

**Agency: Commerce, Community and Economic Development****Grants to Municipalities (AS 37.05.315)****Grant Recipient: Bethel****Federal Tax ID: 926001644****Project Title:****Project Type: Remodel, Reconstruction and Upgrades****Bethel - LED Streetlights****State Funding Requested: \$200,000****House District: 38 / S**

Future Funding May Be Requested

**Brief Project Description:**

Purchase and install LED Streetlights in Bethel, Alaska. Remove old High Pressure Sodium streetlights and dispose of them properly.

**Funding Plan:**

Total Project Cost:	\$250,000
Funding Already Secured:	(\$50,000)
FY2012 State Funding Request:	(\$200,000)
Project Deficit:	\$0

*Funding Details:*

*City of Bethel received \$50,000 in ARRA Energy Efficiency Conservation Block Grant funding from federal government. Seventy-four LED streetlights are installed now. Need \$200,000 more to fund next phase of LED streetlight purchase and installation.*

**Detailed Project Description and Justification:**

Project entails the purchase of LED streetlight mastheads and arms to replace existing high pressure sodium cobra head fixture in Bethel, Alaska. High pressure sodium lights have mercury in the bulbs, a hazardous waste. LED streetlights have no hazardous materials. LED streetlights will save the City 52% in energy use.

The City currently has 590 streetlights. The City of Bethel received a grant from the American Recovery and Reinvestment Act in 2009 in the amount of \$50,000. The City used it to purchase 74 LED streetlights and install them in three neighborhoods. The new LED streetlights are put out 50% more light than the existing 100 kW high pressure sodium bulbs. By adding more light and better quality light, the City hopes to reduce the number of pedestrian-vehicle accidents, the number of automobile accidents, and the number of animal-vehicle accidents in Bethel. The City hopes to reduce the number of violent crimes committed with this project.

Each new LED streetlight has a photosensor on it so that it turns itself on and off depending on the amount of available light. This feature also helps the City save money.

The LED streetlights are vandal resistant. Three are 30 tiny LED "bulb" compartments instead of one large bulb, like the high pressure sodium lights the City currently has. The 30 tiny compartments are more difficult to break with stones and if a bullet goes through a few tiny compartments, the rest of the light still functions. It is called "smart" technology.

**Project Timeline:**

74 LED streetlights already purchased and installed in Bethel.

State legislative grant awarded: May 2011

State grant funds available to City: August 2011

LEDs ordered: September 2011

LED streetlights installed: Oct.-Nov. 2011

**Entity Responsible for the Ongoing Operation and Maintenance of this Project:**

City of Bethel

**Grant Recipient Contact Information:**

Name: John Sargent

Title: Grant Development Manager

Address: 300 State Highway  
Bethel, Alaska 99559

Phone Number: (907)543-1386

Email: jsargent@cityofbethel.net

Has this project been through a public review process at the local level and is it a community priority?  Yes  No

## *CITY OF BETHEL*

### **Resolution # 10-47**

#### **CITY OF BETHEL PRIORITIES FOR THE FY 2012 STATE OF ALASKA CAPITAL BUDGET**

**WHEREAS**, the Bethel City Council is a seven-member body elected by resident voters of Bethel to act in the best interest of the community;

**WHEREAS**, the City intends to exhibit transparency, oversight, and accountability for all funds awarded through this request;

**WHEREAS**, the priorities established herein are rank-ordered and vital to the well-being of the community and municipality of Bethel;

**WHEREAS**, a summary of the City of Bethel's priorities and requested funding amounts are listed in the following table:

<b>Top Three Priorities</b>	<b>Request</b>
1. LED Streetlights	\$200,000
2. Donut Hole Road (new construction)	\$2,000,000
3. Bethel Aquatic Training and Health Center (new construction)	\$4,000,000
Total	\$6,200,000

<b>#1</b>	<b>LED Streetlights</b>
-----------	-------------------------

**WHEREAS**, the City of Bethel owns and operates approximately 492 streetlights in Bethel, all of which are of the high pressure sodium type;

**WHEREAS**, the city's high pressure sodium light bulbs are considered hazardous and when expired, require special handling, packaging, and shipment to a federally-approved disposal site;

**WHEREAS**, the City intends to replace the HPS streetlights with LED streetlights that provide 50% more light and a higher quality, bright, white light, which will make the town safer for pedestrians, bicyclists, and those operating motor vehicles, fourwheelers, and snowmachines;

**WHEREAS**, the City anticipates a 50% to 75% savings in annual electricity if it can replace its high pressure sodium streetlights with LED streetlights;

**WHEREAS**, the City of Bethel expects to purchase and install 74 LED streetlights as part of its \$50,000 Energy Efficiency Community Block Grant award by December 31, 2010;

**WHEREAS**, although the remaining cost to retrofit the high pressure sodium streetlights in Bethel is \$350,000, the City is requesting \$200,000 from the State as a major contribution toward the goal of 100% LEDs;

**NOW, THEREFORE, BE IT RESOLVED** that the Bethel City Council, as elected representatives of the community and City of Bethel, do hereby formally request that the State of Alaska provide \$200,000 in its FY 2012 Capital Budget to cover the cost of purchasing and installing LED streetlights in Bethel;

<b>#2 Donut Hole Road</b>
---------------------------

**WHEREAS**, the primary need of a new road connecting Chief Eddie Hoffman Highway with Ptarmigan Street is to reduce response time for emergency vehicles leaving the Bethel Fire Station or Bethel Police Station and responding to people living in Tundra Ridge and on Ptarmigan Street;

**WHEREAS**, the closure of Tundra Ridge Road in 2008 put a severe burden on the community in terms of time and cost;

**WHEREAS**, people living in Tundra Ridge were disproportionately affected by the closure of Tundra Ridge Road because they had to take a longer, circuitous route to access the airport, Larsen subdivision, Kasayulie subdivision, and west-side businesses;

**WHEREAS**, the 35-mile road system in the community emanates from a large ten-mile oval, referred to as "the donut hole," inside of which is land owned by the city, native allottees, and the Bethel Native Corporation;

**WHEREAS**, the proposed road would be less than two miles long, a width that ensures one safe lane on each side, ample shoulder space, and a proper hydroseeded slope to the base;

**WHEREAS**, constructing the road would bisect the Bethel community oval in half, giving nearly equal access to people driving from the east and west of town;

**WHEREAS**, the City of Bethel is willing and able to provide sand, heavy equipment, and personnel to assist in the development of the new road;

**WHEREAS**, a new road between the state highway and Ptarmigan Street is expected to benefit residents by saving time, fuel cost, and vehicle maintenance cost;

**WHEREAS**, a road through the donut hole would allow for denser development which would benefit the city through savings on infra structure costs;

**WHEREAS**, the projected cost of the new road, including environmental compliances, right-of-ways, survey work, engineering, and construction is \$2,000,000;

**NOW, THEREFORE, BE IT RESOLVED** that the Bethel City Council, as elected representatives of the community and City of Bethel, do hereby formally request that the State of Alaska provide \$2,000,000 in its FY 2012 Capital Budget for design and construction of the Donut Hole Road in Bethel;

<b>#3</b>	<b>Bethel Aquatic Training and Health Center</b>
-----------	--

**WHEREAS**, the need for a multi-use recreation facility that included a swimming pool has been expressed by the community of Bethel in numerous community plans since the early 1970s;

**WHEREAS**, the Yukon-Kuskokwim Delta region experiences one of the highest drowning rates in Alaska—largely because residents and visitors live near the Yukon and Kuskokwim Rivers, engage in boating and water play activities, do not know how to swim, do not know how to rescue individuals from the water, and do not know how to resuscitate victims;

**WHEREAS**, the City of Bethel Aquatic Training and Health Center Plan, completed by Agnew Beck Consultants in 2005, identifies a swimming pool as the number one activity voted on by community members to include in the Aquatic Training and Health Center;

**WHEREAS**, the pool in the Bethel Aquatic Training and Health Center would provide the following benefits to any of the YK-Delta's 26,000 residents: allow children and adults to learn how to swim, provide lifeguard certification courses, provide a place where families and friends come together to recreate and exercise, reduce the onset of diabetes, obesity, and other health problems, provide a venue for physical therapy, and provide special programs for seniors, youth, and people with physical disabilities;

**WHEREAS**, the Bethel Parks and Recreation Committee is a group of concerned citizen volunteers who meet twice a month to assist in the development of the multi-use recreation center, make recommendations to the City Manager, and assure that the project design, construction, operation, and maintenance costs are affordable;

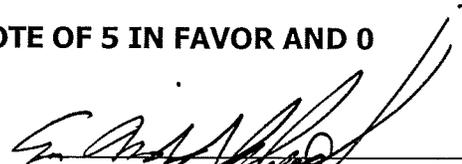
**WHEREAS**, Architects Alaska, Inc. completed the 65% design development documents in April, 2010, which show that the new facility will cost \$23,822,000;

Introduced by: Lee Foley, City Manager  
Date: November 9, 2010  
Action: Passed  
Passed: 5-0

**NOW, THEREFORE, BE IT RESOLVED** that the Bethel City Council, as elected representatives of the community and City of Bethel, do hereby formally request that the State of Alaska provide \$4,000,000.00 in its FY 2012 Capital Budget to be matched with other designated and approved funding sources to construct the new Bethel Aquatic Training and Health Center.

**THEREFORE, BE IT FURTHER RESOLVED** that the Bethel City Council, as elected representatives of the community and city of Bethel, hereby set and reaffirm the three funding priorities for the FY 2012 State of Alaska Capital Budget as: 1) LED Streetlights, 2) Donut Hole Road, and 3) Bethel Aquatic Training and Health Center.

**ENACTED THIS 9<sup>th</sup> DAY OF NOVEMBER 2010 BY A VOTE OF 5 IN FAVOR AND 0 OPPOSED.**

  
Eric Middlebrook, Mayor

ATTEST:

  
Lori Strickler, City Clerk

**City of Bethel**

**Bethel LED Streetlights**

**FY 2012 State of Alaska Capital Budget Request**

**Contact Person**

John Sargent, Grant Development Manager  
City of Bethel  
P.O. Box 1388  
Bethel, AK 99559  
907-543-1386 tel. / 907-543-1388 fax  
jsargent@cityofbethel.net

**1. Summary Statement**

The City of Bethel requests that \$200,000 be put in the FY 2012 State Capital Budget to fund the “Bethel LED Streetlight” project in Bethel, Alaska. Funding for this project will enable the City to remove 313 high pressure sodium light fixtures (100 kW) and replace them with 313 LED streetlight fixtures (a.k.a. a 30 LED configuration).

The City’s ultimate goal is to replace 100% of its high pressure sodium streetlights with LED streetlights to achieve four important purposes: (1) achieve 52% energy savings immediately after installation, (2) increase the amount of light dispersed by new LED streetlights to make all night-time activity safer, (3) eliminate the hazardous waste handling and disposal associated with the mercury in high pressure sodium light bulbs, and (4) reduce the cost of streetlight bulb replacement due to vandalism. All of these goals will be accomplished by the purchase and installation of 313 new LED 30 streetlight mastheads with photosensors.

In 2010, the City of Bethel used its \$50,000 Energy Efficiency Conservation Block Grant awarded as part of the 2009 American Recovery and Reinvestment Act to purchase \$34,000 worth of LED streetlights with photosensors. It will use the remaining \$16,000 to pay Bethel Utilities Corporation to remove 74 high pressure sodium streetlights and replace them with 74 new LED streetlights. This \$50,000 infusion could be considered the City’s match to its FY 2012 state capital request for \$200,000. Once completed, the EECBG funding will result in 13% of the City’s streetlights being LEDs.

The City of Bethel will use the bidding process as described in the Bethel Municipal Code to procure the LED streetlights. A Request for Bids will be issued by the City and remain open for 30 days. All bid packages received will be scored. The vendor with the highest total score among three reviewers will be awarded the contract to provide the City with LEDs.

Bethel Utilities Corporation (BUC) is the electric utility serving Bethel. After the City purchases the LEDs from the successful bidder, the utility will remove the high pressure sodium mastheads and install the LED mastheads. BUC owns the utility poles on which the streetlights are secured and is responsible for overseeing all work related to a grid connection.

## **2. Brief Community Profile**

### **Physical Environment**

The community of Bethel is located alongside the Kuskokwim River, the largest river in Alaska by water volume. Isolated from the road network of Alaska, the city is four hundred air miles from Anchorage and forty air miles from the Bering Sea. The City encompasses approximately 44 square miles in Southwest Alaska, including six miles of Kuskokwim River that encompasses 21 miles of shoreline due to islands and river bank formations. The Kuskokwim River becomes a frozen road in the winter, connecting Bethel to many villages along the river.

The average annual snowfall in Bethel is 53 inches. The average annual precipitation is 16 inches. The mean summer temperature is 53°F and typically fluctuates between 42°F and 62°F. The mean winter temperature is 11° and typically fluctuates between -2°F and 19°F.

Bethel is located in treeless sub-arctic tundra that remains moist in the summertime and frozen in the wintertime. The land in and around Bethel is nearly all permafrost, except for some land surrounding lakes and ponds.

### **Regional Hub**

Bethel is a hub community for 56 Yukon-Kuskokwim villages in the region. Bethel is home to the third busiest airport in the state of Alaska, due largely to its cargo shipments, and home to the largest medium draft port in the state in terms of tonnage off-loaded. Goods destined for Kuskokwim River villages land in Bethel first and then are repackaged and taken to villages by plane, river barge, automobile, four-wheeler, boat, or snowmobile. Petroleum products are handled the same way, off-loaded in Bethel to smaller river fuel barges that transport the fuel to villages upriver and downriver.

Many of the 20,000 residents who live in the 55 villages around Bethel come to Bethel to shop, access government services, satisfy health care needs, attend college or trade school courses, visit friends and relatives, and work. Bethel attracts a continual influx of people because it typically has 100 or more available jobs, private property for sale, businesses for sale, and a variety of places to spend money, including restaurants, hotels, grocery stores, and specialty shops (e.g., hardware, auto parts, party supplies, sporting goods). Village residents travel to Bethel to reconnect with family members.

### **Government**

The City of Bethel was incorporated in 1957 while Alaska was still a territory and has since evolved to become a second-class city with a Council-Manager form of government. The seven elected City Council members hire and direct the City Manager, who oversees nine departments: Administration, Finance, Fire, Police, Port, Planning, Parks and Recreation, Technology, and

Public Works. Bethel is a municipal government in the unorganized borough area of western Alaska and contains no other cities within its boundaries.

The Bethel City Council develops its annual budget by June 15 for the following fiscal year, which runs from July 1 to June 30. The total budget is approximately \$14 million.

### **Population**

Bethel is the eighth largest town in Alaska with a population of 5,803 (Alaska Department of Community and Economic Development website, 2010). According to the Bethel Chamber of Commerce, the number of people in Bethel on a given day could be 6,400 or higher.

The average annual rate of increase for Bethel's population between 1990 and 2000 was 1.6% (U.S. Census 1990; U.S. Census 2000). The Alaska Department of Labor reported that the rate of increase in Bethel's population between 2000 and 2002 was 2.1%. After two years of population decline (2007-2008) totaling 5.2%, the population leveled off in 2009 and then rose 2.4% in 2010. Bethel's population is likely to stabilize or increase as a result of recent improvements in the U.S. and Alaska economy coupled with the advent of several major capital projects taking place in Bethel (e.g., new U.S. Army National Guard Readiness Center, addition of Child Advocacy Center to Tundra Women's Coalition building).

### **Need for Financial Resources**

The Yukon-Kuskokwim Delta area has been dependent on the commercial salmon industry to contribute a summer boon to the economy. The collapse of the commercial salmon fishery has crippled the Bethel economy, resulting in a severe decrease in sales tax revenues to the City. Despite the fact that the federal government declared the Bethel fishery a disaster in the mid-1990s, state support to rural Alaska has been limited, forcing local governments to operate with fewer funds. The Bethel City Council passed one resolution each year from 2001 to present certifying that the city suffered significantly from the lack of fisheries business activities that occurred in the Lower Kuskokwim Fisheries Management Area.

According to the Alaska Department of Commerce, Community and Economic Development (2004), 67.4% of residents in Bethel Census Area villages are in the low to moderate income category. A substantial percent of people living in Bethel are in the low to moderate income category (42.2%). According to the November 2010 edition of the *Alaska Economic Trends* publication put out by the Alaska Department of Labor and Workforce Development, the current unemployment rate in the Bethel Census Area is 14.2%.

## **3. Justification and Level of Need**

The City of Bethel currently owns and operates 566 high pressure sodium streetlights in Bethel. The City pays Bethel Utilities Corporation to maintain the streetlights, change bulbs, and provide electricity to operate the lights. A simple bulb change might cost the city \$150 because BUC must use the bucket truck and certified personnel at a billed cost to the City of \$350 per hour. Vandalism in the form of broken light bulbs and damaged fixtures due to stones thrown or shots fired from a BB-gun or .22 add markedly to the city's cost every year. The city's electricity cost to operate the streetlights is also exorbitant.

The City of Bethel can save money by reducing its electricity cost between 52% by replacing each HPS street light with an LED street light. The LED fixtures will also help the City save money because it will reduce vandalism. One 100 kW HPS light bulb, for instance, will be replaced by 30 small half-inch LED lights or three panels of ten lights each. These small LED lights present a smaller target for vandals and will continue to provide light even if several lights are broken out. With each 100 kW HPS fixture being replaced with an equivalent 150 kW LED fixture; up to 10 tiny lights could be broken in one fixture before the amount of light currently provided decreases.

The City of Bethel can be made safer by providing better quality light and a greater quantity of light. High pressure sodium lights give off a yellowish hue. LED streetlights provide a bright, white light that aids visibility. The City intends to replace each 100 kW light fixture with the equivalent of a 150 kW LED fixture. That equates to the provision of 50% more light for each of 313 street lights or 50% of the total number of lights. Police, Fire, and Emergency Medical responders strongly support the provision of more light as safety feature in Bethel. The Tundra Women's Coalition supports more light as a way to reduce the number of rapes, domestic violence, and other physical abuse that might occur outside. More light means better visibility, increased ability to identify perpetrators, and more accurate witness accounts of altercations, accidents, and natural disaster incidents.

Due to the mercury levels contained in the City's current high pressure sodium light bulbs, the bulbs are considered hazardous waste and must be handled, stored, shipped, and disposed of according to federal law. The City of Bethel collects all spent HPS light bulbs and bulb fragments, stores them in a drum, and ships them to a federally-approved hazardous materials disposal site in Washington State. The City pays up to \$3,000 a year to handle, store, ship, and dispose of its mercury light bulb waste every year. The City would like to stop using HPS light bulbs that contain mercury and rely on LEDs that contain no hazardous waste. In this way, the City will be able to protect the environment and save money.

#### **4. Project Description**

The Bethel LED Streetlight project entails the purchase of \$200,000 worth of LED streetlight mastheads with photosensors and using them to replace the City's current high pressure sodium streetlight mastheads with photosensors. Bethel Utilities Corporation will remove existing HPS streetlights and install new LED streetlights in their place, such that entire neighborhoods and road lengths are completed in their entirety, one at a time.

The City of Bethel chose to use its \$50,000 Energy Efficiency Conservation Block Grant award that it received as part of the American Recovery and Reinvestment Act of 2009 to purchase and install LED streetlights in Bethel. The City solicited bids from prospective companies and selected Arctic Sales, Inc., an Eagle River-based company, to provide the City with Beta brand LEDs. The City ordered and received 74 LED mastheads in October 2010 per the agreement with the vendor. The photosensors were received in November 2010 and all 74 lights will be installed by the utility before the end of the year. The City will direct the utility to remove the high pressure sodium lights and install the LED streetlights in three neighborhoods.

The 74 LED streetlights purchased by the City represent approximately 13% of the total LED streetlights to be installed. The City's request to the State for \$200,000 will help the City complete another 50%, bringing the total to 63% completed. The City will then only have to spend \$150,000 to achieve a 100% LED streetlight installation.

## **5. Budget**

The City of Bethel plans to complete 50% of the total streetlight replacement with this \$200,000 request. Based on a quote from an LED streetlight purveyor, the City estimates that it can purchase and install 313 LED mastheads and photosensors at a cost of \$136,155 and pay BUC to install them at a cost of \$64,165, for a total cost of \$200,320. The City's use of the bid process might yield even greater savings.

## **6. Operation and Maintenance**

Once installed, the City of Bethel will continue to pay Bethel Utilities Corporation to replace LED panels, photosensors, or fixtures when needed. The City expects to incur a lot less cost for these services because the expected life of photosensors is 12.5 years and the life of LED lights is 21 years.

The City of Bethel will continue to pay Bethel Utilities Corporation to provide electricity to the City's LED light fixtures. The City expects to pay for 55 system watts for each LED streetlight that replaces a 100 kW HPS rather than 130 system watts. The City expects to achieve a savings in electricity of 52% per year and reduce the CO<sub>2</sub> emissions emanating from BUC's diesel-burning power plant.

## **7. What if no State Capital Funds are provided?**

The City of Bethel began the conversion away from its high pressure sodium streetlights to environment-friendly LED streetlights by spending its \$50,000 EECBG award on the purchase and installation of LEDs. The City wants to continue with the project and is requesting state capital funds because it does not have sufficient financial resources to complete the project.

If no state capital funds are provided this year, the community of Bethel will continue to live under the amber hue of high pressure sodium streetlights. The City will continue to pay twice as much for electricity to keep its HPS streetlights operating. The criminal element will take advantage of dark spots in the city and the fair amount of light provided currently to exact their cost on law-abiding citizens in the form of violence, rape, and hit-and-run accidents. The City will continue to pay a high cost to maintain the HPS streetlights and the lights will always be vulnerable to rocks, BBs, and .22 bullets.

If no state capital funds are provided, Bethel Utilities Corporation will continue to emit the same amount of CO<sub>2</sub> emissions relative to the power it generates to keep the lights on and the ballasts operating. Oil will have to continue to be extracted from the ground, refined into diesel fuel,

shipped to Alaska, delivered to the BUC power plant holding tanks, and consumed in the production of electricity in the same amounts as in previous years.

## **8. What if State Capital Funds are provided?**

If state capital funds are provided, the City of Bethel will purchase and install approximately 313 LED 30 street lights in place of 100 kW high pressure sodium street lights. Entire street lengths and neighborhoods will be converted from HPS streetlights to LED streetlights. The town will become brighter and objects and people will be easier to see at night.

If state capital funds are provided, there will likely be less crime occurring in town, because of the greater light projected by LED 30 street lights relative to HPS 100 kW street lights—50% greater luminosity. Police, Fire, and Emergency Medical Specialists will be able to see better when responding to calls, assist individuals better, and rely less on personal light sources. Snowmobiles, four-wheelers, vehicles, bicycles, and pedestrians will have fewer accidents because visibility will be 50% greater than it is today.

The City of Bethel will be able to save 52% on the cost of electricity that it incurs every year to operate the LED streetlights. The City will be able to save on streetlight maintenance and light bulb replacement.

The community of Bethel and its environment will be safer by replacing high pressure sodium streetlights with LED street lights. Hazardous high pressure sodium street lights containing mercury will be removed forever. And once the LEDs are installed, the electric utility's power plant will emit less CO<sub>2</sub> because it will burn less diesel fuel to make less electricity.

The light from the LED streetlights will be more directed, focused downward, and light the areas intended. The LED streetlights would allow the City of Bethel to eventually become a “dark sky city.”