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## Cross-Cutting Issues (CC) Technical Work Group

Option No.	Policy Option	GHG Reductions (MMtCO <sub>2</sub> e)			Net Present Value 2007–2020 (Million \$)	Cost-Effectiveness (\$/tCO <sub>2</sub> e)	Status of Option
		2012	2020	Total 2007–2020			
CC-1	Establish an Alaska Greenhouse Gas Emission Reporting Program	<i>Not Quantified</i>					Pending
CC-2	Establish Goals for Statewide GHG Emission Reduction	<i>Not Quantified</i>					Pending
CC-3	Identify and Implement State Government Mitigation Actions	<i>Not Quantified</i>					Pending
CC-4	Integrate Alaska’s Climate Change Mitigation Strategy with the Alaska Energy Plan	<i>Not Quantified</i>					Pending
CC-5	Explore Various Market-Based Systems to Manage GHG Emissions	<i>Not Quantified</i>					Pending
CC-6	Create an Alaska Climate Change Program that Coordinates State Efforts for Addressing Climate Change	<i>Not Quantified</i>					Pending

*On March 10, 2009, U.S. EPA released a draft greenhouse gas (GHG) reporting rule that would require the mandatory reporting of GHG emissions from large sources (those emitting at least 25,000 MTCO<sub>2e</sub>). If adopted in its current form, components of the following CC TWG option may no longer be applicable for the Sub-cabinet to consider, though some of the reporting structures will be necessary to comply with the Federal rule.*

## **CC-1. Establish an Alaska Greenhouse Gas Emissions Reporting Program**

### **Policy Description**

This climate change mitigation policy describes the basic legislative, fiscal, administrative, reporting and database elements necessary to establish and support a Greenhouse Gas (GHG) Reporting Program for the State of Alaska. Alaska's GHG Reporting Program will be responsible for establishing and administering Alaska's mandatory and voluntary GHG emissions reporting program. This program will collect, verify, and analyze GHG emissions data to establish a baseline of anthropogenic GHG emissions for Alaska, identify the types and magnitude of anthropogenic GHG emission sources in Alaska and their relative contributions. These data will be used to inform state leaders and the public on statewide GHG emission trends, identify opportunities for reducing GHG emissions, and will allow us to assess Alaska's climate change mitigation efforts over time. Pending the approval of the Subcabinet on Climate Change, implementation of this climate change mitigation policy would also require legislative and executive branch, including departmental, approval. The development of this program would be in conjunction with but not duplicative of any federally mandated climate change or GHG reporting legislation or regulations.

### **Policy Design**

#### **Goals:**

- Establish a Greenhouse Gas Reporting Program for the State of Alaska which ensures publically accessible, accurate, verifiable, and transparent reporting of GHG emissions data using well-documented mandatory and voluntary GHG emissions reporting and verification procedures.
- Develop an "Energy Database" for the State of Alaska which will track commercial, residential, industrial, and transportation energy consumption, GHG emissions and climate change mitigation actions throughout Alaska.

Develop and publish the Alaska GHG inventory and forecast every three (3) years. Use this information to communicate the results of climate change mitigation efforts, and to modify Alaska's climate change mitigation strategy as needed.

In order to establish a GHG Reporting Program for Alaska, the State will have to establish new climate change statutes and regulations as well as allocate funds for the personnel and infrastructure required to administer this program. The following section describes some of the

legislative, fiscal, administrative, reporting, and database elements that are essential for establishing and administering Alaska's GHG Reporting Program.

**Legislative & Fiscal Requirements:** The State of Alaska and the Subcabinet on Climate Change will have to decide on a legislative pathway and the level of funding necessary for establishing and administering Alaska's GHG Reporting Program. Does the State wish to wait for federal climate change legislation or develop Alaska specific climate change legislation ahead of any federal initiative? It is anticipated that a national, economy-wide, carbon cap-and-trade or tax program will be promulgated by federal law in the near future. Congress may decide to draft new, federal, climate change legislation outside of the Clean Air Act (CAA) to allow the US Environmental Protection Agency (EPA) to promulgate GHG mandatory reporting regulations and a carbon cap-and-trade program (e.g. Climate Security Act of 2008<sup>1</sup>)<sup>2</sup>. In the event of new federal climate change legislation, the State of Alaska may need to prepare a climate change bill with a fiscal note, new statutes and regulations, and a fee study. This will be a multi-year (2-5 year) legislative process.

If Alaska decides to proceed with climate change legislation it could be modeled after California's "*Global Warming Solutions Act of 2006*"<sup>3</sup> and Oregon's "*Climate Integration Act of 2007*"<sup>4</sup>. The Global Warming Solutions Act gave the California Air Resources Board (CARB) the statutory authority to establish a mandatory GHG reporting regulation<sup>5</sup> and funding to establish CARB's mandatory GHG reporting program. This legislation also gave CARB the authority to establish California's 1990 GHG emissions baseline and a publically approved 2020 GHG emissions cap<sup>6</sup>. Oregon's Climate Change Integration Act<sup>4</sup>, an act relating to an emergency, established Oregon's GHG reduction goals in statute (e.g. by 2020 reduce GHG levels that are 10% below 1990 levels), and provided funding for establishing Oregon's mandatory GHG reporting rule<sup>7</sup>. The Oregon Department of Environmental Quality's 2008 legislative package requested a total of more than \$900,000 dollars for ten (10) positions to establish a new GHG Reporting Program within their Division of Air Quality<sup>8</sup>. These positions will be dedicated to administering the Oregon's GHG reporting rule, developing and implementing a cap-and-trade program, data entry and verification, identifying GHG mitigation opportunities.

**Administrative Requirements:** The Alaska Department of Environmental Conservation (ADEC) Division of Air Quality's Air Permitting Program currently administers CAA Title V and Title I air discharge permits, conducts air pollution emission inventories using its

<sup>1</sup> "*Lieberman-Warner Climate Security Act of 2008*", S.3036, 110<sup>th</sup> Congress, 2<sup>nd</sup> Session, May 21, 2008.

<sup>2</sup> On March 10, U.S. EPA released a draft GHG emission reporting rule.

<http://www.epa.gov/climatechange/emissions/ghgrulemaking.html>

<sup>3</sup> "*California Global Warming Solutions Act of 2006*", Assembly Bill 32, State of California.

<http://climatechange.ca.gov/publications/legislation.html>

<sup>4</sup> Oregon's HB 3543 "*Climate Change Integration Act*" of 2007, 74<sup>th</sup> Oregon Legislative Session, June 2007.

<sup>5</sup> California Air Resources Board "*Regulation for the Mandatory Reporting of Greenhouse Gas Emissions*" in Title 17 of California's Code of Regulations. <http://www.arb.ca.gov/regact/2007/ghg2007/frogghg.pdf>

<sup>6</sup> "*California 1990 Greenhouse Gas Emission Level and 2020 Emission Limit*", California Environmental Protection Agency Air Resources Board, Staff Report, Public Release Date November 16, 2007.

<http://www.arb.ca.gov/cc/inventory/1990level/1990level.htm>

<sup>7</sup> Oregon Department of Environmental Quality "*GHG Reporting Rule*", Oregon Administrative Rule 340-215-0010.

<http://www.deq.state.or.us/aq/climate/docs/FinalGHGRule.pdf>

<sup>8</sup> Scott Sloane personnel communication with Margaret Oliphant, Oregon DEQ, August 19, 2008.

AIRTOOLS database, and reports these data electronically to EPA. One option for Alaska's future GHG Reporting Program would have that program work closely with ADEC's Air Permitting Program because of the need to track GHG emissions as well as cap-and-trade allowances for large permitted industries. Therefore, the design of this option assumes that at least a portion of Alaska's future GHG Reporting Program be hosted by ADEC because most of the necessary permitting, database, and reporting tools for administering Alaska's GHG Reporting Program are already in place. Other state agencies will also play a role in Alaska's GHG Reporting Program. The Alaska Energy Authority (AEA) is currently (winter '09) developing Alaska's "Energy Plan". As this plan is enacted, close coordination between AEA and ADEC will be necessary to track energy consumption and climate change mitigation efforts throughout Alaska. The University of Alaska will also play a large role in climate change mitigation and adaptation research and implementation. Alaska's GHG Reporting Program could eventually be composed of several state agencies with different functions.

In order for the State to administer a mandatory GHG reporting and carbon cap-and-trade program it will be necessary for it to have sufficient administrative resources to ensure that all GHG emissions reporting occurs on schedule, that these data are audited each year (both centrally and through targeted site audits), and that the public can access emissions data on the Internet<sup>9</sup>. Under a future cap-and-trade program "accurate measurement and reporting of all GHG emissions will be necessary to assure accountability, establish the integrity of allowances, and sustain confidence in the market. The *regulatory agency* responsible for the program must track emissions to ensure that (1) emissions match allowances at particular sources and (2) overall emissions match overall allowances"<sup>9</sup>. The State will also be responsible for providing certainty through well-recognized civil and criminal penalties<sup>9</sup>.

Alaska's future GHG Reporting Program staff would be tasked to accomplish the following:

- Develop and draft statutes, regulations, fiscal notes, fee studies, position papers, guidance documents, policies, procedures, and standards as necessary to establish and implement federal and state climate change legislation;
- Develop and draft GHG emission reporting and verification protocols, procedures, methods, forms, and reporting guidance documents for regulated industries in Alaska;
- Develop and draft GHG mitigation and reduction goals, priorities, inventories, schedules and performance measures related to mitigating climate change in Alaska;
- Establish Alaska's GHG emissions baseline and compare this baseline to Alaska's GHG mitigation goals;
- Conduct and publish Alaska's GHG emission inventory every three years;
- Allocate and track carbon emission allowances for facilities permitted under a future federal cap-and-trade program;

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<sup>9</sup> "Recommendations for Designing a Greenhouse Gas Cap-and-Trade System for California". Recommendations of the Market Advisory Committee to the California Air Resources Board, June 30, 2007.  
[http://climatechange.ca.gov/market\\_advisory\\_committee/index.html](http://climatechange.ca.gov/market_advisory_committee/index.html)

- Provide information on climate change mitigation technology and regulatory guidance to industry and the public;
- Coordinate the Subcabinet's climate change mitigation policy efforts with Alaska's Energy Plan, the Alaska Municipal League, industry, the Western Climate Initiative and others; and
- Conduct compliance and enforcement activities.

**GHG Reporting & Verification Requirements:** Once Alaska's GHG Reporting Program is in place, the State of Alaska may then establish a standard protocol for mandatory and voluntary GHG emissions reporting and verification. The State would be primarily responsible for developing these written protocols with assistance from private contractors.

All of the necessary reporting and verification procedures can be obtained from other state and regional GHG reporting rules and initiatives. Both the California Climate Action Registry's "*General Reporting Protocol*"<sup>10</sup> and The Climate Registry's (TCR) "*General Reporting Protocol*"<sup>11</sup> are good templates for Alaska's GHG reporting program. Both of these protocols use an on-line reporting database which provides transparent, consistent, written reporting procedures for industry as well as third-party verified data for public consumption. It is likely that EPA's future GHG mandatory reporting protocol will be similar to TCR's "General Reporting Protocol". TCR hosts a national climate database and it is anticipated that, under a future national cap-and-trade program, states will be responsible for reporting these data to a centralized national database such as TCR's. Most western states are also members of the Western Climate Initiative (WCI) which is currently developing its "*Essential Requirements of Mandatory Reporting for the Western Climate Initiative*"<sup>12</sup>. Alaska could choose to join TCR and WCI now to gain familiarity with their reporting and verification procedures and to allow for a more efficient transition of data reporting once a federal GHG reporting rule is promulgated. Essential reporting requirements for Alaska's future GHG reporting program may include but are not limited to the following:

- Greenhouse Gas Pollutants- The following greenhouse gases would be included: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>). Other newly described greenhouse gases, like Nitrogen trifluoride (NF<sub>3</sub>), may also be included under Alaska's mandatory GHG reporting rule.
- Emission Source Categories- Electricity Generation; Industrial Processes such as oil & gas process emissions (including vented, flared, fugitive, and accidental emissions); commercial, industrial, residential, and transportation fuel combustion above the reporting threshold. An Alaska GHG reporting program would include those industries in Alaska with a Title V permit, but could also include mobile sources such as marine and aviation fleets and other transportation sources above the reporting threshold.

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<sup>10</sup> California Climate Action Registry "*General Reporting Protocol*", Version 3.0, April 2008, <http://www.climateregistry.org>

<sup>11</sup> The Climate Registry "*General Reporting Protocol*", Version 1.1, May 2008, <http://www.theclimateregistry.org>.

<sup>12</sup> "*Essential Requirements of Mandatory Reporting for the Western Climate Initiative*", second draft dated September 30, 2008, <http://www.westernclimateinitiative.org/>

- **Reporting Thresholds-** Alaska's GHG reporting threshold will have to be as stringent as any future federal reporting requirement. The Climate Security Act of 2008<sup>13</sup> captured GHG sources emitting >10,000 CO<sub>2</sub> equivalents (10,000 metric tons of CO<sub>2</sub>). California's mandatory GHG reporting rule captures emission sources which emit  $\geq 25,000$  CO<sub>2</sub> equivalents<sup>5</sup>. Oregon's proposed mandatory GHG reporting program captures emission sources which emit  $\geq 2,500$  metric tons or more of carbon dioxide equivalent per year of greenhouse gases<sup>7</sup>.
- **Point of Regulation-** For industrial facilities the point of regulation is the point of emission. For electricity sources in Alaska, the point of regulation would also be the point of emission, since electricity is not currently distributed or sold out-of-state. For transportation sources, the point of regulation could be the point at which fuels enter commerce at the terminal rack, final blender, or distributor<sup>14</sup>.

**Database Requirements:** It is recommended that the State of Alaska develop a statewide energy database which will enable it to record and monitor the following:

- Residential, commercial, industrial and transportation fossil fuel energy consumption and production;
- Alternative energy consumption and production;
- Mandatory and voluntary reporting of energy-related GHG emissions;
- GHG emission reductions due to energy-related climate change mitigation actions; and
- Carbon emission allowances and their monetary value under a future cap-and-trade program.

To track Alaska's energy-related GHG emissions and their abatement it will be necessary to establish an "Energy Database" which will monitor statewide residential, commercial, industrial and transportation fossil fuel energy consumption and production in energy units. The common energy unit used in international reports of GHG emissions is the joule or terajoule (TJ =  $10^{12}$  joules), while the customary U.S. energy unit is the British Thermal Unit (BTU). Electric utilities often report their emissions per kilowatt hour (kWhr) or megawatt hour which are interchangeable with TJ and BTUs. Knowing both the higher heating values of various fuels (e.g. million BTUs per cubic foot of natural gas) and their carbon content (e.g. teragrams of carbon per BTU) allows us to convert a facility's or fleet's energy consumption (BTUs, TJ, kWhr) to GHG emissions in teragrams (Tg =  $10^{12}$  g) of carbon, or million metric tons of CO<sub>2</sub> equivalents (MMT CO<sub>2</sub>e)<sup>14</sup>. Alaska's "Energy Database" should be able to record and monitor facility and fleet specific energy consumption and production in the form of TJ, BTUs, kWhr, calories or other energy unit and easily convert these to GHG emissions in Tg of carbon or MMT CO<sub>2</sub>e.

<sup>13</sup> See Section 4 in "Lieberman-Warner Climate Security Act of 2008", S.3036, 110<sup>th</sup> Congress, 2<sup>nd</sup> Session, May 21, 2008.

<sup>14</sup> EPA's "Inventory of U.S. Greenhouse Gas Emissions and Sinks, 1990-2006", Annexes 1-8.

In addition to tracking energy (BTU, kWhr, TJ), this new or modified database may also have to issue and track carbon emission allowances and have banking capabilities. Carbon emissions or energy units will have a monetary value under a future, federal carbon cap-and-trade or tax program. It is anticipated that large industries in Alaska will be regulated as “capped sources” in the near future<sup>15</sup>. These large industries are already permitted by ADEC’s Air Permitting Program through their Title V permit and are required to report their stack emissions and fuel consumption data. ADEC’s AIRTOOLS database currently tracks emissions from these large industries and transmits these data electronically to EPA on a periodic basis. AIRTOOLS could be enhanced and used for tracking and reporting GHG emissions under a future mandatory GHG reporting rule and cap-and-trade program. However, this database is currently insufficient to monitor statewide energy consumption and production, carbon emission allowances and potentially the flow of money. The state agency eventually responsible for issuing and tracking carbon allowances may need access to and familiarity with a well secured, state insured banking database. Preferably this database would serve multiple functions and have the statewide capability to accurately and securely monitor the following:

**Energy ◊ GHG Emissions ◊ US Currency**  
**[BTU, kWhr, TJ] ◊ [Tg of carbon or MMT CO<sub>2</sub>e] ◊ [\$\$\$]**

It will also be important for Alaska to track and mitigate GHG emissions from residential, commercial, light industrial and transportation sources that are not included under a future cap-and-trade program (uncapped sources). The Center for Climate Strategy’s “*Alaska GHG Inventory & Reference Case Projections, 1990-2020*”<sup>16</sup> estimated that transportation sources in Alaska accounted for approximately 35% of the gross GHG emissions in 2000. Residential and commercial sources accounted for another 9% of the gross GHG emissions in that same year. Combined, these sources accounted for almost 45% of the total GHG emissions in Alaska for 2000. These GHG emissions sources may not be captured under a future mandatory GHG reporting rule or cap-and-trade program. Alaska’s climate change mitigation strategy will need to account for both mandatory (capped) and voluntary (uncapped) GHG emission sources so that all GHG emissions can be tracked as climate change mitigation activities are enacted across the state.

Currently there is no energy database in Alaska which tracks commercial, residential, light industrial, and transportation energy consumption and production throughout the State<sup>17</sup>. Both the State of California and The Climate Registry use an online reporting tool for mandatory and voluntary reporting of GHG emissions which are third-party verified and accessible to the public. The State of Alaska may need to develop a similar, new or modified, database and on-line reporting tool which would enable the State to track energy, carbon emissions and potentially the flow of money. This new or modified database will play an integral part in tracking Alaska’s GHG emissions and energy-related climate change mitigation efforts. AEA may be the agency to house a portion of Alaska’s new or modified database since it’s responsible for implementing Alaska’s Energy Plan.

<sup>15</sup> “Lieberman-Warner Climate Security Act of 2008”, S.3036, 110<sup>th</sup> Congress, 2<sup>nd</sup> Session, May 21, 2008.

<sup>16</sup> “Alaska Greenhouse Gas Inventory and Reference Case Projections, 1990-2020”, Center for Climate Strategies, July 2007.  
[www.climatechange.alaska.gov/doc-links.htm](http://www.climatechange.alaska.gov/doc-links.htm)

<sup>17</sup> Scott Sloane personnel communication with Peter Crimp, Alaska Energy Authority, December 5, 2008.

## Implementation Mechanism

The Subcabinet on Climate Change would need legislative approval from both houses in the form of a bill prior to moving ahead with developing Alaska specific climate change statutes and regulations. Alaska's climate change bill could be modeled after California's "Global Warming Solutions Act of 2006"<sup>18</sup> and Oregon's "Climate Integration Act of 2007"<sup>19</sup>. State departments would co-write Alaska's climate change bill in conjunction with the Subcabinet on Climate Change and the Alaska Department of Law (ADOL). As part of this legislative approval process, affected State of Alaska agencies would have to prepare fiscal notes which reflect the costs of a multi-year process during which the State would hire staff to develop the statutory and regulatory framework for administering a mandatory GHG reporting program and carbon cap-and-trade program. The State would be primarily responsible for developing, writing, and submitting the fiscal note along with Alaska's climate change bill. The fiscal note would include monies for hiring GHG Reporting Program personnel, developing reporting and verification procedures, and developing a database as presented in this mitigation option. Obtaining both senate and house approval of Alaska's climate change legislation and fiscal note could take multiple legislative sessions (1-3 years).

Once Alaska's climate change legislation is approved, the fiscal note will provide the monies necessary for the State to hire staff to develop a GHG Reporting Program, develop climate change statutes and regulations, GHG reporting and verification procedures and a database. ADOL would be primarily responsible for developing Alaska specific climate change statutes and regulations in conjunction with the Subcabinet. The State would be primarily responsible for developing a "GHG Mandatory Reporting Rule" by amending and adopting GHG reporting regulations developed in other states. The State would develop the GHG reporting and verification protocols and regulatory guidance documents for industry with the assistance from private contractors. The State would be solely responsible for conducting a fee study to determine the monetary fees associated with administering its mandatory GHG reporting rule. It is anticipated that any new positions will eventually be funded through fees generated via the implementation of Alaska's GHG mandatory reporting rule and carbon cap-and-trade program.

One of the primary implementation tasks will be developing a database, new or modified, which tracks energy and carbon allowances. Carbon emissions will have a monetary value under a future carbon cap-and-trade program. The state agency eventually responsible for issuing and tracking these carbon allowances will need access to and familiarity with a well secured, state insured banking database. AEA may be the agency to house a portion of Alaska's new or modified database since it's responsible for implementing Alaska's Energy Plan.

### Timing and Parties Involved

The State of Alaska, in conjunction with the Subcabinet on Climate Change, will be primarily responsible for writing Alaska's climate change bill, statutes and regulations. The State will be primarily responsible for writing the fiscal note. The State will also be responsible for establishing and implementing the mandatory and voluntary components of Alaska's GHG emissions reporting program, and publishing a state-wide GHG inventory and forecast every

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<sup>18</sup> "California Global Warming Solutions Act of 2006", Assembly Bill 32, State of California.

<http://climatechange.ca.gov/publications/legislation.html>

<sup>19</sup> Oregon's HB 3543 "Climate Change Integration Act" of 2007, 74<sup>th</sup> Oregon Legislative Session, June 2007.

three years. AEA may play a role in tracking voluntary reporting of energy consumption, energy production and energy-related climate change mitigation efforts. Close coordination between state agencies including ADEC, AEA and the University of Alaska will be required to design and implement energy-related GHG mitigation efforts. The following timeline provides an estimated timeframe for establishing Alaska's GHG Reporting Program, including legislation, regulations and related efforts:

- **2009-2011:** ADOL and other appropriate State of Alaska departments, in consultation with the Subcabinet on Climate Change, develop a climate change bill and a fiscal note to obtain legislative approval and monies for establishing Alaska's GHG Reporting Program.
- **2010-2012:** ADOL and other appropriate State of Alaska departments, in consultation with the Subcabinet on Climate Change, develop statutes and regulations to establish Alaska's mandatory GHG emissions reporting program, and carbon cap-and-trade program.
- **2010-2012:** The State of Alaska develops a database to track energy consumption and energy related climate change mitigation efforts throughout Alaska.
- **2009:** The State of Alaska joins TCR and WCI to gain familiarity with their GHG reporting and verification procedures and infrastructure.
- **2012:** Covered entities will be required to begin reporting to the State of Alaska on their GHG emissions for 2011. Thereafter, reporting will occur on an annual basis.
- **2012:** The State of Alaska publishes Alaska's GHG emissions inventory and forecast. This report will be published every three years to guide Alaska's climate protection efforts.

### Related Policies/Programs in Place

- Federal Climate Change Initiatives: EPA has released a draft GHG emissions reporting rule, and it will soon be open for public comment. This draft rule, as written, would regulate large sources of GHG emissions, including those not currently regulated by EPA. The rule will be finalized 60 days after it is published in the *Federal Register*, and may undergo substantial changes, depending on the comments received. Currently, the draft reporting rule would regulate any source that emits  $\geq 25,00$  MTCO<sub>2</sub>e.
- Regional Climate Change Initiatives: The Climate Registry (TCR) maintains a national climate database. It is likely that future federal GHG mandatory reporting legislation will include methods very similar to TCR's "General Reporting Protocol"<sup>13</sup> because most states and Canadian provinces belong to TCR and already employ its reporting and verification procedures. The State of Alaska could join TCR now to gain familiarity with their reporting and verification procedures. Alternatively, the State of Alaska could develop state-specific reporting and verification procedures or wait for federal GHG legislation and adopt the federal GHG reporting and verification procedures.
- State Climate Change Initiatives: The western states of California<sup>5</sup>, Oregon<sup>7</sup>, and Washington have already promulgated or are in the process of developing a GHG mandatory reporting rule. Under California's and Oregon's GHG reporting rules covered entities are those

industries which produce, consume, transport or manufacture  $\geq 25,000$  and  $\geq 2,500$  metric tons of CO<sub>2</sub> equivalents, respectively. EPA will likely employ GHG reporting and verification procedures similar to those developed by California, TCR, and WCI.

- Alaska Climate Change Initiatives: The Alaska Energy Authority (AEA) is currently (winter '09) developing an Energy Plan for Alaska due to be published in January 2009. The Subcabinet on Climate Change could work with AEA and the Alaska Municipal League to integrate their alternative energy plans into Alaska's Climate Change Mitigation Strategy. To integrate Alaska's Energy Plan and Climate Change Mitigation Strategy a new or modified database will need to be developed for the State which can track energy and carbon.

## Key Uncertainties

A key uncertainty regarding development of a GHG Reporting Program for Alaska is coordination and interaction with EPA regulations. Recently, EPA released a draft GHG emissions reporting rule. Does the State wish to wait for federal climate change legislation to be finalized or does it want to develop Alaska-specific legislation ahead of a finalized federal climate change initiative? Previous federal attempts at climate change legislation gave states a 2% emission allowance for those states with GHG reporting programs that exceed federal GHG emission reduction targets (see section 3302 Climate Security Act<sup>20</sup>), though the current draft of EPA's rule does not do this. It may make financial sense for the State of Alaska to develop GHG legislation prior to the finalization of the federal rule in order to receive extra carbon emission allowances under any future cap-and-trade program. However, there are many uncertainties with regards to what future federal climate change legislation may require (e.g. reporting thresholds, source categories, point of regulation): since the rule is in draft form, there may be many changes to it before it is finalized. Therefore, it may be financially prudent for Alaska to wait for federal GHG legislation to avoid duplication of effort, avoid wasting legislative staff time and executive branch money.

Another key uncertainty centers on developing an "energy-database" for Alaska. Where will this database be housed and who will develop it? What data elements are required? Close coordination between affected state agencies, AEA and the University of Alaska will be required to develop this database. This coordination process should begin immediately following the climate change bill and fiscal note approval. A list of policy questions follows:

- Should the State of Alaska develop a "GHG Mandatory Reporting Rule" now or wait for finalization of federal legislation?
- Should Alaska's GHG Reporting Program include both mandatory and voluntary reporting of GHG emissions, and what emission sources and emission thresholds should be included?
- Should the State of Alaska develop an energy-database to track GHG emissions, carbon allowances, and energy related climate change mitigation efforts throughout Alaska?
- Should the State of Alaska join TCR and WCI now to gain familiarity with their reporting and verification procedures; or wait for future federal mandatory reporting requirements?

<sup>20</sup> See Section 3302 in "Lieberman-Warner Climate Security Act of 2008", S.3036, 110<sup>th</sup> Congress, 2<sup>nd</sup> Session, May 21, 2008.

- Does Alaska have existing statutory authority to implement a GHG cap-and-trade program or do new statutes and regulations have to be developed prior to implementing this program?
- Does Alaska have the monetary resources to hire additional staff as needed to develop and manage a GHG Reporting Program?

### Additional Benefits and Costs

Establishing a GHG Reporting Program in Alaska would allow the State to ascertain an accurate, verifiable, and transparent baseline of GHG emissions for Alaska, and subsequently develop a technically feasible GHG mitigation goal. This Program could collect, verify, and analyze GHG emissions data to establish a baseline of anthropogenic GHG emissions for Alaska, identify the types and magnitude of anthropogenic GHG emission sources in Alaska and their relative contributions. These data could be used to inform state leaders and the public on statewide GHG emission trends, identify opportunities for reducing GHG emissions, and could allow us to assess Alaska's climate change mitigation efforts over time.

### Costs

The estimated five-year (FY 2010-2014) operating expenditures for establishing and administering Alaska's GHG Reporting Program are presented in Table 1. Personnel salary and benefit funds are presented for five FTEs including one Environmental Program Specialist (EPS) IV, three EPS III, and one Analyst Programmer.

**Table 1. GHG Reporting Program 5-Year Estimated Operating Expenditures.**

Operating Expenditures	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Personnel Salary & Benefits for 5 full-time positions	\$425,000	\$425,000	\$425,000	\$425,000	\$425,000
Travel	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000
Equipment	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000
Contractual					
AK Dept. of Law	\$100,000	\$100,000	\$100,000	0	0
Reporting/Guidance Documents	\$100,000	\$100,000	\$100,000	0	0
Energy Database Development	\$100,000	\$100,000	\$100,000	0	0
Database Maintenance				\$50,000	\$50,000
<b>Totals</b>	<b>\$775,000</b>	<b>\$775,000</b>	<b>\$775,000</b>	<b>\$525,000</b>	<b>\$525,000</b>

During the first three years of this transition period (FY 2010-2012) a total of \$300,000 dollars are allocated to the following: \$100,000 for Alaska Department of Law to develop a climate change bill, statutes and regulations; \$100,000 for private contractors for developing mandatory GHG reporting & verification procedures and other regulatory guidance documents; \$100,000 for developing an energy-database. Over the five-year transition period, annual program receipts from routine fees associated with administering the GHG Reporting Program are expected to increase. The State will have to conduct a fee study to ascertain the fee structure necessary to pay for the increased level of effort associated with administering a mandatory GHG reporting

program, administering the carbon cap-and-trade program, as well as compliance and enforcement activities. It is anticipated that eventually most of the personnel salary and benefit costs will be paid for by permit fees and the trading of carbon under a future cap-and-trade program. Final costs estimates may differ from those presented above depending on the final options for and design of a state GHG Reporting Program.

### **Feasibility Issues**

In developing an Alaska-specific reporting program, the feasibility issues to note are how it would interface with any federal or regional program, and where and how funding would be available for the staff positions and infrastructure required.

### **Status of Group Approval**

*TBD – [until MAG moves to final agreement]*

### **Level of Group Support**

*TBD – [until MAG moves to final agreement]*

### **Barriers to Consensus**

*TBD – [undetermined until final vote by the MAG]*

## CC-2. Establish Goals for Statewide GHG Emission Reductions

### Policy Description

Countries, regions and companies worldwide committed to reversing the effects of climate change have set goals or targets as a mechanism to ensure that emission reductions are achieved. Many of these governmental and corporate entities have done so in response to the UN's Intergovernmental Panel on Climate Change which has determined that an 80% reduction (below 1990 levels) in GHG emission by 2050 is necessary to keep CO2 levels below 450 parts per million. Members of the United States Climate Action Partnership, (USCAP) an alliance of major companies and climate and environmental groups that includes BP America, ConocoPhillips and Shell, have agreed to their own emission reductions targets, and have also reached consensus on the need for a regulated, economy-wide market-driven approach to climate protection that includes emission reductions for total U.S. emissions and for capped sectors. USCAP recommends the following emission reduction targets and timetable, which it believes are achievable at manageable costs to the economy when enacted along with offset and other cost containment measures:

- 97%-102% of 2005 levels by 2012
- 80%-86% of 2005 levels by 2020
- 58% of 2005 levels by 2030
- 20% of 2005 levels by 2050

Several states have already established state-specific goals and targets to reduce their emissions beginning in 2012, reaching 60-80 percent reductions by 2050.<sup>21</sup> More recently, President Obama has publicly announced his intent to “establish strong annual targets that set us on a course to reduce emissions to their 1990 levels by 2020 and reduce them an additional 80% by 2050.” One hundred and fifty two members of Congress have signed a letter expressing strong support for these same levels of emission reductions. Draft legislation currently circulating in Congress includes the same goals articulated by President Obama.

In Alaska, the Center for Climate Strategies found that, as of 2005, there are likely over 50 million metric tons (MMt) of gross GHG emissions generated from Alaskan sources. Over 40% of these emissions result from burning carbon based fuels at industrial sites. Another major finding of the report is that nearly 40% of the state-wide greenhouse gas emissions come from the transportation sector, mostly from jet fuel consumption. Of the remaining 20%, about 7% is non-combustion related emissions from the fossil fuel industries and 7% from electricity consumption/generation (for all uses). The remainder is divided between commercial and

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<sup>21</sup> States with state-specific goals and targets include Arizona, California, Colorado, Connecticut, Oregon, Florida, New Mexico, Illinois, Minnesota, Utah and Washington. At this time, California is the only state with a mandatory economy-wide emissions cap that includes enforceable penalties. The Pew Center website contains detailed information on emissions targets and other activities at the state level: [www.pewclimate.org/what\\_s\\_being\\_done/in\\_the\\_states/state\\_action\\_maps.cfm](http://www.pewclimate.org/what_s_being_done/in_the_states/state_action_maps.cfm)

residential (non-electrical) energy needs. On a per capita basis, Alaska activities emit about 82 MTCO<sub>2</sub> annually; significantly higher than the national average of 25 MTCO<sub>2</sub> per year.

Given that almost half of Alaska's emissions are a result of fossil fuel industrial activity, it is important to note that BP America, ConocoPhillips and Shell Oil, in addition to agreeing to the goals promoted by USCAP, have all issued strong statements regarding climate change and emission goals. Here are a few excerpts:

- Robert Malone, President of BP America noted before the House Select Committee on Energy and Global Warming (April 2008) that “Congress should set climate policy goals and allow the market to decide which technologies best deliver upon the objectives it sets”.
- BP America notes that in 1998 we set a target to cut emissions from our own operations to 10% below 1990 levels by 2010 – a target we reached nine years early.
- Jim Mulva, CEO of ConocoPhillips noted in his remarks to an energy conference (Feb. 2008) that “the industry must also recognize that the ways it provides energy must change. In the near term, we should reduce the carbon intensity of our own energy consumption. We can do this by continually improving efficiency and using more low-carbon and renewable fuels.
- Shell America notes on their website that they were one of the first energy companies to acknowledge the threat of climate change; to call for action by governments, our industry and energy users; and to take action ourselves. Shell America has reduced their GHG emission by nearly 25% compared to 1990.

Given these following indisputable facts:

1. Alaska is a premier energy state and the only Arctic state.
2. Alaska is experiencing the effects of climate change more than other state.
3. Alaska's major industry and source of GHG emissions supports policy goals to begin reducing GHG emissions by 2012, with reductions up to 10 percent by 2017 and incremental goals thereafter that reduce GHG emissions by 60-80% below 1990 levels by 2050.
4. There is a strong likelihood that national legislation will contain similar goals and that Alaska will strive to be part of the national solution.

The recommendation is: **the State of Alaska should set a goal similar to that promoted by USCAP (see 3 above) that both recognizes Alaska's unique emissions profile and the emerging dynamics of a federal GHG emission regulatory program.** “Goal” in this context is meant as an aspiration for the State as a whole and does not imply that these goals should become mandatory. It should be noted that these goals will 1) be reviewed after waste energy audits have been completed for Alaska's major emission sources and 2) do not account for emissions that may be added as a result of the operation of the natural gas pipeline. Once emission effects of the natural gas pipeline are known then these goals will be modified to account for this important energy project.

In addition, obtaining an accurate baseline of GHG emissions or energy consumption in Alaska will be necessary to measure Alaska's success in combating climate change and meeting its GHG emission reduction goals. Under any future carbon cap-and-trade program, carbon emission allowances may be allocated based on the GHG emissions baseline established. It will be crucial to have accurate data when establishing a cap-and-trade program to "avoid over-allocation of carbon allowances and to create the necessary market scarcity."<sup>22</sup>

## Policy Design

### Goals:

- Similar to the USCAP goal, the State of Alaska adopts a goal of beginning to reduce GHG emissions by 2012, with reductions of 14-20% by 2020, and with an aim to reduce GHG emissions by 60-80% below 1990 levels by 2050. The CC TWG recognizes that these goals are the minimum, but offer a starting point for Alaska to enter the national stage on climate change mitigation. The CC TWG will refine these goals as the work is completed in the sector specific TWGs.
- The State of Alaska will establish a GHG emissions baseline and refine it based on updates from any mandatory reporting program and GHG inventories (CC-1) to measure progress on goals.

### Timing and Parties Involved

To respect the bottom-up planning process established by the Governor's Climate Change Subcabinet, the CC TWG is advancing this recommendation to the Mitigation Advisory Group (MAG). As part of the evaluation process for all options being forwarded to the MAG, this option should be accepted knowing that the final review of this recommendation will occur at the end of the planning process. Acceptance of this option ensures that the recommendation of the Cross Cutting TWG is accepted in the process. A final review at the end of the planning process (just prior to submitting all recommendation to the Climate Change Subcabinet) will allow the MAG to have a 'reality check' based on a composite analysis of the mitigation options proposed by all of the TWGs for Alaska.

## Implementation Mechanisms

How this option would be implemented is still to be determined, and will likely depend on the discussion from the MAG and other TWGs. An example of how it could be implemented is the approach taken in Oregon. Oregon's *Climate Change Integration Act* established Oregon's GHG reduction goals in statute (e.g. by 2020, reduce GHG levels that are 10% below 1990 levels), as well as provided funding for establishing Oregon's mandatory GHG reporting rule.<sup>23</sup>

## Related Policies/Programs in Place

See the Option Description for goals that have been set by other U.S. states, organizations and members of industry in Alaska.

<sup>22</sup> *Recommendations for Designing a Greenhouse Gas Cap-and-Trade System for California*. Recommendations of the Market Advisory Committee to the California Air Resources Board, June 30, 2007.

<sup>23</sup> Oregon Department of Environmental Quality "GHG Reporting Rule", Oregon Administrative Rule 340-215-0010. <http://www.deq.state.or.us/aq/climate/docs/FinalGHGRule.pdf>

### **Key Uncertainties**

The key uncertainty associated with this option is how it could interface with any federal legislation that may occur in the near future. It is possible that the U.S. Congress would pass legislation that would require a GHG emission cap across all states. If this were to happen, Alaska would decide whether they wanted to meet that cap or set a goal to go even further in reductions.

### **Benefits**

By setting a GHG emissions goal, Alaska will be on par with many other U.S. states. Working to meet these goals could put Alaska in a more advantageous position if and when national rules on emissions reductions are enacted.

### **Costs**

Costs for adopting this option could be zero if the MAG and Sub-cabinet agree to these proposed goals. If additional work is needed to help stakeholders agree to goals for GHG emission reductions, there would be some moderate costs (\$10,000 - \$50,000) to facilitate a workgroup of these stakeholders and develop a decision.

### **Feasibility Issues**

These goals should be evaluated against other Mitigation TWGs recommended options for reducing greenhouse gas emissions to ensure this reduction goal is feasible for the state to undertake.

### **Status of Group Approval**

*TBD – [until MAG moves to final agreement]*

### **Level of Group Support**

*TBD – [until MAG moves to final agreement]*

### **Barriers to Consensus**

*TBD – [undetermined until final vote by the MAG]*

### CC-3. Identify and Implement State Government Mitigation Actions

#### Policy Description

The State of Alaska can lead by example in responding to climate change and reducing GHG emissions by identifying potential GHG reduction activities and implementing specific and tangible changes in its operations.

Leadership on the part of the State to both identify and implement these early actions<sup>24</sup> will accomplish two primary goals:

- The State of Alaska can quickly make reductions in GHG emissions.
- The demonstrated success of State action can be an incentive for private citizens, businesses, NGOs, and local governments to take action. Identifying early actions and then doing them is the essence of “leading by example” and a necessary first step for more ambitious goals. Initial successes can also help convince the public and Legislature to move forward with actions that may require more significant changes in behavior, regulation and public funding.

#### Policy Design

##### Goals

- The State of Alaska “Leads by Example” by implementing no cost and low cost “Early Actions” that can be taken without new funding or legislative approval in the immediate future to reduce the State’s GHG emissions, and actions that must be completed as a first step toward implementing more complex and expensive goals by the State.
- Publicize successes quickly through a “Report Card” to encourage others to act and to generate political momentum.

The objective of this option is for State agencies to implement actions within their purview and authority, with a priority toward immediate and meaningful reductions in GHG emissions by changes in day-to-day State activity. To facilitate this, the CC TWG has developed a preliminary matrix outlining potential lead-by-example actions, timeframes, needed resources and authorities, potential GHG reductions, and potential savings (see matrix following this write-up). Alaska can learn from the examples of other State governments that have taken steps to reduce State government GHG emissions in developing this list of actions.

The list of early-actions that the State should pursue includes:

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<sup>24</sup> Actions that can be taken without new funding or legislative approval

- Require the establishment of audio-visual conferencing facilities and their use by state employees to reduce the economic and greenhouse gas emission costs associated with state employee airline travel
- Convert state-owned fleets to use lower carbon fuels and/or have more energy efficient vehicles;
- Develop expansive incentives for environmentally friendly commuting and comprehensive telecommuting policies for State employees;
- Develop an environmentally preferred purchasing program for state procurement;
- Conduct an energy audit and implement identified changes to improve energy efficiency for the governor's mansion and other key government buildings (e.g. require that all state computers be set at "sleep" mode or switched off when not in use for long periods of time, use LED holiday lights on state owned buildings and venues rather than conventional lights, switch to more energy efficient lighting, etc.);<sup>25</sup>
- Encourage creative ideas from state employees by offering incentives for energy conservation ideas in State facilities.

Alaska will establish an annual "Report Card" to describe the GHG reduction goals, and the progress that each State agency is making towards these goals<sup>26</sup> (relates to CC-1 and CC-2). In addition, to publicize success and encourage a culture of energy conservation, State agencies will release web updates and public service announcements when undertaking greenhouse gas emission reduction measures.

### **Timing and Parties Involved**

State lead-by-example activity should be implemented as soon as possible after the MAG approves it as part of the Alaska Climate Change Strategy. DEC would take the lead initially to communicate and implement the immediate actions, using ideas and feedback from other State climate offices and relevant non-governmental organizations. Once established, the new State Climate Change Program (CC-6) would take over the function of implementing and coordinating state lead-by-example actions, including identifying, tracking, and implementing more complex and expensive actions.

### **Implementation Mechanisms**

DEC should initiate activity through the Subcabinet, identifying those actions to address immediately. The Subcabinet can agree to specific activities and recommend to the Governor's Office issuance of Executive Orders or other administrative mechanisms to implement immediate actions pertaining to specific departments. Funding may be needed in some instances to achieve early action goals.

<sup>25</sup> For examples, see the "Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California", October 17<sup>th</sup>, 2007. <http://www.arb.ca.gov/cc/ccea/reports/reports.htm>.

<sup>26</sup> For example, refer to "State Agency Greenhouse Gas Reduction Report Card", published by the California Environmental Protection Agency Air Resources Board, 2007. <http://www.arb.ca.gov/cc/cc.htm>

If a State Climate Change Program is established, it would take on the responsibility of communicating, educating, and providing resources for State agencies to continue to reduce their GHG emissions.

Additional implementation approaches may be developed based on specific actions

### **Related Policies/Programs in Place**

- Identifying early actions—and then implementing them—will serve as the catalyst for many other policies and goals identified in Alaska’s Climate Change Strategy.
- Using “lessons learned”, the State of Alaska could work with municipalities (borough, city, & village) in Alaska, possibly through the Alaska Municipal League, to develop their GHG mitigation plans. The State of Alaska can also look for opportunities to apply and expand the work developed at the municipal level to the state level (e.g. expanding the City of Homer’s climate change plan).

### **Key Uncertainties**

The ability of Alaska State agencies to implement GHG reduction policies that may require additional funding or time is unknown. The amount of funding and time required will vary by action. The matrix of early actions provided here will have some initial estimates of funding needs, and additional scoping will be required for any additional actions.

### **Feasibility Issues**

For each action, feasibility issues will vary. For developing further ideas for early action, there may be some need for staff time, though most actions that would fit in this option should be relatively simple to implement, thus not requiring a great deal of staff time.

### **Benefits**

Changes in State procedures or employee behavior could significantly reduce GHG emissions in Alaska. Successful implementation at the State level can also set the stage for citizens and businesses to follow. Both “leading by example” and launching “first step” actions will create momentum that can launch the State’s entire Climate Change Program.

### **Costs**

The costs of developing and implementing these actions will vary, depending on the specific actions. The intent of these actions is that they be relatively low cost to implement and/or create cost-savings over some period of time. Additional work is needed to determine specific costs of the initial actions outlined in this option, and not-yet-developed options will require some amount of staff time to scope and cost for inclusion in this effort.

### **Status of Group Approval**

*TBD – [until MAG moves to final agreement]*

### **Level of Group Support**

*TBD – [until MAG moves to final agreement]*

### **Barriers to Consensus**

*TBD – [undetermined until final vote by the MAG]*

**INITIAL LIST OF LEAD-BY-EXAMPLE ACTIONS**

#	Action	Timing	Needed Resources	Implementation Needs	GHG Savings	Cost or Cost Savings	Question/ Notes
1	<b>Require the use of audio-visual (AV) teleconferencing between state employees</b>	Immediate implementation using available resources; Increased use as more A/V centers are made available	Some AV resources are already available; Increased facilities needed; May need education/ training	Education to state employees about available resources; Establishment of new A/V centers	Elimination of air or ground travel GHG emissions	Eliminate cost of air or ground travel; Cost of increased use of AV resources	Is there any education related to Alaska's current AV resources? Are there additional barriers to use that should be considered?
2	<b>Convert state-owned fleets to use lower carbon fuels and/or have more energy efficient vehicles</b>	Phased implementation: older vehicles are replaced with more efficient vehicles or those that can use lower carbon fuels	New, more energy efficient vehicles; lower carbon fuels	Purchasing protocol to identify fleet vehicles for replacement and direct appropriate conversion	GHG savings as a result of using lower emissions fuels and/or vehicles	Initial higher cost of upgrading vehicles to more efficient models; likely decreased costs over the life of the vehicle, depending on the cost of fuel	How many state vehicles are there? Does AK have an obligation to purchase cars from American companies? Is there a central purchasing authority that this policy should be tailored towards?
3	<b>Develop expansive incentives for environmentally friendly commuting and comprehensive telecommuting policies for State employees</b>	Immediate implementation	Incentives for carpooling and transit; Increased infrastructure to support telecommuting	Development of incentives for carpooling and use of transit, such as transit passes or preferred parking; Development of telecommuting policies	State employees commuting less or more efficiently reduces GHG	Decreased driving could reduce parking lot needs and costs; Increased telecommuting can decrease office space needs	Does Alaska have a telecommuting policy for any state employees?

#	Action	Timing	Needed Resources	Implementation Needs	GHG Savings	Cost or Cost Savings	Question/ Notes
3a	<b>State managers will immediately authorize certain employees the ability to telecommute</b>	Immediate implementation	Infrastructure to support telecommuting	Development of telecommuting policy; Identification of priority employees for telecommuting (i.e. those who commute more than 5 miles; those who do not have regular field or customer work)	State employees commuting less or more efficiently reduces GHG	Decreased driving could reduce parking lot needs and costs; Increased telecommuting can decrease office space needs	Does Alaska have a telecommuting policy for any state employees?
3b	<b>State sets up satellite work sites for those who commute long distances, but are unable to telecommute, such as in the Mat Su Borough</b>	Few months to years	Property and services for satellite work sites	Identification of locales that would be best served by satellite work sites (e.g. Mat Su Borough)	State employees commuting less reduces GHG		Does this action fit the definition of "early action"?
3c	<b>State provides or subsidizes commuter buses from park-and-ride sites in far suburbs from metropolitan areas</b>	Almost immediate	Buses or bus service to provide commuter service; Parking lots	Identified of locales that would be best served by commuter buses	State employees commuting more efficiently reduces GHG		Could there be enough voluntary use to make the system pay for itself? Would particular amenities encourage ridership?

#	Action	Timing	Needed Resources	Implementation Needs	GHG Savings	Cost or Cost Savings	Question/ Notes
4	<b>Develop an environmentally preferred purchasing program for state procurement, including energy efficient products</b>	Implementation following development of program and policies	Time needed for developing new policy	Development of new policy on procurement of environmentally preferable products	Reduced environmental footprint, including GHG emissions, in the purchase of environmentally preferable products	Reduced operational costs of using more energy efficient products; Some products may have higher costs than conventional counterparts	See MA: <a href="http://tinyurl.com/9qcfnr">http://tinyurl.com/9qcfnr</a> ; Are there any policies in AK about environmentally responsible purchasing? What is the appropriate implementation vehicle?
5a	<b>Conduct an energy audit and implement identified changes to improve energy efficiency for key government buildings</b>	Immediate energy audit; phased implementation of identified changes	Resources for making identified changes to government buildings	Identify buildings for energy audit; Implement energy audit	Minor and major GHG savings, depending on buildings that were audited and upgraded; High profile building could encourage energy audits in public	Initial cost of making identified changes in buildings, though many of the changes (e.g. insulation, lighting upgrades, etc) will have a short payback period	Who will have primary responsibility? What resources/tools do they need?
5b	<b>Encourage creativity and new ideas by soliciting energy conservation ideas from state employees and providing an incentive for the best ones (e.g. paid time off)</b>	Immediate	No resources needed	Identification of incentive for good ideas	Employees are often aware of the best places to make energy conservation changes, so providing a goal could encourage large savings in GHG emissions	Costs would depend on incentive; Cost savings could be significant, depending on energy conservation measures suggested and implemented	

## CC-4. Integrate Alaska's Climate Change Mitigation Strategy with the Alaska Energy Plan

### Policy Description

This climate change mitigation policy describes the basic strategy and reporting tools necessary to integrate Alaska's "Climate Change Mitigation Strategy" with the Alaska Energy Plan to accomplish the triple objective of maintaining climate integrity, energy security and economic prosperity for Alaska.

Both the Center for Climate Strategy's *Alaska GHG Inventory & Reference Case Projections, 1990-2020*<sup>27</sup>, and the Alaska Department of Environmental Conservation's (ADEC) *Refinements to the Alaska GHG Emission Inventory*<sup>28</sup> reports concluded that the majority of Alaska's anthropogenic greenhouse gas (GHG) emissions are due to the consumption of energy as fossil fuels to power industry and transportation. Those industries in Alaska combusting, producing, refining, storing and transporting the most fossil fuel had the highest GHG emission estimates and can be grouped into Alaska's energy sector. "The energy sector is mainly comprised of exploration and exploitation of primary energy sources; conversion of primary energy sources into more useable energy forms in refineries and power plants; transmission and distribution of fuels; use of fuels in stationary and mobile applications"<sup>29</sup>. These data lead us to the conclusion that integrating Alaska's "Climate Change Mitigation Strategy" with Alaska's "Energy Plan" is good policy for achieving the stated objectives.

It seems sensible to assume that Alaska's "Energy Plan" eventually be integrated with Alaska's "Climate Change Mitigation Strategy" since both plans will include the development of energy efficiency, energy conservation, co-generation, fuel switching and renewable energy measures. It would not make sense to develop a climate change mitigation strategy that calls for a reduction in Alaska's GHG emissions while at the same time enact an energy plan that calls for developing Alaska's coal, oil, and natural gas resources without considering the carbon footprint.

Starting in 2010, pending the approval of the Subcabinet on Climate Change, it is recommended that Alaska's "Energy Plan" and "Climate Change Mitigation Strategy" be combined into one plan to achieve Alaska's stated climate change mitigation goals guided by a 10-year energy plan. It is also recommended that Alaska's 10-year integrated<sup>30</sup> "Climate Protection & Energy Plan" include all fossil fuel (coal, oil, natural gas, coal-bed methane) resource extraction and production potential in Alaska projected through the year 2020 because these estimates influence the rate at which GHGs are produced in Alaska. A major component of this integrated "Climate

<sup>27</sup> *Alaska Greenhouse Gas Inventory and Reference Case Projections, 1990-2020*, Center for Climate Strategies, July 2007. [www.climatechange.alaska.gov/doc-links.htm](http://www.climatechange.alaska.gov/doc-links.htm)

<sup>28</sup> *Summary Report of Improvements to the Alaska Greenhouse Gas Emission Inventory*, ADEC, January 2008. <http://www.climatechange.alaska.gov/doc-links.htm>

<sup>29</sup> *2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2 Energy*, Prepared by the IPCC National Greenhouse Gas Inventories Programme. Published: IGES, Japan, <http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.htm>.

<sup>30</sup> Integrate: to combine to form a more complete, harmonious or coordinated entity. Webster's 3<sup>rd</sup> New International Dictionary, 1981.

Protection & Energy Plan” will be the development of an “Energy Database” for Alaska as briefly described below. Finally, it is recommended that Alaska’s integrated “Climate Protection & Energy Plan” be updated periodically to guide Alaska’s climate change mitigation objectives and energy consumption goals through time and across various State administrations. This mitigation policy does not provide the detailed, industry-by-industry energy policies necessary for achieving Alaska climate change mitigation objectives because these are being developed by the individual Technical Workgroups (TWGs) and AEA. This climate change mitigation policy addresses greenhouse gases (GHG) from fossil fuels (carbon dioxide, methane, nitrous oxide) but does not address high global warming potential greenhouse gases containing bromine, chlorine or fluorine.

## Policy Design

### Goals

- Starting in 2010, the State of Alaska will begin to develop Alaska’s 10-year “Climate Protection & Energy Plan” to achieve Alaska’s climate change mitigation strategy objectives and energy consumption goals through the year 2020.
- Starting in 2010, the State of Alaska will begin to develop an “Energy Database” which will track commercial, residential, industrial, and transportation energy consumption and production, GHG emissions and climate change mitigation actions throughout Alaska.

**Establish Energy (GHG Emissions) Baseline:** As referenced previously, the majority of Alaska’s anthropogenic GHG emissions are due to the consumption of energy as fossil fuels to power industry and transportation<sup>1,2</sup>. Obtaining an accurate baseline of GHG emissions or energy (fossil fuel) consumption in Alaska will be necessary to measure Alaska’s success in combating climate change. The Alaska Cold Climate Housing Research Center’s (CCHRC) report<sup>4</sup> states that “most significantly, energy conservation and policy effectiveness cannot be measured without establishing a current baseline. Collecting baseline data is the first step in launching a meaningful energy-related efficiency program”<sup>31</sup>. Alaska’s GHG emissions or energy consumption baseline is the starting point from which we account for how well our climate change mitigation strategy is working. Also, under a future carbon cap-and-trade program, carbon emission allowances may be allocated based on the GHG emissions baseline established in Alaska’s GHG inventory. It will be crucial to have accurate data when establishing a cap-and-trade program to “avoid over-allocation of carbon allowances and to create the necessary market scarcity”<sup>32</sup>. Therefore, through the Climate Change Mitigation Strategy, the Mitigation Advisory Group should strive to establish a “publically approved” energy or GHG emissions baseline for Alaska.

**Establish Energy (GHG Emissions) Reduction Goals:** In addition to establishing a GHG emissions or energy baseline for Alaska, the final Climate Change Mitigation Strategy should

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<sup>31</sup> *Alaska Energy Efficiency Program and Policy Recommendations*, Final Report to the Cold Climate Housing Research Center, dated June 5, 2008. <http://www.akenergyauthority.org/>

<sup>32</sup> *Recommendations for Designing a Greenhouse Gas Cap-and-Trade System for California*. Recommendations of the Market Advisory Committee to the California Air Resources Board, June 30, 2007.

also include a statewide GHG emissions reduction goal (e.g. reduce Alaska's GHG emissions 30% below 2000 levels by 2020 and 80% by 2050).

Alaska's "GHG emissions baseline" and "GHG reduction goal" can be used as "goal posts" for achieving Alaska's desired climate change mitigation objectives. For example let's assume, as presented on page 3 of the "Alaska Greenhouse Gas Inventory"<sup>1</sup>, that Alaska's GHG emissions baseline is approximately 50 million metric tons of CO<sub>2</sub> equivalents (MMT CO<sub>2</sub>e). Let's also assume that Alaska's stated GHG reduction goal is reducing Alaska's baseline of GHG emissions 30% by 2020. This would imply that Alaska would have to reduce its GHG emissions by 15 MMT CO<sub>2</sub>e over the next 10 years, equivalent to an annual reduction of 1.5 MMT CO<sub>2</sub>e per year. The alternative energy-related measures that are currently being developed by the various TWGs (e.g. Energy, Oil & Gas, etc.) will include a combination of fuel switching, cogeneration, flare-reduction, energy-efficiency and energy conservation measures. All of these energy-related measures can be used to achieve Alaska's annual GHG reduction goal (e.g. 1.5 MMT CO<sub>2</sub>e per year), and overall GHG reduction goal (e.g. reduce Alaska's GHG emissions 30% below 2000 levels by 2020 and 80% by 2050).

**Use Energy Plans to Achieve Alaska's GHG Reduction Goals:** Alaska's "Climate Change Mitigation Strategy" objectives and desired GHG mitigation goals can be achieved by integrating these objectives with Alaska's "Energy Plan". In addition to the alternative energy policies currently being developed by AEA and the TWGs, there are many newly developed alternative energy blueprints that Alaska can incorporate to achieve its GHG mitigation goals. California's *Climate Change Proposed Scoping Plan*<sup>33</sup> provides numerous examples of state-led alternative energy initiatives. The US Department of Energy (DOE) and US Environmental Protection Agency (EPA) recently release their cooperative *National Action Plan for Energy Efficiency, Vision for 2025: A Framework for Change*<sup>34</sup>. The U.S. House of Representatives' Select Committee on Energy Independence and Global Warming *Final Staff Report for the 110<sup>th</sup> Congress*<sup>35</sup> also provides many energy-related measures to combat climate change. The Alaska Cold Climate Housing Research Center's (CCHRC) report<sup>4</sup> includes several examples of voluntary, residential and commercial energy measures that can be used to achieve a portion of Alaska's desired GHG mitigation goals. All of the energy-related measures can be used to accomplish the triple objective of maintaining climate integrity, energy security, and economic prosperity for Alaska through the integration of its Climate Change Mitigation Strategy and its Energy Plan.

**Establish Energy or Carbon Database:**

"Because there will be monetary value to carbon credits, there is an even greater incentive to establish carbon data management systems that works."<sup>36</sup> In the near future carbon emissions will have a monetary value under a national carbon cap-and-trade or carbon tax program.

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<sup>33</sup> *Climate Change Proposed Scoping Plan*, October 2008, prepared by the California Air Resources Board for the State of California. <http://www.arb.ca.gov/cc/cc.htm>

<sup>34</sup> *National Action Plan for Energy Efficiency, Vision for 2025: A Framework for Change*, prepared by the US Department of Energy, and US Environmental Protection Agency, November 2008. <http://www.epa.gov/eeactionplan>

<sup>35</sup> *Final Staff Report for the 110<sup>th</sup> Congress*, US House of Representatives Select Committee on Energy Independence & Global Warming, October 31, 2008. <http://globalwarming.house.gov>

<sup>36</sup> NACAA's *Defining the Role of States and Localities in Federal Global Warming Legislation*, Conference Proceedings, June 2008. <http://www.4cleanair.org/TopicDetails.asp?parent=16>

Therefore, it would be financially beneficial to the State of Alaska if it could track fossil fuel energy consumption and production throughout the state. Currently in Alaska there is no single statewide database that tracks residential, commercial, industrial and transportation fossil fuel energy consumption and production. There are separate state and federal agencies which track energy consumption and production for their individual agency missions. For example, ADEC tracks fuel consumption for its Title V permits. The Alaska Housing & Finance Corporation tracks residential energy consumption. The federal Energy Information Administration tracks energy production and consumption in Alaska. However, there is *no single state agency* in Alaska that is responsible for tracking energy consumption and production *for the State of Alaska*.

To track Alaska's energy-related GHG emissions and their abatement, it will be necessary to establish an "Energy Database" which will monitor statewide residential, commercial, industrial and transportation fossil fuel energy consumption and production in energy units. The common energy unit used in international reports of GHG emissions is the joule or terajoule (TJ =  $10^{12}$  joules), while the customary U.S. energy unit is the British Thermal Unit (BTU). Electric utilities often report their emissions per kilowatt hour (kWhr) or megawatt hour which are interchangeable with TJ and BTUs. Knowing both the higher heating values of various fuels (e.g. million BTUs per cubic foot of natural gas) and their carbon content (e.g. teragrams of carbon per BTU) allows us to convert a facility's or fleet's energy consumption (BTUs, TJ, kWhr) to GHG emissions in teragrams (Tg =  $10^{12}$  g) of carbon, or million metric tons of CO<sub>2</sub> equivalents (MMT CO<sub>2</sub>e)<sup>37</sup>. Alaska's "Energy Database" should be able to record and monitor facility and fleet specific energy consumption and production in the form of TJ, BTUs, kWhr, calories or other energy unit and easily convert these to GHG emissions in Tg of carbon or MMT CO<sub>2</sub>e.

In addition to tracking energy (BTU, kWhr, TJ), this new or modified database may also have to track carbon emission allowances and have banking capabilities. Carbon emissions will have a monetary value under a future, federal carbon cap-and-trade, cap-and-dividend or tax program. It is anticipated that large industries in Alaska will be regulated as "capped sources" in the near future<sup>38</sup>. The state agency eventually responsible for issuing and tracking carbon allowances will need access to and familiarity with a well secured, state insured banking database. Preferably this database will serve multiple functions and have the statewide capability to accurately and securely monitor the following:

**Energy ◊ GHG Emissions ◊ US Currency**  
**[BTU, kWhr, TJ] ◊ [Tg of carbon or MMT CO<sub>2</sub>e] ◊ [\$\$\$]**

It will also be important for Alaska to track and mitigate GHG emissions from residential, commercial, light industrial and transportation sources that are not included under a future cap-and-trade program (uncapped sources). The Center for Climate Strategy's "*Alaska GHG Inventory & Reference Case Projections, 1990-2020*"<sup>39</sup> estimated that transportation sources in

<sup>37</sup> EPA's "Inventory of U.S. Greenhouse Gas Emissions and Sinks, 1990-2006", Annexes 1-8.

<sup>38</sup> "Lieberman-Warner Climate Security Act of 2008", S.3036, 110<sup>th</sup> Congress, 2<sup>nd</sup> Session, May 21, 2008.

<sup>39</sup> "Alaska Greenhouse Gas Inventory and Reference Case Projections, 1990-2020", Center for Climate Strategies, July 2007.  
[www.climatechange.alaska.gov/doc-links.htm](http://www.climatechange.alaska.gov/doc-links.htm)

Alaska accounted for approximately 35% of the gross GHG emissions in 2000. Residential and commercial sources accounted for another 9% of the gross GHG emissions in that same year. Combined, these sources accounted for almost 45% of the total GHG emissions in Alaska for 2000. These GHG emissions sources may not be captured under a future mandatory GHG reporting rule or cap-and-trade program. Alaska's climate change mitigation strategy will need to account for both mandatory (capped) and voluntary (uncapped) GHG emission sources so that all GHG emissions can be tracked as climate change mitigation activities are enacted across the state. It will also be important to track Alaska's alternative energy consumption and production (e.g. hydro, solar, wind, tidal, geothermal) because the rate at which these technologies are implemented corresponds directly with the decrease of GHG production in Alaska.

### **Timing and Parties Involved**

- Beginning in 2010, pending approval from the Subcabinet on Climate Change, the State of Alaska will work to develop Alaska's 10-year "Climate Protection & Energy Plan". This plan will include the Subcabinet's final climate change mitigation objectives, and include future fossil fuel (coal, oil, natural gas, coal-bed methane) resource extraction and production potential in Alaska projected through the year 2020. This plan will include the alternative energy measures being developed by the TWGs and AEA. This plan will be updated every two years to guide Alaska's energy consumption and climate change mitigation efforts. Alaska's natural gas will be developed where possible to replace high density carbon fuels (e.g. coal and oil).
- Beginning in 2010, pending approval from the Subcabinet on Climate Change, the State of Alaska will work to develop an "Energy Database" for Alaska, which will enable it to record and monitor the following:
  - Residential, commercial, industrial and transportation fossil fuel energy consumption and production;
  - Mandatory and voluntary reporting of energy-related GHG emissions;
  - GHG emission reductions due to alternative energy-related climate change mitigation actions;
  - Carbon emission allowances and their monetary value under a future cap-and-trade or tax program.

### **Implementation Mechanisms**

*See Policy Design Section*

### **Related Programs/Policies in Place**

It seems sensible to assume that Alaska's "Energy Plan" eventually be integrated with Alaska's "Climate Change Mitigation Strategy" since both plans will include the development of energy efficiency, energy conservation, co-generation, fuel switching and renewable energy measures. AEA is responsible for implementing Alaska's "Energy Plan"; therefore, it also seems sensible to assume that AEA would be responsible for developing and administering Alaska's energy

database. Funding to develop and administer this database could come from AEA's existing Alternative Energy Fund. Other related efforts include the following:

- The New York Stock Exchange and Energy Futures Report provides financial data for energy related fuels. Alaska's energy database may eventually have to be connected with these financial transactions because carbon emissions will have a monetary value.
- ADEC collects fuel consumption and emissions data for large (Title V) industries and submits emissions inventory data to EPA through their Consolidate Emissions Reporting program.
- The Alaska Housing and Finance Corporation collect data on residential energy consumption.
- The Energy Information Administration collects data on energy consumption and production in Alaska.
- Alaska's 10-year "Climate Protection and Energy Plan" should integrate the energy and climate protection plans currently being developed by the members of the Alaska Municipal League.
- Both the State of California and The Climate Registry use an online reporting tool for mandatory and voluntary reporting of GHG emissions which are third-party verified and accessible to the public. The State of Alaska may need to develop a similar, new or modified, database or on-line reporting tool which would enable the State to track energy consumption and production, carbon emissions and potentially the flow of money. This new or modified database will play an integral part in tracking Alaska's GHG emissions and energy-related climate change mitigation efforts.

### Key Uncertainties

- How will Alaska track energy-related GHG emissions and their abatement?
- What kind of carbon trading system will be developed by the federal government (e.g. carbon cap-and-trade vs. carbon tax and dividend) and what kind of database will be required to track carbon emissions and their monetary value?
- Who will be responsible for establishing and administering Alaska's "Energy Database", how much will it cost, and where will this database be located?

This mitigation strategy recommends, starting in 2010, that the State of Alaska begin to develop its 10-year integrated "Climate Protection & Energy Plan" and its energy database. By 2011, it is anticipated that a federal carbon cap-and-trade or carbon tax program will be in place. The agency responsible for administering Alaska's energy database, its exact location, structure (e.g. reporting requirements) and costs will be determined based on the federal program about to be promulgated. It appears that the federal government is leaning towards developing a national carbon cap-and-trade program, also less talked about is the possibility of developing a carbon tax-and-dividend program. In either case, carbon emissions will have a monetary value in the

near future. Therefore, it would be beneficial to the State of Alaska to start developing its own carbon or energy database now in anticipation of the federal program.

### **Benefits**

Integrating Alaska's climate protection and energy policies will allow Alaska to achieve its GHG mitigation goals, and result in a profitable, less-volatile, fixed-price, carbon-based economy. Alaska is rich in carbon based fuels and should benefit from a future GHG cap-and-trade program<sup>40,41</sup>.

### **Costs**

The State of Alaska will accrue costs for developing and managing an "Energy Database" for Alaska. Estimated costs for developing this database range from \$300,000 to \$500,000 dollars, depending on whether or not the State can modify an existing database or must develop a completely new one. Funds could come from AEA's existing Alternative Energy Fund to develop and administer this database.

### **Feasibility Issues**

The feasibility issues associated with this option are how to ensure that the those working on the Alaska Energy Plan and those working on the Climate Change Strategy will work in coordination to develop an integrated plan. Further, for the development of the energy database, what mechanism the funding will come from is not yet known.

### **Status of Group Approval**

*TBD – [until MAG moves to final agreement]*

### **Level of Group Support**

*TBD – [until MAG moves to final agreement]*

### **Barriers to Consensus**

*TBD – [undetermined until final vote by the MAG]*

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<sup>40</sup> Comments on the documents titles "Analysis of The Lieberman-Warner Climate Security Act (S. 2191) Using The National Energy Modeling System (NEMS/ACCF/NAM)" & "Alaska Economic Impact on the State from the Lieberman-Warner Proposed Legislation to Reduce Greenhouse Gas Emissions", ISER Working Paper 2008.1 prepared by Steve Colt, Ph.D. Associate Professor of Economics, Institute of Social and Economic Research University of Alaska Anchorage, 11 April 2008.

<sup>41</sup> "Energy Market and Economic Impacts of S.2191, the Lieberman-Warner Climate Security Act of 2007", by Energy Information Administration, April 2008.

## CC-5. Explore Various Market-Based Systems to Manage GHG Emissions

### Policy Description

Many organizations and governmental entities are exploring and implementing market-based programs for managing GHG emissions. For example, the European Union Emissions Trading Scheme and the Northeast Regional Greenhouse Gas Initiative have been developed and are being implemented. The Western Climate Initiative (WCI) is developing a regional cap and trade system among Western states (Alaska is an observer to WCI). The U.S. Congress is also developing and considering market-based systems that would be enacted nationwide if adopted, with varying scopes on industry. Details of these proposals vary, as does their impact on Alaska.

Alaska has many issues to be addressed as the State considers development of climate policy for the state. Alaska is a major producer of oil and natural gas, which makes up a large portion of its economy and of its greenhouse gas (GHG) footprint. Any market-based system that is adopted by Alaska or the United States could have significant effects on the nationwide demand for oil and gas. In general, any efforts to put a price on carbon will increase the wellhead value of both gas and crude oil from the North Slope. According to the Institute for Social and Economic Research (ISER), “natural gas contains 55% as much CO<sub>2</sub> per unit energy as coal. Switching from coal to natural gas is one sure way for electric utilities to reduce GHG emissions. Economic theory predicts that the more stringent is the cap on emissions, the more the demand for natural gas will be stimulated.”<sup>42</sup> Indeed, the projections contained in this ISER analysis of the Lieberman-Warner bill show an additional \$4 billion to \$9 billion per year of wellhead value, translating into an additional \$1 billion to \$2 billion per year of gas revenue to the State treasury under Lieberman-Warner.

This option recommends that a study be commissioned to explore the implications to Alaska of participating in the various market-based approaches for managing greenhouse gas emissions, including cap and trade programs, carbon taxes and cap and dividend programs. The study would include investigation into the experiences of those who have implemented market-based systems, such as the European Union and the U.S. Northeast. The study could further make a recommendation on the type of market-based system that would be most beneficial to Alaska or the type of system that the State should prepare for. An appropriately designed market-based program can help ensure that GHG emissions are achieved in the most cost-effective manner possible. Revenues generated from the market-based program can be used to cover program costs, generate jobs, and establish loan or grant programs, or offset impacts.

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<sup>42</sup> Steve Colt, Institute for Social and Economic Research, “Comments on the Lieberman-Warner Climate Security Act and Lieberman-Warner proposed legislation,” April 2008, ([www.iser.uaa.alaska.edu/Publications/Colt\\_ACCF-NAM\\_Ak2.pdf](http://www.iser.uaa.alaska.edu/Publications/Colt_ACCF-NAM_Ak2.pdf)) and Steve Colt, Scott Goldsmith, and Peter Larson, ISER, “Analysis of National Greenhouse Gas (GHG) Control Legislation on Alaska Energy Prices and Consumer Costs,” July 2007, ([www.iser.uaa.alaska.edu/presentations/Bingaman\\_update\\_V2.pdf](http://www.iser.uaa.alaska.edu/presentations/Bingaman_update_V2.pdf)).

## Policy Design

Market based initiatives to manage carbon are under development.<sup>43</sup> Exploring the impact on Alaska of the various market-based systems in detail requires rigorous economic inquiry. This option recommends that research be done to explore different market-based initiatives and their impact on Alaska.

### Goals

- Examine how a market-based program interacts with existing and proposed emission reduction measures including regulations, performance-based standards, price subsidies, tax credits, and other technology promoting initiatives.
- Examine how to oversee and manage revenues generated by any future market-based program and determine whether changes to existing laws will be needed.
- In parallel and coordination with this study, participate in federal and regional discussions on and implementation of a market-based program for Alaska

The three major types of market-based systems under debate are carbon taxes, carbon cap-and-trade program, and a carbon cap and dividend program. The advisability and costs and benefits of these approaches for Alaska need further investigation. A brief description of these market-based systems follows:

- A carbon tax is a pollution tax on carbon dioxide and other GHG emissions, levied on the production, distribution or use of a fossil fuel. The government would set a price for GHG emissions and translate that price into a tax on covered entities, such as the electric power industry, based on the amount of GHG emitted from fossil fuels. Because this tax would make energy more expensive to produce, it would encourage more energy conservation from both producers and consumers.<sup>44</sup>
- A carbon cap-and-trade program would set a cap on the amount of allowable GHG emissions. The program would grant a certain number of allowances to entities (by geographic area or by industry). Entities that emit fewer GHG emissions than their allowance could sell their allowances on the market to entities that emit over their allowance, thereby putting a price on carbon that would encourage covered entities to reduce their GHG emissions. Some cap and trade programs propose a “safety valve”—if the price of a GHG allowances becomes too high, entities would be able to purchase additional allowances at some fixed price. The cap would lower over time, affecting costs of carbon and decreasing emissions.<sup>45</sup>

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<sup>43</sup> See [www.pewclimate.org/federal/analysis/congress/110/cap-trade-bills](http://www.pewclimate.org/federal/analysis/congress/110/cap-trade-bills) for a table summarizing the Economy-Wide Cap & Trade Proposals in the 110th Congress prepared by the Pew Center on Global Climate Change. See [www.westernclimateinitiative.org/ewebeditpro/items/O104F19865.PDF](http://www.westernclimateinitiative.org/ewebeditpro/items/O104F19865.PDF) for the design recommendations of the Western Climate Initiative.

<sup>44</sup> Pew Center on Global Climate Change. “Tax Policies to Reduce Greenhouse Gas Emissions.” <http://www.pewclimate.org/DDCF-Briefs/Taxes>

<sup>45</sup> Ibid.

- A carbon cap and dividend program establishes permits for emitting CO<sub>2</sub> that are auctioned to potential emitters, with the revenues being returned to citizens in the form of dividends, based on specific criteria for distribution (e.g., equal distribution or need). This could be modeled after the Alaska Permanent Fund. Similar to a cap and trade program, the cap would lower over time and the price of carbon would rise. Dividends will rise as the price of carbon rises.<sup>46</sup>

### **Timing and Parties Involved**

2009: The Subcabinet on Climate Change would commission a research study to engage Alaska professionals in an Alaska-specific analysis of the impact of participating in various market-based proposals and determine a recommendation of the path forward for Alaska.

### **Implementation Mechanisms**

The Subcabinet on Climate Change would commission a study on market-based options, potentially by leveraging existing funding and contracting mechanisms.

### **Related Programs/Policies in Place**

The Institute of Social and Economic Research (ISER) has done some economic analyses of how carbon market legislation could affect Alaska:

<http://www.iser.uaa.alaska.edu/Home/ResearchAreas/climatechange.htm>

### **Key Uncertainties**

The timeframe for developing a federal market-based program to manage GHG emissions is unknown. Recent discussions in Congress, and announcements from President Obama, suggest that a GHG cap and trade program may be on the horizon. The pace of development of this federal legislation could impact the need for a study. Mandatory requirements could be developed before Alaska evaluates options and engages in discussions.

### **Benefits**

The results of this analysis could help inform Alaska's participation in some market-based system, such as the WCI.

### **Costs**

The costs of this option will be the costs of commissioning a study, which will vary depending on the final scope of the study. Initial estimates for this option range between \$25,000- \$50,000.

### **Feasibility Issues**

It is unclear who would conduct this analysis, although the Alaska Institute for Social and Economic Research (ISER) is well-positioned given their past work on climate change legislation and its impacts on the Alaskan economy. Further, the mechanism for funding and overseeing this study is not yet known.

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<sup>46</sup> *Cap and Dividend: Raise the price of carbon and give the money back.* "How Cap and Dividend Works." See: <http://www.capanddividend.org/?q=readfirst>

### **Status of Group Approval**

*TBD – [until MAG moves to final agreement]*

### **Level of Group Support**

*TBD – [until MAG moves to final agreement]*

### **Barriers to Consensus**

*TBD – [undetermined until final vote by the MAG]*

## **CC-6. Create an Alaska Climate Change Program that Coordinates State Efforts for Addressing Climate Change**

### **Policy Description**

Responding to climate change and reducing GHG emissions will require a dedicated and coordinated State of Alaska effort with sufficient funding and staff. Better coordination can promote efficiencies and effectiveness in the following areas:

- Coordination and tracking of climate change efforts across State agencies in Alaska;
- Coordination between State of Alaska and other efforts (e.g., federal activities);
- Coordination of the Alaska GHG emissions reporting program and related reporting tools (see CC-1 and CC-4);
- Access to information and education resources (web portal);
- Support of educational materials for students and the public about climate change strategies and impacts; and
- Potential development and drafting of a GHG baseline, goals, priorities, inventories, schedules and performance measures related to mitigating climate change in Alaska.

To achieve the above, a centralized coordinating entity is needed—an Alaska Climate Change Program. It is recommended that the Subcabinet prioritize available staff time and resources to create this entity, including an online presence (e.g., web portal) that represents the State of Alaska climate change activities, including the work of the Subcabinet and Climate Change Strategy that results from its efforts. With a strong coordinating office, resources and funding can be identified and secured to further develop this effort as the voice and face of Alaska's climate change policies and goals.

### **Policy Design**

#### **Goals**

The goals of an Alaska Climate Change Program include the following:

- Develop and draft statutes, regulations, fiscal notes, fee studies, position papers, guidance documents, policies, procedures, and standards as necessary to establish and implement federal and state climate change legislation;
- Provide information on climate change mitigation technology and regulatory guidance to industry and the public;
- Coordinate the GHG emission reporting program and associated inventories (see CC-1);

- Coordinate the Subcabinet’s climate change mitigation policy efforts with the Alaska Energy Plan (see CC-4), the Alaska Municipal League, industry, the Western Climate Initiative and advisory groups and coordinate and track climate change efforts in Alaska;
- Develop partnerships with private citizens, businesses, and local governments;
- Conduct direct outreach on climate change and GHG reduction strategies (see Appendix to CC-6);
- Develop a web portal and a repository of relevant resources and information;
- Support educators to teach students of all levels regarding climate change (see Appendix to CC-6); and
- Provide outreach and education on climate adaptation actions and responses (see Appendix to CC-6).

The following staff within this coordinating program would have responsibility for the above goals:

Staff Member	Overall Goal	Specific Goal
Director Deputy Director Funds Manager	Coordination	<ul style="list-style-type: none"> <li>• Coordinate with Alaska Energy Plan (see CC-4)</li> <li>• Interact with the Western Climate Initiative</li> <li>• Coordinate with Alaska State Agencies for data, outreach and education</li> <li>• Partner with private parties</li> <li>• Coordinate with federal programs</li> </ul>
GHG Reporting Program Staff (see CC-1)	Regulation	<ul style="list-style-type: none"> <li>• Develop Climate Change Statutes</li> <li>• Manage GHG Emissions Reporting</li> <li>• Develop Energy Database</li> </ul>
Data Manager	Data and Information Management	<ul style="list-style-type: none"> <li>• Organize and provide access to climate change data and information (portal)</li> <li>• Publish GHG Inventory and Forecast</li> <li>• Establish indicators and performance measures</li> </ul>
Outreach and Education Coordinator (see Appendix to CC-6)	Outreach and Education	<ul style="list-style-type: none"> <li>• Develop Outreach Materials</li> <li>• Develop Education Materials for School</li> </ul>

**Figure 1. Roles for Coordinating Program Staff Members**

**Activities of the Program**

- Coordinate and track climate change efforts in Alaska by working with the Governor’s office, Subcabinet, Commissioners and state agencies as they develop policy, launch legislative initiatives, and implement practical and meaningful GHG emission reductions in day-to-day state operations;
- Implement a GHG emission Reporting Program (see CC-1) and coordinate with any carbon cap and trade system;
- Coordinate with the Alaska Energy Authority on development of an Energy Database (see CC-4);
- Develop partnerships with private citizens, businesses, and local governments to gather and share practical strategies to reduce emissions and mitigate climate change;
- Identify and implement “early actions” for State government on climate change (see CC-3);
- Provide access to information by creating and populating a Web Portal dedicated to the Alaska Climate Change Strategy. The Web Portal effort could be supported by a team that includes agency Public Information Officers and Special Assistants for relevant State agencies, along with existing departmental staff who work on climate change issues. The Web Portal will be a repository of relevant resources and information for diverse audiences (e.g., elected officials, media, researchers, the public) and serve as a clearinghouse of climate change information, resources, and education materials. The goal of the web portal is not to replace or replicate existing efforts, but expand information access and assist current efforts with state resources. Examples of information that can be included on the website are:
  - Information on renewable energy, energy efficiency and incentive program in Alaska;
  - Practical and doable strategies—“what you can do”—for private citizens, businesses and industry sectors, and local governments
  - Identification and reporting of the actions that the state government is taking (see CC-3); and
  - Links to the Alaska/Arctic climate change research and monitoring underway by universities, agencies and other groups (see Overarching Option #1).
  - Actions to take to help adapt to a changing climate
- Coordinate technical advisory groups and then process, organize and share their recommendations with state leaders and the public;
- Implement and/or advocate the state’s long-term climate change policy and plan;
- Conduct direct outreach on climate change, GHG reduction strategies, including personal and business strategies, and potential risks from and needed responses to climate change;

- Reach across state and municipal governments, NGOs, the private sector, and citizens to ensure the longevity of the Climate Change Strategy efforts (e.g., Advisory Groups and Technical Working Groups), bring agencies together to coordinate efforts, coordinate outreach and education, and support the ongoing work of the Subcabinet; (see Appendix to CC-6 for further details)
- Identify necessary regulations and work with agencies and the Legislature to enact them;
- Support education of students at all levels and the general public about climate change strategies and impacts and develop education resources and curriculum on climate change for schools and work with the local school districts and state Board of Education to incorporate climate change into science education standards (see Appendix to CC-6 for further details).

### **Timing and Parties Involved**

This coordination effort should be initiated as soon as possible after approval by the Subcabinet of the Alaska Climate Change Strategy. Key to success of the effort will be identifying and maximizing partnerships within State Agencies, and with federal, private and public programs. The Governor and the Governor's Office, OMB, the Climate Change Sub-Cabinet, and representatives of key State Departments, including ADEC, ADFG, ADNR, and DCCED should be involved. In 2009, the Subcabinet should assess current resources and identify lead staff. Resources and staff should be committed by the end of 2009 to address the coordination goals and activities listed above. Many groups will be partners and beneficiaries of this coordinating body:

- Alaska State Legislature
- Alaska Climate Change Strategy Subcabinet
- State Agencies
- Alaska Municipal League
- Tribes
- Alaska Energy Authority
- Federal Agencies
- University of Alaska
- Public
- Alaska Elementary and Secondary Schools
- Industry

### **Implementation Mechanisms**

To establish an Alaska Climate Change Program, the State must promulgate statutes and regulations and allocate funds for the personnel and infrastructure to administer this program. The Subcabinet should submit legislative or budget documentation necessary to procure the resources and authority to charter this coordination and outreach effort. The design of this option assumes that at least a portion of Alaska's future Climate Change Program will be hosted by ADEC because most of the necessary permitting, database, and reporting tools for administering a GHG Reporting Program (see CC-1) are already in place.

## Related Programs/Policies in Place

Creating an entity with the mission of tracking climate change and coordinating the State's response will help to ensure the success of the other policies in the Alaska Climate Change Strategy. Staff tasked with this effort can also serve as key liaisons and resources for the private sector if or when the State enacts regulations governing GHG emissions or reporting. The web portal would serve as an information hub to provide outreach for preparing for and responding to climate change, and for efforts to monitor, measure and research climate change.

Many state agencies already have existing staff that deal with climate change issues and outreach. This option would not fund these positions or create new ones within these agencies, but would serve to coordinate and complement these activities.

## Key Uncertainties

Several challenges include creating a program using existing resources or securing additional needed funding; identifying an appropriate program lead; developing an approach to presenting information to the public in a way that will be comprehensive and accessible; identifying processes by which the website is maintained and updated; and fostering coordination among the various entities with responsibilities to mitigate and address adaptive actions to climate change.

## Benefits

Creating a coordination function to track and coordinate the state's response and resources to climate change can help ensure the continuation and success of the other mitigation policies, and offer an opportunity to leverage and pool resources.

## Costs

Costs primarily entail personnel, including salaries and benefits, and contracting costs to develop materials and support a web portal. Figure 2 depicts the costs for the program without the GHG Reporting and Energy Database, which is discussed further in CC-4.

Operating Expenditures	Cost
Program Director	\$100,000
Program Deputy Director	\$95,000
Funds Manager	\$85,000
Data Manager	\$85,000
FTEs for Reporting Program (5) <sup>47</sup>	\$425,000
Outreach and Education Coordinator <sup>48</sup>	\$85,000
Travel & Equipment	\$100,000
Contracts <sup>49</sup>	\$400,000
<b>Total</b>	<b>\$1,375,000</b>

Figure 2. Alaska Climate Change Program Estimated Operating Expenditures

<sup>47</sup> See CC-1 for more detail on costs

<sup>48</sup> See Appendix to CC-6 for more detail on costs

<sup>49</sup> These contracts include the costs for developing the reporting program (CC-1), education materials development and coordination program contracts, but does not include the development of an Energy Database (see CC-1 and CC-4)

### Feasibility Issues

Key feasibility issues include identifying a funding source and appropriately coordinating across existing programs. In addition, the effort needs to be flexible and generate sufficient political will to be effective and sustained.

### Status of Group Approval

*TBD – [until MAG moves to final agreement]*

### Level of Group Support

*TBD – [until MAG moves to final agreement]*

### Barriers to Consensus

*TBD – [undetermined until final vote by the MAG]*

## CC-6 Appendix: Promote Climate-Change Literacy: An Alaskan Program in Climate-Change Education and Outreach<sup>50</sup>

### Recommended Option

Despite the critical and growing importance of climate change to Alaska's residents, there is a generally poor level of public understanding of the causes and consequences of climate change. In order for Alaska to adapt effectively to climate change there is an urgent need to raise the level of literacy about climate change through formal and informal educational pathways and agency outreach to the general public.

The State of Alaska will promote climate-change education and literacy in the state by:

- Identifying climate change as a high-priority subject in the State K-12 Science Standards (both science content and science performance or grade level expectations) and increasing coordination among existing programs and entities that address climate-change education in Alaska's schools; and
- Supporting the development and delivery of effective public outreach materials by state agencies.

### Sub-Option 1: Climate Change Education in the Public Schools

#### Option Description

The State of Alaska will establish a framework through K-12 education to rapidly improve public understanding of the causes and consequences of climate change in Alaska. The State will identify climate change as a high-priority subject in the State K-12 Science Standards, provide an

<sup>50</sup> This option was initially developed by Adaptation TWG members as an overarching option for the Subcabinet to address. As it overlaps with CC-6, it has been incorporated here.

education specialist to focus on science and climate change education, increase coordination among existing programs and entities that address climate-change education in Alaska's schools, and provide training and curricula to teachers to implement the new Science Standards.

By incorporating climate-change education as a formal component of public education, Alaska will provide adequate educational resources to its residents to enable them to make wise choices about how to minimize the costs and maximize the opportunities that result from climate change. In the absence of such education and outreach initiatives, K-12 teachers in schools will not be able to teach about climate change because of the time and subject-matter constraints in their existing curricula. Alaskans are unlikely to take climate change seriously and will not be prepared to adapt to the environmental and ecological changes that are occurring.

## Option Design

**Structure/design:** Sub-option 1 has three major components:

1. The Alaska Department of Education and Early Development (DEED) will identify climate change as a high-priority subject and include it in the State K-12 Science Content and Performance (Grade Level Expectations, GLEs) Standards and provide funding for the rapid development of GLEs, assessment tests, and curricular materials that enable teachers to present this material effectively to students. Climate change curricula can be developed in-house at DEED or could be developed by another entity/entities funded through state contracts and/or competitive grants.

The Science Standards for the State of Alaska were most recently updated in 2005. There is no specific reference in the standards to climate change; climate change content should be added to the frameworks related to life science, earth science, physical science, science and technology; and cultural, social and personal perspectives regarding science. Since students are tested in science proficiency in grades 4, 8 and 10, it will also be necessary to revise assessment tests to measure proficiency with this new climate change content.

The State of Alaska does not have a regular, specified schedule for review and updates to the Standards and GLEs. Revisions to the GLEs typically involve DEED working directly (or through a contractor) with a stakeholder committee (teachers, school districts, public, scientists) to develop new standards. New assessment tests would need to be developed and piloted by the State's assessment contractor. The development of climate change curriculum would likely be accomplished through contract or by the University of Alaska.

2. The state will establish and fund a new environmental/climate change science education specialist at DEED to provide coordination among existing programs and entities that address climate-change education in Alaska's schools, and to coordinate development of the new Science Standards/GLEs. (At present, DEED does not have an environmental science education specialist.)
3. The state will provide funding to the University of Alaska to develop courses for K-12 teachers so these professionals have the training necessary to teach about climate change in Alaska. These courses will involve professionals in education and extension/outreach.

It would be important to determine cost effective, yet successful methods for delivery of this training to Alaska's teachers, through distance delivery, training at district in-service sessions, etc.

**Targets/goals:** The goal of this sub-option is to include climate change as an integral component of public education in Alaska, so Alaska's youth are prepared to make wise choices about adapting to climate change. Targets will include completion of the tasks listed above.

**Timing:** Implementation for this policy can begin immediately and could be completed within three to four years.

**Participants/Parties involved:** DEED, US Department of Education, University of Alaska, stakeholders, school districts, teachers, and entities listed in the Related Programs section, below.

**Evaluation:** Implementation of the adopted policy in classrooms can be monitored and evaluated through formative and summative assessments administered by classroom teachers and/or by DEED, e.g., including climate change in the statewide science test materials.

**Research and Data Needs:**

- Research public education standards and curricula developed and implemented in other states (e.g., public schools in the State of California).

## Implementation Mechanisms

The primary need for implementation of these recommendations is Cabinet-level emphasis, intention, and funding. No additional feasibility studies or research is required. Specific implementation steps are provided in the Option Design section, above.

## Related Policies/Programs and Resources

Several organizations that have initiated efforts to integrate climate-change understanding into the educational program include the Center for Ocean Sciences Education, International Arctic Research Center, and the Alaska Sealife Center.

The document on *Climate Literacy: Essential Principles of Climate Science* has been developed by federal science agencies including NOAA and NSF in collaboration with many individuals and the following science and education partners: American Association for the Advancement of Science Project 2061, American Meteorological Society, Association of Science-Technology Centers, College of Exploration, Cooperative Institute for Research in Environmental Sciences, Federation of Earth Science Information Partners, Lawrence Hall of Science, University of California, Berkeley, National Environmental Education Foundation, National Geographic Education Programs, North American Association For Environmental Education, TERC, Inc., GLOBE Program, National Center for Atmospheric Research and University Corporation for Atmospheric Research. This Climate Science Literacy Guide includes science concepts aligned with the National Science Education Standards and the AAAS Benchmarks for Science, and

provides a framework for understanding and communicating about climate change and climate science for individuals and communities.

### Feasibility

These recommendations could be feasibly implemented within a very reasonable time frame, if funding is appropriated.

### Benefits and Costs

**Benefits:** The primary and essential benefits to this option will be improving the literacy of Alaska's youth (our future adults) in basic information about climate change, mitigation and adaptation, to inform their future decisions regarding their own actions and to ensure that Alaska's population understand the importance in future State decisions and actions.

**Costs:** Sub-option 1 would involve the following general costs:

- Revision to the State Science Standards / GLEs would require DEED staff time and contractual and logistics costs associated with convening and facilitation of a stakeholder process to review and develop the new standards. There would also be contractual costs to develop and pilot/evaluate new assessment tools to test student proficiency. Development of climate change curricula for K-12 classrooms would require additional contractual funding.
- A new staff position to coordinate climate change education efforts for the DEED would involve hiring an Education Specialist II (approximate cost \$83,000 per year, salary and benefits).
- Development of teacher training materials and accomplishment of teacher training by the University would require contractual funding.

### Sub-Option 2: Development and Dissemination of Effective Public Outreach Regarding Climate Change

#### Option Description

This policy sub-option will support the development and delivery of effective public outreach materials and presentations regarding climate change, by Alaska's state agencies.

#### Option Design

**Structure/design:** It is recommended that the State of Alaska:

- Provide funding to state agencies for development and delivery of effective public information materials regarding climate change;<sup>51</sup> and

<sup>51</sup> See Ward, B. 2008. *Communicating on Climate Change: An Essential Resource for Journalists, Scientists, and Educators*, Metcalf Institute for Marine and Environmental Reporting.

- Provide funding to the University of Alaska to develop courses targeted to the state's natural resource managers, so these professionals will have the training necessary to effectively communicate with the public about the effects of climate change in Alaska, mitigation and adaptation.

**Targets/goals:** The goal of this policy is to improve the content and effectiveness of climate change presentations and materials developed and provided to the public by the state agencies.

**Timing:** Implementation for this policy can begin immediately. It is recommended that the University of Alaska develop climate-change courses for resource managers within one year and that agencies prepare materials and strategies for public outreach about climate change within two years.

**Participants/Parties involved:** University of Alaska, State of Alaska resource agencies, federal agencies, non-profit organizations, other scientific institutions.

**Evaluation:** Community surveys prior to and post education outreach to the general public could be used to evaluate effectiveness.

**Research and Data Needs:**

- Research effective public outreach initiatives and materials developed and distributed by other states, local governments, nonprofit organizations and others.

### Implementation Mechanisms

The primary need for implementation of these recommendations is Cabinet-level emphasis, intention, and funding. No additional feasibility studies or research is required.

### Related Policies/Programs and Resources

Several organizations that have initiated efforts to integrate climate-change understanding into the educational program include the Center for Ocean Sciences Education, International Arctic Research Center, and the Alaska Sealife Center.

### Feasibility

These recommendations could be feasibly implemented within a very reasonable time frame, if funding is appropriated.

### Benefits and Costs

**Benefits:** The primary benefits related to sub-option 2 will be improving the literacy of Alaska's public in basic information about climate change, mitigation and adaptation, to inform their decisions regarding their own actions and to ensure that Alaska's population understands the importance in future State decisions and actions.

**Costs:** Sub-option 2 would require funding for the University to develop and deliver training for natural agency resource managers in climate change.