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SUSITNA-WATANA HYDRO

Susitna-Watana Hydroelectric Project
(FERC No. 14241)

Regional Economic Evaluation Study
Study Plan Section 15.5

Initial Study Report

Prepared for

Alaska Energy Authority

SUSITNA-WATANA HYDRO

Clean, reliable energy for the next 100 years.

Prepared by

Northern Economics, Inc. and Veritas Economic Consulting

February 2014 Draft

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LIST OF ACRONYMS, ABBREVIATIONS, AND DEFINITIONS

Abbreviation	Definition
AE	Aurora Energy, LLC
AEA	Alaska Energy Authority
CEA	Chugach Electric Association
CIRI	Cook Inlet Region, Inc.
FERC	Federal Energy Regulatory Commission
GVEA	Golden Valley Electric Association
GWh	gigawatt hour
HAGO	heavy atmospheric gas oil
HEA	Homer Electric Association
ILP	Integrated Licensing Process
kWh	kilowatt hour
ISR	Initial Study Report
MEA	Matanuska Electric Association
ML&P	Anchorage Municipal Power and Light
MW	Megawatt(s)
Project	Susitna-Watana Hydroelectric Project No. 14241
REMI	Regional Economic Models, Inc.
RSP	Revised Study Plan
SPD	study plan determination

EXECUTIVE SUMMARY

Regional Economic Evaluation Study 15.5	
Purpose	This study assesses potential changes in regional economic conditions in the study area resulting from the operation of the proposed Project and the power generated by the Project.
Status	Development of the Regional Economic Models, Inc. (REMI) model is continuing. Information has been compiled on existing generation facilities and historical trends in power generation and sales for the major utilities in the Railbelt region.
Study Components	The Study Plan establishes three primary components to this study: • Describe the effects of the Project on the regional economy resulting from improvements in the reliability of the current electrical power system. • Describe the effects of the Project on the stability of electric prices over time. • Determine the economic effects of the Project's power over time (e.g., will the availability of Watana power attract new industry to the state or enable other industries to expand or commence operation?).
2013 Variances	No variances occurred in the implementation of this Study Plan in 2013.
Steps to Complete the Study	As explained in the cover letter to this draft Initial Study Report (ISR), AEA's plan for completing this study will be included in the final ISR filed with FERC on June 3, 2014.
Highlighted Results and Achievements	Information on current power generation, transmission, and demand in the Railbelt was obtained from the utilities or secondary sources. Data provided for each major Railbelt utility include the service area, installed capacity, and amount and cost of power sold. Progress was made in developing the REMI model assumptions for comparing future regional economic conditions with and without the Project.

1. INTRODUCTION

On December 14, 2012, Alaska Energy Authority (AEA) filed with the Federal Energy Regulatory Commission (FERC or Commission) its Revised Study Plan (RSP) for the Susitna-Watana Hydroelectric Project No. 14241 (Project), which included 58 individual study plans (AEA 2012). Section 15.5 of the RSP described the Regional Economic Evaluation Study. This study focuses on assessing regional economics resulting from the operation of the proposed Project and the power generated by the Project. RSP Section 15.5 provided goals, objectives, and proposed methods for data collection regarding regional economics.

On February 1, 2013, FERC staff issued its study determination (February 1 Study Plan Determination, SPD) for 44 of the 58 studies, approving 31 studies as filed and 13 with modifications. RSP Section 15.5 was one of the 31 studies approved with no modifications.

Following the first study season, FERC's regulations for the Integrated Licensing Process (ILP) require AEA to "prepare and file with the Commission an initial study report describing its overall progress in implementing the study plan and schedule and the data collected, including an explanation of any variance from the study plan and schedule" (18 CFR 5.15(c)(1)). This Initial Study Report on Regional Economic Evaluation Study has been prepared in accordance with FERC's ILP regulations and details AEA's status in implementing the study, as set forth in the FERC-approved RSP (referred to herein as the "Study Plan").

2. STUDY OBJECTIVES

The goal of this study is to assess potential changes in regional economic conditions in the study area resulting from the operation of the proposed Project and the power generated by the Project. The study objectives are established in RSP Section 15.5.1 and include the following:

- Describe the effects of the Project on the regional economy resulting from improvements in the reliability of the electrical power grid.
- Describe the effects of the Project on the stability of electric prices over time.
- Determine the economic effects of the Project's power over time.

3. STUDY AREA

As established by RSP Section 15.5.3, the study area encompasses the region where the economic impacts of the new energy source provided by Project operations will be concentrated. This region is referred to as the Railbelt, which includes the Fairbanks North Star Borough, Denali Borough, Matanuska-Susitna Borough, Municipality of Anchorage, and Kenai Peninsula Borough.

4. METHODS AND VARIANCES IN 2013

4.1. Data Collection and Analysis

AEA implemented the methods as described in the Study Plan (RSP Section 15.5.4) with no variances. Information on current power generation, transmission, and demand in Alaska's Railbelt was obtained from the utilities or secondary sources and analyzed.

Information was compiled on existing generation facilities and historical trends in power generation and sales for the major utilities in the Railbelt region. This region is defined as the service areas of six interconnected utilities: Chugach Electric Association, Anchorage Municipal Light & Power, Golden Valley Electric Association, Matanuska Electric Association, Homer Electric Association, and Aurora Energy, LLC. The data collected to date provide a general description of each utility in terms of the service area, primary fuels, installed capacity, and amount and cost of power sold. Primary online data sources were the U.S. Energy Information Administration's websites for Form EIA-923 and Form EIA-826 information. The survey Form EIA-923 collects detailed annual electric power data on electricity generation at the power plant and prime mover level, while the survey Form EIA-826 collects annual retail sales of electricity and associated revenue from a statistically chosen sample of electric utilities in the United States. These data are current through 2012.

The forecast of socioeconomic conditions with and without the Project will be based in part on estimates derived from a data and software program created by REMI (Regional Economic Models, Inc.). The REMI model assumptions are being obtained from an information collection process aimed at developing a consensus about long-term modeling assumptions with and without the Project. Progress was made in developing the model assumptions by conducting interviews with industry and government representatives who have experience and expertise in the state's leading industries and economic policy areas. All key informants were selected for their first-hand knowledge about Alaska's current socioeconomic environment, and for their understanding of the socioeconomic opportunities and obstacles that the state may encounter in the future. An attempt was made to obtain a diverse set of representatives with different backgrounds and from different groups or sectors. This diversity provides a broad range of perspectives. In addition, interviews were conducted with business representatives in the Railbelt region to ascertain the potential for changes in business opportunities as a result of the new energy source provided by the Project. The categories of organizations interviewed and examples of interview questions are presented in Attachment 15-1 of the RSP.

4.2. Variances

No variances occurred when implementing the Study Plan in 2013.

5. RESULTS

As described in Section 4 above, efforts in 2013 focused primarily on collecting data on current power generation, transmission, and demand in Alaska's Railbelt. These data will provide context for changes in regional economic conditions resulting from the power-related effects of

the Project. The preliminary results of this effort appear in Section 5.1. In addition, the study team made progress in developing the REMI model. The preliminary results of this effort appear in Section 5.2.

5.1. Description of Current Power Generation, Transmission, and Demand

This section outlines information on existing generation facilities and historical trends in power generation and sales for the major utilities in the Railbelt region. This region is defined as the service areas of six interconnected utilities, including: Chugach Electric Association (CEA), Anchorage Municipal Light & Power (ML&P), Golden Valley Electric Association (GVEA), Matanuska Electric Association (MEA), Homer Electric Association (HEA), and Aurora Energy, LLC (AE). Four of these utilities are cooperatives (CEA, GVEA, MEA, and HEA), one is a municipal utility (ML&P), and one is a private company (AE). Together, these utilities accounted for approximately 77 percent of the electricity produced statewide in 2011 (Fay et al. 2012).

The City of Seward Electric System currently has three diesel generators in operation, each with capacities of 2.5 megawatts (MW), and one diesel generator with a capacity of 2.9 MW. In this analysis, these small existing diesel generators are not included because the City of Seward is a full requirements customer of Chugach and the existing diesels are mainly used for back-up. In addition, Copper Valley Electric Association serves two small communities in the Railbelt region, Lake Louise and Nelchina.

Table 5.1-1 provides a general description of these utilities in terms of power generation facilities, primary fuels, and electricity net generation. As summarized in Figure 5.1-1, natural gas is used to generate most of the electricity for the Railbelt, but the region also has significant coal and hydroelectric capacity.

Railbelt utilities consume all of the coal, most of the natural gas, and around half of the fuel oil used for power generation in Alaska (Table 5.1-2). With exception of GVEA, the utility that provides service in the Fairbanks area, the fuel oil is used for stand-by generation. GVEA depends significantly on both fuel oil and coal for power generation; about 99 percent of all the fuel oil used in the Railbelt is consumed by GVEA, of which 71 percent is naphtha, 24 percent heavy atmospheric gas oil (HAGO), and 5 percent distillate and residual fuel oil (Fay et al. 2012).

Among Railbelt utilities, the prime mover type with the largest share of installed capacity is combustion gas turbines and combined cycle gas turbines, which together account for about 80 percent of net generation. Hydroelectric turbines and steam turbines had shares of 10 percent and 7 percent, respectively. Finally, wind turbines and internal combustion generators were the least common prime movers, with shares of 2 percent or less.

As expected, most of the electricity sales in Alaska are by Railbelt utilities (Table 5.1-3). However, the annual average use per residential customer is higher in the Southeast and North Slope regions of the state. The North Slope region consumption is high because some communities benefit from natural gas and the borough has a low flat rate structure per kilowatt

hour (kWh) for all their communities. The Southeast region benefits from lower rates due to high hydropower production financed in part with public funds (Fay et al. 2012). Railbelt utilities accounted for about 77 percent of the electricity sold to commercial customers in Alaska. In 2011, the North Slope and Railbelt regions had the highest annual average use per commercial customer of about 71,085 kWh and 70,987 kWh, respectively (Fay et al. 2012).

Figure 5.1-2 compares average annual residential electricity rates across Railbelt utilities from 2005 through 2012. CEA's rate showed the least volatility during that time period, while ML&P's customers enjoyed the lowest rate due primarily to lower fuel costs. ML&P's cost for gas, which comes from its one-third ownership in the Beluga River Gas Field, is around half of what other utilities pay privately owned producers of Cook Inlet natural gas (Bradner 2011). The comparatively high rate paid by GVEA customers reflects the utility's heavy reliance on oil-fired generation. Rates have increased with rising crude oil prices and the subsequent increase in the price of refined petroleum products.

Figure 5.1-3 expands the comparison of Railbelt utilities by identifying the fuel/purchased power and base rate (non-fuel) components of a residential electrical bill effective fourth quarter 2009 to 2012. In 2012, fuel/purchased power made up about half of a typical GVEA residential bill, but only 17 percent of a ML&P bill. Due to the rise in the price of fuel, especially diesel fuel, fuel costs have come to represent a much larger portion of consumers' electricity bills, as compared to utilities' base rates, which have remained relatively steady. However, some utilities have periodically raised base rates to help fund major capital investment programs.

In comparison to the business and operating environment of the utility industry in the U.S., the Railbelt region is unique. The overall size of the Railbelt region is small when compared to other utilities or areas. The total combined peak load of all six utilities is approximately 1,600 MW. When compared to the peak loads of other utilities throughout the U.S., a combined "Railbelt utility" would still be relatively small. As an example, many electric utilities have single coal or nuclear plants that exceed 900 MW of capacity (based on Energy Information Administration plant data, there are 100 generating units in the U.S. with nameplate capacity greater than 900 MW) (Black & Veatch 2008).The Railbelt electric transmission grid is also unique. It has been described as a long straw, as opposed to the integrated, interconnected, and redundant grid that is in place throughout the lower-48 states. This characterization reflects the fact that the Railbelt electric transmission grid is an isolated grid with no external interconnections to other areas and that it is essentially a single transmission line running from Fairbanks to the Kenai Peninsula, with limited total transfer capabilities and redundancies. As a consequence, each Railbelt utility is required to maintain much higher generation reserve margins than elsewhere in order to ensure reliability in the case of a transmission grid outage (Black & Veatch 2008). The leading cause of outages among Railbelt utilities is associated with the transmission and distribution system. However, while customers of Railbelt utilities lose power for an estimated 2 to 3 hours per year (Thibert 2013), that still compares favorably with the nationwide annual average of 214 minutes of outages per customer (Apt et al. 2006).

The following sections provide additional information on each major Railbelt utility, including the service area, installed capacity, and amount and cost of power sold.

Chugach Electric Association

In 2011, the net generation of the CEA reached over 2.3 million MWhs, nearly half of the total net generation among major utilities. In 2012, the utility generated approximately 88 percent of its power from Cook Inlet natural gas, 10 percent from hydro and 1 percent from wind (wind comprises about 4 percent of retail energy) (Chugach Electric Association 2013). More than 90 percent of the electricity generated or purchased by CEA prior to 2013 came from the Beluga River Power Plant, which is powered by combined cycle and natural gas and has a power rating of 374.4 MW. Gas for the facility is delivered from the nearby Beluga River Gas Field, which is jointly owned by ConocoPhillips, ML&P, and Hilcorp Energy, and via a Hilcorp Energy pipeline from Granite Point. Two other CEA facilities that generate electricity using natural gas are the International Airport Road Power Plant (46.3 MW) and Southcentral Power Plant (203.9 MW). Since commissioning of the new Southcentral Power Plant, which is more efficient than the older generators at Beluga, that plant has been used to generate a major portion of power requirements for CEA and MLP.

One of CEA's facilities, the Cooper Lake Power Plant (19.4 MW), is hydro-powered. CEA also purchases the largest share of the power generated by the 126-MW Bradley Lake Hydroelectric Plant near Homer. This facility provides 5 to 10 percent of the annual Railbelt electric power need and is most important to the Railbelt electric system during the cold winter months when demand for both electric power and natural gas for heat is at its highest. CEA and other utilities limited by available natural gas are able to use Bradley Lake Hydroelectric Plant power to meet the high electric demand (AEA 2013). CEA's share of power generated by the Eklutna Lake Hydroelectric Plant is 30 percent, up to an 11.7 MW maximum

In 2011, CEA signed an agreement with Cook Inlet Region Inc. (CIRI), an Alaska Native regional corporation, to purchase power from CIRI's 17.6-MW wind turbine project on Fire Island, 3 miles off the coast of Anchorage. The facility began operating in late 2012, and it offsets approximately 0.5 billion cubic feet of CEA's natural gas consumption for power generation (Fire Island Wind LLC 2013). However, that gas would have cost CEA about $2.4 million, while the wind power cost the utility $4.6 million. CEA retail customers pay a surcharge for the wind energy, amounting to about $1.22 on a typical monthly residential bill (Bradner and Bradner 2013). CIRI has started a $45 million expansion of the wind project, which is expected to add 11 more turbines by 2015.

Figure 5.1.1-1 shows CEA's volume and value of electricity sales by customer. Prior to 2009, CEA purchased natural gas from four separate suppliers, and as gas supplies in Cook Inlet declined, the price went up. From 2009 to the present, the price CEA paid was based on either a basket of Lower 48 Production Area price points, as published in Platts Gas Daily, or on gas futures on the New York Mercantile Exchange. U.S. gas prices have decreased since 2009 due primarily to a large expansion of domestic production following improvements in drilling technology that opened immense shale gas fields. As a result, CEA's electricity rates have also decreased. Residential and commercial sales declined in the late-2000s, possibly reflecting increased energy efficiency. For example, during the past several years the Alaska Housing Finance Corporation has offered programs to promote the energy efficiency of existing and newly constructed homes.

Municipal Light and Power

ML&P serves approximately 30,000 residential and commercial customers in a 20-square-mile area in the northern portion of the Municipality of Anchorage, including the downtown central business district, Mountain View, East Anchorage, Midtown, and nearby military bases on an interruptible basis (Posey and Griffith 2003). The utility owns and operates two generation facilities that utilize seven natural gas-fired turbines and one heat-recovery turbine. The Hank Nikkels Plant 1 has a capacity of 102.9 MW, while the George M. Sullivan Plant 2 has a capacity of 266.3 MW. Five of the seven turbines in these facilities are capable of using No. 2 fuel oil as alternate fuel, and ML&P stores nearly 1 million gallons of diesel fuel as reserve fuel in the event of a natural gas shortage (Municipal Light and Power 2013). In terms of gas supply, ML&P has an advantage over other Railbelt utilities through its one-third Beluga River Gas Field ownership (Harbour 2008). It has a secure gas supply for its two power plants through 2017 (Posey and Griffith 2003). ML&P also owns 53.33 percent of the 44.4-MW Eklutna Lake Hydroelectric Plant and has rights to 25.9 percent of the power supplied by the Bradley Lake Hydroelectric Plant. ML&P is currently expanding the generation facilities at its George M. Sullivan Plant 2. Three gas turbines, which will provide 120 MW of power, are scheduled to be installed in 2015.

Figure 5.1.2-1 shows ML&P's volume and value of electricity sales by customer. Power rates have been relatively stable due to ML&P's partial ownership of the Beluga River Gas Field. The rate increase in 2010 is likely due to the costs of maintaining the gas field, including the installation of a new compressor to increase compression capacity. The growth in commercial sales in the mid-2000s occurred as a result of Elmendorf Air Force Base agreeing to purchase all of its bulk electric power requirements from ML&P.

Golden Valley Electric Association

GVEA serves nearly 100,000 Interior residents from Cantwell north along the Parks Highway and from Fairbanks south to Fort Greely along the Richardson Highway. In addition to residential customers, the utility provides electrical power to the Ground-based Missile Defense System at Fort Greeley, Alyeska's Pump Station 9, the Pogo gold mine, and the Fort Knox gold mine near Fairbanks.

The North Pole Power Plant generates nearly three-quarters of GVEA's electricity using combined cycle and gas turbines. Since the 1970s, GVEA has relied primarily on refined crude oil products from Fairbanks refineries using crude oil originating from the Trans-Alaska Pipeline System. Currently, GVEA's 181-MW power plant in North Pole burns HAGO produced at the oil refineries located in North Pole. The North Pole Expansion Plant, which adds 60 MW of generation at the North Pole Power Plant site, burns naphtha produced at the nearby Flint Hills refinery (Golden Valley Electric Association 2009a). Steam is GVEA's second largest prime mover source. Electricity generation from steam takes place at the Healy Power Plant, which is located adjacent to the Usibelli Coal Mine and is coal-fired. GVEA owns two diesel-fired power plants, the Zehnder Power Plant (42.2 MW) and Delta Power Plant (23.1 MW). In 2012, GVEA established the Eva Creek Wind Project consisting of 12 turbines with nearly 25 MWs of capacity; it is the largest wind project in Alaska.

To further satisfy customer demands, GVEA also purchases power from the Alaska Energy Authority (16.9 percent of the power generated Bradley Lake Hydroelectric Project, or approximately 20 MW), Aurora Energy (which operates a 27.5-MW coal-fired power plant in Fairbanks), CEA, and ML&P (Regulatory Commission of Alaska Undated). Under contracted terms, the Alaska Energy Authority and Aurora Energy are priority sellers; Bradley Lake energy is take-or-pay, and Aurora Energy is contracted to be base-load "firm" energy. CEA has priority for meeting GVEA's non-firm needs. It has rights to supply two-thirds of GVEA's first 450 gigawatt hours (GWh), and four-fifths of subsequent, non-firm needs (if any). CEA and ML&P compete on the "economy energy spot market" for the remainder of GVEA's non-firm needs. Competitive supply entry is possible for any utility wishing to provide firm or non-firm power, subject to conditions imposed under GVEA's non-firm energy contract with CEA (Regulatory Commission of Alaska Undated).

Figure 5.1.3-1 shows GVEA's volume and value of electricity sales by customer. In general, higher prices of crude oil were transferred to electricity rates, causing economic impacts to GVEA's customers. However, to some extent, the utility's diverse fuel mix helps stabilize costs; for example, the low-cost power from Bradley Lake helps smooth out the peaks and valleys associated with price fluctuations of fossil fuels (Golden Valley Electric Association 2009b). Moreover, in recent years lower fuel costs, together with contracts to buy wholesale gas-fired power from CEA, have further helped stabilize rates. The Alaska Intertie, a 170-mile long intertie owned by Alaska Energy Authority that connects Anchorage area utilities (CEA and ML&P) with GVEA, allows GVEA to take advantage of low cost natural gas (plus hydro and coal) generation. However, the capacity of the line is currently limited to increases in GVEA's industrial sales due to the expansion of mining activities in the Fairbanks area, including the opening of the Fort Knox gold mine in the late-1990s and the Pogo gold mine in the mid-2000s. After peaking in 2008, residential sales tapered off. As noted above, residential customers have been able to take advantage of programs offered by the Alaska Housing Finance Corporation to promote energy efficiency. While these energy-saving programs were available statewide, relatively high electricity rates, combined with the harsh winters of Interior Alaska, made the programs especially attractive to customers in the GVEA service area.

Homer Electric Association

HEA serves about 22,000 member-owners in a 3,166 square-mile service area. Prior to 2014, HEA had a wholesale purchase power agreement with CEA to purchase power from that utility. While there were other power generation sources, including HEA's Nikiski Power Plant (37.9 MW), the Bernice Lake Power Plant (76.7 MW) that HEA purchased from CEA in 2011, and the state-owned Bradley Lake Hydroelectric Plant (HEA's share is 14.8 MW), these HEA resources were operated by CEA as part of its overall generation portfolio (Homer Electric Association 2009).

After the agreement with CEA expired at the end of 2013, HEA began producing its own power under its Independent Light program. The cornerstone of the program is the Nikiski Combined Cycle Plant, consisting of the Nikiski Power Plant gas turbine and a newly-installed turbine powered by steam produced from exhaust heat generated by the gas turbine. The capacity of the Nikiski Combined Cycle Plant is 80 MW, and working in concert with HEA's share of the Bradley Lake Hydroelectric Plant, the facility covers all of HEA's power needs. In addition,

HEA recently installed a 48-MW combustion turbine at the utility's property in Soldotna. This facility, together with the Bernice Lake Power Plant, is used to provide reserve power. To fuel its power facilities, HEA has secured contracts for natural gas supply with Hilcorp Energy through March 31, 2016 (Smith 2013).

Figure 5.1.4-1 shows HEA's volume and value of electricity sales by customer. Power rates closely tracked those of CEA because of the power purchase agreement between the utilities. The decline in industrial sales beginning in 2008 is due largely to the closure of the Agrium ammonia-urea fertilizer plant in Nikiski as a result of natural gas price and availability issues.

Matanuska Electric Association

MEA serves the Matanuska Borough and the community of Chugiak-Eagle River within the Municipality of Anchorage. Under a current contract, which expires on December 31, 2014, MEA must purchase all of its power from CEA, and CEA is required to meet all of MEA's requirements. MEA is CEA's largest customer, accounting for nearly 25 percent of all power sold. MEA's shares in the Eklutna Lake (16.67 percent) and Bradley Lake (13.8 percent) hydroelectric projects have been temporarily assigned to CEA to manage in the interest of MEA.

To meet its power needs after the electricity supply contract with CEA expires, MEA is constructing a new 170-MW power plant northeast of the Eklutna Interchange on the Glenn Highway. This dual-fuel facility will operate primarily on natural gas, but it will be able to switch to diesel. The plant is expected to be operational by 2015 and will produce about 90 percent of MEA's total power output, with the remaining portion coming from the Bradley Lake Hydroelectric Plant. MEA has negotiated a natural gas supply contract with Hilcorp Energy that would begin in 2015 and run through to March 2018.

Figure 5.1.5-1 shows MEA's volume and value of electricity sales by customer. As with HEA, the electricity rates of MEA closely followed those of CEA because of the power purchase agreement between the utilities.

Aurora Energy, LLC

Aurora Energy operates a 32-MW coal-fired power plant in Fairbanks. All of its electricity is sold to GVEA under a long-term contract.

5.2. REMI Model Development

In 2013, progress was made in developing the model assumptions by conducting interviews with industry and government representatives who have experience and expertise in the state's leading industries and economic policy areas. A description of the persons and organizations included in the interview process and the information collected is available in Appendix A.

6. DISCUSSION

Data collection was adequate in 2013 to describe current power generation, transmission, and demand in the Railbelt. These data will provide context for changes in regional economic conditions resulting from the power-related effects of the Project. The primary data source was the U.S. Energy Information Administration, which provides online data current through 2012. Efforts are currently underway to collect data for future conditions under the with and without Project scenarios, including changes in generation facilities and fuels, megawatt hours sold, and sales price by customer category.

The assumptions for the REMI model are being obtained from an information collection process aimed at developing a consensus about reasonably foreseeable future economic activities in Alaska with and without the Project. Progress was made in developing the model assumptions by conducting interviews with industry and government representatives who have experience and expertise in the state's leading industries and economic policy areas.

7. COMPLETING THE STUDY

[As explained in the cover letter to this draft Initial Study Report, ISR, AEA's plan for completing this study will be included in the final ISR filed with FERC on June 3, 2014.]

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9. TABLES

Table 5.1-1. Railbelt Utilities Power Generation Facilities and Fuel Types

Plant Name	Plant Owner (percent ownership)	Net Generation (MWh)[3]					
		Gas	Coal	Oil	Hydro	Wind	Total
Beluga River	CEA	2,009,571					2,009,571
Cooper Lake	CEA				77,589		77,589
International Airport Road	CEA	56,163					56,163
Fire Island	Cook Inlet Region, Inc.[1]					50,092	50,092
Hank Nikkels 1	ML&P	54,582		51			54,633
George M. Sullivan 2	ML&P	1,005,890		1,199			1,007,089
Delta Power	GVEA			-32			-32
Zehnder	GVEA			10,667			10,667
Healy	GVEA		215,310	114			215,424
North Pole	GVEA		423,592	167,379			590,971
Eva Creek	GVEA					65,443 (Jan./13-Nov./13)	65,443
Chena 5	AE		201,405				201,405
Bernice Lake	HEA	78,818					78,818
Nikiski	HEA	239,080					239,080
Seldovia	HEA			201			201
Southcentral	CEA (70%), ML&P (30%)	607,739 (Jan./13-Aug./13)					607,739
Eklutna Lake	CEA (30%), ML&P (53.33%), MEA (16.67%)				71,126		71,126
Bradley Lake	Alaska Energy Authority[2]				397,373		397,373

[1]Cook Inlet Region Inc. sells all the energy from the Fire Island Wind Project to CEA.

[2]Alaska Energy Authority distributes energy from the Bradley Lake Hydroelectric Plant as follows: CEA (30.4%); ML&P (25.9%); GVEA (16.9 %); MEA (13.8%); HEA (12%); Seward Electric Utility (1%)

[3] Data are for 2012 unless otherwise noted.

Source: U.S. Energy Information Administration (2013a)

Table 5.1-2. Railbelt Utilities Fuel Use for Power Generation, 2011

	Fuel Oil (Barrels)	Gas (Mcf	Coal (Short Tons)
	821,105	40,181,450	397,367
Percent of Statewide Total	49.8%	98.2%	100.0%

Source: Fay et al. (2012)

Table 5.1-3. Railbelt Utilities Sales, 2011

	Residential	Commercial	Other[1]	Total (MWh)
	1,640,126	2,125,764	1,050,834	4,817,024
Percent of Statewide Total	76.6%	77.1%	76.2%	76.7%

[1] Other includes sales to community and governmental facilities and industrial customers.

Source: Fay et al. (2012)

10. FIGURES

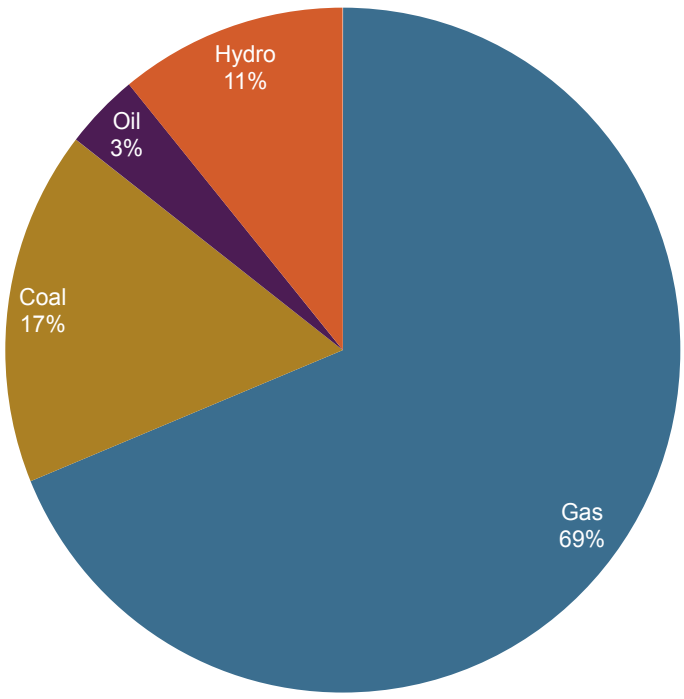

Figure 5.1-1. Railbelt Utilities Net Generation by Fuel Type

Source: U.S. Energy Information Administration (2013a)

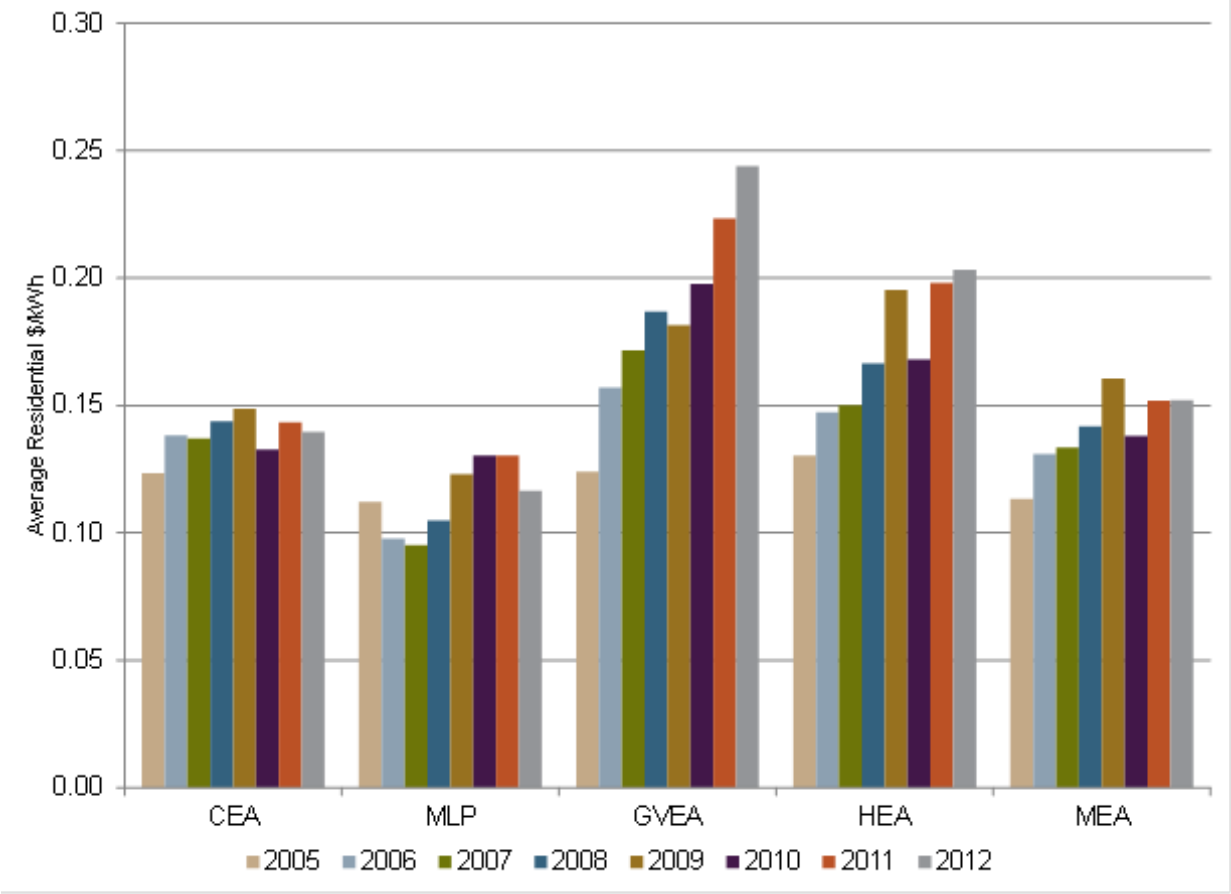

Figure 5.1-2. Average Annual Residential Electricity Rates by Utility, 2005-2012

Source: U.S. Energy Information Administration (2013b)

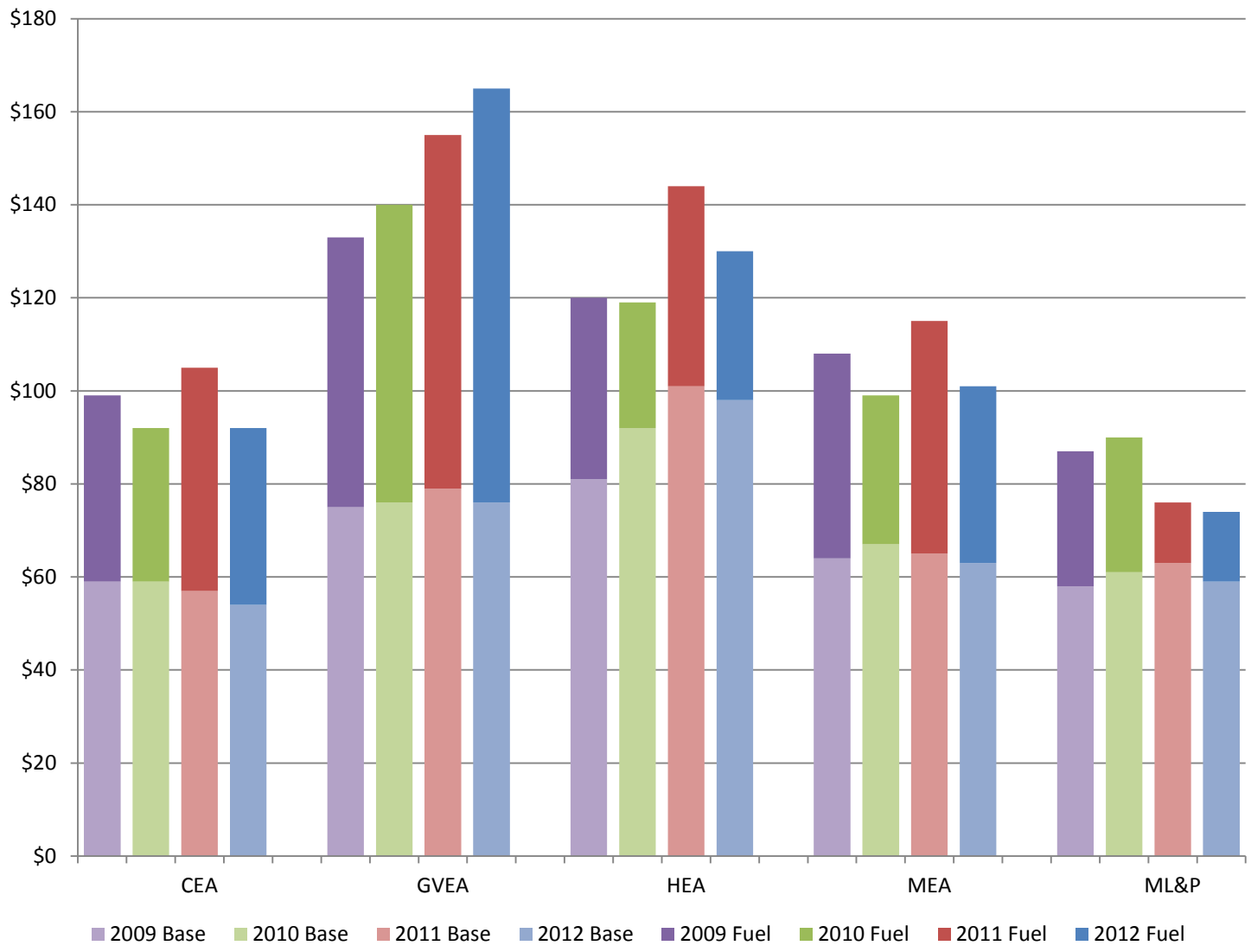

Figure 5.1-3. Base Rate and Fuel and Purchased Power Components of a Residential Electrical Bill by Railbelt Utility, Fourth Quarter 2009-2012

Source: Chugach Electric Association (2009; 2010; 2011; 2012)

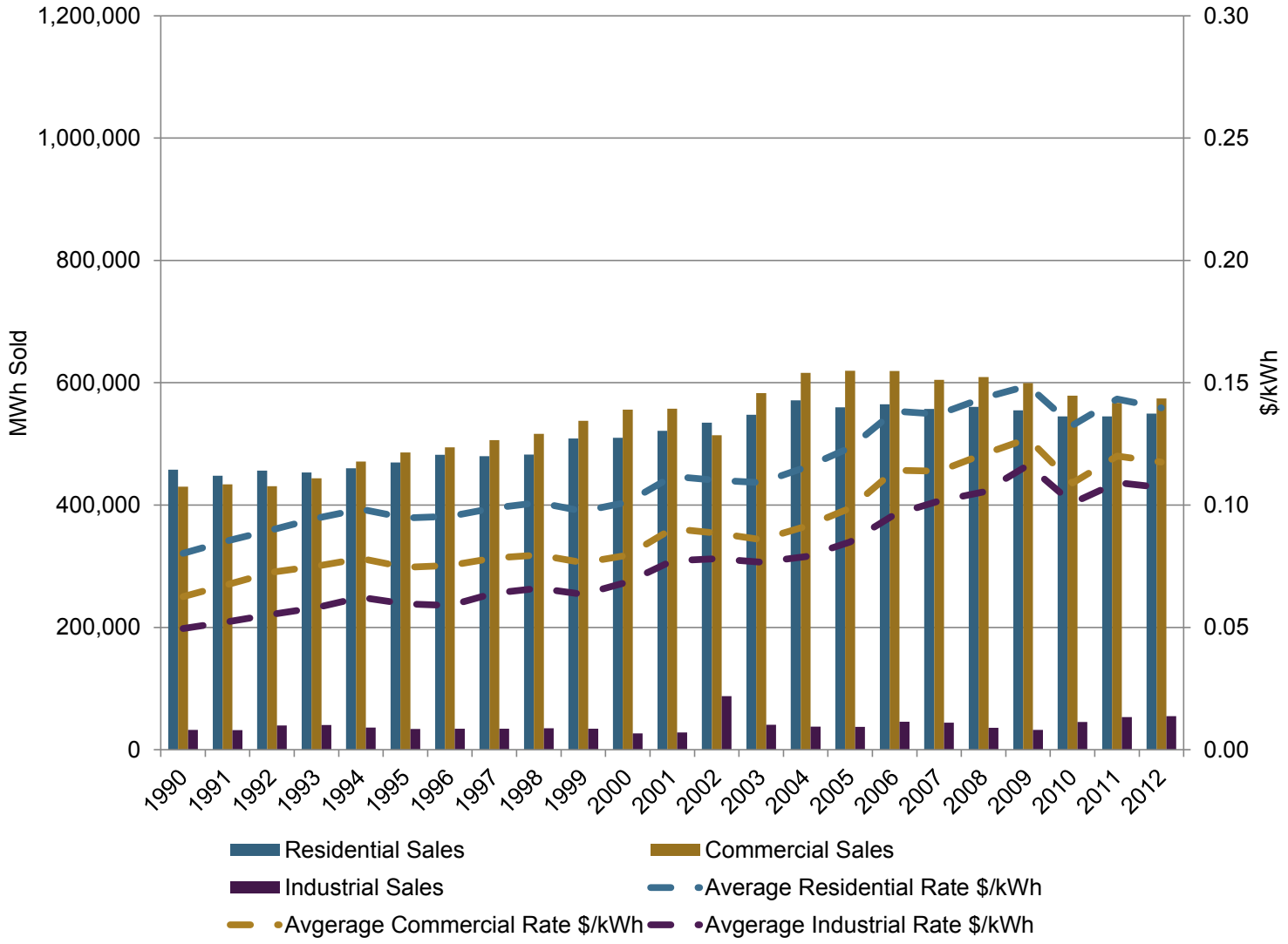

Figure 5.1.1-1. Amount and Cost of Power Sold by Chugach Electric Association, 1990-2012

Source: U.S. Energy Information Administration (2013b)

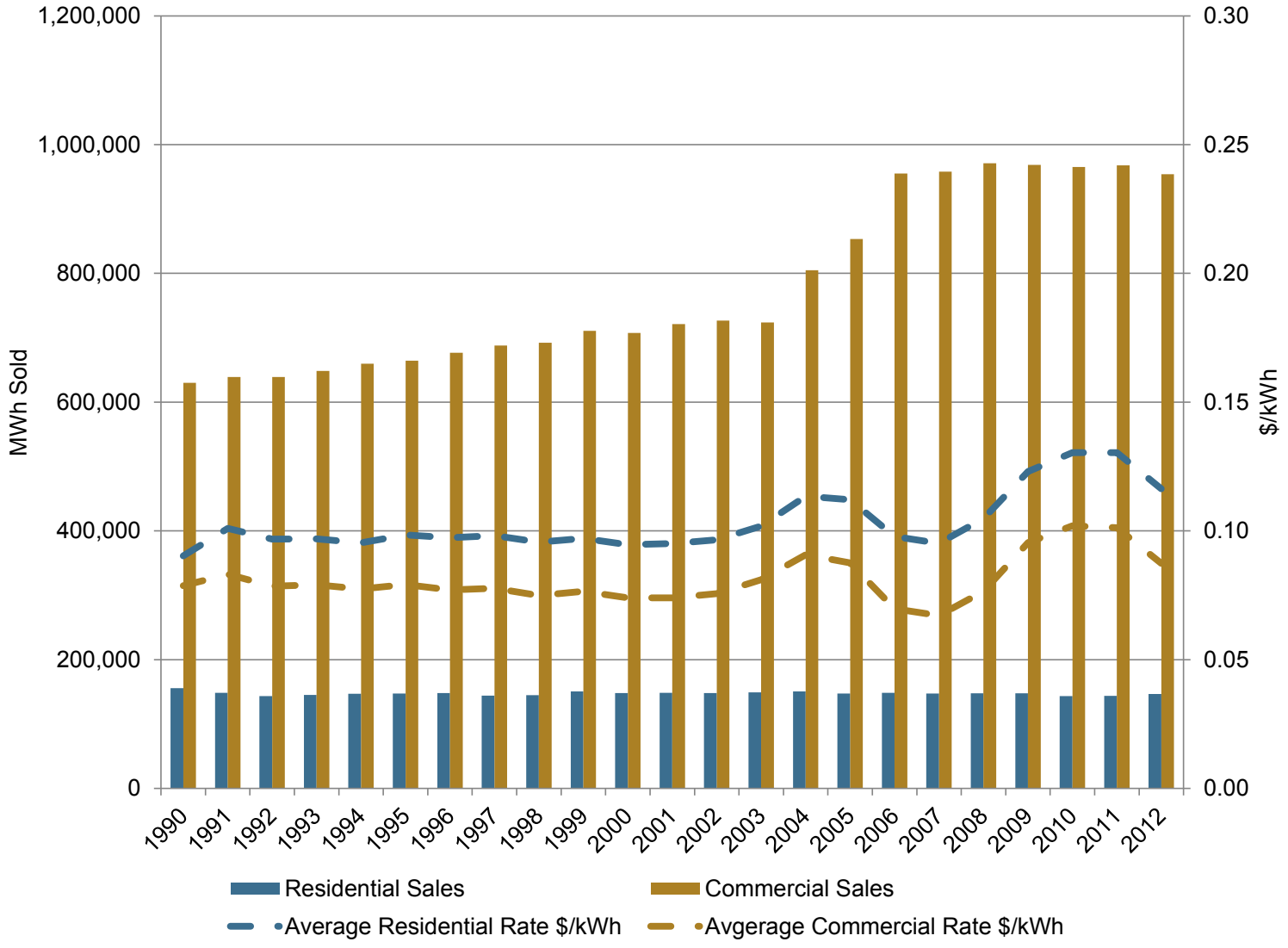

Figure 5.1.2-1. Amount and Cost of Power Sold by Municipal Light and Power

Source: U.S. Energy Information Administration (2013b)

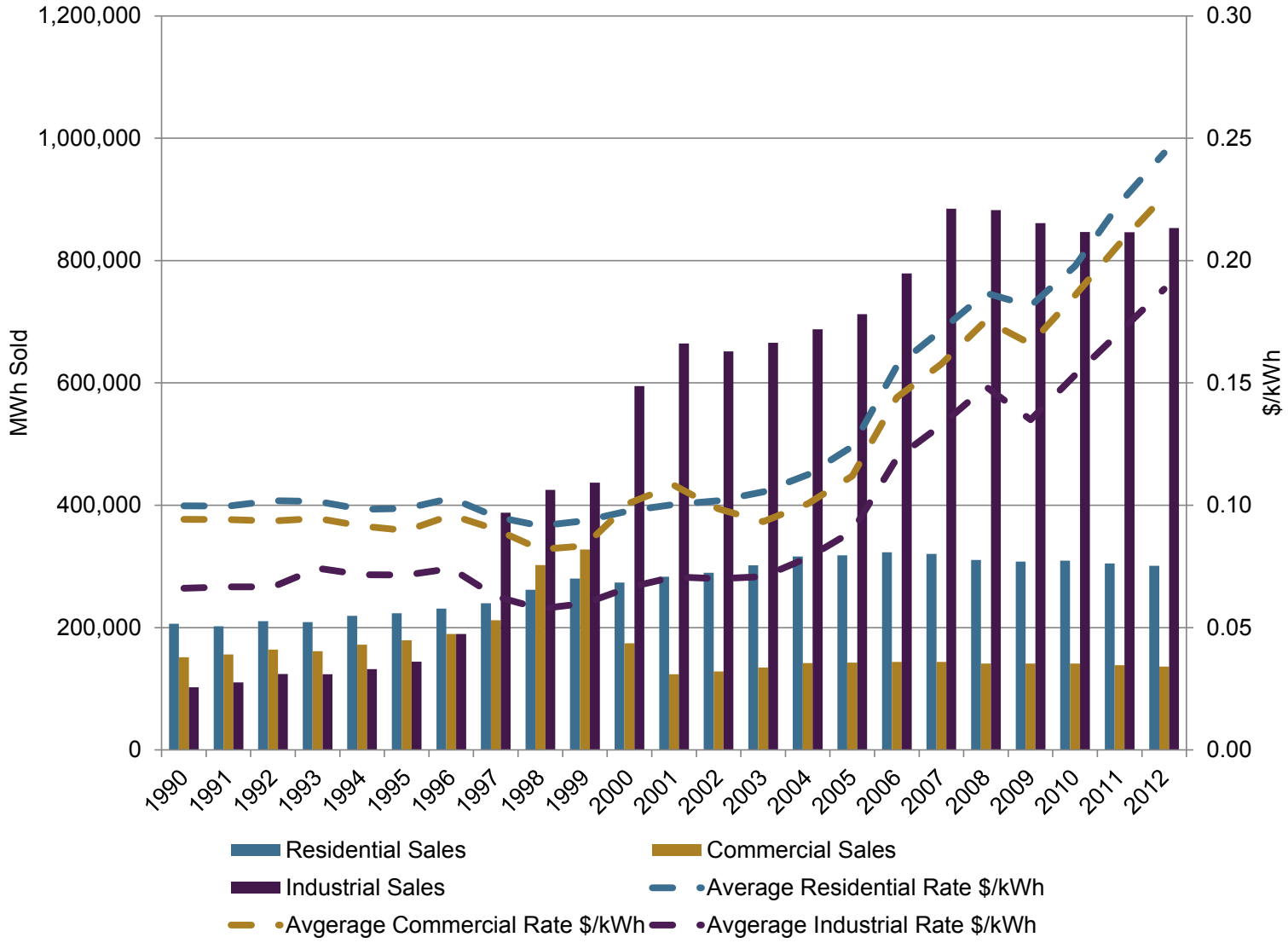

Figure 5.1.3-1. Amount and Cost of Power Sold by Golden Valley Electric Association

Source: U.S. Energy Information Administration (2013b)

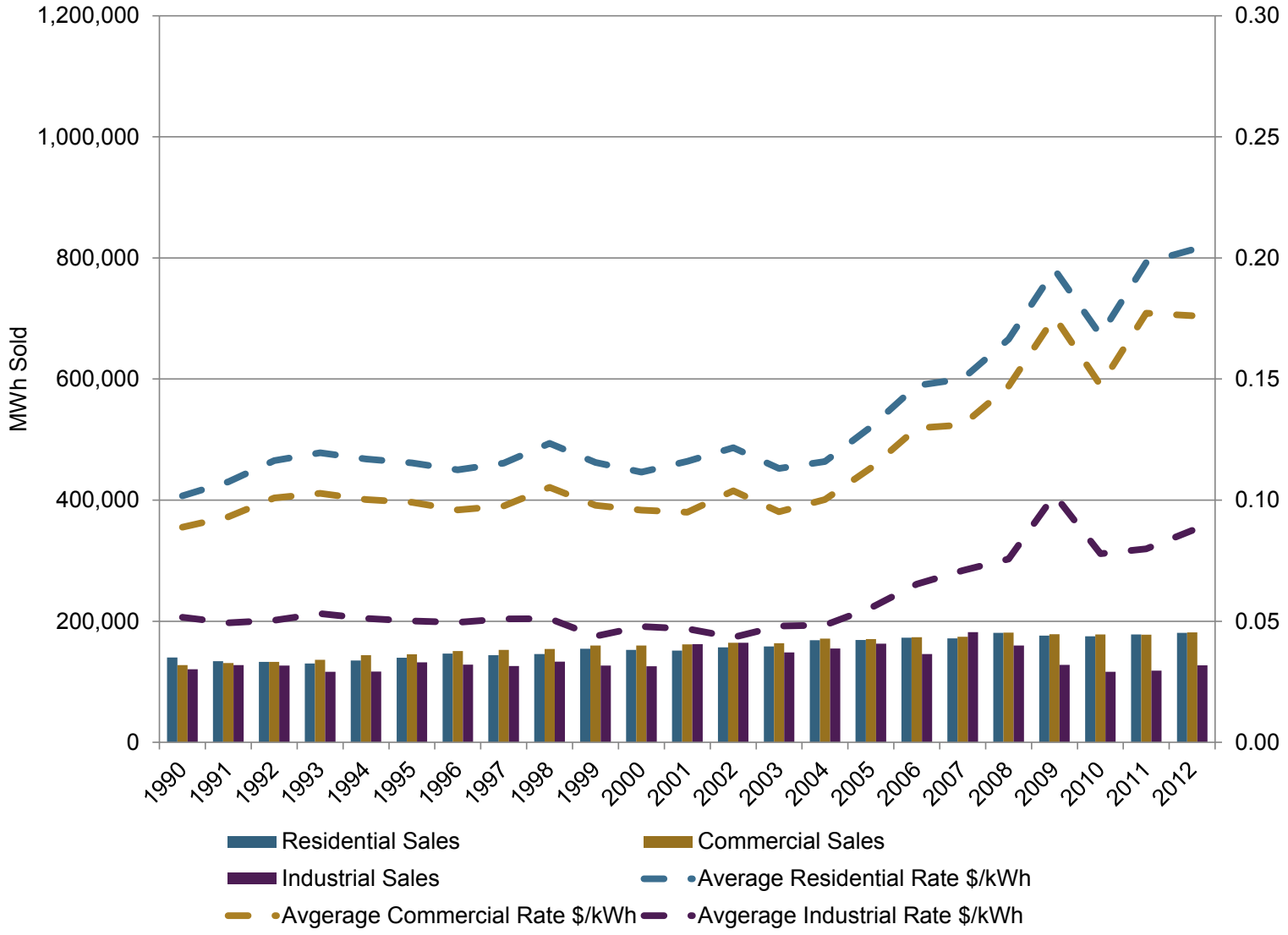

Figure 5.1.4-1. Amount and Cost of Power Sold by Homer Electric Association

Source: U.S. Energy Information Administration (2013b)

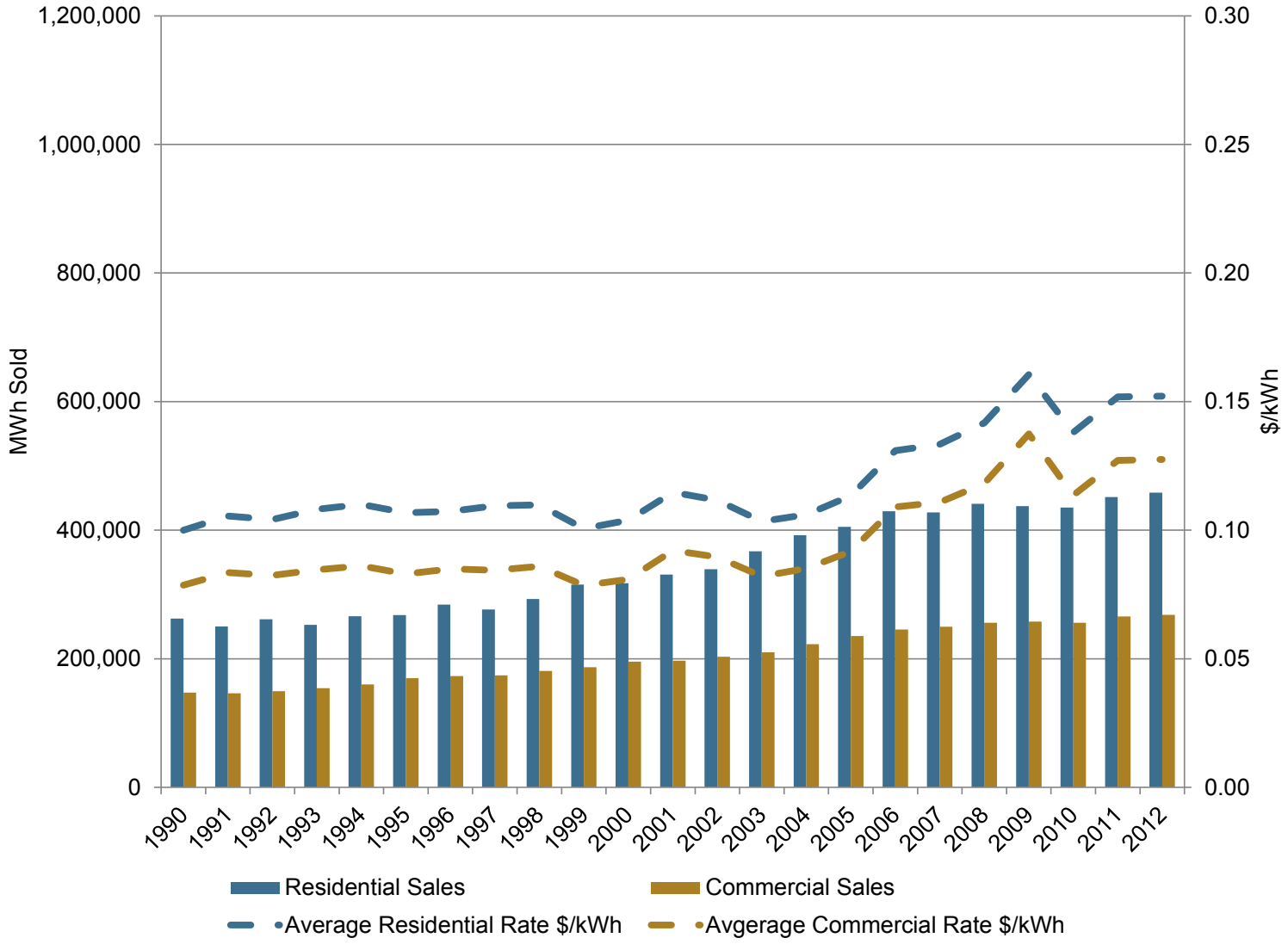

Figure 5.1.5-1. Amount and Cost of Power Sold by Matanuska Electric Association

Source: U.S. Energy Information Administration (2013b)

APPENDIX A: TECHNICAL MEMORANDUM ON LONG-TERM MODELING ASSUMPTIONS

Plan for Unanticipated Discovery of Cultural Resources and Human Remains

Susitna-Watana Hydroelectric Project

FERC No. 14241

Alaska Energy Authority

[Review Draft: 6/20/12]

Appendix A

PLAN FOR UNANTICIPATED DISCOVERY OF CULTURAL RESOURCES AND HUMAN REMAINS DURING THE 2012 SUSITNA-WATANA HYDROELECTRIC PROJECT FIELD INVESTIGATIONS

(Provisional – June 20, 2012)

The first part of this plan (pages 1-3) is addressed to non-cultural resource contractors and other personnel involved with the Susitna-Watana Hydroelectric Project and establishes procedures in the event that unreported or unanticipated cultural resources and/or human remains are found in the field. The field reporting procedures differ depending on: a) whether cultural materials or human remains are encountered; and b) whether the discoverers are involved in a non-destructive effort or whether ground disturbance is involved. Reports of finds will then be forwarded by the Cultural Resources Program or Study Lead as per the remainder of this plan according to c) whether the finds are on federal, state, or private land[1]. Prior to fieldwork, AEA and contracted personnel will receive environmental training including the following guidance for identifying and reporting cultural resources or human remains discovered in the field. This plan briefly describes cultural resources in the study area, how to distinguish them from insignificant items and trash, and what to do if you find them during your fieldwork (all "ifs" are underlined).

Cultural Resources in the Study Area

The general study area contains historic and prehistoric remains going back as much as 10,000 years, and over 250 sites are known from previous studies. Of those, about 90% had stone tools and other prehistoric artifacts, about 10% were historic sites consisting of building ruins or scatters of commercially manufactured items (metal cans, bottles, etc.), and only a couple were fossil discoveries (animal or plant remains). The more recent prehistoric sites are from the Athabascan Indians who inhabited the area historically and hold the majority of the area's Native place names in their linguistic dialect -- Ahtna, while the older sites fade into a more generalized adaptation shared by most of Alaska's ancient interior peoples. Historic sites in the Susitna-Watana area reflect remote land use like mining, prospecting, hunting, trapping, and recreational pursuits, in addition to simple homesteading.

How to Distinguish Cultural Resources

Prehistoric sites most commonly contain stone tools, which are the main indicator for field personnel. Rocks free of flaws that fracture easily and predictably (like flint or obsidian) were typically struck and pressured into form, resulting in tools and discarded flakes with distinctively faceted surfaces – shallow concave scars on tools as well as the corresponding positive bulbs on removed flakes (imagine the rippled conical chunk of glass your son, daughter, – or you – once popped out of a plate glass window with a BB gun). This is the major diagnostic you need to have in mind for prehistoric sites. Discriminating between an artifact and a naturally shattered rock relies a lot on context. A few suspicious stone shards among a rocky talus slope of identical mineralogy are probably not cause for concern. An interesting multi-flaked sharp stone plus a few others nearby (perhaps with detachment bulbs) on a flat overlook would more likely be a cultural

[1] As set forth by the National Historic Preservation Act (NHPA), as amended (16 USC 470) and implementing regulations (36 CFR 800), Archaeological Resources Protection Act (ARPA), Native American Graves Protection and Repatriation Act (NAGPRA) and Alaska Statutes 11.46.482 (a)(3), 12.65.5, 18.50.250, and 41.35.200.

occurrence. Many of these locales have already been found and recorded as formal archaeological sites; likely more remain to be discovered.

Historic sites can have more variability than prehistoric sites in terms of surface and subsurface features and their degree of preservation. Building ruins ranging from roofed examples to those fast entering the archaeological record are part of the cultural resource inventory. Scatters of metal cans and glass bottles legally can be cultural resources, too, if they are 50 or more years old (using that criterion, hypothetically, archaeologist Ivar Skarland's field camp from his 1953 investigations of the then-proposed Devils Canyon dam impoundment could be historically significant). Unvegetated deposits of loose rock at the base of mineralized outcrops – often reddish or yellowish, may indicate historic prospecting, as might the remains of water diversion systems. As with the prehistoric inventory, many of these sites have already been discovered, and likely more remain to be found.

What to Do if You Find Cultural Features or Artifacts

Regardless of whether you are involved in a non-destructive field program or one involving ground disturbance, stop work immediately in the vicinity and don't disturb the features or artifacts further. If you are involved in a ground-disturbing activity then contact immediately either Cultural Resource Program Lead Charles M. Mobley or Study Lead Justin Hays (below). Information you will be requested to provide is primarily description of the finds and location including GPS coordinates. If you are involved in a non-destructive field program, then you are requested to report the description and location of the suspected cultural resource including GPS coordinates to Mobley or Hays within five days. Digital photographs accompanying the report are especially recommended but no photographs or site-specific location information should be released to the press or other individuals other than the Cultural Resource Program or Study Leads. Contact either:

Charles M. Mobley Cultural Resources Program Lead (907) 653-1937 office (907) 632-1933 cell mobley@alaska.net Charles M. Mobley & Associates 200 W. 34th Avenue #534 Anchorage, Alaska 99503	**OR**	Justin Hays Cultural Resources Study Lead (907) 474-9684 office (907) 750-9857 cell jmh@northernlanduse.com Northern Land Use Research, Inc. 234 Front Street Fairbanks, Alaska 99709

How to Distinguish Human Remains

Animal bones are statistically more common than human remains by far, so probabilities favor your find not being human. Ask the biologist or hunter on your crew for an opinion. If the bones are cut or sawn then let's assume they're not human. Human skulls and our all-one-piece jaws are relatively unique and easily identified. For the other bones, try to imagine each one in your body where you think it should fit – does it? If not, it's less likely human.

Context is important. If the bones are scattered around a not-too-old fire ring, for example, then they're likely animal. If they're tumbling out of a rock cairn, they're more likely human.

What to Do if You Find Human Remains

Regardless of whether you are involved in a non-destructive field program or one involving ground disturbance, stop work immediately in the vicinity and don't disturb the bones further. Contact immediately either Cultural Resource Program Lead Charles M. Mobley or Study Lead Justin Hays, by telephone or email (below). Information you will be requested to provide is primarily description of the bones and location including GPS coordinates. Digital photographs accompanying the report are especially recommended but no photographs or site-specific location information should be released to the press or other individuals other than the Cultural Resource Program or Study Leads. Contact either:

Charles M. Mobley
Cultural Resources Program Lead
(907) 653-1937 office
(907) 632-1933 cell
mobley@alaska.net
Charles M. Mobley & Associates
200 W. 34th Avenue #534
Anchorage, Alaska 99503

OR

Justin Hays
Cultural Resources Study Lead
(907) 474-9684 office
(907) 750-9857 cell
jmh@northernlanduse.com
Northern Land Use Research, Inc.
234 Front Street
Fairbanks, Alaska 99709

Forwarding Reports of Discoveries from the Field

After the field report has been made to Mobley or Hays the field finders' responsibilities are over other than to be available for further consultation if necessary. The following steps will then be set in motion:

1. The Cultural Resources Program or Study Lead will compare the find's GPS coordinates and description with the known site inventory to determine if it actually reflects a new discovery or an already-recorded site.

2. If the discovery involves human remains or is determined to be an unrecorded cultural property, the Cultural Resources Program or Study Lead will immediately notify AEA's Environmental Manager of the find and its potential significance.

Betsy McGregor, AEA Environmental Manager
(907) 771-3957 office
(503) 312-2217 cell
BMcGregor@aidea.org
411 W. 4th Avenue, Ste. 1
Anchorage, Alaska 99501

3. AEA's Environmental Manager will coordinate with a cultural resources consultant who will travel to the location and evaluate the find as warranted to determine if indeed human bones have been discovered, or if a new cultural site has been found.

4. If the materials found are human remains, then the protocols outlined in the subsequent two sections entitled **Protection of Human Remains** (distinguished according to land ownership) will be followed. If a cultural site is at imminent risk from a proposed ground-disturbing activity, the procedures specified in the following two sections entitled **Protection of Cultural Remains** (again distinguished according to land ownership) below will be followed. If the materials are already recorded cultural sites and not in jeopardy, no further action will be taken.

Protection of At-Risk Cultural Materials on Private and State-Managed Land

a) AEA's Environmental Manager will promptly notify the Environmental Inspector to flag the at-risk site with a 20-meter buffer as appropriate. This buffer may be larger if there is the possibility of more resources in the area or in the case of slopes or cut-banks where ongoing construction may impact the site.

b) AEA's Environmental Manager will direct the cultural resources consultant to begin a more detailed assessment of the find's significance and the potential effect of construction.

c) AEA's Environmental Manager will promptly notify the Alaska State Historic Preservation Officer (SHPO) or State Archaeologist of the find. Contact either:

Judith Bittner, SHPO (907) 269-8721 judy.bittner@alaska.gov Alaska Dept. of Natural Resources Office of History and Archaeology 550 West 7th Avenue Ste. 1310 Anchorage, Alaska 99501-3565	OR	David McMahan, State Archaeologist (907) 269-8723 dave.mcmahan@alaska.gov Alaska Dept. of Natural Resources Office of History and Archaeology 550 West 7th Avenue Ste. 1310 Anchorage, Alaska 99501-3565

d) The landowner will be promptly notified.

e) The cultural resources consultant will document the site circumstances, potential significance, and risk of harm. If the cultural resources consultant assesses the find as not significant or lacking integrity, then the consultant will notify the AEA Environmental Manager who will then inform the SHPO. Upon SHPO agreement of a finding of no effect, AEA will request approval to resume construction. A brief report of the find will be provided to the SHPO within one week of its recording. If the archaeological consultant recommends that the find may be significant, then the following steps will be implemented.

f) AEA's Environmental Manager will notify other parties, such as appropriate Alaska Native organizations, as directed by the SHPO.

Alaska Native Regional Corporations:

- Ahtna, Incorporated (Ahtna)
  Michelle Anderson, President
  PO BOX 649, Glennallen, Alaska 99588

Glennallen Office: (907) 822-3476
Fax: (907) 822-3495
Anchorage Office: (907) 868-8250
Fax: (907) 868-8285
Email: manderson@ahtna.net

- Cook Inlet Region Incorporated (CIRI)
  2525 C Street Suite 500, Anchorage, Alaska 99503
  P.O. Box 93330, Anchorage, Alaska 99509-3330
  (907) 274-8638
  Fax: (907) 279-8836

- Doyon, Ltd. (Doyon)
  1 Doyon Place, Suite 300
  Fairbanks, Alaska 99701-2941
  (907) 459-2000
  (888) 478-4755 (toll-free)
  (907) 459-2060 (fax)

- Doyon, **Limited - Anchorage Office**
  11500 C Street, Suite 250
  Anchorage, Alaska 99515-2692
  (907) 563-5530 or (907) 375-4220
  (907) 375-4205 (fax)

A more complete contact list is attached as Appendix A.

g) If the find is significant and continuing work may damage more of the site, then AEA's Environmental Manager will request recommendations from the SHPO and other parties regarding appropriate measures for site treatment. These measures may include: formal archaeological evaluation of the site; visits to the site by the SHPO and other parties; preparation of a mitigation plan by AEA for approval by the SHPO; implementation of the mitigation plan; and/or approval to resume construction following completion of the fieldwork component of the mitigation plan.

h) If further analysis indicates that the find lacks significance, then AEA's Environmental Manager will consult with the SHPO and other appropriate parties to request approval for resumption of construction.

i) AEA's Environmental Manager will notify the on-site Field Coordinator who will grant clearance to the Contractor to start construction.

Protection of At-Risk Cultural Materials on Federal Lands

a) AEA's Environmental Manager will promptly notify the Environmental Inspector to flag the at-risk site with a 20-meter buffer as appropriate. This buffer may be larger if there is the possibility

of more resources in the area or in the case of slopes or cut-banks where ongoing construction may impact the site.

b) AEA's Environmental Manager will direct the cultural resources consultant to begin a more detailed assessment of the find's significance and the potential effect of construction.

c) AEA's Environmental Manager will promptly notify the appropriate federal land managing agency and Alaska State Historic Preservation Officer (SHPO) of the find. Contact both:

John Jangala, Archaeologist
(907) 822-7303
jjangala@blm.gov
Glennallen Field Office
Bureau of Land Management
P.O. Box 147
Glennallen, Alaska 99588-0147

Judith Bittner, SHPO
(907) 269-8721
judy.bittner@alaska.gov
Alaska Dept. of Natural Resources
Office of History and Archaeology
550 West 7th Avenue Ste. 1310
Anchorage, Alaska 99501-3565

d) The cultural resources consultant will document the site circumstances, potential significance, and risk of harm, and then notify the AEA Environmental Manager who will in turn then inform the Bureau of Land Management (BLM) archaeologist and the SHPO. If the cultural resources consultant assesses the find as not significant or lacking integrity, and the BLM and SHPO agree on a finding of *no effect*, then AEA will request approval to resume construction. A brief report of the find and an AHRS site form will be provided to the BLM and SHPO within two weeks of its recording. If the archaeological consultant recommends that the find may be significant, then the following steps will be implemented.

e) AEA's Environmental Manager will notify other parties, such as appropriate Alaska Native organizations, as directed by the SHPO.

Alaska Native Regional Corporations:

- Ahtna, Incorporated (Ahtna)
  Michelle Anderson, President
  PO BOX 649, Glennallen, Alaska 99588
  Glennallen Office: (907) 822-3476
  Fax: (907) 822-3495
  Anchorage Office: (907) 868-8250
  Fax: (907) 868-8285
  Email: manderson@ahtna.net

- Cook Inlet Region Incorporated (CIRI)
  2525 C Street Suite 500, Anchorage, Alaska 99503
  P.O. Box 93330, Anchorage, Alaska 99509-3330
  (907) 274-8638

- Doyon, Ltd. (Doyon)
  1 Doyon Place, Suite 300
  Fairbanks, Alaska 99701-2941
  (907) 459-2000
  (888) 478-4755 (toll-free)
  (907) 459-2060 (fax)

- Doyon, **Limited - Anchorage Office**
  11500 C Street, Suite 250
  Anchorage, Alaska 99515-2692
  (907) 563-5530 or (907) 375-4220
  (907) 375-4205 (fax)

A more complete contact list is attached as Appendix A.

f) If the find is assessed as significant and continuing work may damage more of the site, then AEA's Environmental Manager will request recommendations from the appropriate federal land managing agency, SHPO, and other parties regarding appropriate measures for site treatment. These measures may include: formal archaeological evaluation of the site; visits to the site by the SHPO and other parties; preparation of a mitigation plan by AEA for approval by the appropriate federal land managing agency and SHPO; implementation of the mitigation plan; and/or approval to resume construction following completion of the fieldwork component of the mitigation plan.

g) If further analysis indicates that the find lacks significance, then AEA's Environmental Manager will consult with the federal land managing agency, SHPO and other appropriate parties to request approval for resumption of construction.

h) AEA's Environmental Manager will notify the on-site Field Coordinator who will grant clearance to the contractor to start construction.

Protection of Human Remains on Private and State-Managed Land

a) AEA's Environmental Manager will promptly notify the Environmental Inspector to flag the at-risk site with a 20-meter buffer as appropriate. This buffer may be larger if there is the possibility of more resources in the area or in the case of slopes or cut-banks where ongoing construction may impact the site.

b) AEA's Environmental Manager will notify a peace officer of the state (police, Village Public Safety Officer, or Alaska State Trooper [AST]) and the Alaska State Medical Examiner (SME) immediately of the discovery, as stipulated in Alaska Statute 12.65.5. In addition to a local peace officer (if in a local jurisdiction), notification should include the AST Criminal Investigation Bureau. If the human remains appear recent (less than 50 years old) in the judgment of the archaeologists, the AST and SME will determine whether the remains are of a forensic nature and/or subject to criminal investigation. The AST and SME contacts are:

Sgt. Kid Chan
(800) 478-9333
(907) 269-5058
choong.chan@alaska.gov
(cc: Stephanie Johnson at steph.johnson@alaska.gov)
Alaska State Troopers
Missing Persons Bureau
5700 East Tudor Road
Anchorage, AK 99507

Talkeetna Post - Alaska State Troopers
(907) 733-2256
HC89 Box 8576
Talkeetna, AK 99676

Dr. Gary Zientek, Deputy Medical Examiner
(907) 334-2200
gary.zientek@alaska.gov
Alaska State Medical Examiner
5455 Dr. Martin Luther King Jr. Ave
Anchorage, Alaska 99507

c) The landowner will be promptly notified.

d) The Alaska SHPO will also be notified of any discovery unless circumstances indicate that the death or burial is less than 50 years old and that there is need for a criminal investigation or legal inquiry by the coroner.

Judith Bittner, State Historic Preservation Officer
(907) 269-8721
judy.bittner@alaska.gov
Alaska Dept. of Natural Resources
Office of History and Archaeology
550 West 7th Avenue Ste. 1310
Anchorage, AK 99501-3565

e) Written authorization in the form of a Burial Transit Permit from the Alaska State Bureau of Vital Statistics (BVS) shall be obtained prior to any excavation or re-interment of any human remains. In addition, clearance from the appropriate Alaska Native organization must be obtained prior to excavation or re-interment of Alaska Native remains. The BVS contact is:

Phillip Mitchell, Section Chief
(907) 465-3391
BVSResearch@alaska.gov
Phillip.mitchell@alaska.gov
Alaska Bureau of Vital Statistics
5441 Commercial Boulevard
P.O. Box 110675
Juneau, AK 99801

f) If the human remains are found to be historic in nature, a qualified professional physical anthropologist with experience in the analysis of human remains will examine them in situ to determine racial identity. The physical anthropologist shall document, analyze, and photograph the remains so that an independent assessment of racial identity can be made. The physical anthropologist shall be afforded no more than 30 days time to conduct his or her analysis.

g) If the unanticipated discovery consists of Alaska Native human remains, AEA will consult with the Alaska SHPO, FERC, and appropriate Alaska Native organizations regarding the appropriate measures to respectfully handle such a discovery. If it can be determined adequately that the identified human remains have affinity to any federally recognized tribe(s), a reasonable effort will be made by AEA to identify, locate, and notify these tribes. The appropriate Alaska Native Regional Corporations also will be contacted by AEA. A comprehensive contact list is attached as Appendix A.

h) AEA's Environmental Manager will notify other parties, as directed by the SHPO.

i) If the human remains are not Native American, and a determination has been made by the AST and Alaska SME that a death investigation is not warranted, then AEA, in consultation with the Alaska SME, will identify, locate and inform descendants of the deceased.

j) After permission to resume construction has been issued by the SHPO, AEA's Environmental Manager will notify the on-site Field Coordinator who will grant clearance to the contractor to restart construction.

Protection of Human Remains on Federal Land

a) AEA's Environmental Manager will promptly notify the Environmental Inspector to flag the at-risk site with a 20-meter buffer as appropriate. This buffer may be larger if there is the possibility of more resources in the area or in the case of slopes or cut-banks where ongoing construction may impact the site.

b) AEA's Environmental Manager will notify a peace officer of the state (police, Village Public Safety Officer, or Alaska State Trooper [AST]) and the Alaska State Medical Examiner (SME) immediately of the discovery, as stipulated in Alaska Statute 12.65.5. In addition to a local peace officer (if in a local jurisdiction), notification should include the AST Criminal Investigation Bureau. If the human remains appear recent (less than 50 years old) in the judgment of the archaeologists, the AST and SME will determine whether the remains are of a forensic nature

and/or subject to criminal investigation. The appropriate federal land managing agency will also be contacted in case the human remains are related to a crime scene. The contact of the AST and SME are:

Sgt. Kid Chan
(800) 478-9333
(907) 269-5058
choong.chan@alaska.gov
(cc: Stephanie Johnson at steph.johnson@alaska.gov)
Alaska State Troopers
Missing Persons Bureau
5700 East Tudor Road
Anchorage, AK 99507

Talkeetna Post - Alaska State Troopers
(907) 733-2256
HC89 Box 8576
Talkeetna, AK 99676

Dr. Gary Zientek, Deputy Medical Examiner
(907) 334-2200
gary.zientek@alaska.gov
Alaska State Medical Examiner
5455 Dr. Martin Luther King Jr. Ave
Anchorage, Alaska 99507

John Jangala, Archaeologist
(907) 822-7303
jjangala@blm.gov
Glennallen Field Office
Bureau of Land Management
P.O. Box 147
Glennallen, Alaska 99588-0147

c) The Alaska SHPO will also be notified of any discovery unless circumstances indicate that the death or burial is less than 50 years old and that there is need for a criminal investigation or legal inquiry by the coroner. The SHPO contact is:

Judith Bittner, State Historic Preservation Officer
(907) 269-8721
judy.bittner@alaska.gov
Alaska Dept. of Natural Resources
Office of History and Archaeology
550 West 7th Avenue Ste. 1310
Anchorage, AK 99501-3565

d) Written authorization in the form of a Burial Transit Permit from the Alaska State Bureau of Vital Statistics shall be obtained prior to any excavation or re-interment of any human remains. In addition, clearance from the appropriate Alaska Native organization must be obtained prior to excavation or re-interment of Alaska Native remains. The BVS contact is:

Phillip Mitchell, Section Chief
(907) 465-3391
BVSResearch@alaska.gov
phillip.mitchell@alaska.gov
Alaska Bureau of Vital Statistics
5441 Commercial Boulevard
P.O. Box 110675
Juneau, AK 99801

e) If the human remains are found to be historic in nature, AEA, as directed by the appropriate federal land managing agency, will determine the origin of the human remains. A qualified professional physical anthropologist with experience in the analysis of human remains will examine them in situ to determine racial identity. The physical anthropologist shall document, analyze, and photograph the remains so that an independent assessment of racial identity can be made. The physical anthropologist shall be afforded no more than 30 days to conduct his or her analysis. The appropriate federal land managing agency will follow NAGPRA and the implementing regulations set forth in 43 CFR 10, for Alaska Native remains.

f) For Alaska Native remains, the appropriate federal land managing agency will retain the responsibility for determining and contacting the appropriate Alaska Native groups. In this case, NAGPRA dictates that work in the immediate vicinity of the remains cannot proceed until 30 days after the reply from the federal agency in charge or appropriate Alaska Native group that the documents regarding the finding were received, unless a written and binding agreement is issued from the federal agency in charge and the affiliated Native American group(s) (NAGPRA 25 USC 3002 Sec 3(d)). The remains will then be assessed and treated based on the guidance of the federal agency in charge and the appropriate Alaska Native group as defined by NAGPRA.

g) If the human remains are not Native American, and a determination has been made by the AST and Alaska SME that a death investigation is not warranted, then AEA, as directed by the appropriate federal land managing agency in consultation with the Alaska SME, will identify, locate, and inform descendants of the deceased.

h) AEA's Environmental Manager will notify other parties, as directed by the appropriate federal land managing agency.

i) After permission to resume construction has been issued by the appropriate federal land managing agency, AEA's Environmental Manager will notify the on-site Field Coordinator who will grant clearance to the Contractor to restart construction.

Contacts for AEA's Cultural Resource Program

Charles M. Mobley
Cultural Resources Program Lead
(907) 653-1937 office
(907) 632-1933 cell
mobley@alaska.net
Charles M. Mobley & Associates
200 W. 34th Avenue #534
Anchorage, Alaska 99503

OR

Justin Hays
Cultural Resources Study Lead
(907) 474-9684 office
(907) 750-9857 cell
jmh@northernlanduse.com
Northern Land Use Research, Inc.
234 Front Street
Fairbanks, Alaska 99709

APPENDIX A: CONTACTS FOR ALASKA NATIVE ENTITIES

Though communities potentially affected by the Project have different histories and cultures, they are characterized by strong past and present ties to the land and its resources. The successful completion of the Consultation and Coordination phase of the National Historic Preservation Act (NHPA) Section 106 process requires an efficient and effective consultation process that addresses the laws and regulations within the context of local custom and practice. Several Alaska tribal entities recognized by the U.S. Department of Interior and established through the Alaska Native Claims Settlement Act (ANCSA) of 1971, are broadly located near the study area. In Alaska, consultation typically occurs with the 229 federally-recognized tribes, the 13 Alaska Native Regional Corporations, and some 200 Alaska Native Village Corporations created by the ANCSA (the Regional and Village Corporations are recognized as "Indians tribes" for NHPA purposes).

There are four Regional Native Alaskan corporations that have interests within or near the Project area (see Table 1). In addition, twenty-two tribes recognized by the Bureau of Indian Affairs under 25 CFR 83.6(b) are located within or near the Project area, including those indicated in Table 2. Table 3 includes a list of recognized and non-recognized ANCSA village; group and urban corporations; and village organizations that also have interests.

Table 1. List of Regional Native Corporations with interests within the vicinity of the Susitna-Watana Hydroelectric Project.

Ahtna, Incorporated (Ahtna) Michelle Anderson, President PO BOX 649, Glennallen, Alaska 99588 Glennallen Office: (907) 822-3476 Fax: (907) 822-3495 Anchorage Office: (907) 868-8250 Fax: (907) 868-8285 Email: manderson@ahtna.net	Doyon, Ltd. (Doyon) 1 Doyon Place, Suite 300 Fairbanks, Alaska 99701-2941 (907) 459-2000 (888) 478-4755 (toll-free) (907) 459-2060 (fax)
Cook Inlet Region Incorporated (CIRI) 2525 C Street Suite 500, Anchorage, Alaska 99503 P.O. Box 93330, Anchorage, Alaska 99509-3330 (907) 274-8638	Doyon, Limited - Anchorage Office 11500 C Street, Suite 250 Anchorage, Alaska 99515-2692 (907) 563-5530 or (907) 375-4220 (907) 375-4205 (fax)

Table 2. List of Tribes recognized by the Bureau of Indian Affairs under 25 CFR 83.6(b) within the vicinity of the Susitna-Watana Hydroelectric Project.

Cheesh-Na Tribal Council/Mount Sanford ibal Consortium P.O. Box 357 Gakona, Alaska 99586 907-822-5399 Fax 907-822-5810	Knik Tribe P.O. Box 871565 Wasilla, AK 99687 907-373-7991 Fax 907-373-2161 kniktribe@mtaonline.net
Chickaloon Native Village P.O. Box 1105 Chickaloon, AK 99674-1105 907-745-0707 Fax 907-745-7154 cvadmin@chickaloon.org http://www.chickaloon.org	Mentasta Traditional Council P.O. Box 6019 Mentasta Lake, AK 99780-6019 907-291-2319 Fax 907-291-2305 kmartin@tribalnet.com
Native Village of Chitina P.O. Box 31 Chitina, AK 99566-0031 907-823-2215 Fax 907-823-2233 aceak2000@yahoo.com	Native Village of Cantwell P.O. Box 94 Cantwell, AK 99729 907-768-2591 Fax 907-768-1111 hallvc@yahoo.com
Gulkana Village P.O. Box 254 Gakona, AK 99586 907-822-3746 Fax 907-822-3976 lclaw@gulkanacouncil.org http://gulkanacouncil.org/	Eklutna Native Village 26339 Eklutna Village Road Chugiak, AK 99567-6339 907-688-6020 Fax 907-688-6021 nve@eklutna-nsn.gov http://www.eklutna-nsn.gov
Healy Lake Village P.O. Box 74090 Fairbanks, AK 99706-0300 907-876-0638 Fax 907-876-0639 jpolstonhitc@live.com	Native Village of Gakona P.O. Box 102 Gakona, AK 99586 907-822-5777 Fax 907-822-5997 gakonavc@cvinternet.net www.nvgakona.com
Kenaitze Indian Tribe P.O. Box 988 Kenai, AK 99611-0988 907-283-3633 Fax 907-283-3052 kenaitze@alaska.net http://www.kenaitze.org/	Native Village of Kluti-Kaah P.O. Box 68 Copper Center, AK 99573-0068 907-822-5541 Fax 907-822-5130 nvkktops@cvinternet.net

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Table 2. List of Tribes recognized by the Bureau of Indian Affairs under 25 CFR 83.6(b) within the vicinity of the Susitna-Watana Hydroelectric Project (continued).

Native Village of Tazlina P.O. Box 87 Glennallen, AK 99588-0087 907-822-4375 Fax 907-822-5865 tazlinajulie@cvinternet.net ▪	Northway Village P.O. Box 516 Northway, AK 99764 907-778-2287 Fax 907-778-2220 dnnvc@yahoo.com
Native Village of Tetlin P.O. Box 797 Tetlin, AK 99779 907-883-2021 tetlin@earthlink.net ▪	Seldovia Village Tribe P.O. Drawer L Seldovia, AK 99663 907-234-7898 Fax 907-234-7865 svt@svt.org http://www.svt.org/
Native Village of Tyonek P.O. Box 82009 Tyonek, AK 99682-0009 Phone 907-583-2271 Fax 907-583-2442 E-mail tyonek@aitc.org ▪	Native Village of Tanacross P.O. Box 76009 Tanacross, AK 99776 907-883-5024 Fax 907-883-4497 jerry_isaac@hotmail.com
Nenana Native Association P.O. Box 369 Nenana, AK 99760 907-832-5461 Fax 907-832-1077 nibor652004@yahoo.com ▪	Village of Dot Lake P.O. Box 2279 Dot Lake, AK 99737-2279 907-882-2695 or 907-322-2694 Fax 907-882-5558 dotlake@aitc.org ▪
Ninilchik Village P.O. Box 39070 Ninilchik, AK 99639 907-567-3313 Fax 907-567-3308 ntc@ninilchiktribe-nsn.gov/ http://www.ninilchiktribe-nsn.gov/ ▪	Village of Salamatoff P.O. Box 2682 Kenai, AK 99611 907-283-7864 Fax 907-283-6470 ▪

Table 3. List of recognized and non-recognized ANCSA village; group and urban corporations; and village organizations that have interests within the vicinity of the Susitna-Watana Hydroelectric Project.

Alexander Creek, Incorporated 8128 Cranberry Anchorage, AK 99502 (907) 243-5428	Knikatnu, Incorporated P.O. Box 872130 Wasilla, AK 99687-2130 907-376-2845 Fax 907-376-2847 knikcorp@gci.net
Caswell Native Association HC 89, Box 83 Willow, AK 99688 (907) 495-1263	Little Lake Louise Corporation (907) 250-2098
Chitina Native Corporation P.O. Box 3 Chitina, AK 99566-0031 907-823-2223 Fax 907-823-2202 chitina_native@cvinternet.net http://www.chitinanative.com	Lower Tonsina Corporation Unavailable
Chickaloon-Moose Creek Native Association, corporated P.O. Box 875046 Wasilla, AK 99687 907-373-1145 Fax 907-373-1142 cmena@alaska.net http://www.chickaloon.org	Kenai Natives Association, Inc. 215 Fidalgo Ave. #101 Kenai, AK 99611-7776 907-283-4851 Fax 907-283-4854
Dot Lake Native Corporation 3500 Wolf Run Fairbanks, AK 99709 907-882-2755 Fax 907-882-2775	Nabesna Native Group, Inc. Unavailable
Eklutna, Incorporated 16515 Centerfield Dr. #201 Eagle River, AK 99577 907-696-2828 Fax 907-696-2845 receptionist@eklutnainc.com http://www.eklutnainc.com	Mendas Cha-ag Native Corporation Gary Lee, President 457 Cindy Dr. Fairbanks, AK 99701

Table 3. List of recognized and non-recognized ANCSA village; group and urban corporations; and village organizations that have interests within the vicinity of the Susitna-Watana Hydroelectric Project (continued).

Gold Creek-Susitna NCI P.O. Box 847 Talkeetna, AK 99676-0847 (907) 733-2329	Seldovia Native Association, Incorporated P.O. Drawer L Seldovia, AK 99663-0250 907-234-7625 Fax 907-234-7637 info@snai.com http://www.snai.com
Montana Creek Native Association P.O. Box 100379 Anchorage, AK 99510	Tanacross, Incorporated P.O. Box 76029 Tanacross, AK 99776 907-883-4130 Fax 907-883-4129 http://www.tanacrossinc.com
Ninilchik Natives Association, Incorporated P.O. Box 39130 Ninilchik, AK 99639 907-567-3866 Fax 907-567-3867 nnai@nnai.net http://www.nnai.net	Tetlin Native Corporation Gary David Sr., President P.O. Box 657 Tok, AK (907) 883-6652 (907) 505-0253
Northway Natives, Incorporated P.O. Box 401 Northway, AK 99764 907-778-2298 Fax 907-778-2266	Toghotthele Corporation P.O. Box 249 Nenana, AK 99760 907-832-5832 Fax 907-832-5834 Toghotthele@hotmail.com
Point Possession, Incorporated Feodoria Pennington, President 1321 Oxford Dr. Anchorage, AK 99503 (907) 563-1848	Twin Lake Native Group, Incorporated Unavailable
Salamatkof Native Association, Incorporated 100 N. Willow Street Kenai, AK 99611 907-283-3745 Fax 907-283-6470 info@salamatof.com http://www.salamatof.com/	Tyonek Native Corporation 1689 C Street, Suite 219 Anchorage, AK 99501 907-272-0707 Fax 907-274-7125 http://www.tyonek.com/
Slana Native Corporation - Unavailable	