these employees available to perform their primary job function (like fixing broken electric meters) they were hanging door hangers. This process has been costing the community on the order of $35,000 per year and those people hours will be re-directed toward the back-log of high value metering work (like harbor meters). Customers who do not pay timely still receive notice by means of a phone call or email prior to the disconnection of services and the City has a system to allow for a payment plan when customers are challenged financially. Additionally, a source of funding for our most challenged citizens has been set up with the Salvation Army.

7. How much did Blue Lake Cost versus Green Lake

The Blue Lake project cost was approximately $150M (2015) which included the Titan Turbine at Jarvis Street. In 2007 the preliminary estimate was $50M. In 2008 the project was estimated at $100M with the goal of 50% grant funding. In 2010 the community voted 2595-373 to sell $50M in bonds for the project. In 2012 the bids resulted in a revised cost of $145M. In 2012 rate increases of between 27%-56% were publically identified prior to the award of the contract.

The Green Lake project cost was approximately $76M (1982) which included the Marine Street Substation. Green Lake Planning began in 1974 and the initial estimate was $21M at that time. In 1977 the Citizens voted overwhelmingly to go forward with the project. By 1979 the estimate had increased to $42M. In 1979 the Assembly raised rates by 25% then by 20% in 1980. The project was placed in service in 1982 at a final cost of $76M.

8. How much debt is the Electric Enterprise fund responsible for –

Approximately $125M of Debt which includes $100M in bonds and approximately $25M in loans. The payments on this debt is fairly stable through 2030 and accounts for approximately $8M/year in interest and principal payments

9. What does the Electric Utility cost per year –

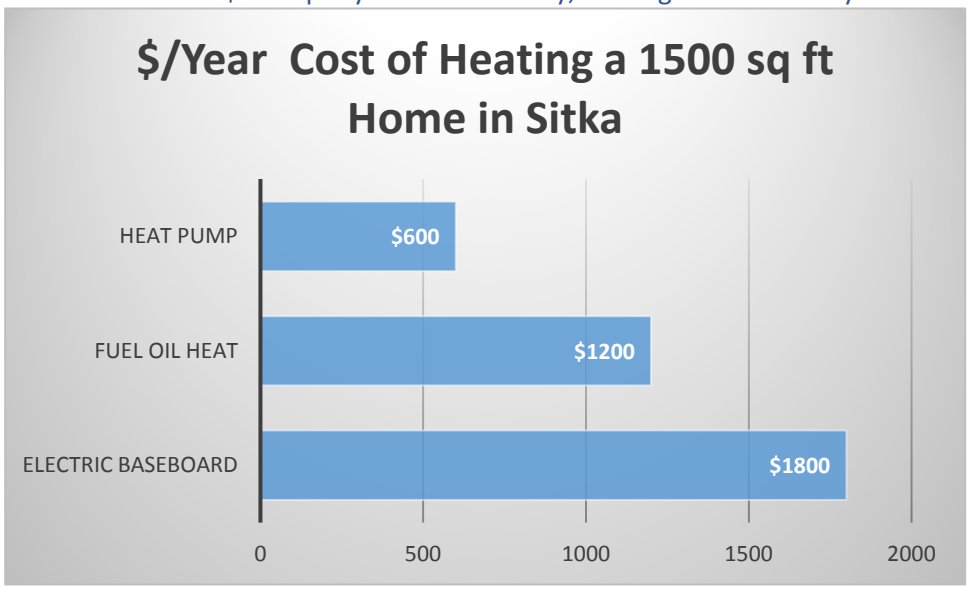
The annual required budget for the non-profit utility is approximately $16.4M. Of this total: $8.0m goes to debt service, $4.2M goes to labor, and $4.2M goes to materials and contracts. Additionally, a further 25% over the debt service is collected and used for working capital to replace old and aging infrastructure. This working capital is approximately $1.5M per year. This means a total of approximately $18M must be collected through rates.

10. How much energy use does seafood production account for –

All of the community benefits from seafood production. In electric sales alone, seafood production accounts for over $2M/year. All Sitkans should be proud of the clean and reliable energy that we provide for this critical business in our community.

11. Heat Pumps –

In our 2016 Sitka community, it costs approximately $1200 per year to heat a 1500 square foot home with a modern fuel oil heater (with $3/gal fuel delivered). *If you owned a heat pump in that same home, it would cost about **ONE-HALF** as much or about $600 per year in electric cost (FY17 rate of 15cents)*. A similar home with baseboard heat would cost $1800 per year. Additionally, heating with electricity rather than fuel oil keeps those $ here in Sitka which lowers both your electric rate and the rates for our entire community. Further, our hydro-electric system is one of the finest in Alaska and represents clean energy without carbon emissions.



Calculation Details:

Fuel oil heating value is approximately 130,000 btu/gallon. A modern TOYO stove runs at approximately 85% efficiency or approximately 110,000 btu/gallon. At a price of $3/gallon, that is equivalent to 36,000 btu/$. A heat pump with a HSPF rating of 12 or 12,000btu/kw efficiency and 15 cent power will cost approximately 80,000 btu/$. In summary, the heat pump is ½ the cost of fuel oil for the same amount of heat.

An AFUE of 90 means that 90 percent of the energy in the fuel becomes heat, while the other 10 percent is lost.

New fossil-fuel warm-air furnaces must have an AFUE of at least 78 percent. High-efficiency models will have an AFUE of 90 percent or higher. Electric furnaces generally have AFUE ratings of 95 or higher, though the cost of electricity to power these systems is typically higher than natural gas.

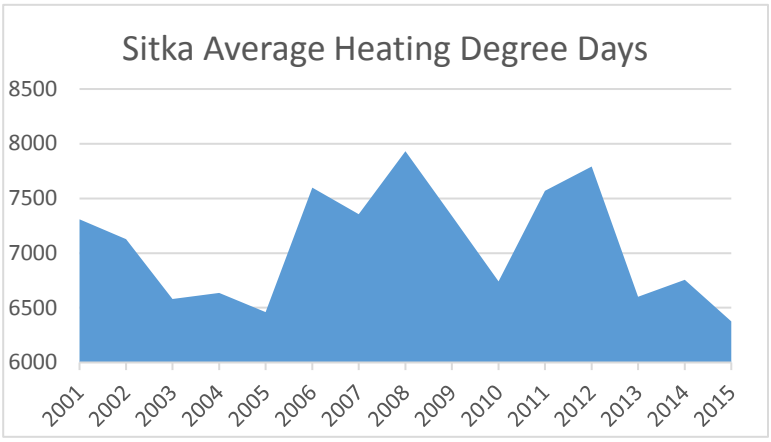
In contrast, heat pump efficiency is measured by its HSPF, or Heating Seasonal Performance Factor. HSPF ratings range from the minimum required of 7.7 for units manufactured after 2005 to 9.35. A heat pump with an HSPF of 8.2 is considered a high-efficiency model.

The most common type of heat pump is the air-source heat pump, which transfers heat between your house and the outside air. Today's heat pump can reduce your electricity use for heating by approximately 50% compared to electric resistance heating such as furnaces and baseboard heaters. High-efficiency heat pumps also dehumidify better than standard central air conditioners, resulting in less energy usage and more cooling comfort in summer months. Air-source heat pumps have been used for many years in nearly all parts of the United States, but until recently they have not been used in areas that experienced extended periods of subfreezing temperatures. However, in recent years, air-source heat pump technology has advanced so that it now offers a legitimate space heating alternative in colder regions.

12. Status of the new Blue Lake Turbines –

The new Gilkes Turbines in the Blue Lake Power house have run exceptionally well for over two years. The Electric Department completed an inspection of the turbines prior to the end of the warranty period. During this inspection small areas of cavitation corrosion were identified on the turbine "runners" along with a small number of minor issues. "In a marine based community this is similar to the cavitation corrosion that can be seen on your boat propeller, but at very low levels" said Bryan Bertacchi, the Electric Utility Director. Bertacchi also said: "This is not an impending failure at all, this is just a long term issue that needs to be addressed and Gilkes (the turbine manufacturer) is working very hard to help us understand and solve this issue". The Electric Department has been working very closely with the Gilkes Engineering staff to solve the problem and a series of twelve 100 hour tests are being run on the Blue Lake turbine #5 to identify the source of the problem. Bertacchi also said: "we are very impressed with Gilkes support as they are running extensive computer modeling on high speed computers to provide an ultimate solution". Additionally, "these types of problems are not uncommon and we fully expect a rational resolution and a "fix" over the next twelve month period". Gilkes has sent engineers all the way to Sitka multiple times in the last few months and they are working diligently to help the City and Borough of Sitka solve this problem.

13. **Is the overall Weather changing in Sitka –** In our industry changes in weather are monitored using Heating Degree Days. To calculate HDD, you take the average of a day's high and low temperatures and subtract from 65. For example, if the day's average temperature is 50° F, its HDD is 15. If every day in a 30-day month had an average temperature of 50° F, the month's HDD value would be 450 (15 x 30). **In Sitka, we have been on a warming trend for a few years (since 2012) and this is impacting our electric department revenue.** The NOAA 30 year average for Sitka is 7197



http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/cdus/degree_days/mctyhddy.txt

http://biorealis.com/wwwroot/akclimo1.html

14. **Harbor Meters -** Our community has a total of 1147 harbor electric meters. Over 60 of these meters are in a failed condition and the rate of failure is high so the list is getting larger every month. These meters are old and suffering from high rates of corrosion. The electric department has tried to replace the failed parts but have found that the high level of corrosion inside the "power head" where the meter sits makes it impossible to repair them (and we have tried!). The department has experimented with a number of solutions and have settled on replacement of the entire power head as the least cost solution. Based on these facts the Electric Department met with the Harbor Commission and recommended an increase from the $8.75/mo meter fixed rate to $19.50/mo for boats in the harbor. These funds would be used to support the costs of repairing these meters. Currently, a prototype is under construction.