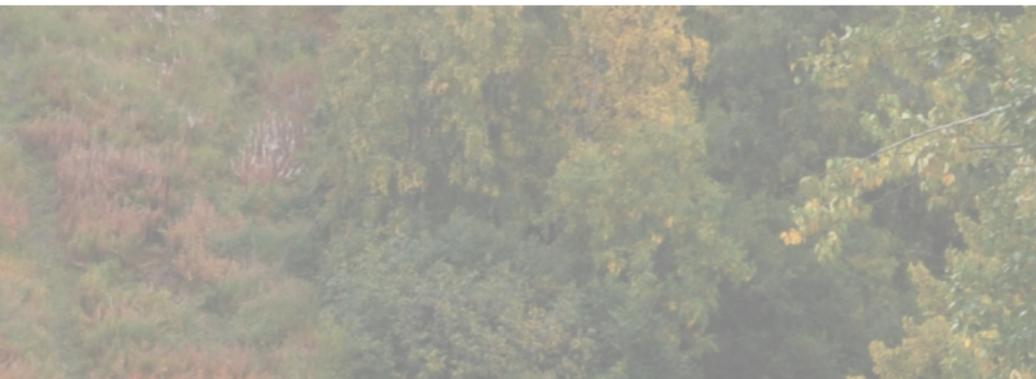




2013 Railbelt Energy Priorities



ARCTEC

Board Members

Cory Borgeson - *Golden Valley Electric Association*

Willard Dunham - *Seward Electrical System*

Brad Evans - *Chugach Electric Association*

John Foutz - *Seward Electrical System*

Joe Griffith - *Matanuska Electric Association*

Brad Janorschke - *Homer Electric Association*

Janet Kincaid - *Matanuska Electric Association*

Janet Reiser - *Chugach Electric Association*

Rick Schikora - *Golden Valley Electric Association*

Richard Waisanen - *Homer Electric Association*

About ARCTEC

The five utilities currently comprising ARCTEC include:

- **Chugach Electric Association (Chugach)**
- **Matanuska Electric Association (MEA)**
- **Homer Electric Association (HEA)**
- **Seward Electrical System (SES)**
- **Golden Valley Electric Association (GVEA)**

Alaska's Railbelt region stretches from the Kenai Peninsula north more than 500 miles to Fairbanks. This portion of our state, named for areas served by the Railroad, is home to 70 percent of Alaska's population. Combined, this area is served by six electrical utilities over a vast and diverse territory.

In an unprecedented move on January 7, 2011, five Railbelt utilities created a new Generation and Transmission utility, the Alaska Railbelt Cooperative Transmission and Electric Company (ARCTEC) to collectively deal with Railbelt energy needs and challenges.

About ARCTEC

Two board members from each of the founding utilities comprise the 10-member board. Along with Chairwoman Janet Reiser from Chugach, the slate of officers includes Vice Chairman Rick Schikora from GVEA, Secretary Janet Kincaid from MEA, and Treasurer Willard Dunham from SES. The ARCTEC CEO is MEA General Manager Joe Griffith.

ARCTEC's focus is on centralizing efforts to manage future power projects, obtain state funding for electrical infrastructure projects and programs, construct such projects when requested by the member utilities, and collectively deal with Railbelt energy needs.

"ARCTEC is a win/win for the State of Alaska and for every citizen who lives along the Railbelt. Our challenges are daunting but I have absolute faith that ARCTEC is an innovative step forward in finding solutions to our common energy challenges."

Joe Griffith,
CEO of ARCTEC

ARCTEC Projects

Unconstrain Bradley Lake

\$13.7M has been included in the Governor's budget for these projects.

Bernice Lake - Beluga HVDC Intertie

Battery Energy Storage System (BESS) 25 Megawatt

Bradley to Soldotna 115 kV Transmission Line

University to Dave's Creek 230 kV
Transmission Line Conversion

University to Dave's Creek 230 kV
Substations & Compensation

Fairbanks Transmission Reliability

Lake Lorraine Substation	\$1,000,000
Douglas Substation Expansion (Willow)	\$3,500,000
Douglas Transmission Line	\$1,000,000
Gold Creek Station	\$3,500,000
Healy Station	\$1,000,000
Douglas to Healy Transmission Line	\$1,000,000
Communications Infrastructure	\$1,000,000
Fairbanks Transmission Reliability Total	<hr/>
	\$12,000,000

ARCTEC Projects

Southcentral Service Transmission Reliability

Fossil Creek Station	\$2,500,000
Eklutna Substation	\$2,000,000
Southcentral Service Transmission Reliability Total	\$4,500,000

Fuel Assurance

Phase I	\$8,000,000
Flexible Gas Storage, Anchorage Area	\$1,500,000
Fuel Assurance Total	\$9,500,000

Battle Creek Diversion

Divert Battle Creek to Bradley Lake	\$23,500,000
TOTAL	\$63,200,000

This project list has ARCTEC board support and represents a top priority for all member utilities.

This project list was developed with assistance from the Alaska Energy Authority and represents the first of a multi-year upgrade program which is critical to avoid increased energy costs to individuals and businesses served by these utilities.

All project costs are based on known estimates as of January 2013, and as project development progresses are subject to change. Delays in project funding will increase project costs.

UNCONSTRAIN BRADLEY LAKE HYDROELECTRIC PROJECT

The Bradley Hydroelectric Project has been constrained in its operation since its completion in 1991. The basic problem is the lack of an adequate transmission system to deliver the project's energy from Kachemak Bay to Anchorage and Fairbanks. The only transmission line between Kenai and Anchorage is a 115 kV transmission line constructed in 1961 to deliver approximately 16 MW of power from the Cooper Lake hydroelectric project to Anchorage, and a similar 115 kV transmission line from Soldotna to the Cooper Lake area. The two lines have a combined length of 146 miles.

Without improvements to the electrical system between Anchorage and Kenai, the utilities will experience substantial cost increases in electrical line losses, lost generation capacity, and operating costs. The result will be an increase in energy costs to individuals and businesses served by these utilities.

ARCTEC recommends an improved transmission system between Anchorage and Kenai composed of improvements to portions of the existing Anchorage – Kenai transmission system combined with a new transmission line connecting the south central area's 230 kV transmission system at Beluga to the Kenai's 115 kV transmission system at Bernice Lake. The combination of these two projects results in the lowest overall cost as well as the most benefits and fewest constraints on the Bradley project.

UNCONSTRAIN BRADLEY LAKE HYDROELECTRIC PROJECT DETAIL

\$13.7M has been included in the Governor's budget for these projects.

Beluga – Bernice Lake HVDC Intertie

This project includes the construction of two 100 MW High Voltage Direct Current (HVDC) cables between the Beluga power plant in and the Bernice Lake Power Plant on the Kenai Peninsula.

Total cost: \$187M over 4 years.

25 MW BESS - Anchorage Area

This project includes the installation of a 25 MW / 14 mWh Battery Energy Storage System (BESS) in the Anchorage area. This device will add stability to the system and provide a measure of “spin” to facilitate spooling-up alternative generation in the event of an outage.

Total cost: \$30.2M over 3 years.

UNCONSTRAIN BRADLEY LAKE HYDROELECTRIC PROJECT DETAIL

Bradley Lake – Soldotna 115 kV Transmission Line

This project includes the construction of a new 68 mile long, 115 kV transmission line from the Bradley Lake Power plant to a new substation near Homer Electric Association (HEA's) existing Soldotna substation.

Total cost: \$67.5M over 4 years.

University – Dave's Creek 230 kV Transmission Line Conversion

This project includes the conversion of 77 miles of existing 115 kV transmission line to 230 kV from Chugach Electric Association Dave's Creek substation on the Kenai Peninsula to Chugach's University substation in Anchorage. The project requires two separate phases: 1) the conversion of the line to 230 kV and 2) the conversion of the substations to 230 kV.

Total cost: \$56.9M over 5 years.

UNCONSTRAIN BRADLEY LAKE HYDROELECTRIC PROJECT DETAIL

University – Dave’s Creek 230 kV Substations & Compensation

This project includes the installation of reactive compensation at Dave’s Creek station and the conversion of substations at Dave’s Creek, Hope, Summit Lake, Portage, Girdwood and Indian stations to 230 kV. The project also includes the completion of the 230 kV bus at Chugach’s University substation. The project includes the installation of sectionalizing switches at each of the stations to allow remote sectionalizing of the transmission line.

Total cost: \$32.2M over 3 years.

FAIRBANKS TRANSMISSION RELIABILITY

Transfers between the Fairbanks area either to or from the Anchorage/Kenai systems are currently limited to a single line. The second transmission line spanning the 171 miles between Healy and Anchorage will help prevent outages to Fairbanks and allow GVEA to access electrical and gas markets in the south-central system. The second line is also required in order to facilitate hydro-hydro optimization of existing and planned hydroelectric projects in the future.

The absence of a second transmission line between the areas precludes the contracting for firm power between the systems and precludes GVEA from contracting for known quantities of fuel or energy from the southern utilities including the sharing of capacity reserves across the Railbelt Grid. The addition of a second line between Anchorage and Fairbanks increases the amount of energy transferred between the areas from 75 MW of non-firm to 125 MW of firm power sales.

FAIRBANKS TRANSMISSION RELIABILITY DETAIL

Lake Lorraine Substation

FY2014 request: \$1.0M

This project includes the construction of the 230 kV substation near the confluence of Chugach's 230 kV West Terminal and its Teeland Transmission lines. The substation would provide a termination point for the Lorraine – Douglas (Willow) transmission line(s). The substation includes an -85/+25 MVAR SVC at the station to control voltages on the 230 kV system during periods of low and high power transfer.

Total cost: \$84.0M over 3 years.

Douglas Substation Expansion

FY2014 request: \$3.5M

This project includes the construction of the 230 kV / 138 kV substation at the existing Douglas substation near Willow.

Total cost: \$16.5M over 2 years.

FAIRBANKS TRANSMISSION RELIABILITY DETAIL

Douglas Transmission Line

FY2014 request: \$1.0M

This project includes the construction of a 42-mile, 230 kV double-circuit transmission line from Lake Lorraine substation to Douglas substation.

Total cost: \$50.5M over 4 years.

Gold Creek Station

FY2014 request: \$3.5M

This project includes the construction of a 230 kV (operated at 138 kV) substation near Gold Creek on the Alaska Intertie.

Total cost: \$14.5M over 2 years.

Healy Station

FY2014 request: \$1.0M

This project includes the construction of a 230 kV (operated at 138 kV) substation near Healy on the Alaska Intertie. Scope includes terminations for two 230 kV (operated at 138 kV) lines to Gold Creek, lines to GVEA's Wilson substation and GVEA's Gold Hill substation, lines to existing Healy plant and an SVC.

Total cost: \$16.5M over 3 years.

FAIRBANKS TRANSMISSION RELIABILITY DETAIL

Douglas - Healy Transmission Line

FY2014 request: \$1.0M

This project includes the construction of a 171-mile, 230 kV (operated at 138 kV) transmission line from Douglas substation to Healy substation.

Total cost: \$106.0M over 6-8 years.

Communication Infrastructure

FY2014 request: \$1.0M

This project includes the development and installation of communication infrastructure between the Teeland, Lorraine, Douglas, Gold Creek and Healy substations. The communications will be used for high-speed protective relaying communications between control areas and control and monitoring of the substation equipment.

Total cost: \$15.0M over 4 years.

SOUTHCENTRAL SERVICE TRANSMISSION RELIABILITY DETAIL

The Southcentral Service Transmission Reliability Projects are integral to the reliability of the transmission system serving Anchorage and the Mat-Su valley.

Fossil Creek Substation

FY2014 request: \$2.5M

This project includes the construction of a 115 kV Fossil Creek substation (Fort Richardson). The Fossil Creek substation is located near the existing Briggs Tap on the Eklutna – Anchorage Municipal Light & Power (ML&P) transmission line. The projects include the construction of a 115 kV substation to interconnect the Eklutna Express circuit, the Eklutna local circuit, and the ML&P express circuit with provisions for future 230/115 kV transformers and Raptor substation interconnections.

Total cost: \$8.3M over 2 years.

Eklutna Substation

FY2014 request: \$2.0M

This project includes the construction of the 115 kV substation at the Eklutna Hydroelectric Power Plant. The Eklutna substation is currently located on the roof of the Eklutna Plant, where there is no room for expansion to accommodate new transmission and generation sites.

Total cost: \$6.2M over 2 years.

BATTLE CREEK DIVERSION INTO BRADLEY LAKE DETAIL

Battle Creak Diversion

FY2014 request: \$23.5M

The Battle Creek Diversion is a project of the Alaska Energy Authority.

Diverting the Battle Creek watershed into Bradley Lake will add upwards of 50,000 MWh per year of energy. This amount of power is worth about \$3.5 million to Railbelt electric utilities at today's prices.

All six utilities in the Railbelt take power from Bradley Lake, maintain the hydroelectric plant and pay the debt on service on outstanding bonds. These six utilities are the beneficiaries of the project and will pay for half of the project costs.

FUEL ASSURANCE DETAIL

Phase 1

FY2014 request: \$8M

This project will encourage Cook Inlet infield development, onshore and offshore exploration, and market development through loan guarantees and/or capital investments. Additionally, this project will study adequacy of the Cook Inlet gas pipeline system to meet utility demands. It will also seek approval of a new export permit for LNG to maintain the Cook Inlet market. Alternative sources to Cook Inlet gas will be explored as well.

Total cost: \$108.0M over 6-8 years.

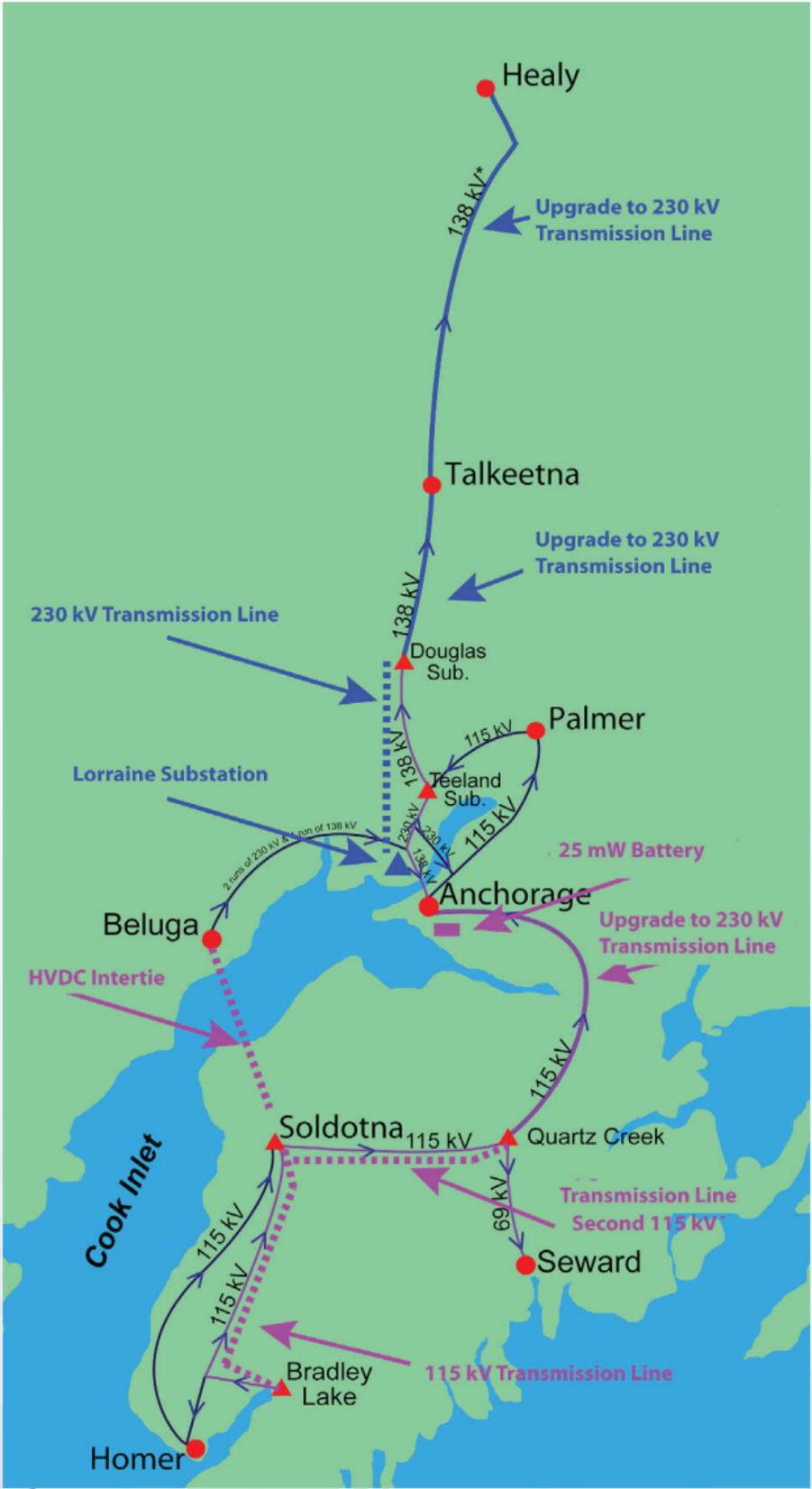
Flexible Gas Storage – Anchorage Area

FY2014 request: \$1.5M

This project includes the installation of a 262 mWh gas storage facility at an Anchorage/Mat-Su area power plant. The gas storage includes storage tanks for compressed natural gas, compressor, compressor building and delivery system. This project will provide a gas supply to facilitate spooling-up additional generation should the line to Kenai suffer an outage.

Total cost: \$18.2M over 2 years.

TRANSMISSION UPGRADE MAP



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