Alaska's Sustainable Strategy for Energy Transmission & Supply

A.S.S.E.T.S

Sponsor Substitute for Senate Bill 25

Senator Lesil McGuire (District N)

February 13, 2012

Disclaimer

* The following presentation contains slides which present estimates of capital spending based on projects identified in reports prepared for or by the Alaska Energy Authority. This presentation should not be considered an endorsement of any particular project, fuel source, or combination of projects identified by the authority and/or its contractors.

Agenda

* Description of the problem A.S.S.E.T.S is intended to address:
  * Highlights from selected reports: capital
  * Highlights from selected reports: financing
  * Legislative history (2010-2012)
  * Power Project Fund
* Introduction to SB 25

Alaska Energy Pathway; Toward Energy Independence

AEA July 2010

out into regions as defined by existing regional native corporations.

Table 1. Capital Cost Rollup.

Capital Cost Rollup							
Native Corporation	Immediate (0-10 Years)	Short-Term (1 - 3 Years)	Mid-Term (2-10 years)	Long-Term (5 -15 Years)	Stretch-Goal (15+ years)	Capital Cost per Region	Capital Cost per Capita
Ahtna, Incorporated	$9,883,000	$18,961,000	$41,925,000	$18,456,000	$14,698,000	$103,923,000	$34,710
Aleut Corporation	$24,104,000	$34,481,000	$359,890,000	$20,209,300	$0	$438,484,300	$59,918
Arctic Slope Regional Corp.	$22,252,000	$29,020,000	$0	$47,349,461	$0	$98,621,461	$14,636
Bering Straits Native Corp.	$30,862,000	$49,560,000	$158,950,000	$41,132,382	$0	$280,504,382	$29,952
Bristol Bay Native Corporation	$24,011,000	$65,871,000	$220,744,000	$63,078,468	$1,467,000	$375,171,468	$51,569
Calista Corporation	$81,189,800	$65,708,000	$160,031,000	$116,208,706	$1,277,000	$424,414,506	$17,263
Chugach Alaska Corporation	$23,126,000	$41,150,000	$37,617,000	$23,741,592	$0	$125,634,592	$17,894
Doyon, Limited	$23,079,800	$50,777,000	$104,062,500	$30,258,596	$18,142,447	$226,320,143	$32,349
Koniag, Incorporated	$30,266,100	$28,451,000	$63,861,000	$902,449	$3,068,760	$126,549,309	$13,789
NANA Regional Corporation	$23,487,000	$29,195,000	$46,339,847	$53,288,779	$3,807,000	$155,915,626	$21,858
Sealaska Corporation	$222,371,300	$98,123,000	$162,172,408	$57,809,096	$2,505,248	$542,981,052	$8,040
Rural Region Totals	$514,631,800	$511,297,000	$1,355,392,755	$472,432,829	$44,765,455	$2,898,519,839	$27,453
Railbelt Region	$1,485,000,000	$940,000,000	$2,631,000,000	$2,959,000,000	$760,000,000	$7,290,000,000	$16,200
Statewide Totals	$1,999,631,800	$1,451,297,000	$3,986,392,755	$3,431,432,829	$804,765,455	$10,188,519,839	$43,653

- Projected "immediate" (0-10 years) capital spending of **$1.999 billion** for energy projects statewide (p. 25).

Source: http://www.akenergyauthority.org/alaska-energy-plan.html

Railbelt Integrated Resource Plan (RIRP)

AEA February 2010

Table 1-4
Summary of Results – Economics

Case	Cumulative Present Value Cost ($000,000)	Average Wholesale Power Cost (¢ per kWh)	Renewable Energy in 2025 (%)	Total Capital Investment ($000,000)
Scenarios				
Scenario 1A	$13,625	17.26	62.32%	$9,087
Scenario 1B	$13,625	17.26	62.32%	$9,087
Scenario 2A	$20,162	19.75	42.64%	$14,111
Scenario 2B	$21,109	20.68	65.83%	$18,805
Sensitivities				
1A/1B Without DSM/EE Measures	$14,507	17.40	67.10%	$8,603
1A/1B With Double DSM	$12,546	15.89	65.15%	$8,861
1A/1B With Committed Units Included	$14,109	17.87	46.84%	$8,090
1A/1B Without CO2 Costs	$11,206	14.20	49.07%	$8,381
1A/1B With Higher Gas Prices	$14,064	17.82	61.95%	$9,248
1A/1B Without Chakachamna	$14,332	18.16	38.06%	$7,719
1A/1B With Chakachamna Capital Costs Increased by 75%	$14,332	18.16	38.06%	$7,719
1A/1B With Susitna (Lower Low Watana Non-Expandable Option) Forced	$15,228	19.29	61.01%	$12,421
1A/1B With Susitna (Low Watana Non-Expandable Option) Forced	$15,040	19.05	63.01%	$15,057
1A/1B With Susitna (Low Watana Expandable Option) Forced	$15,346	19.44	63.01%	$15,588
1A/1B With Susitna (Low Watana Expansion Option) Forced	$14,854	18.82	66.90%	$14,069
1A/1B With Susitna (Watana Option) Forced	$15,683	19.87	70.97%	$13,211
1A/1B With Susitna (High Devil Canyon Option) Forced	$14,795	18.74	66.92%	$11,633
1A/1B With Modular Nuclear	$13,841	17.53	60.51%	$9,105
1A/1B With Tidal	$13,712	17.37	65.52%	$9,679
1A/1B With Lower Coal Fuel and Lower Coal Capital Costs	$13,625	17.26	62.32%	$9,087
1A/1B With Tax Credits for Renewables	$12,954	16.41	67.56%	$9,256

Table 1-6
Summary of Proposed Transmission Projects

Project No.	Transmission Projects	Type	Cost ($000)
A	Bernice Lake – International	New Build (230 kV)	227,500
B	Soldotna – Quartz Creek	R&R (230 kV)	126,500
C	Quartz Creek – University	R&R (230 kV)	165,000
D	Douglas – Teeland	R&R (230 kV)	62,500
E	Lake Lorraine – Douglas	New Build (230 kV)	80,000
F	Douglas – Healy	Upgrade (230 kV)	30,000
G	Douglas – Healy	New Build (230 kV)	252,000
H	Eklutna – Fossil Creek	Upgrade (230 kV)	65,000
I	Healy – Gold Hill	R&R (230 kV)	180,500
J	Healy – Wilson	Upgrade (230 kV)	32,000
K	Soldotna – Diamond Ridge	R&R (115 kV)	66,000
L	Lawing – Seward	Upgrade (115 kV)	15,450
M	Eklutna – Lucas	R&R(115 kV/230 kV)	12,300
N	Lucas – Teeland	R&R (230 kV)	51,100
O	Fossil Creek – Plant 2	Upgrade (230 kV)	13,650
P	Pt. Mackenzie – Plant 2	R&R (230 kV)	32,400
Q	Bernice Lake – Soldotna	Rebuild (115 kV)	24,000
R	Bernice Lake – Beaver Creek - Soldotna	Rebuild (115 kV)	24,000
S	Susitna Transmission Additions	New Build (230 kV)	57,000

- Projected capital spending estimates range from **$13.625 billion to $21.109 billion** (p. 1-17, 1-19)

Source:

http://www.akenergyauthority.org/regionalintegratedresourceplan.html

Southeast Integrated Resource Plan (SEIRP)

AEA December 2011

Table 1-2 Refined Screened Potential Hydro Project List

PROJECT NAME	LOCATION	CATEGORY	CAPACITY (MW)	CAPITAL COST ($ MILLIONS)	CAPITAL COST $/KW	ANNUAL ENERGY (MWH)
SEAPA						
Anita - Kunk Lake	Wrangell	Storage	8.60	90.54-135.82	10,528-15,793	28,100
Cascade Creek	Petersburg	Storage	70.00	146.35-219.53	2,091-3,136	202,300
Connell Lake	Ketchikan	Storage	1.70	5.40-10.80	3,176-6,353	10,600
Lake Shelokum	Wrangell	Storage	10.00	39.00-91.00	3,900-9,100	40,000
Mahoney Lake	Ketchikan	Storage	9.60	34.50-51.76	3,594-5,392	46,066
Orchard Lake	Meyers Chuck	Storage	10.00	34.20-79.80	3,420-7,980	56,000
Ruth Lake	Petersburg	Storage	20.00	84.54-126.82	4,227-6,341	70,700
Scenery Creek	Petersburg	Storage	30.00	128.98-193.48	4,299-6,449	128,700
Sunrise Lake	Wrangell	Storage	4.00	16.64-24.96	4,160-6,240	13,500
Thoms Lake	Wrangell	Storage	7.50	110.11-135.17	14,681-18,023	24,200
Triangle Lake	Metlakatla	Storage	3.50	12.63-18.95	3,609-5,414	13,100
Tyee New Dam Construction	Wrangell	Storage	1.40	36.60-85.4	26,143-61,000	9,100
Tyee New Third Turbine	Wrangell	Storage	10.00	13.20-30.80	1,320-3,080	-
Virginia Lake	Wrangell	Storage	12.00	103.21-154.81	8,601-12,901	43,800
Baranoff Island						
Takatz Lake	Sitka	Storage	27.70	117.04-175.56	4,225-6,338	106,900
Chichagof Island						
Crooked Creek and Jim's Lake	Elfin Cove	Storage/Run-of-River	0.16	1.48-2.22	9,250-13,875	666
Indian River	Tenakee Springs	Run-of-river	0.25	2.02-3.02	8,080-12,080	916
Water Supply Creek	Hoonah	Run-of-river	0.40	5.49-8.23	13,725-20,575	1,480

PROJECT NAME	LOCATION	CATEGORY	CAPACITY (MW)	CAPITAL COST ($ MILLIONS)	CAPITAL COST $/KW	ANNUAL ENERGY (MWH)
Juneau Area						
Lake Dorothy Expansion	Juneau	Storage	28.00	71.40-166.60	2,550-5,950	96,000
Sweetheart Lake	Juneau	Storage	30.00	82.82-124.08	2,761-4,136	136,000
Upper Lynn Canal						
Connelly Lake	Haines	Storage	12.00	36.80-55.20	3,067-4,600	39,762
Schubee Lake	Skagway	Storage	4.90	36.00-54.00	7,347-11,020	25,000
Walker Lake	Chilkat Valley	Run-of-river	1.00	6.08-9.12	6,080-9,120	2,750
West Creek	Skagway	Storage	25.00	112.00-168.00	4,480-6,720	76,600

- The low end capital cost estimates contained in the *refined screened potential hydro project* table (p. 1-15,16) identify **$1.327 billion** in potential expenditures.
- The capital cost estimates in the *results of transmission interconnection economic evaluation* table (p. 1-19) identify **$1.424 billion** in potential expenditures.
- The SEIRP *results of integrated cases – regional summary* table (p. 1-37) estimates capital spending for the *optimal hydro/transmission case* at **$1.407 billion**.

Source:

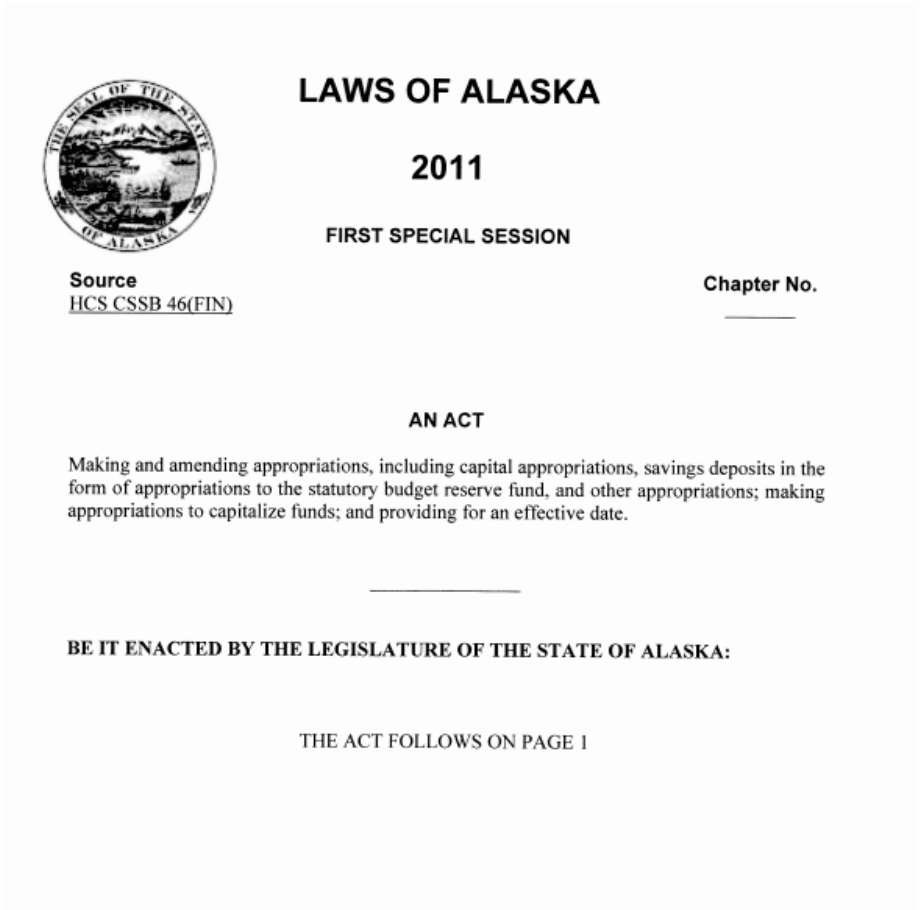
http://www.akenergyauthority.org/southeastIRP.html

Summary: Capital Estimates

* Alaska Energy Pathway (AEA 2010) near term:
  * $1.999 billion.
* Railbelt Integrated Resource Plan (AEA 2010) long term:
  * $13.625 - $21.109 billion.
* Southeast Integrated Resource Plan (AEA 2011) long term:
  * $1.407 billion

* ***Takeaway: there will be substantial spending on energy infrastructure in Alaska over the next five to ten years.***

Financing: Legislative Intent



LAWS OF ALASKA

2011

FIRST SPECIAL SESSION

Source
HCS CSSB 46(FIN)

Chapter No.

AN ACT

Making and amending appropriations, including capital appropriations, savings deposits in the form of appropriations to the statutory budget reserve fund, and other appropriations; making appropriations to capitalize funds; and providing for an effective date.

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

THE ACT FOLLOWS ON PAGE 1

"It is the intent of the legislature that the state's capital investment into energy generation projects not exceed 50% of the total investment required to fully complete those projects."

Page 136, Chapter 5 SSLA 11

Financing

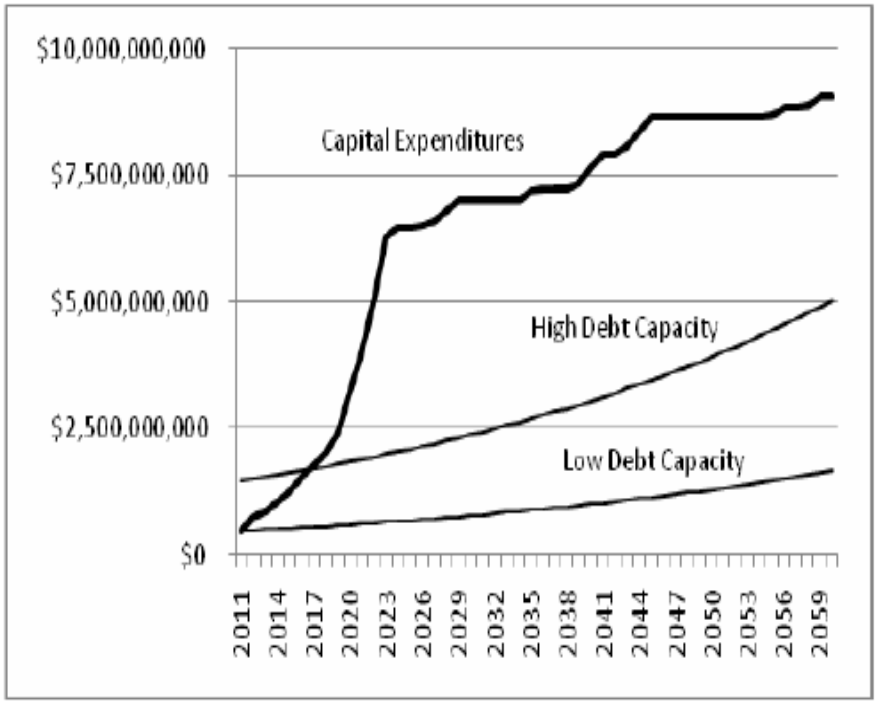
Alaska Energy Pathway: AEA July 2010

"The largest identified challenge is how to finance projects that have been identified as economic. There is a financial gap between the projected capital expenditures and the debt capacity of the Railbelt utilities. This gap is apparent in Figure 1, excerpted from the Railbelt IRP document. The debt capacity curve indicates a low capacity of $1 billion and a high capacity of $2.5 billion. These debt capacities leave a Financing Gap from $4.5 billion to $6.5 billion for the Railbelt electric infrastructure alone.

There are three options to close the financial gap:

1. *Reduce capital expenditures by reducing the number and size of projects.*
2. *Increase debt capacity by building a healthy economic base, **obtaining favorable financing terms such as loan guarantees, low interest rates or grant assistance.***
3. *Obtain grant funding from state, federal or other outside sources."*

Figure 1-9
Required Cumulative Capital Investment (Scenarios 1A/1B) Relative to Railbelt Utility Debt Capacity



Source: SNW Report included in Appendix C.

Source: http://www.akenergyauthority.org/alaska-energy-plan.html

Financing: continued

Southeast Integrated Resource Plan: Appendix B AEA July 2010

Selected Inputs into the model:

- Project Cost: $250,000,000
- Long Term Debt: $306,890,758
- Interest Rate: 5.5%
- Generation: 25 MW
- Capacity Factor: 65%
- Project Life: 50 years

Debt Service	Operation Year 1
Interest Accrual in Operation Year	$16,822,278
Principal Payments in Operation Year	$4,181,330
Total Principal & Interest Payments	$21,003,614
Debt Service as % of Revenue	78.1%

Debt Service (Principal & Interest)					
Interest Accrual in Operation Year	*16,822,278*	*16,580,143*	*16,343,008*	*16,083,150*	*15,808,804*
Principal Payments in Operation Year	*4,181,336*	*4,414,472*	*4,660,606*	*4,920,464*	*5,194,810*
Total Unit 1 Debt Service Payments	21,003,614	21,003,614	21,003,614	21,003,614	21,003,614
Total Principal & Interest Payments	21,003,614	21,003,614	21,003,614	21,003,614	21,003,614
Cash Flow net Debt Service	4,200,723	6,203	6,389	6,581	6,778

Source: Southeast Integrated Resource Plan; Appendix B: http://www.akenergyauthority.org/SEIRP/12-23-2011_Vol3_SoutheastAlaskaIRP.pdf

Summary: Financing

* The legislature has expressed the intent that state funding for generation projects not exceed 50% of the total investment required for the projects; necessitating financing.
* AK Energy Pathway: "*The largest identified challenge is how to finance projects that have been identified as economic.*"
* Financing costs represent a significant portion of the revenues of any energy project.
* ***Takeaway: financing is an important part of project development and a challenge in Alaska.***

Legislative History 2009: GRETC

1. Governor proposes Senate Bill 143: Greater Railbelt Energy and Transmission Corporation (GRETC)
2. Proposed limited financing powers for the corporation and a mechanism to convey state assets like Bradley Lake and interties to the corporation from AEA.
3. Failed to pass the legislature.
4. Alaska Railbelt Cooperative Transmission & Electric Company (ARCTEC) formed.

Legislative History 2011: Senate Bill 42

1. Governor proposes Senate Bill 42: Power Project; Alaska Energy Authority (AEA)
    1. Proposed limited financing powers for the AEA. Would have allowed AEA to issue bonds to finance the construction of projects owned by the AEA or **leased** by the AEA. (Section 7 27-GS1822\A; p. 4, lines 5-7)
    2. Passed but amended by the legislature limiting the powers of AEA to acquire or construct a power project to a susitna dam. (Section 2, Chapter 6, FSSLA 11; p. 3, lines 30-31).

Current Financing Mechanism

1. Power Project Fund (PPF)
    1. As 42.45.010
    2. Limited to 10 megawatts
    3. Financing may be offered for up to 50 years
    4. Repayment may be deferred for up to 10 years
    5. May offer below market interest rates
    6. Requires legislative approval for loans greater than $5,000,000

Senate Bill 25: A.S.S.E.T.S

Alaska's Sustainable Strategy for Energy Transmission and Supply

1. Senate Bill 25
    1. Creates a new *Sustainable Energy Transmission and Supply* (SETS) development program and fund within the Alaska Industrial Development and Export Authority (AIDEA) [sections 10 & 11]
    2. Proposes the SETS fund be capitalized with $250,000,000 [section 2]
    3. Makes conforming changes to AIDEA's mission by including **energy** in the legislative findings of AIDEA's enabling statutes AS 44.88.010(a) [section 3].
    4. Makes changes to AIDEA's loan participation program AS 44.88.155(d) [section 6].
    5. Allows for an incentive interest rate for "renewable energy development" in addition to the existing rural and economic development criteria [section 9].

SB 25: Powers and Limitations of SETS

1. Section 10 a new *Sustainable Energy Transmission and Supply* (SETS) development program and fund within the Alaska Industrial Development and Export Authority (AIDEA). Some of the powers granted to AIDEA are to use the SETS fund to:
    1. To finance qualified projects, insure project obligations, guarantee loans or bonds and establish reserves.; and
    2. Defer principal payments or capitalize interest on project financing; and
    3. Enter into project financing agreements; and
    4. Finance projects up to a term of 30 years or 50 years for a hydroelectric or transmission project; but
    5. AIDEA must obtain legislative approval if it finances:
        1. More than one-third of the capital cost of an energy project; or
        2. Guarantees a loan that exceeds $20 million.

Why put SB 25 in AIDEA?

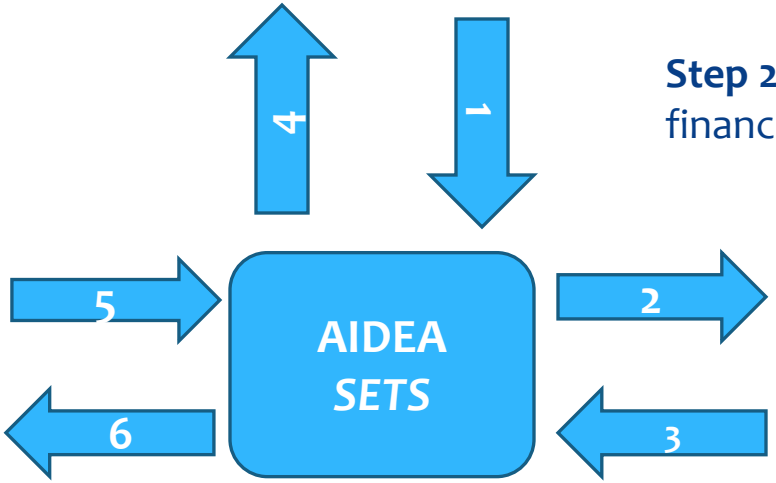
Source: AIDEA Annual Report 2011

Since inception, AIDEA has paid $324,500,000 in dividends to the state of Alaska and has net assets of nearly $1 billion. AIDEA was capitalized with the transfer of $384,500,000 in general funds and loans beginning in 1981.

How SETS will work within AIDEA

Step 1: the state of Alaska establishes SETS and capitalizes the fund.

Step 5 & 6: AIDEA can access the financial markets to make more credit available through SETS.



Step 2: AIDEA uses SETS to finance an energy project.

Step 4: AIDEA pays dividends to the state.

Step 3: the energy project repays the loan/investment from AIDEA.

Summary

1. Senate Bill 25 creates a sustainable strategy for energy transmission and supply by putting some of Alaska's financial assets to work within the state in order to fund energy projects.
2. The strategy is sustainable because each investment is an asset that will generate revenues for AIDEA and the state and earnings that can be reinvested in future projects.
3. Senate Bill 25 is **not** the answer to Alaska's energy challenges. The high costs, vast distances and small populations will often require direct state participation in energy projects for generations to come.
4. However, Senate Bill 25 does provide a tool that will help facilitate the development of energy projects in Alaska and is complimentary to the work the legislature and the Governor have done to date to address the energy needs of Alaska.

Questions?

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