SB
301

Alaska State Legislature

Sen. Pat Pourchot, Chairman

Sen. Jan Faiks, Vice Chairman
Sen. Al Adams
Sen. Tim Kelly
Sen. Rick Uehling

P.O. Box V
State Capitol
Juneau, Alaska 99811

907-465-3712

Senate State Affairs Committee

MEMORANDUM

TO: Senate State Affairs Committee Members

FROM: Senator Pat Pourchot

RE: Friday, March 23 Committee Hearing

DATE: March 22, 1990

On Friday, March 23 at 1:30 p.m. in the Beltz Room the Senate State Affairs Committee will hear the following bills:

SSSB 301, An Act relating to the Power Cost Equalization Program.
SSSB 301 and the Power Cost Equalization Report recommend changing the PCE formula's minimum entry rate, eliminating federal and state governments and state funded schools as eligible commercial customers, prioritizing funds to first residential, then commercial facilities and then commercial customers, lowering residential and commercial caps from 750 kWh/month and lowering the community facility cap from 70 kWh/month/resident to 50 kWh/month/resident.

A report on Energy Credits prepared by Alan Mitchell, the State Consumer Advocate, in included in your packet and is currently being released for public review. The report compares PCE with Energy Credits on a utility by utility basis using data from 1988.

This is the third hearing on PCE, testimony will be heard from the public.

SB 456, An Act requiring certain general law and home rule cities to provide police protection and law enforcement services; and providing for an effective date.
SB 456 would require the city of Wasilla to provide police protection and would prevent other cities, such as Fairbanks from withdrawing police service in favor of State Trooper protection. This bill does not impact unified municipalities such as Anchorage.Representatives of the cities of Wasilla and Fairbanks have been invited to testify.

SB 301, PCE March 23, 1990

TELECONFERENCE; Legislative Information Offices:
Anchorage
Barrow
Bethel
Delta Junction
Glennallen
Kotzebue
Mat-Su
Dillingham
Nome
Fairbanks
Tenekee
Petersburg
Naknek

ANNOUNCMENT: Phil tried to pouch the Mitchell report to all the LIO's but lo and behold, they only provide pouch service to Juneau. . so, he is mailing them out so copies will be available in a few days. He will be glad to mail the report to anyone who contacts him at the Anchorage office 561-7623.

NOTES;

1. No one is officially scheduled to testify. Several people plan to listen in. Apparently your comments at the Areca conference have spread and people understand that this is being put to rest for this year.

Orutsararmuit Native Council

P.O. BOX 927 BETHEL, ALASKA 99559
(907) 543-2608

RESOLUTION 90-7

A RESOLUTION IN SUPPORT OF THE POWER COST EQUALIZATION PROGRAM

WHEREAS, The Power Cost Equalization (PCE) program, authorized in 1984, is the highest priority rural energy program and currently benefits residential and commercial electric utility customers in over 170 rural communities, and

WHEREAS, the existing Power Cost Equalization program has greatly assisted rural residents in paying for the high cost of electrical power, and also financially assists rural electricl utilities, and

WHEREAS, SB 301 proposes to amend the existing Power Cost Equalization statutes, which will reduce the eligible KWH levels and funds to rural residents and commercial customers under the Power Cost Equalization program, and.

WHEREAS, the required yearly funding level for the Power Cost Equalization program is not increasing, and the new Power Cost Equalization regulations, efficiency improvements to rural electrical systems, bulk fuel purchasing, and better operating and maintenance practices are having a positive impact on increasing energy efficienty, reducing fuel costs, and lowering the cost of the Power Cost Equalization program;

NOW, THEREFORE, BE IT RESOLVED that the Orutsararmuit Native Council strongly recommends that the Power Cost Equalization statutes remain as currently enacted and that SB 301 or other legislation proposing to amend the Power Cost Equalization program NOT be passed.

BE IT FURTHER RESOLVED that sufficient funding continue to be made available for energy-efficient electrical system improvements and that the Power Cost Equalization program be funded by the Legislature at a level no less than $20 Million in FY 1991.

PASSED THIS 22 day of March 1990 by poll vote 7 yes 0 no.

Thaddeus Tikiun Jr.
Chairman

Roy Hall
Vice Chairman

ALASKA STATE LEGISLATURE

Sen. Lloyd Jones, Chairman
Sen. Bettye Fahrenkamp, Vice Chairman
Sen. John B. "Jack" Coghill
Sen. Paul Fischer
Sen. Pat Pourchot

P.O. Box V
Juneau, AK 99811

907-465-4921

Senate Transportation Committee

February 28, 1990

MEMORANDUM

To: Senator Pourchot, Chairman
Senate State Affairs Committee

From: Senator Jones LJ

Subj: Senate Bill 310

I would like to request a hearing in the State Affairs Committee as soon as possible on SB 310.

As we discussed previously, Senator Duncan and I have worked on a new version of the bill that we feel will establish the continuity of management that was the intention of the original bill. The AMHS is an important part of the state-wide highway system. Not only the communities served by our ferries are adversely affected by inconsistent management, but also the other residents of Alaska that depend on tourism dollars or wish to personally visit and enjoy the beauty of our coastal regions that the ships travel.

Thank you for considering this request.

LJ/cm

To: Pat
Fr: Phil
Da: 3/21/90
Re: Energy Crdedits

Attached to this memo is Alan Mitchell's Comparison of PCE with Energy Credits using 1988 data.

The first thing you will probably notice as you look at the first table (cover page) is that there are some very big winners and losers. This I think is impossible to avoid. The range of 1988 PCE/customer is from $128 (Skagway) to $1695 (Cold Bay). The Energy Credit proposal narrows this range from $451 (Bethel) to $1048 (St. Paul).

Following the cover table, is an explanation by Alan on how he derived the Energy Credit formula. I would also direct your attention to Table 5 which contains all the information in the cover table but orders the utilities in terms of winners and losers.

Comparison of PCE with Energy Credits

1988 PCE Data

ID#	Utility	1988 PCE $/kWh	1988 PCE per Cust.	Energy Credit per Cust.	$ Change	EC Usage Credit $/kWh	EC Fixed Credit $/month
1	Akhiok, City of	$0.265	$623	$862	$239	$0.145	$43.46
2	Akiachak Ltd.	$0.283	$897	$729	($168)	$0.108	$32.27
3	Akiak City Council	$0.180	$582	$831	$249	$0.122	$36.46
4	Alaska Power & Telephone						
5	Craig	$0.037	$198	$649	$451	$0.072	$21.63
6	Hydaburg	$0.068	$316	$793	$476	$0.096	$28.89
7	Skagway	$0.024	$128	$646	$517	$0.073	$21.90
8	Tok	$0.050	$237	$584	$347	$0.070	$21.08
9	Alaska Village Elec Coop	$0.258	$1,024	$790	($234)	$0.104	$31.29
10	Allakaket Energy Systems	$0.309	$527	$698	$171	$0.132	$39.47
11	Alutiiq Power Co. (Karluk)	$0.271	$845	$875	$29	$0.130	$39.03
12	Andreanof Elec. (Atka)	$0.151	$533	$886	$353	$0.124	$37.23
13	Aniak L & P	$0.246	$1,129	$756	($373)	$0.092	$27.67
14	Arctic Village Elec.	$0.215	$377	$712	$335	$0.133	$39.86
15	Atmautluak Joint Utility	$0.246	$1,127	$961	($166)	$0.118	$35.28
16	Beaver Elec.	$0.270	$541	$714	$173	$0.127	$38.21
17	Bethel Utility Corp.	$0.072	$366	$451	$85	$0.052	$15.55
18	Bettles L & P	$0.317	$1,434	$832	($602)	$0.102	$30.74
19	Birch Creek Village	$0.313	$924	$871	($53)	$0.133	$39.84
20	Brevig Mission Utility	$0.217	$435	$745	$311	$0.133	$39.89
21	Buckland City Council	$0.170	$462	$793	$332	$0.126	$37.69
22	Chefornak Elec. Co.	$0.176	$679	$861	$181	$0.115	$34.58
23	Chenega Bay IRA Vil. Coun.	$0.222	$907	$981	$74	$0.128	$38.32
24	Chignik Elec.	$0.136	$439	$793	$354	$0.116	$34.85
25	Chitina Elec. Inc.	$0.237	$712	$846	$134	$0.128	$38.43
26	Circle Elec. Utility	$0.361	$1,639	$1,017	($621)	$0.125	$37.51
27	Clarks Pt., City of	$0.157	$531	$915	$383	$0.131	$39.27
28	Coffman Cove Utility Assoc	$0.062	$422	$1,103	$682	$0.106	$31.91
29	Cordova Elec. Co-Op.	$0.075	$472	$547	$75	$0.055	$16.61
30	Diomede City Council	$0.120	$438	$831	$393	$0.115	$34.35
31	Eagle Power Co.	$0.271	$626	$664	$38	$0.112	$33.71
32	Eagle Village	$0.418	$1,089	$881	($208)	$0.142	$42.60
33	Egegik L & P	$0.379	$1,574	$835	($738)	$0.108	$32.31
34	Ekwok, City of	$0.157	$349	$778	$429	$0.134	$40.06
35	Elfin Cove Elec. Utility	$0.154	$586	$955	$369	$0.129	$38.64
36	False Pass Elec. Assoc.	$0.148	$540	$926	$386	$0.128	$38.32
37	Far North Utility (Central)	$0.276	$1,210	$947	($263)	$0.119	$35.58
38	G & K, Inc. (Cold Bay)	$0.233	$1,695	$895	($800)	$0.082	$24.68
39	Galena, City of	$0.101	$480	$731	$251	$0.088	$26.31

ID#	Utility	1988 PCE $/kWh	1988 PCE per Cust.	Energy Credit per Cust.	$ Change	EC Usage Credit $/kWh	EC Fixed Credit $/month
40	Golovin Power Utility	$0.292	$1,000	$845	($155)	$0.120	$36.10
41	Gustavus Elec. Co.	$0.385	$1,101	$704	($397)	$0.109	$32.67
42	Gwitchyaa Zhee (Ft Yukon)	$0.188	$652	$635	($17)	$0.090	$26.93
43	Haines L & P	$0.040	$257	$687	$430	$0.068	$20.50
44	Hughes P & L	$0.363	$1,036	$830	($206)	$0.129	$38.58
45	Igiugig Vil. Council	$0.398	$984	$832	($152)	$0.137	$41.12
46	Ipnatchiaq Co. (Deering)	$0.180	$995	$1,026	$32	$0.112	$33.70
47	INN Elec. Co-Op (Iliamna)	$0.327	$1,392	$722	($670)	$0.092	$27.59
48	King Cove, City of	$0.094	$543	$901	$358	$0.096	$28.87
49	Kobuk Valley Elec. Co-Op	$0.211	$523	$790	$266	$0.130	$38.95
50	Kokhanok Vil. Council	$0.387	$871	$789	($83)	$0.135	$40.41
51	Koliganek Vil. Council	$0.164	$296	$693	$397	$0.128	$38.49
52	Kotzebue Elec. Assoc.	$0.108	$683	$606	($76)	$0.061	$18.28
53	Koyukuk, City of	$0.220	$320	$657	$337	$0.130	$39.00
54	Kwethluk, Inc.	$0.167	$463	$678	$215	$0.106	$31.94
55	Kwig Power Co.	$0.261	$993	$838	($155)	$0.113	$33.99
56	Larsen Bay Utility	$0.211	$843	$879	$36	$0.116	$34.76
57	Levelock Elec. Co-Op	$0.312	$896	$753	($144)	$0.116	$34.87
58	Manley Utility Co.	$0.380	$786	$678	($108)	$0.120	$35.87
59	Manokotak Natives Ltd.	$0.211	$1,078	$915	($163)	$0.105	$31.51
60	McGrath L & P	$0.231	$1,217	$747	($470)	$0.084	$25.29
61	Middle Kuskokwim Coop	$0.389	$1,018	$802	($216)	$0.129	$38.68
62	Naknek Elec.	$0.131	$738	$548	($190)	$0.059	$17.80
63	Napakiak Ircinraq Power	$0.385	$1,209	$749	($460)	$0.111	$33.32
64	Napaskiak Inc.	$0.385	$977	$719	($258)	$0.117	$35.12
65	Nelson Lagoon Elec.	$0.212	$1,203	$1,104	($99)	$0.119	$35.69
66	Nikolai L & P	$0.207	$730	$856	$127	$0.120	$36.05
67	Nome Joint Utility	$0.083	$498	$521	$23	$0.054	$16.25
68	North Slope Borough						
69	Anaktuvuk	$0.120	$559	$793	$234	$0.096	$28.79
70	Atqasuk	$0.126	$830	$1,013	$183	$0.100	$29.91
71	Kaktovik	$0.109	$550	$820	$271	$0.095	$28.44
72	Nuiqsut	$0.126	$576	$800	$224	$0.098	$29.37
73	Pt. Hope	$0.109	$601	$803	$202	$0.088	$26.43
74	Pt. Lay	$0.120	$569	$876	$307	$0.105	$31.50
75	Wainwright	$0.109	$521	$758	$237	$0.090	$27.11
76	Northway P & L	$0.174	$704	$729	$25	$0.095	$28.63
77	Nushagak Elec. Co-Op	$0.084	$465	$564	$98	$0.062	$18.45
78	Ouzinkie, City of	$0.121	$487	$847	$360	$0.111	$33.35
79	Pedro Bay Vil. Council	$0.400	$1,015	$838	($177)	$0.136	$40.95
80	Pelican Utility Co.	$0.030	$176	$802	$626	$0.084	$25.33
81	Perryville, City of	$0.164	$618	$925	$307	$0.126	$37.70
82	Pilot Point Vil. Council	$0.205	$870	$997	$127	$0.127	$38.10
83	Port Heiden, City of	$0.115	$533	$955	$422	$0.116	$34.78
84	Puvurnaq Power Co. (Kong.)	$0.242	$977	$871	($106)	$0.114	$34.24
85	Rampart Village	$0.418	$927	$777	($150)	$0.133	$40.05

ID#	Utility	1988 PCE $/kWh	1988 PCE per Cust.	Energy Credit per Cust.	$ Change	EC Usage Credit $/kWh	EC Fixed Credit $/month
86	Ruby Elec. Co.	$0.237	$550	$654	$104	$0.110	$33.14
87	Sand Point Elec.	$0.044	$431	$996	$565	$0.075	$22.35
88	Sheldon Pt. City Council	$0.225	$813	$871	$58	$0.121	$36.27
89	Stevens Village Sys.	$0.265	$378	$671	$293	$0.134	$40.06
90	St. George Elec. Utility	$0.255	$1,421	$987	($434)	$0.107	$32.25
91	St. Paul Mun. Elec.	$0.144	$1,217	$1,048	($169)	$0.087	$26.11
92	Takotna Comm. Assoc.	$0.129	$358	$822	$464	$0.129	$38.65
93	Tanana Power Co.	$0.184	$685	$679	($6)	$0.093	$27.83
94	Tatitlek Elec. Utility	$0.292	$1,017	$900	($117)	$0.127	$38.09
95	Telida Village Utility	$0.404	$1,119	$947	($172)	$0.149	$44.63
96	Teller Power	$0.325	$922	$702	($220)	$0.109	$32.74
97	Tenakee Springs Elec.	$0.218	$520	$705	$185	$0.118	$35.30
98	Tetlin Village Energy	$0.242	$469	$765	$295	$0.138	$41.41
99	Thorne Bay Public Utility	$0.131	$693	$847	$154	$0.095	$28.54
100	Tlingit Haida REA						
101	Angoon	$0.218	$1,395	$940	($455)	$0.094	$28.17
102	Hoonah	$0.217	$1,336	$822	($514)	$0.084	$25.25
103	Kake	$0.216	$1,454	$901	($554)	$0.087	$26.18
104	Kasaan	$0.218	$821	$973	$152	$0.132	$39.60
105	Klawock	$0.217	$1,351	$868	($484)	$0.088	$26.49
106	Tulkisarmute Inc (Tuluksak)	$0.213	$659	$801	$142	$0.120	$35.93
107	Tuntutuliak Comm. Serv.	$0.163	$536	$759	$223	$0.110	$33.07
108	Umnak Power Co.(Nikolski)	$0.335	$1,012	$879	($133)	$0.133	$39.84
109	Unalakleet Valley Elec.	$0.122	$695	$776	$81	$0.084	$25.05
110	Unalaska Elec. Utility	$0.062	$469	$650	$181	$0.058	$17.54
111	Unqusrag Power Co (Newtok)	$0.351	$945	$815	($130)	$0.130	$38.88
112	Venetie Village Elec.	$0.170	$394	$739	$345	$0.125	$37.47
113	White Mountain Utility	$0.218	$660	$757	$97	$0.114	$34.29
114	Yakutat Power Inc.	$0.061	$392	$776	$384	$0.078	$23.27

Prepared by: Alan Mitchell
Analysis North
911 W. 8th Avenue, Suite 204
Anchorage, AK 99501
907-272-3425

Analysis North

Alaska's Utility Consumer Advocate

911 West 8th Avenue, Suite 204 Anchorage, Alaska 99501 907-272-3425

Energy Credit Program Development

By Alan Mitchell March 20, 1990

I. Development of Formula

A. General Approach

1. The Energy Credit Program requires that a formula be developed to determine the size of the Fixed and Usage credit for each utility. In developing the formula, the objective was to create a formula that matches as closely as possible the distribution of money across utilities from the existing PCE program. In order to determine the closeness of the match, the average PCE dollars per customer was the quantitative measure focused on. A secondary objective in the creation of the formula was to only include utility characteristics that significantly improved the closeness of the match. Including characteristics that only marginally improve the closeness of the match serves to complicate program administration without significantly diminishing the rate shock caused by switching to a new program.

2. The formula development involved performing a linear regression, a statistical technique that allowed us to determine how and to what extent various utility characteristics are useful in our Energy Credit formula. A utility characteristic was eliminated from the formula if the statistical regression indicated that there was less than a 90% chance that the utility characteristic was actually useful in improving the match between Energy Credits and PCE.

B. Utility Characteristics Tested

1. Expectations

   a. Information was available for three potentially important utility characteristics: total kWh sales, use per customer, and fuel transportation cost. We expected that the Fixed and Usage credits in the Energy Credits program would need to be lower for utilities with higher kWh sales. Larger utilities tend to have lower cost per kWh and thus lower PCE per customer.

   b. We had unclear expectations as to the utility of the use per customer variable in the Energy Credit formula. Utilities with higher use per customer tend to receive more PCE per customer because PCE is a usage-

based program. However, the Energy Credit program also has usage-based component. Thus, utilities with high use per customer may not need higher credit levels, because they will be rewarded through the usage-based component of the Energy Credit program. Another possible influence of the use per customer variable is that utilities with high use per customer have lower $/kWh costs because fixed customer service and distribution costs per customer can be spread over more kWh. This effect taken alone would say that utilities with high use per customer should have lower Energy Credits.

c. Finally, we expected utilities with higher transportation costs to need higher Energy Credits. PCE rates would tend to be higher in these utilities because of higher fuel costs and higher living costs in general (and thus higher labor costs).

2. Transportation Cost Variable

a. We had total kWh sales and a total customer count for all utilities receiving PCE in 1988 (from George Matz at the AEA). Our limited search produced a consistent set of transportation cost data for only a limited number (n = 27) of Western Alaska communities. This data consisted of general (without discounts) fuel transportation tariffs from Crowley Maritime. Therefore, we performed a regression on this limited sample of utilities to determine if the transportation cost characteristic was a significant determinant of the amount of PCE received by a utility.

b. Table 1 shows the utilities that were included in the regression. The transportation cost variable was not found to be significant with 90% confidence. The t-statistic was 0.3, less than the 90% criteria of 1.66. The other variables in the regression were the logarithm of the total kWh sales, and the total customer count for the utility (to be consistent with the subsequent regressions we should have used use per customer instead of total customer count in this regression). As an alternative to using the actual transportation cost, a three zone variable was also tried. The variable separated communities into three transportation cost zones: regional centers, communities served by a secondary shipments from regional centers, and remote high-cost communities. This regression also did not show significant results for the transportation cost variable (t-stat = 0.5).

c. Possible explanations for the insignificance of the transportation cost variable include:

(1) Much of the transportation effect may be captured in the utility size variable, total kWh sales. Larger utilities tend to be located in low transportation cost areas.

(2) The quantity of fuel purchased may be more important than where the delivery occurs in determining price. If so, this effect on PCE is also

captured in the kWh sales variable.

(3) The other factors that cause PCE to vary across utilities may swamp the variation due to transportation cost. A 30 cent/gallon difference in transportation cost translates to roughly a 3 cent/kWh difference in PCE rate. The total variation across utilities in PCE rates is 35-40 cents/kWh. The statistical regression may not pick up variations in the 3 cent/kWh range.

3. Use per Customer Variable

a. Once the transportation cost variable was eliminated from consideration, subsequent regressions were performed on the full sample of utilities receiving PCE. Table 2 shows the results of the regression involving the logarithm of total kWh sales and the use per customer variable. The use per customer variable was found to be statistically insignificant in improving the match between Energy Credits and PCE (t-statistic = 0.61).

b. The insignificance may be explained by the counteracting effects mentioned in the "Expectations" section above. Also, there is correlation between use per customer and total kWh sales (larger utilities have higher use per customer), so some of the use per customer effect may be picked up in the total kWh sales variable.

4. Total kWh Sales Variable

a. The total kWh sales variable was found to be significant with over 99% confidence in all the regression performed. It was entered into the regressions in a logarithmic form, since visual plots of PCE per customer against sales indicated a logarithmic relationship.

b. The relationship between size of utility and PCE received per customer may not be as strong as expected. Larger utilities tend to have lower costs (causing less PCE) but they also have higher usage per customer (causing more PCE).

II. Results of Formula

A. Formula Mechanics

1. The formula resultant from the regressions is:

Utility Scaling Factor = 0.09431 - 0.01404 * ln(annual kWh sales in millions)

"ln" means take the natural logarithm of the quantity in parentheses. A utility

with a Utility Scaling Factor (USF) of 0.10 will have Fixed and Usage credits that are twice as large as one that has a USF of 0.05.

2. For utilities such as AVEC and Middle Kuskokwim that have multiple power systems yet have a postage stamp rate for all communities, a "weighted average" utility size is used in the formula. First a weighted average of the logarithm of each power system size (annual kWh, millions) is found using the customer count as the weighting factor for each power system. The anti-logarithm of this weighted average is taken to produce the correct value to use in the USF formula. In the summary tables, this technique was only used for AVEC and Middle Kuskokwim utilities.

B. Explanation of Tables and Graphs

1. The Energy Credit approach was applied to 1988 characteristics for PCE-receiving utilities. It was assumed that $17.18 million was available to the Energy Credit program. This is the amount that would have spent by the PCE program in 1988 had all PCE utilities received PCE for all 12 months of the year. Further, it was assumed that relationship between the Fixed and Usage credits in the Energy Credit program is that there is $300 of fixed credit per month for every $1/kWh of usage credit (same as $30/month of fixed credit for every 10 cents/kWh of usage credit). (This fixed to usage relationship was assumed in the regression work also). This relationship causes about 44% of the total Energy Credit funding to be paid through the fixed credit (56% is paid through the usage credit).

2. Table 4 summarizes the results of the Energy Credit approach for 1988 data. The utilities are sorted in alphabetical order. The most interesting columns to compare are column 6, the benefit per customer under the PCE program, to column 7, the benefit per customer under the Energy Credit program. The contents of all of the columns are listed below:

   1) Annual Sales, GWh: Total energy sales for the utility in millions of kWh (GWh = gigawatt-hours).

   2) Formula GWh: This value is the value that is plugged into the Utility Scaling Factor formula. It is the same as the column 1 value, unless the utility consists of multiple power systems that are treated together because of a postage-stamp rate. In that case the Formula GWh is the weighted average size of the utilities, as discussed above in the Formula Mechanics section.

   3) PCE Eligible GWh: This is the amount of GWh for a utility that were eligible to receive the PCE credit. For a customer, those PCE over 750 kWh/month are not eligible.

   4) # of Cust: Total number of customers in the utility, including residential,

commercial, and community facilities.

5) 1988 PCE $/kWh: The 1988 PCE rate for the utility, i.e. the amount of PCE received per eligible kWh.

6) 1988 PCE per Cust: The dollar amount of PCE received in 1988 per customer.

7) Energy Credit per Cust: The dollar amount of benefit that would have been received under the Energy Credit program.

8) $ Change: The dollar difference between column 7 and column 6. A positive number indicates the utility would have received more money under the Energy Credit program.

9) % Change: The percentage change between column 6 and 7.

10) Usage Credit $/kWh: The Usage credit under the Energy Credit program, expressed in dollars per eligible kWh.

11) Fixed Credit $/month: The Fixed credit under the Energy Credit Program, expressed in dollars per month for each customer.

3. Table 5 is the same as Table 4 but the utilities are sorted according to contents of column 8, the change in benefit caused by the Energy Credit program. Thus, the utilities are listed in order from "winners" to "losers".

4. Figure 1 shows the amount of PCE received per customer in 1988 for each utility. Each utility is plotted according to its size (GWh sales), as listed on the X-axis (the scale is logarithmic). A utility is identified by its ID number, which correlates with the ID number in Table 4. The line drawn through the points is the customer benefit that would be derived from the Energy Credit program. Individual utilities cannot be located on the line, but it does show the general trend of the Energy Credit benefit across utility size. The line is not straight, because the benefit per customer does not only depend on the utility size. Since the Energy Credit program has a usage credit, the benefit per customer also depends of the eligible kWh per customer.

5. Figure 2 graphs the change in benefit caused by the Energy Credit program versus the size of the utility. Essentially, this is column 8 plotted against column 1 in Table 4.

III. Additional Work

A. Transition Period

1. The magnitude of changes in customer benefit between the PCE program and the Energy Credit program suggest that a transition period may be necessary. The mechanics of determining the Energy Credits during the transition period need to be worked out. The mechanics would involve adjusting the USF for each utility towards the value that would be necessary to replicate the customer benefit received under the old PCE program.

B. Low Effective Rates and $0 Customer Bills

1. For some of the utilities that receive substantially more benefit under the Energy Credit program, some extremely low effective rates may result from the program, and the fixed credit may cause some customers to have $0 bills. The utilities likely to have this problem will be AP&T's Craig, Skagway and Tok, Haines L&P, and Pelican Utility (although we have not looked in detail at the rate structure to verify this for sure). This issue and a possible remedy needs to be looked at (effective rates and usage levels that produce $0 bills could be calculated for each utility). The problem at first glance seems to indicate that the Energy Credit formula rewards South East utilities too much. However, the Tlingit Haida utilities are some of the big "losers" in the Energy Credit program.

Table 1

C:\DATA\PCE\REGRESS.WK1, Sheet 1
03/13/90

Fixed/Usage Ratio = $200 / ($/kWh) / month

	INPUTS																	
Utility	Transpo Cost Factor	Annual GWh Sold	# of Customers	PCE Eligible GWh	Current PCE $/kWh	R + E/C	Constant X Value	Customer X Value	Usage X Value	Transport X Value	Existing Total Funding	Existing Funding /Cust	Proposed Funding /Cust	% Change	$ Change	Usage Credit $/kWh	Fixed Credit $/month	
Akiachak Ltd.	2	0.58	129	0.41	$0.283	5,574	5,574	27,086	(2,996)	11,147	115,689	$897	$621	-31%	($276)	$0.111	$22.3	$0.75
Akiak City Coun	2	0.23	65	[illegible]	$0.180	5,639	5,639	23,539	(8,338)	11,278	37,841	$582	$673	16%	$90	$0.119	$23.9	$0.75
Aniak L & P	2	1.65	203	0.9[illegible]	$0.246	6,994	6,994	37,159	3,482	13,987	229,117	$1,129	$664	-41%	($465)	$0.095	$19.0	$0.80
Bethel Utility	1	25.95	1687	8.60	$0.072	7,500	7,500	55,729	24,157	7,500	617,509	$366	$507	38%	$141	$0.068	$13.5	$0.40
Brevig Mission	2	0.11	48	0.10	$0.217	4,404	4,404	17,051	(9,913)	8,809	20,857	$435	$583	34%	$149	$0.132	$26.5	$0.74
Buckland City C	2	0.17	71	0.19	$0.170	5,116	5,116	21,809	(8,976)	10,233	32,785	$462	$660	43%	$198	$0.129	$25.8	$0.96
Diomede City Co	2	0.37	48	0.18	$0.120	6,056	6,056	23,443	(6,088)	12,111	21,031	$438	$598	36%	$159	$0.099	$19.7	$0.90
Golovin Power U	2	0.25	60	0.21	$0.292	5,821	5,821	23,833	(8,131)	11,642	59,977	$1,000	$669	-33%	($330)	$0.115	$23.0	$0.70
Kobuk Valley El	2	0.13	42	0.10	$0.211	4,881	4,881	18,244	(9,949)	9,762	21,973	$523	$602	15%	$78	$0.123	$24.6	$1.00
Kotzebue Elec.	1	13.57	980	6.22	$0.108	8,746	8,746	60,242	22,809	8,746	668,909	$683	$615	-10%	($68)	$0.070	$14.1	$0.50
Kwethluk, Inc.	2	0.63	150	0.42	$0.167	5,169	5,169	25,898	(2,396)	10,337	69,437	$463	$585	26%	$122	$0.113	$22.6	$0.75
McGrath L & P	3	2.81	241	1.27	$0.231	7,657	7,657	42,000	7,909	22,972	293,191	$1,217	$709	-42%	($508)	$0.093	$18.5	$0.90
Nikolai L & P	3	0.25	49	0.17	$0.207	5,928	5,928	23,069	(8,219)	17,783	35,754	$730	$695	-5%	($34)	$0.117	$23.5	$0.90
Nome Joint Util	1	21.43	1631	9.83	$0.083	8,425	8,425	62,318	25,821	8,425	812,675	$498	$598	20%	$99	$0.071	$14.2	$0.40
Anaktuvuk	3	1.28	111	0.52	$0.120	7,060	7,060	33,248	1,728	21,179	62,058	$559	$664	19%	$105	$0.094	$18.8	$1.25
Atqasuk	3	0.99	68	0.45	$0.126	8,962	8,962	37,814	(50)	26,885	56,433	$830	$791	-5%	($39)	$0.088	$17.7	$1.25
Kaktovik	3	1.38	90	0.45	$0.109	7,452	7,452	33,531	2,408	22,355	49,471	$550	$645	17%	$95	$0.087	$17.3	$1.25
Nuiqsut	3	1.12	117	0.53	$0.126	6,968	6,968	33,181	802	20,903	67,336	$576	$689	20%	$114	$0.099	$19.8	$1.25
Pt. Hope	3	2.17	193	1.06	$0.109	7,912	7,912	41,639	6,146	23,736	115,970	$601	$742	24%	$141	$0.094	$18.8	$1.18
Pt. Lay	3	0.70	55	0.26	$[illegible]	7,142	7,142	28,621	(2,595)	21,426	31,293	$569	$661	16%	$92	$0.093	$18.5	$1.18
Wainwright	3	1.87	164	0.78	$0.109	7,186	7,186	36,645	4,479	21,557	85,481	$521	$674	29%	$153	$0.094	$18.8	$1.18
Nushagak Elec.	1	13.06	1090	6.07	$0.084	7,965	7,965	55,708	20,467	7,965	507,285	$465	$590	27%	$124	$0.074	$14.8	$0.35
Takotna Comm. A	3	0.14	42	0.12	$0.129	5,184	5,184	19,375	(10,219)	15,551	15,057	$358	$670	87%	$311	$0.129	$25.8	$0.90
Teller Power	2	0.53	86	0.24	$0.325	5,237	5,237	23,328	(3,360)	10,474	79,303	$922	$543	-41%	($379)	$0.104	$20.8	$0.74
Unalakleet Vall	2	2.96	273	1.56	$0.122	8,099	8,099	45,429	8,794	16,197	189,867	$695	$701	1%	$5	$0.087	$17.3	$0.70
Unalaska Elec.	2	16.02	385	2.89	$0.062	9,910	9,910	58,997	27,486	19,820	180,379	$469	$492	5%	$23	$0.050	$9.9	$0.30
White Mountain	2	0.37	78	0.24	$0.218	5,424	5,424	23,631	(5,373)	10,848	51,475	$660	$601	-9%	($59)	$0.111	$22.1	$0.70

Table 1
cont'd

Zone Approach

Regression Output:

Constant		0		
Std Err of Y Est		224.3027		
R Squared		0.131339		
No. of Observations		27		
Degrees of Freedom		23		
X Coefficient(s)	-0.04323	0.02561	-0.02709	0.007768
Std Err of Coef.	0.139477	0.023055	0.013491	0.014911
	0.3	1.1	2.0	0.5
	Constant	Cust	GWh	Transp

Actual Cost per gallon approach

Regression Output:

Constant		0		
Std Err of Y Est		225.2286		
R Squared		0.124152		
No. of Observations		27		
Degrees of Freedom		23		
X Coefficient(s)	0.037518	0.014139	-0.0224	-0.00791
Std Err of Coef.	0.100999	0.017835	0.011418	0.027879
	0.4	0.8	2.0	0.3
	Constant	Cust	GWh	Transp

Table 2

Regression with ln(GWh) and kWh/customer
$300/month Fixed per $/kWh Usage

Regression Output:

Constant		0	
Std Err of Y Est		318.0101	
R Squared		0.18129	
No. of Observations		111	
Degrees of Freedom		108	
X Coefficient(s)	0.09034	-0.0154	0.386269
Std Err of Coef.	0.007548	0.003288	0.630472
T-statistic	11.97	4.68	0.61
	Constant	ln(GWh)	Use/Cust

Table 3

Regression with only ln(GWh)
$300/month Fixed per $/kWh Usage

Regression Output:		
Constant		0
Std Err of Y Est		317.0976
R Squared		0.178445
No. of Observations		111
Degrees of Freedom		109
X Coefficient(s)	0.094311	-0.01404
Std Err of Coef.	0.003854	0.002427
T-statistic	24.47	5.79
	Constant	ln(GWh)

Utility Scaling Factor = 0.094311 $ - 0.01404 * ln(GWh)

Table 4

C:\DATA\PCE\REGRESS.WK3, Sheet 2
03/17/90

Fixed to Usage Ratio = $300 /month per $/kWh

FORMULA
Constant 0.094311
ln(GWh) Term -0.01404

Total Program Funding = $17.18 million

ID#	Utility	1 Annual Sales GWh	2 Formula GWh	3 PCE Eligible GWh	4 # of Cust	5 1988 ~~Current~~ PCE $/kWh	6 1988 ~~Existing~~ PCE per Cust	7 Energy Credit per Cust	8 $ Change	9 % Change	10 ENERGY CREDITS Usage Credit $/kWh	11 Fixed Credit $/month
1	Akhiok, City of	0.05	0.05	0.05	22	$0.265	$623	$862	$239	38%	$0.145	$43.5
2	Akiachak Ltd.	0.58	0.58	0.41	129	$0.283	$897	$729	($168)	-19%	$0.108	$32.3
3	Akiak City Council	0.23	0.23	0.21	65	$0.180	$582	$831	$249	43%	$0.122	$36.5
4	Alaska Power & Telephone											
5	Craig	6.38	6.38	3.03	561	$0.037	$198	$649	$451	227%	$0.072	$21.6
6	Hydaburg	1.25	1.25	0.77	166	$0.068	$316	$793	$476	150%	$0.096	$28.9
7	Skagway	6.02	6.02	2.54	484	$0.024	$128	$646	$517	404%	$0.073	$21.9
8	Tok	7.23	7.23	2.50	531	$0.050	$237	$584	$347	146%	$0.070	$21.1
9	Alaska Village Elec Coop	32.28	0.73	19.96	5,021	$0.258	$1,024	$790	($234)	-23%	$0.104	$31.3
10	Allakaket Energy Systems	0.12	0.12	0.11	67	$0.309	$527	$698	$171	33%	$0.132	$39.5
11	Alutiiq Power Co. (Karluk)	0.13	0.13	0.09	28	$0.271	$845	$875	$29	3%	$0.130	$39.0
12	Andreanof Elec. (Atka)	0.19	0.19	0.16	44	$0.151	$533	$886	$353	66%	$0.124	$37.2
13	Aniak L & P	1.65	1.65	0.93	203	$0.246	$1,129	$756	($373)	-33%	$0.092	$27.7
14	Arctic Village Elec.	0.11	0.11	0.11	60	$0.215	$377	$712	$335	89%	$0.133	$39.9
15	Atmautluak Joint Utility	0.30	0.30	0.26	57	$0.246	$1,127	$961	($166)	-15%	$0.118	$35.3
16	Beaver Elec.	0.15	0.15	0.09	46	$0.270	$541	$714	$173	32%	$0.127	$38.2
17	Bethel Utility Corp.	25.05	25.05	8.60	1,687	$0.072	$366	$451	$85	23%	$0.052	$15.6
18	Bettles L & P	0.83	0.83	0.28	62	$0.317	$1,434	$832	($602)	-42%	$0.102	$30.7
19	Birch Creek Village	0.11	0.11	0.08	26	$0.313	$924	$871	($53)	-6%	$0.133	$39.8
20	Brevig Mission Utility	0.11	0.11	0.10	48	$0.217	$435	$745	$311	72%	$0.133	$39.9
21	Buckland City Council	0.17	0.17	0.19	71	$0.170	$462	$793	$332	72%	$0.126	$37.7
22	Chefornak Elec. Co.	0.35	0.35	0.29	74	$0.176	$679	$861	$181	27%	$0.115	$34.6
23	Chenega Bay IRA Vil. Coun.	0.15	0.15	0.11	26	$0.222	$907	$981	$74	8%	$0.128	$38.3
24	Chignik Elec.	0.33	0.33	0.25	76	$0.136	$439	$793	$354	81%	$0.116	$34.8
25	Chitina Elec. Inc.	0.15	0.15	0.12	40	$0.237	$712	$846	$134	19%	$0.128	$38.4
26	Circle Elec. Utility	0.18	0.18	0.10	22	$0.361	$1,639	$1,017	($621)	-38%	$0.125	$37.5
27	Clarks Pt., City of	0.12	0.12	0.11	33	$0.157	$531	$915	$383	72%	$0.131	$39.3
28	Coffman Cove Utility Assoc	0.63	0.63	0.47	69	$0.062	$422	$1,103	$682	162%	$0.106	$31.9
29	Cordova Elec. Co-Op.	19.77	19.77	8.31	1,324	$0.075	$472	$547	$75	16%	$0.055	$16.6
30	Diomede City Council	0.37	0.37	0.18	48	$0.120	$438	$831	$393	90%	$0.115	$34.4
31	Eagle Power Co.	0.42	0.42	0.27	115	$0.271	$626	$664	$38	6%	$0.112	$33.7
32	Eagle Village	0.06	0.06	0.06	22	$0.418	$1,089	$881	($208)	-19%	$0.142	$42.6
33	Egegik L & P	0.58	0.58	0.32	76	$0.379	$1,574	$835	($738)	-47%	$0.108	$32.3
34	Ekwok, City of	0.10	0.10	0.10	44	$0.157	$349	$778	$429	123%	$0.134	$40.1
35	Elfin Cove Elec. Utility	0.14	0.14	0.13	34	$0.154	$586	$955	$369	63%	$0.129	$38.6
36	False Pass Elec. Assoc.	0.15	0.15	0.11	29	$0.148	$540	$926	$386	71%	$0.128	$38.3
37	Far North Utility (Central)	0.28	0.28	0.19	44	$0.276	$1,210	$947	($263)	-22%	$0.119	$35.6
38	G & K, Inc. (Cold Bay)	3.22	3.22	0.53	73	$0.233	$1,695	$895	($800)	-47%	$0.082	$24.7
39	Galena, City of	2.23	2.23	1.46	307	$0.101	$480	$731	$251	52%	$0.088	$26.3
40	Golovin Power Utility	0.25	0.25	0.21	60	$0.292	$1,000	$845	($155)	-15%	$0.120	$36.1
41	Gustavus Elec. Co.	0.53	0.53	0.45	159	$0.385	$1,101	$704	($397)	-36%	$0.109	$32.7
42	Gwitchyaa Zhee (Ft Yukon)	1.94	1.94	1.08	310	$0.188	$652	$635	($17)	-3%	$0.090	$26.9
43	Haines L & P	8.24	8.24	4.54	703	$0.040	$257	$687	$430	168%	$0.068	$20.5

44	Hughes P & L	0.14	0.14	0.11	39	$0.363	$1,036	$830	($206)	-20%	$0.129	$38.6
45	Igiugig Vil. Council	0.08	0.08	0.06	26	$0.398	$984	$832	($152)	-15%	$0.137	$41.1
46	Ipnatchiaq Co. (Deering)	0.42	0.42	0.29	53	$0.180	$995	$1,026	$32	3%	$0.112	$33.7
47	INN Elec. Co-Op (Iliamna)	1.67	1.67	1.06	249	$0.327	$1,392	$722	($670)	-48%	$0.092	$27.6
48	King Cove, City of	1.26	1.26	1.08	188	$0.094	$543	$901	$358	66%	$0.096	$28.9
49	Kobuk Valley Elec. Co-Op	0.13	0.13	0.10	42	$0.211	$523	$790	$266	51%	$0.130	$38.9
50	Kokhanok Vil. Council	0.09	0.09	0.08	37	$0.387	$871	$789	($83)	-10%	$0.135	$40.4
51	Koliganek Vil. Council	0.14	0.14	0.12	66	$0.164	$296	$693	$397	134%	$0.128	$38.5
52	Kotzebue Elec. Assoc.	13.57	13.57	6.22	980	$0.108	$683	$606	($76)	-11%	$0.061	$18.3
53	Koyukuk, City of	0.13	0.13	0.07	49	$0.220	$320	$657	$337	105%	$0.130	$39.0
54	Kwethluk, Inc.	0.63	0.63	0.42	150	$0.167	$463	$678	$215	46%	$0.106	$31.9
55	Kwig Power Co.	0.40	0.40	0.31	82	$0.261	$993	$838	($155)	-16%	$0.113	$34.0
56	Larsen Bay Utility	0.33	0.33	0.26	65	$0.211	$843	$879	$36	4%	$0.116	$34.8
57	Levelock Elec. Co-Op	0.33	0.33	0.21	74	$0.312	$896	$753	($144)	-16%	$0.116	$34.9
58	Manley Utility Co.	0.26	0.26	0.18	88	$0.380	$786	$678	($108)	-14%	$0.120	$35.9
59	Manokotak Natives Ltd.	0.69	0.69	0.48	94	$0.211	$1,078	$915	($163)	-15%	$0.105	$31.5
60	McGrath L & P	2.81	2.81	1.27	241	$0.231	$1,217	$747	($470)	-39%	$0.084	$25.3
61	Middle Kuskokwim Coop	0.67	0.14	0.44	168	$0.389	$1,018	$802	($216)	-21%	$0.129	$38.7
62	Naknek Elec.	15.13	15.13	3.73	661	$0.131	$738	$548	($190)	-26%	$0.059	$17.8
63	Napakiak Ircinraq Power	0.46	0.46	0.33	104	$0.385	$1,209	$749	($460)	-38%	$0.111	$33.3
64	Napaskiak Inc.	0.31	0.31	0.24	93	$0.385	$977	$719	($258)	-26%	$0.117	$35.1
65	Nelson Lagoon Elec.	0.27	0.27	0.19	33	$0.212	$1,203	$1,104	($99)	-8%	$0.119	$35.7
66	Nikolai L & P	0.25	0.25	0.17	49	$0.207	$730	$856	$127	17%	$0.120	$36.0
67	None Joint Utility	21.43	21.43	9.83	1,631	$0.083	$498	$521	$23	5%	$0.054	$16.2
68	North Slope Borough											
69	Anaktuvuk	1.28	1.28	0.52	111	$0.120	$559	$793	$234	42%	$0.096	$28.8
70	Atqasuk	0.99	0.99	0.45	68	$0.126	$830	$1,013	$183	22%	$0.100	$29.9
71	Kaktovik	1.38	1.38	0.45	90	$0.109	$550	$820	$271	49%	$0.095	$28.4
72	Nuiqsut	1.12	1.12	0.53	117	$0.126	$576	$800	$224	39%	$0.098	$29.4
73	Pt. Hope	2.17	2.17	1.06	193	$0.109	$601	$803	$202	34%	$0.088	$26.4
74	Pt. Lay	0.70	0.70	0.26	55	$0.120	$569	$876	$307	54%	$0.105	$31.5
75	Wainwright	1.87	1.87	0.78	164	$0.109	$521	$758	$237	45%	$0.090	$27.1
76	Northway P & L	1.32	1.32	0.44	110	$0.174	$704	$729	$25	4%	$0.095	$28.6
77	Nushagak Elec. Co-Op	13.06	13.06	6.07	1,090	$0.084	$465	$564	$98	21%	$0.062	$18.5
78	Ouzinkie, City of	0.46	0.46	0.34	84	$0.121	$487	$847	$360	74%	$0.111	$33.3
79	Pedro Bay Vil. Council	0.08	0.08	0.07	29	$0.400	$1,015	$838	($177)	-17%	$0.136	$40.9
80	Pelican Utility Co.	2.78	2.78	0.68	116	$0.030	$176	$802	$626	355%	$0.084	$25.3
81	Perryville, City of	0.17	0.17	0.11	30	$0.164	$618	$925	$307	50%	$0.126	$37.7
82	Pilot Point Vil. Council	0.16	0.16	0.14	34	$0.205	$870	$997	$127	15%	$0.127	$38.1
83	Port Heiden, City of	0.33	0.33	0.25	53	$0.115	$533	$955	$422	79%	$0.116	$34.8
84	Puvurnaq Power Co. (Kong.)	0.38	0.38	0.26	64	$0.242	$977	$871	($106)	-11%	$0.114	$34.2
85	Rampart Village	0.10	0.10	0.07	30	$0.418	$927	$777	($150)	-16%	$0.133	$40.0
86	Ruby Elec. Co.	0.48	0.48	0.31	133	$0.237	$550	$654	$104	19%	$0.110	$33.1
87	Sand Point Elec.	5.44	5.44	2.04	209	$0.044	$431	$996	$565	131%	$0.075	$22.4
88	Sheldon Pt. City Council	0.24	0.24	0.11	31	$0.225	$813	$871	$58	7%	$0.121	$36.3
89	Stevens Village Sys.	0.10	0.10	0.07	48	$0.265	$378	$671	$293	78%	$0.134	$40.1
90	St. George Elec. Utility	0.59	0.59	0.43	77	$0.255	$1,421	$987	($434)	-31%	$0.107	$32.2
91	St. Paul Mun. Elec.	2.33	2.33	1.58	187	$0.144	$1,217	$1,048	($169)	-14%	$0.087	$26.1
92	Takotna Comm. Assoc.	0.14	0.14	0.12	42	$0.129	$358	$822	$464	129%	$0.129	$38.7
93	Tanana Power Co.	1.59	1.59	0.67	180	$0.184	$685	$679	($6)	-1%	$0.093	$27.8
94	Tatitlek Elec. Utility	0.16	0.16	0.17	48	$0.292	$1,017	$900	($117)	-12%	$0.127	$38.1
95	Telida Village Utility	0.04	0.04	0.03	10	$0.404	$1,119	$947	($172)	-15%	$0.149	$44.6
96	Teller Power	0.53	0.53	0.24	86	$0.325	$922	$702	($220)	-24%	$0.109	$32.7
97	Tenakee Springs Elec.	0.30	0.30	0.24	99	$0.218	$520	$705	$185	36%	$0.118	$35.3
98	Tetlin Village Energy	0.07	0.07	0.06	30	$0.242	$469	$765	$295	63%	$0.138	$41.4
99	Thorne Bay Public Utility	1.35	1.35	1.05	198	$0.131	$693	$847	$154	22%	$0.095	$28.5
100	Tlingit Haida REA											
101	Angoon	1.47	1.47	1.04	163	$0.218	$1,395	$940	($455)	-33%	$0.094	$28.2
102	Hoonah	2.83	2.83	1.77	288	$0.217	$1,336	$822	($514)	-38%	$0.084	$25.3
103	Kake	2.30	2.30	1.63	243	$0.216	$1,454	$901	($554)	-38%	$0.087	$26.2

104	Kasaan	0.11	0.11	0.11	28	$0.218	$821	$973	$152	19%	$0.132	$39.6
105	Klawock	2.15	2.15	1.63	262	$0.217	$1,351	$868	($484)	-36%	$0.088	$26.5
106	Tulkisarmute Inc (Tuluksak)	0.26	0.26	0.24	77	$0.213	$659	$801	$142	22%	$0.120	$35.9
107	Tuntutuliak Comm. Serv.	0.49	0.49	0.27	83	$0.163	$536	$759	$223	42%	$0.110	$33.1
108	Unnak Power Co.(Nikolski)	0.11	0.11	0.10	32	$0.335	$1,012	$879	($133)	-13%	$0.133	$39.8
109	Unalakleet Valley Elec.	2.96	2.96	1.56	273	$0.122	$695	$776	$81	12%	$0.084	$25.1
110	Unalaska Elec. Utility	16.02	16.02	2.89	385	$0.062	$469	$650	$181	39%	$0.058	$17.5
111	Unqusraq Power Co (Newtok)	0.13	0.13	0.13	49	$0.351	$945	$815	($130)	-14%	$0.130	$38.9
112	Venetie Village Elec.	0.18	0.18	0.16	68	$0.170	$394	$739	$345	88%	$0.125	$37.5
113	White Mountain Utility	0.37	0.37	0.24	78	$0.218	$660	$757	$97	15%	$0.114	$34.3
114	Yakutat Power Inc.	4.42	4.42	1.80	282	$0.061	$392	$776	$384	98%	$0.078	$23.3

Table 5

C:\DATA\PCE\REGRESS.WK3, Sheet 2
03/17/90

Fixed to Usage Ratio = $300 /month per $/kWh

FORMULA

Constant	0.094311
ln(GWh) Term	-0.01404

Total Program Funding = $17.18 million

ID#	Utility	1 Annual Sales GWh	2 Formula GWh	3 PCE Eligible GWh	4 # of Cust	5 1988 ~~Current~~ PCE $/kWh	6 1988 ~~Existing~~ PCE per Cust	7 Energy Credit per Cust	8 $ Change	9 % Change	10 ENERGY CREDITS Usage Credit $/kWh	11 Fixed Credit $/month
28	Coffman Cove Utility Assoc	0.63	0.63	0.47	69	$0.062	$422	$1,103	$682	162%	$0.106	$31.9
80	Pelican Utility Co.	2.78	2.78	0.68	116	$0.030	$176	$802	$626	355%	$0.084	$25.3
87	Sand Point Elec.	5.44	5.44	2.04	209	$0.044	$431	$996	$565	131%	$0.075	$22.4
7	Skagway	6.02	6.02	2.54	484	$0.024	$128	$646	$517	404%	$0.073	$21.9
6	Hydaburg	1.25	1.25	0.77	166	$0.068	$316	$793	$476	150%	$0.096	$28.9
92	Takotna Comm. Assoc.	0.14	0.14	0.12	42	$0.129	$358	$322	$464	129%	$0.129	$38.7
5	Craig	6.38	6.38	3.03	561	$0.037	$198	$649	$451	227%	$0.072	$21.6
43	Haines L & P	8.24	8.24	4.54	703	$0.040	$257	$687	$430	168%	$0.068	$20.5
34	Ekwok, City of	0.10	0.10	0.10	44	$0.157	$349	$778	$429	123%	$0.134	$40.1
83	Port Heiden, City of	0.33	0.33	0.25	53	$0.115	$533	$955	$422	79%	$0.116	$34.8
51	Koliganek Vil. Council	0.14	0.14	0.12	66	$0.164	$296	$693	$397	134%	$0.128	$38.5
30	Dionede City Council	0.37	0.37	0.18	48	$0.120	$438	$831	$393	90%	$0.115	$34.4
36	False Pass Elec. Assoc.	0.15	0.15	0.11	29	$0.148	$540	$926	$386	71%	$0.128	$38.3
114	Yakutat Power Inc.	4.42	4.42	1.80	282	$0.061	$392	$776	$384	98%	$0.078	$23.3
27	Clarks Pt., City of	0.12	0.12	0.11	33	$0.157	$531	$915	$383	72%	$0.131	$39.3
35	Elfin Cove Elec. Utility	0.14	0.14	0.13	34	$0.154	$586	$955	$369	63%	$0.129	$38.6
78	Ouzinkie, City of	0.46	0.46	0.34	84	$0.121	$487	$847	$360	74%	$0.111	$33.3
48	King Cove, City of	1.26	1.26	1.08	188	$0.094	$543	$901	$358	66%	$0.096	$28.9
24	Chignik Elec.	0.33	0.33	0.25	76	$0.136	$439	$793	$354	81%	$0.116	$34.8
12	Andreanof Elec. (Atka)	0.19	0.19	0.16	44	$0.151	$533	$886	$353	66%	$0.124	$37.2
8	Tok	7.23	7.23	2.50	531	$0.050	$237	$584	$347	146%	$0.070	$21.1
112	Venetie Village Elec.	0.18	0.18	0.16	68	$0.170	$394	$739	$345	88%	$0.125	$37.5
53	Koyukuk, City of	0.13	0.13	0.07	49	$0.220	$320	$657	$337	105%	$0.130	$39.0
14	Arctic Village Elec.	0.11	0.11	0.11	60	$0.215	$377	$712	$335	89%	$0.133	$39.9
21	Buckland City Council	0.17	0.17	0.19	71	$0.170	$462	$793	$332	72%	$0.126	$37.7
20	Brevig Mission Utility	0.11	0.11	0.10	48	$0.217	$435	$745	$311	72%	$0.133	$39.9
81	Perryville, City of	0.17	0.17	0.11	30	$0.164	$618	$925	$307	50%	$0.126	$37.7
74	Pt. Lay	0.70	0.70	0.26	55	$0.120	$569	$876	$307	54%	$0.105	$31.5
98	Tetlin Village Energy	0.07	0.07	0.06	30	$0.242	$469	$765	$295	63%	$0.138	$41.4
89	Stevens Village Sys.	0.10	0.10	0.07	48	$0.265	$378	$671	$293	78%	$0.134	$40.1
71	Kaktovik	1.38	1.38	0.45	90	$0.109	$550	$820	$271	49%	$0.095	$28.4
49	Kobuk Valley Elec. Co-Op	0.13	0.13	0.10	42	$0.211	$523	$790	$266	51%	$0.130	$38.9
39	Galena, City of	2.23	2.23	1.46	307	$0.101	$480	$731	$251	52%	$0.088	$26.3
3	Akiak City Council	0.23	0.23	0.21	65	$0.180	$582	$831	$249	43%	$0.122	$36.5
1	Akhiok, City of	0.05	0.05	0.05	22	$0.265	$623	$862	$239	38%	$0.145	$43.5
75	Wainwright	1.87	1.87	0.78	164	$0.109	$521	$758	$237	45%	$0.090	$27.1
69	Anaktuvuk	1.28	1.28	0.52	111	$0.120	$559	$793	$234	42%	$0.096	$28.8
72	Nuiqsut	1.12	1.12	0.53	117	$0.126	$576	$800	$224	39%	$0.098	$29.4
107	Tuntutuliak Comm. Serv.	0.49	0.49	0.27	83	$0.163	$536	$759	$223	42%	$0.110	$33.1
54	Kwethluk, Inc.	0.63	0.63	0.42	150	$0.167	$463	$678	$215	46%	$0.106	$31.9
73	Pt. Hope	2.17	2.17	1.06	193	$0.109	$601	$803	$202	34%	$0.088	$26.4
97	Tenakee Springs Elec.	0.30	0.30	0.24	99	$0.218	$520	$705	$185	36%	$0.118	$35.3
70	Atqasuk	0.99	0.99	0.45	68	$0.126	$830	$1,013	$183	22%	$0.100	$29.9

22	Chefornak Elec. Co.	0.35	0.35	0.29	74	$0.176	$679	$861	$181	27%	$0.115	$34.6
110	Unalaska Elec. Utility	16.02	16.02	2.89	385	$0.062	$469	$650	$181	39%	$0.058	$17.5
16	Beaver Elec.	0.15	0.15	0.09	46	$0.270	$541	$714	$173	32%	$0.127	$38.2
10	Allakaket Energy Systems	0.12	0.12	0.11	67	$0.309	$527	$698	$171	33%	$0.132	$39.5
99	Thorne Bay Public Utility	1.35	1.35	1.05	198	$0.131	$693	$847	$154	22%	$0.095	$28.5
104	Kasaan	0.11	0.11	0.11	28	$0.218	$821	$973	$152	19%	$0.132	$39.6
106	Tulkisarnute Inc (Tuluksak)	0.26	0.26	0.24	77	$0.213	$659	$801	$142	22%	$0.120	$35.9
25	Chitina Elec. Inc.	0.15	0.15	0.12	40	$0.237	$712	$846	$134	19%	$0.128	$38.4
82	Pilot Point Vil. Council	0.16	0.16	0.14	34	$0.205	$870	$997	$127	15%	$0.127	$38.1
66	Nikolai L & P	0.25	0.25	0.17	49	$0.207	$730	$856	$127	17%	$0.120	$36.0
86	Ruby Elec. Co.	0.48	0.48	0.31	133	$0.237	$550	$654	$104	19%	$0.110	$33.1
77	Nushagak Elec. Co-Op	13.06	13.06	6.07	1,090	$0.084	$465	$564	$98	21%	$0.062	$18.5
113	White Mountain Utility	0.37	0.37	0.24	78	$0.218	$660	$757	$97	15%	$0.114	$34.3
17	Bethel Utility Corp.	25.05	25.05	8.60	1,687	$0.072	$366	$451	$85	23%	$0.052	$15.6
109	Unalakleet Valley Elec.	2.96	2.96	1.56	273	$0.122	$695	$776	$81	12%	$0.084	$25.1
29	Cordova Elec. Co-Op.	19.77	19.77	8.31	1,324	$0.075	$472	$547	$75	16%	$0.055	$16.6
23	Chenega Bay IRA Vil. Coun.	0.15	0.15	0.11	26	$0.222	$907	$981	$74	8%	$0.126	$38.3
88	Sheldon Pt. City Council	0.24	0.24	0.11	31	$0.225	$813	$871	$58	7%	$0.121	$36.3
31	Eagle Power Co.	0.42	0.42	0.27	115	$0.271	$626	$664	$38	6%	$0.112	$33.7
56	Larsen Bay Utility	0.33	0.33	0.26	65	$0.211	$843	$879	$36	4%	$0.116	$34.8
46	Ipnatchiaq Co. (Deering)	0.42	0.42	0.29	53	$0.180	$995	$1,026	$32	3%	$0.112	$33.7
11	Alutiiq Power Co. (Karluk)	0.13	0.13	0.09	28	$0.271	$845	$875	$29	3%	$0.130	$39.0
76	Northway P & L	1.32	1.32	0.44	110	$0.174	$704	$729	$25	4%	$0.095	$28.6
67	Nome Joint Utility	21.43	21.43	9.83	1,631	$0.083	$498	$521	$23	5%	$0.054	$16.2
93	Tanana Power Co.	1.59	1.59	0.67	180	$0.184	$685	$679	($6)	-1%	$0.093	$27.8
42	Gwitchyaa Zhee (Ft Yukon)	1.94	1.94	1.08	310	$0.188	$652	$635	($17)	-3%	$0.090	$26.9
19	Birch Creek Village	0.11	0.11	0.08	26	$0.313	$924	$871	($53)	-6%	$0.133	$39.8
52	Kotzebue Elec. Assoc.	13.57	13.57	6.22	980	$0.108	$683	$606	($76)	-11%	$0.061	$18.3
50	Kokhanok Vil. Council	0.09	0.09	0.08	37	$0.387	$871	$789	($83)	-10%	$0.135	$40.4
65	Nelson Lagoon Elec.	0.27	0.27	0.19	33	$0.212	$1,203	$1,104	($99)	-8%	$0.119	$35.7
84	Puvurnaq Power Co. (Kong.)	0.38	0.38	0.26	64	$0.242	$977	$871	($106)	-11%	$0.114	$34.2
58	Manley Utility Co.	0.26	0.26	0.18	88	$0.380	$786	$678	($108)	-14%	$0.120	$35.9
94	Tatitlek Elec. Utility	0.16	0.16	0.17	48	$0.292	$1,017	$900	($117)	-12%	$0.127	$38.1
111	Unqusraq Power Co (Newtok)	0.13	0.13	0.13	49	$0.351	$945	$815	($130)	-14%	$0.130	$38.9
108	Umnak Power Co.(Nikolski)	0.11	0.11	0.10	32	$0.335	$1,012	$879	($133)	-13%	$0.133	$39.8
57	Levelock Elec. Co-Op	0.33	0.33	0.21	74	$0.312	$896	$753	($144)	-16%	$0.116	$34.9
85	Rampart Village	0.10	0.10	0.07	30	$0.418	$927	$777	($150)	-16%	$0.133	$40.0
45	Igiugig Vil. Council	0.08	0.08	0.06	26	$0.398	$984	$832	($152)	-15%	$0.137	$41.1
40	Golovin Power Utility	0.25	0.25	0.21	60	$0.292	$1,000	$845	($155)	-15%	$0.120	$36.1
55	Kwig Power Co.	0.40	0.40	0.31	82	$0.261	$993	$838	($155)	-16%	$0.113	$34.0
59	Manokotak Natives Ltd.	0.69	0.69	0.48	94	$0.211	$1,078	$915	($163)	-15%	$0.105	$31.5
15	Atmautluak Joint Utility	0.30	0.30	0.26	57	$0.246	$1,127	$961	($166)	-15%	$0.118	$35.3
2	Akiachak Ltd.	0.58	0.58	0.41	129	$0.283	$897	$729	($168)	-19%	$0.108	$32.3
91	St. Paul Mun. Elec.	2.33	2.33	1.58	187	$0.144	$1,217	$1,048	($169)	-14%	$0.087	$26.1
95	Telida Village Utility	0.04	0.04	0.03	10	$0.404	$1,119	$947	($172)	-15%	$0.149	$44.6
79	Pedro Bay Vil. Council	0.08	0.08	0.07	29	$0.400	$1,015	$838	($177)	-17%	$0.136	$40.9
62	Naknek Elec.	15.13	15.13	3.73	661	$0.131	$738	$548	($190)	-26%	$0.059	$17.8
44	Hughes P & L	0.14	0.14	0.11	39	$0.363	$1,036	$830	($206)	-20%	$0.129	$38.6
32	Eagle Village	0.06	0.06	0.06	22	$0.418	$1,089	$881	($208)	-19%	$0.142	$42.6
61	Middle Kuskokwim Coop	0.67	0.14	0.44	168	$0.389	$1,018	$802	($216)	-21%	$0.129	$38.7
96	Teller Power	0.53	0.53	0.24	86	$0.325	$922	$702	($220)	-24%	$0.109	$32.7
9	Alaska Village Elec Coop	32.28	0.73	19.96	5,021	$0.258	$1,024	$790	($234)	-23%	$0.104	$31.3
64	Napaskiak Inc.	0.31	0.31	0.24	93	$0.385	$977	$719	($258)	-26%	$0.117	$35.1
37	Far North Utility (Central)	0.28	0.28	0.19	44	$0.276	$1,210	$947	($263)	-22%	$0.119	$35.6
13	Aniak L & P	1.65	1.65	0.93	203	$0.246	$1,129	$756	($373)	-33%	$0.092	$27.7
41	Gustavus Elec. Co.	0.53	0.53	0.45	159	$0.385	$1,101	$704	($397)	-36%	$0.109	$32.7
90	St. George Elec. Utility	0.59	0.59	0.43	77	$0.255	$1,421	$987	($434)	-31%	$0.107	$32.2
101	Angoon	1.47	1.47	1.04	163	$0.218	$1,395	$940	($455)	-33%	$0.094	$28.2
63	Napakiak Ircinraq Power	0.46	0.46	0.33	104	$0.385	$1,209	$749	($460)	-38%	$0.111	$33.3
60	McGrath L & P	2.81	2.81	1.27	241	$0.231	$1,217	$747	($470)	-39%	$0.084	$25.3

105	Klawock	2.15	2.15	1.63	262	$0.217	$1,351	$868	($484)	-36%	$0.088	$26.5
102	Hoonah	2.83	2.83	1.77	288	$0.217	$1,336	$822	($514)	-38%	$0.084	$25.3
103	Kake	2.30	2.30	1.63	243	$0.216	$1,454	$901	($554)	-38%	$0.087	$26.2
18	Bettles L & P	0.83	0.83	0.28	62	$0.317	$1,434	$832	($602)	-42%	$0.102	$30.7
26	Circle Elec. Utility	0.18	0.18	0.10	22	$0.361	$1,639	$1,017	($621)	-38%	$0.125	$37.5
47	IHN Elec. Co-Op (Iliamna)	1.67	1.67	1.06	249	$0.327	$1,392	$722	($670)	-48%	$0.092	$27.6
33	Egegik L & P	0.58	0.58	0.32	76	$0.379	$1,574	$835	($738)	-47%	$0.108	$32.3
38	G & K, Inc. (Cold Bay)	3.22	3.22	0.53	73	$0.233	$1,695	$895	($800)	-47%	$0.082	$24.7

Energy Credits vs. PCE

1988 PCE Data

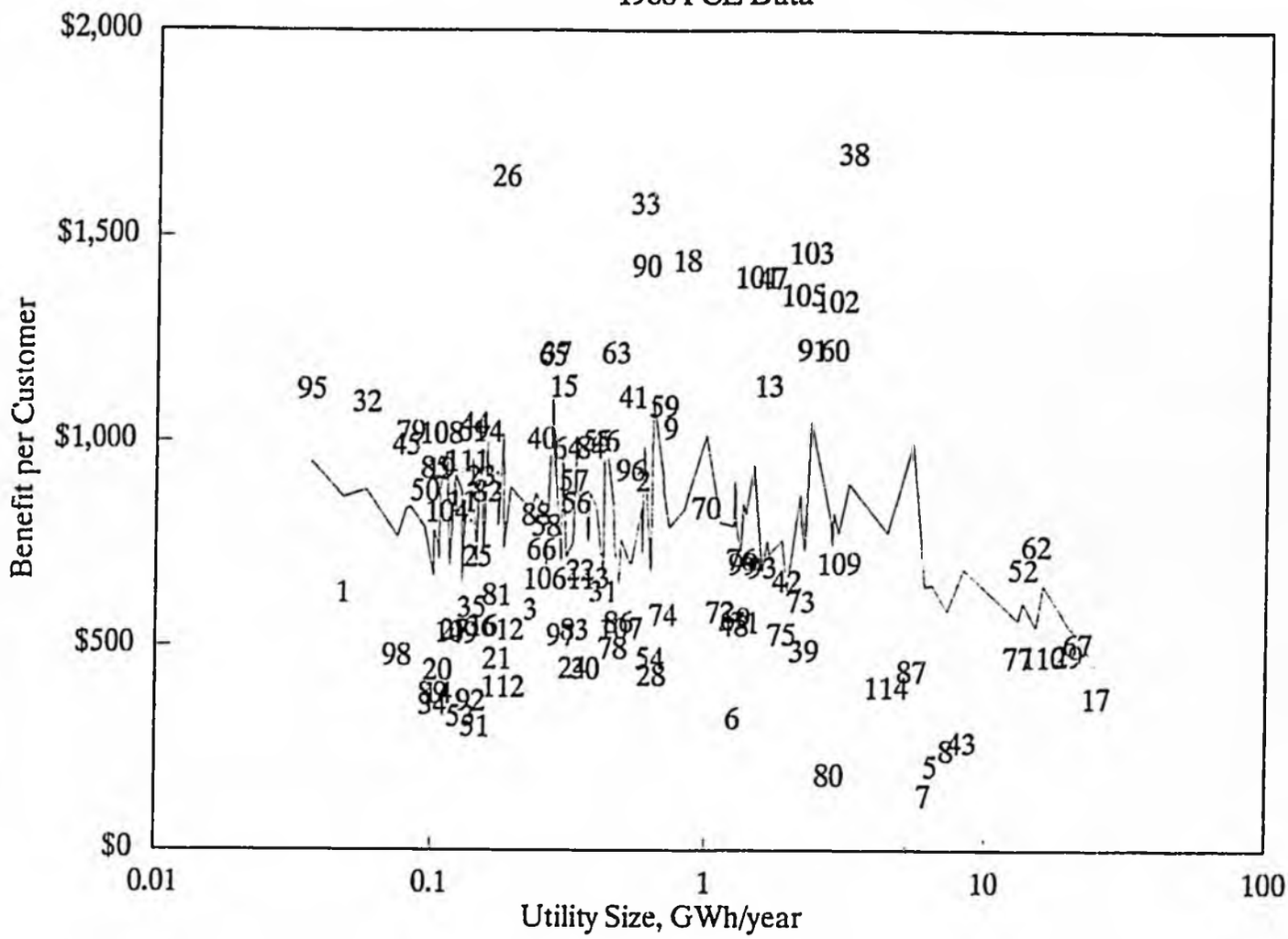

Figure 1

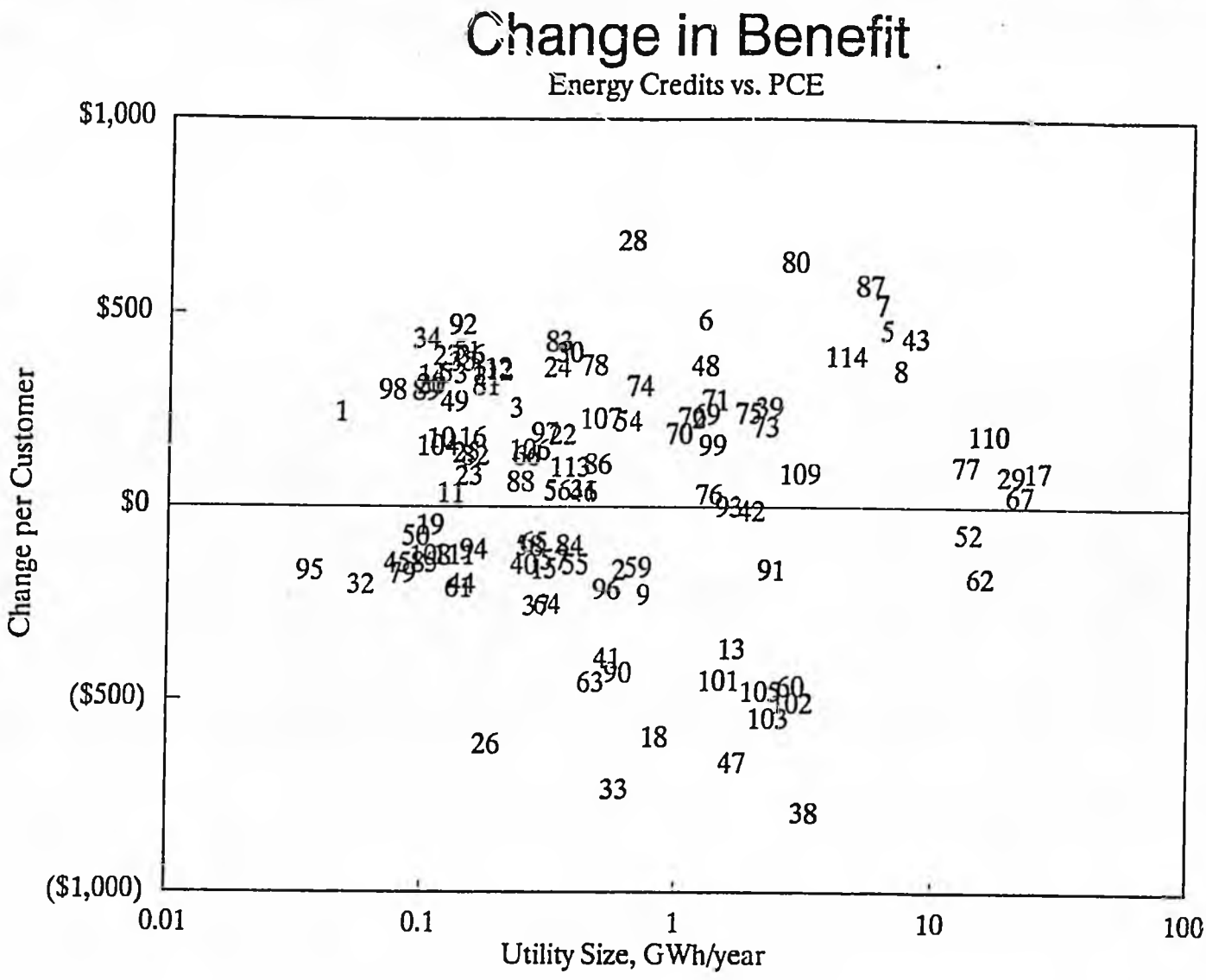
Change in Benefit
Energy Credits vs. PCE
$1,000
$500
$0
($500)
($1,000)
Change per Customer
0.01
0.1
1
10
100
Utility Size, GWh/year

Figure 2

POWER COST EQUALIZATION

SENATE STATE AFFAIRS COMMITTEE

SECOND SESSION

16TH ALASKA STATE LEGISLATURE

Senator Pat Pourchot, Chairman

Report to the Senate

February 1990

The Chairman extends special thanks to Philip Treuer for his work in the drafting of this report.

POWER COST EQUALIZATION

INTRODUCTION

Power Cost Equalization (PCE) is a state program that subsidizes rural electric rates using a formula based on the fuel and non-fuel costs of rural utilities. In the past, the legislature has always been able to fully fund the program, and, as a result, the PCE program has come to be viewed as an entitlement program. In recent years, as state revenues have declined and program costs have steadily increased there has been growing concern about what effect a budget shortfall would have on PCE recipients.

This report examines the current program and a variety of modifications in light of three criteria:

1. Ability to contain long-range program costs;

2. Ability to mitigate the effects of a budget shortfall on residential and low-income consumers; and

3. Incentives for utilities to cut costs and for consumers to use electricity more efficiently.

BACKGROUND

Power Cost Equalization (PCE) is the latest in a series of electric power subsidy programs (Power Production Assistance (PPA) Program, FY 81; Power Cost Assistance (PCA) Program, FY 82 - FY 85; PCE Program, FY85 - Present) offered by the State of Alaska to offset the high cost of electricity to rural residents. PCE is designed to reduce rural electric costs to levels close or equal to the mean value of the cost per kilowatt-hour (kwh) in Anchorage, Fairbanks and Juneau.

One hundred and three of the state's approximately 130 utilities are eligible to receive funding under the PCE program. Although most utilities are beneficiaries under the program the percentage of state customers represented is rather small, 10.8%. In terms of kwh's sold the percentage is even smaller, 6.4%. Generally, PCE customers pay higher electric rates and consume less per month than their urban counterparts. As Table 1 shows, the average PCE utility charges its customers a rate (27.5 cents/kwh) which is approximately two and one half times the statewide average rate (10.6 cents/kwh). The average PCE subsidy of 14.3 cents/kwh helps to bring rural rates close to the statewide average.

Table 1
Comparative Statistics

	Utilities Receiving PCE Funding FY88	All AK Electric Utilities CY88	Percent of Total
Number of Residential Customer	18,825	191,698	9.8
Number of Total Customers	24,457	227,020	10.8
MWH's Sold	256,653	4,019,398	6.4
Average KWH per month per customer	875	1475	
Average Rate (without PCE)	27.5 cents	10.6 cents	
Average Rate (with PCE)	13.2 cents	10.6 cents	

Source: Alaska Electric Power Statistics 1960-1988, Alaska Energy Authority and Alaska Systems Coordinating Council, September 1989; First Annual Statistical Report of the Power Cost Equalization Program, Alaska Energy Authority, December 15, 1988.

Approximately 66% of PCE utilities are not rate regulated by the APUC and most serve fewer than 100 customers. These smaller utilities follow a pattern similar to that found between PCE utilities in general and the rest of the utilities in the state: higher rates and lower monthly consumption. Table 2 shows that the smallest 25 PCE utilities sell less than one percent of kwh's sold by all PCE utilities. Average monthly consumption per customer for the smallest utilities is less than one-fifth that of the largest PCE utilities.

POWER COST EQUALIZATION

INTRODUCTION

Power Cost Equalization (PCE) is a state program that subsidizes rural electric rates using a formula based on the fuel and non-fuel costs of rural utilities. In the past, the legislature has always been able to fully fund the program, and, as a result, the PCE program has come to be viewed as an entitlement program. In recent years, as state revenues have declined and program costs have steadily increased there has been growing concern about what effect a budget shortfall would have on PCE recipients.

This report examines the current program and a variety of modifications in light of three criteria:

1. Ability to contain long-range program costs;

2. Ability to mitigate the effects of a budget shortfall on residential and low-income consumers; and

3. Incentives for utilities to cut costs and for consumers to use electricity more efficiently.

BACKGROUND

Power Cost Equalization (PCE) is the latest in a series of electric power subsidy programs (Power Production Assistance (PPA) Program, FY 81; Power Cost Assistance (PCA) Program, FY 82 - FY 85; PCE Program, FY85 - Present) offered by the State of Alaska to offset the high cost of electricity to rural residents. PCE is designed to reduce rural electric costs to levels close or equal to the mean value of the cost per kilowatt-hour (kwh) in Anchorage, Fairbanks and Juneau.

Operation of Current Program

The current program is jointly administered by Alaska Energy Authority (AEA) and the Alaska Public Utilities Commission (APUC). The APUC examines utility costs and determines the PCE rate for each utility. The AEA disburses funds to utilities.

The program pays 95% of a utility's eligible costs above $.085/kwh and below $.525/kwh. The maximum PCE rate based on the formula is currently $.418/kwh ([52.5 - 8.5] x .95).[1]

PCE Formula
(eligible fuel and nonfuel costs/kwh* - 8.5 cents) x .95 = PCE rate
* or average rate per eligible kwh sold, whichever is less; capped at 52.5 cents per kwh

All of a utility's customers are eligible to receive benefits under the program, however different consumption caps apply to different classes of customers. Residential and commercial customers are eligible for PCE subsidized rates on consumption up to 750 kwh/month. Community facilities receive PCE subsidized rates on consumption up to 70 kwh/month/resident. Community facilities include water and sewer facilities, public outdoor lighting, charitable educational facilities, and community buildings whose operations are not paid for by the state or federal government or private commercial interests. The commercial customer category includes all non-residential and non-community facility customers.

Utility Profile

Utilities eligible for funding under PCE are limited to those which: 1) used diesel generation for more than 75% of electrical consumption in calendar year 1984; and 2) did not exceed certain residential consumption levels in calendar year 1983.[2]

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[1] In FY 88 there were only two utilities receiving the maximum rate; in FY 89 there were three. See section on Utility Profile for more information on rates.

[2] "[D]uring calendar year 1983 had a residential consumption level of power eligible for power cost equalization under this chapter of less than 7,500 megawatt hours or had a residential consumption level of power eligible for power cost equalization under this chapter of less than 15,000 megawatt hours if the utility served two or more municipalities or unincorporated communities" AS 44.83.162(p)(3)(B)

One hundred and three of the state's approximately 130 utilities are eligible to receive funding under the PCE program. Although most utilities are beneficiaries under the program the percentage of state customers represented is rather small, 10.8%. In terms of kwh's sold the percentage is even smaller, 6.4%. Generally, PCE customers pay higher electric rates and consume less per month than their urban counterparts. As Table 1 shows, the average PCE utility charges its customers a rate (27.5 cents/kwh) which is approximately two and one half times the statewide average rate (10.6 cents/kwh). The average PCE subsidy of 14.3 cents/kwh helps to bring rural rates close to the statewide average.

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Table 2
PCE Utility Profile FY 88

Utilities ranked by kwh sold	KWH sold (mill.)	Total Custom-ers	KWH per Customer per Month	Disburse-ments ($ mill.)	Disb per Cust	Ave Elig kwh per month	Ave PCE rate
First 24	237	19,746	1000	$13.4	$683	496	14
Second 24	13	2,359	459	$1.9	$820	333	23
Third 24	5	1,395	299	$1.0	$685	280	24
Last 25	2	955	175	$.4	$428	211	27

Source: Alaska Electric Power Statistics 1960-1988, Alaska Energy Authority and Alaska Systems Coordinating Council, September 1989; First Annual Statistical Report of the Power Cost Equalization Program, Alaska Energy Authority, December 15, 1988.

There is a good deal of variation in the PCE rates for each utility, ranging from 3.0 cents/kwh to 41.8 cents/kwh in FY 88. Two-thirds of the utilities have average PCE rates between 10 cents/kwh and 30 cents/kwh (Table 3).

Table 3
PCE Rates FY 88

	3.0 - 9.9 cents/kwh	10.0 - 19.9 cents/kwh	20.0 - 29.9 cents/kwh	30.0 - 39.9 cents/kwh	40.0 - 41.8 cents/kwh
No. of Utilities	12	29	35	18	4

Source: First Annual Statistical Report of the Power Cost Equalization Program, Alaska Energy Authority, December 15, 1988.

In FY 88 there were 17 PCE communities with effective residential rates (i.e., residential rates per kwh after the PCE subsidy is added) of less than 10 cents per kwh. Table 3a compares the PCE subsidized rates of these communities with the residential rates charged by southcentral Alaska and Fairbanks utilities not in the PCE program.

Table 3a

Comparison of Residential Rates:

PCE Utilities with Effective Rates under 10 cents/kwh (FY 88) with Rates of Other* Utilities not Eligible for PCE Funding(1988)

PCE Utilities with effective residential rates less than $.10/kwh	Effective Residential Rate	Other* Communities (Utilities) not eligible for PCE	Residential Rate for 500 kwh/month
Bethel Utility Corp.	9.9 cents	Anchorage (CEA)	7.8 cents
Circle Electric Utility	8.5	Anchorage (AML&P)	9.5
Gustavus Electric Co.	8.5	Cordova (CEC)	12.8
Koliganek Village. Council	8.5	Glennallen (CVEA)	20.2
Manokotak Natives Ltd.	8.9	Homer/Seidovia (HEA)	10.9
Napakiak Ircinraq Power	8.5	Kodiak/Port Lions (KDEA)	15.1
Nome Joint Utility	6.3	Palmer (MEA)	10.8
North Slope Borough[1]	- -	Paxson (PLI)	19.9
Anaktuvuk	2.5	Seward (SES)	8.1
Atqasuk	1.5	Valdez (CVEA)	17.5
Kaktovik	4.5	Fairbanks (GVEA)	11.0
Nuiqsut	1.5	Fairbanks (FMUS)	9.5
Pt. Hope	4.5	*Not all inclusive	
Pt. Lay	2.5		
Wainwright	4.5		
Port Heiden	8.5		
Tatitlek Electric Utility	9.8		
Tulkisarmute Inc.	8.5		

Source: Alaska Electric Power Statistics 1960-1988, Alaska Energy Authority and Alaska Systems Coordinating Council, September 1989; First Annual Statistical Report of the Power Cost Equalization Program, Alaska Energy Authority, December 15, 1988.

Customer Profile

In FY 88, residential customers used 65% of total PCE eligible kwh's, commercial customers used 21% and community facility customers used 14%. Table 4 shows the dollar breakdown by customer category based on 1989 disbursements of $18.2 million.

[1]NSB rates were achieved through supplemental borough subsidies which have since been disallowed by the APUC. In 1990 all PCE recipients should have minimum effective rates of at least 8.5 cents/kwh.

Table 4
Disbursements by Customer Category

Customer Category	PCE Elig. KWH	Percent of Total	Disbursements (FY 89)	Ave. PCE Elig. KWH/month (FY 88)
Residential	79.4 m	65	11.8 m	382
Commercial	25.8 m	21	3.8 m	474
Comm. Facil.	16.1 m	14	2.6 m	2,366

Source: AEA, Data provided in February, 1990; First Annual Statistical Report of the Power Cost Equalization Program, AEA, December 15, 1988; AEA, Office of Internal Programs and Budget.

The AEA does not collect regular monthly data on all the groups that constitute the commercial category. However, based on sample data from February 1987, this category is approximately 19% schools, 15% federal and state government and 66% other commercial.

Table 5
Commercial Customers

Commercial Customers	Percent of Commercial	Estimated Disbursements
Schools	19	.72 million
Fed & State Govt	15	.57 million
Other	66	2.51 million

Source: Energy Policy Report: The Power Cost Equalization Program, Division of Policy, Office of the Governor, January 1988; AEA, Office of Internal Programs and Budget.

Based on an AEA survey[1] of 1988 calendar year usage, approximately 77% of residential use is below the 500 kwh/month level. Approximately 91% of residential use is below the 750 kwh/month level (Table 6). Average PCE eligible kwh/month was 382 for residential users compared to 445 for all other PCE customers.

[1] Customer Usage Survey of Several Utilities that Participate in the Power Cost Equalization Program (Draft), AEA, December 1989.

Table 6
Residential Usage CY 88

Electric Usage KWH per month	% of PCE Customers	% of PCE Customers
1 -100	16.4	76.5
101 - 200	17.5	
201 - 300	17.7	
301 - 400	14.4	
401 - 500	10.5	
501 - 600	7.2	14.2
601 - 700	5.0	
701 - 750	2.0	
> 750	9.3	9.3

Source: Customer Usage Survey of Several Utilities that Participate in the Power Cost Equalization Program (Draft), AEA, December 1989.

In comparing PCE statistics (FY 86) with U.S. Census Bureau income data (1985), the AEA made the following observations relating to income, community size and PCE disbursements.

1. Most utilities that have a high PCE rate serve communities that have low per capita income.

2. Communities with low per capita income also tend to have low consumption per customer.

3. Communities that have low per capita income usually have fewer customers.

These observations suggest a fourth generalization: low income customers tend to use fewer kwh/month than higher income customers. Unfortunately, due to lack of data, it is not possible to quantify the relationship between income and usage levels.

Program Costs

Increased benefits and participation under PCE and its predecessors have escalated the cost of the programs from $2.2 million in FY 81 to $18.3 million in FY 89 (Table 7). The AEA has requested $18.4 million for FY 91, but actual disbursements are expected to be between $19.2 million and 20.7 million, depending on fuel costs.

Table 7
Funding

	Appropriation	Disbursements	Per Customer	# Utilities
FY 81	$2.7 million	$2.2 million	$180	13
FY 82	9.3	6.4	359	31
FY 83	8.3	8.3	421	48
FY 84	8.3	8.7	385	61
FY 85	19.1	13.8	637	83
FY 86	21.7	17.8	766	94
FY 87	13.8	16.8	686	97
FY 88	15.1	17.2	703	98
FY 89	19.9	18.2	724	102
FY 90	18.4	19.0 - 19.5 (est)	N/A	N/A
FY 91	18.4 (est)	19.2 - 20.7 (est)	N/A	N/A

Source: First Annual Statistical Report of the Power Cost Equalization Program, Alaska Energy Authority, December 15, 1988; AEA, Office of Internal Programs and Budget.

Much of the growth of the cost of rural electric assistance in the early years (1981 - 1985) is attributable to the increased participation under the PPA and the PCA programs. During this time the number of utilities receiving electric subsidies rose from 13 to 83. In 1986, as participation began to reach a saturation point, the dramatic increase in program costs was largely due to increased benefits available under PCE. Compared to PCA, the PCE program lowered the entry rate, raised the ceiling rate and increased the consumption limits (Table 8).

Table 8
Comparison of PPCA, PCA AND PCE

	Amount per KWH Criteria		
	PPCA	PCA	PCE
AMOUNT/KWH			
Entry Rate (cent/KWH)	7.65	12.0 + 1.0/yr	8.5
Ceiling Rate (cent/KWH)	40.0	45.0	52.5
Eligible Costs Allowed	85%	95%	95%
Eligible Costs Over Ceiling	100%	0%	0%
CONSUMPTION LIMITS			
Community Facilities (KWH/Month)	No Limit	55/Resident	70/Resident
All Others (KWH/Month)	No Limit	600	750

Source: Energy Policy Report: The Power Cost Equalization Program, Division of Policy, Office of the Governor, January 1988.

Since 1986 the cost of the program has continued to grow (except for FY 87, due to steeply falling fuel prices), primarily due to increased consumption. Between FY 86 and FY 89 total eligible kwh's increased from 108 million to 121 million, increasing program costs by $ 0.4 million.

Table 8a
Eligible Consumption FY 89

	Res. and Commer.	Commun. Fac.	Total
Eligible kwh	105.3 m	16.1 m	121.4
Maximum Elig kwh	216.7	55.7	272.4
Maximum Cost	$30.6	$7.9	$38.5
Elig as % of max	49%	29%	45%

Source: Calculated from AEA data provided February 1990

As demand (i.e., kwh/month per customer) grows so will eligible kwh's of consumption. In 1989 eligible kwh's were approximately 45% of maximum eligible consumption (Table 8a).[1] The cost of the program with maximum eligible consumption would have been $38 million in FY 89 rather than $18.2 million.

Table 9
Program Costs by Fuel and Non-fuel Components

	FY 86	FY 87	FY 88	FY 89
Total PCE Disbursements	$17.8m	$16.8m	$17.2m	$18.2m
Fuel Portion	42.2%	37.7%	35.3%	33.0%
Non-fuel Portion	57.8%	63.3%	64.7%	67.0%
Fuel Portion	$7.5m	$6.3m	$6.1m	$6.0m
Non-fuel Portion	$10.3m	$10.6m	$11.1m	$12.2m

Source: APUC, Data provided in January 1990; AEA, Office of Internal Programs and Budget

As can be seen by examining Table 9, growth of program costs cannot be attributed to increased fuel costs. Since 1986 utilities have benefitted from both declining fuel prices and savings achieved through bulk fuel purchases. PCE disbursements related to non-fuel costs have more than offset declining fuel costs. Between FY 86 and

[1]Maximum eligible consumption would occur if all customers consumed up to their respective caps of 750 kwh/month for residential and commercial and 70 kwh/month/resident for community facilities.

FY 89 PCE payments related to fuel costs have declined by $1.5 million while PCE payments related to non-fuel costs have risen by $1.9 million, a net increase in program cost of $0.4 million. Possible causes for increases in non-fuel costs include: 1) costs for increased generating capacity driven by increased demand; 2) PCE related incentives to increase non-fuel costs; and 3) better reporting of costs by utilities to the APUC.

APUC Regulations

The 15th legislature directed the APUC, AEA and DCRA to review and evaluate possible modifications to the PCE program with specific attention to fuel efficiency and administrative expense standards. On April 13, 1989 the APUC adopted an order codifying existing policies and procedures, promulgating standards for defining costs, and establishing new efficiency standards. The efficiency regulations will go into effect Oct. 1, 1990.

Since the inception of PCE, problems have been caused by the inconsistent use of the words "costs" and "rates" in the PCE statute. The statute uses the words "costs" and "rates" both synonymously and with different meanings. The APUC regulations attempt to clarify the ambiguity and confusion that surround the use of these terms.[1]

The new efficiency standards apply to electrical generation and line loss. A five-tiered system, for different sized utilities, will be phased in over three years.[2] The APUC maintains that "the

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[1]In response to a January 30, 1987 Legislative Audit the APUC has also proposed to change AS 44.83.162(a) to read:

> The power cost equalization fund is established as a separate fund for the purpose of equalizing power rates [cost] per kilowatt-hour state-wide at a rate [cost] close or equal to the mean of the cost per kilowatt-hour in Anchorage, Fairbanks, and Juneau...

[2]For utilities that rely on all-diesel generation a combined generating efficiency line loss standard has been established that measures the kilowatt hours sold per gallon consumed. Utilities are tiered according to kwh sales.

A separate set of standards has been established for utilities that do not rely exclusively on diesel generation (six out of 102 utilities). The line loss standard is measured as:

(kwh generated or purchased - kwh sold)/kwh generated or purchased

minimum standards for October 1990 should be achievable by most utilities through adoption of reasonable operating practices such as:[1]

1. metering of all customers consuming electric power;

2. assuring that meters are correctly wired and registering properly;

3. maintaining diesel engines and other equipment in good operating condition;

4. matching the best available generator to load size;

5. maintaining adequate security over fuel supplies; and

6. identifying and correcting major causes of high line losses.

AEA Programs

The AEA has a number of ongoing programs designed to improve the efficiency of many of the small rural utilities. In FY 90 $4,150,000 of the capital budget was appropriated for:

> *Operation and Technical and Emergency Assistance* -- "Consists of programs (1) to provide a wide range of technical assistance to rural communities and utilities in identifying upgrades or replacements to their existing power systems in order to improve operations, and (2) to effectively deal with power system emergencies as they occur."
>
> *Circuit Rider Program* -- "Provides regularly scheduled preventative maintenance and operations assistance to rural electric utilities that have received financial or technical aid from the state."

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and must be less than 12%. The generating efficiency standards measure kwh generated (as opposed to kwh sold for all diesel utilities) per gallon consumed. Utilities are tiered by annual kwh of diesel generation.

[1]In a separate statement to the APUC order, Commissioner Sokolov advocated supplementing efficiency standards with a comprehensive program to encourage the smallest PCE utilities to use standardized equipment and to improve operation and maintenance.

PCE Utility Efficiency Improvements -- "Supports improved efficiencies for utilities/communities receiving PCE, through upgrading or replacement of inefficient generators, bulk fuel tanks, waste heat recovery systems, conservation measures and metering."

Another program which is currently receiving serious consideration is AEA's Regional Electric Utilities in Rural Alaska proposal. This program would consolidate the operations of rural utilities into one of several regional utilities in three phases:

1. Develop cooperative arrangements for bulk fuel purchasing, a circuit rider preventive maintenance program, and insurance coverage.

2. Provide technical assistance to smaller utilities that want to merge into a regional utility, which should result in a more efficient and centralized management structure.

3. Consider opportunities for including other utility services, such as water, sewer, and solid waste, under the management of the regional electric utility in order to further improve the economies of scale.

ANALYSIS

Evaluation of Current Program

Criteria 1: Cost Containment -- The costs of the PCE program are no longer in a steep incline, as the number of utilities participating in the program has reached a saturation point and as fuel costs and benefits have stabilized. However, unless the program formula is changed, the appropriations necessary to fully fund the program will grow as non-fuel costs continue to rise (Table 9). Furthermore, at some point savings achieved through bulk fuel purchases will plateau and program costs will once again become sensitive to rising fuel prices.

Costs will also probably continue to rise as long as demand grows on the part of consumers who are currently below their

respective caps. If all PCE customers were consuming at the statutory caps (750 kwh for residential and commercial, 70 kwh/month/resident) program costs in FY 89 would have been approximately $38.5 million.[1]

Criteria 2: Mitigating the Effects on Low Income and Residential Customers -- The PCE program is not an entitlement program, therefore funding can be reduced below levels required by the formula. In the event appropriations were to fall below full funding levels, the PCE rate for each utility would be prorated. While all PCE recipients would receive a proportional cut, those with higher PCE rates would lose a greater absolute amount of subsidy. Because users with higher PCE rates tend to come from communities with lower per capita income, a funding cut would tend to have a greater absolute effect on lower income consumers.

In addition, under current statutes there is no procedure for mitigating the effects of a program cutback on any particular group or groups. Therefore residential customers would not receive any preference over community facility or commercial customers.

Finally, the PCE program has in some cases created an inequitable relation between PCE and non-PCE recipients. As the PCE statutes makes clear, the program is designed to reduce rural electric costs to levels close or equal to the mean value of the cost per kwh in Anchorage, Fairbanks and Juneau. Unfortunately the PCE program does not apply to all utilities state-wide. There are a number of non-PCE recipient communities with rates much higher than many PCE recipient communities (Table 3a). For example, without PCE both Nome and Kodiak would both have average residential rates of approximately 15 cents/kwh. Yet, because Nome received PCE, its residential rate for up to 750 kwh/month in FY 88 was only 6.3 cents/kwh, while Kodiak residents paid the full 15 cents/kwh.

Criteria 3: Efficiency Incentives -- The current program offers little, if any, incentive for consumers to conserve electricity until they have already exceeded the 750 kwh monthly cap. Because the formula covers 95% of the cost over 8.5 cents of an additional

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[1]Furthermore the maximum program cost is not static from year to year but rather increases with increases in fuel costs, the PCE rate, population and the number or residential and commercial customers.

kwh, consumers don't face the true cost of producing electricity and are encouraged to consume more than they would otherwise.

Likewise, the PCE program provides very little incentive for utilities to reduce costs. Cutting costs reduces a utility's total PCE funding and may actually result in a lower PCE rate to consumers.

Finally, the efficiency standards recently adopted by the APUC do not apply to non-fuel costs and are only expected to result in a program saving of $100,000 in the first year.

Reduce 750 KWH/Month Cap for Commercial and/or Residential Users

Criteria 1: Cost Containment -- Table 10 shows the program savings achievable by reducing the 750 kwh cap to progressively lower levels. For example, a 500 kwh cap would reduce program costs by approximately $2.2 million (12.2%). Reducing the cap even further to the current average PCE eligible usage for residential and commercial customers (396 kwh/month) would save $3.6 million (20%).

Another benefit of a reduced residential and commercial cap is that it brings the maximum eligible consumption much closer to actual eligible consumption, potentially reducing the cost of the program over the long run. Eligible residential and commercial consumption is currently 48% of maximum eligible consumption. In FY 88, under a 500 kwh cap, eligible consumption would have been 72% of maximum, reducing the maximum potential cost of the program from $38 million to $28 million.

Table 10
Program savings from reducing eligible KWH per month ($m)

	500 KWH Cap	400 KWH Cap	300 KWH Cap	200 KWH Cap
Residential	$1.2 m	$2.2 m	$3.7 m	$6.0 m
Commercial	1.0	1.4	1.9	2.5
Total	2.2	3.6	5.6	8.5

Source: Based upon data provided by the AEA, January 3, 1990.

Criteria 2: Mitigating the Effects on Low Income and Residential Customers -- The effect on low income groups of lowering the 750 kwh cap would depend on whether it was uniformly

applied to residential and commercial users. Obviously a cap reduction limited to commercial users would have little effect on residential users, regardless of whether they were high or low income.

With respect to just residential users, a cap reduction limited to 500 kwh would tend to favor low income users over other residential users because low income users tend to consume fewer kwh/month than others. Seventy-seven percent of residential use is already below the 500 kwh cap (see Table 6).

Criteria 3: Efficiency Incentives -- Any lowering of the cap would provide incentives for consumers to conserve electricity. As the cap is lowered a greater percentage of consumers will exceed the cap and begin paying higher rates. Higher rates will discourage consumption at levels above the cap.

One of the problems that the current program presents to utilities is that the PCE subsidy actually stimulates demand. This artificially induced demand places pressure on utilities to increase generating capacity, as witnessed by the growing non-fuel portion of PCE program costs. In this type of situation, there is always the danger that, if the PCE subsidy were to end suddenly, demand would fall leaving utilities with a great deal of excess capacity, a cost for which consumers would still have to pay. Lowering the cap closer to average consumption, will diminish an artificial stimulus to growth of consumption and reduce the degree of excess capacity.

Reduce 70 KWH/Month/Resident Cap for Community Facilities

Criteria 1: Cost Containment -- Community facilities represent a relatively small percentage of PCE program costs (14%). If community facilities were eliminated, program savings would be $2.6m (based on FY 89 disbursements of $18.2 m) which is only $.4 m more than the program savings from reducing the residential/commercial cap to 500 kwh/month/resident.

The current cap of 70 kwh/month/resident is well above the current average of approximately 20 kwh/month/resident. Based on calendar year 1988 sample data, reducing the cap from 70 kwh to 50 kwh would have yielded program savings of only $27,500.

Eligible kwh consumption for community facilities in FY 88 was approximately 30% of maximum eligible consumption. In other words, if community facilities were all consuming at 70 kwh/month/resident the cost of PCE for this class of customer would be $7.9 million rather than $2.4 million. A 50 kwh/month/resident cap would reduce the maximum cost from $7.9 million to $5.7 million. A reduced cap, although of little significance in the short run, could yield cost savings over the long run as consumption per resident increases.

Table 12
Program savings from lowering community facility cap

	50 kwh cap	40 kwh cap	30 kwh cap
Program Savings	$27,500	N/A	N/A

Source: Customer Usage Survey of Several Utilities that Participate in the Power Cost Equalization Program (Draft), AEA, December 1989.

Criteria 2: Mitigating the Effects on Low Income and Residential Customers -- Reducing the community facility cap would not directly effect residential users. However, it may indirectly effect residents through increased taxes to support the higher costs of operating local government facilities.

Criteria 3: Efficiency Incentives -- In the short term, lowering the cap would have only a marginal impact on conservation. Current usage levels are so low for so many communities that lowering the cap to 50 kwh would leave most communities unaffected. Over the long term, lowering the cap would encourage conservation as community facility consumption approaches upper limits of allowable electric usage.

Reduce Percent Reimbursed

Criteria 1: Cost Containment -- The PCE rate is currently determined in part by calculating 95% of a utility's eligible costs per kwh. Reducing the percentage could lead to significant programs savings. For example, reducing the percentage to 85% of eligible costs would reduce program costs by about $2.2 million (Table 13), roughly equivalent to reducing the 750 kwh cap to 500 kwh.

Table 13

Prograr gs ($m) by reducing 95% reimbursed to:

	90%	85%	80%	75%	70%
Progra. Savings	1.1	2.2	3.3	4.4	5.5

Criteria 2: Mitigating the Effects on Low Income and Residential Customers -- This approach would be more regressive than lowering the kwh/month cap for residential users. Whereas lowering the cap favors low income, low monthly use customers, reducing the percent reimbursed would involve an across the board cut. Although each utility's PCE rate would be reduced by an equal percent, consumers of utilities with higher PCE rates would experience greater absolute decreases in their subsidy. Since communities with high PCE rates also tend to have low per capita income, this method would tend to hurt low income customers more than lowering the monthly kwh cap.

Criteria 3: Efficiency Incentives -- Any change that increases rates will encourage lower consumption. However, by leaving the kwh/month cap at 750 there will still be a substantial gap between average eligible usage and the cap. In the long run this will still encourage increased consumption.

Raise 8.5 cent entry rate

Criteria 1: Cost Containment -- Raising the entry rate could produce sizeable reductions in program costs. Table 14 shows that raising the entry rate to slightly above 10 cents would achieve programs savings comparable to lowering the residential and commercial caps to 500 kwh or comparable to reducing the percent reimbursed to 85%.

Table 14

Program savings from raising the entry rate

	$.10 entry rate	$.12 entry rate	$.14 entry rate
Program Savings	$1.8m	$4.2m	$6.3m

Source: Based upon data provided by the AEA, January 18, 1990.

Criteria 2: Mitigating the Effects on Low Income and Residential Customers -- Raising the entry rate would effect all consumers but not all consumers equally. The absolute change in PCE rates will be the same for all consumers, however, the percentage change will vary depending on the actual PCE rate. For example, a one cent increase in the entry rate would reduce all consumers PCE subsidy by .95 cents/kwh. However, .95 cents represents 31.7% of Pelican Utility's FY 88 average PCE rate (3 cents) but only 2.5% of Manley's FY 88 average PCE rate (38 cents).

Because communities with low per capita income tend to have higher PCE rates this modification of the PCE formula would probably favor low income consumers. It would not favor residential customers over commercial and community facility customers unless a specific distinction were made.

Raising the entry rate would reduce some of the inequity experienced by low-income consumers receiving service from utilities that do not qualify for PCE subsidies. As Table 3a shows there are a number of utilities in southcentral Alaska alone which charge residential rates which are significantly higher than the effective residential rates of a number of PCE eligible utilities.

One proposal for making the PCE program more equitable would be to peg the entry rate to the statewide average rate rather than the mean value of costs in Anchorage, Fairbanks and Juneau. This would have the immediate effect of raising the entry rate to about 10 cents/kwh. This approach would also tie the entry rate to an index which is easier to define and calculate than the current index.

Criteria 3: Efficiency Incentives -- Efficiency incentives are the same as described in the section Reduced Percent Reimbursed.

Reduce Maximum Eligible Cost

Criteria 1: Cost Containment -- Marginal decreases in the maximum eligible cost would produce only very small cost savings, compared to the other alternatives discussed above. The bulk of PCE funds go to the largest utilities which tend to have lower costs per kwh. Table 15 shows the program savings that could be achieved by this formula adjustment.

Table 15
Program savings from lowering the ceiling rate

	50.0 cents	47.5 cents	45.0 cents	42.5 cents	40.0 cents
Program Savings	$5,561	$32,933	$98,633	$175,270	$283,294

Source: Based upon data provided by the AEA, January 18, 1990.

Criteria 2: Mitigating the Effects on Low Income and Residential Customers -- This PCE formula change is perhaps the most regressive of ail the alternatives because it targets the smaller utilities which tend to represent communities with low per capital income.

Criteria 3: Efficiency Incentives -- It is unlikely that this alternative would lead to any significant conservation. The total number of customers represented by utilities with very high PCE rates is very small.

Eliminate Subsidy for Federal and State Governments and State Funded Schools

Criteria 1: Cost Containment -- Currently federal and state governments and state funded schools receive PCE subsidies as commercial customers. This represents program costs of approximately $1.2 million (Table 5).

Criteria 2: Mitigating the Effects on Low Income and Residential Customers -- Residential and low-income users would not be effected.

Criteria 3: Efficiency Incentives -- The AEA has documented cases in which state funded schools have equipped their kitchen facilities with all electric appliances. While this may be cost effective for the school district, it involves a hidden cost to the state because it greatly increases the cost of the PCE program.

Prioritize Funding in the Event of a Budget Shortfall

Criteria 1: Cost Containment -- By requiring that funding goes first to residential, then commercial, then community facility customers, program cutbacks may be more politically palatable.

Criteria 2: Mitigating the Effects on Low Income and Residential Customers -- This proposed change has obvious benefits to residential and low-income residential customers because they would be first in line for available funds.

Criteria 3: Efficiency Incentives -- This proposal would not effect conservation.

Energy Credits

This report has limited discussion of alternatives to changes in the parameters of the PCE formula. It has not considered the substitution of alternative formulas. For example, there are other generic subsidy programs which do not focus on utility costs in the way the PCE program does. One such alternative is an energy credit program proposed by the State Consumer Advocate, Alan Mitchell, which provides greater incentives to consumers to conserve electricity and utilities to cut costs. Unfortunately, consideration of this approach and other generic approaches are beyond the scope of this report. An explanation of how Mr. Mitchell's energy credit program works is attached to this report as an appendix.

CONCLUSIONS AND RECOMMENDATIONS

Based on the above analysis the following modifications to the PCE formula are recommended:

1. Eliminate commercial subsidies to federal and state governments and state funded schools. There is little reason for the state to subsidize federal spending. Elimination of subsidies to state agencies and schools which are funded with state dollars will encourage more appropriate energy related purchases on the part of these organizations. State agencies and state funded schools would not be financially effected as long as PCE program savings are passed on as budget supplements in recognition of higher energy costs. Program savings: $1.21 million ($550,000 for state and federal agencies; $660,000 for schools). Savings to State of Alaska (if program savings are passed on to state agencies and schools): less than $550,000.

2. Prioritize funding to residential then community facility then commercial customers in the event of insufficient appropriations.
Program savings: Equal to budget shortfall.

3. Reduce residential and commercial cap to 500 kwh/month. This will reduce program costs and encourage conservation. This program change is less regressive than other methods which also achieve sizeable program cost reductions.
Program savings: $2.2 million.

4. Reduce community facility cap to 50 kwh/month/resident. This change will be negligible in terms of programs savings but will discourage excessive growth of demand by users in this category.
Program savings: $27,500.

5. Raise entry rate to be equal to the statewide average rate. This would improve the equity of the program and make adjustment of the entry rate less problematic. Program savings: $1.8 million.

Table 16

Recommendations and Program Savings

PROGRAM CHANGE	PROGRAM SAVINGS
Eliminate commercial subsidies to federal and state government agencies and schools.	$1.2 million
Prioritize funding to residential then community facility and then commercial customers.	Equal to budget shortfall
Reduce residential and commercial cap to 500 kwh/month.	$2.2 million
Reduce community facility cap to 50 kwh/month/resident.	$27,500
Change entry rate to statewide average rate.	$1.8 million
TOTAL[1]	$5 million

[1]Because some of the proposed cuts are overlapping, the total is less than the sum of the parts.

Analysis North

Alaska's Utility Consumer Advocate

911 West 8th Avenue, Suite 204 Anchorage, Alaska 99501 907-272-3425

A Proposal to Modify the Power Cost Equalization Program

By Alan Mitchell

1. **Existing PCE Program.** This box shows the bill of a customer in a hypothetical utility using 300 kWh under the current PCE program. The PCE subsidy is 25 cents per kWh used.

Usage = 300 kWh	
Energy Charge:	300 kWh x \$0.40/kWh = \$120
PCE Credit:	300 kWh x **\$0.25/kWh** = (\$75)
	===
Net Bill:	\$45

2. **First Modification: Determine the PCE rate by a formula instead of by the actual costs of operating the utility.** With the existing PCE program, the 25 cent/kWh subsidy is determined from the actual costs of operating the utility. The modification illustrated in this step changes the program to base the PCE subsidy rate on a *formula* instead of actual costs. In the example of this hypothetical utility, the formula determined that the PCE rate should be 23 cents/kWh.

Usage = 300 kWh	
Energy Charge:	300 kWh x \$0.40/kWh = \$120
PCE Credit:	300 kWh x **\$0.23/kWh** = (\$69)
	===
Net Bill:	\$51

This modification serves to restore the incentive to the utility to operate more cost-efficiently. Any reductions in operating cost do *not* cause a reduction in the amount of subsidy received. It also dramatically reduces the utility reporting requirements of the program, since actual cost records are not needed to determine the PCE subsidy rate. The rate is determined by a formula based on the size of the utility receiving the subsidy, the utility's geographical location (a proxy for fuel cost), and the total funding for the PCE program. This change to a formula-based system also lessens the chance for abuse of the program and improves its fairness.

3. **Second Modification, convert a portion of the PCE credit to a fixed credit (a credit independent of usage).** One problem with the program described in the previous step is that it does not improve the incentive for consumers to use energy-efficient equipment. If a consumer reduces their demand by a kWh, they lose 23 cents of subsidy. By changing the structure of the subsidy so that a portion of it is independent of usage, this disincentive to conserve can be

reduced.

Usage = 300 kWh		
Energy Charge:	300 kWh x $0.40/kWh =	$120
PCE *Usage* Credit:	300 kWh x **$0.13/kWh** =	($39)
PCE *Fixed* Credit:		**($30)**
Net Bill:		$51

In the example bill to the right, the total amount of subsidy is the same as the program in the previous box, but it is structured differently. The usage-based subsidy is 13 cents per kWh consumed, and a fixed $30 subsidy is also applied to the bill. This $30 figure does not change if the consumer uses more or less electricity. If the consumer reduces their demand by one kWh, they only lose 13 cents of subsidy, instead of the 23 cents under the previous system.

This program proposal differs from the program that Conrad Zipperian of RurAL CAP and I have proposed in the past. In our past proposal, we proposed to make the PCE subsidy entirely fixed; i.e. there would be no component of the subsidy that would increase with usage. With a totally fixed subsidy, the incentive to conserve would be fully restored. A decrease in usage would cause no decrease in the amount of subsidy received. In this regard, a fixed credit program is better than the current proposal.

Usage = 300 kWh		
Energy Charge:	300 kWh x $0.40/kWh =	$120
PCE *Fixed* Credit:		**($69)**
Net Bill:		$51

The bill to the right illustrates the old proposal. A fixed credit of $69 is applied to bill. This credit would be the same for a customer using more or less electricity than 300 kWh.

One of the problems with this structure is that low-usage consumers would have very low bills, probably less than comparable urban households. This situation is illustrated in the next bill that shows a customer who uses only 200 kWh/month.

Usage = 200 kWh		
Energy Charge:	200 kWh x $0.40/kWh =	$80
PCE *Fixed* Credit:		**($69)**
Net Bill:		$11

Under the totally fixed credit system, this customer has a bill of $11. Such a low bill would seem unfair to urbanites. It may also seem unfair to other households in the same community, because the low-usage household is likely to be a household with few occupants. A small household would receive

as much subsidy under a fixed credit plan as a household with many occupants.

The PCE proposal with both a fixed and a usage-based component alleviates this problem, as illustrated in the bill to the right. The 200 kWh/month customer has a bill of $24, given this hypothetical division of the subsidy between fixed and usage-based components. The sacrifice relative to a program with no usage-based component is some loss of incentive to conserve electricity.

Usage = 200 kWh		
Energy Charge:	200 kWh x $0.40/kWh =	$80
PCE *Usage* Credit:	200 kWh x $0.13/kWh =	($26)
PCE *Fixed* Credit:		($30)
		===
Net Bill:		$24

PCE _ 3·23·90

PAT: NOT THIS SESSION _ will be revisitwg
Next 2 years.
WORK WITH ADAMS DURING INTERIM.
" " Mr. Martin

Linda Stewart:

Dave Baker_ Dillingham:
Page 4_ NOTICE TO THE CUSTOMER
"TOO BIG"

FAIKS:
Figure 2

Mitchell _ notations/logrythmic

Jim McBean_ Tenekee Utility
28% increase

6-1312E
Cramer
2/8/90

BY SEN. POURCHOT

IN THE SENATE

SPONSOR SUBSTITUTE FOR SENATE BILL NO. 301

IN THE LEGISLATURE OF THE STATE OF ALASKA

SIXTEENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act relating to the power cost equalization program."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. AS 44.83.162(a) is amended to read:

(a) The power cost equalization fund is established as a separate fund for the purpose of <u>providing rate relief on electric sales that exceed the average rate</u> [EQUALIZING POWER COST] per kilowatt-hour statewide [AT A COST CLOSE OR EQUAL TO THE MEAN OF THE COST PER KILOWATT-HOUR IN ANCHORAGE, FAIRBANKS, AND JUNEAU] by paying money from the fund to eligible electric utilities in the state. The fund shall be administered by the authority as a fund distinct from the other funds of the authority. The fund is composed of money appropriated for the purpose of providing power cost equalization to eligible electric utilities.

* Sec. 2. AS 44.83.162(c) is amended to read:

(c) An eligible electric utility is entitled to receive power cost equalization for

(1) sales of power to local community facilities, calculated in the aggregate for each community served by the electric utility, for actual consumption of not more than <u>50</u> [70] kilowatt-hours per month for each resident of the community; and

(2) actual consumption of not more than <u>500</u> [750] kilowatt-hours per month sold to each <u>eligible</u> customer in all classes served by the electric utility except to customers of the utility under (1)

of this subsection.

* Sec. 3. AS 44.62.162(d) is amended to read:

(d) The amount of power cost equalization provided per kilowatt-hour under (c) of this section may not exceed 95 percent of the power costs, or the average rate per eligible kilowatt-hour sold, whichever is less, as determined by the commission. However,

(1) during the state fiscal year that begins July 1, 1989 [1984] the power costs for which power cost equalization may be paid to an electric utility are limited to minimum power costs of more than 9.9 [8.5] cents per kilowatt-hour and less than 52.5 cents per kilowatt-hour;

(2) during each following state fiscal year, the power costs for which power cost equalization may be paid to an electric utility shall be the allowable power costs or rates that exceed the average rate per kilowatt-hour for sales in the state as determined by the commission [ADJUSTED BY THE COMMISSION, CONSIDERING THE RATE OF CHANGE IN FUEL COST AND POWER DEMAND]; and

(3) the power cost equalization per kilowatt-hour may be determined for a utility without historical kilowatt-hour sales data by using kilowatt hours generated.

* Sec. 4. AS 44.83.162(e) is amended to read:

(e) An electric utility whose customers receive power cost equalization under this section shall set out in its tariff the rates without the power cost equalization and the amount of power cost equalization per kilowatt-hour sold. The rate charged to the customer shall be the difference between the two amounts. Power cost equalization paid under this section shall be used to reduce the cost of all power sold to local community facilities, in the aggregate, to the extent of 50 [70] kilowatt-hours per month per resident of the

community, and to reduce the cost of the first 500 [750] kilowatt-hours per eligible customer per month for all other classes served by the electric utility.

* Sec. 5. AS 44.83.162(j) is amended to read:

(j) The authority shall review the report required under (i)(1) of this section and may submit the report to the commission for additional review before payment. After review and approval of the report by the authority, the authority shall, subject to appropriation, pay to each eligible electric utility an amount equal to the power cost equalization per kilowatt-hour determined by the commission under (b) and (d) of this section, multiplied by the number of kilowatt-hours eligible for power cost equalization that were sold during the preceding month to all customers of the utility in accordance with (c) of this section. Payment shall be made by the authority within 30 days after receipt from the utility of the report required under (i) of this section. However, if there is a dispute between the authority and the utility relating to the payment, the authority shall submit the report to the commission for review within 30 days after its receipt by the authority. When a report is submitted to the commission for review under this section, payment shall be made by the authority within 30 days after submission, based on a commission determination. If the commission determines that appropriations are insufficient for payment in full, the amount paid to each electric utility must fully fund, in descending order, residential customers, community facilities, and commercial facilities until the appropriation is fully spent. If the appropriation is insufficient for payment in full to a class of eligible customers, the amount paid to customers in that class must be [IS] reduced on a pro rata basis.

* Sec. 6. AS 44.83.162(k) is amended to read:

(k) If an electric utility receives power cost equalization under this section, the utility shall either

(1) give the following notice to its electric service customers eligible under this program for each period for which the payment is received:

NOTICE TO CUSTOMER

For the current billing period the utility will be paid under the State of Alaska's power cost equalization program (AS 44.83.162) an amount to assist the utility and its customers in reducing the high cost of generation of electric energy. For electric energy consumed by eligible residential customers and private commercial customers, this state payment applies only to the first 500 kilowatt-hours per month used by each customer. For electric energy sold to eligible local community facilities, this state payment applies to the total number of kilowatt-hours used each month by all those facilities in the community, up to a maximum of 50 kilowatt-hours, multiplied by the number of residents in the community.

Your total electrical service cost $.....

Less state equalization $.....

Your charge $.....; or

(2) give to its electric service customers a notice approved by the authority, which notice provides electric service customers the same information provided by the notice in (1) of this subsection.

* Sec. 7. AS 44.83.162(p)(2) is amended to read:

(2) "community facility" means a facility, other than a facility of a governmental customer, essential to the public health, safety, and welfare of the community, and includes a water and sewer facility, public outdoor lighting, including lighting for a community-

owned airport strip or harbor, a community washeteria or freezer, a community volunteer firehall, a community health clinic, a village public safety office, a [,] charitable educational facility, or a community building whose operations are not paid for by the state, the federal government, or private commercial interests;

* Sec. 8. AS 44.83.162(p) is amended by adding new paragraphs to read:

(8) "eligible customer" means a residential customer, a private commercial customer, or a community facility, but does not include a governmental customer;

(9) "governmental customer" means a customer that is a federal or state agency, the University of Alaska, the Alaska Railroad, a school district, or a regional educational attendance area.

* Sec. 9. AS 44.83.163(a) is amended to read:

(a) The power cost equalization per kilowatt-hour determined under AS 44.83.162 payable to an electric utility that is subject to rate regulation under AS 42.05 may be adjusted by the commission if

(1) an increase or decrease in the electric utility's cost of fuel has resulted in the approval of a fuel cost rate adjustment by the commission;

(2) a permanent or interim rate increase or decrease has been approved by the commission, thereby establishing a higher or lower power cost; or

(3) an adjustment is required after the authority has discovered discrepancies in its review of monthly data submitted by the electric utility [; OR

(4) THE AUTHORITY DETERMINES THAT APPROPRIATIONS ARE INSUFFICIENT TO FINANCE FULL PAYMENTS TO ELIGIBLE ELECTRIC UTILITIES].

* Sec. 10. AS 44.83.163(b) is amended to read:

(b) An electric utility that is eligible to receive power cost equalization under this section and that receives power cost equalization per kilowatt-hour approved by the commission shall report monthly to the authority within the time and in the form the authority requires. An electric utility shall report

(1) the power cost equalization per kilowatt-hour approved by the commission;

(2) the total kilowatt-hours sold to each class of <u>eligible customers</u> [CUSTOMER] during the preceding month;

(3) the total kilowatt-hours eligible for power cost equalization under this section sold to each class of <u>eligible customers</u> [CUSTOMER] during the preceding month;

(4) the total kilowatt-hours generated during the preceding month, if available;

(5) any commission-approved amendments to the schedule of rates in effect during the preceding month; and

(6) an increase or decrease in the current unit price of fuel from the base price used by the commission in the determination of power costs which may be expected to result in a subsequent power cost equalization adjustment.

2.9.90

PHIL_
Copy of Draft 206

SB 301 _ PCE L

- Pat: Intro'd Report and SS

Time is right
POSE 2 ~~Alan Mitchell~~ on Report recommendations
Supports: 1. To eliminate fed. subsidies

Concerns 2. How to make pro-rata reductions
When
Implementation may be problematic

Supports 3. reduce cap
? 6 4.

Supports 5. would improve equity

ON SS

Line 22. Page 3 Page 5 _ lines 27, 28
comm to auth

Comm. supports Areka amendments:

Alan Mitchell
Energy Credit Program

SB 301
Disbursement formula is not questioned,
He questions structure of the formula.
Current program is not efficient/equitable

- Inequities in various utilities production of energy
- "Current prog. discourages improvement"

Decouple PCE rate from actual cost of ~~of~~ utility.
Determine rate by size and location
↳ would lower cost of program

Current system does not encourage efficiency.

Need to create incentive to conserve elec.

Summary

Formula based on size and location
↳ lower admin costs

Credit on customer's bill ~~unchanged~~ unrelated to consumption — A portion of

LeRasche:

Communities with PCE still pay twice what "urban" are.
Inequity among villages — some 6 times as much as another village

Recs

Supports (1.) with Foster concerns
Supports (2.) as is
Nuetral (3.) — normally increase incentive to conserve. If budget cut, best way
Nuetral (4.) — same
? (5) Questions

LaReesche
Charge Sec. 3.5. — old bill

Build incentive

PAT = raise entry level, annually recalculate
Make entry rate based on all NON-PCE utilities. Should be weighted by size.

JACK KreiNheder
Concurs with LaReshe.

Gov's bill in 1987 on PCE
based on budget shortfall.
Gov. would not support.
SB 301 reflects 30% reduction:
Gov's budget gave full funding to PCE
Avoid rate shock

Rec's
(1.) Fuel subsidies belong in these budgets not in PCE program

3./4. ~~Ep~~ Phase in approach
"Bonus Ladder"
— 100 Kilowatts per year
Rate Shock —
mutiplied impact
+ commercial users

Concern — cutting program from the bottom to the top
Reduce cap/not raise floor.

SSSB 301

Purpose – not to kill PCE, believes in program but reaching point where reductions are being considered.

Senator Zharoff – requested a study of all subsidy programs in the state – asks committee to take into consideration including Cook Inlet Gas.

Linda Stewart: RAPA

Concerned

- requests that extensive interim hearings

Dave Hutchins: ARECA

15 co-ops – 7 are PCE

Areca does not advocate funding cuts.

Amendments:

Report – Recs

(1.) Agreement with APUC and AEA but problem in smaller villages, school is essential part of the load. If eliminate, schools should be required to stay on.

Pat > cost of generator is not part of comparative rates. (Unsophisticated methods of cost analysis by schools)

(2.) Prioritize consumer classes. (Don't like from administrative view)

Rate instability for consumers, dependent on funding level.

(3) Reduce cap to 500 KW p. month_
If cuts must be made_ most members see as reasonable.
(Phase in not a good idea)

(4) Reduce cap on comm. facilities_
minimal affect (PAT_: get out now before getting painful)

(5.) Entry level
Workable approach
Statewide average
Letter of Intent_ spelling out how to set statewide average.
AK. Power Statistics

Areka:
95% to cost but not to rates problem w/in system.

162(d.)

Amend to allow Copper Valley Electric to ~~bring~~ come into system.
Large Gap between Copper Valley and next out, Kodiak. ($540,000 with SS charges)

Page 4_ Notification requirement_
too long, too much.

Willy Goodwin — Kotzebue
- AK. Mayors support PCE
  opposed to 301
- Change from 700 KW to 500KW: rec's phase in

Senator Zharoff:
PCE "REPORT"
from FY 81 - 2.6 mil
to FY 90 - 18 mil
16 utilities
NOWaa " serving 167 communities
40-50 ~~AEA~~ villages not on,

Consumption Rate: not much control

Bob Martin THREA

Average 454
- 100 ~~Ref~~
- 60 Furnace
- 100 Stove
- 40 Lights
- 40 ~~FW~~
- 10 Coffee
- 10

- 15 Stereo
- 30 Dishw
- 30 Dryer
- 140 Freezer
- 400 Hot Water

→ reduced fuel cost mean reduced PCE but reduced operating costs mean saving.

Gov's Administration

Robert Wilkinson

Copper Valley – 2500 members

Debt Service – flows back in

Eliminated on basis of generation facility

Kuaglink = MR. Guy — Rates
Against SB 301
Help with technical Asst

44¢ per KWH

VILLAGE PARTICIPATION CONFERENCE RESOLUTION # 90 - 4

ENTITLED: In support of the Power Cost Equalization (P.C.E.) Program as currently authorized.

WHEREAS, Senate Bill 301 is currently trying to amend the PCE Program; and

WHEREAS, The power costs in rural Alaska villages are extraordinarily high on per capita basis; and

WHEREAS, The rural communities would face financial hardships by having the P.C.E. Program reduced to 500 KWH: and

WHEREAS, The rural communities and School Districts would face financial hardship by the increased costs of electrical power; and

WHEREAS, The schools would be required to reduce quality educational services; and

WHEREAS, Rural residents have fixed incomes and a high rate of unemployment.

Now therefore be it

RESOLVED: That the 1990 Village Participation Conference hereby opposes any attempt to reduce the P.C.E. Program as presently funded and statutorily regulated; and

be it further

RESOLVED: That the Village Participation Conference specifically opposes Senate Bill 301.

ADOPTED this 23rd day of February, 1990 at the Village Participation Conference in Juneau, Alaska.

_____

Chairperson
1990 Village Participation Conference

VILLAGE PARTICIPATION CONFERENCE RESOLUTION # 90 - 23

ENTITLED: A Resolution in support of the Power Cost Equalization (PCE) Program as Currently Authorized.

WHEREAS, The PCE Program is the highest priority rural energy program statutorily authorized in 1984, currently benefits residential and commercial electric utility customers in 120 rural communities; and,

WHEREAS, The existing PCE Program statutes have greatly assisted residents and businesses in paying for the high cost of electrical power in rural Alaska, which in turn financially assists rural electric utilities; and,

WHEREAS, SB 301 proposes to amend the existing PCE statutes which will reduce the eligible KWH levels and funds paid by PCE to residential and commercial customers under the program; and,

WHEREAS, The required yearly funding level for the PCE program is not drastically increasing; and the new PCE regulations, efficiency improvements to rural electrical systems, bulk fuel purchasing and better O & M practices, are having a positive impact by increasing energy efficiency, reducing fuel costs and lowering the cost of the PCE program.

Now therefore be it

RESOLVED: That the 1990 Village Participation Conference strongly recommends that the PCE statutes remain as currently enacted and that SB 301 or other legislation proposing to amend the PCE program not be passed, and

be it further

RESOLVED: That sufficient funding continue to be made available for energy efficient electrical system improvements and that the PCE program be funded by the Legislature at $17.8 million in FY 91.

ADOPTED this 23rd day of February, 1990 at the Village Participation Conference in Juneau, Alaska.

_____

Chairperson
1990 Village Participation Conference

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DATE OF A.O.:
PHONE: (907) 465-4522

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THE SENATE STATE AFFAIRS COMMITTEE
will host public hearings on
Friday, February 16, 1990

Intrastate Long Distance Telephone Competition

1:00 PM to 2:30 PM
and

Power Cost Equalization

2:30 PM to 3:30 PM
Anchorage Legislative Information Office
3111 C Street, Ground Floor Conference Room
Teleconferenced to Juneau and other cities upon request
For more information contact:
Sen. Pat Pourchot, Chairman 465-3712

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STATE OF ________________ ss

________________ DIVISION.

BEFORE ME, THE UNDERSIGNED, A NOTARY PUBLIC THIS DAY PERSONALLY APPEARED ____________________ WHO, BEING FIRST DULY SWORN, ACCORDING TO LAW, SAYS THAT HE/SHE IS THE ________________ OF ________________ PUBLISHED AT ____________________ IN SAID DIVISION ____________ AND STATE OF ______________ AND THAT THE ADVERTISEMENT, OF WHICH THE ANNEXED IS A TRUE COPY, WAS PUBLISHED IN SAID PUBLICATION ON THE ________ DAY OF ________________ 19____, AND THEREAFTER FOR ______ CONSECUTIVE DAYS, THE LAST PUBLICATION APPEARING ON THE ______ DAY OF ________________ 19____, AND THAT THE RATE CHARGED THEREON IS NOT IN EXCESS OF THE RATE CHARGED PRIVATE INDIVIDUALS.

____

SUBSCRIBED AND SWORN TO BEFORE ME

THIS ____ DAY OF ________________ 19__.

____

NOTARY PUBLIC FOR STATE OF ________________

MY COMMISSION EXPIRES ________________

REMINDER—

INVOICE MUST BE IN TRIPLICATE AND MUST REFERENCE THE ADVERTISING ORDER NUMBER.

A CERTIFIED COPY OF THIS AFFIDAVIT OF PUBLICATION MUST BE SUBMITTED WITH THE INVOICE.

ATTACH PROOF OF PUBLICATION HERE.

02-901 (Rev. 6-85)

PUBLISHER