Regulatory Commission of Alaska



House Energy Committee Overview: History & Current State of the Railbelt Electric Utilities

February 28, 2017

Presented by: Chairman, Bob Pickett

Regulatory Commission of Alaska



- The RCA has authority to regulate public utilities and pipeline carriers providing service in the state, currently monitoring over 600 certificated utilities and pipelines. The RCA regulates a broad range of services, from small water and wastewater systems to large telecommunications, electric, natural gas, and pipeline monopolies.
- The RCA assures reliable utility and pipeline service is provided with just and reasonable rates to consumers in Alaska.
- The RCA also jointly administers the Power Cost Equalization (PCE) program with the Alaska Energy Authority (AEA), establishing PCE levels for participating electric utilities.
- Governing statutes
 - AS 42.04 Regulatory Commission of Alaska (AS 42.04.010-AS 42.04.080), enacted 1999
 - AS 42.05 Alaska Public Utilities Regulatory Act (AS 42.05.141-AS 42.05.990), enacted 1970
 - AS 42.06 Pipeline Act (AS 42.06.055 AS 42.06.640), enacted 1981
 - AS 42.08 In-state Pipeline Contract Carrier (AS 42.08.010-AS 42.08.540), enacted 2013
 - AS 42.45 Rural & Statewide Energy Programs (AS 42.45.010-AS 42.45.990), enacted 1993

Railbelt Service Area



Railbelt Installed Generation Capacity (MW) 2016

	Thermal	Bradley Lake	Eklutna Lake	Cooper Lake	Eva Creek	
Utility	Capacity	Capacity	Capacity	Capacity	Capacity	Total (MW)
MEA	170.0	16.1	6.7	0.0	0.0	192.8
HEA	193.5	14.0	0.0	0.0	0.0	207.5
CEA	517.6	35.6	12.0	20.0	0.0	585.2
GVEA *	334.0	19.8	0.0	0.0	24.6	378.4
ML&P **	407	30.3	21.3	0.0	0.0	458.6
SES	15.6	1.2	0.0	0.0	0.0	16.8
Total	1637.7	117.0	40.0	20.0	0.0	1839.3

GVEA * Healy 2 (50) 2017

ML&P **2017 add 120MW for Plant 2A



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Railbelt Utilities Peak Load 2010-2015 (MW/h/yr)

Utility	2010	2011	2012	2013	2014	2015
HEA	860	866	887	862	734	800
MEA	1,291	1,324	1,376	1,346	1,312	1,347
ML&P	1,950	1,946	1,932	1,903	1,814	1,824
CEA	4,515	5,154	5,089	5,420	4,670	2,620
GVEA	2,016	2,184	2,179	2,183	2,099	2,147



Matanuska Electric Association (MEA) Service Area CPCN # 18 63,000 customers



MEA's Eklutna Generation Station (EGS)



- MEA's EGS, a new 171-megawatt natural-gas-powered power plant in Eklutna, Alaska.
- EGS went online May 1, 2015 with 10 Wartsila generators, (17 MW each).
- Costs \$324 million
- Originally scheduled to start January 2015
- Only 40% engines online January 2015

CPCN # 8 Service Area 69,000 customers



Southcentral Power Project (CEA/ML&P) Three Natural Gas Turbines, One Steam Turbine: 200 MWs Capacity



Turbine

No. 10	57.4 megawatts	Mitsubishi power steam turbine (ST)
No. 11	47.6 megawatts	GE LM6000 combustion turbine (CT)
No. 12	47.6 megawatts	GE LM6000 combustion turbine (CT)
No. 13	47.6 megawatts	GE LM6000 combustion turbine (CT)
Total*	200.2 megawatts	

\$359 million Cost (Under budget) Schedule January 31, 2013 (Ahead of schedule)

*ML&P is a 30% owner and receives 30% of the power

Beluga Power Plant



Baseload generation of Beluga combined cycle Units 6, 7, and 8 (218 MW total) were replaced by 200 MW from SPP

UNITS		TURBINE	INSTALLED
Unit # 8	53 MW	single-pressure steam turbine	1979
Unit # 7	80 MW	gas turbine	1978
Unit # 6	79 MW	gas turbine	1975
Unit # 3	65 MW	gas turbine	1973
Unit # 2	20 MW	gas turbine	1968
Unit # 1	20 MW	gas turbine	1968

Anchorage Municipality Light & Power (ML&P) CPCN # 121 Service Map 31,000 customers



ML&P Plant 2a



- 120 (MW), 2x1 combined-cycle, natural-gas-fired power generation
- Two GE LM6000 PF Combustion Turbine Generators
- One steam unit
- Costs over \$275 million
- Start up 1st quarter 2017

Homer Electric Association (HEA)CPCN # 32Service Area30,000 customers



HEA's Nikiski Combined Cycle Plant



- A steam turbine in conjunction with an existing natural gas turbine, producing a total of 80 MW of power.
- On January 1, 2014, HEA began an independent power generation to serve its load (CEA no longer serves HEA).
- Costs \$95 million
- Other HEA Generation plant costs: Soldotna Combustion Turbine \$77.5 million; Bernice Combustion Turbine \$15.4 million
- Total HEA generation Plant Costs = \$187.9 million

Bradley Lake Hydro



- 120 MW hydroelectric plant
- Two 60 MW generators
- Completed September 1991
- Costs \$328 million
- Power shared by Six Railbelt Electric Utilities (CEA, ML&P, MEA, GVEA, HEA and City of Seward).

Bradley Lake Hydro, continued

AS 42.05.431(c) – Exempts Bradley Lake Hydro from RCA regulation

(1) <u>a wholesale agreement</u> for the sale of power from a project licensed by the Federal Energy Regulatory Commission on or before January 1, 1987, and related contracts for the wheeling, storage, regeneration, or wholesale repurchase of power purchased under the agreement, entered into between the Alaska Energy Authority and one or more other public utilities or among the utilities after October 31, 1987, and before January 1, 1988, and amendments to the wholesale agreement or related contract, and the wholesale agreement or related contract assigned by the Alaska Energy Authority to a joint action agency formed under AS 42.45.310 that purchases the project from the Alaska Energy Authority, are not subject to review or approval by the commission until all long-term debt incurred for the project is retired, or, for a wholesale agreement or related contract assigned to a joint action agency formed under AS 42.45.310, until all long-term debt incurred to pay the purchase price to the Alaska Energy Authority is retired; and (2) a wholesale agreement or related contract described in (1) of this subsection may contain a covenant for the public utility to establish, charge, and collect rates sufficient to meet its obligations under the contract; the rate covenant is valid and enforceable. [Emphasis added]

Golden Valley Electric Association (GVEA) Service Area CPCN # 13 40,000 customers



North Pole Expansion Power Plant 60 MW



- Completed March 2007
- Cost \$100 million
- Petro Star built a new 600-ft. pipe to supply a naphtha-blended fuel July 2016.
- Generator can be fueled by Natural Gas if available

GVEA's Eva Creek Wind Farm



- 24.6 MW 12 Senvion turbines
- 410 foot tall wind turbines (base to Blade Tip)
- Cost \$93 million
- Commissioned January 7, 2013

Healy Unit 2 Coal Power Plant



- In 1989 the U.S. DOE's Clean Coal Technology Program for Healy Clean Coal Plant (HCCP)
- HCCP in 1998 began burning coal
- HCCP failed in 1999 during test phase
- Costs \$305 million for construction plus the \$44 million GVEA paid AIDEA for the plant
- Also \$98 million for the costs of the Consent Decree Stipulation
- Total costs \$447 million (not including the latest start up costs)
- HCCP change its name to Healy Unit 2 in 2012
- On December 4, 2013, the purchase of Healy Unit 2 was finalized. Golden Valley paid \$44 million to Alaska Industrial Development and Export Authority (AIDEA) for the 50 MW coal power plant
- Experience a fire/explosion on March 3, 2016, during commissioning test
- Healy Unit 2 is expected to resume operation by mid 2017

Alaska Environmental Power (AEP) Wind Farm



- Two 900 kW wind turbines
- One 100 kw turbine
- Sells two MW to GVEA since 2010
- Cost \$8.3 million: Grant from AIDEA \$6.3 million; matching \$2 million

Fire Island Wind Farm (FIW)



- Fire Island Wind LLC owns and operates a 17.6 megawatt wind turbine project on Fire Island,
- The project began in the fall of 2012
- FIW has a long-term power purchase agreement with Chugach Electric Association. The 25-year agreement provides a flat net price of \$97/MW-hour.

Alaska Electric Light & Power (AEL&P) CPCN # 1 Service Area 16,300 customers



The Lake Dorothy Project



Lake Dorothy Hydroelectric Placed in production on 8-31-2009

2000 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990	tak street	And the second
A MARINE A	Capacity	14.3 MW
radia di tata	Average annual energy	75 GW hours
	Cost	\$70 million
ake Dorothy	Lake Dorothy elevation	2,423 / 1
Lake Doloany	Lake Dorothy tap	143' below surface
Project Data	Tunnel	, 900' long
	Outlet pipe	
A CARANA	Bart Lake elevation	1,009
and the state of t	Bart Lake dam	
	Penstock length	8,249'
a'a a a a a a a a a a a a a a a a a a a	Diameter	60″
	Powerhouse	50' x 60' x 50'
	Transmission line	3.5 miles at 138 kV
Permi	tting began August 1995.	E Hereite
Const	ruction began May 2006.	The Spectrum
	All stables and share a stable to the state of the state	

Alaska Power Company (APC)CPCN # 2Service Area7,200 customers



Alaska Power Company

Load Centers				
Haines and Skagway	Whale Pass	Chistochina		
Craig/Klawock	Naukati	Healy Lake		
Hydaburg	Tok/Dot Lake/ Tetlin	Mentasta		
Hollis	Allakaket and Alatna	Slana		
Kasaan	Bettles and Evansville			
Thorne Bay	Eagle and Eagle Village			
Coffman Cove	Northway and Northway Village			

Alaska Village Electric Cooperative, Inc.(AVEC) CPCN # 169 Serves 11,000 customers in 57 villages



AVEC, continued

- AVEC provides electricity to rural Alaska since 1968
- Sold 113 million kilowatt hours (kWh) in 2015
- Revenue \$58,642,290 in 2015
- Net Margins \$ 3,951,497 in 2015
- 4 % power from Wind Turbines in 2015

Inside Passage Electric Cooperative (IPEC) CPCN # 240 1072 customers

Four Southeast Communities

- Angoon 236 customers Diesel Generation
- Hoonah 469 customers
- Kake -- 303 customers
- Klukwan 64 customers

- **Diesel Generation**
 - **Diesel Generation**
 - **Diesel Generation**

Commission's Findings and Recommendations – Special Public Meeting on June 29, 2015

Finding No.1

- Railbelt system requires institutional reform
- Legacy power purchase agreements limit efficiency
- No significant State funding available

Finding No.2

- Dispatch on a system-wide basis does not occur
- System does not deliver the maximum benefit possible to ratepayers
- Key principles include: non-discriminatory access to the grid, transparent pricing, and dispatching from an independent entity

Recommendation No.1

- Create an independent transmission company (ITC) to operate system
- ITC should be certificated and regulated as a public utility under AS 42.05

Recommendation No.2

- System-wide merit order economic dispatch will bring maximum benefit to ratepayers
- Loose power pools should be encouraged in the interim
- Voluntary power pooling strategies and quarterly reports shall be filed with the Commission

Commission's Findings and Recommendations – Special Public Meeting on June 29, 2015 (continued)

Finding No.3

- Many past efforts to reform have failed
- Skepticism exists towards electric utilities ability to voluntarily reform grid
- Reliance on state appropriations and lack of trust have created a dysfunctional history

Finding No.4

- Not all electric utilities have adopted the same standards
- Intertie Management Committee (IMC) was created including: CEA, GVEA, MEA, ML&P
- HEA adopted a modified version of the Railbelt reliability standards

Recommendation No.3

- History indicates that current voluntary transmission restructuring may fail
- Failure of the voluntary efforts and initiatives will trigger compulsory action by the Commission

Recommendation No.4

- Enforceable and consistent Railbelt operation and reliability standards are necessary
- Develop a common Railbelt operating and reliability standard
- Commission strongly encourages the IMC and HEA to resolve their differences

Commission's Findings and Recommendations – Special Public Meeting on June 29, 2015 (continued)

Finding No.5

- Recommendation Nos.1-4 will be challenging and time consuming
- Full implementation of proposed electrical system structural changes will take approximately five to ten years
- Many parties must cooperate or this effort will fail

Recommendation No.5

- Initial action steps will need to be implemented within existing RCA resources
- Commission receives the necessary Administration and Legislative support in order to implement these proposed recommendations

USO and Transco

- Unified System Operator ("USO"): Entity that would operate common system-wide security-constrained economic dispatch with post-dispatch financial settlement. The USO would create planning protocols and reliability standards.
 - This differs slightly from an **Independent System Operator ("ISO")** in that it would not operate complex trading arrangements such as day ahead and other procurement arrangements
- **Transco**: a transmission-only **utility** tasked with the responsibility for both area-wide and inter-area transmission planning and development, and field operations and maintenance of transmission assets. Transmission investment would be made in accordance with the USO planning protocols and subject to RCA prudence review and pre-approval.

Chugach Board Resolution USO/Transco MOU with Chugach and ATC (1/26/2017)

Chugach Board of Directors authorized the Chief Executive Officer to enter a non-binding Memorandum of Understanding and associated confidentiality agreements with American Transmission Company (ATC) and other Railbelt utilities to further the work of the Joint Development Agreement subcommittees and collaboratively define the business and organizational structure of a USO/Transco that conforms to our guiding principles. And, subsequently, develop the business plan for this organization in sufficient detail to support regulatory approval.

Power Pooling and Joint Dispatch Agreement by Chugach/MEA and ML&P (1/27/2017)

- Agreement provides a contractual framework for coordinated scheduling, dispatch, and settlement transactions among the Parties for the purchase, sale, or exchange of energy, capacity, reserves, and transmission ancillary services on an efficient and economic basis using the Parties' respective most efficient generation and transmission resources.
- Saving up to \$16 million per year estimated by the Utilities.

Power Cost Equalization (PCE) Established in 1985 (AS 42.45.100-190)

The PCE program is a state-funded program designed to equalize power cost per kilowatt hour statewide, with a target cost based on the average cost per kilowatt hour in Anchorage, Fairbanks, and Juneau. To accomplish this, the PCE program provides economic assistance payments to eligible electric utilities based on electric sales to community facilities and residential customers. Generally, PCE reduces the effective rate per kilowatt hour up to 500 kilowatt hours per month for a residential customer (community facilities receive up to 70 kilowatt hours a month for each community resident).

The Railbelt electric utilities, the electric utility in Juneau and those utilities that receive electric power from the Four Dam Pool facilities (Ketchikan, Wrangell, Petersburg, Kodiak, Glennallen, and Valdez) are not eligible for PCE.

In FY15 PCE program provided funding to 190 communities, resulting in 83,426 people receiving approximately \$37.3 million in PCE disbursements.

Role in PCE (3 AAC 52.600 - .690)

The RCA establishes the PCE rate applicable to each utility participant's billings, calculating the PCE for non rate-regulated PCE recipients as well as electric utilities subject to RCA rate regulation. The RCA notifies PCE recipients of the base rate and reviews annual reports filed by nonregulated entities to ensure appropriate use of PCE funding. The RCA must also recalculate the PCE rate when AEA changes the PCE funding level or the legislature adjusts PCE limits. Costs used to calculate the amount of PCE for both regulated and nonregulated utilities include all allowable costs, except return on equity, used by the RCA to determine the revenue requirement for electric utilities subject to rate regulation. A non rate-regulated utility sets its rates without RCA oversight, but must submit information that allows the RCA to determine the PCE level for the utility.

Alaska Energy Authority Role in PCE (3 AAC 107.200 - .270)

AEA administers the PCE program based on PCE rate determinations by the RCA. Eligible utilities submit monthly reports to AEA that document the eligible power sold and PCE credits applied to eligible customers' bills. AEA issues payment to the PCE-eligible utilities on a monthly basis based on the PCE level established by the RCA, multiplied by the eligible kilowatt hours sold in the preceding month to all eligible customers. AEA verifies the eligibility of customers and of community facilities. In addition, AEA calculates the required pro-rated PCE levels based on available funds. If there are not enough funds to pay for the costs of the program in a given fiscal year, the PCE levels are reduced.

PCE Eligible Communities 190 communities



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