

## T-1. Transit, Ridesharing, and Commuter Choice Programs

### Mitigation Option Description

The state would provide the leadership and resources necessary to help expand Alaska's public transit and ridesharing system. To alter Alaskan driving habits to reduce GHG emissions, issues of convenience, choice, and finance must be major elements in expanded transit and ridesharing operation. Public education will be paramount to success.

In order to reduce GHG emissions through expanding transit opportunities, commuters need to be provided with progressive incentives to change behavior. Intense, long term education must be undertaken to demonstrate the financial savings for transit users. Current successful van routes from Wasilla into Anchorage appear to offer cost savings to the users. The overall system connections, from parking lot to rail to bus routes, must meet citizen demands to get from home to workplace and lead to a public awareness of system functionality. Piecemeal programs will fade away with the lack of public buy in.

The majority of GHG reduction with increased transit and ridesharing service is expected to be achieved in the state's larger population areas.

If funding is not allocated to initiate the larger programs, then beginning with individual large employers incorporating financial incentives may be the best method to show success.

### Mitigation Option Design

This option would:

- Develop park-and-ride systems that are coupled to increased urban transit schedules. Estimates of new infrastructure will be needed in cold areas to keep car engines heated.
- Develop outlying collector routes with buses or vans to high employment destinations, i.e., university campuses, oil industry offices, and state offices. A daytime shuttle or van offer to provide for personal lunch time trips has been demonstrated in the private work place.
- Provide funding support to expand the current transit systems operations is required to get additional in town schedules increased.
- Develop rail tie-in along existing track. DMU cars from Wasilla to Anchorage and North Pole - UAF Campus through Fairbanks would be leased on an initial winter basis. Funding would be provided to invest in these cars and a program operator, a possible statewide or regional transit authority.

### Goals:

- [Double transit ridership in Alaska by 2025, compared to 2007 levels.](#)
- [Double ridesharing in Alaska by 2025, compared to 2007 levels.](#)

**Timing:****Parties Involved:****Implementation Mechanisms****Related Policies/Programs in Place****Transit in Anchorage**

Since 2002, People Mover ridership in Anchorage has exceeded estimations. Service enhancements through route restructuring and increases in operations, combined with high fuel prices, have attracted more commuters resulting in 2008 ridership being the highest in People Mover's history. Future plans to improve service frequency to a bus every ½ hour from 6 a.m. to 6 p.m., as well as increased peak hour frequency on seven routes in corridors that have the highest ridership.

While the trend in Anchorage is matching the success of transit systems in the lower 48, Anchorage riders are more responsive to service increases. The industry standard for new service is that a 10% increase in service will result in a 7% increase in riders. Changes made since 2002 have increased service 18% with a corresponding 28% increase in riders indicating a strong latent demand for public transportation.

Anchorage's Long Range Transportation Plan addresses high frequency, high performance express bus service on the Glenn Highway corridor to pick-up 5-7 percent of the peak-period commuters.

Currently the transit fixed route fleet has 55 buses. People Mover's long range goals double the size of the fleet. In the short term, approximately \$7 million is needed to replace the aging fleet, and another 20-25 buses are needed to meet the goals of the increased frequency on key corridors. The increased transit availability and ridership has a direct benefit to reducing GHG and managing congestion by reducing the number of overall vehicles on the road.

**Transit and Intelligent Transportation Systems in Anchorage**

Anchorage's People Mover system has implemented a number of Intelligent Transportation Systems (ITS) in the past five years. Scheduling and dispatching systems, bus schedule information via a 24-hour telephone system, and most significantly, TransitRealTime provides the actual time a bus will arrive at a bus stop via the internet and by signs at major bus stops. This technology is being implemented to enhance the reliability, predictability and attractiveness of transit services for existing and potential bus riders.

**Ridesharing in Anchorage**

Ridesharing is a program that provides car/van pool matching services for residents in Anchorage and its commute area. Its primary objective is to encourage and support alternatives to

Single Occupant Vehicle (SOV)-driver commuting by coordinating with employers, disseminating information and sponsoring vanpool services and proving rideshare matching services.

The existing significant need in addressing ridesharing is the commuting traffic between the Mat-Su and Anchorage. Currently, 700 residents travel in 49 vanpools between Mat-Su and Anchorage and in 3 vanpools between Anchorage and Girdwood. Park and ride lots are full and the waiting list to enroll in the vanpool program is over 700 residents strong. The lack of vans that are used in the rideshare program is the largest obstacle. Anchorage and the Mau-Su are working to solve this need hopefully with some financial support for the legislature in the coming sessions.

## T-2. Vehicle Idling Regulations and/or Alternatives

### Mitigation Option Description

Alaska will focus on reducing idling times for diesel and gasoline heavy-duty vehicles, buses, and other vehicles through a combination of statewide anti-idling regulations and by promoting and expanding the use of technologies that reduce heavy-duty vehicle idling. These technologies include vehicle equipment modifications such as auxiliary power units, direct fired heaters, and automatic engine shut down/startup system controls. Other effective means of idle reduction come through the use of Intelligent Transportation Systems (ITS) technology such as electronic weigh station bypass systems. These systems allow safe and legal vehicles to pass a weigh station, at highway speed, without stopping for inspection. This bypass eliminates the need for a heavy duty vehicle to idle its engine for a period from as few as 10 minutes to as many as 60-90 minutes.

Recognizing Alaska's severe arctic and sub-arctic winter conditions, accommodations must be made for below zero winter temperatures. Auxiliary power units, for example, can ameliorate the effects of idling but idling cannot be entirely prohibited such as when extreme weather conditions warrant.

Alaska will encourage the adoption of statewide statutes or regulations and local ordinances to promote idle reduction for all vehicles. All vehicle owners, public and private will be subject to these regulations and to the penalties prescribed in the statute or regulations.

### Mitigation Option Design

Alaska will develop and implement a statewide regulation banning extended idling by heavy-duty vehicles given accommodations for below zero arctic and sub arctic winter conditions. As with all regulations, they must be enforceable with a reasonable expectation of penalty for non-compliance. Alaska will also provide local governmental units with model language for adoption as local anti-idling ordinances.

Alaska will encourage and promote reduced idling through programs aimed at increasing voluntary adoption of idling reduction technologies. Components of such an effort should include collaborative outreach and education timed with the implementation and enforcement of a statewide anti-idling regulation and seeking funding for pilot projects and demonstrations as well as funds available through any federal or other programs to evaluate the effectiveness of various idle reduction technologies.

Alaska may also provide additional incentives to fleet or individual heavy truck owners to purchase and install idle reduction technologies on their vehicles. These incentives may come in the form of full grants, matching grants, tax credits and low or no interest loans.

Alaska may also provide incentives to assist the private fleets to convert some of their vehicles to hybrid operation. Such engine technology is or soon will become available in the marketplace.

**Goals:**

- Alaska DOT&PF will lead by example with the installation of idle reduction technology for its fleet of heavy duty vehicles. This goal will be phased to accomplish installation of these technologies; 20% will be so equipped by 2012 with the remaining 80% equipped by 2020.
- Local governments and school districts will install idle reduction for their fleets at a rate similar or slightly lagging the state DOT&PF.
- Commercial and private fleets will be encouraged through regulation and through incentives to meet the same timetables.
- The Alaska DEC will be the lead agency to adopt and enforce the statute or regulations on both public and private vehicle owners.
- Accomplishment of these goals should result in significant reductions in both green house gas emissions and should also show significant fuel savings.

**Timing:**

- Target date for the development and implementation of anti idling regulations for state and local governments is the end of 2011. Legislation can be introduced in the 2010 session of the Alaska Legislature to establish the statutory authority to require that regulations and local ordinances be adopted to implement these requirements.
- Target date for partial and full implementation of idle reduction technologies by all parties is 20% by 2012 and the remaining 80% by 2020.

**Parties Involved:**

Alaska Departments of Commerce and Community Development, Transportation and Public Facilities, Environmental Conservation, Revenue, local governments, school districts, commercial and private truck fleets, tour bus operators, trucking associations, unions, shippers, Metropolitan Planning Organizations (MPO) including FMATS and AMATS.

### T-3. Transportation System Management

#### Mitigation Option Description

The State of Alaska would seek to reduce GHG emissions from the transportation sector through improvements to transportation system management. These efforts would focus on the improvement, management, and operation of the transportation infrastructure, with a focus on the roads and highway systems.

#### Mitigation Option Design

- ADOT&PF, FMATS and AMATS should evaluate potential intersection locations for roundabout installation. ADOT&PF will report on its roundabout evaluation criteria and list all locations evaluated annually for potential roundabout installation, to be no less than 5 intersections/locations annually. ADOT&PF will encourage the installation of roundabouts when the installation is based on sound engineering principles. ADOT&PF will work cooperatively with local governments seeking information on the principles of roundabout installation. ADOT&PF will assist the cities and boroughs in their analysis of roundabout suitability for intersections under their jurisdiction. ADOT&PF will consider roundabout treatment at planned right angle intersections for new construction and upgrades and when completing routine safety reviews. ADOT&PF has previously adopted roundabouts in the 2007 Strategic Highway Safety Plan as a preferred solution, where practicable, for safety reasons. Roundabouts have safety benefits as crashes generally are of reduced severity. Roundabouts can also reduce traffic queuing and delay, thus saving fuel and reducing GHG emissions.
- Reduce maximum speed limits on highways in Alaska to improve fuel economy and reduce GHG emissions per mile traveled. Specifically reduce maximum speed limits on state managed roadways to 60 MPH or lower where appropriate. Evaluate reducing the maximum speed limit on the Dalton Highway north of Fairbanks to Deadhorse to 50 MPH or lower where appropriate. Additional benefits are reduced traffic injuries and fatalities.
- ADOT&PF will continue its commitment to providing a multimodal transportation system by continuing to invest in transit, bike and pedestrian facilities. ADOT&PF spends an average of roughly \$5 million annually on these facilities and expects this level of commitment to continue or increase.
- All urban areas (i.e., >5,000 population) will continue to include consideration of bike and pedestrian facilities in their urban transportation plans.
- ADOT&PF in partnership with urban communities will work to improve traffic signal synchronization on all state managed routes (mostly arterials) in urban areas (i.e., >5,000 population) by 2012. Signal synchronization reduces start/stop traffic on arterial routes as the lights are timed to continuously move traffic forward at the target pace. This strategy also helps reduce traffic queuing thus saving fuel and reducing GHG emissions.

- ADOT&PF will complete conversion of all traffic lights to LED bulbs by 2010 and will work with cities to convert roadway luminary lighting under city jurisdiction. LED bulbs significantly conserve energy thereby indirectly reducing GHG emissions.
- ADOT&PF will continue to expand transit services in Alaska communities including coordinated transit solutions, and seek additional funds to support this expansion. The recently approved (September 2008) Governor's Coordinated Transportation Task Force (Administrative Order #243), is an important step in advocacy for transit improvements.
- All urban transportation plans will be updated by 2012 with an emphasis on operations and safety. The operations elements in urban transportation plans will improve traffic flow, reduce conflict points and can result in turn lanes, reconfiguration of intersections or access control. In metropolitan areas, the transportation plans will meet air quality conformity requirements for criteria pollutants.
- Congestion management plans for all high traffic volume construction projects will be considered by ADOT&PF. These plans implement strategies to keep traffic flowing through construction zones, thus reducing fuel use and reducing GHG emissions.
- Access management will continue to be pursued consistent with state of Alaska statutes and ADOT&PF policies. Access management is intended to reduce the number of street and driveway access points to major roads and highways, in order to reduce conflict points. It has a proven capacity and safety benefit. The appropriate goal is to continue and strengthen access management within the state.
- Install traffic management technologies and provide public information of travel conditions on high volume commuter routes, especially those lacking practical bypasses. Routes such as the Glenn Highway between Anchorage and the Mat-Su valley experience considerable traffic during peak conditions. Due to a lack of alternative routes, incidents such as accidents and spilled loads can tie up traffic for hours. ADOT&PF along with partner communities will strive to complete by 2010 a comprehensive ITS Plan for the corridor that would evaluate and prioritize:
  - Installation of speed and congestion sensors
  - Installation of internet accessible cameras
  - Use these technologies to monitor conditions, respond to incidents and inform the public of incidents and congestion
  - Use all available means of communication, including radio, email/text message, Variable Message Signs, Highway Advisory Radio and internet media.
  - Deploy (perhaps on a trial basis) courtesy patrols which can respond to breakdowns, out of fuel, flat tire, accident scenes.
  - Capture better data on incidents so that progress can be evaluated (e.g., benefit-cost)
- Improve the manner in which incidents and accidents on high volume routes are processed to include:
  - Require drivers involved in fender benders to pull away from travel lanes. Implementation will require educational signs, and possibly a statutory change requiring moving vehicles to the side of a road in non-injury accidents.
  - Accelerate accident scene processing following the Washington state model (faster accident scene clean-up, faster documentation of scene evidence, while not

compromising investigation of facts) this may require some trial deployment and testing of the new approach in the courts

- Require the Department of Education require school boards in selecting new school sites to favor sites which can be reached by walking and biking for the majority of the population the school will serve. Travel of school children by parent-driven vehicles is widely practiced, and is considered a major component in traffic volumes due peak periods. The benefits of walking and bike riding to schools include not only reduced vehicular fuel consumption and GHG emissions but also a more physically fit youth population.

**Goals:**

**Timing:**

**Parties Involved:**

## **Implementation Mechanisms**

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

To improve energy efficiency of traffic signal and roadway lighting, several efforts are underway in Anchorage. The Municipality has already installed LED lights in all of its traffic signals to reduce energy costs. It's estimated that energy cost for traffic signals alone is about a 30% savings. In addition, the Municipality is reviewing all outdoor lighting, which includes over 16,000 streetlights as well as pedestrian lighting, parking garage lighting, and trail lighting. Streetlights currently utilize a 150W to 400W High Pressure Sodium (HPS) fixture, which operate approximately 4,400 hours per year at an annual energy cost of \$2.2 Million. It's also possible to reduce the load or wattage of the street lights and /or provide dimming devices for greater energy and cost savings.

As of December 2008, Anchorage has finalized design criteria for low-speed, residential street lighting and is installing over 4,000 LED fixtures in neighborhoods throughout the city. The Municipality is undergoing testing of LED fixtures for higher speed roadways and hopes to finalize criteria for this application in 2009.

The quality, amount, brightness, glare, and uniformity of lighting are all key elements in the effort for better and lower cost lighting. In addition to cost and energy savings, lighting can also provide a better color of light (white instead of orange or blue), enhanced safety through improved visibility, less light trespass into homes, and less light pollution into the night sky.

The effort to minimize operational maintenance cost is a significant benefit. The LED fixtures being installed in Anchorage use 50% of the energy of HPS fixtures, and the lamps last roughly five to seven times as long.



## T-4. Promote Efficient Development Patterns (Smart Growth)

### Mitigation Option Description

GHG emission reduction through efficient, sustainable (i.e., smart growth) land development patterns will need to be incorporated with reduced VMT, transit improvements, sustained implementation of multi modal links to facilitate biking, walking, and winter trail use in residential and urban areas.

Issues and items to be developed would include:

- State policy issues detailing funding parameters and funders' policies distributing state and fed dollars
- Changes to state laws and regulations
- Local development plans i.e. Anchorage 2020, FNSB Regional Comprehensive Plan
- Local zoning code changes
- Increased urban / residential density factors
- Land "disposal" sales and auctions, including UA and AMHLT
- Subdivision codes and standards to set aside people friendly open spaces, green belt reserves
- Tax credits / incentives to developers
- Must be combined with infrastructure planning – roads and utilities

Public buy-in is a must. There must be strong incentives to have people accept programs.

### Mitigation Option Design

This option will focus on promoting land use changes that result in higher densities in developed, urban areas. It will also focus on incorporating retail zones and small limited commercial nodes in residential developments, with a goal of reducing driving needs by facilitating walking or bicycling. Changes to residential development patterns, including new subdivisions around population centers, will require a full gambit of incentives to produce the desired change.

**Goals:**

**Timing:**

**Parties Involved:**

## T-5. Promotion of Alternative Fuel Vehicles

### Mitigation Option Description

Alternative fuel vehicles (AFVs) offer significant opportunities to reduce greenhouse gas emissions **from the light-duty fleet**. Alternative fuels include natural gas, propane, bio-diesel, electricity, ethanol, hydrogen, and fuel cells. **AFVs include hybrid vehicles that utilize more than one power source to move the vehicle.**

**[Alaska's North Slope has one of nation's largest deposits of technically recoverable natural gas. Congress has encouraged conversion of cars to CNG with tax credits of up to 50% of the auto conversion cost and the CNG home filling station cost. However, while CNG is a much cleaner fuel, the conversion requires a type certificate from the EPA. Meeting the requirements of a type certificate can cost up to \$50,000.]**

This mitigation option consists of two parts. The first part is working towards the replacement of existing **light-duty** vehicle fleets with AFVs. The second part consists of better informing the public of the benefits of purchasing AFVs and providing incentives as well.

Public sector agencies<sup>1</sup> and **some** private sector firms own large number of vehicles. Converting these fleets to AFVs can result in large reduction of pollutants and greenhouse gases.

The second component of this proposed policy consists of providing information to consumers about benefits of AFVs, such as fuel efficiency benefits, environmental (cleaner air) benefits, cost savings, and technological benefits.

The policy would be implemented through as series of federal and state supported low-cost loans, grants, attractive financing of trade-in, tax incentives, other incentives and subsidies, to promote use of AFVs.

### Mitigation Option Design

#### Goals:

- Increase the use of **light-duty** AFVs by public sector agencies and private sector firms to 25% of on-road fuel consumption by 2020 and 35% by 2030.
- Increase the use of AFVs by consumers to 10% of on-road fuel consumption by 2020 and 25% by 2030.
- State legislation authorizing financing (2% loans) by 2012.
- State legislation authorizing tax incentives for public sector fleet conversions by 2012.
- **State legislation creating a feebate program for the purchase of AFVs.**

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<sup>1</sup> Public sector agencies include: federal, state, and local governments; school districts, and utilities.

- [State support for analysis of life-cycle GHG benefits of alternative fuels.](#)

**Timing:**

See above.

**Parties Involved:**

*Affected:* [Government at all levels; other fleets](#)

*Implementers:* Government, military.

## T-6. VMT and GHG Reduction Goals in Planning

### Mitigation Option Description

Transportation Planning has historically focused on meeting the user demands for transportation, reacting primarily to changes in population growth, land use and other demands such as freight or resource movements. In many respects, the profession has been reactive or passive to these other considerations. Transportation planning generally evaluates tradeoffs of agency cost, travel time and user costs. The idea of using Planning as a means of reducing both the number of miles driven, and the production of green house gases is the cornerstone of this option. By empowering transportation planners to evaluate alternative proposals on the basis of VMT and/or GHG generation, decision makers can further improve the organization of communities so as to reduce the impacts of transportation on the environment.

It is important that personal mobility be retained as a paramount goal. Such mobility is a hallmark of modern society, for it empowers people to live, work, shop, play and go to school at locations they choose rather than those for which no other alternative exists due to lack of mobility. Historically in the U.S., VMT has risen much faster than population including a 3:1 ratio in Alaska since statehood. Thus any policy that attempts to reduce the per capita VMT and GHG production must be carefully tailored and include follow-up monitoring during implementation, to ensure it does not put a drag on the economy. Moreover, the real goal of this policy should focus on emissions reductions, even if VMT is unfettered. The fact that VMT can occur without emissions, depending upon the means of propulsion, suggests the ultimate goal should be on the form of energy and not the use of vehicles.

Unlike other states, where highway travel is the predominant source of transportation emissions, in Alaska the predominant emissions source is aviation, with highways a distant second. Thus, many Alaska communities are limited in their mobility options, relying solely on aviation and seasonal barge deliveries of freight and fuel. Nearly 30% of the state's population is limited in their mobility options, and any analysis must consider these circumstances. Currently, due to high energy costs, villages are experiencing out-migration to Alaska's cities, where employment is more readily found and the cost of living lower. This will increase per capita VMT within the state, as a cohort of the population is moving into the ranks of drivers.

Transportation planning is one tool to better inform decision makers. Many important decisions affecting vehicle miles traveled are made by various other entities. For example, the decision made in siting a new school may make busing and/or driving by parents the unavoidable option for pupil transport. Yet, seldom is this even considered by school boards when they make decisions for new school locations. When a new school is sited where walking and biking is not safe or practical it results in millions of vehicle trips being necessary over the long life of the school. This is but one example of how TLU-6 can help inform decision makers of the transportation consequences of their decisions.

## Mitigation Option Design

### Greenhouse Gases (GHG)

Calculating CO<sub>2</sub> emissions associated with an individual transportation project is not straightforward. The analysis can be quite complicated as most projects form but one piece of a larger network. Transportation planner's models do not generally predict the land use, induced demand, changes in speed and fleet that will occur during the project life nor travel characteristics of the user population. For example, phenomenon such as trip linking or what has happened in modern Alaska, when a large cohort of young people that arrived in the 1970's later age and thus have fewer children at home and follow a different life style, are generally not considered in even today's most sophisticated models.

However, whether adopted by the state, or later mandated under federal law<sup>2</sup>, the requirement to predict the GHG emissions of any given project, including all considered alternatives, is likely to become a requirement soon.

**Goals:** All significant transportation system plans developed at the state and MPO level, and all actions that would change or provide a new mode of transportation or enlarge capacity would be required to have an evaluation of their contribution to GHG emissions. Currently, traffic models to assist in such evaluations exist only at the metropolitan level in Alaska, and thus time may be needed to develop tools for non-metropolitan areas.

**Timing:** The two MPOs (FMATS and AMATS) would work with ADOT&PF to start developing consistent methods to evaluate GHG from transportation system plans, and relevant projects by the end of 2010.

### **Parties Involved:**

### Vehicle Miles of Travel (VMT)

#### **Goals:**

- Support and promote public and private planning and development practices, including smart growth planning (see TLU-4) and infrastructure provisions, including expanded opportunities for non-vehicular travel that reduce the number and/or length of trips made in Alaska.
- By 2015, reduce the per-capita light-duty vehicle miles traveled (VMT) by 1% in communities that offer transit services and 3% by 2025.

**Timing:** See above.

### **Parties Involved:**

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<sup>2</sup> The Ninth Circuit which includes Alaska recently held that federal agencies must assess climate change impacts in environmental documents prepared under NEPA (9<sup>th</sup> Cir., November 15, 2007).

## Key Uncertainties

The goal of limiting the per-capita use of light duty vehicles by 1%, then 3% by 2015 and 2020 respectively may be considered short of a “stretch goal” by some observers. Further, as written, the goal exempts heavy vehicle VMT, and further exempts communities that lack transit systems. However, the Alaska circumstance is so significantly different, the following factors are put forward to justify this seemingly “soft” goal.

- **Gas Line Construction:** Alaska is facing the construction of one and possibly two major pipelines in the coming decade which will substantially amplify the economy and the number of trips being made, since most of the line’s construction lies beyond the reach of transit, walking or biking. The larger gas line project will be the largest private sector construction project in North America history, and it will have a material impact on VMT.
- **Migration to other modes:** Alaskans rely extensively on aviation as a means of travel, and in some cases, where possible, their travel mode of choice may be changed to highway travel. Since highway travel is often less fuel intensive than is aviation, this is a good outcome for GHG production, even if it results in increased VMT.
- **Not including heavy vehicles trips in the goal:** Much of Alaska’s reliance on freight and construction vehicles (non light-duty) is related to oil and gas industry or other resource production. Including these types of trips in any goal, is not realistic, since there are very limited options for such freight and equipment movements.
- **Historic pattern of VMT growth:** Alaska has seen its VMT measure increase by about 300% as compared to population. This is higher than in the United States where a growth ratio of 2.5 has been observed. Yet nearly 30% of Alaskans cannot drive beyond the confines of their community due to an incomplete road network, and thus the actual ratio might have been higher if more roads were available. In a state larger than Texas, Montana and California combined, long distance travel is sometimes unavoidable, and thus any goal must keep this in mind.
- **Land Use Changes are Slow Moving:** Once developed, land use is relatively fixed, and thus the pattern of vehicle use from these locations is not easily addressed by transportation planners. The practice of large lot subdivisions within the rapidly growing Mat-Su area is one example, or the hillside development in south Anchorage. Encouraging walking and biking to schools that are miles from their pupils is another example of prior decisions that lock in vehicle use, for many more years into the future.
- **Alternatives May Not Exist:** If a community is too small or too spread out for transit and walking, what choices are there for residents, but to drive as they do today? Many of Alaska’s communities are not likely to see transit systems in the foreseeable future. Thus any VMT reduction goal in such communities is not founded in reality.

## T-7. On-Road Heavy-Duty Diesel Engine Efficiency Improvements

### Mitigation Option Description

The State of Alaska should create new services and add additional support to existing voluntary and incentive-based programs that help public and private on-road heavy-duty diesel powered fleets reduce GHG emissions.

### Mitigation Option Design

This policy employs a combination of three primary strategies to achieve GHG emission reductions. The three strategies are:

1. Develop incentives to encourage public and private on road diesel fleets to participate in the Federal EPA Smart Way® Transport Partnership Program.  
**Goal** – Achieve public and private fleet participation in Smart Way of 10% of total fleets in Alaska by 2012 and to 25% by 2020.
2. Provide incentives to phase out “old” (make and model year to be determined) high GHG emitting on-road heavy-duty diesel engines and replace them with modern lower GHG emitting diesel engines if appropriate.  
**Goal** - Phase out 50% of “old” (make and model year to be determined) high GHG emitting on-road heavy-duty diesel engines by 2015.
3. Develop incentives for state, borough and municipal government managed vehicle fleets to develop and implement plans to reduce GHG emissions from their public transit, school bus and maintenance vehicles. Examples could include idling reduction strategies, alternatively powered engines; i.e. LNG, NG, electric, hybrid, resource sharing etc...  
**Goal** - Achieve a minimum 20% GHG emission reduction from 2008 benchmark by 2020.

**Timing:** Immediate, no need to wait.

**Parties Involved:** Alaska Departments of Environmental Conservation, Transportation and Public Facilities, Municipal and local governments, Alaska Railroad, Alaska Trucking Association, public and private partners, local and statewide businesses, several not-for-profit organizations.

## T-8. Marine Vessel Efficiency Improvements

### Mitigation Option Description

Actions by the State can promote efficiencies and conservation options for commercial fishing, recreational fishing, marine tourism, and other forms of marine transportation.

Because Alaska's commercial fishing economy powers most coastal communities and provides employment levels higher than any other private industry in the state, it is critical to mitigate GHG emissions from the sector as a way to assure continued commercial fishing activities. Registration information available from the State of Alaska through the Commercial Fisheries Entry Commission (CFEC) for 2007 shows that there are 9,695 registered Alaska commercial fishing vessels, including 6,028 diesel and 3,510 gasoline vessels, with 1981 as the average year of construction and a mean horsepower rating of 311. While the vessel registrations range from 2-cycle gasoline powered outboard skiffs to sophisticated factory ships, the larger vessels are more likely to be newer and have operational plans that include engine and hull efficiency improvements. The medium and small vessels that typically operate seasonally are more likely to need government assistance to encourage installation of more fuel efficient engines.

There may also be efficiency gains and resulting GHG reductions available to the commercial fishing fleets relating to season openings, closings, and conduct through regulatory adjustments and coordination with freight transportation systems.

Charter vessels (4,097 as of 2004) are generally less than 50 feet and are likely to have issues similar to the small and medium vessels in the commercial fleet; information on the fleet's make-up is not as readily available. Determining the nature of the recreational fleet and issues relating to fuel efficiency is more problematic. Larger vessels such as cruise ships and ferries would typically have sophisticated operational plans that consider fuel efficiency issues with government oversight well established.

### Mitigation Option Design

The basic policy recommendation for promoting installation of more fuel efficient engines or hull design is to provide financial incentives such as low-cost loans that would encourage vessel owners to implement changes without unduly compromising industry economics. For the Alaska resident commercial fleet, the state's Department of Commerce, Community and Economic Development (DOCCED) already has a commercial fishery revolving loan fund that could be further altered to allow for targeting energy efficiency improvements. For the out-of-state residents, options include a Department of Energy loan program or inclusion of fishermen in equipment upgrade programs set up for farmers under the Department of Agriculture. Charter and recreational vessels are currently not eligible under the DOCCED program and need an alternate avenue for financial assistance.

Efficiency improvements relating to conduct of a given commercial or sport fishery are regulatory in nature and would require action by the Alaska Board of Fisheries (BOF). Currently,



there are no BOF criteria specifically relating to efficiency or GHG emissions other than cost considerations. A mandate to consider these issues when setting regulations would allow the BOF to at least consider GHG emissions.

**Goals:**

**Timing:**

**Parties Involved:**

## T-9. Aviation Emission Reductions

### Mitigation Option Description

In addressing GHG emissions from the aviation sector, the State of Alaska must take into account its unique interests in the sector, the policies and practices of other states and territories, and other national and international laws and policies affecting aviation and environmental goals.

Aviation plays a critical role in the Alaskan economy and society. Its location on the great circle routes connecting Asia, North America and Europe, affords the State a vital role and unique opportunities within the international aviation system. At the intrastate level, vast distances between population centers and relatively underdeveloped infrastructure supporting other transportation modes require the State to rely more on intrastate aviation than other jurisdictions. Alaskan policy must take in account and protect these unique interests.

At the same time, both commercial air transportation and the climate change challenge are manifestly global in character. These factors intensify the need to calibrate policies carefully to ensure they do not merely deter or deflect economically beneficial aircraft operations (and associated emissions) to other jurisdictions.

Climate change policy also must account for and operate within the longstanding and complex frameworks of environmental and aviation policies. In the environmental sphere, Alaska has the responsibility to meet National Ambient Air Quality Standards for criteria pollutants such as particulate matter and carbon monoxide – recognizing that many measures aimed at reducing GHG emissions could have the co-benefit of reducing criteria pollutant emissions, policies should allocate limited resources accordingly. Similarly, aviation is subject to comprehensive Federal regulation designed to ensure safety and maximize the availability of affordable air transportation services throughout the country. State and local authority to directly regulate air carrier operations is necessarily limited by that framework and Alaska, like other states, must calibrate policies accordingly.

This mitigation option includes three components:

- Support Modernization of the Air Traffic Management System
- Operational Measures
- Alternative Fuels for Aviation

### Mitigation Option Design

#### Support Modernization of the Air Traffic Management System

Support the Federal Aviation Administration (FAA) in the redesign and improvement of the existing, out-dated, air traffic management (ATM) system through the implementation of the Next Generation Air Transportation System project (NextGen). Implementation of NextGen, which will include enhanced communications, navigation and surveillance, will reduce air traffic

delays and shorten routes resulting in a more efficient National Airspace System with a significant reduction in GHG emissions. According to FAA, full implementation of NextGen has the potential to reduce greenhouse gas emissions by between 10 and 15 percent. The State of Alaska will take measures to support the implementation of NextGen and document the associated emissions reductions.

**Goals:**

- Identify opportunities to assist FAA's implementation of NextGen
  - Advocate for implementation of NextGen in the United States Congress
  - Identify state-specific actions that will assist with the timely implementation of NextGen.
- Determine potential GHG emissions reductions in Alaska resulting from implementation of NextGen
  - Catalogue emissions reductions associated with the existing use of advanced navigation technology.
  - Project potential emissions reductions associated with additional NextGen improvements.

**Timing:**

- 2010 - Identify opportunities to assist FAA in achieving goals in FAA's Roadmap for Implementation.
  - Carry out actions identified above on a timely basis to assist FAA achieve goals in Roadmap for implementation
- 2010 – Identify existing emissions reductions resulting from advanced navigation technologies
- 2011 – Identify potential emissions reductions associated with full implementation of NextGen.
  - Revise project as NextGen is implemented to determine whether projections are accurate and what level of emissions reductions are being achieved.

**Parties Involved:** The State of Alaska will lead this effort with input and assistance from airports and aircraft operators.

**Operational Measures**

Identify existing and new operational best practices for maximizing fuel efficiency in the aviation sector, facilitate (including through financial incentives) voluntary implementation of such practices where practical, and evaluate resulting emissions benefits where possible. Certain practices, such as using electric power supplied from airport gates in lieu of running aircraft auxiliary power units (APUs), require the cooperation of multiple parties. Similarly, infrastructure to support the operation of electrified airport ground support equipment (GSE) typically is provided by the airport, which may be funded, through federal programs. Therefore, the State will facilitate cooperation among airports, aircraft owners and operators, and other parties where necessary, to implement operational best practices.

**Goals:**

- Identify measures currently used and evaluate the emissions benefits that are achieved from those measures.
- Identify new measures that will lead to additional benefits
- Identify means to facilitate voluntary implementation of identified measures.

**Timing:**

- Identify existing measures and means to facilitate voluntary implementation (2010-2011)
- Identify new measures and means to facilitate voluntary implementation (ongoing – prepare initial report 2011)

**Parties Involved:** Aircraft operators, airports, State of Alaska

Alternative Fuels for Aviation

Adopt a clear statement that it is the policy of the State of Alaska to facilitate the rapid introduction of alternative fuels for aviation that are both economically viable and have a reduced emissions profile on a life-cycle basis. Identify and implement measures to support the production, distribution and use of alternative aviation fuels.

**Goals:** Similar to Operational Measure (above)

**Timing:** Similar to Operational Measure (above)

**Parties Involved:** Aircraft operators, airports, State of Alaska, fuel providers