Energy Beyond the Railbelt
Rural Alaska's Challenges and Opportunities

Presentation to the Regulatory Commission of Alaska

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Alaska's Electrification

Juneau, Sitka, Anchorage had hydro late 1890s

- Nome – Gold Rush
- Cordova – Copper/Kennecott
- Katalla – Oil fields

FDR established the REA in 1935

- Palmer led the way – MEA was formed in 1940
- Kodiak Electric organized in 1942
- Golden Valley began in 1946
- Naknek Electric started up in 1960
- Most rural hub communities were energized in the 60s

Early Village Electrification

Villages were small, scattered, hard to reach

- Some got seasonal power from schools or stores
- Homes self-powered with small generators, wind, batteries
- There was no Alaska Energy Authority – nor RCA
- Virtually no central station service before 1960

Seeking The Way Forward – the 60s

Gov. Hickel appointed a Task Force in 1965

- Willie Hensley, Diane Carpenter, Jimmy Hoffman, Morris Thompson and David Peterson
- They identified the Cooperative model as the best fit
- AVEC was incorporated in 1967
- REA was highly skeptical
  - Non-contiguous service areas were unheard of
  - Distant HQ was an issue
  - Operating Agreements with local Municipalities
    - Hundreds of villages established 2nd and 3rd class cities
  - To be eligible, 80% of residents to sign up for service
  - BIA contracted as anchor tenants (schools)

Before TAPS

Almost no transmission in Alaska

- Chugach electric owned a line (built in 1968) from the Beluga gas field to Anchorage
- Subsidized natural gas heated and lit South Central
- Fairbanks relied on local heavy oil and coal
- Diesel fuel was the primary energy source elsewhere

Very little hydropower

- Eklutna – 30 mw, serving ML&P, MEA, CEA
- Cooper Lake – 20 mw, serving CEA
- Snettisham – 52 mw, serving Juneau
- ~20 mw of small projects scattered throughout SE Alaska

Then Came Oil - 1977

The State began to spend its newfound wealth

- A transmission line to Fairbanks was started
- The Susitna mega-project design was started
- The Bradley Lake project was started
- Kodiak, Valdez, Ketchikan, Wrangell and Petersburg began work on 4 hydro-projects
- Studies were commissioned to identify projects to reduce the cost of electricity throughout Alaska

Power Cost Assistance Programs

- 1980 - Power Production Cost Assistance Program
- 1981- Power Cost Assistance Program, designed to self-extinguish in five years
- 1984 – Power Cost Equalization established
  - Utilities that used diesel for 75% of power in 1983
  - Cost of power equalized to the average of Anchorage, Fairbanks and Juneau – 8.5 cents/kwh
  - Costs above 52.5 cents were not covered
  - All users were eligible for the first 750 kWh used
  - Community Facilities get PCE on all kWh used

AVEC Today

- Hooper Bay, Nulato, Old Harbor electrified in 1968
- 58 villages (recently added Yakutat, Bethel)
- 49 power plants
- 32,000 population –
  - 38% of PCE population served
  - 41% of total PCE disbursed
  - Shageluk (smallest) 77
  - Bethel (largest) 6,224
  - Anchorage 294,356
- 92% Alaska Native

Microgrids R Us

- Alaska has 250+ microgrids
- 70 microgrids with variable renewables
  - 10% of the world's microgrids
- AVEC serves 22 communities with wind/solar
  - As much as 40% fuel displacement

Why are we subsidizing Rural Alaska?

- This was the compromise reached in 1984, when the Legislature recognized there was no other answer to bring affordable power to rural Alaska
- In 1985, PCE utilities paid $1.17/gallon for diesel – 25x the cost of Railbelt gas at $0.35/mcf
- Billions of dollars were spent or committed to reduce power costs for urban Alaska and communities fortunate to have hydropower
- Railbelt communities have continued to benefit from heavily subsidized natural gas since the 60s.

The PCE Endowment Fund

- Established in FY2000 via HB446
  - **After15 years of underfunding PCE (FY92 – FY07)**
- Invested to achieve 7% return
- $100 M from CBR in FY01
- $84 M from sale of 4 Dam Pool hydros in FY02
- $182.7 M in FY07
- $400 M in FY12
- Value as of 10/31/20 $1.06 B
- Revised target of 5% return in FY16
  - After PCE, returns fund Municipal Assistance, Renewable Energy Grants, RPSU and BFU projects

How PCE is Funded

- The Governor's budget for AEA includes PCE
  - The funding source is identified
  - Until 2014, it was entirely or mostly General Funds
- Legislature decides on the final amount and source
- If appropriation is less than needed, PCE rates are prorated
  - Between 1992 and 2007, PCE was prorated every year
- The Endowment Fund was intended to replace GF
  - Because of the three-year averaging, GF supplemented EF earnings until 2014
  - There have been no draws on GF since FY14
- PCE has cost $395M since FY08; $320M from the EF

The Mechanics of PCE

- 75% of power in 1983 must have been from diesel
- Utility submits detailed cost and operational data to RCA
- RCA determines eligible costs and computes PCE
- Utility bills customers per normal tariff rates
  - PCE credit is applied to the bill
  - Consumer is responsible to pay bill after PCE credit
- Utility bills State (AEA) for all PCE credited
  - Utility submits detailed billing records
- Utility files required annual report with RCA
- Fuel cost updates are submitted as cost changes
- RCA reviews non-fuel costs every 3 – 5 years

Between 1985 and 2020

- The floor is up 143% to 20.63 cents
- The ceiling was raised from 52.5 cents to $1.00
- Eligible electricity has been reduced 1/3 to 500 kwh
- 6,000+ commercial customers no longer get PCE
- Fuel cost up 127% but efficiency is also up 32%
  - Fuel cost per kWh went from $.1033 - $.1914
- Non-fuel costs per kWh are up 34%
  - $.141 in ‘85 to $.189 in ‘19
- PCE cost in FY86 $17.8 million
- PCE cost in FY19 $28.4 million

Program Changes since FY86

	FY86	FY19
Alaskans served (thousands)	62	82
Total Sales in GWh	225	454
PCE Eligible Sales	108	130
Percentage Eligible	48%	29%
Fuel Cost per Gallon	$1.17	$3.06
Fuel Consumed – Million Gallons	21	28
Fuel Cost – Millions	$23	$87
Non-Fuel Cost – Millions	$32	$86
Total Utility Cost – Millions	$55	$173
Total PCE – Millions	$17.8	$28.4
Percent of Total Costs	**32%**	**16%**

Does Most of PCE go to "Overheads?"

FY19 Program Statistics

Fuel Costs	$86,989,310
Non-Fuel Costs	$85,813,619
Total Electricity Cost	$172,802,929
Total PCE Disbursed	$28,357,347
Percent of Fuel Costs	33%
Percent of Total Costs	16%

The PCE Conundrum

- Statutes encourage renewables, use of recovered heat
- Commission penalizes use of dump energy/heat sales
- Revenue from sales is treated as "reverse expense"
  - PCE eligible costs are reduced by this revenue
  - PCE rate is lower
  - In Bethel, customers pay ~2 cents/kWh more
- INN revenue from dump energy sales is similarly treated
- This is RCA's "preferred practice"
- The spirit of PCE is thwarted – communities should be encouraged to maximize efficiencies and minimize fuel use
- We urge you to reconsider this practice

The Bethel Situation

Total kWh Sales	40,088,302
Power Generation	$2,120,438
Distribution Expense	326,247
Customer Accounts Expense	124,368
Administrative & General	189,032
Depreciation, Taxes	176,827
Total Eligible Costs	$2,937,712
Non-fuel cost per kWh	$0.0733
Heat Recovery Revenue	850,530
Eligible Costs less HR Revenue	$2,087,182
Adjusted non-fuel cost per kWh	$0.0521