

ALASKA STATE LEGISLATURE

Session

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Juneau, Alaska 99801-1182
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Interim

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Co-Chair

Senate Resources Committee

Chair

Senate Special Committee on Energy
Senate Special Committee on World Trade,
Technology & Innovation

Member

Senate Judiciary Committee
Joint Armed Services Committee

SENATOR LESIL MCGUIRE

SPONSOR STATEMENT

SB 150: Emerging Energy Technology Fund

Because of Alaska's unique remote communities and abundant energy resources – both renewable and fossil-based – our state has great potential to become a world leader in researching and developing new energy technologies.

Although Alaska's commitment to renewable and alternative energy development is well proven by both the Renewable Energy Fund established last year and by Governor Palin's recently stated goal of 50% renewable power generation by 2025, the state nevertheless has no mandate or mechanism for funding energy research at the state, regional, or local level. Projects funded under the Renewable Energy Fund are explicitly limited to proven, existing, "off the shelf" technologies.

SB 150 creates a funding mechanism and designates an administrating agency for a competitive grant program aimed at funding projects designed to research and test new energy technologies. It establishes the Emerging Energy Technology Fund (EETF) to be administered by the Alaska Center for Energy Power, the University of Alaska agency whose mission is to meet state, industry, and federal demand for applied energy research in order to lower the cost of energy throughout Alaska and develop economic opportunities for the state, its residents, and its industries.

Dollars spent on energy research via the EETF could be handsomely leveraged to bring additional federal dollars to Alaska. In recent years, the U.S. Department of Energy has offered millions in federal grants that typically require a mere 20% cost share at the state level. Alaska's lack of a dedicated energy research program has caused us to miss out on these generous federal programs. Furthermore, with the Obama administration committing over \$13 billion to renewable energy research and development, the need for a state energy research fund like the one created by SB 150 is more critical than ever. Every \$1 of state funding invested in the EETF could generate up to an additional \$4 of investment from federal sources.

Our abundant renewable energy sources, vast proven but stranded fossil fuel energy supplies, and increasingly difficult-to-access oil and gas reserves combine to make Alaska an ideal place for companies and institutions to test new energy technologies. The EETF would provide a means to further attract these types of projects and encourage the in-state development of new technologies that could be of great benefit to the state and its communities.

Alaska has the available natural resources, the financial means, and the political spirit to become a national and global leader in researching and developing new energy technologies. SB 150 creates the funding mechanism that will help us to achieve that goal.

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SUMMARY OF CHANGES

CS for SB 150 - Version E

(1) Section 1(f)

Added a five-member advisory committee to carry out the business of soliciting, reviewing, and selecting grant applications.

Reason:

This language was loosely modeled on Renewable Energy Fund language. It is a common model for grant programs managed at universities around the country; it avoids the conflict that would arise if a project that is partnered with the University applies for grant funding; and it allows a wide range of stakeholder voices to be included in the selection process.

(2) Section 1(h)(1)

Expanded the definition of eligible applicant to both public and private sector entities, including licensed businesses, non-profits, and government and quasi-governmental entities.

Reason:

The original language, which was based on Renewable Energy Fund language, excluded private sector and non-profit projects. Feedback from ACEP and other sources encouraged expanding eligibility to include private sector companies and non profits, as well as governmental and quasi-governmental entities. A considerable amount of new energy technology research and development is carried out in the private sector and the sponsor did not want to exclude those potential applicants.

26-LS0700\E
Kane
3/25/09

CS FOR SENATE BILL NO. 150()

IN THE LEGISLATURE OF THE STATE OF ALASKA
TWENTY-SIXTH LEGISLATURE - FIRST SESSION

BY

Offered:
Referred:

Sponsor(s): SENATOR MCGUIRE

A BILL

FOR AN ACT ENTITLED

1 **"An Act establishing an emerging energy technology fund."**

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

3 * **Section 1.** AS 42.45 is amended by adding a new section to read:

4 **Article 7A. Emerging Energy Technology.**

5 **Sec. 42.45.375. Emerging energy technology fund.** (a) The emerging energy
6 technology fund is established. The fund consists of

7 (1) money appropriated to the fund by the legislature to provide grants
8 and loans for energy projects; and

9 (2) gifts, bequests, contributions from other sources, and federal
10 money appropriated to the fund.

11 (b) The fund is not a dedicated fund.

12 (c) The fund shall be administered by the interdisciplinary research unit of the
13 arm of the College of Engineering and Mines of the University of Alaska known as the
14 Alaska Center for Energy and Power, whose mission is to research energy sources and
15 the way in which energy fits into the state's economic development, but the Alaska

1 Center for Energy and Power may contract for the investment of money appropriated
2 to the fund but not disbursed for a grant or loan. The Alaska Center for Energy and
3 Power, in consultation with the advisory committee established under (f) of this
4 section, may make grants or loans from the fund to eligible applicants for research,
5 development, or demonstration projects designed to

- 6 (1) test new energy technologies or methods of conserving energy; or
- 7 (2) improve an existing energy technology.

8 (d) In making grants and loans under this section, the Alaska Center for
9 Energy and Power, in consultation with the advisory committee established under (f)
10 of this section, shall give priority to

- 11 (1) Alaska residents, associations, organizations, or institutions;
- 12 (2) projects that demonstrate partnership with the University of Alaska
13 or another Alaska postsecondary institution; and
- 14 (3) projects supported by matching funds or in-kind partnerships.

15 (e) If the University of Alaska alters the status of the Alaska Center for Energy
16 and Power, the president of the University of Alaska shall promptly notify the revisor
17 of statutes and the presiding officer of each house of the state legislature of that
18 change.

19 (f) An advisory committee is established and consists of five members. Each
20 member of the committee shall have a degree in science or engineering and at least
21 two years of experience working in the state. Members of the committee shall be
22 appointed by the governor to staggered three-year terms. The committee consists of
23 one representative of each of the following groups:

- 24 (1) a business or organization engaged in the renewable energy sector;
- 25 (2) a business or organization engaged in the fossil fuel energy sector;
- 26 (3) the Alaska Power Association or an Alaska electric utility;
- 27 (4) the Denali Commission established under P.L. 105 - 277 and
28 mentioned in a note at 42 U.S.C. 3121;
- 29 (5) a department or agency of the state.

30 (g) A member of the advisory committee appointed under (f) of this section
31 serves without compensation but is entitled to per diem and travel expenses as

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provided in AS 39.20.180.

(h) In this section,

(1) "eligible applicant" means

(A) an electric utility holding a certificate of public convenience and necessity under AS 42.05;

(B) an independent power producer;

(C) a local government, quasi-governmental entity, or other governmental entity, including a tribal council or housing authority;

(D) a business holding an Alaska business license; or

(E) a nonprofit organization.

(2) "energy technology" means technology that promotes, enhances, or expands the diversity of available energy supply sources or means of transmission, increases energy efficiency, or reduces negative energy-related environmental effects; "energy technology" includes technology related to renewable sources of energy, conservation of energy, enabling technologies, efficient and effective use of hydrocarbons, and integrated energy systems;

(3) "fund" means the emerging energy technology fund.

SENATE BILL NO. 150

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-SIXTH LEGISLATURE - FIRST SESSION

BY SENATOR MCGUIRE

Introduced: 3/13/09

Referred: Senate Special Committee on Energy, Resources, Finance

A BILL

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12 (c) The fund shall be administered by the interdisciplinary research unit of the
13 arm of the College of Engineering and Mines of the University of Alaska known as the
14 Alaska Center for Energy and Power, whose mission is to research energy sources and
15 the way in which energy fits into the state's economic development, but the Alaska

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2 to the fund but not disbursed for a grant or loan. The Alaska Center for Energy and
3 Power may make grants or loans from the fund to eligible applicants for research,
4 development, or demonstration projects designed to

- 5 (1) test new energy technologies or methods of conserving energy; or
- 6 (2) improve an existing energy technology.

7 (d) In making grants and loans under this section, the Alaska Center for
8 Energy and Power shall give priority to

- 9 (1) Alaska residents, associations, organizations, or institutions;
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11 or another Alaska postsecondary institution; and
- 12 (3) projects supported by matching funds or in-kind partnerships.

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14 and Power, the president of the University of Alaska shall promptly notify the revisor
15 of statutes and the presiding officer of each house of the state legislature of that
16 change.

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20 convenience and necessity under AS 42.05;

21 (B) an independent power producer; or

22 (C) a local government, or other governmental utility, including
23 a tribal council or housing authority;

24 (2) "energy technology" means technology that promotes, enhances, or
25 expands the diversity of available energy supply sources or means of transmission,
26 increases energy efficiency, or reduces negative energy-related environmental effects;
27 "energy technology" includes technology related to renewable sources of energy,
28 conservation of energy, enabling technologies, efficient and effective use of
29 hydrocarbons, and integrated energy systems;

30 (3) "fund" means the emerging energy technology fund.

FISCAL NOTE

STATE OF ALASKA
2009 LEGISLATIVE SESSION

Fiscal Note Number: _____
 Bill Version: SB150
 () Publish Date: _____

Identifier (file name): SB150-UA-03-25-09 Dept. Affected: University of Alaska
 Title An act establishing an emerging energy technology fund RDU University of Alaska Fairbanks
 Component Fairbanks Campus
 Sponsor Senator McGuire
 Requester Energy Committee Component Number 741

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information						
		FY 2010	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
OPERATING EXPENDITURES								
Personal Services								
Travel								
Contractual								
Supplies								
Equipment								
Land & Structures								
Grants & Claims								
Miscellaneous								
TOTAL OPERATING		0.0	0.0	0.0	0.0	0.0	0.0	0.0

CAPITAL EXPENDITURES								
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CHANGE IN REVENUES ()								
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FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts								
1003 GF Match								
1004 GF								
1005 GF/Program Receipts								
1037 GF/Mental Health								
Other Interagency Receipts		0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL		0.0	0.0	0.0	0.0	0.0	0.0	0.0

Estimate of any current year (FY2009) cost: 0.0

POSITIONS

Full-time	0.0							
Part-time								
Temporary								

ANALYSIS: (Attach a separate page if necessary)

The UA Alaska Center for Energy and Power (ACEP) will administer grant funds appropriated in to the "emerging energy technology fund." ACEP would provide services for an administrative fee similar to that used by the Denali Commission, 5%. Thus there would be no additional fiscal impact beyond what is appropriate into the fund. This would be a service fee charged on the amount of funding used on a project by project basis. At this time there is not an established amount to be appropriated for the fund. If there were \$5 million in projects funded in a given year the service fee would total \$250,000.

Prepared by: Alesia Kruckenberg
 Division: University of Alaska
 Approved by: Michelle Rizk
University of Alaska

Phone 907-450-8426
 Date/Time 03/25/2009 5:00pm
 Date 03/25/2009 5:00pm

ANALYSIS CONTINUATION

The UA Alaska Center for Energy and Power will administer grant funds appropriated in to the "emerging energy technology fund." This will entail:

Selecting and calling an advisory group to;
 establish priorities and criteria which are consistent with the statute.
 evaluating and prioritizing grant proposals
 awarding grants
 evaluating results of projects completed.

Fiscal administration, accounting, and reporting on project status and overall accomplishment of the funds invested;

 distribute funds to successful grant proposals
 provide regular report to various constituents on project status
 account for and report on funds balance
 provide annual report on results achieved.

ACEP would provide these services for an administrative fee similar to that used by the Denali Commission, 5%. Thus there would be no additional fiscal impact beyond what is appropriate into the fund. This would be a service fee charged on the amount of funding used on project by project basis. At this time there is not an established amount to be appropriated for the fund. If there were \$5 million in projects funded in a given year the service fee would total \$250,000.



ACEP

The Case for Funding Applied Energy Research

There is no doubt that energy is (and should be) foremost in the minds of Alaskans. Most of the money flowing through the Alaska economy is from the oil resources on the North Slope, and our lives are connected in both positive and negative ways with the price of energy.

Alaska's rural communities have reached a crisis level in the escalating cost of energy. Along the Railbelt, traditional fossil fuel based resources used for power generation, such as Cook Inlet natural gas, are in decline. Production of oil from the North Slope is also in decline. This has led state policymakers at both the legislative and executive level to begin the process of developing a comprehensive energy plan for the state. Alaska has the financial means, available resources, and political willpower to become a leader in developing renewables, stranded energy resources, and difficult to extract fossil fuel resources, including the vast proven heavy oil resources on the North Slope. Alaska has already made significant strides in this direction. The Alaska renewable energy fund created under HB152 and administered by AEA is by far the largest and most aggressive fund of its type in the country. In addition, Governor Palin's stated target to achieve 50% renewable power generation by 2025 is also the most ambitious goal among the 50 states.

In order to fulfill the vision of Governor Palin and many others of truly becoming a leader in the energy field, Alaska must invest in three areas: energy projects, energy policy, and energy research. It is essential to develop a plan which incorporates a balanced approach between these key elements, and elements of which are being worked on at the legislative and executive levels of state government. In addition, the Alaska Energy Authority has already been tasked with managing the project component; however projects funded under the Alaska Renewable Energy Fund are explicitly limited to proven, existing technologies. AEA currently has no mandate or capability to engage in energy research, and the current legislation does not allow for funding of any emerging technologies. While this is appropriate under the goals for this funding, the lack of identified funding for applied energy R&D greatly limits Alaska's ability to successfully achieve a leadership role in the energy field. This is particularly crippling in a state with very different conditions than are found elsewhere in the U.S. in terms of environment, population density, and the isolated nature of the electrical generation and transmission system.

While basic research addresses mostly scientific questions (what are the basic rules of the universe), applied research is aimed at developing technologies for immediate use. This requires understanding of the basic underlying science, but centers on producing cost effective, reliable, and locally appropriate technologies. An important part of this research is independent third party testing and verification of technologies before these are deployed in remote sites. A funded applied energy research program through the

State of Alaska could ensure a much greater success rate for projects in the field, including the 77 projects recently funded under the Alaska Renewable Energy Fund.

For example, the Alaska Center for Energy and Power is currently involved in programs to test and evaluate new battery systems, waste heat recovery devices and hydrokinetic turbines. The goal is to ensure manufacturer performance claims are accurate and that the devices perform as expected under harsh Alaskan conditions. In one case, a waste heat recovery device had received numerous international rewards and looked like a very viable candidate for improving efficiency from diesel engines. However, when researchers from ACEP travelled to a location where the unit was purportedly in operation, it was quickly apparent that the manufacturer performance claims were not being realized in the field and that this was not a technology that should be invested in at this time. ACEP was able to alert the Alaska Energy Authority to this fact and prevented unnecessary expenditure of state funds on what undoubtedly would have been a failed and frustrating project. A relatively small investment (a few days of research and phone calls, a few thousand dollars spent on travel) allowed a good decision about the investment of hundreds of thousands of dollars that would have been spent purchasing equipment from out of state suppliers.

Dollars spent on energy research can also be leveraged to bring additional federal dollars to Alaska. The Alaska Center for Energy and Power frequently submits proposals for federal funds under the U.S. Department of Energy, which generally required 20% cost share for projects. The lack of state funding to date for ACEP has greatly hampered the ability to bring in this federal funding. At this time, given the \$13 Billion the Obama administration intends to commit to renewable energy research, tremendous opportunities exist for tapping federal funding, but much of this funding will still require some demonstration of program support at the state level. Every \$1 of state funding can generate an additional \$4 of investment from federal sources.

According to the National Science Foundation, Alaska currently ranks 46th among states in terms of funding spent on R&D, and has no significant mechanism for funding energy research at the state, regional, or local level. Despite tremendous expenditures proposed for developing natural gas resources, renewable energy, and immediate short-term relief for the high cost of energy, the state has been slow to see the need for investment in research. If Alaska is truly to become a leader in energy, it will be necessary to invest in energy research in addition to project development.

By funding research as a part of the state's overall investment in energy projects, Alaska has the opportunity to truly become a leader on the world stage in energy development in a manner which can provide stable, affordable energy throughout the state while simultaneously developing economic opportunities for its residents and its industries. It is only by taking a balanced approach between forward-thinking policy, investment in cost-effective projects, and investment in research to 'peer over the horizon' at emerging technologies which will provide future energy solutions that this goal can be realized.



Alaska Emerging Energy Technology Development Fund

Background Narrative

The United States is entering a new era. The Obama administration is now promising an economic stimulus package that will likely top \$700 billion. Many of those dollars will replace and repair crumbling infrastructure. A significant portion of the money will fund energy infrastructure, including renewable energy projects, new transmission lines, and research and development of emerging energy technologies.

Renewable energy has become mainstream, and is no longer considered “alternative.” Large-scale wind, geothermal and hydroelectric technologies are mature and cost competitive. Other technologies such as biomass, solar, and ocean power (tidal and wave) are in various states of commercialization. One of the goals of the upcoming federal spending will be to bring those technologies to maturity to help lessen our dependence on foreign oil. But since very little oil is used to generate electricity in the United States, America will need to find new ways to apply renewable-sourced electricity to both heating and transportation.

Today there are several companies around the world working to capture “first mover” advantage in the electric car industry. The Israeli company *Better Place* has recently been grabbing headlines with its plan to create a charging station infrastructure where a customer simply pulls into the station and swaps a depleted battery for a freshly charged one. Others see renewable-sourced hydrogen and fuel cells as part of our transportation future.

Alaska is already seeing consumers in communities like Sitka and Juneau switch from oil based heating to relatively inexpensive hydro-based electric heat. Residents of those communities are also exploring ways to use electricity for transportation. If a new large hydro facility is built to serve the Railbelt, Southcentral Alaskans will do the same. Wave and tidal based electricity presents enormous potential for Alaskan communities to generate excess electricity to be used for heating and transportation. Alaska is also seeing a growing use of wood biomass for central heating facilities that are decreasing the use of heating oil. Some of those same communities are also interested in the technology that gasifies wood to generate electricity.

Necessary innovations in battery storage, tidal and wave power technology, biomass gasification, and hydrogen generation, transportation and storage all require continued research and development. Breakthroughs in ways to capture and store carbon also need more R & D. Private industry is already engaged in such R & D, and is being supported by a number of state-based funds and small federal programs. However, with the federal government now on the verge of much larger investment in such technologies, it's a good bet that the states with existing emerging energy technology development programs will be first in line for federal grant money.

Alaska's creation of the Renewable Energy Grant Fund in 2008 was a fundamental first step in the long process of decreasing Alaskans' dependence on volatile priced fossil fuels. Getting viable renewable energy projects in the ground is an essential long-term investment for many communities. But the Renewable Energy Grant Fund is only one component of an overall state renewable energy program.

Because of Alaska's unique remote communities and abundant renewable energy resources, our state has an excellent opportunity to become a world leader in renewable energy development. Unlike any other place in the nation, Alaska can demonstrate new technology *and save consumers money at the same time* because energy prices in rural communities are already so high. Demonstrating emerging technologies in rural Alaska could also lead to the state becoming a leading marketer of that expertise to the two billion people on the planet who do not yet have any electricity at all. However, the Renewable Energy Grant Fund was not designed or written to fund demonstration projects. In order for Alaska to be part of what many are calling the next industrial revolution in energy innovation, Alaska needs to create its own "Emerging Energy Technology Development Fund."

Such a Fund should encourage collaboration between Alaska institutions of higher learning and private industry, with a modest contribution of state money to capitalize and catalyze its creation. Because no state agency currently exists with the expertise to do so, the Fund should be administered by a newly created Alaska Energy Trust. The Trust should be a non-profit, non-governmental entity overseen by the Regulatory Commission of Alaska. This arrangement is similar to the one that established the very successful Energy Trust of Oregon. The Fund should provide both grants and loans to university researchers, non-profits, private industry and local governments to fund research and development, demonstration projects and market transformation of renewable and alternative energy technologies that have a high likelihood of becoming economically and technologically viable in the short term in a carbon constrained world. Equally important, the Fund should provide coordination and funding for targeted work force development and education programs that will train Alaska's next generation of construction workers, technicians, engineers and scientists that will guide us through the next century of energy innovation.

The Trust should be administered by a professional staff with oversight from an Advisory Committee that consists of nine representatives from state and federal agencies and private institutions that have expertise in emerging technologies. The methodology for funding projects should give the most weight to projects that create partnerships with Alaska entities, have matching funds and will lead to real benefits for the people of Alaska.

With the Governor's recent announcement that the goal of the State of Alaska shall be to obtain 50% of its electricity from renewable energy sources by the year 2025, the state has set an important target. Establishing an emerging energy technology development fund is a necessary and timely component of reaching that goal, stabilizing energy costs and diversifying Alaska's economy.

Establish an Emerging Energy Technology Fund

*One of Three Priorities for Enhancing Alaska's Quality of Life and
Protecting a Healthy Environment*

The Need

The creation of the Renewable Energy Grant Fund in 2008 was a critical first step in the process of promoting a secure, clean energy future for Alaska. However, the Renewable Energy Fund is only one component of a renewable energy program and was not designed to fund developing technologies that are not yet fully commercialized like tidal, geothermal or battery storage. Because of Alaska's unique remote communities and abundant renewable energy resources, our state has an excellent opportunity to become a world leader in emerging renewable energy development. Unlike any other place in the nation, Alaska can demonstrate new technology *and save consumers money at the same time* because energy prices in rural communities are already so high. In order for Alaska to be part of what many are calling the next industrial revolution in energy innovation, Alaska needs to create its own "Emerging Energy Technology Development Fund." Establishing an Emerging Technology Fund is also necessary to help grow our cutting edge University programs and create a highly valued workforce.

With the Governor's recent announcement that the goal of the State of Alaska shall be to obtain 50% of its electricity from renewable energy sources by the year 2025, the state has set an important target. Establishing an emerging energy technology development fund is a necessary and timely component of reaching that goal, stabilizing energy costs and diversifying Alaska's economy. It could also favorably position Alaska to receive a larger portion of the upcoming \$700 billion economic stimulus package. A significant portion of the federal money will fund energy infrastructure, including renewable energy projects, new transmission lines, and research and development of emerging energy technologies and those states with existing emerging technology development programs will be first in line for federal grant money.

The Proposal

The Alaska Conservation Alliance supports the creation of the Emerging Energy Technology Development Fund proposed by the Renewable Energy Alaska Project (REAP), a coalition of urban and rural Alaska utilities, businesses, conservation and consumer groups, and Alaska Natives. The Emerging Energy Technology Development Fund should help Alaska become a leader in research and implementation of technologies for battery storage, tidal and wave power, biomass gasification, and hydrogen generation, as well as transportation and storage of energy. The Fund should provide both grants and loans to university researchers, non-profits, private industry and local governments to fund research and development, demonstration projects and market transformation of renewable and alternative energy technologies that have a high likelihood of becoming economically and technologically viable in the short term. Equally important, the Fund should provide coordination and funding for targeted work force development and education programs that will train Alaska's next generation of construction workers, technicians, engineers and scientists that will guide us through the next century of energy innovation. After all, the \$55 billion/year "clean energy" business is expected to at least quadruple worldwide by 2015.

The Benefits

- Develop commercially promising emerging energy technologies for use both in Alaska and in the world-wide market.
- Puts Alaska in prime position to tap into \$700 billion Federal stimulus program.
- Alaska can demonstrate new technology and save rural energy consumers money.

Contact

- Kate Troll, Alaska Conservation Alliance, (907) 258-6174, kate@akvoice.org

2009 ACA Priority

Establish an Emerging Energy Technology Fund