02/06/13 Alaska Energy Authority Overview and Renewable Energy Fund Update

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Alaska Energy Authority Overview and Renewable Energy Fund Update

House Energy Committee
Feb. 6, 2013

ALASKA ENERGY AUTHORITY

Reducing the Cost of Energy

- Energy Planning and Policy
- Technical and Community Assistance
- Investing in Alaska's Energy Infrastructure
- Diversifying Alaska's Energy Portfolio

ALASKA ENERGY AUTHORITY

Electricity Generation by Region

Annual Electric Generation

AEA Energy Region	MWhs per Year	Percent of Total
Aleutians	65,340	1%
Bering Straits	55,362	1%
Bristol Bay	55,145	1%
Copper River/Chugach	116,700	2%
Kodiak	150,503	2%
Lower Yukon-Kuskokwim	96,625	1%
North Slope	82,544	1%
Northwest Arctic	35,549	1%
Railbelt	5,075,507	77%
Southeast	785,190	12%
Yukon-Koyukuk/Upper Tanan	31,175	0%
Total	**6,549,640**	**100%**

2011 Alaska Energy Statistics

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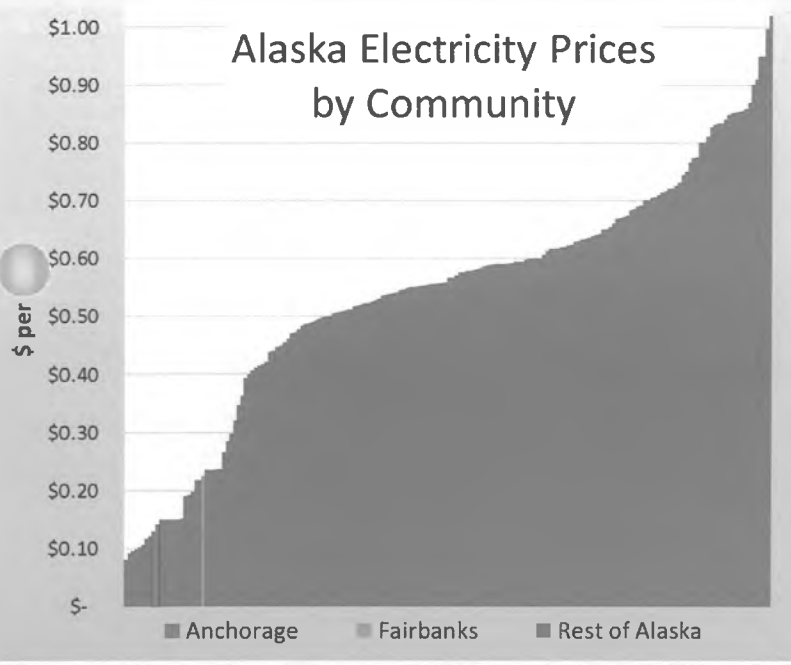
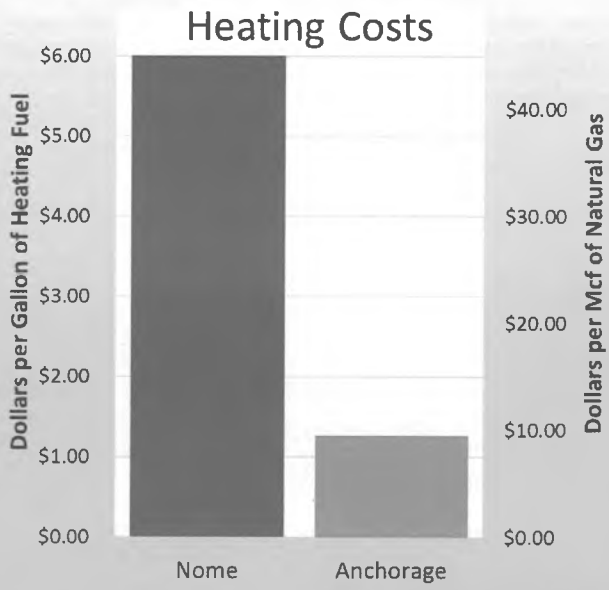
Energy Costs Vary





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Energy Policy Development and Coordination

- Deputy Director for Statewide Energy Policy Development
- Serve as lead on Alaska's energy policy development
- Coordination of energy plans on statewide level
- Coordinate multi-agency efforts
- Individual project analysis and vetting
- Transmission planning
- Working with AIDEA on LNG trucking

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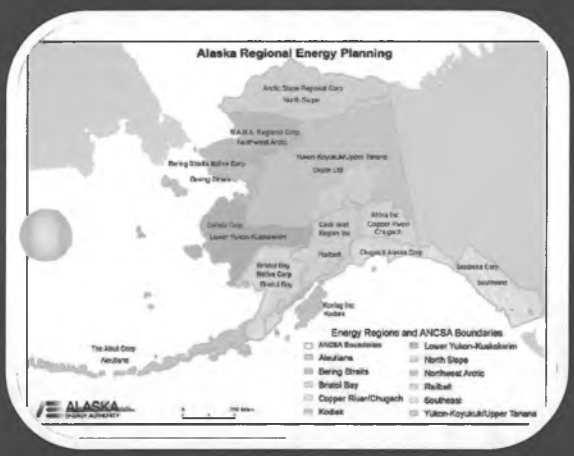

Supporting Regional Solutions

Regional Energy Planning

- Energy Pathways led to regional planning
- Address unique challenges while capitalizing on regional resources
- Locally driven and community-vetted blueprint for sustainability
- Objective to provide specific, actionable recommendations
- Includes electric, heat and transportation energy
- Previous Plans: Railbelt Integrated Resources Plan and Southeast Integrated Resources Plan
- Technical assistance to local communities to provide synergy between planning and funding sources

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Bradley Lake Hydroelectric Project

Alaska Intertie

Infrastructure and Large Projects

Bradley Lake Hydro

- State capital contribution 50%
- Produces about 10% of Railbelt electricity
- AEA-owned asset
- Low-cost energy producer
- 120 megawatts, 4.5 cents/kWh

Alaska Intertie

- AEA-owned with no outstanding debt
- Operated by AEA and Railbelt utilities

Susitna-Watana Hydro

- Will provide about 50% Railbelt electricity
- SB 42 authorized AEA to pursue licensing
- Long-term, stable rates

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Rural Energy

Bulk Fuel and Rural Power System Upgrades

- Help utilities improve efficiency, safety and reliability of power systems
- Completed $304 million in rural bulk fuel and rural power system upgrade projects since 2000, in partnership with Denali Commission
- Thirteen projects under construction next year
- Circuit rider technical assistance in 53 communities (FY 12)

Training and Technical Assistance

- Training for power plant operators, advance power plant, bulk fuel, electric utility manager, Power Cost Equalization
- Energy specialists assisted 40+ communities to advance to project-ready status

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Rural Energy

Power Cost Equalization (PCE)

- Provide economic assistance in rural Alaska where electrical rates can be 3 to 4 times higher than in urban Alaska
- Available to community facilities and residential customers
- Regulatory Commission of Alaska (RCA) sets rates, calculations based on use, costs and efficiencies
- Approximately 77,341 people live in the 183 participating communities (FY 11)
- PCE payments at 100% totaling $39.5 million (FY 12)
- $788 million PCE Endowment

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Prince of Wales: Run-of-River Hydro

Chena Hot Springs: Geothermal

AEA Programs

Power Project Fund

- Low-interest loans to upgrade or develop small-scale electric power facilities
- Includes bulk fuel storage, transmission and distribution, waste energy, energy conservation, energy efficiency and alternative energy facilities and equipment
- State assistance for a project more than $5 million requires Legislative approval
- $35 million in Power Project Fund (~half in application process)
- 34 projects funded, $31 million
- Pending applications: City of St. George, wind/diesel hybrid; Haida Energy Inc., hydroelectric project

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ALASKA ENERGY EFFICIENCY PARTNERSHIP

AEA Programs

Efficiency and Conservation

- State Goal: improve efficiency 15% by 2020
- AEA's focus is on commercial buildings, rural public buildings, industrial facilities and electrical efficiency
- Statewide outreach and education
- Support for multi-stakeholder group, Alaska Energy Efficiency Partnership AKEnergyEfficiency.org
- Coordination between State agencies
- Alaska Commercial Energy Audit Program
- Village Energy Efficiency Program

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Energy Efficiency and Conservation

AEA Energy Efficiency and Conservation Programs: Results

- 132 participating Alaska communities, 419 buildings
- $1,534,062 and 282,938 diesel equivalent gallons in projected savings
- Average immediate savings of implemented efficiency measures: $0.29 cents/ $1 invested, 300% ROI after 10 years
- Alaska Commercial Energy Audit Program measures produce 30% savings with 6.2 year simple payback

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Emmonak City Hall boiler before and after efficiency improvements

Community Highlight: Emmonak

Whole-Village Retrofit for Energy Efficiency

- AEA Programs: Village Energy Efficiency Program, Energy Efficiency and Conservation Block Grant Program
- Whole-village retrofit to reduce the cost of energy
  - Audits and efficiency retrofits in 8 community buildings
- Successes:
  - $670,000 in efficiency and conservation investment projected to provide $90,000 in annual savings
  - 27% of savings from efforts to reduce electricity consumption, remainder from reducing fuel consumption
  - Used local labor
  - Increased awareness

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Altaeros Energies Helium Balloon Wind Turbine

AEA Programs

Energy Statistics

- Summary and analysis of electricity generation and use across Alaska

Emerging Energy Technology Fund

- SB 220 (2010) created fund
- Through Denali Commission matching grant, $8.9 million available
- First round, 16 project selected for funding (2012)
- Projects must be commercially viable within 5 years
- Projects in Juneau, Fairbanks, Kodiak, Delta Junction, Nenana, Nikiski, Igiugig, Tuntutuliak, Kwigllingok and Kotzebue

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Ruby: Hydrokinetic

Unalakleet: Wind

AEA Programs

Renewable Energy Fund

- HB 152 (2008) authorized AEA to manage program, reauthorized in 2012
- 227 projects approved totaling $202.5 million
- More than 60 projects currently under construction
- By 2016, 12.3 million gallons of diesel and natural gas equivalent will be displaced annually.
- Results: $45 million in annual savings

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Renewable Energy Fund: Evaluation Process

- Applications solicited and received by AEA
- Technical and Economic Review
  - Stage 1 – Qualifying project
  - Stage 2 – Technical & Economic
  - Stage 3 – Scoring for Rank
  - Stage 4 – Regional Spreading
- Renewable Energy Fund Advisory Committee
- Recommendations to the Legislature

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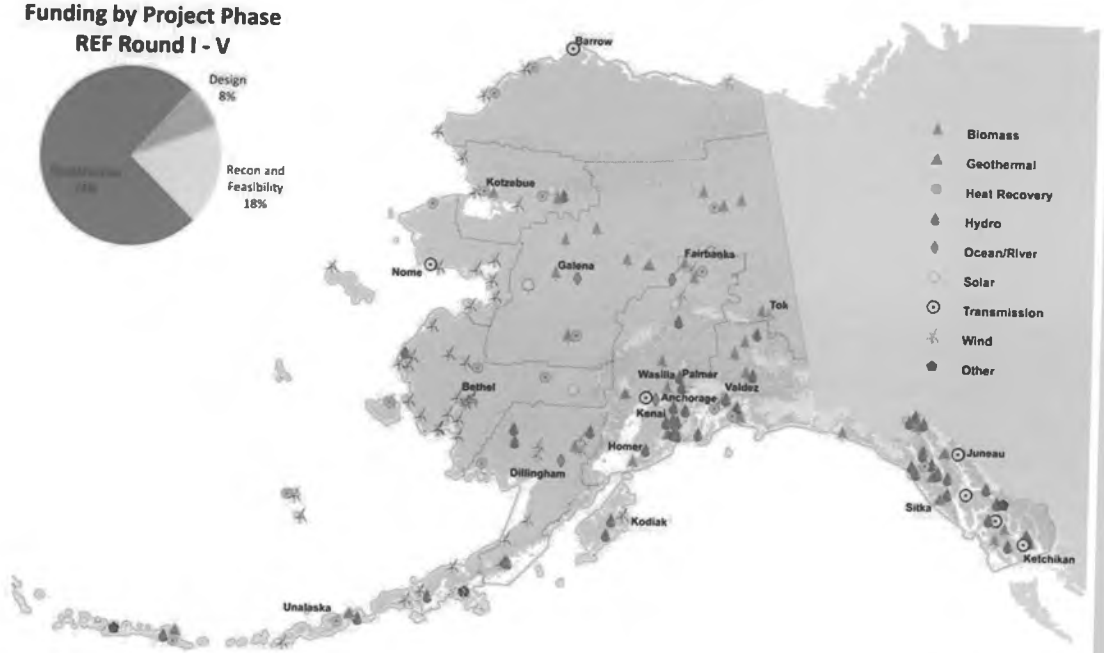
Renewable Energy Fund Projects

Funding by Project Phase
REF Round I - V



As of 4/17/12

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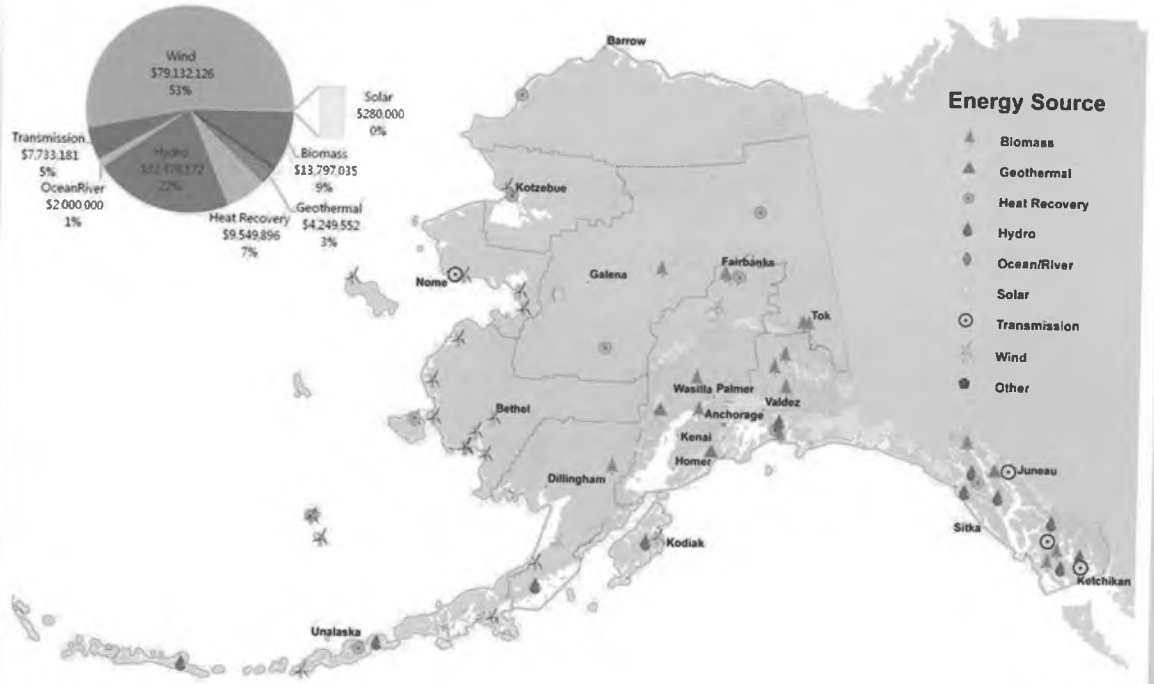
Construction Projects (R1-5)



As of 4/17/12

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Renewable Energy Fund: Benefits

- Supports Alaska's 50% Renewable Power goal
- Diversifies Alaska's energy supply
- Reduces energy costs by:
  - Providing low-cost renewable energy to displace fossil fuels
  - Reducing the cost of renewable energy
  - Keeping more dollars in local community
- Provides consistent and efficient evaluation of projects and prospective funding
- Leverages State dollars to produce energy
- Enhances regional planning efforts

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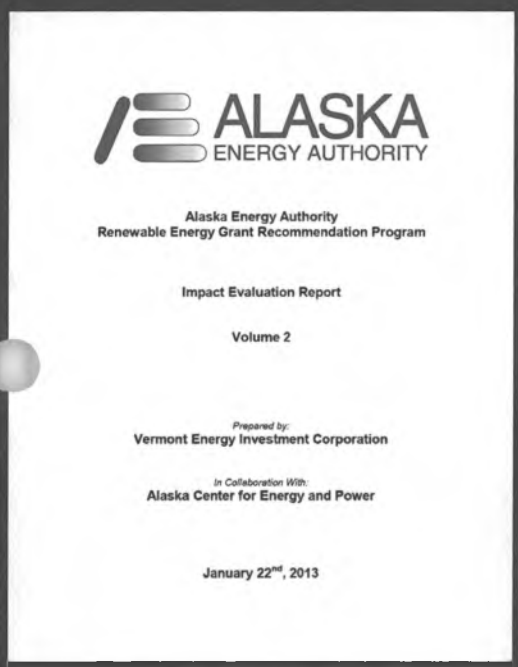

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Alaska Energy Authority
Renewable Energy Grant Recommendation Program

Impact Evaluation Report

Volume 2

Prepared by:
Vermont Energy Investment Corporation

In Collaboration With:
Alaska Center for Energy and Power

January 22nd, 2013

Available at: AKenergyauthority.org

Renewable Energy Fund

Independent Program Review

- Vermont Energy Investment Corporation and the Alaska Center for Energy and Power
- Found energy savings, reduced emissions
- Renewable Energy Fund is cost effective
- Projects that have reached construction are projected to provide a positive net present value of more than $500 million
- Increased knowledge base on renewable energy development in Alaska that will improve future projects
- Includes Renewable Energy Fund Rounds 1-4

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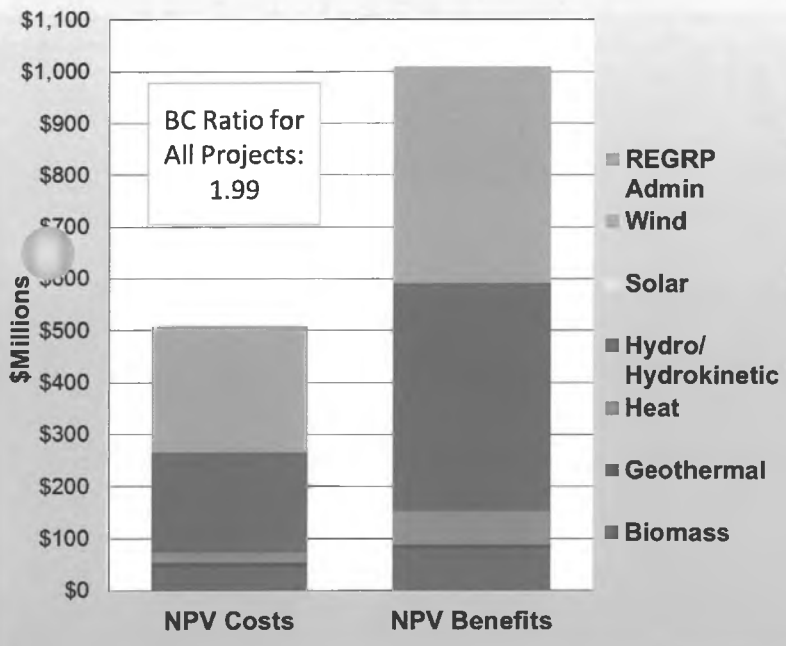
Renewable Energy Fund: Economic Benefits



- $500 million net present benefits from Renewable Energy Fund projects in construction is projected
- Integrates actual performance from completed projects
- AEA manages grants, not programs, making it difficult to precisely identify the beneficiaries of the $500 million

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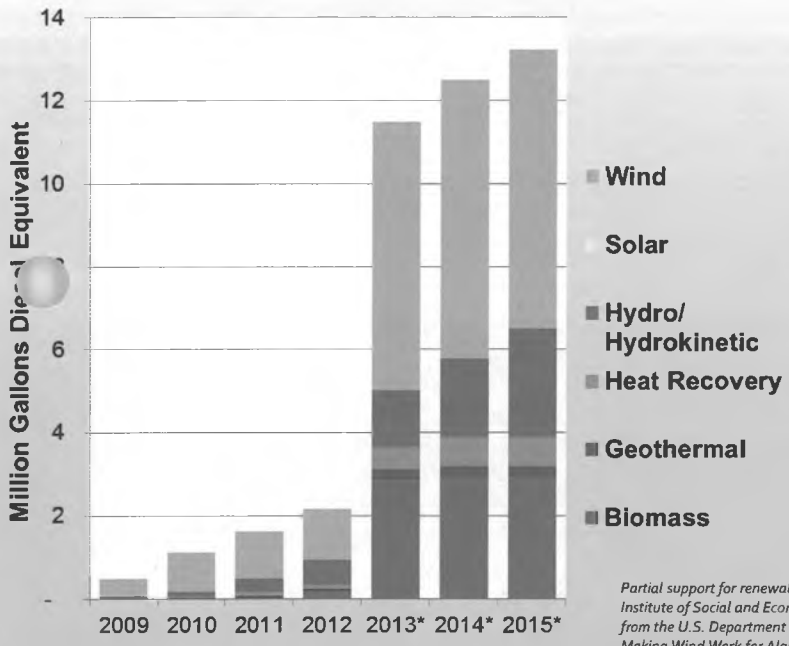
Renewable Energy Fund: Avoided Fuel



- Renewable Energy Fund projects offset a growing volume of fuel
- Large jump in 2013 is from Eva Creek Wind and ML&P Landfill Gas projects, both successful Railbelt projects
- Expect continued growth in avoided fuel as previously funded projects complete construction

Partial support for renewable energy fund project database developed by the Institute of Social and Economic Research, University of Alaska Anchorage from the U.S. Department of Energy, EPSCoR project DE-PS02-09ER09-12, Making Wind Work for Alaska: Supporting the Development of Sustainable, Resilient, Cost-Effective Wind-Diesel Systems for Isolated Communities

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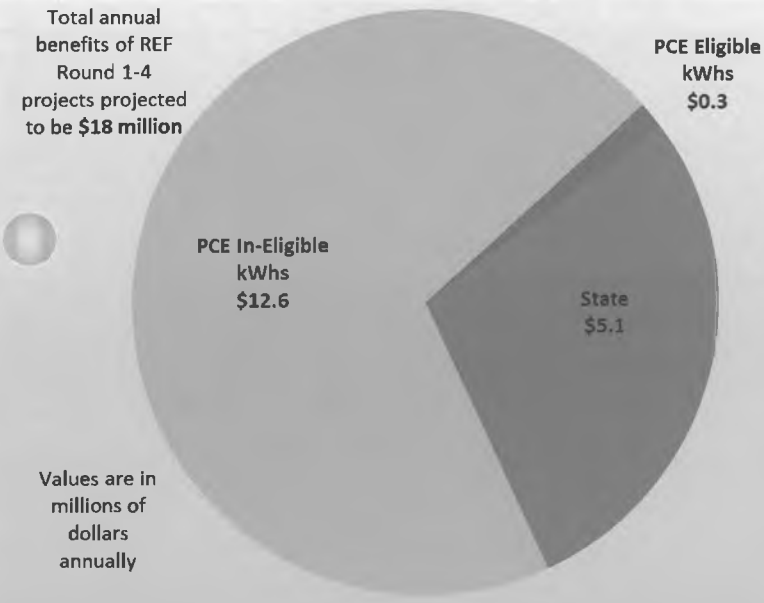
Renewable Energy Fund: PCE Communities

Distribution of Project Benefits



- $18 million annual benefits from Renewable Energy Fund projects (Rounds 1-4) projected
- Most benefit goes towards non PCE kWhs (e.g., business, households exceeding monthly limit)

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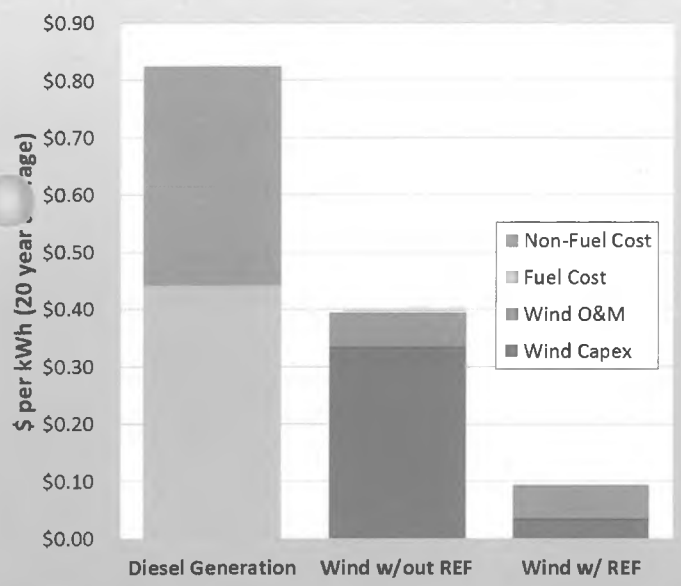
Renewable Energy Project: Lowering the Cost of Energy



- We expect Renewable Energy Fund projects to lower power costs
  - Even without a REF grant
  - Achieving these economics are part of our scoring criteria
- Renewable Energy Fund grants help good projects get built
  - Provides needed capital
  - Decreases the payback period on good projects

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GE Jenbacher gas engines at Doyon Utility's JBER facility

Community Highlight: JBER

Landfill-Gas-To-Energy Project

- Funding from AEA Renewable Energy Fund, Doyon Utilities and federal government
- Constructed in 2012
- Alaska's first landfill-gas-to-energy project
- Located on Joint Base Elmendorf-Richardson (JBER)
- Produce power from Anchorage Regional Landfill methane gas
- Expected results:
  - Will produce 56,000 megawatts annually, 26.2% of JBER's power use
  - Will produce more than $50 million in savings over project life

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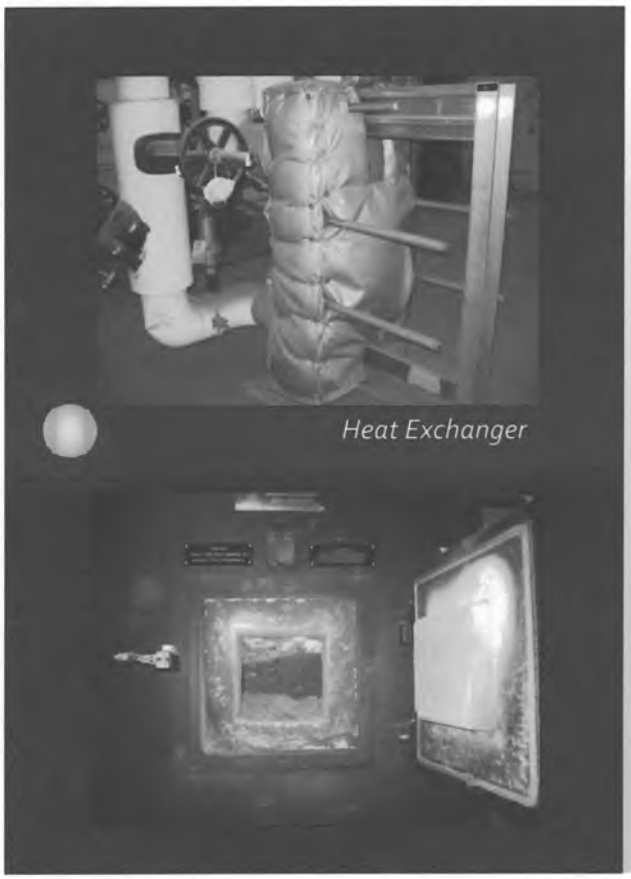

Heat Exchanger

Community Highlight: Delta Junction

Delta Junction School Biomass

- Completed in September 2011
- High-efficiency, low-emissions wood chip biomass heating system
- Wood chips come from Dry Creek Saw Mill waste product
- Funding $2M grant/$2.8M total
- Simple Pay Back: 13 years for Renewable Energy funds,19 years on total cost
- Successes:
  - During the first winter, saved $153,000 and 53,000 gallons in heating
  - Allowed the school to save 2 teacher positions, reopen music program and remodel the school kitchen
  - Potential to add additional facilities
  - Easy maintenance

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Community Highlight: Atka

Chuniisax Creek Hydroelectric Project

- Completed in 2012 (City of Atka has pursued since 1997)
- Capacity: 283 kilowatts
- Will provide nearly 100 % of Atka's power needs, including a portion of Atka Pride Seafoods' demand
- Capital Cost: $5 million
- 261,000 fuel savings
- Simple payback 21 years
- ROI 139%
- Used local labor
- Expected Results:
  - $180,000 annual savings in diesel fuel costs
  - Potential to use excess power for electric heat

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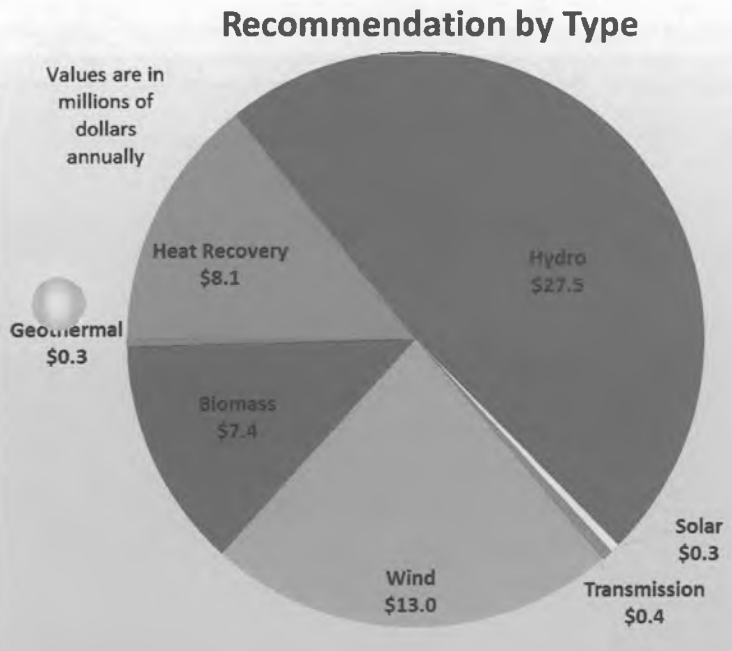
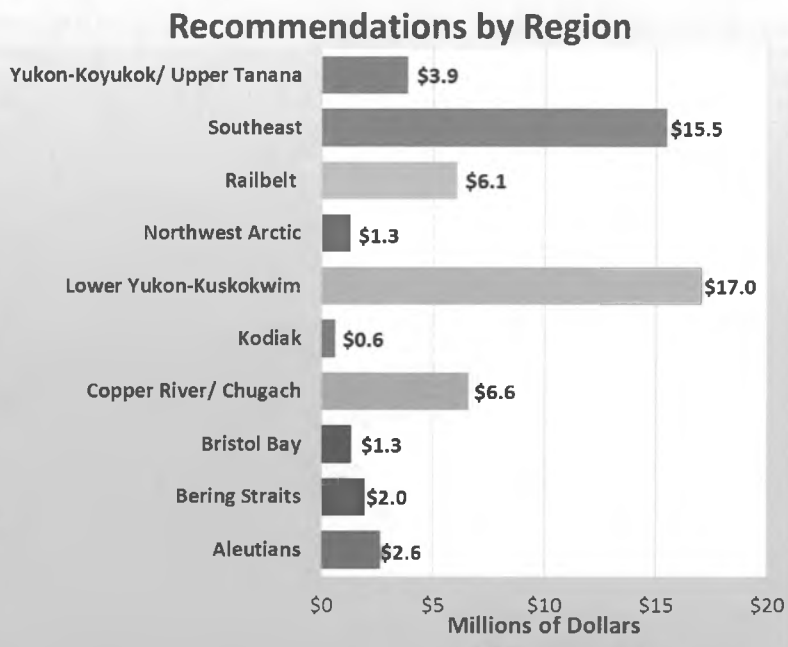
Renewable Energy Fund : Round 6 Recommendations





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AEA: Active Energy Projects

Active Energy Projects - January 2012 thru January 2013
Prepared: January 23, 2013

Program Type	No. of Active Projects	Renewable Energy Funds	Other State Funds	Federal Funds	Total Funding
Renewable Energy Programs:					
Biomass	24	7,440,548	1,305,858	1,192,036	***9,938,442***
Heat Recovery - Other Diesel	10	4,956,664	567,727	271,543	***5,795,934***
Energy Efficiency & Conservation	20	-	5,029,132	12,053,731	***17,082,864***
Geothermal	8	9,793,213	76,908	91,184	***9,961,305***
Hydropower	40	35,382,172	25,210,755	5,128,173	***65,721,101***
Ocean & River Energy	3	718,175	634,925	8,571	***1,361,671***
Energy Generation - Transmission	25	21,662,031	70,388,208	2,402,838	***94,453,077***
Wind Energy	36	39,287,809	11,660,500	2,890,817	***53,839,127***
Solar Power	1	90,000	-	-	***90,000***
Emerging Energy Technology	*	-	-	-	-
Bulk Fuel Upgrades	11	-	8,827,551	13,828,679	***22,656,230***
Rural Power System Upgrades	27	-	25,997,441	26,345,943	***52,343,384***
Large Energy Development Projects:					
Susitna-Watana Hydro	1	-	76,000,000	-	***76,000,000***
Fire Island Wind Farm T-Lines	1	-	25,000,000	-	***25,000,000***
Totals:	**207**	**119,330,612**	**250,699,007**	**64,213,516**	**434,243,135**

* 16 projects in process of being awarded. Not active in calendar year 2012

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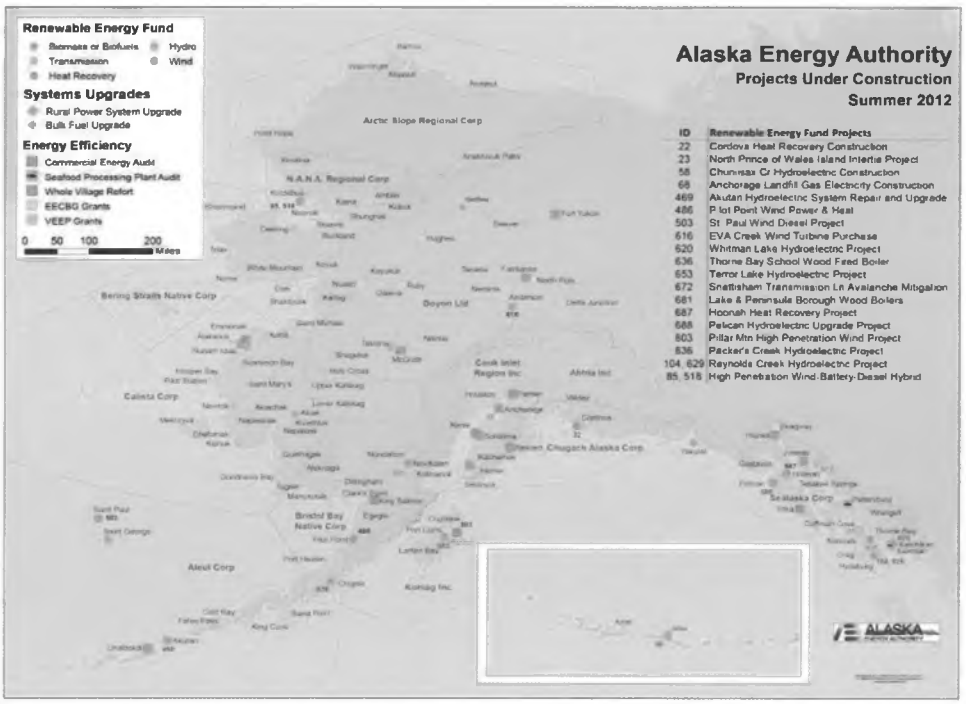

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AEA: By the Numbers

FY14 Budget Summary
Prepared: January 13, 2013

Governor's FY14 Budget (in thousands)

OPERATING:	Allocations	Appropriation	General Funds (UGF & DGF)	Other Funds	
Alaska Energy Authority		**14,362**	**5,627**	**8,735**	
AEA Owned Facilities	1,067			1,067	
AEA Rural Energy Operations	6,144		2,188	3,957	
AEA Technical Assistance	577		407	170	
Statewide Project Development, Alternative Energy & Energy Efficiency	6,574		3,032	3,541	
Language Section:					
Power Cost Equalization (estimated)		**40,351**	7,260		
			33,091	Endowment Fund AS 42.45.070(a)	

CAPITAL:	Allocations	Appropriation	General Funds	Other Funds	Federal Funds
AEA Susitna-Watana Hydro		**95,200**	95,200		
AEA Bradley Lake Transmission Upgrade		**13,700**	13,700		
AEA Rural Power Systems Upgrade		**12,600**	9,600		3,000
AEA Renewable Energy Projects Round Six		**25,000**	25,000		
AEA Bulk Fuel Upgrades		**8,500**	6,500		2,000
AEA - Alternative Energy & Energy Efficiency Programs		**2,000**	2,000		
AEA - Energy Plan Implementation		**1,000**	1,000		
AEA - Electrical Emergencies Program		**330**	330		
AIDEA - Natural Gas Treatment & Distribution		**50,000**	50,000		
Language Sections:					
Fund Capitalization - Emerging Energy Technology Fund		**2,000**	GF Appropriation to EETF AS 42.45.375		
Fund Transfers - Renewable Energy Fund		**25,000**	GF Appropriation to REGF AS 42.45.045(a)		
Reappropriation - Akiak to Atmautluak for Rural Power System Upgrades		**1,750**	Reappropriation of GF		

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AKEnergyAuthority.org

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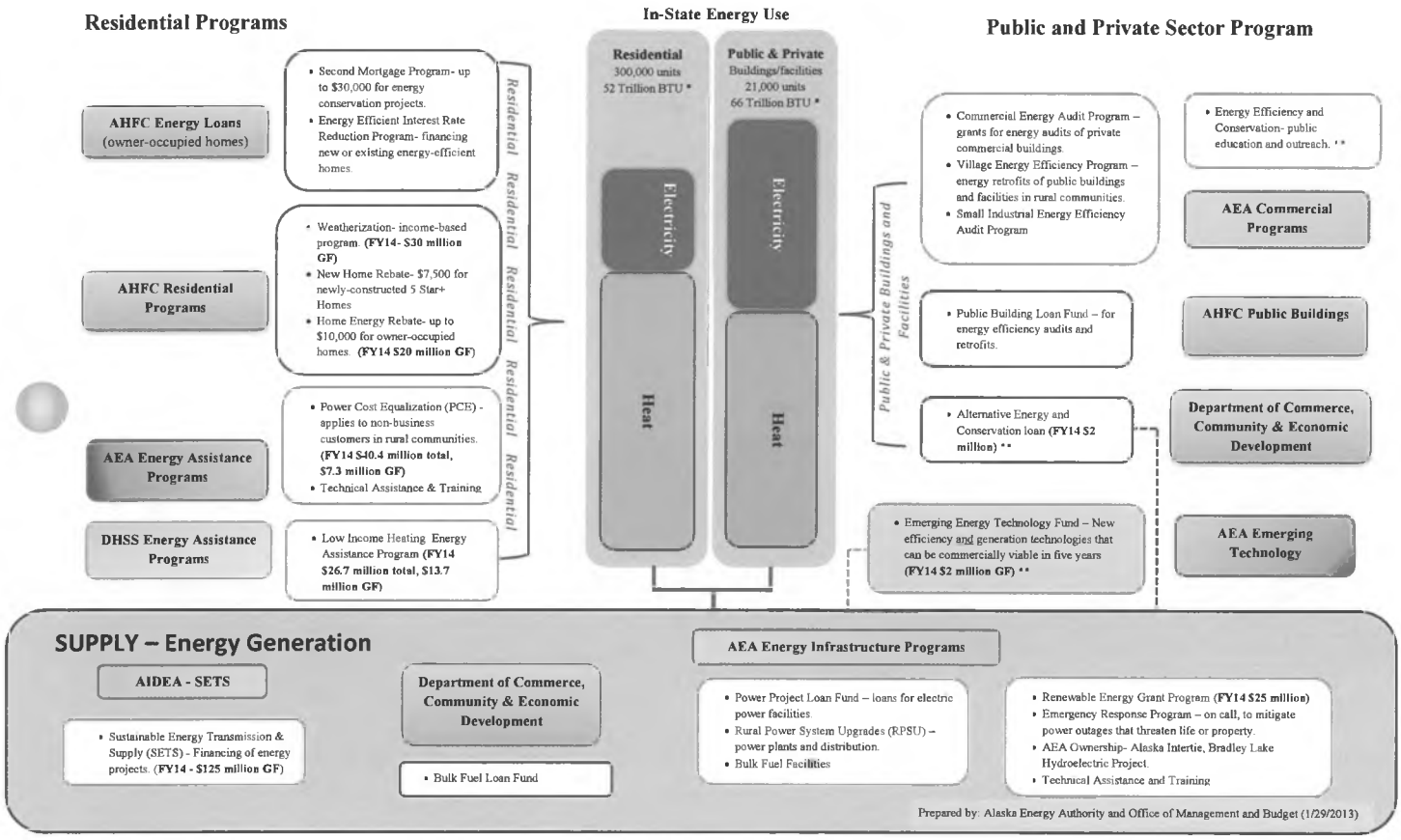
State of Alaska Energy Programs: Serving the needs of Alaska's residential and commercial energy users



** Source: Energy Information Authority*

*** Note that some programs do not fall within specific categories - Public outreach and education serves both the commercial and residential markets and Emerging Technology and the Alternative Energy and Conservation loan serve both generation and efficiency*