

Submitted by: Chair of the Assembly at the
Request of the Acting Mayor
Prepared by: Traffic Department
For Reading: May 12, 2009

See AR 2009-129(S)

ANCHORAGE, ALASKA
AR NO. 2009-129

A RESOLUTION OF THE ANCHORAGE ASSEMBLY ADOPTING
RECOMMENDATIONS TO BE FORWARDED TO THE ANCHORAGE
METROPOLITAN AREA TRANSPORTATION SOLUTIONS (AMATS) POLICY
COMMITTEE DELETING THE KNIK ARM CROSSING (KAC) PROJECT FROM THE
ANCHORAGE BOWL 2025 LONG-RANGE TRANSPORTATION PLAN (LRTP) AND
UPDATING THE PLANNING AND CONSULTATION REQUIREMENTS

THE ANCHORAGE ASSEMBLY RESOLVES:

Section 1. That the Assembly has reviewed the recommendations of the AMATS
Policy Committee, as of April 23, 2009, regarding the final draft amendment to the Anchorage
Bowl 2025 LRTP.

Section 2. That the Assembly hereby adopts said recommendations for the
Amendment to delete the KAC Project from the Anchorage Bowl 2025 LRTP and update the
planning and consultation requirements, and recommends its approval to the AMATS Policy
Committee.

PASSED AND APPROVED by the Anchorage Municipal Assembly this ____ day of
____, 2009.

Chair

ATTEST:

Municipal Clerk



MUNICIPALITY OF ANCHORAGE

ASSEMBLY MEMORANDUM

No. AM 277-2009

Meeting Date: May 12, 2009

1 **FROM:** Acting Mayor

2
3 **SUBJECT:** AMENDMENT TO THE ANCHORAGE BOWL 2025 LONG-RANGE
4 TRANSPORTATION PLAN (LRTP) DELETING THE KNIK ARM CROSSING
5 (KAC) PROJECT AND ENSURING CONFORMITY WITH NEW PLANNING
6 AND CONSULTATION REQUIREMENTS
7

8 An Assembly Resolution is requested to recommend to the Anchorage Metropolitan
9 Area Transportation Solutions (AMATS) Policy Committee an amendment to the
10 Anchorage Bowl 2025 LRTP deleting the KAC Project and updating the LRTP to reflect
11 new planning and consultation requirements in the Safe, Accountable, Flexible,
12 Efficient Transportation Equity Act: a Legacy for Users (SAFETEA-LU).
13

14 On September 16, 2008, the Anchorage Municipal Assembly passed Resolution
15 2008-198, that requested the AMATS Policy Committee begin the process to consider
16 the question of removing the KAC Project from the Anchorage Bowl 2025 LRTP with
17 2027 revisions, and from the Transportation Improvement Program. The AMATS
18 Policy Committee recommended approval of an amendment on April 23, 2009 to
19 remove the KAC Project from the 2025 LRTP and to reflect the new SAFETEA-LU
20 planning and consultation requirements.
21

22 THE ADMINISTRATION RECOMMENDS APPROVAL OF THE ATTACHED
23 RESOLUTION FOWARDING RECOMMENDATIONS TO THE AMATS POLICY
24 COMMITTEE DELETING THE KAC PROJECT FROM THE ANCHORAGE BOWL
25 2025 LRTP AND UPDATING THE PLANNING AND CONSULTATION
26 REQUIREMENTS.
27

28
29 Prepared by: Lance R. Wilber, Director, Traffic Department
30 Concur: Michael K. Abbott, Municipal Manager
31 Respectfully submitted: Matt Claman, Acting Mayor

Content ID: 007704**Type:** AR_AllOther - All Other Resolutions

A RESOLUTION OF THE ANCHORAGE ASSEMBLY ADOPTING
RECOMMENDATIONS TO BE FORWARDED TO THE ANCHORAGE
METROPOLITAN AREA TRANSPORTATION SOLUTIONS (AMATS) POLICY
Title: COMMITTEE DELETING THE KNIK ARM CROSSING (KAC) PROJECT FROM
THE ANCHORAGE BOWL 2025 LONG-RANGE TRANSPORTATION PLAN
(LRTP) AND UPDATING THE PLANNING AND CONSULTATION
REQUIREMENTS

Author: pruittns**Initiating
Dept:** Traffic**Description:** Amendment to the Anchorage Bowl 2025 LRTP deleting the Knik Arm Crossing
Project and updating the planning and consultation requirements.**Keywords:** LRTP, KNIK ARM**Date
Prepared:** 5/5/09 3:53 PM**Director
Name:** Lance R. Wilber**Assembly
Meeting Date:** 5/12/09

PH 6/9/09

<u>Workflow Name</u>	<u>Action Date</u>	<u>Action</u>	<u>User</u>	<u>Security Group</u>	<u>Content ID</u>
Clerk_Admin_SubWorkflow	5/7/09 3:59 PM	Exit	Joy Maglaqui	Public	007704
MuniMgrCoord_SubWorkflow	5/7/09 3:59 PM	Approve	Joy Maglaqui	Public	007704
MuniManager_SubWorkflow	5/7/09 3:59 PM	Approve	Joy Maglaqui	Public	007704
CFO_SubWorkflow	5/6/09 11:13 AM	Approve	Sharon Weddleton	Public	007704
CFO_SubWorkflow	5/6/09 11:11 AM	Checkin	Nina Pruitt	Public	007704
CFO_SubWorkflow	5/6/09 11:07 AM	Checkin	Nina Pruitt	Public	007704
CFO_SubWorkflow	5/6/09 10:33 AM	Checkin	Nina Pruitt	Public	007704
Traffic_SubWorkflow	5/5/09 4:10 PM	Approve	Lance Wilber	Public	007704
AllOtherARWorkflow	5/5/09 4:01 PM	Checkin	Renee Stewart	Public	007704

Addendum - CONSENT AGENDA - RESOLUTIONS FOR ACTION-OTHER

Chapter 13: 2009 LRTP Revisions

Public Review Draft

Introduction

The Anchorage Bowl 2025 Long-Range Transportation Plan (LRTP) was approved in December, 2005. The LRTP was amended in 2007 with a major revision to add a regionally significant project, the Knik Arm Crossing (KAC), and a minor revision to define the timeframe of the Lake Otis Parkway and Tudor Road intersection improvement as a short-term project.

The 2007 LRTP amendment required a public process, an update to the financial plan, and an air quality conformity determination that resulted in the LRTP horizon year being extended from 2025 to 2027. With approval of the 2007 LRTP amendment and horizon year extension, the next required 4-year LRTP update became due in 2011.

This 2009 amendment to the Anchorage Bowl 2027 LRTP responds to increasing concern over projected impacts of the KAC project to Anchorage, and includes a major revision to delete the KAC project, as well as to document conformance of the LRTP with new federal planning regulations. This LRTP amendment requires a public process, as well as a review of plan assumptions used for population, housing and employment projections; an update to the financial plan; and an updated air quality conformity determination.

An expanded background section is provided in an Addendum to Chapter 13, and

discusses the LRTP revisions approved in 2007 and explains the rationale for their inclusion in the LRTP, and for the subsequent recommendation in 2009 to remove the KAC project from the LRTP. Also included in this chapter is a section to address conformity of the LRTP with new federal planning requirements in transportation reauthorization legislation (SAFETEA-LU, the 2005 Safe, Accountable, Flexible and Efficient Transportation Equity Act: A Legacy for Users) that became effective after the 2007 LRTP was approved.

For this 2009 amendment, the LRTP horizon year 2027 is retained, and the next 4-year LRTP update remains due in 2011. New federal planning regulations that became effective after the 2007 LRTP revisions were approved allow metropolitan planning organizations like AMATS to make interim amendments to the LRTP without extending the horizon year.

Background: Knik Arm Crossing Project

The Alaska Legislature established KABATA, the Knik Arm Bridge and Toll Authority, in 2003 to "...develop, stimulate, and advance the economic welfare of the state and further the development of public transportation systems in the vicinity of the Upper Cook Inlet with construction of a bridge to span Knik Arm and connect the

Municipality of Anchorage and the Matanuska-Susitna Borough." (AS 19.75.011) An Assembly Resolution passed in 2005 supported construction of the KAC in furtherance of the goals of the Anchorage Comprehensive Plan, *subject to* the resolution of the required economic and environmental issues.

The KAC is a "regionally significant project" that consists of a roadway and bridge crossing of Knik Arm connecting the Municipality of Anchorage (MOA) and the Matanuska-Susitna Borough (Mat-Su), as shown in Figure 12-1, Chapter 12 of the LRTP. A regionally significant project is one that is on a facility that serves regional transportation needs. To comply with 23 USC 134 that requires regionally significant projects to be included in a metropolitan planning organization long-range transportation plan (LRTP) prior to FHWA issuing a Record of Decision on the environmental impact statement (EIS), KABATA requested in March, 2006, that AMATS consider an amendment to the Anchorage Bowl 2025 LRTP to include the KAC project through the construction phase.

With support from FHWA, the AMATS Policy Committee agreed to the request from KABATA. The draft LRTP amendment was released for public review and comment October 12, 2006, and addressed the new environmental information that was released

with the *Knik Arm Crossing Draft Environmental Impact Statement and Draft Section 4(f) Evaluation* (DEIS) by KABATA in September, 2006.

Titled “2027 LRTP Revisions”, the proposed new LRTP section included a table of contents, introduction to the 2027 LRTP Revisions, a new Chapter 12, “The Knik Arm Crossing Project”, as well as additional revisions to fourteen pages of the Anchorage Bowl 2025 LRTP. The 2027 LRTP revision built on the Anchorage Bowl 2025 LRTP, which addressed the environmental and preliminary design phases of the KAC, but did not include the construction phase in the list of recommended projects, pending further information and analysis of the environmental impact statement (EIS).

The 2027 LRTP revision added the KAC project, number 810, to Table 8-1, Recommended Road Improvement Projects, Short-Term Projects (2006-2015). The project description included construction of the entire length of the bridge from the Mat-Su Borough to the Anchorage side, and a second phase for construction of the Ingra-Gambell streets/viaducts to 3rd Avenue from Government Hill. The only revision that did not pertain to KAC was a minor change adding to Table 8-1, Recommended Road Improvement Projects, for project number 601, Lake Otis Parkway and Tudor Road Intersection. This project was moved from

page 137 under Projects for Which the Funding Priority is Undetermined, to page 133 under Short-Term Projects (2006-2015), and project information was updated.

2027 LRTP Population and Employment Growth & Traffic Projections

The 2007 LRTP revisions extended the planning horizon to 2027. Population, housing and employment projections were updated to 2027 based on the latest available projections that were developed by the Institute of Social and Economic Research (ISER) for the Knik Arm Crossing environmental impact statement in 2005, and regional and local traffic estimates were prepared.

The KAC project was expected to have little effect on the overall regional growth in terms of population and employment. By providing access to a large supply of vacant land in the Mat-Su, however, ISER projected the KAC project would have an impact on the relative share of population, households, and jobs growth between the MOA and the Mat-Su. The regional traffic model estimated that about 33,500 vehicles per day would cross the Knik Arm bridge by 2027, adding a significant amount of traffic to the MOA roadway network.

For local community traffic, it was assumed that the primary impact of the bridge traffic was expected to be in Downtown Anchorage, and the traffic analysis focused on

that area. Results of the analysis showed that the Glenn-Seward Highway connection project and the Ingra-Gambell connection across Ship Creek were critical complementary projects linked to the KAC project. Without these projects, traffic volumes traversing Downtown along the A-C couplet would double by 2027, and 12 percent of total trips would be truck trips, which would further affect Downtown.

2027 LRTP Public Review and Comment

The public review process for the 2027 LRTP revisions included public hearings held by the MOA Planning and Zoning Commission and the MOA Assembly. The Planning and Zoning Commission considered the formal comments that were submitted by MOA to KABATA in November, 2006, for the DEIS, as well as comments from the Mat-Su Borough for the LRTP amendment, an Issue-Response Summary prepared by staff, and input from public agency staff, and the public.

The Commission was particularly interested in impacts of the KAC project on Anchorage, and compatibility with the LRTP amendment with the *Anchorage 2020 Comprehensive Plan*. It appeared that the bridge in and of itself would not increase economic investment by any significant amount, but would redistribute it away from Anchorage more than toward Anchorage. In that sense, the Commission found the project

did not comply with the 2020 Comprehensive Plan, which is based on new economic development, and infill re-development.

After further consideration, the Commission unanimously rejected the motion to include the KAC project in the Anchorage LRTP. The resolution denying the 2027 LRTP amendment to add KAC to the LRTP included twenty-one findings of fact, emphasizing that the project was not consistent with *Anchorage 2020*, the comprehensive plan for the Anchorage Bowl. The Assembly ultimately recommended approval for amending the LRTP to include the KAC project, subject to five specific conditions.

Approval of 2027 LRTP, and Conditions for Approval

The Assembly recommendations for conditions to include the KAC into the LRTP were incorporated into the final revised LRTP. Recognizing fiscal issues, traffic impacts, neighborhood impacts, as well as impacts on the community and the environment from the Knik Arm Crossing, the KAC project was added to the LRTP, *subject to* a number of conditions identified in Chapter 12. One of the conditions for including the KAC project in the LRTP was that “the final environmental impact statement is released and the comments from the MOA, Mat-Su, the Alaska Railroad Corporation, and the public have been

addressed.” The AMATS Policy Committee approved the 2027 LRTP amendment together with the Air Quality Conformity Determination Report in April, 2007.

Final Environmental Impact Statement (FEIS)

The final environmental impact statement (FEIS) for the Knik Arm Crossing was released on December 18, 2007. The MOA submitted a formal response to the FEIS on February 19, 2008 to KABATA. The MOA acknowledged that there were remaining disagreements in the technical analysis, financial assumptions, the overall long-term affect the bridge would have on the land use pattern and economic impacts, as well as the future policy implications to the Anchorage Bowl and the region. The MOA opposed a Record of Decision on the FEIS until MOA concerns were addressed, particularly the mitigation of Government Hill neighborhood improvements, and assurances of construction of the Ingra/Gambell connection by a specified date.

During summer of 2008, the AMATS Policy Committee asked KABATA to respond to lingering questions about the project. Some Committee members continued to have serious reservations about the financial feasibility of the project; concerns for a potential breach of financial firewall protections required by MOA to insulate the MOA, the state, and AMATS against additional project cost

impacts; and other negative impacts of the KAC project on Anchorage, including increased traffic congestion in Downtown, lost development investment, lower revenues, and a weakened tax base. Comments from others, including Government Hill Community Council, Alaska Railroad Corporation, and environmental agencies, indicated continuing, unresolved issues, particularly with the alternatives analysis and the consultation process. Mat-Su did not prepare a formal response to the FEIS. After the FEIS was released, Mat-Su continued to support the bridge concept, although some expressed dissatisfaction that the FEIS did not include connecting infrastructure needs on the Mat-Su side as an element of the KAC project cost, as had been done for the Anchorage side.

FHWA Record of Decision (ROD) Postponed

When the current LRTP amendment was developed, the Federal Highway Administration (FHWA) had not yet issued a Record of Decision (ROD) for the KAC project FEIS. FHWA was aware of the continuing and increasing controversy over the KAC project, and postponed their decision pending final action by the AMATS Policy Committee for the 2009 LRTP amendment.

Regional Transit Authority Agreement

On June 13, 2008, the MOA and Mat-Su Borough mayors signed a letter of agreement to create a Regional Transit Authority to better serve the residents of Southcentral Alaska. One goal of the agreement was to develop a regional public strategy to consist of a mix of strategies, including additional bus, van-pool capacity and carpooling, Glenn Highway improvements, commuter rail development, Mat-Su ferry service and the exploration of other transportation modes. The KAC was not specified in the list of strategies that should be included to address the transit needs of citizens in the region.

On January 6, 2009, the Anchorage Assembly and Mat-Su Borough Assembly concurrently approved a Memorandum of Agreement to move forward with the creation of a regional transit authority. The MOA and Mat-Su Borough mayors planned to begin work immediately on ways to improve commuting opportunities between Mat-Su and Anchorage, and to seek enabling legislation and start-up funding from the state legislature for the regional transit authority.

Recommendation to Delete the Knik Arm Crossing Project

In the fall of 2008, the MOA Assembly took an interest in revisiting the KAC project in the LRTP. The Assembly passed a resolution asking AMATS to consider the

question of removing the KAC project from the LRTP.

The Assembly request was based on the following: unprecedented increases in fuel and construction costs over the previous two years that were expected to alter future growth, land use, and commuting patterns in the Anchorage/Mat-Su region; the declining balance in the Highway Trust Fund; the newly formed Regional Transit Authority that would serve commuters; and the impact of funding demands for KAC-related roadway improvements on the ability of AMATS to fund, design and develop other needed transportation improvements.

Assembly members serving on the AMATS Policy Committee also expressed concern that the KAC project was not consistent with *Anchorage 2020*, and concerns that spiraling costs for construction projects, together with the current national and international economic downturn, posed a high risk to the KAC revenue stream and financial feasibility. The AMATS Policy Committee directed the Technical Advisory Committee to begin the process to delete the KAC project from the Anchorage LRTP.

2009 LRTP Revisions

Deletion of Knik Arm Crossing Project

Public Involvement, Outreach, and Consultation

For the proposed 2009 LRTP amendment to delete the KAC project, opportunities for the public to participate include attending AMATS meetings, and public hearings held by the MOA Planning and Zoning Commission and MOA Assembly. Project documents are provided on the project Web site at the following link:

<http://www.muni.org/transplan/>; at public libraries; and at the MOA Traffic Department. Opportunities for public comment are identified on the project Web page, where comment forms are available.

In an effort to broaden outreach for this LRTP amendment to minority and low-income persons, the e-mail notification includes many of the minority organizations, churches, and businesses from resource lists of the ADOT&PF Office of Civil Rights. During the public review period, expanded opportunities for consultations with environmental and cultural resource agencies, required by new planning regulations, are being pursued, as well as individual consultation with the Native Village of Eklutna, the federally recognized tribe within MOA.

Population, Employment and Land Use Assumptions

New federal planning regulations that became effective after the 2027 LRTP revision was adopted allow metropolitan planning organizations, like AMATS, to approve interim LRTP amendments without extending the LRTP horizon year. For the 2009 LRTP amendment, the horizon year 2027 is retained. For this amendment, a review was conducted by an inter-agency consultation team to confirm the validity of the assumptions and their consistency with current and forecasted transportation and land use conditions and trends. The group agreed with the methodology to use the same assumptions for land use, population, and employment that were used for the Anchorage Bowl 2025 LRTP, extrapolated to 2027.

Air Quality Conformity

Federal environmental regulations require that an LRTP amendment to delete a project must be demonstrated to conform to the Clean Air Act before the amendment is approved by the MPO or is accepted by the U.S. Department of Transportation. Such conformity demonstration must be based on the most recent planning assumptions and data available, and must include a regional emissions analysis for the last year of the LRTP.

The 2009 LRTP recommendation to delete the KAC project was reviewed by an

inter-agency air quality conformity group that included KABATA. Air quality conformity determination findings will be documented in a report and presented to the public for review and comment. The transportation network envisioned in the 2009 LRTP is identical to the network proposed in the 2005 LRTP which was determined to meet conformity

requirements.¹ For this reason it is likewise anticipated that projects included in the LRTP revisions will not contribute to new violations of the national ambient air quality standard (NAAQS) for CO, increase the frequency or severity of any existing violations in the problem zone, or delay timely attainment of the NAAQS. The conformity analysis for the 2009 LRTP will extend to 2027, two years beyond that considered in the 2005 LRTP. The amount of growth in travel activity during the period 2025-2027 is relatively small and is not expected to effect the conformity determination.

Climate Change and Transportation

On September 14, 2007, Governor Palin signed Administrative Order 238 creating a Climate Change Sub-Cabinet. The Sub-Cabinet advises the Office of the Governor on

¹ The transportation networks in 2005, 2007 and proposed 2009 LRTP are identical in all respects except for the inclusion of the KAC and associated connections to C Street and Ingra/Gambell. The 2005 and proposed 2009 LRTP do not include the KAC; the 2007 KAC does.

the preparation and implementation of an Alaska climate change strategy.

In January, 2008, the Alaska Department of Environmental Conservation (ADEC) submitted a draft *Summary Report of Improvements to the February 2007 Alaska Greenhouse Gas Emission Inventory*. The 2007 report was prepared for Alaska by the Center for Climate Strategies, and contained the first comprehensive inventory and forecast of state GHG emissions from 1990 to 2020. The 2008 summary provided refined information on emissions from industrial and aviation sources and presented an update of the original CCS report. The GHG inventory summary is being used by the Sub-Cabinet as a foundation to explore opportunities to reduce GHG emissions across the state.

ADEC worked to refine emission estimates for the industrial and transportation source groups, the two largest emission sources in the initial report, and concurrently reviewed the initial report for errors and areas needing clarifications. The ADEC report revealed that the transportation sector overall contributes 18.8% of total GHG emissions, with commercial aviation emitting the largest quantity of GHG emissions in the transportation category. Further, the air freight industry at the Anchorage International Airport (AIA) appears to be a major source of GHGs. Surface transportation (on-road vehicles) contributes 3.6% of total state GHG emissions, and rail and other add 0.12%.

The Sub-Cabinet is comprised of advisory and working groups organized along

the major themes of adaptation and mitigation. "Adaptation" includes measures that can be taken to respond to the effects of climate change, including effects on transportation infrastructure. "Mitigation" refers to measures to reduce Alaska greenhouse gas (GHG) emissions by various sectors, including transportation and land use, and to address other sources and causes of climate change. The public is invited to participate in working group meetings and teleconferences.

The Adaption Advisory Group has identified current and projected impacts on the Alaska transportation infrastructure from damage due to thawing permafrost, temperature changes, coastal and river erosion; buckling and submersion of boardwalks; icing and ice control; increased glacier melting; flooding, avalanches, and debris flows; and vegetation management. The Mitigation Advisory Group has developed a preliminary list of recommended high priority options to reduce GHG emissions. These options include expanding or improving existing transit service, ridesharing and commuter choice; developing vehicle idling regulations or alternatives; encouraging transportation system management; promoting efficient development patterns ("Smart Growth"); promoting alternative fuel passenger vehicles; developing VMT and GHG reduction goals in planning; and pursuing diesel engine efficiency improvements.

An Immediate Action Workgroup presented its final Report on April 17, 2008. The report includes state actions and policies recommended to be taken in the following 12-

18 months to prevent loss of life and property in Alaskan communities in greatest peril due to soil erosion and other natural hazards. Other working groups are in the process of developing policy options for state actions to be considered by the governor. A Research Needs group was also formed.

Beginning in 2009 the MOA will conduct a baseline assessment of GHG emissions. The baseline inventory is the first step in the broader effort to address reductions in GHG emissions at the local level. Results from the state and local efforts will be addressed in the next four-year LRTP update due in 2011.

Environmental Justice

The U.S. Department of Transportation and FHWA have issued a final order on Environmental Justice. This final order requires that metropolitan planning organizations, like AMATS, identify and address disproportionately high and adverse public health and environmental effects of transportation policies, programs, and activities on minority and low-income populations.

The Anchorage Bowl 2025 LRTP, Appendix B, included an assessment of the plan recommendations for environmental justice, and concluded that the recommendations in the 2025 LRTP did not have a disproportional impact on areas with a high concentration of low-income and minority populations. The LRTP duly considered the transportation needs of low-

income and minority populations and provided many recommendations that would substantially benefit these populations.

The KAC project DEIS included a section describing the low-income and minority populations in affected areas of Anchorage, including Native Village of Eklutna, Government Hill Community Council, and Elmendorf A.F.B. The DEIS states that no disproportionately high and adverse effects on minority and low-income populations were found. According to the EPA, this conclusion was apparently based on the mitigation efforts to avoid housing displacements in the low income/minority portion of the Government Hill community, and upon the fact that KABATA sought to find a replacement site for the Knik Tribe Dena'ina fish camp, which was buried long ago by military activities. EPA commended the efforts by FHWA to address concerns of the Knik and Eklutna Tribes within Knik Arm, and the issues in Government Hill, but found that the final EIS would benefit from additional information and analysis in order to support the statement that the proposed project would present no disproportionate adverse impacts to these populations.

According to the FEIS, in response to these comments, the conclusion that there would be no disproportionately high and adverse effects was based on the comprehensive analysis of the effects on all populations in the study area and the planned

mitigation of any adverse effects. FHWA had conducted Government-to-Government consultation, sponsored tribal workshops pertaining to historic preservation planning and workforce development needs, and continued to facilitate communication through a project Tribal Liaison.

The Anchorage Bowl 2027 LRTP revisions did not conduct a separate environmental justice analysis for the KAC project, but acknowledged the need for KABATA to better address neighborhood impacts, particularly for Government Hill. The revised LRTP included additional guidance for neighborhood mitigation measures, and required that a neighborhood mitigation program as described in the new Chapter 12 be adopted. The program was intended to protect the integrity of Government Hill and other affected neighborhoods using context sensitive solutions, with the objective of enhancing and revitalizing these unique and historic neighborhoods.

Financial Plan

A financial plan for this LRTP amendment was prepared that addresses projects approved in the 2025 LRTP with 2007 revisions, with the exception of the Knik Arm Crossing project (proposed for deletion from the LRTP), and projects that have been completed since the 2007 LRTP was adopted. At the end of Chapter 13 is revised Figure 8-1, "Recommended Road Projects, Proposed 2009 Revision", and revised Tables 8-1,

"Recommended Road Improvement Projects, Proposed 2009 Revision", and 8-2, "Recommended Pedestrian and Trail Projects, Proposed 2009 Revision", indicating these changes.

The financial plan for this update focuses on the need to estimate project cost in dollars of year of expenditure based on new federal requirements that must be applied as part of this LRTP amendment. This means that project costs were estimated based on their estimated cost for the year to be constructed.

An analysis was completed to update the 2004 project cost to 2008 dollars. The method in which the cost estimates were derived is from two basic steps. First was to estimate the current projects costs of all transportation improvements in the LRTP, including the Knik Arm Crossing. Project costs are based on the local information on project costs.

Locally, road project costs have increase an estimated 10% annually from 2004 to 2008 as the cost of oil, asphalt, concrete and steel rose significantly during this period. Information was obtained from current road construction cost of given size and quantity as well as engineers' estimates of those LRTP projects in final design. Information from the American Association of General Contractors and others was used as means to estimate and measure the increase in project costs.

Once the new 2008 project costs were estimated, an annual growth factor was applied to all projects. This growth factor varies over time and estimated to be a 4% annual increase

for the next 4 years (2010-2013) and then annual averaged increase of 3% over the remaining years of the LRTP.

This planning calculation for annual increase in project costs was necessary to establish a project cost in the year of construction. Consultation with Alaska Department of Transportation and Public Facilities (ADOT&PF) Central Region and Headquarters was an important element of this estimation of growth factor for consistency with the method of forecasting the State applies to their development of the a 2010-2013 Statewide Transportation Improvement Program (STIP).

The establishment of project cost was measured against project revenue forecast to support the transportation improvements, recognizing the fact that project costs have been going up and federal revenues have traditionally funded the majority of transportation improvement in Anchorage and Alaska during the past 5 years have decreased. To offset part of the most recent Federal Highway Administration funding reduction to Anchorage, a significant contribution to support LRTP projects have come from State Bonds and State Grants to transportation facilities on both National Highway System and the Non-National Highway System.

To forecast future revenues, an analysis of three measures of funding trends was completed. The first step was a review of the total dollars coming to the AMATS area for the past 25 years and the average annual

increase in dollars and percentage. Second was a review of a trend of the federal dollars received by AMATS since 1991, which was the first year the new paradigm of federal highway funds spent in Alaska and Anchorage. The last trend analysis was for the amount of revenue received in more recent time, during the last decade. The result is that in both cases as stated above the trend is consistent reflecting in an average annual 2-3% increase in revenues over time. There are periods when the funds have decreased significantly and times when a large influx of funds benefited our community. For planning purposes, the LRTP recommends using a 2.5% annual increase in revenue.

Similar to a home mortgage payment, the total principal owned on the LRTP is the sum of all the cost of transportation improvements. There is an annual increase in cost similar to an interest rate on a home. Complimentarily there is a steady stream of revenue or income that pays down the principle and the interest, which in this case is the current cost plus the growth rate of project costs. Overtime and assuming like projects and revenue scenarios, AMATS will be able to fund the transportation improvements recommended in this LRTP based on the project costs growth rate and revenue projections in this LRTP.

In addition to the capital improvements, revenues for operation and maintenance for the existing and future transportation system were reviewed for all roads, public transportation and non-motorized projects in the LRTP

Information on operations and maintenance costs was received from the MOA for roads, trails and public transportation and from the ADOT&PF primarily for highways. Similar to forecasting revenues for capital improvements, a review of historic and recent funding was completed. The significance of maintenance and operations revenues is recognized in this plan amendment. With the exception of a few major roads and highways in the AMATS area, the State owns and is responsible for maintenance. The source of revenues to support these responsibilities is primarily from the state general fund included in the ADOT&PF operating budget approved by the Governor. No local tax dollars are or can be spent to maintain state-owned roads.

Similarly, the maintenance and operations of all local streets and a few major roads are supported from local property funds and are not used on the most major roads. The MOA owns and operates the public transportation system (People Mover) with a combination of local tax dollars, fare revenue, and FTA operating support funding.

LRTP Conformance with SAFETEA-LU Planning Requirements

New federal planning regulations became effective July 1, 2007, with reauthorization and funding of the U.S. transportation program

through SAFETEA-LU, the 2005 Safe, Accountable, Flexible and Efficient Transportation Equity Act: A Legacy for Users. SAFETY-LU carried forward many of the previous requirements for transportation planning, adding some provisions, including a new emphasis on security, and requirements for expanded consultation.

Although the Anchorage Bowl 2025 LRTP and the 2027 LRTP revisions were approved before the new regulations became effective, they demonstrated overall consistency with new elements of SAFETEA-LU. The purpose of this section is to review the new requirements that relate to the LRTP, and to address these requirements.

LRTP Update Cycle

The new planning regulations changed the LRTP regular update cycle from every three years to every four years in air quality nonattainment and maintenance areas, including Anchorage. The Anchorage Bowl 2027 LRTP revisions extended the LRTP planning horizon to 2027 and resulted in the need for the next planned update to be due no later than 2011. AMATS has scheduled work to begin in 2009 for development of the 2011 LRTP.

Metropolitan Transportation Planning Factors

Federal regulations require the transportation planning process to address specific planning factors when considering and

implementing projects, strategies, and services. One planning factor, to increase the safety and security of the transportation system for motorized and non-motorized users, was expanded under SAFETEA-LU by creating two new stand-alone factors to address safety and security separately. The planning factor for protecting and enhancing the environment was also expanded to promote consistency between recommended transportation improvements, and state and local planned growth and economic development patterns. These amended planning factors are discussed below.

- **Safety**

Chapter 3, Goals and Objectives, of the Anchorage 2025 LRTP includes four goals that specifically address safety either in the goal statement or under related objectives. Goal number 1, Safety and Health, identifies objectives to improve the safety and security of people on all modes and in all areas, to reduce vehicular and pedestrian crashes, to decrease emergency response time, and to reduce risk to the community from natural hazards and disasters. The 2025 LRTP with 2007 revisions includes many recommendations that are safety-related. One-fifth of the recommended roadway improvement projects target safety. The LRTP also includes a recommendation for roadway-rail intersection warning and preemption systems to improve safety for at-grade rail crossings, where grade-separation projects are not feasible.

Many of the congestion management strategies in the LRTP also contribute to safety. For example, the LRTP recommends construction of an MOA traffic management center that will monitor corridor traffic operation conditions and will include incident-response strategies such as cameras, response coordination, public information dissemination, and traffic advisories.

From a practical perspective, performance measures for LRTP objectives must be easily calculated, and reported using a quantitative scale, preferably with a numeric value. Crash statistics are an important measure in evaluating the relative safety of a transportation facility. Chapter 5 of the LRTP, Status of the System Today, reports crashes at selected intersections. AMATS has funded a comprehensive update of an Anchorage traffic crash data collection system. More detailed crash data, including high-accident locations, and data for accidents involving pedestrians and moose are available from the MOA Traffic Data Section for Anchorage. The Annual Traffic Report is available at the following Web site:

<http://www.muni.org/traffic/Annual%20Report%20Page.cfm>

Four minutes is the targeted response time for fire emergencies. Maps showing equivalent 4-minute fire response times are available for MOA fire stations. This information is used in making the decision to construct and locate new fire stations, or to construct needed road connections to improve response times from

existing stations. Incident density maps are also available for fire and police.

Qualitative assessments are also performed for proposed road, pedestrian, and bicycle improvements. Such assessments are based on professional judgment and review of related factors such as the number of accidents, safety for travelers, and conflicts between freight movement and traffic and pedestrians. During development of the next Status of the System Report, the MOA will review the need for additional safety performance measures.

Public safety stakeholders are included in the LRTP process. MOA fire and police responders, as well as the Office of Emergency Management, were consulted during development and review of the 2025 LRTP, and are included in LRTP revisions for public review.

SAFETEA-LU requires that each state develop a plan to address safety on all public roads using data-driven problem identification, and to set priorities for corrective action at high-hazard locations. For areas receiving federal transportation funds, like Anchorage, SAFETEA-LU also requires that the local transportation planning process be consistent with the state safety plan.

The ADOT&PF Long-Range Transportation Policy Plan, *Let's Get Moving 2030*, published in February, 2008, contained 14 guiding policies, including five that addressed safety. One policy is to increase the safety of the transportation system for

motorized and non-motorized users. ADOT&PF has responsibilities for the design, construction, and operation of safe highways, ferries, and airports. These responsibilities include system maintenance, hazard elimination, and emergency preparedness planning and response. To exercise these responsibilities, ADOT&PF works in conjunction with industry associations and other state, federal, and local agencies.

In September, 2007, ADOT&PF published the *Alaska Strategic Highway Safety Plan* (SHSP). The SHSP, as well as a breakdown of the data used by the Alaska SHSP working groups to determine where the state should focus its resources for the greatest improvements in safety, may be found at the following ADOT&PF Web site: <http://dot.alaska.gov/stwdp/eng/shsp/index.shtml>

The Alaska SHSP goal is to reduce the rate of fatalities and serious injuries by one-third over the next ten years. In developing the plan, ADOT&PF coordinated with many agencies to form a working group, including the Anchorage Metropolitan Area Transportation Solutions (AMATS) planning group, and the MOA Traffic Department. Teams were formed to address the following specific emphasis areas: driver behavior, special users of the transportation system, and highways. The teams developed action plans with specific strategies for each emphasis area, and performance measures for each strategy. The MOA participated on the special user and highway emphasis area teams.

The special user emphasis area team outlined policies and strategies to improve safety primarily for pedestrians and bicyclists, as well as for motorcyclists and off-highway vehicles. ADOT&PF made major efforts recently to collect and analyze crash data. This data was used in developing recommendations of the *Anchorage Pedestrian Plan*, approved in October, 2007, and of the draft *Anchorage Bicycle Plan*, released for public review in December, 2008.

Recommended goals, policies, and action items of both the Pedestrian Plan and Bicycle Plan include and expand upon the strategies identified in the SHSP to improve pedestrian and bicyclist safety. These SHSP strategies include providing public education and outreach to motorists to raise their awareness of pedestrian and bicyclist safety needs, and providing public education and outreach for pedestrians and bicyclists; preserving right-of-way for pedestrians and bicyclists during snow events; identifying and implementing appropriate engineering strategies to address high-crash locations involving pedestrians and bicyclists; improving visibility of pedestrians; expansion of the Safe Routes to School Program in Alaskan communities; implementing targeted crosswalk enforcement; increasing bicycle helmet use; and expanding the Alaska Drivers Manual to include more detailed information about bicycle and pedestrian safety.

Another strategy is to install countdown timers for pedestrians crossing streets at all intersections in Alaska. MOA supports this

strategy. MOA will install the countdown timers through an agreement with ADOT&PF. For the Anchorage area, the project cost will be approximately \$2 million.

The highway emphasis area team developed three general strategies to improve safety, as well as strategies targeting specific types of crashes. The team recommended including explicit consideration of safety in ADOT&PF highway design. To accomplish this, a safety sign-off would be included as a process step for all ADOT&PF highway projects. The safety sign-off would be included in the Design Study Report (DSR) as part of the Design Approval process required by the ADOT&PF Pre-Construction Manual (PCM). The MOA is required to follow the PCM when designing federally-funded projects.

Other strategies were developed that target reducing crashes on high-speed rural highways, crashes involving moose, and intersection crashes. The MOA Traffic Department supports the SHSP strategies for reducing intersection crashes within MOA. These include developing a comprehensive access management policy for ADOT&PF; implementing a "roundabouts first" policy as part of the PCM; implementing red light running countermeasures; and installing pedestrian countdown timers. MOA supports the use of roundabouts, and includes consideration of roundabouts on a case-by-case basis when analyzing intersection design. A major consideration is the additional right-

of-way required to accommodate the roundabout footprint.

Red light running countermeasures include installing red light running confirmation lights, and using cameras at high-crash locations to diagnose the severity of the red light running problem. The red confirmation light is installed on the back side of the traffic signal head and goes on when the red light on the signal is lit. The Anchorage police officer can then sit downstream from the signal, see the light come on and watch for red light runners. If someone does run through a red light, the officer is already positioned downstream and can easily apprehend the driver.

The MOA supports the red light confirmation project, and has an agreement with ADOT&PF to install these lights by summer of 2009. Some of the locations include Northern Lights Boulevard and Seward Highway; Benson Boulevard and Seward Highway; Dimond Boulevard and Old Seward Highway; Boniface Parkway and Northern Lights Boulevard; and 36th Avenue and Seward Highway.

The SHSP approach for using red light running cameras is for ADOT&PF to install some cameras at select intersections in Anchorage. The purpose of the cameras is to record the scale of the problem with the number of red light running citizens. The initial approach will not use the cameras as an enforcement tool. MOA supports the project concept, with ADOT&PF taking the lead.

The ADOT&PF Iways Architecture (AIA) is an implementation plan for using ITS (Intelligent Transportation Systems). One of the project goals is to improve traveler and staff safety. One program area specifically targets traveler safety. ADOT&PF has recently updated the AIA to include the Glenn Highway and Seward Highway ITS corridors, which incorporate strategies that will address safety. The Anchorage Regional ITS Architecture likewise addresses safety. One program goal is to ensure public safety. The implementation plan addresses incident detection and notification, as well as emergency response and highway-rail intersection safety. An update to the MOA ITS Architecture will incorporate related recommendations in the LRTP.

The Alaska Railroad Corporation (ARRC) is a mixed freight-passenger railroad under the jurisdiction of both the Federal Railroad Administration and the Federal Transit Administration. The Alaska Railroad is also responsible for operating several ports on its system. The Alaska Railroad has developed an integrated System Safety Program Plan (SSPP) that applies system-wide. The MOA Public Transportation Department has internal department policies and procedures in place that address safety issues.

- **Security**

The ADOT&PF Long-Range Transportation Policy Plan, *Let's Get Moving 2030*, includes a policy to increase the security of the transportation system for motorized and

non-motorized users. Security for transportation includes the security of infrastructure, as well as the important role that transportation infrastructure plays in national security, emergency planning, and incident management. ADOT&PF has an important role to play in ensuring the security of the Alaska transportation system, including responsibility for addressing security-related requirements at airports, on Alaska Marine Highway System vessels, and in highway facilities, as well as for users of the transportation system. The agency role in homeland security is developing, and the agency is working to improve security with federal and other state agencies.

The State of Alaska *Emergency Response Plan*, published in 2004, outlines the relationships between the Alaska Division of Homeland Security and Emergency Management and other federal and state agencies and plans; defines functional responsibilities for each; and provides emergency planning guidance for local governments. The State Emergency Response Commission (SERC) ensures that state, federal, and local emergency planning and preparedness is established, integrated, and mutually supportive.

After the events of September 11, 2001, three public safety amendments were added to *Anchorage 2020*, the Anchorage Bowl Comprehensive Plan. Policy 98 required development of a functional plan for emergency management that would include long-term disaster mitigation efforts through

land use, transportation, and public facilities planning. Policy 99 called for incorporating crime prevention and other public safety needs into the design of residential and commercial areas, individual buildings, and public facilities, and policy 100 called for adoption of level of service standards for crime prevention, emergency services, and other public safety delivery systems.

The MOA Office of Emergency (OEM) Management has primary responsibility within MOA for homeland security and emergency management planning. The OEM published the *All-Hazard Mitigation Plan*, which was adopted in March, 2005. This plan describes various types and levels of potential hazards that could occur within the MOA and assigns a threat level to each. Roads, bridges, ports, airports and railroads are included under infrastructure that needs to be protected from such potential hazards. In addition, the All-Hazard Mitigation Plan acknowledges that many neighborhoods in the MOA have limited routes through which suppression apparatus can enter and residents can evacuate. The overall mitigation strategy serves as a guide for MOA departments in determining projects for which MOA would seek FEMA and other mitigation funds from outside sources.

The following goals and objectives in the All-Hazard Mitigation Plan relate to planning for transportation systems and traveler information:

- Goal 3, Emergency Management: Create and maintain a community in which people and property are safe.

- Objective 3-5: Improve road connectivity for evacuation purposes.

- Objective 3-7: Improve disaster warning systems.

- Objective 3-8: Promote appropriate hazard mitigation of all public and privately-owned property within the Municipality of Anchorage, including infrastructure systems.

- Objective 3-10: Promote post-disaster mitigation as part of repair and recovery.

- Goal 4, Protection of Public/Critical Facilities: Make MOA-owned facilities as disaster-resistant as feasible

- Objective 4-1: Encourage a structural review of new facilities.

- Objective 4-2: Consider known hazards when siting new facilities and systems.

- Objective 4-3: Perform structural retrofitting of existing structures.

- Objective 4-6: Implement mitigation programs that protect critical Municipal facilities and services and promote reliability of lifeline systems to minimize impacts from hazards, to maintain operations, and to expedite recovery in an emergency.

- Objective 4-8: Formalize best practices for protecting systems and networks.

The All-Hazard Mitigation Plan also includes a specific action item that relates to the LRTP:

- Action 12: Identify alternate connections between Eagle River and the Anchorage Bowl to provide additional access for response and evacuation.

The Anchorage Bowl 2025 LRTP, Chapter 7, calls for a study of a north-south coastal route

as an alternative to the Glenn Highway for emergency access from Port of Anchorage to the Knik River. The Knik Arm Crossing project that was included in the 2025 LRTP with 2007 revisions would also provide an alternative route for additional access for response and for evacuation. However, the bridge could be subject to seismic stresses during a potential earthquake, which could diminish its usefulness in such circumstances.

In December 2005 the MOA published the *Emergency Operations Plan*, also developed by the Office of Emergency Management. The Emergency Operations Plan identifies key and essential agencies, and their roles and responsibilities. MOA Maintenance and Operations, Traffic Communications, and Public Transportation are included among key agencies.

When the MOA Traffic Operations Center (TOC) is complete, it will potentially have a role with evacuation, communications, public information and warning, and possibly resource management. It is anticipated that responsibility for coordination between the TOC and the 511 Alaska traveler information system and CARS, the multi-agency secure intranet communications system, will be clearly designated, and a plan developed for use during emergencies. TOC support roles could include incident notification and response coordination, including signals and remote traffic monitoring, surveillance control, and resource requests.

The TOC could provide basic public information regarding traffic signal operation or traffic control in the event of signal outage, advising the public about what to expect during a signal outage, and clarifying how signals are controlled during an emergency. The TOC could also work with MOA Maintenance and Operations to develop a contingency plan for providing emergency power to signals.

As an example for evacuation responsibilities, the Traffic Department has developed a planning tool for use by other departments that can help predict evacuation times based on road and lane availability, size, speed, and length. The tool, which is not based on the common GIS transportation network, may need to be updated in the future.

A goal of the ADOT&PF Iways Architecture (AIA) is to improve security. One program area specifically addresses traveler safety and infrastructure security, and includes strategies for incident management and emergency response, traveler safety, infrastructure security, and port operations and security, and includes a technical appendix on Alaska Homeland Security. Reflecting consistency with the AIA, a goal of the Anchorage Regional ITS Architecture is to support public security. The implementation plan addresses security with incident detection and notification, as well as emergency response, and can be amended to include homeland security during the next architecture update. The amended Anchorage Regional ITS Architecture then could be used as a

planning tool to assist in updating the Emergency Operations Plan, as appropriate.

During 2009, AMATS will develop a white paper to address roles, responsibilities, and potential action items appropriate for transportation planning. This white paper will be used to guide the discussion of security issues for the next major LRTP update.

• Environment

SAFETEA-LU expanded the planning factor to protect and enhance the environment by adding the phrase, “and promote consistency between transportation improvements and State and local planned growth and economic development patterns.” AMATS staff currently coordinates with the MOA Planning Department when updating its land use allocation projections used in modeling future traffic volumes. The MOA Planning and Traffic Departments regularly consult with the University of Alaska Anchorage Institute of Social and Economic Research (ISER) for their most current economic projections for the state, region, and municipality. AMATS staff also recognizes the need to develop a regional transportation demand model that incorporates both the Mat-Su Valley and the MOA comprehensive plan. Work on this task will begin when 2010 Census data becomes available.

Fiscal Constraint

Planning regulations continue to require the LRTP to demonstrate fiscal constraint,

meaning that anticipated revenues must be sufficient to cover projected costs for projects, maintenance and operations over the life of the LRTP. Starting December 11, 2007, revenue and cost estimates that support the LRTP must use an inflation rate to reflect “year of expenditure dollars”.

As described in the SAFETEA-LU regulations, a financial plan must demonstrate the consistency of proposed transportation investments with already available and projected sources of revenue. The financial plan must compare the estimated revenue from existing and proposed funding sources that can reasonably be expected to be available for transportation uses, and the estimated costs of constructing, maintaining and operating the total (existing plus planned) transportation system over the period of the plan.

The estimated revenue by source (local, state, federal and private) available for transportation projects is to be determined. If shortfalls are predicted, then proposed new revenues and/or revenue sources to cover shortfalls are to be identified, including strategies for ensuring their availability for proposed investments. Existing and proposed revenues should cover all forecasted capital, operating, and maintenance costs.

All cost and revenue projections shall be based on the data reflecting the existing situation and historical trends. For nonattainment and maintenance areas such as AMATS, the financial plan shall address the specific financial strategies required to ensure the implementation of projects and programs

to reach air quality compliance. (For more information, please see the Financial Plan section of this LRTP amendment, page 13).

Consultation and Cooperation / Environmental Mitigation Activities

The MOA must now consult, as appropriate, with state and local agencies responsible for land use management, natural resources, environmental protection, conservation, and historic preservation concerning the development of the LRTP. The consultation shall involve, as appropriate, a comparison of transportation plans with state conservation plans or maps, or to inventories of natural or historic resources, if available.

The LRTP must now also include a generalized discussion of potential environmental mitigation activities. This discussion is to be developed with federal, state, and tribal land management, wildlife, and regulatory agencies. During development of this LRTP amendment, outreach efforts included inviting resource agency representatives to discuss major recommendations in the LRTP. MOA Coastal Zone resource maps showing sensitive areas including habitat, wetlands, etc., were prepared that also identified the location of recommended road and transit improvements in the LRTP. These maps were made available to the resource agencies for review.

The resource agencies were invited to provide suggested guidance at a project or program level for managers of the LRTP projects, with the intent that such guidance

would complement, not replace, other formal guidance already in place, such as the National Environmental Protection Agency (NEPA) requirements. Several agencies responded with suggestions for guidance to project managers to be included in the LRTP, and their recommendations are provided in the following section.

Recommendations for Consultation and Environmental Mitigation Activities

The following federal, state, tribal, and local resource agencies were contacted during development of this 2009 LRTP amendment:

U.S. Department of the Interior, Fish and Wildlife Service

U.S. Department of Commerce, NOAA,

National Marine Fishery Service

U.S. Bureau of Land Management,

Lands/Realty Group

U.S. Environmental Protection Agency

U.S. Army Corps of Engineers

Alaska Department of Natural Resources,

Habitat Management

Alaska Department of Fish and Game,

Wildlife Management

Alaska Department of Natural Resources,

State Parks

Alaska Department of Environmental

Conservation, Air Quality

Alaska Department of Natural Resources,

Office of Project Management and Permitting

Alaska State Historic Preservation Office

Native Village of Eklutna, Lands and

Environment Office

Anchorage Historic Preservation

Commission

MOA Planning Department, Coastal Zone Planning

MOA Heritage Land Bank

MOA Parks and Recreation

MOA Project Management and

Engineering, Watershed Management

MOA Department of Health and Human

Services, Air Quality

The MOA Planning Department, Environmental Protection Agency, and U.S.

Army Corps of Engineers recommend that the policies and maps of the *Anchorage Wetlands*

Management Plan (AWMP) and the

Anchorage Coastal Management Plan

(ACMP), as well as other Municipal resource

maps, including the new Coastal Resource

Atlas maps and Municipal Watershed

Management Services Stream and Drainage

Mapping Standards (periodically updated

database) be incorporated into the LRTP as

resources to be consulted for potential project

impacts. Work on every specific project

should include consulting, early in the

planning stages, with the Municipal Watershed

Management and Physical Planning Divisions

to obtain the most up-to-date information

regarding these resources.

Proposed road improvements and

potentially all proposed trails have the

potential to impact wetlands, streams, or

intertidal areas, either directly or indirectly.

EPA recommends the following:

- plan and design the improvements in order to maximize avoidance of aquatic areas

- minimize direct, indirect and cumulative impacts through planning and design, where avoidance is impracticable
 - implement measures to offset unavoidable adverse impact
- Such actions are required by Part 230.10(a) of the Clean Water Act Section 404(b) (1) Guidelines, compliance with which is necessary in order to obtain Corps of Engineers authorization for aquatic fill.

Projects affecting wetlands identified in the Anchorage Wetlands Management Plan should comply with the enforceable policies and management strategies of the plan, and all projects that would involve adverse impacts to aquatic areas should include, in their design and construction budgets, adequate funding to provide for avoidance, minimization and compensatory mitigation measures.

Avoidance measures include, where practicable, the following:

- maximizing opportunities for forms of transportation other than automobiles
- alignment of routes through uplands or the edges or lower value portions of wetlands
- use of retaining walls and other features to minimize fill footprints
- incorporation of onsite storm water treatment measures

Compensatory mitigation measures include the following:

- replacing or upgrading existing culverts or other structures that block or impede fish passage
- increasing the length of existing bridges
- restoring previously damaged reaches of streams or areas of wetlands
- providing for permanent protection of valuable aquatic areas

The National Marine Fisheries Service (NMFS), NOAA, provides the following recommendations to project managers for Essential Fish Habitat (EFH):

- The Magnuson-Stevens Fishery Conservation and Management Act <<http://www.nmfs.noaa.gov/sfa/magac1/>>, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established a new requirement to describe and identify “Essential Fish Habitat” (EFH) in each fishery management plan
- Essential Fish Habitat means those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity. Waters include aquatic areas and their associated physical, chemical and biological properties. Substrate includes sediment underlying the waters.
- “Necessary” means the habitat required to support a sustainable fishery and the managed species’ contribution to a healthy ecosystem. Spawning, breeding, feeding, or growth to maturity covers all habitat

types utilized by a species throughout its life cycle

- An EFH Consultation is triggered when a federal agency, or its designee, determines that an action to be authorized, funded, or undertaken by the agency may adversely affect EFH. For example, if FHWA (a federal agency) is funding a road in the Municipality of Anchorage, FHWA or the designee (consultant) would need to consult FHA and/or designee to determine if the project would adversely affect EFH

- An “adverse effect” is any impact that reduces the quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and/or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions
- Early consultation (project pre-scoping or scoping phase) with NMFS personnel regarding EFH is highly encouraged. Early consultation can help avoid potential conflicts during the permitting process.

- For more information contact the Habitat Conservation Division at (907) 586-7636 (SE Alaska) or (907) 271-5006 (rest of Alaska), email HCD_Alaska@noaa.gov (mailto:HCD_Alaska@noaa.gov), or see the list of HCD support staff and fisheries biologists' contact information at: [</habitat/default.htm#staff>](http://habitat/default.htm#staff)

- For frequently asked questions regarding EFH see : <http://www.fakr.noaa.gov/habitat/faq.htm#triggers>

To determine if projects may affect culturally sensitive sites, project managers should also consult the SHPO inventory of reported sites and consult with Native Village of Eklutna Land and Environment Department to determine all potential impacts to cultural resources in a project area, and address potential mitigation measures in project documentation.

Air Quality Conformity Schedule

The requirement to determine LRTP air quality conformity with requirements of the Clean Air Act is changed from every three years to every four years, to coincide with the new four-year LRTP update schedule. An air quality conformity determination is also required for major LRTP revisions that result in a plan amendment. The 2009 Anchorage Bowl LRTP revision deleting the Knik Arm Crossing project requires that a new air quality conformity determination be prepared. For

more information, please refer to the Air Quality Conformity section in this chapter under the section titled "Deletion of the Knik Arm Crossing Project."

Operations and Management Strategies/ Congestion and Management Process

Prior to SAFETEA-LU, the LRTP was required to identify adopted operations and management strategies needed for improved system performance. This requirement is continued under SAFETEA-LU, with new emphasis on improving the performance of existing transportation facilities to relieve vehicular congestion and to maximize the safety and mobility of people and goods. The LRTP must also consider results of the congestion management process (formerly named the congestion management program).

Sixteen performance measures were used in developing the first MOA *Status of the System Report* published in 2000. Several of the measures related to mobility and, indirectly to safety, including Roadway Level of Service (LOS), Intersection LOS, Travel Time by Corridor, and Travel Time Ratio. Three more performance measures were added with the *Status of the System, 2003*, one of which was High Accident Locations

The Anchorage Bowl 2025 LRTP (Chapter 5, *Status of the System Today*) provides a performance summary of the Anchorage multi-modal transportation system based on the report *Status of the System, 2003*, that was developed in conjunction with the LRTP update. Chapter 5 includes a section on congestion management, and describes the

MOA *Congestion Management Program* (CMP), created in 1994. The 1994 CMP lists strategies that may be considered to address congestion, but does not prioritize them.

The 1994 CMP was updated with development of the Anchorage Bowl 2025 LRTP; a separate process was not used for the update to the CMP. Chapter 5 of the 2025 LRTP concludes with a discussion of MOA congestion management initiatives already implemented to some degree. Chapter 7, *Meeting Future Transportation Needs*, describes the methods used to analyze and evaluate the performance of the transportation system, and for evaluating and comparing alternatives to address system deficiencies.

Selected strategies listed in the 1994

Congestion Management Program were considered for congested roadway segments identified in the LRTP, along with new strategies. Recommended actions to reduce congestion include travel demand management strategies, such as providing more traveler choices to induce a shift from single vehicle use by, for example, improving public transit service and providing financial incentives. Transportation system management strategies to improve traffic operations include fine-tuning traffic signal timing and coordination; upgrading the traffic signal system; implementing Intelligent Transportation Systems (ITS); and adding system capacity.

Progress has been made on implementing several of the 2025 LRTP congestion management recommendations. The MOA Public Transportation Department will soon

hire the Travel Options Program staff person who will manage the new program.

Implementation of the Public Transportation

People Mover Blueprint: A Plan to

Restructure the Anchorage Transit System,

2002, is largely complete, and the next 5-year

transit study is well underway. A consultant

was hired and has been working with the

Transit Advisory Board, analyzing and

working with staff on route proposals for the

system. Surveys have been performed and

tabulated. Recommendations will be compiled

and presented to the public at public hearings

in the spring of 2009. Progress on other 2025

L RTP congestion management

recommendations includes completion of the

Tudor Road Corridor Study in June, 2006, and

progress on projects to improve traffic signal

timing and upgrade the traffic signal system.

The 2025 L RTP calls for assessing transportation system performance at least every 3 years. To coincide with the new 4-year L RTP update cycle, this step should be done at least every 4 years. A 2007 update to the 2004 Status of the System Report has just been completed and will be published soon. The 2007 SOS report will be used in preparing the next L RTP update due in 2011.

Interested Parties and Participation

SAFETEA-LU expanded the definition of “interested parties” to be engaged in developing the L RTP, which now includes representatives of people with disabilities. Publication of the L RTP is to be made available in electronically accessible formats, for example, on the Web, and shall employ

visualization techniques to depict the L RTP.

A new Public Participation Program is

required, to be developed in consultation with

interested parties participation plan is. On

February 12, 2009, the Policy Committee

adopted the new *AMATS Public Participation*

Plan. The plan describes how best to engage

agency personnel, their consultants, and

citizens in dialog regarding the process of

planning, prioritizing and funding road

projects, bicycle and pedestrian facilities, and

public transit in the Anchorage Bowl and

Chugiak/Eagle River areas. The public

participation plan reflects the new

requirements in SAFETEA-LU. The plan

may be found at the following Internet Web

link:

<http://www.muni.org/transplan/AMATS%20PPP.cfm>

Figure 8-1. Recommended Road Projects, Proposed 2009 Revision

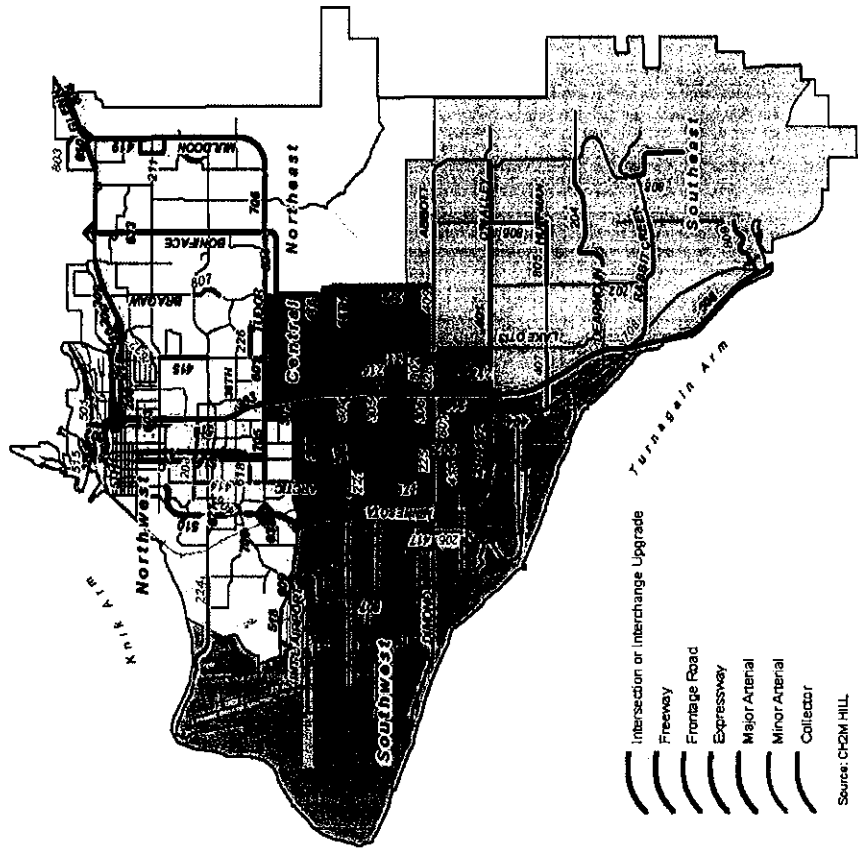


Table 8-1. Recommended Road Improvement Projects ~~2009 Revision~~

Project Number	Facility Name	From	To	Project Purpose and Description
Funded Projects (2005-2009)				
202	C St. Extension Phase III	O'Malley Rd.	Diamond Blvd.	Add new facility—extend C St. as a 4-lane limited access arterial to O'Malley Rd.; 2005 construction; Purpose: Circulation, access, and freight; Facility class: Major arterial (3); Length of project: 1.5 miles; Length of new sidewalk: 1.5 miles; Length of new pathway: 1.5 miles; Estimated cost: ^a \$3.15; Funding source: GARVEE Bond; Linked project(s): None.
203	Fireweed Ln. Surface Rehabilitation	Spenard Rd.	Seward Hwy.	Reconstruct roadway to improve surface and safety for automobiles and non-motorized users; Purpose: Maintenance and safety; Facility class: Minor arterial (4); Length of project: 1.25 miles; Length of new sidewalk: 1.25 miles; Length of new pathway: 1.25 miles; Estimated cost: ^a \$9.2; Funding source: TIP; Linked project(s): 406, 429, and 514.
204	DeArmoun Rd. Reconstruction Phase II	140th Ave.	Hillside Dr.	Reconstruct the existing alignment, pavement, and pedestrian facilities (3R project); minimize impact on private property; Purpose: Safety and capacity; Facility class: Collector; Length of project: 2.4 miles; Length of new sidewalk: 2.4 miles; Length of new pathway: 2.4 miles; Estimated cost: ^a \$10.7; Funding source: TIP; Linked project(s): None.
206	Victor Rd.	100th Ave.	Diamond Blvd.	Upgrade roadway to minor arterial standard with a minimum of 2 lanes with a center turn lane; Purpose: Capacity; Facility class: Minor arterial (4); Length of project: 0.5 mile; Length of new sidewalk: 0.5 mile; Length of new pathway: 0.5 mile; Estimated cost: ^a \$7.6; Funding source: TIP; Linked project(s): 417.
209	Glenn Hwy.	Ingra St./Gambell St.	McCarrey St.	Reconstruct with one additional lane in each direction; Purpose: Capacity and freight; Facility class: Major arterial (3) and Freeway (1); Length of project: 2.4 miles; Length of new sidewalk: 2.4 miles; Length of new pathway: 2.4 miles; Estimated cost: ^a \$22.4; Funding source: TIP; Linked project(s): 309.
210	Minnesota/C St. Interchange	C St.	C St.	Add new facility—interchange at Minnesota Dr./O'Malley Rd. and C St.; Purpose: Circulation, access, and freight; Facility class: Freeway (1); Length of project: 0.6 mile; Length of new sidewalk: 0.6 mile; Length of new pathway: 0.6 mile; Estimated cost: ^a \$26.5; Funding source: GARVEE Bond; Linked project(s): 202.
211	Creekside Parkway	DeBarr Rd. at Creekside	DeBarr Rd. at Muldoon	Add new facility—collector loop providing access within Creekside Town Center; Purpose: Circulation and access; Facility class: Collector (5); Length of project: 0.9 mile; Length of new sidewalk: 0.9 mile; Length of new pathway: 0.9 mile; Estimated cost: ^a \$17.2; Funding source: TIP; Linked project(s): None.
213	Abbott Loop Extension	Abbott Rd.	E. 48th Ave.	Add new facility—extension of Bragaw Rd. from 48th Ave. to Abbott Rd.; 3 lanes between Abbott Rd. and 68th Ave., and 4 lanes between 68th Ave. and 48th Ave.; 2005 construction start; Purpose: Circulation and access; Facility class: Major arterial (3); Length of project: 1.05 miles; Length of new sidewalk: 1.05 miles; Length of new pathway: 1.05 miles; Estimated cost: ^a \$37.5; Funding source: State bond; Linked project(s): 416 and 604.
214	Northern Lights Blvd.	Nathaniel Ct.	Wisconsin Ave.	Upgrade to urban standards with center turn lane; 2005 construction; Purpose: Capacity; Facility class: Minor arterial (4); Length of project: 0.5 mile; Length of new sidewalk: 0.5 mile; Length of new pathway: 0.5 mile; Estimated cost: ^a \$9.1; Funding source: MOA Bond; Linked project(s): 427 and 509.

Table 8-1. Recommended Road Improvement Projects 2005-2009

Project Number	Facility Name	From	To	Project Description
Funded Projects (2005-2009) (continued)				
215	3rd Ave. Surface Rehabilitation	Post Rd.	Reeve Blvd.	Restripe from 4 lane to 3 lane, including sidewalk addition/improvements; 2005 construction; Purpose: Capacity and freight; Facility class: Minor arterial (4); Length of project: 0.75 miles; Length of new sidewalk: 1.5 miles; Length of new pathway: 0 miles; Estimated cost: \$3.3; Funding source: Bond; Linked project(s): 603.
216	Hartzell Rd. Extension	Lore Rd.	79th Ave.	Add new facility—2-lane collector between Lore Rd. and 79th Ave.; 2005 construction; Purpose: Circulation and access; Facility class: Collector (5); Length of project: 0.2 mile; Length of new sidewalk: 0.2 mile; Length of new pathway: 0.2 mile; Estimated cost: \$2.2; Funding source: Bond; Linked project(s): None.
217	Independence Dr. Extension	Abbott Rd.	O'Malley Rd.	Add new facility—rehabilitate surface from Colony Lp. to Abbott Rd. and extend Independence Dr. from Colony Lp. to O'Malley Rd., including a study on connection with O'Malley Rd.; 2005 construction; Purpose: Circulation and access; Facility class: Collector (5); Length of project: 0.4 mile; Length of new sidewalk: 0.4 mile; Length of new pathway: 0.4 mile; Estimated cost: \$1.3; Funding source: Bond; Linked project(s): None.
219	Lake Otis Pkwy. Surface Rehabilitation	Abbott Rd.	68th Ave.	Rehabilitate pavement and add traffic signal at 72nd Ave; rehabilitate sidewalks to meet ADA standards; 2005 construction; Purpose: Maintenance and safety; Facility class: Major arterial (3); Length of project: 1.5 miles; Length of new sidewalk: Not applicable; Length of new pathway: Not applicable; Estimated cost: \$5; Funding source: Bond; Linked project(s): 409 and 425.
221	Raspberry Rd. Extension	Rovenna St.	Ardic Blvd.	Add new facility—reconstruct and extend to meet future demands; 2005 construction; Purpose: Circulation, access, and freight; Facility class: Minor arterial (4); Length of project: 0.5 mile; Length of new sidewalk: 0.5 mile; Length of new pathway: 0.5 mile; Estimated cost: \$1.5; Funding source: Bond; Linked project(s): 308.
224	Northern Lights Blvd.	Postmark Dr.	Nathaniel Ct.	Reconstruct pavement; add shoulders and turning pockets where needed; Purpose: Circulation, access, and safety; Facility class: Minor arterial (4); Length of project: 1.2 miles; Length of new sidewalk: Not applicable; Length of new pathway: Not applicable; Estimated cost: \$18.4; Funding source: Bond; Linked project(s): None.
225	92nd Ave.	Minnesota Dr.	King St.	Add new facility—upgrade missing minor arterial to urban standards; Purpose: Circulation, access, and freight; Facility class: Minor arterial (4); Length of project: 2 miles; Length of new sidewalk: 0 miles; Length of new pathway: 0 miles; Estimated cost: \$6.5; Funding source: Bond; Linked project(s): None.
226	40th Ave. Extension	Lake Otis Pkwy.	Piper St.	Add new facility—2-lane collector connection from Lake Otis Pkwy. to Piper St. to serve University-Medical District; Purpose: Circulation and access; Facility class: Collector (5); Length of project: 1 mile; Length of new sidewalk: 2 miles; Length of new pathway: Not applicable; Estimated cost: \$4.5; Funding source: Bond; Linked project(s): None.
309	Bragaw Rd./Glenn Hwy. Interchange	Airport Heights Rd.	Bragaw Rd.	Add new facility—Bragaw Rd. interchange; Purpose: Circulation, access, and freight; Facility class: Ramps (7&8); Length of project: 0.3 mile; Length of new sidewalk: 0.3 mile; Length of new pathway: 0.3 mile; Estimated cost: \$33.2; Funding source: TIP; Linked project(s): 209 and 603.

Table 8-1. Recommended Road Improvement Projects 2009 Revision

Project Number	Facility Name	From	To	Project Purpose and Description
Short-Term Projects (2006-2015)^b				
301	International Airport Rd. Extension	Old Seward Hwy.	Brayton	Add new facility—grade separation and extension of International Airport Rd. from Homer Dr. to Brayton Dr. (part of 303); Purpose: Circulation, access, and freight; Facility class: Major arterial (3); Length of project: 0.35 mile; Length of new sidewalk: 0.7 mile; Length of new pathway: 0 miles; Estimated cost: ^a \$34.9; Funding source: TIP; Linked project(s): 303.
303	Seward Hwy.	O'Malley Rd.	36th Ave.	Reconstruct and widen from 4 to 6 lanes from Tudor Rd. to O'Malley Rd.; minor pathway south of O'Malley Rd.; frontage road improvements, landscaping, and possible noise walls; Purpose: Capacity and freight; Facility class: Freeway (1); Length of project: 4.5 miles; Length of new sidewalk: 4.5 miles; Length of new pathway: 4.5 miles; Estimated cost: ^a \$81.7; Funding source: TIP; Linked project(s): 201, 301, 305, 306, 311, 516, and 603.
304	68th Ave. Extension	Homer Dr.	Brayton Dr.	Add new facility—grade separation and extension of 68th Ave. from Homer Dr. to Brayton Dr. (part of 303); Purpose: Circulation and access; Facility class: Collector (5); Length of project: 0.3 mile; Length of new sidewalk: 0.6 mile; Length of new pathway: 0 mile; Estimated cost: ^a \$23.4; Funding source: TIP; Linked project(s): 311.
305	76th Ave. Extension	Homer Dr.	Brayton Dr.	Add new facility—grade separation and extension of 76th Ave. from Homer Dr. to Brayton Dr. (part of 303); Purpose: Circulation and access; Facility class: Collector (5); Length of project: 0.1 mile; Length of new sidewalk: 0.2 mile; Length of new pathway: 0 miles; Estimated cost: ^a \$23.4; Funding source: TIP; Linked project(s): 303.
306	92nd Ave. Extension	Homer Dr.	Brayton Dr.	Add new facility—grade separation and extension of 92nd Ave. from Homer Dr. to Brayton Dr. (part of 303); Purpose: Circulation and access; Facility class: Collector (5); Length of project: 0.1 mile; Length of new sidewalk: 0.2 mile; Length of new pathway: 0 miles; Estimated cost: ^a \$23.4; Funding source: TIP; Linked project(s): 303.
308	Dowling Rd. Extension	Raspberry Rd.	Old Seward Hwy.	Add new facility—extend Dowling Rd. from Old Seward Hwy. to Minnesota Dr., improve the rest of the facility, and replace one bridge; Purpose: Circulation, access, and freight; Facility class: Major arterial (3); Length of project: 1.65 miles; Length of new sidewalk: 1.65 miles; Length of new pathway: 1.65 miles; Estimated cost: ^a \$115; Funding source: TIP; Linked project(s): 201, 221, and 416.
401	O'Malley Rd.	Seward Hwy.	Hillside Dr.	Reconstruct to improve safety and capacity. 3-lane section east of Lake Otis Pkwy. and 5-lane section between Seward Hwy. and Lake Otis Pkwy; Purpose: Capacity; Facility class: Major arterial (3); Length of project: 3.65 miles; Length of new sidewalk: 3.65 miles; Length of new pathway: 3.65 miles; Estimated cost: ^a \$20; Funding source: TIP; Linked project(s): None.
404	Old Seward Hwy.	Brandon St.	O'Malley Rd.	Reconstruct to a multi-lane facility; Purpose: Capacity; Facility class: Major arterial (3); Length of project: 1.5 miles; Length of new sidewalk: 1.5 miles; Length of new pathway: 1.5 miles; Estimated cost: ^a \$15; Funding source: TIP; Linked project(s): 407 and 312.
405	Eklutna River Bridge	New Glenn Hwy.	New Glenn Hwy.	Add commercial vehicle bridge clearance warning system; Purpose: Maintenance, safety, and freight; Facility class: Not applicable; Length of project: 0.3 mile; Length of new sidewalk: Not applicable; Length of new pathway: Not applicable; Estimated cost: ^a \$0.35; Funding source: TIP; Linked project(s): None.

Table 8-1. Recommended Road Improvement Projects 2025-2035

Project Number	Facility Name	From	To	Description
Short-Term Projects (2006–2016)^b (continued)				
406	Spenard Rd. Surface Rehabilitation	Minnesota Rd.	Minnesota Rd. Onramp	Reconstruct from 4 to 2 lanes with a center turn lane, plus pedestrian facilities, including Spenard Rd./36th Ave. couplet; Purpose: Capacity; Facility class: Minor arterial (4); Length of project: 0.15 mile; Length of new sidewalk: 0.15 miles; Length of new pathway: 0.15 miles; Estimated cost: ^a \$2.5; Funding source: TIP; Linked project(s): None.
407	Huffman Rd.	Old Seward Hwy.	Lake Otis Pkwy.	Increase from 2 to 4 lanes and improve intersections and pedestrian facilities; Purpose: Capacity; Facility class: Minor arterial (4); Length of project: 1 mile; Length of new sidewalk: 1 mile; Length of new pathway: 1 mile; Estimated cost: ^a \$7.5; Funding source: TIP; Linked project(s): 404.
409	Abbott Rd.	Lake Otis Pkwy.	Birch Rd.	Increase from 2 to 4 lanes and improve intersections and pedestrian facilities; Purpose: Capacity; Facility class: Minor arterial (4); Length of project: 2 miles; Length of new sidewalk: 2 miles; Length of new pathway: 2 miles; Estimated cost: ^a \$13.5; Funding source: TIP; Linked project(s): 219.
414	Arctic Blvd. Surface Rehabilitation	Fireweed Ln.	International Airport Rd.	Rehabilitate from 4 to 2 lanes plus a center turn lane from Fireweed Ln. to 36th Ave. (2006 construction); upgrade from 4 to 5 lanes from 36th Ave. to Tudor Rd. (2008 construction); upgrade from 4 to 5 lanes from Tudor Rd. to Raspberry Rd., and southbound right-turn lane at Tudor Rd. (2005 construction); Purpose: Maintenance and safety; Facility class: Minor arterial (4); Length of project: 3 miles; Length of new sidewalk: Not applicable; Length of new pathway: Not applicable; Estimated cost: ^a \$15.2; Funding source: TIP; Linked project(s): 221 and 423.
415	Lake Otis Pkwy.	Northern Lights Blvd.	DeBarr Rd.	Reconstruct and increase capacity, bridge over Chester Creek, Lake Otis/Northern Lights Blvd. intersection and pedestrian/landscape facilities; Purpose: Capacity; Facility class: Major arterial (3); Length of project: 0.85 miles; Length of new sidewalk: 0.85 mile; Length of new pathway: 0.85 mile; Estimated cost: ^a \$24.3; Funding source: TIP; Linked project(s): 603 and 632.
416	Dowling Rd. Extension	Laurel St.	Abbott Lp. Rd.	Add new facility—extend Dowling Rd. from Laurel St. to Abbott Loop Rd.; Purpose: Circulation and access; Facility class: Major arterial (3); Length of project: 0.9 mile; Length of new sidewalk: 0.9 mile; Length of new pathway: 0.9 mile; Estimated cost: ^a \$20; Funding source: State general fund; Linked project(s): 201 213, and 308.
417	Northwood Dr. Extension	88th Ave.	Dimond Blvd.	Add new facility—extend Northwood Dr. from Dimond Blvd. to 88th Ave; Purpose: Circulation and access; Facility class: Collector (5); Length of project: 0.5 mile; Length of new sidewalk: 1 mile; Length of new pathway: 8.9 miles; Estimated cost: ^a \$11.8; Funding source: Bond; Linked project(s): None.
418	100th Ave. Extension	Minnesota Dr.	King St.	Add new facility—extend 100th Ave. between Minnesota Dr. and King St.; Purpose: Circulation, access, and freight; Facility class: Collector (5); Length of project: 0.95 mile; Length of new sidewalk: 0.95 mile; Length of new pathway: 0.95 mile; Estimated cost: ^a \$9.1; Funding source: Bond; Linked project(s): None.
419	Muldoon Rd. Improvements	Tudor Rd.	Glenn Hwy.	Landscaping and pedestrian improvements; Purpose: Maintenance and safety; Facility class: Major arterial (3); Length of project: 3.55 miles; Length of new sidewalk: 3.55 miles; Length of new pathway: 3.55 miles; Estimated cost: ^a \$6.5; Funding source: TIP; Linked project(s): None.

Table 8-1. Recommended Road Improvement Projects ~~2009 Revision~~

Project Number	Facility Name	From	To	Project Purpose and Description
Short-Term Projects (2006–2015)^b (continued)				
507	Jewel Lake Rd.	Dimond Blvd.	International Airport Rd.	Reconstruct Jewel Lake to operate as a 2 lane with center turn lane; Purpose: Maintenance and safety; Facility class: Major arterial (3); Length of project: 2.9 miles; Length of new sidewalk: 2.9 miles; Length of new pathway: 2.9 miles; Estimated cost: ^a \$19.9; Funding source: Bond; Linked project(s): 640.
603	Glenn Hwy./Seward Hwy. Connection	Glenn Hwy./Bragaw St.	Seward Hwy./Tudor Rd.	Construct freeway connection between Airport Heights Rd. and 36th Ave.; includes interchanges at Airport Heights Rd. and 36th Ave., freeway access and egress ramps elsewhere along the alignment; depressed segments of freeway that include the construction of bridges and decking above freeway for cross streets, community amenities, and redevelopment over highway airspace (see the section in this chapter titled Building the Glenn-Seward Highway Connection" for further discussion); Purpose: Circulation, access, and freight; Facility class: Freeway (1) and Ramps (7 & 8); Length of project: 4.9 miles; Length of new sidewalk: 4.9 miles; Length of new pathway: 4.9 miles; Estimated cost: ^a \$581; Funding source: TIP/National Highway System; Linked project(s): 209, 215, 303, 309, and 502.
604	48th Ave./Boniface Pkwy. Extension	48th Ave./Bragaw Rd.	Boniface Pkwy./Tudor Rd.	Add new facility—extend Boniface Pkwy. as an expressway parallel to Tudor Rd. connecting at the intersection of 48th Ave. and Bragaw Rd.; Purpose: Circulation and access; Facility class: Major arterial (3); Length of project: 1.2 miles; Length of new sidewalk: 1.2 miles; Length of new pathway: 1.2 miles; Estimated cost: ^a \$13.9; Funding source: TIP; Linked project(s): 213, 416, and 633.
618	40th Ave. Extension	Arctic Blvd.	Eureka St.	Add new facility—extend 40th Avenue from Arctic Blvd. to Eureka St.; Purpose: Capacity; Facility class: Collector (5); Length of project: 0.4 mile; Length of new sidewalk: 0.4 mile; Length of new pathway: 0.4 mile; Estimated cost: ^a \$2.7; Funding source: Bond; Linked project(s): None.
628	92nd Ave./Academy Dr. Extension	Brayton Dr.	Abbott Rd.	Add new facility—extend 92nd Avenue from Brayton Dr. to Abbott Rd.; Purpose: Circulation and access; Facility class: Collector (5); Length of project: 0.45 mile; Length of new sidewalk: 0.45 mile; Length of new pathway: 0.45 miles; Estimated cost: ^a \$4; Funding source: TIP; Linked project(s): None.
633	Boniface Pkwy. Access Management	Tudor Rd.	Glenn Hwy.	Add access management and related local circulation access to preserve capacity on Boniface Pkwy; Purpose: Capacity; Facility class: Expressway (2); Length of project: 3.1 miles; Length of new sidewalk: 3.1 miles; Length of new pathway: Not applicable; Estimated cost: ^a \$20; Funding source: TIP; Linked project(s): 604.
705	Tudor Rd. Access Management	Seward Hwy.	Arctic Blvd.	Add access management and turn restrictions; modify local connections to make adjacent property access to other roads; east-west or north-south in lieu of direct access from Tudor Rd. wherever practical; Purpose: Circulation, access, and freight; Facility class: Major arterial (3); Length of project: 1.25 miles; Length of new sidewalk: 1.25 miles; Length of new pathway: 1.25 miles; Estimated cost: ^a \$12.5; Funding source: TIP; Linked project(s): None.

Table 8-1. Recommended Road Improvement Projects 2009-2015

Project Number	Facility Name	From	To	Project Description
Short-Term Projects (2006–2015)^b (continued)				
706	Tudor Rd. Access Management	Seward Hwy.	Patterson St.	Add access management and turn restrictions; modify local connections to make adjacent property access to other roads; east-west or north-south in lieu of direct access from Tudor Rd. wherever practical; Purpose: Circulation, access, and freight; Facility class: Major arterial (3); Length of project: 3.7 miles; Length of new sidewalk: 3.7 miles; Length of new pathway: 3.7 miles; Estimated cost: ^a \$37; Funding source: TIP; Linked project(s): None.
707	Glenn Hwy. at Eagle River	Hiland Rd.	Artillery Rd.	Make necessary improvements at Hiland Rd. and Artillery Rd. interchanges and add a 3rd lane northbound and southbound between Hiland Rd. and Artillery Rd.; bridge improvements at Eagle River interchange, Hiland Rd. interchange, and 2 Eagle River bridges; Purpose: Circulation, access, and freight; Facility class: Freeway (1); Length of project: 2 miles; Length of new sidewalk: Not applicable; Length of new pathway: 4 miles; Estimated cost: ^a \$65; Funding source: TIP; Linked project(s): 639, 710, and 804.
801	92nd Ave.	King St.	Seward Hwy.	Add new facility—extend 92nd Ave. from King St. to Seward Hwy. and evaluate grade separation crossing of railroad; Purpose: Circulation, access, and freight; Facility class: Minor arterial; Length of project: 0.75 mile; Length of new sidewalk: 1.5 miles; Length of new pathway: 0 mile; Estimated cost: ^a \$15; Funding source: Bond; Linked project(s): 225 and 306.
802	84th Ave.	Hartzell Rd.	Lake Otis Pkwy.	Reconstruct existing road and add new segment; Purpose: Circulation and access; Facility class: Collector; Length of project: 0.5 mile; Length of new sidewalk: 1 mile; Length of new pathway: 0 mile; Estimated cost: ^a \$7; Funding source: TIP; Linked project(s): None.
803	Oilwell Rd.	North of Muldoon Rd. Interchange	Elmendorf Air Force Base Access Gate	Upgrade existing facility; Purpose: Safety and capacity; Facility class: Minor arterial; Length of project: 1 mile; Length of new sidewalk: 0 mile; Length of new pathway: 1 mile; Estimated cost: ^a \$5; Funding source: TIP; Linked project(s): 610.
804	Glenn Hwy. Interchange Operational Analysis and Improvements	Muldoon Rd. Interchange	Eklutna	Perform an operational and safety evaluation of all interchange facilities on the Glenn Hwy., including Thunderbird Falls exit and North Peters Creek; Purpose: Safety and capacity; Facility class: Freeway; Length of project: Not applicable; Length of new sidewalk: Not applicable; Length of new pathway: Not applicable; Estimated cost: ^a \$5; Funding source: TIP; Linked project(s): 707.
805	Huffman Rd.	Elmore Rd.	Birch Rd.	Reconstruct road; Purpose: Safety; Facility class: Collector; Length of project: 1 mile; Length of new sidewalk: 0 mile; Length of new pathway: 1 mile; Estimated cost: ^a \$7.1; Funding source: TIP; Linked project(s): 702 and 806.
806	Birch Rd.	Huffman Rd.	O'Malley Rd.	Reconstruct road; Purpose: Safety; Facility class: Collector; Length of project: 1 mile; Length of new sidewalk: 0 mile; Length of new pathway: 1 mile; Estimated cost: ^a \$8; Funding source: TIP; Linked project(s): 805.
807	North Access to University-Medical District	Providence Dr.	Northern Lights Blvd.	Add new facility—north access to University-Medical District; Purpose: Circulation, capacity, and safety; Facility class: To be determined; Length of project: 0.5 mile; Length of new sidewalk: 0.5 mile; Length of new pathway: 0.5 mile; Estimated cost: ^a \$25; Funding source: TIP; Linked project(s): None.

Table 8-1. Recommended Road Improvement Projects 2006-2025

Project Number	Facility Name	From	To	Project Purpose and Description
Short-Term Projects (2006-2015)^b (continued)				
808	Mountain Air Dr.	Rabbit Creek Rd.	E. 164th Ave.	Add new facility—extend Mountain Air Dr. from Rabbit Creek Rd. to E. 164th Ave. (extended); Purpose: Circulation and access; Facility class: Collector; Length of project: 1 mile; Length of new sidewalk: 0 mile; Length of new pathway: 1 mile; Estimated cost: To be determined; Funding source: To be determined; Linked project(s): None.
809	Unnamed (Heritage Land Bank/Mental Health Trust/Private)	Goldenview Dr.	Potter Valley Rd./Old Seward Hwy.	Add new facility from Goldenview Dr. to Potter Valley Rd./Old Seward Hwy.; Purpose: Circulation and access; Facility class: Collector; Length of project: 1 mile; Length of new sidewalk: 0 mile; Length of new pathway: 1 mile; Estimated cost: To be determined; Funding source: To be determined; Linked project(s): None.
810	Knik Arm Crossing	Matanuska-Susitna Borough near Point MacKenzie	3rd Ave. at Gambell and Ingra streets	See Chapter 12 for details of this project.
Long-Term Projects (2016-2025)				
302	Seward Hwy./O'Malley Rd. Interchange	Old Seward Hwy.	Seward Hwy.	Add freeway system interchange at Seward Hwy. and O'Malley Rd., and interchange at Old Seward Highway and O'Malley Rd.; Purpose: Circulation, access, and freight; Facility class: Ramps (7&8); Length of project: 3.9 miles; Length of new sidewalk: 3.9 miles; Length of new pathway: 3.9 miles; Estimated cost: ^a \$60.6; Funding source: TIP; Linked project(s): 210 and 311.
311	Seward Hwy.	O'Malley Rd.	Rabbit Creek Rd.	Add ramp and pedestrian facility improvements from O'Malley Rd. to Rabbit Creek Rd.; Purpose: Circulation, access, and freight; Facility class: Freeway (1); Length of project: 3 miles; Length of new sidewalk: 3 miles; Length of new pathway: 3 miles; Estimated cost: ^a \$9.5; Funding source: State general fund; Linked project(s): 303.
501	Whitney Rd.	North C St.	Post Rd.	Upgrade Whitney Rd. to urban industrial standards; may include relocation of the Whitney Rd.; Purpose: Maintenance, safety, and freight; Facility class: Collector (5); Length of project: 1.05 miles; Length of new sidewalk: 1.05 miles; Length of new pathway: 1.05 miles; Estimated cost: ^a \$7; Funding source: TIP; Linked project(s): 502; Priority: Long term (2016-2025)
502	Ingra-Gambell Extension	3rd Ave.	Whitney Rd.	Add new facility—extend Ingra St./Gambell St. to Ship Creek Ave. and Whitney Rd.; Purpose: Circulation, access, and freight; Facility class: Major arterial (3); Length of project: 0.6 mile; Length of new sidewalk: 0.6 mile; Length of new pathway: 0.6 mile; Estimated cost: ^a \$26; Funding source: TIP; Linked project(s): 209, 215, 501, and 603; Priority: Long term (2016-2025)
506	Seward Hwy.	Potter Weigh Station	Rabbit Creek Rd.	Reconstruct and widen Seward Hwy. between Potter Weigh Station and Rabbit Creek Rd.; Purpose: Circulation, access, and freight; Facility class: Freeway (1); Length of project: 2.65 miles; Length of new sidewalk: 2.65 miles; Length of new pathway: 2.65 miles; Estimated cost: ^a \$35; Funding source: TIP; Linked project(s): 303 and 311; Priority: Long term (2016-2025)

Table 8-1. Recommended Road Improvement Projects 2009 Revision

Project Number	Facility Name	From	To	Project Purpose and Description
510	Minnesota Dr. (Northbound)	26th Ave.	16th Ave.	Reconstruct and add one lane to improve capacity northbound; Purpose: Capacity and freight; Facility class: Major arterial (3); Length of project: 0.7 mile; Length of new sidewalk: 0.7 mile; Length of new pathway: 0.7 mile; Estimated cost: \$16.7; Funding source: TIP; Linked project(s): None; Priority: Long term (2016-2025)

Table 8-1. Recommended Road Improvement Projects 2016-2025

Project Number	Facility Name	From	To	Project Details and Description
Long-Term Projects (2016-2025) (continued)				
514	A/C St. Couplet Restripe	Tudor Rd.	9th Ave.	Restripe to include 4 lanes in each direction; Purpose: Capacity and freight; Facility class: Major arterial (3); Length of project: 4.5 miles; Length of new sidewalk: Not applicable; Length of new pathway: Not applicable; Estimated cost: \$0.48; Funding source: TIP; Linked project(s): None.
515	C St./Ocean Dock Rd. Access Ramp	C St. Viaduct	Ocean Dock Rd.	Reconstruct the ramp at Ship Creek; Purpose: Maintenance, safety, and freight; Facility class: Collector (5); Length of project: 0.05 mile; Length of new sidewalk: Not applicable; Length of new pathway: Not applicable; Estimated cost: \$10; Funding source: TIP; Linked project(s): None.
518	Postmark Dr./International Airport Rd. Grade Separation	Postmark Dr.	International Airport Rd.	Add grade separation of International Airport Rd. over Postmark Dr.; Purpose: Circulation, access, and freight; Facility class: Not applicable; Length of project: Not applicable; Length of new sidewalk: 0 mile; Length of new pathway: 0 mile; Estimated cost: \$21; Funding source: TIP; Linked project(s): None.
609	Jewel Lake Rd./International Airport Rd. Grade Separation	Jewel Lake Rd.	Northwood St.	Construct interchange at International Airport Road and Jewel Lake incorporating a grade separation of the railroad and construct a grade separation of International Airport Road near Northwood street with realignment of railroad to the south side of International Airport Rd.; Purpose: Circulation, access, and freight; Facility class: Not applicable; Length of project: Not applicable; Length of new sidewalk: 0 miles; Length of new pathway: 0 miles; Estimated cost: \$45; Funding source: TIP; Linked project(s): None.
610	Muldoon Rd. Interchange	Glenn Hwy.	at Muldoon Rd.	Reconstruct ramps at the intersection of Glenn Hwy. and Muldoon Rd. to meet current safety standards; Purpose: Capacity and freight; Facility class: Ramps (7 & 8); Length of project: Not applicable; Length of new sidewalk: Not applicable; Length of new pathway: Not applicable; Estimated cost: \$5.1; Funding source: TIP; Linked project(s): None.
621	Minnesota Dr. Frontage Road	Dimond Blvd.	Raspberry Rd.	Add new facility on the east side of Minnesota Dr. only; one-way frontage road parallel to Minnesota Dr. between Dimond Blvd. and Raspberry Rd.; Purpose: Capacity; Facility class: Frontage (10); Length of project: 3.1 miles; Length of new sidewalk: 3.1 miles; Length of new pathway: 3.1 miles; Estimated cost: \$16.8; Funding source: TIP; Linked project(s): None.
627	Minnesota Dr. Corridor	International Airport Rd.	Northern Lights Blvd.	Extend controlled access from International Airport Rd. through an interchange at Tudor Rd. and widen the arterial to 8 lanes north of Tudor Rd.; Purpose: Capacity and freight; Facility class: Frontage (10); Length of project: 1.6 miles; Length of new sidewalk: 3.2 miles; Length of new pathway: Not applicable; Estimated cost: \$19.9; Funding source: TIP; Linked project(s): 406 and 638.
632	Lake Otis Pkwy. Extension	DeBarr Rd.	Glenn Hwy.	Add new facility—extend Lake Otis Parkway to Glenn Hwy. interchange at Airport Heights Rd.; Purpose: Circulation and access; Facility class: Minor arterial (4); Length of project: 0.7 mile; Length of new sidewalk: 0.7 mile; Length of new pathway: Not applicable; Estimated cost: \$16; Funding source: TIP; Linked project(s): 415 and 603.

Table 8-1. Recommended Road Improvement Projects 2016-2025

Project Number	Facility Name	From	To	Project Description
Long-Term Projects (2016-2025) (continued)				
638	Minnesota Dr./Tudor Rd. Interchange	Minnesota Dr.	at Tudor Rd.	Add new facility—construct grade-separated interchange; Purpose: Capacity and freight; Facility class: Major arterial(3) Ramps (7&8); Length of project: Not applicable; Length of new sidewalk: Not applicable; Length of new pathway: Not applicable; Estimated cost: \$25; Funding source: TIP; Linked project(s): 627.
639	Glenn Hwy. HOV Lane	Boniface Pkwy.	Eagle River; Artillery Rd. Interchange	Widen with lanes to the inside with 1 lane each direction designated non-SOV, includes Ship Creek Bridge improvements; Purpose: Capacity and freight; Facility class: Freeway (I); Length of project: 11.3 miles; Length of new sidewalk: 0 mile; Length of new pathway: Not applicable; Estimated cost: \$38.3; Funding source: TIP; Linked project(s): 610, 707, and 710.
702	Elmore Rd. Extension	Rabbit Creek Rd.	DeArmoun Rd.	Add new facility—extend Elmore Rd. from Rabbit Creek Rd. to DeArmoun Rd.; Purpose: Circulation and access; Facility class: Collector (5); Length of project: 1 mile; Length of new sidewalk: 2 miles; Length of new pathway: Not applicable; Estimated cost: \$8; Funding source: TIP; Linked project(s): 805.
708	Rabbit Creek Rd.	Seward Hwy.	Goldenview Dr.	Upgrade to 3-lane arterial; Purpose: Capacity; Facility class: Minor arterial (4); Length of project: 1 mile; Length of new sidewalk: 1 mile; Length of new pathway: 1 mile; Estimated cost: \$4.5; Funding source: TIP; Linked project(s): 702.
709	Railroad. Grade Separation at Spenard Rd. and at C St.	Spenard Rd.	at C St.	Add railroad grade separation at Spenard Rd. near 36th Ave. (\$105), and at C St. near Raspberry Rd. (\$25); Purpose: Maintenance, safety, and freight; Facility class: Not applicable; Length of project: Not applicable; Length of new sidewalk: Not applicable; Length of new pathway: Not applicable; Estimated cost: \$130; Funding source: Other; Linked project(s): None.
710	Glenn Hwy. HOV Lane	Eagle River; Artillery Rd. Interchange	Mill 21.5 S. Peters Creek Interchange (Voyles Rd.)	Widen Glenn Hwy. to add an additional non-SOV lane in each direction, including interchange upgrades at Peters Creek Bridge; Purpose: Capacity and freight; Facility class: Freeway; Length of project: 8.1 miles; Length of new sidewalk: Not applicable; Length of new pathway: Not applicable; Estimated cost: \$61.8; Funding source: TIP; Linked project(s): None.

Projects for Which the Funding Priority Is Undetermined

601	Lake Otis Pkwy./ Tudor Rd. Intersection	Lake Otis Pkwy.	Tudor Rd.	Add left- and right-turn lanes where needed to improve capacity and efficiency of existing intersection; finished configuration will have 2 left-turn lanes and one free right-turn lane at each approach; Purpose: Circulation and access; Facility class: Not applicable; Length of project: Not applicable; Length of new sidewalk: 0 miles; Length of new pathway: 0 miles; Estimated cost: \$10; Funding source: Bond/TIP; Linked project(s): 705 and 706. (The MOA Traffic Engineer, in consultation with DOT&PF, shall provide a report to AMATS Policy Committee within 6 months after Project 213 is open for public use to identify the congestion relief accomplished or expected to be accomplished with full completion of Projects 213 and 416 and quantifying the additional congestion relief that may be accomplished through Project 601.)
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^a Estimated costs are in millions of 2004 dollars.

^b Some short-term projects will be completed after 2016.

Note: In addition to the recommended projects identified in this list, existing roadways that are currently not constructed to urban standards may need to be upgraded during the time covered by the LRTP (through 2025). Road upgrade projects typically result in the same number of lanes for the road. Improvements may also include sidewalks, pathways, and accommodations that comply with requirements of the Americans with Disabilities Act.

Source: CH2M HILL

Table 8-2. Recommended Pedestrian and Trail Projects—Improvements Associated with Recommended Road Projects

Project Number	Project Name	From	To	Streetway Miles	Separated Pathway Miles
202	C St. Extension Phase III	O'Malley Rd.	Dimond Blvd.	1.5	1.5
203	Fireweed Ln. Surface Rehab.	Spenard Rd.	Seward Hwy.	1.25	1.25
204	DeArmour Rd. Reconstruction Phase II	140th Ave.	Hillside Dr.	2.4	2.4
206	Victor Rd.	100th Ave.	Dimond Blvd.	0.5	0.5
209	Glenn Hwy.	Ingra St./Gamble St.	McCarrey St.	2.4	2.4
210	Minnesota/C St. Interchange	C St.	C St.	0.6	0.6
211	Creekside Town Center Couplet	DeBarr Rd. at Creekside	DeBarr Rd. at Muldoon	0.9	0.9
213	Abbott Loop Extension	Abbott Rd.	E. 48th Ave.	1.05	1.05
214	Northern Lights Blvd.	Nathaniel Ct.	Wisconsin Ave.	0.5	0.5
215	3rd Ave. Surface Rehab.	Post Rd.	Reeve Blvd.	1.5	0
216	Hartzell Rd. Extension	Lore Rd.	79th Ave.	0.2	0.2
217	Independence Dr. Extension	Abbott Rd.	O'Malley Rd.	0.4	0.4
221	Raspberry Rd. Extension	Rovenna St.	Arctic Blvd.	0.5	0.5
226	40th Ave. Extension	Lake Otis Pkwy.	Piper St.	2.0	NA
301	International Airport Rd. Extension	Old Seward Hwy.	Brayton	0.7	0
302	Seward Hwy/O'Malley Rd. Interchange	Old Seward Hwy.	Seward Hwy.	3.9	3.9
303	Seward Hwy.	O'Malley Rd.	36th Ave.	4.5	4.5
304	68th Ave. Extension	Homer Dr.	Brayton Dr.	0.6	0
305	76th Ave. Extension	Homer Dr.	Brayton Dr.	0.2	0
306	92nd Ave. Extension	Homer Dr.	Brayton Dr.	0.2	0

Table 8-2. Recommended Pedestrian and Trail Projects—Improvements Associated with Recommended Road Projects

Project Number	Project Name	From	To	Stakeholder	Separated Pathway Miles
308	Dowling Rd. Extension	Raspberry Rd.	Old Seward Hwy.		1.65
309	Glenn Hwy. Corridor Improvements	Ingra St./Gamble St.	McCarrey St.		0.3
311	Seward Hwy.	O'Malley Rd.	Rabbit Creek Rd.		3
401	O'Malley Rd.	Seward Hwy.	Hillside Dr.		3.65
404	Old Seward Hwy.	Brandon St.	O'Malley Rd.		1.5
406	Spennard Rd. Surface Rehab.	Minnesota Rd.	Minnesota Rd. Onramp		0.15
407	Huffman Rd.	Old Seward Hwy.	Lake Otis Pkwy.		1
409	Abbott Rd.	Lake Otis Pkwy.	Birch Rd.		2
415	Lake Otis Pkwy.	Northern Lights Blvd.	DeBarr Rd.		0.85
416	Dowling Rd. Extension	Laurel St.	Abbott Lp. Rd.		0.9
417	Northwood Dr. Extension	88th Ave.	Diamond Blvd.		1
418	100th Ave. Extension	Minnesota Dr.	King St.		0.95
419	Muldoon Rd. Improvements	Tudor Rd.	Glenn Hwy.		3.55
501	Whitney Rd.	North C St.	Post Rd.		1.05
502	Ingra-Gambell Extension	3rd Ave.	Whitney Rd.		0.6
506	Seward Hwy.	Potter Weigh Station	Rabbit Creek Rd.		2.65
507	Jewel Lake Rd.	Diamond Blvd.	International Airport Rd.		2.9
510	Minnesota Dr. (Northbound)	26th Ave.	16th Ave.		0.7
603	Glenn Hwy./Seward Hwy. Connection	Glenn Hwy./McCarrey St.	Seward Hwy. (36th)		4.9
604	48th Ave./Boniface Pkwy. Extension	48th Ave./Bragaw Rd.	Boniface Pkwy./Tudor Rd.		1.2
618	40th Ave. Extension	Arctic Blvd.	Eureka St.		0.4
621	Minnesota Dr. East side Frontage Road	Diamond Blvd.	Raspberry Rd.		3.1
627	Minnesota Dr. Corridor	International Airport Rd.	Northern Lights Blvd.		NA

Table 8-2. Recommended Pedestrian and Trail Projects—Improvements Associated with Recommended Road Projects

PROPOSED 2009 REVISION

Project Number	Facility Name	From	To	Sidewalk Miles	Separated Pathway Miles
628	92nd Ave./Academy Dr. Extension	Brayton Dr.	Abbott Rd.	0.45	0.45
632	Lake Otis Pkwy. Extension	DeBarr Rd.	Airport Heights Rd.	0.7	NA
633	Boniface Pkwy. Access Management	Tudor Rd.	Glenn Hwy.	3.1	NA
702	Elmore Rd. Extension	Rabbit Creek Rd.	DeArmoun Rd.	2	NA
705	Tudor Rd. Access Management	Seward Hwy.	Arctic Blvd.	1.25	1.25
706	Tudor Rd. Access Management	Seward Hwy.	Patterson St.	3.7	3.7
707	Glenn Hwy. at Eagle River	Hiland Rd.	Artillery Rd.	NA	4
708	Rabbit Creek Rd.	Seward Hwy.	Goldenview Dr.	1	1
801	92nd Ave.	King St.	Seward Hwy.	1.5	NA
802	84th Ave.	Hartzell Rd.	Lake Otis Pkwy.	1.0	NA
803	Oilwell Road	north of Muldoon Rd. interchange	Elmendorf Air Force Base Access Gate	1.0	NA
COMPLETED			Total Miles	82.7	76.9

NA = Not applicable

Source: CH2M HILL

Chapter 13 Addendum: Deletion of Knik Arm Crossing Expanded Background

Background: Knik Arm Crossing Project

The Alaska Legislature established KABATA, the Knik Arm Bridge and Toll Authority, in 2003 to “...develop, stimulate, and advance the economic welfare of the state and further the development of public transportation systems in the vicinity of the Upper Cook Inlet with construction of a bridge to span Knik Arm and connect the Municipality of Anchorage and the Matanuska-Susitna Borough.” (AS 19.75.011) An Assembly Resolution passed in 2005 supported construction of the KAC in furtherance of the goals of the Anchorage Comprehensive Plan, *subject to the resolution of the required economic and environmental issues.*

The KAC is a “regionally significant project” that consists of a roadway and bridge crossing of Knik Arm connecting the Municipality of Anchorage (MOA) and the Matanuska-Susitna Borough (Mat-Su), as shown in Figure 12-1, Chapter 12 of the LRTP. A regionally significant project is one that is on a facility that serves regional transportation needs. To comply with 23 USC 134 that requires regionally significant projects to be included in a metropolitan planning organization long-range transportation plan (LRTP) prior to FHWA issuing a Record of Decision on the environmental impact statement (EIS), KABATA requested in March, 2006, that AMATS consider an amendment to the Anchorage Bowl 2025 LRTP to include the KAC project.

With support from FHWA, the AMATS Policy Committee agreed to the request from KABATA. The draft LRTP amendment was released for public review and comment October 12, 2006, and addressed the new environmental information that was released with the *Knik Arm Crossing Draft Environmental Impact Statement and Draft*

Section 4(f) Evaluation (DEIS) by KABATA in September, 2006.

KAC Draft Environmental Impact Statement: MOA Concerns

The MOA submitted formal comments on the KAC DEIS, and supporting technical reports, on November 17, 2006. MOA expressed concern on the following issues: Downtown Anchorage impacts; lack of alternatives; impacts to the historic and ethnically and socio-economically diverse Government Hill neighborhood; transportation funding priorities; project financing; inconsistency with the *Anchorage 2020 Comprehensive Plan*; effect on Anchorage property values; Port of Anchorage impacts; and the DEIS comment period.

Regarding alternatives considered, MOA commented that the decision to exclude consideration of a route from the proposed KAC through Elmendorf Air Force Base to the Boniface Interchange was never fully explained, and that similarly, the Hiland Road connection was evaluated in the preliminary DEIS, but excluded without satisfactory explanation in the DEIS. According to the MOA, the DEIS discussion of the rail bridge across Knik Arm illustrated “a convoluted assessment process and criteria that considered all alternatives as single modes only, an approach that was widely understood to be non-optimum, and that omission of rail-highway multimodal services in the KAC corridor constituted a transportation efficiency degradation for the region and the state.”

The MOA also expressed concern about KAC project impacts on rail transportation, recognizing the high value held for railroad interaction with the Port of Anchorage facilities, the utility and cost-effectiveness of railroad transport of heavy and bulk materials, and the services the railroad provided for goods and passenger movement that would otherwise strain the MOA road network. In particular, MOA was concerned that railroad

operating efficiency, competitiveness, and freight and passenger service vitality must not be compromised in any way as a result of, or in connection with, the KAC project as presently proposed by KABATA.

DEIS: KAC Project Purpose and Need

With respect to the intended purpose and need for the project to develop, stimulate, and advance the economic welfare of the state, MOA comments on the DEIS noted that with construction of the bridge, ISER predicted the KAC would produce no net regional gain in economic activity. Population and employment projected to 2030 in the region (MOA and Mat-Su) was no different with or without the KAC. Furthermore, projected gains in Mat-Su wage and salary employment and population through 2030 corresponded exactly to losses in Anchorage employment and population due to the KAC, which translated into lower property values for Anchorage homeowners. Although the DEIS recognized this impact, no mitigation was proposed to offset this loss.

The MOA noted that the DEIS did not speak to the likely effect on MOA revenues and expenditures of Mat-Su borough residents who would be living in much closer proximity to Anchorage with the KAC, and who would need to draw on MOA social and other public services. In fact, the DEIS estimated that for all phases of the KAC project, Anchorage tax revenues, as well as budgets, would be higher without than with the bridge. In the operation phase of the KAC, 2010-2030, Anchorage property tax revenues would be \$406.9 million under the build alternatives, but the No-Action Alternative would be about \$19.2 million more. Other taxes would provide revenues of \$24.9 million under the build alternatives, but \$1.2 million more would be raised under the No-Action Alternative.

Under the No-Action Alternative, the Anchorage budget would also be higher by about \$36.6 million, with the APD and AFD budgets higher by \$6.8 million, and the ASD budget higher by \$35.1 million. Overall, according to the DEIS, the No-Action Alternative would have higher Anchorage tax revenues and require higher budgets than would be the case under the build alternatives.

The MOA also questioned the regional benefits of a project that would serve as the catalyst for more dispersed development, urban land absorption, increased automobile dependency, higher vehicle travel miles, more mobile emission and greenhouse gases, and significant new and larger public infrastructure needs. Furthermore, the DEIS did not devote adequate consideration to and integration of public transportation, ridesharing, non-truck goods movement options and non-motorized transportation among the alternatives examined, the travel model mode choice procedures, and the modal composition of the project.

Without more in-depth discussion, it was difficult to conclude that the project would fulfill its intended purpose of furthering the development of public transportation systems in the vicinity of Upper Cook Inlet. The MOA clearly expected the final environmental impact statement (FEIS) to address these and other concerns, and to adequately address mitigation of KAC impacts on Anchorage.

DEIS: Other Public Comment

Comments on the DEIS were also submitted by MOA Port of Anchorage, Mat-Su Borough, Government Hill Community Council, U.S. Army Corps of Engineers, Alaska Railroad Corporation (ARRC), State of Alaska Department of Natural Resources, U.S. Department of Commerce National

Oceanic and Atmospheric Administration (NOAA), Marine Mammal Commission, Minerals Management Service, Native Village of Eklutna, Knik Tribal Council, U.S. Department of the Interior, Federal Transit Administration, Bureau of Land Management, Alaska Center for the Environment, *et al.*, and local residents. Although several agencies expressed general support for the project, common themes in comments from agencies included the lack of adequate discussion of alternatives and lack of range of alternatives; inadequate discussion of mitigation measures; impacts of the project on natural aquatic resources, wetlands, and Essential Fish Habitat; effects of the bridge on hydrology and sedimentation; logical termini; cost feasibility and potential impact to funding of other projects; project funding; impacts to Government Hill; land use and policies; environmental justice; traffic impacts; noise and air quality; subsistence; and context-sensitive solutions.

According to the DEIS, comments from individuals were approximately evenly split between those who supported the project and those who did not, and included many of the same issues addressed in agency comments.

2027 LRTP Revisions

Titled “2027 LRTP Revisions”, the proposed new LRTP section included a table of contents, introduction to the 2027 LRTP Revisions, a new Chapter 12, “The Knik Arm Crossing Project”, as well as additional revisions to fourteen pages of the Anchorage Bowl 2025 LRTP.

Most of the proposed revisions pertained to the KAC project. The LRTP amendment added the KAC as a regionally significant project; supported the designation of the project alignment as part of the National Highway System (NHS); and adopted the regional air quality conformity determination on the project in accordance with the Clean Air Act.

The 2027 LRTP revision built on the Anchorage Bowl 2025 LRTP, which addressed the environmental and preliminary design phases of the KAC, but did not include the construction phase in the list of recommended projects, pending further information and analysis of the environmental impact statement (EIS). The 2027 LRTP revision added the KAC project, number 810, to Table 8-1, Recommended Road Improvement Projects, Short-Term Projects (2006-2015). The project description included construction of the entire length of the bridge from the Mat-Su Borough to the Anchorage side, and a second phase for construction of the Ingra-Gambell streets/viaducts to 3rd Avenue from Government Hill.

The only revision that did not pertain to KAC was a minor change adding to Table 8-1, Recommended Road Improvement Projects, for project number 601, Lake Otis Parkway and Tudor Road Intersection. This project was moved from page 137 under Projects for Which the Funding Priority is Undetermined, to page 133 under Short-Term Projects (2006-2015), and project information was updated.

2027 LRTP Population and Employment Growth & Traffic Projections

The 2007 LRTP revisions extended the planning horizon to 2027. Population, housing and employment projections were updated to 2027 based on the latest available projections that were developed by the Institute of Social and Economic Research (ISER) for the Knik Arm Crossing environmental impact statement in 2005, and regional and local traffic estimates were prepared.

The KAC project was expected to have little effect on the overall regional growth in terms of population and employment. By providing access to a large supply of vacant land in the Mat-Su, however, ISER projected the KAC project would have an impact on the relative share of population,

households, and jobs growth between the MOA and the Mat-Su. The regional traffic model estimated that about 33,500 vehicles per day would cross the Knik Arm bridge by 2027, adding a significant amount of traffic to the MOA roadway network.

For local community traffic, it was assumed that the primary impact of the bridge traffic was expected to be in Downtown Anchorage, and the traffic analysis focused on that area. Results of the analysis showed that the Glenn-Seward Highway connection project and the Ingra-Gambell connection across Ship Creek were critical complementary projects linked to the KAC project. Without these projects, traffic volumes traversing Downtown along the A-C couplet would double by 2027, and 12 percent of total trips would be truck trips, which would further affect Downtown.

2027 LRTP Public Review and Comment

The public review process for the 2027 LRTP revisions included public hearings held by the MOA Planning and Zoning Commission and the MOA Assembly. The Planning and Zoning Commission considered the formal comments that were submitted by MOA to KABATA in November, 2006, for the DEIS, as well as comments from the Mat-Su Borough for the LRTP amendment, an Issue-Response Summary prepared by staff, and input from public agency staff, and the public.

The Commission was particularly interested in impacts of the KAC project on Anchorage, and compatibility with the LRTP amendment with the *Anchorage 2020* Comprehensive Plan. It appeared that the bridge in and of itself would not increase economic investment by any significant amount, but would redistribute it away from Anchorage more than toward Anchorage. In that sense, the Commission found the project did not comply with the 2020 Comprehensive Plan, which is based on new economic development, and infill re-development.

The Commission noted that during development of *Anchorage 2020* the public specifically rejected a slow growth scenario which would have pushed more of the regional growth out into the Mat-Su Borough. The KAC was projected to lead to a reduction of Anchorage population and employment growth, with the redistribution of jobs and population from Anchorage to the Mat-Su Borough accelerating over time. Construction of the project was viewed to undermine redevelopment and infill efforts in Anchorage, and to promote sprawl throughout the western part of the Mat-Su Borough, increasing the regional commute distances, travel time, energy consumption and overall reliance on the automobile, all of which directly contradicted the intent of *Anchorage 2020*.

With the projected loss of jobs, population, and households, there would also be some loss of economic investment associated with industrial development and possibly recreation and tourism. To the degree that Anchorage would lose economic investment, it was believed Anchorage would lose tax revenue that provides for services, but to what degree this would occur was uncertain. It was also uncertain to what degree it would be a temptation for developers to go Mat-Su to build, and what impact the timing of the KAC project would have relative to the timing of the transition in the Anchorage Bowl in implementing the new comprehensive plan.

Commissioners noted that the comprehensive plan included a policy to optimize existing transportation and utility infrastructure before extending these facilities to undeveloped areas, as the KAC project would do. Referring to a staff level analysis of LRTP planning factors, Commissioners noted that opening the KAC would have a limited effect on preservation of the existing system.

Although there could be regional benefits, Commissioners believed the benefits for Anchorage transportation and land use could not be quantified, and that impacts for Anchorage should be weighed against the regional picture. However, the task of demonstrating regional benefits was not the responsibility of the metropolitan planning organization (AMATS); rather, federal planning regulations require AMATS to “provide for the consideration of projects and strategies that will...support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity and efficiency.”

The comprehensive plan placed new emphasis on reducing VMT, and enhancing the pedestrian environment for downtown, but Phase I of the KAC project did not include funding for pedestrian or other multi-modal facilities. Furthermore, the project was viewed as contributing little to reducing congestion in Anchorage; having a negligible effect on reducing existing commuting times from the Mat-Su Borough to Anchorage; and not substantially reducing the rate of traffic growth on the Glenn Highway, or significantly changing the need and timing of the recommended improvements along the Glenn corridor.

The Commission was also concerned that the project would have a devastating impact on the historic Government Hill neighborhood, and increased traffic congestion through Downtown Anchorage created by the bridge would have a negative effect on its vitality, which again was contrary to the intent of the Anchorage comprehensive plan. Other concerns expressed by the Commission related to the costs and risks of the project to the economy; the substantial risk that the project would not be able to pay for itself; concern over the diversion of existing sources of federal and state transportation funds from needed transportation projects in Anchorage; and environmental impacts.

After further consideration, the Commission unanimously rejected the motion to include the KAC project in the Anchorage LRTP. The resolution denying the 2027 LRTP amendment to add KAC to the LRTP included twenty-one findings of fact, emphasizing that the project was not consistent with *Anchorage 2020*, the comprehensive plan for the Anchorage Bowl.

During the subsequent Assembly public hearing most of the public testimony was not in favor of adding the KAC project to the LRTP. The Assembly ultimately recommended approval for amending the LRTP to include the KAC project, subject to five specific conditions.

Approval of 2027 LRTP

The Assembly recommendations for conditions to include the KAC into the LRTP were incorporated into the final revised LRTP. Recognizing fiscal issues, traffic impacts, neighborhood impacts, as well as impacts on the community and the environment from the Knik Arm Crossing, the KAC project was added to the LRTP, *subject to* a number of conditions identified in Chapter 12.

One of the conditions for including the KAC project in the LRTP was that “the final environmental impact statement is released and the comments from the MOA, Mat-Su, the Alaska Railroad Corporation, and the public have been addressed.” The AMATS Policy Committee approved the 2027 LRTP amendment together with the Air Quality Conformity Determination Report in April, 2007.

Final Environmental Impact Statement (FEIS) Background

After the LRTP was amended to include the KAC project, the MOA continued to express concerns for the operation and management of the KAC project. On August 8, 2007, the MOA asked that the KAC funding process be made more transparent and open to the public, and that performance standards for the KAC include concrete triggers for improving and completing the important connections on both sides of the bridge. In Anchorage, that meant a definite traffic volume level that would trigger a project-funded connection to the Ingra-Gambell corridor to relieve the inevitable traffic congestion brought about by any additional traffic the bridge delivered to downtown. In the Mat-Su Borough, this meant a similar volumetric requirement for a modern, straightened and improved Point MacKenzie Road that would actually deliver the time savings envisioned by supporters of this project.

In October, 2007, the MOA adopted the *Anchorage Pedestrian Plan*. The purpose of this plan was to establish a 20-year framework for improvements that would enhance the pedestrian environment and increase opportunities to choose walking as a mode of transportation. Public input obtained during development of this plan was used to develop the pedestrian project list. It should be noted that needs identified by the public for the 20-year timeframe addressed by the Pedestrian Plan did not include pedestrian connections to the proposed Knik Arm Crossing.

In December, 2007, the MOA adopted the *Anchorage Downtown Comprehensive Plan*. The proposed KAC project was addressed under planning considerations for connectivity and accessibility. The Downtown Comprehensive Plan noted that if the KAC were not connected to the Freeway to Freeway connection, but only to the A/C couplet, then local circulation and the potential for high-density and mixed-use redevelopment could be negatively impacted.

FEIS and Response:

- MOA

The final environmental impact statement (FEIS) for the Knik Arm Crossing was released on December 18, 2007. The MOA submitted a formal response to the FEIS on February 19, 2008 to KABATA. The MOA acknowledged that FHWA offered some thoughtful responses in the FEIS to MOA comments on the DEIS. However, it was evident to the MOA that there were remaining disagreements in the technical analysis, financial assumptions, the overall long-term affect the bridge would have on the land use pattern and economic impacts, as well as the future policy implications to the Anchorage Bowl and the region.

The FEIS-recommended alternative, the Northern Access – Erickson Alternative with an 8200' bridge, recognized the MOA concerns, but opted to address at a later time the significant impacts to the Government Hill neighborhood, which was unacceptable to MOA. The MOA opposed a Record of Decision on the FEIS until MOA concerns were addressed, particularly the mitigation of Government Hill neighborhood improvements, and assurances of construction of the Ingra/Gambell connection by a specified date.

During summer of 2008, the AMATS Policy Committee asked KABATA to respond to lingering questions about the project. Some Committee members continued to have serious reservations about the financial feasibility of the project; concerns for a potential breach of financial firewall protections required by MOA to insulate the MOA, the state, and AMATS against additional project cost impacts; and other negative impacts of the

KAC project on Anchorage, including increased traffic congestion in Downtown, lost development investment, lower revenues, and a weakened tax base.

- **Government Hill Community Council**

On February 19, 2008, the Government Hill Community Council (GHCC) submitted comments on the FEIS and *Final Section 4(f) Evaluation*. Council comments indicated continuing unresolved issues, including seismic capacity of the A/C Couplet Bridge, financial feasibility of the project, failure to adhere to guidelines established by the TeamBuilding Initiative, and problems with the alternatives analysis and the consultation process.

GHCC commented that the *Final Section 4(f) Evaluation* incorrectly stated that consultation was ongoing with the Government Hill Community Council when, according to the Council, KABATA had not worked with GHCC since early 2006, and the KABATA offer to now work with GHCC on Context Sensitive Solutions was “after the fact”. GHCC commented that KABATA should be required to conclude the consultation process, and to develop mitigation measures for impacts to Government Hill and to the community as a whole that are acceptable to MOA and GHCC before FHWA issued its Record of Decision.

- **Mat-Su Borough**

Mat-Su did not prepare a formal response to the FEIS. After the FEIS was released, Mat-Su continued to support the bridge concept, although some expressed dissatisfaction that the FEIS did not include connecting infrastructure needs on the Mat-Su side as an element of the KAC project cost, as had been done for the Anchorage side.

Land use and economic development plans for Mat-Su clearly identify development of Point MacKenzie as the most important growth objective for Mat-Su, encompassing such large-scale investments as Port MacKenzie, the Cook Inlet Ferry, Goose Creek Correctional Center, and the planned Alaska Railroad connection to the Port. During development of the Mat-Su Borough Long-Range Transportation Plan, a land use charrette identified the projected need for high-density residential development near mile 7 on the Point MacKenzie Road. The KAC and supporting road infrastructure have been identified as critical elements for success of these projects.

- **Alaska Railroad Corporation**

The Mat-Su Borough plans to build a rail extension to Port MacKenzie that will be operational by 2012, sooner than was planned when the DEIS was released. At that time, the port rail extension was anticipated by 2030. ARRC commented on the DEIS that with regard to a spur line to Port MacKenzie, it was not likely to be operating by 2030, but that construction of a gas pipeline could accelerate that project dramatically. KABATA responded in the FEIS that should construction of a gas pipeline change the rail spur conditions prior to the KAC construction, that “additional consideration would be required.” With the acceleration of the rail spur line, ARRC responded with a letter on February 22, 2008, that the FEIS must reconsider the impact the two projects have on each other.

ARRC has also been interested in pursuing a rail crossing of the Knik Arm connecting the Port of Anchorage and MOA with Port MacKenzie and northern sites. With the near-term completion of the rail spur to Port MacKenzie, a Knik Arm rail crossing has become a more immediate priority, and ARRC remains committed to the concept of a KAC rail bridge.

ARRC strategic plans identify a KAC rail bridge as a high priority link that will serve not only the immediate region, but the state as a whole. The DEIS recognized that the ARRC is a crucial part of the Alaska transportation system, and more efficient rail access to Interior Alaska has long been recognized as an eventual need. However, the DEIS recommended a highway-only bridge, with no structural capability to add rail at a later time, but suggested that a separate rail structure could be built in the future.

Commenting on the DEIS, ARRC had found it unfortunate that the scope of the project was limited to construction of a highway-only bridge, and that a rail bridge now, with the capability to add highway capacity later when needed, made more economic sense. One compelling reason to support a direct rail connection between Anchorage/Port of Anchorage and Port MacKenzie/northern sites was that it would reduce train travel times by up to 2 hours. Also, a rail bridge would make it possible to move the ARRC railyard and other operations from the Anchorage side to Port MacKenzie, potentially opening up prime water-front real estate on the Anchorage side for future development, including high-density residential land uses. This concept of moving the railyard to Point MacKenzie has long been suggested by ARRC whenever a Knik Arm Crossing is discussed.

ARRC indicated that adequate work had not been done to resolve the issue of whether a future rail crossing would be precluded as a result of the KAC project, and additional technical studies and grade and curvature analyses would be required to settle the issue. Responses from KABATA in the FEIS did not satisfy these and other ARRC concerns, including impacts of an Ingra-Gambell connection to ARRC property, and impacts to the ARRC Railyard and Ship Creek Industrial Area.

- **Environmental Agencies**

On February 15, 2008, the U.S. Environmental Protection Agency (EPA) submitted comments on the FEIS to FHWA. Although EPA was pleased to see that the FEIS included some promising mitigation components, the basis of the EPA objections remained, including concerns over the alternative considered. EPA wanted KABATA to explore the Expanded Ferry Alternative and the Transportation Package Alternative, which included commuter rail. EPA had commented earlier on the DEIS that while a rail bridge is more expensive to construct, future plans include this service, which would result in having to build an additional bridge for rail use. EPA had recommended further study, coordination, and collaboration with the ARRC which could result in better transportation solutions.

EPA also expressed continuing concern for environmental consequences of the KAC project, and mitigation for water quality, beluga whales, hydrology and sedimentation, air quality, dispersed development in the Mat-Su Borough, wildlife impacts, and financial feasibility.

On February 19, 2008, the U.S. Department of Commerce National Oceanic and Atmospheric Administration (NOAA) submitted comments to KABATA on the FEIS indicating that NOAA continued to have serious concerns about the environmental consequences of the project, especially for beluga whales, essential fish habitat, and marine and freshwater trust resources. While the FEIS responded to earlier comments by NOAA on the DEIS by providing additional analyses and clear statements regarding adverse effects, NOAA commented that these additional analyses did not remove their concerns. On October 17, 2008, the National Marine Fisheries Service

(NIMFS) designated the Cook Inlet Beluga whale as "endangered" under the federal Endangered Species Act, further intensifying environmental issues for the KAC project.

FHWA Record of Decision (ROD) Postponed

When the current LRTP amendment was developed, the Federal Highway Administration (FHWA) had not yet issued a Record of Decision (ROD) for the KAC project FEIS. FHWA was aware of the continuing and increasing controversy over the KAC project, and postponed their decision pending final action by the AMATS Policy Committee for the 2009 LRTP amendment.

Regional Transit Authority Agreement

On June 13, 2008, the MOA and Mat-Su Borough mayors signed a letter of agreement to create a Regional Transit Authority to better serve the residents of Southcentral Alaska. One goal of the agreement was to develop a regional public strategy to consist of a mix of strategies, including additional bus, van-pool capacity and carpooling, Glenn Highway improvements, commuter rail development, Mat-Su ferry service and the exploration of other transportation modes. The KAC was not specified in the list of strategies that should be included to address the transit needs of citizens in the region.

On January 6, 2009, the Anchorage Assembly and Mat-Su Borough Assembly concurrently approved a Memorandum of Agreement to move forward with the creation of a regional transit authority. The MOA and Mat-Su Borough mayors planned to begin work immediately on ways to improve commuting opportunities between Mat-Su and Anchorage, and to seek enabling legislation and start-up funding from the state legislature for the regional transit authority.

Recommendation to Delete the Knik Arm Crossing Project

In the fall of 2008, the MOA Assembly took an interest in revisiting the KAC project in the LRTP. The Assembly passed a resolution asking AMATS to consider the question of removing the KAC project from the LRTP.

The Assembly request was based on the following: unprecedented increases in fuel and construction costs over the previous two years that were expected to alter future growth, land use, and commuting patterns in the Anchorage/Mat-Su region; the declining balance in the Highway Trust Fund; the newly formed Regional Transit Authority that would serve commuters; and the impact of funding demands for KAC-related roadway improvements on the ability of AMATS to fund, design and develop other needed transportation improvements.

Assembly members serving on the AMATS Policy Committee also expressed concern that the KAC project was not consistent with *Anchorage 2020*, and concerns that spiraling costs for construction projects, together with the current national and international economic downturn, posed a high risk to the KAC revenue stream and financial feasibility. The AMATS Policy Committee directed the Technical Advisory Committee to begin the process to delete the KAC project from the Anchorage LRTP.

Table 9-6 - Project Cost

(\$ in Millions)
reflects est remaining cost after 05-09 funds to projects

Inflation Rate: 2004	10%	10%	10%	10%	10%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
(Note 1)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
National Highway System															
National Highway System	1,281	1,409	1,550	1,705	1,876	1,739	1,881	1,956	2,034	2,095	2,158	2,223	2,290	2,358	2,429
Pavement Preservations	76	84	92	101	111	100	104	108	117	120	124	128	132	136	140
Total National Highway System	1,357	1,493	1,642	1,806	1,987	1,839	1,989	2,069	2,151	2,216	2,282	2,351	2,421	2,494	2,569
Non-National Highway System															
Anchorage Roads	650	715	787	865	952	795	827	860	894	930	958	987	1,016	1,047	1,111
C/ER roads	91	100	110	121	133	132	137	143	148	154	159	164	169	174	184
Non-NHS Pavement Preservation	112	123	136	149	164	158	171	184	192	200	205	212	218	225	238
Highway Safety Improvement Program	35	38	41	44	47	27	28	29	30	31	32	33	34	36	38
Enhancements	8	8	9	10	11	10	11	12	13	14	15	16	17	18	20
Congestion Management & Air Quality	87	93	100	105	110	105	110	115	120	124	128	132	136	140	144
Roadway/Railroad Crossings	17	18	19	20	21	18	19	20	21	22	23	24	25	26	28
Planning	6	7	7	8	9	7	7	8	8	8	8	9	9	9	10
Total Non-National Highway System	1,190	1,309	1,440	1,584	1,742	1,525	1,586	1,649	1,715	1,783	1,837	1,892	1,949	2,007	2,130
Total Roads, excluding Transit	2,547	2,802	3,082	3,390	3,729	3,364	3,498	3,638	3,784	3,935	4,053	4,174	4,300	4,429	4,698
Transit															
Buses (\$67.3) other (32.1) vans (7.3)	107	118	129	142	157	134	139	145	151	157	161	166	171	176	187
Total Transit	107	118	129	142	157	134	139	145	151	157	161	166	171	176	187
Total Capital Cost	2,654	2,919	3,211	3,532	3,886	3,498	3,637	3,783	3,934	4,092	4,214	4,341	4,471	4,605	4,886
Note 1): 2004 source = Long Range Transportation Plan															

The Purpose of this analysis is to show anticipated sources of funding for Long Range Transportation Plan projects through 2019.

prepared by: LRW For TAC review draft

AMATS Technical Advisory Committee (REVIEW DRAFT)
Reconciliation - Project Plans to Capital Funding Sources

AMATS Technical Advisory Committee (REVIEW DRAFT)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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Prepared by: URW, AMATS Technical Advisory Committee (review draft)

AMATS Technical Advisory Committee (REVIEW DRAFT)
Transportation Plan - Sources and Uses of Revenue (2009 through 2027)

(\$ in millions)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
2009-2030 ALL Projects																			
Total Project Costs	1,749	1,664	1,542	1,463	1,319	1,145	1,000	862	737	624	517	415	312	215	121	42	197	207	465
Less: Year's Spending	149	181	138	194	207	358	469	538	621	713	836	947	1,058	1,168	1,271	1,374	1,477	1,580	1,683
Projects Deferred to Future Years	3,348	3,302	3,298	3,236	3,159	2,826	2,531	2,282	2,076	1,911	1,781	1,647	1,511	1,374	1,240	1,106	973	843	717
Inflation	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Deferred Projects	3,482	3,434	3,430	3,365	3,284	3,000	2,692	2,413	2,178	1,986	1,832	1,685	1,547	1,409	1,271	1,133	995	857	719
2009-2018 Short Range Projects																			
Total Project Costs	1,749	1,664	1,542	1,463	1,319	1,145	1,000	862	737	624	517	415	312	215	121	42	197	207	465
Less: Year's Spending	149	181	138	194	207	358	469	538	621	713	836	947	1,058	1,168	1,271	1,374	1,477	1,580	1,683
Projects Deferred to Future Years	1,600	1,483	1,406	1,268	1,112	798	638	482	321	173	(4)	(340)	(4)	(340)	(4)	(340)	(4)	(340)	(4)
Inflation	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Deferred Projects	1,684	1,542	1,463	1,319	1,145	807	654	494	321	173	(4)	(349)	(4)	(349)	(4)	(349)	(4)	(349)	(4)

Revenues or spending is the estimated yearly funding to be spent on projects to reduce the total projects deferred to the next year
 4% annual project inflation from 2009-2013, 2.5% projected inflation after 2014

CONSULTATION TEAM REVIEW DRAFT

PROPOSED

2009 ANCHORAGE LONG-RANGE TRANSPORTATION PLAN

REVISIONS

AIR QUALITY CONFORMITY DETERMINATION

Prepared By:

Municipality of Anchorage
Community Planning & Development Department
Transportation Planning Division
and
Municipality of Anchorage
Health and Human Services Department
Air Quality Section

April 9, 2009

INTRODUCTION AND BACKGROUND

This document provides the analysis and conclusions regarding the air quality conformity determination for the 2009 Anchorage Long-Range Transportation Plan Revisions (2009 LRTP) pursuant to 40 CFR Part 93. The 2009 LRTP covers the period 2007-2027.

Anchorage is currently only required to conduct air quality conformity determinations for carbon monoxide (CO).

Relationship between the 2009 LRTP Conformity Determination and Previously Approved Conformity Determinations for LRTPs Adopted in 2005 and 2007

In November 2005, AMATS* adopted a new LRTP that complemented a new Anchorage comprehensive plan, adopted in 2001, called *Anchorage 2020*. The new comprehensive plan set a new direction for long-term growth and development in the Anchorage Bowl. The 2005 LRTP† contained a package of transportation improvement projects that were complementary to Anchorage 2020 including improvements to the streets and highway system, transit services, pedestrian system, bicycle system, freight distribution system, regional connections, and congestion management program. A conformity determination was prepared for the 2005 LRTP which was reviewed by the inter-agency consultation team and released for public review as required by federal regulation. The conformity determination was adopted along with the 2005 LRTP by the AMATS Policy Committee in November 2005. The 2005 LRTP and associated conformity determination covered the period 2005-2025.

In 2007 the LRTP was amended to include the Knik Arm Crossing (KAC) project. The proposed KAC project would bridge the Turnagain Arm and provide a connection between Anchorage and the Mat Su Borough to the north. The amendment included the addition of new facilities that would connect the KAC to C Street and later to the Ingra/Gambell couplet. No other changes were made to the transportation network. The conformity determination was reviewed by the inter-agency consultation team, released for public comment and approved by the AMATS Policy Committee in November 2007. The 2007 LRTP and associated conformity determination covered the period 2007-2027.

In 2009 AMATS is considering an amendment that would remove the KAC and associated connections to C Street and Gambell/Ingra from the LRTP. If this amendment is adopted, the transportation network envisioned would be *identical* to the 2005 LRTP. For this reason, the conformity determination for the 2009 LRTP will rely in part on the analysis performed for the 2005 LRTP. Because the transportation networks programmed in the 2005 and 2009 LRTP are identical, on April 6, 2009 the inter-agency consultation team agreed that using results from the 2005 LRTP conformity analysis was appropriate in the analysis of the 2009

* AMATS (Anchorage Metropolitan Area Transportation Solutions) is the metropolitan planning organization for the Anchorage.

† For the purpose of this document we will refer to the 2005-2025 Anchorage LRTP as the 2005 LRTP. The LRTP amendment adopted in 2007 to include the Knik Arm Crossing will be referred to as the 2007 LRTP. The currently proposed amendment to the LRTP, which is the subject of this analysis, will be called the 2009 LRTP.

LRTP. The 2009 LRTP conformity analysis will, however, have to address the issue of whether the planning assumptions used in the analysis of the 2005 LRTP are still acceptable in 2009. In addition, because the horizon year of the 2009 LRTP extends two years beyond the 2005 LRTP, the conformity analysis will also discuss how CO emissions will be projected through 2027, the horizon year of the 2009 LRTP.[†]

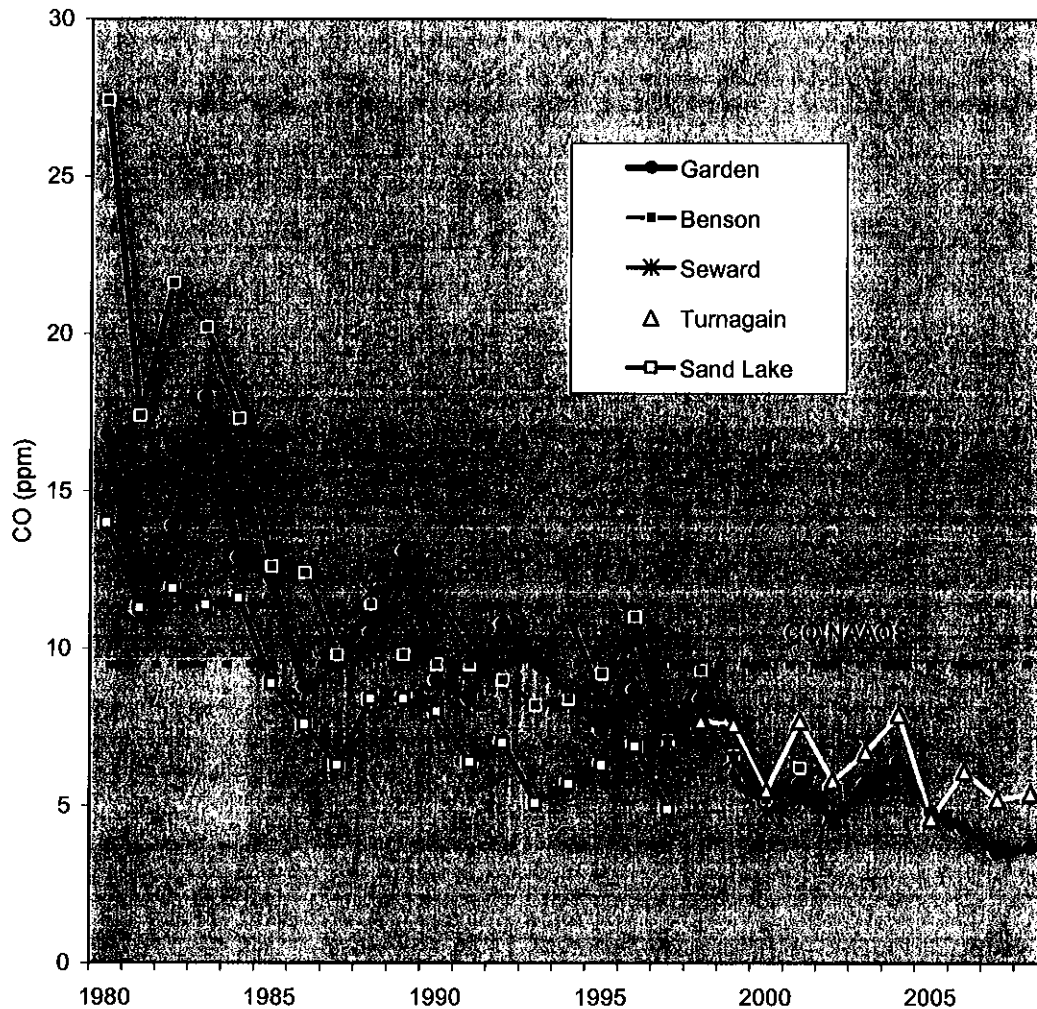
Attainment Status

Carbon monoxide (CO) is a colorless, odorless and poisonous gas produced by incomplete burning of carbon in fuel. The health threat from CO is most serious for those who suffer from cardiovascular disease, particularly those with angina and peripheral vascular disease. Due to the health effects of carbon monoxide, the Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS) for CO. Although the Municipality of Anchorage has a history of NAAQS violations, there has been a dramatic decline in CO concentrations from the peak levels experienced in Anchorage in the early and mid-1980s (see chart below).

Anchorage was first identified as experiencing high levels of ambient CO concentrations in the early 1970s. Since that time, extensive monitoring programs demonstrated elevated levels of CO throughout the community. Anchorage violated the national ambient air quality standard (NAAQS) for CO every year from 1972 through 1994 and again in 1996. In 1998 the EPA declared Anchorage as a serious nonattainment area for CO. Between 1997 and 2008, however, Anchorage compiled 12 consecutive years of compliance with the NAAQS. In February 2004, on behalf of the Municipality of Anchorage, the State of Alaska requested that the EPA redesignate Anchorage from a nonattainment area to an area that has attained the standard. This request was accompanied by a maintenance plan that showed that Anchorage should continue to maintain compliance with the NAAQS through 2023. The EPA approved this plan on June 23, 2004. Anchorage is now considered a CO maintenance area; an area that has attained compliance with the NAAQS.

[†] FHWA planning regulations (23 CFR 450.322(c)) do not require the horizon year of a new LRTP extended to 20 years unless a new 4-year update of the plan is being performed. For this reason the 2027 horizon year of the last previously approved LRTP amendment, the 2007 LRTP, is being retained.

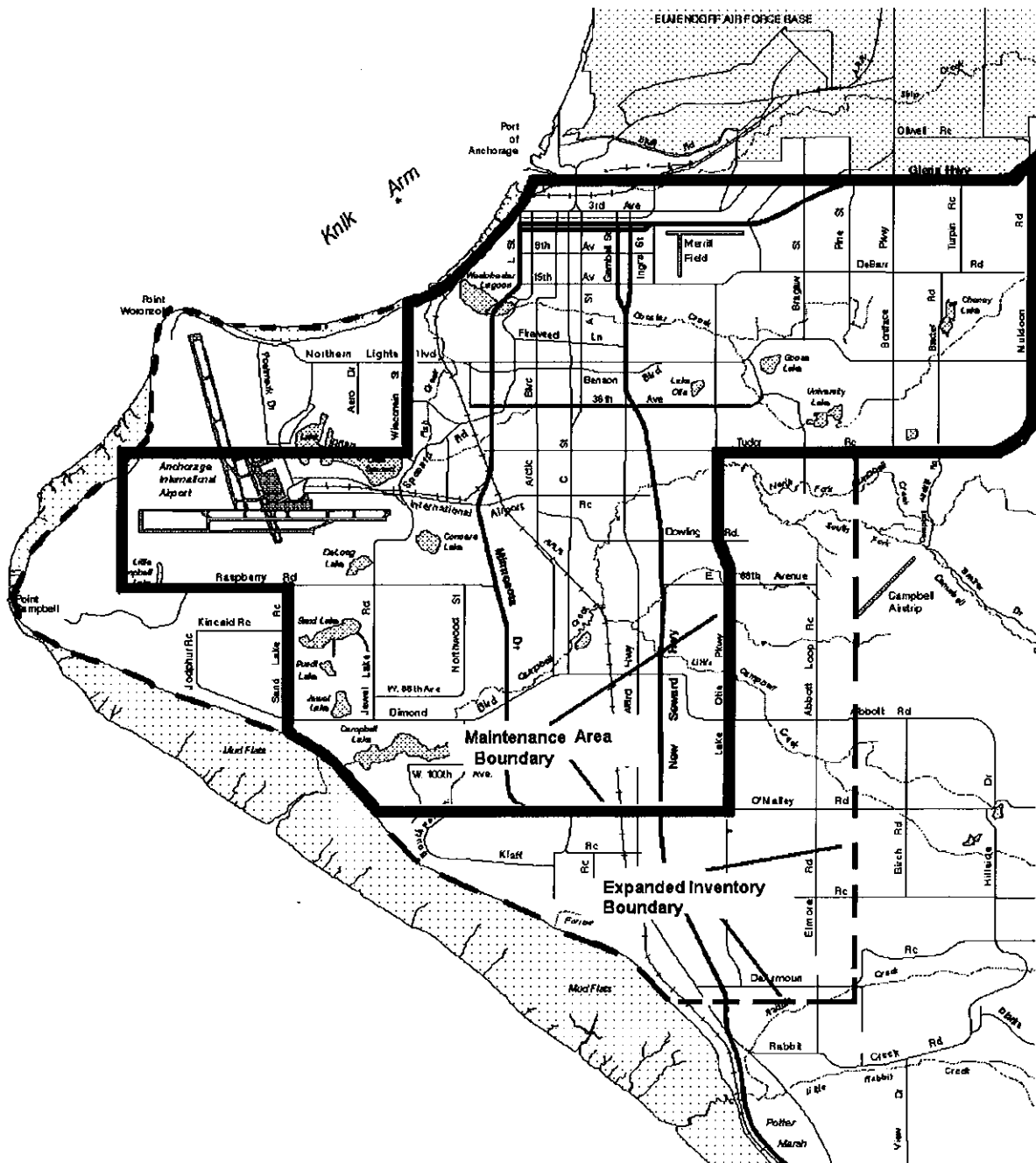
Figure 1
Trend in 2nd Maximum CO Concentration 1980 - 2008



Maintenance Area Boundary

The boundaries of the Anchorage nonattainment area were established in 1978. When Anchorage was redesignated as a maintenance area in 2004, these same boundaries were used to describe the maintenance area. The emission inventory boundary contains this maintenance area plus areas to the south and west not included in the maintenance area. The boundary was expanded slightly because significant residential and commercial growth has occurred in south and west Anchorage in the past two decades. The boundaries of the maintenance area are compared with the expanded emission inventory area in Figure 2. The inventory area encompasses approximately 200 square kilometers of the Anchorage Bowl.

Figure 2.
Anchorage Maintenance Area Boundary Compared with Expanded Inventory Area



Conformity Criteria Used in This Analysis

On August 15, 1997 the EPA published a clarified and more flexible transportation conformity rule. The rule was amended on January 24, 2008 to reflect changes in the new surface transportation legislation known as SAFETEA-LU. The specific conformity criteria used in this review include the following sections contained in 40 CFR Part 93 of the Federal Register:

<u>Section</u>	<u>Criteria</u>
93.110	The conformity determination must be based on the latest planning assumptions.
93.111	The conformity determination must be based on the latest emission estimation model available.
93.112	Conformity must be determined according to the consultation procedures in this subpart and in the applicable implementation plan, and according to the public involvement procedures established in compliance with 23 CFR part 450.
93.113(b)	The LRTP and TIP must provide for the timely implementation of TCMs from the applicable implementation plan.
93.118	The LRTP and TIP must demonstrate that emissions of the pollutants are less than or equal to the motor vehicle emissions budget established in the applicable implementation plan..

Analysis Years

The analysis years correspond to the requirements contained in 40 CFR 93.118(B) which states that the analysis years shall be no more than ten years apart with the first analysis year no more than five years beyond the year in which the conformity determination is being made. The conformity analysis performed for the 2005 LRTP covered the period 2005 through 2025. Because the last year of the LRTP forecast period must also be an analysis year, this analysis will extend that period through 2027, the horizon year of the 2009 LRTP. The conformity analysis for the 2009 LRTP will utilize results from the 2005 LRTP to estimate emission for analysis years 2005, 2015 and 2025. A separate analysis will be performed to estimate emissions in analysis year 2027. Appendix A of the 2005 LRTP contained a list of the roadway improvement projects by analysis year based on the short and long-term priorities recommended in the 2025 Anchorage Long-Range Transportation Plan. Except for one minor change (the Lake Otis Parkway / Tudor Road intersection project was advanced to a short-term project), this list is identical to that contemplated in the 2009 LRTP.

METHODOLOGY

The discussion of methodology is divided into three sections. The first section will discuss the methodology employed in the 2005 LRTP to estimate CO emissions in analysis years 2005, 2015, and 2025. (This section was taken verbatim from the earlier 2005 LRTP conformity determination.) The second section will discuss how these results were extrapolated to analysis year 2027 to meet the requirement that the conformity analysis include an analysis of the last year of the transportation plan. The third section will discuss the implications of using slightly dated planning assumptions to develop these projections and justify the use of these older projections in preparing CO emissions forecasts.[§]

Methodology Used to Estimate CO Emissions in Analysis Year 2005, 2015, and 2025

Local studies suggest that warm-up idling is a very important source of CO emissions and the use of engine block heaters is an effective way to reduce emissions. MOBILE6 would ordinarily be used to quantify emissions. However, a conventional MOBILE6 approach to computing vehicle emission rates does not adequately address the emissions impact of warm-up idling at the beginning of a trip. Moreover, MOBILE6 does not provide a mechanism to estimate the air quality benefits of engine block heater use.

To address these limitations Anchorage prepared a grid-based inventory of carbon monoxide (CO) emissions to more accurately characterize the time and location of mobile, area, and point-source emissions. Particular emphasis was devoted to accurately estimate CO emissions from vehicle cold starts and warm up idling and to accurately reflect the thermal state of vehicles traveling within Anchorage.

The methodology used to prepare estimates of mobile source emissions used in this conformity analysis were similar to that used in the preparation of the latest Anchorage CO maintenance SIP revisions approved by EPA effective July 2004. The methodology deviated slightly because a new transportation model, adopted by AMATS in April 2005, was used to generate estimates of vehicle miles traveled and vehicle starts. These changes in methodology were discussed and approved by an interagency consultation team during a July 13, 2005 teleconference. Staff prepared a memo describing the changes to the transportation model, accompanying air quality post-processor and the spreadsheet model used to compute CO emissions. This memo and minutes from the July 13 teleconference can be found in Appendix C (*note this is Appendix C of the conformity determination for the 2005 LRTP*).

The methodology involves a three step modeling process, utilizing the regional transportation model, an air quality post processor and the EPA approved emissions model (MOBILE6). The air quality post-processor was developed that is designed to be used within the travel demand model software. The post-processor provides estimates of vehicle miles of travel

[§] A FHWA/FTA/EPA January 18, 2001 memorandum: *Use of Latest Planning Assumptions in Conformity Determinations*, states that "conformity determinations that are based on assumptions that are older than 5 years should include written justification for not using more recent information."

(VMT), travel speed, trip starts, and demographic characteristics using a one-kilometer grid overlay on the Anchorage Travel Demand Model. This post processor operates in a seamless fashion with the Anchorage Travel Demand Model that is used to forecast future travel volumes on Anchorage roadways. This integration allows estimation of travel activity by time of day, and further allows the tracking of VMT by operating mode along the roadway system, thus providing the opportunity to develop a more thorough characterization of the thermal state of a vehicle's engine. Speed estimates are disaggregated by roadway functional class, while VMT and trip start estimates are disaggregated by trip purpose.

The output of this post processor is a linked set of database files with detailed vehicle activity and socioeconomic data for each grid. The linked files can be processed with estimates of vehicle emissions rates for air quality models (Mobile6) to develop the final forecast of CO emissions by location and time of day.

Travel Demand Model

In April 2005, AMATS adopted a new Transportation Demand Model. The updated model was a significant improvement over the previous model which was developed in 1998 (the basis for the previous air quality conformity determinations). Some of the major improvements and updates included:

- 1) Reestimation of household and employment characteristics and totals for traffic analysis zones based on 2000 US Census and Alaska Department of Labor information,
- 2) Restructuring and refinement of the highway network representation;
- 3) Restructuring and refinement of the transit network representation including development of ridership catchment areas for the traffic analysis zones;
- 4) Reestimation and extension of all household disaggregation models based on 2000 US Census data;
- 5) Reestimation and recategorization of all trip generation and attraction models including expanding the number of individual trip purposes;
- 6) Reestimation of trip distribution models based on the new trip purposes using information about trip lengths obtained from the 2002 Household Survey as a basis;
- 7) Revised time of day model. Old model generated total link loads and estimated trip purpose percent based on an external methodology. New model uses simultaneous assignment of all trip purposes separately to generate link loads stratified by trip purpose.
- 8) Reestimation of mode choice models based on household survey data including addition of separate out of pocket cost parameter including parking costs. General improvements in parameter estimation utilizing GIS capabilities;

- 9) Restimation of household and employment forecast based on updated existing land use data and regional projections.

It is important to note that the new Travel Demand Model utilized 2000 US Census data as well as the 2002 Anchorage Household Travel Survey whereas the previous model utilized 1990 U.S. Census data and a 1992 Travel Survey. Not only is the data more up-to-date but it is of better quality. The change in data sources changed the model results in at least two ways.

First, the 2002 survey suggested that the old travel demand model was significantly overestimating the number of automobile trips and underestimating non-automobile trips being made by the average household. The difference is explained in the methodology used in the two surveys. The use of a trip diary in the 2002 survey greatly improved the reporting of walk trips as well as carpool trips which are typically underreported in a survey (such as 1992) which relies solely on recall.

Second, the 2002 Household Travel reported more accurate trip start and end locations. The survey suggested that automobile trips lengths were longer than previously assumed. Since trip length distribution is used in the calibration of the gravity model, any changes in this data will have an effect on VMT output of the model.

In summary, the new model meets all of the requirements for determining regional transportation-related emissions for serious CO non-attainment areas contained in 23 CFR 93.122(b)(1):

- The Anchorage Transportation Planning Model was validated against observed 2002 daily counts and was found to meet the validation criteria established by FHWA (23 CFR 93.122(b)(1)(i)).
- Population and employment projections were based on the 2003 Institute of Social and Economic Institute Population and Employment projections. (23 CFR 93.122(b)(1)(ii)).
- Land use assignment scenarios used as input into the model utilize an accessibility index to distribute land use based in part on future improvements to the transportation system (23 CFR 93.122(b)(1)(iii)).
- The model uses a TransCAD capacity sensitive assignment procedure (User Equilibrium) which incorporates link capacity restraint effects and flow-dependent travel times. Emissions estimates were based on a methodology that differentiates between peak and off-peak volumes and speeds and uses speeds based on final assigned volumes. (23 CFR 93.122(b)(1)(iv)).
- Zone to zone impedances used to distribute trips between origins and destination pairs are in reasonable agreement with travel times that are estimated in the final assigned traffic volumes (23 CFR 93.122(b)(1)(v)).

- The model uses multinomial mode choice models to provide estimates of travel for the following modes: drive alone, high-occupancy vehicle with two occupants, high-occupancy vehicle with three occupants, bus transit, and non-motorized modes (walk and bicycle). Variables utilized in the model included travel times and costs, and socioeconomic characteristics of the trip-maker such as household size and income, auto ownership, number of workers in the household, and presence or absence of children (23 CFR 93.122(b)(1)(vi)).

The Anchorage Travel Model Calibration and Validation Report dated February 2005 provides a comprehensive description of the entire set of travel demand models used in this air quality conformity determination, is available from the Municipality of Anchorage, Traffic Department.

Land Use Assumptions

One of the most important assumptions used as input in the Anchorage Transportation Demand Model involves population and employment projections. In the past, it has been the policy of AMATS to use the population and employment estimates provided by the Institute of Social and Economic Research (ISER). There are several advantages to using this estimate as the basis of the Anchorage Transportation Demand Model, including:

- ISER is the only organization in the State of Alaska that regularly updates its population and employment forecast. This is particularly important for transportation planning since the metropolitan planning regulations require use of the latest population and land use assumptions.
- The ISER forecast is an econometric model which is based on assumptions regarding future economic activity in the state. This is a particularly appropriate methodology for Alaska which is a relatively young economy that has in the past undergone substantial boom and bust swings based on the performance of a few sectors of the economy.

Table 1, 2, and 3 shows the population, household and employment projections used in the Anchorage Transportation Planning Model.

**Table 1.
Regional Population Projections**

	2002	2025 Forecast	Numeric Change	Percent Change
Anchorage	237,160	302,330	65,170	28
Chugiak-Eagle River	31,540	58,870	27,330	87
Mat-Su Valley	68,800	126,600	60,800	92
Total	334,500	487,800	153,300	46

Table 2.
Regional Household Projections

	2002	2025 Forecast	Numeric Change	Percent Change
Anchorage	84,620	113,060	28,440	34
Chugiak-Eagle River	10,580	18,680	8,100	77
Mat-Su Valley	22,800	42,100	19,300	85
Total	118,000	173,840	55,840	47

Table 3.
Regional Employment Projections
(includes self employed)

	2002	2025 Forecast	Numeric Change	Percent Change
Anchorage	150,660	186,570	35,910	24
Chugiak-Eagle River	3,980	7,190	3,210	81
Mat-Su Valley	13,700	24,200	10,500	77
Total	168,340	217,960	49,620	30

Tables 1, 2 and 3 above show the Mat-Su Valley will experience the most dramatic population growth (92%), followed by Chugiak-Eagle River (87%), and the Anchorage Bowl (28%). This is in line with recent trends, which show the Mat-Su Valley increasing its share of the regional population from 9.3% in 1980 to 17.7% in 1999. Mat-Su Valley's share of regional employment also grew from 4.0% in 1980 to 8.4% in 1999.

Anchorage Transportation Model and Inventory Grid System

The CO inventories were based in large part on traffic activity outputs from the Anchorage Transportation Model. The model was developed using TransCAD travel demand modeling software. Because TransCAD is a GIS-based model, post-processing software was used to overlay a grid system on the inventory area. The post-processor was used to disaggregate the inventory area into grid cells, each one square kilometer in area.

Transportation activity estimates (e.g., vehicle miles of travel, number of trip starts, and vehicle speeds) were produced for each of the cells. The grid location of every roadway link in the transportation network is known. Thus, the attributes of a particular roadway link (e.g., traffic volume, speed, and prior travel time) can be assigned to a particular grid. If a roadway link crosses the boundary between two or more grids, its attributes are assigned to the appropriate grid in relation to the proportion of the length of link contained in each grid. In other words, if 80% of a roadway link lies within a particular grid, 80% of the vehicle travel is assigned to that grid and 20% to the other grid.

Time-of-Day Estimates of CO Emissions

Separate estimates of mobile CO emissions were prepared for the AM peak (7 a.m. – 9 a.m.), PM peak (3 p.m. – 6 p.m.) and off peak (9 a.m. – 3 p.m. and 6 p.m. – 7 a.m., combined). These estimates relied on time-of-day activity estimates (e.g., number of trip starts and VMT) generated by the Anchorage Transportation Model. A 24-

hour inventory was compiled by summing the separate emission contributions from each time period.

A great deal of effort was devoted to developing a credible highway motor vehicle emissions inventory that reflects real world conditions and driver behavior in Anchorage. This inventory explicitly quantifies the CO emissions that occur during cold starts and lengthy warm-up idles that precede many vehicle trips. Separate estimates were made of the emissions associated with the initial warm-up idle period and the after-idle, “on-road” trip period.

As discussed earlier, a hybrid approach utilizing locally generated cold temperature idle emission data in combination with the MOBILE6 CO model was employed to compute motor vehicle emissions. An essential element of this hybrid approach is the use of “thermal state tracking” to determine how warmed up a vehicle is at three critical points in the vehicle trip:

- immediately prior to start-up,
- after the initial warm-up idle, and
- during the on-road or travel portion of the trip.

The emission rate of a vehicle at each of these three critical points is a function of its thermal state. Warm vehicles emit less CO than cold vehicles. Although the computation of thermal state is fairly complex, it is not conceptually difficult. The equations used to compute the thermal state of a vehicle include three basic factors:

- how long, and at what temperature, it was parked before it was started;
- how long it was idled before starting a trip; and
- how long it has been traveling and at what speed.

Intuitively, the effect of each of the three factors on the thermal state or degree of warmth of a vehicle is fairly obvious. One would expect that vehicles that are parked for long periods of time would be in a colder thermal state than those parked for short periods; a long warm-up idle period would result in a warmer thermal state than a short idle; and long travel time at a high rate of speed would result in a warmer vehicle than a short trip at slow speeds.

A spreadsheet model was developed that incorporates the results of the thermal state calculations described above along with post processor outputs from the Anchorage Transportation Model, outputs from the modified MOBILE6 emissions model, warm-up idle emission data from research conducted in Anchorage and Fairbanks and information derived locally on driver idling behavior. This spreadsheet allowed for separate computation of warm-up idle emissions and on-road trip emissions.

Estimation of Warm-up Idle Emissions

Three key sources of information were required to estimate idle emissions: (1) the duration of the idle period preceding the trip; (2) the amount of time since the vehicle last operated and has been cooling or “soaking” in ambient conditions; and (3) the idle emission rate. The idle

emission rate is largely a function of engine and catalyst temperature and thus is dependent on idle duration and soak time.

Idle duration

Idle duration was quantified by the MOA Air Quality Program during the winter of 1997-98 as part of the Anchorage Driver Behavior Study. The objective of this field study was to observe and document winter season driver idling behavior prior to the beginning of a trip. Since direct questioning of drivers prior to a vehicle startup was likely to affect idling behavior, it was avoided. Over 1300 start up idles were observed and documented at various times and locations in Anchorage. In addition to documenting the duration of each of the idles, the trip origin (e.g., home, work, shopping, etc.), time of day, ambient temperature, weather and windshield icing conditions were also recorded. One important objective of the study was to develop estimates of median idle duration by trip purpose^{**} and time-of-day. The idle duration assumptions used to develop emissions estimates for 2005, 2015, and 2025. are shown in Table 4. The longest idle duration was associated with trips originating at home for work, shopping, school or other during the AM peak.^{††}

Table 4.
Median warm-up idle duration by trip purpose and origin (in minutes)

	Home-based Work		Home-based Shopping		Home-based School		Home-based Other		Non-home Based Work		Non-home Based Non-Work		Truck	
	H	O	H	O	H	O	H	O	H	O	H	O	H	O
AM peak	7	3	7	1	7	1	7	1	NA	3	NA	1	NA	3
PM peak	3	1	2	1	2	1	2	1	NA	3	NA	1	NA	3
Off Peak	3	3	1	1	2	1	2	1	NA	2	NA	1	NA	1

Soak Time

Vehicle emissions of CO are highest just after startup and decrease rapidly as the engine warms. The emissions that occur during start up are largely a function of how long the engine has been shut off and cooling at ambient temperatures. Because these data suggest that soak time is a critical factor in determining vehicle CO emissions, it was important to develop

^{**} The Anchorage Transportation model categorizes all travel into four trip purposes. HBW (home-based work) trips include all trips that begin at home and end directly at work or trips that begin at work and end at home. HBO (home based other) trips are those that begin at home and end at a location other than work or begin at a non-work location and at end at home. NHB (non home-based) trips are those that begin and at a location other than home. Finally, the Anchorage model includes a fourth category of "truck" trips comprised of trips made by commercial trucks.

^{††} 35% of home-based trips were assumed to begin with cars parked in garages and 65% outside. Warm-up idle time for cars parked inside was not quantified in the idling study but was assumed to be 30 seconds. The idle times shown in Table 2 reflect the weighted average of idle times for garage and outside-parked vehicles.

credible estimates of soak times in Anchorage as part of the CO emission inventory preparation.

Fortunately, information was available from a local travel survey that allowed average vehicle soak times to be estimated for the a.m., mid-day, p.m. and night periods by trip purpose. Hellenthal and Associates conducted a household travel behavior survey of 1,548 Anchorage households between February 25 and April 12, 1992. Soak times were estimated by examining travel logs from the survey. Drivers recorded the time when each trip began and ended. The time elapsed between the end of one trip and the beginning of the succeeding trip was presumed to be equal to the soak time for that driver's vehicle. Estimates of average soak times derived from the Hellenthal travel behavior survey are shown in Table 5. Morning home-based trips originating at home have the longest average soak time (12 hours) while non home based trips and home based trips originating at a non-home location have the shortest average soak time (1 hour).

Table 5.
Average soak time prior to trip start (in hours).

	Home-based Work		Home-based Shopping		Home-based School		Home-based Other		Non-home Based Work		Non-home Based Non-Work		Truck	
	H	O	H	O	H	O	H	O	H	O	H	O	H	O
AM peak	12	5	12	1	12	0.5	12	1	NA	4	NA	1	NA	2
PM peak	3	5	2	0.5	2	0.5	2	1	NA	5	NA	1	NA	2
Off Peak	3	5	1	0.5	2	0.5	2	1	NA	3	NA	1	NA	2

Estimation of Idle Emissions as a Function of Idle Duration and Soak Time

Emission data from the Alaska Cold Temperature Emission Study conducted in Anchorage and Fairbanks during the winter of 1998-99 were used to construct a lookup table that provided an estimate of the warm-up idle emissions (in grams CO per start) to idle duration and soak time. CO and HC emissions were measured during the first 20 minutes following a cold start. Although over 200 tests were conducted on light duty vehicles in Anchorage and Fairbanks, some were excluded from the database because of data gaps or other problems. Data from 111 valid tests were used to develop the relationships in the look up table. The lookup table is shown in Table 6.

No data were collected from commercial trucks during the idle study. These comprise a small part of the total vehicle population and are largely low-emitting heavy-duty diesel vehicles (HDDV). These vehicles were assumed to emit CO at 30% the rate of the average light duty vehicles (LDVs) that make up the majority of the Anchorage vehicle population. This assumption is consistent with MOBILE6 model estimates for HDDV versus LDV emission factors.

Table 6.
Idle emission look up table for calendar year 2000
CO emissions (in grams per start) as a function of soak time and idle duration

	Warm up Idle Duration (min)														
(g)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0.0	1.0	2.7	4.7	6.2	7.3	8.2	9.0	9.7	10.3	10.8	11.3	11.7	12.1	12.5	12.8
0.5	4.0	11.0	15.1	17.9	20.2	22.0	23.6	24.9	26.1	27.2	28.1	29.0	29.8	30.5	31.2
1.0	10.0	19.7	25.4	29.4	32.6	35.1	37.3	39.2	40.8	42.3	43.6	44.8	46.0	47.0	48.0
1.5	15.2	27.1	34.0	39.0	42.8	45.9	48.6	50.8	52.9	54.7	56.3	57.8	59.2	60.4	61.6
2.0	19.6	33.3	41.3	47.0	51.4	55.0	58.1	60.7	63.0	65.1	67.0	68.7	70.3	71.8	73.1
2.5	23.5	38.8	47.7	54.0	58.9	62.9	66.3	69.2	71.8	74.1	76.2	78.1	79.9	81.5	83.1
3.0	26.9	43.5	53.2	60.1	65.4	69.7	73.4	76.6	79.4	81.9	84.2	86.3	88.2	90.0	91.6
3.5	32.4	51.2	62.1	69.9	76.0	80.9	85.1	88.7	91.9	94.7	97.3	99.6	101.8	103.8	105.7
4.0	36.6	57.1	69.2	77.7	84.3	89.7	94.3	98.2	101.7	104.8	107.6	110.2	112.6	114.8	116.8
4.5	39.7	61.6	74.4	83.5	90.5	96.3	101.1	105.4	109.1	112.4	115.4	118.2	120.7	123.0	125.2
5.0	42.1	65.0	78.3	87.8	95.2	101.2	106.3	110.7	114.6	118.1	121.2	124.1	126.7	129.2	131.5
5.5	43.8	67.5	81.3	91.1	98.7	104.9	110.2	114.7	118.7	122.3	125.6	128.6	131.3	133.8	136.2
6.0	45.2	69.4	83.5	93.5	101.3	107.7	113.1	117.7	121.9	125.5	128.9	131.9	134.7	137.3	139.7
6.5	46.2	70.8	85.2	95.4	103.3	109.8	115.3	120.0	124.2	127.9	131.3	134.4	137.2	139.9	142.3
7.0	49.1	75.0	90.1	100.9	109.2	116.0	121.7	126.7	131.1	135.1	138.6	141.9	144.9	147.6	150.2

Effect of Fleet Turnover on Idle Emission Factors

The MOBILE6 includes an algorithm, supported by vehicle testing data, to estimate the effect of fleet turnover on vehicle emission rates. The fleet turnover factors, implicit in the MOBILE6, were used to estimate the benefits of improvements in emission control technology as newer cleaner burning vehicles make their way into the Anchorage fleet. Although MOBILE6 does not provide explicit estimates of idle emissions, idle emissions can be estimated by computing the emission rate in grams per minute from the gram per mile emission rate predicted by vehicle traveling at 2.5 mph.^{††} MOBILE6 outputs of this 2.5 mph emission rate were examined for years 2005, 2015, and 2025 and the rate of decline in the emission rate was computed. This rate of decline in the 2.5 mph emission rate was applied to estimate idle emission rates for each analysis year. The adjustment factors are shown in Table 7.

Table 7.
Adjustment Factors Used to Modify Year 2000 Idle Emission Lookup
Improvements due to Fleet Turnover (Year 2000 = 1.0)

Calendar Year	Adjustment for Cold Start Idles (soak > one hour)	Adjustment for Hot Start Idles (soak < one hour)
2005	0.866	0.849
2015	0.535	0.506
2025	0.448	0.406

^{††} This is the procedure recommended by EPA for estimating idle emissions in project-level conformity analysis.

Estimating the Effect of Engine Block Heater Usage on Warm-up Idle CO Emissions

Quantifying the benefits of engine block heater use was a principal objective of the Alaska Cold Temperature Emission Study. This study showed that engine block heaters reduced CO emissions by an average of 72% during the first 10 minutes of idle after a cold start. The municipality has hired a public opinion research firm to perform annual telephone surveys to determine engine block heater plug-in rates among Anchorage drivers at ambient temperatures below 15 °F. The survey firm estimated at-home plug-in rates before and after the Municipality and State began a television, radio and print media campaign aimed at increasing plug-in rates among Anchorage drivers. Survey data suggested that plug-in rates increased from about 10% before the campaign to 20% after the campaign for morning trips that begin at home.

In Anchorage almost all block heater usage occurs at home because electrical receptacles are not generally available at work places and other locations. For this reason, the emission inventory spreadsheet was configured to assign plug-in benefits only to trips that begin at home during the 6 a.m. – 9 a.m. period and for the first portion of the 9 a.m. – 3 p.m. mid-day period. Trips beginning at work, shopping centers, and other “non-home” locations were assumed to have a zero plug-in rate.

Home-based morning trips comprise a small fraction of all trips taken over the entire day. When this is considered, the overall plug-in rate for all trips taken during the day is less than 2%. The plug-in rate assumptions used in the spreadsheet are shown in Table 8.

Table 8.
Block heater plug-in rates by time-of-day, trip origin and trip purpose

	Home-based Work		Home-based Shopping		Home-based School		Home-based Other		Non-home Based Work		Non-home Based Non-Work		Truck	
	H	O	H	O	H	O	H	O	H	O	H	O	H	O
AM peak	20%	0%	10%	0%	20%	0%	20%	0%	0%	0%	0%	0%	0%	0%
PM peak	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Off Peak	10%	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%

The emission inventory spreadsheet used these block heater usage rates in conjunction with block heater CO reductions determined from the Alaska Cold Temperature Emission Study to estimate the air quality benefit of engine block heater use. Benefits were calculated for each grid cell and for each analysis year.

Spreadsheet Calculation of Warm-up Idle Emissions

The transportation model post-processor provides data on the number of home based work, home based other, home based school, home based shopping, non-home based work, non-home based non-work, and truck trips generated within each grid cell for a particular time period. The emission inventory spreadsheet uses this data along with user-supplied data on

idle duration (Table 2), soak time (Table 3), per start idle emission estimates (Table 4) and block heater usage rates to estimate total idle emissions for each grid cell.

Estimation of On-Road Travel Emissions

On-road travel emissions were estimated on a grid-by-grid basis using travel outputs (vehicle miles traveled (VMT) and speed by road facility category^{§§} and trip purpose). The post processor also provided information that was used to indirectly develop grid-by-grid estimates of operating mode^{***} by facility category. These estimates of the travel activity and characteristics were used in conjunction with emission factor estimates generated by MOBILE6.

VMT Estimation

The Anchorage Transportation Model and post-processor were used to estimate VMT within each of the grids in the inventory area. The transportation model was calibrated in 2004. Because there are 5 facility categories and 7 trip purposes, the VMT in each grid was disaggregated into 35 (5 x 7) different categories, each with potentially different travel activity characteristics. The number of VMT categories grows to 36 when intrazonal VMT is considered. The travel accrued within each of these seven trip purposes was assigned a different operating mode depending on the idle duration, soak time, and prior travel time associated with each trip purpose. Thus, freeway travel accrued by home-based work trips was likely assigned a different CO emission rate than freeway travel accrued by shopping trips.

Vehicle Speed Estimation

The Anchorage Transportation Model and its post-processor provides estimates of vehicle speeds by facility category and time-of-day. Thus for each grid, the post-processor generates an estimate of the average speed of vehicles traveling on freeways, major arterials, minor arterials, collectors and local streets. The speed estimates for these facility categories are average speeds and include periods when vehicles are stopped at signals or in traffic. Thus speed estimates generated by the model change in relation to the amount of congestion on the network. If network capacity is not expanded in relation to growth in VMT, slower speeds result.

Because the primary purpose of the transportation model is to evaluate the capacity needs of the roadway and transit network, the speed outputs generated by the model are not considered to be as important as VMT. Unlike VMT, modeled speed estimates are usually not reconciled

^{§§} The post-processor developed estimates of VMT and speeds for five facility categories which include (1) freeways and ramps; (2) major arterials; (3) minor arterials; (4) collectors; and (5) local roads. In addition, the post-processor estimated "intrazonal" VMT, travel that occurs within a traffic analysis zone and not explicitly accounted for by the travel demand model.

^{***} Operating mode refers to the thermal state of the vehicles traveling on a particular facility category within a particular grid. Warm engines emit less CO than cold ones. The operating mode is dependent on the soak time, idle duration, and the amount of time spent traveling on the road before arriving in the grid of interest.

to observed network values. Thus, modeled vehicle speed estimates can deviate substantially from observed speeds. Indeed, the vehicle speed estimates generated by the Anchorage Transportation Model were significantly higher than those measured in a recent travel time study conducted by the Municipality and the Alaska Department of Transportation in October – November 1998.

Because speed is an important variable in the estimation of CO emissions, the emission inventory spreadsheet was used to apply linear speed adjustment factors to the speed outputs from the model to bring them into closer agreement with speeds observed in the travel time study. In the travel time study, average vehicle speed was measured on freeways and major arterials during the a.m., mid day and p.m. peak periods. Because data were not available for minor arterials and collectors, speed adjustment factors for these facility categories were assumed to be identical to the adjustment factors determined for major arterials. The speed adjustments incorporated into the emission inventory spreadsheet are shown in Table 9.

**Table 9.
Speed Adjustment Factors**

	Freeway			Major Arterial		
	AM	Off-Peak	PM	AM	Off-Peak	PM
Speed Study (measured)	56.5	59.7	57.2	31.6	31.9	27.3
Transportation Model Estimate	48.1	50.5	48.3	38.2	41.6	37.8
spreadsheet model correction factor	1.17	1.18	1.18	0.83	0.77	0.72

Note that model output freeway speeds were significantly slower than observed speed, so model speeds were adjusted upward by a correction factor varying from 1.17 to 1.18 depending on the time-of-day. Conversely, modeled speeds on arterials were higher than observed so modeled speed were adjusted downward with a correction factor that varied from 0.72 during the PM peak to 0.83 during the AM peak. These same adjustment factors were applied to minor arterials and collectors. A default speed of 15 miles per hour was assigned to all VMT on local roadways and 20 miles per hour for intrazonal travel.

Estimation of Vehicle Operating Mode

One of the most important variables in the estimation of vehicle CO emissions is the operating mode. Cold-started vehicles emit significantly more CO than hot started or hot-stabilized vehicles and the MOBILE6 model reflects this. CO emission factor estimates generated by the MOBILE6 model are very sensitive to user supplied inputs regarding operating mode.

For this reason, a great deal of effort was invested in developing credible local estimates of operating mode. Rather than use traditional definition of operating mode (i.e. fraction of VMT accrued by vehicles operating in cold start, hot start and hot stabilized modes), an alternative approach was developed that uses predictive coolant temperature equations to

estimate the thermal state of a vehicle as a function of its soak time, idle duration, and prior travel time. This can be expressed as:

$$\text{Operating mode} = f(\text{soak time, idle duration, prior travel time})$$

Sierra Research developed a method that provides a way to use MOBILE6 to compute emission factors that reflect thermal state or operating mode of a vehicle after a given soak, idle and travel time. Five customized soak distribution input files were used with MOBILE6 to reflect the impact of various thermal states on travel CO emissions.

An extensive look up table was then developed in the spreadsheet model that allowed the appropriate MOBILE6 emission factor to be selected based on the speed, soak time, idle duration, and prior travel time for vehicles traveling in each grid by both trip purpose and facility category. Soak time and idle duration were supplied as user inputs in the spreadsheet and were based on the local driver behavior studies discussed in the earlier section on estimation of idle emissions. These user inputs varied by time-of-day and trip purpose.

The third variable necessary in the estimation of operating mode was the average prior travel time of the vehicles traveling within the grid of interest. If vehicles had long prior travel times they were likely to be in a fully warm state, and hence, a large proportion of the VMT accrued in the grid would be in the hot fraction. Anchorage Transportation Model post-processor outputs were used to estimate prior travel time. The end result of this work was a spreadsheet look up table that allowed separate emission factor estimates to be generated for the 36 different categories of VMT in each grid.

MOBILE6 CO Model

The MOBILE6 CO model was configured to exclude the emissions impacts of the Supplemental Federal Test Procedure (SFTP), the so called “aggressive driving component” of the drive cycle used to compute emission factors. The effects of SFTP were disabled in the model to reflect observed drive cycle behavior in Alaska. Sierra Research conducted studies in Anchorage and Fairbanks to characterize the behavior of Alaskan drivers in the winter. As one might expect, they found a low proportion of driving in hard acceleration or hard deceleration modes when roads are often icy. They determined that the old FTP, without the so-called “aggressive driving supplement”, fairly approximated the winter drive cycle in Alaska. The primary effect of excluding the SFTP was to reduce emission factors computed for the on road portion of trip emissions. However, disabling the SFTP emission component in MOBILE6 has the secondary effect of reducing the benefits of fleet turnover on future emissions.

Vehicle registration distributions were based on data from detailed parking lot surveys conducted by ADEC during the winters of 1999 and 2000. These surveys indicated that the in use vehicle population is newer than suggested by vehicle registration data.

Odometer measurements collected by the Anchorage I/M program allowed mileage accumulation rates of vehicles subject to I/M requirements to be estimated. Default mileage accumulation rates were used for diesels and other I/M exempt vehicles. An I/M program effectiveness of 85% and compliance rate of 90% was assumed for all analysis years.

Calculation of On Road CO Emissions

An Excel spreadsheet was developed to assemble the information necessary to calculate CO emissions from on road travel in each grid cell. As discussed earlier, the spreadsheet was used to compute the emission contributions of 36 possible categories of travel, with varying speeds and operating modes. The emissions from these various categories of travel were then summed to determine on-road emissions in each grid using the following formula:

$$\text{On-road emissions} = \sum_{i=1}^{36} (VMT_1 \times EF_1) + (VMT_2 \times EF_2) \dots (VMT_{36} \times EF_{36})$$

Methodology Used to Estimate CO Emissions in Analysis Year 2027

The previous discussion discussed how outputs from the air quality post-processor to the Anchorage Travel Demand Model are utilized in the spreadsheet model to estimate CO emissions. The post-processor provides estimates of key parameters necessary for estimating CO emissions in each analysis year. These include vehicle miles of travel (VMT), travel speed, trip starts, and information about the proportion of trips and VMT by trip purpose. This information provided for each of the 200 one-kilometer grid cells that comprise the Anchorage inventory area.

Linear extrapolation of post-processor outputs from analysis years 2015 and 2025 was used to estimate the travel activity parameters necessary to estimate CO emissions in 2027. For example, between 2015 and 2025, average annual growth in VMT was about 1.5%. This same growth rate was assumed to continue through 2027.

The same MOBILE6-based modeling process used to estimate travel and idle emissions in 2027. A new MOBILE6 model run was generated for 2027 using the same assumptions regarding the Anchorage vehicle fleet used for analysis years 2005, 2015 and 2025.

Justification for the Use of 2003 ISER Socio-Economic Forecasts as the Basis for the Anchorage Travel Demand Model Forecasts Used in the Conformity Determination

The Travel Demand Model runs used in the 2005 LRTP were based on population and employment forecasts developed by ISER in 2003. ISER subsequently developed updated forecasts in 2005. These 2005 forecasts were used to construct the Travel Demand Model runs used in the 2007 LRTP and its associated conformity determination. Although the 2005 ISER projections included regional population and employment forecasts with and without the Knik Arm Crossing, model runs developed for 2007 LRTP only examined a scenario with

the KAC project. Although the 2005 ISER forecasts suggested that the KAC would have little effect on growth region-wide, they predicted that the bridge would have the effect of re-distributing population growth from Anchorage to the Mat Su. In other words, Anchorage would be expected to grow more slowly if the bridge were built.

Although it is possible to develop new travel demand model runs based on the latest 2005 ISER forecasts, a significant effort would be required. The inter-agency consultation team agreed that model runs based on the older ISER forecasts could be used if adequately justified.

According to ISER, the differences between the 2003 and 2005 socio-economic projections for the “no bridge scenario” are small. Moreover, ISER has stated that Anchorage population and employment is projected to grow more slowly in their 2005 projections than those predicted in their 2003 forecasts. This means that if new travel demand model runs were prepared using the more recent ISER forecasts, the growth in travel activity (VMT, vehicle starts, etc.) would likely be slower than predicted by the model runs developed from the 2003 ISER forecasts and used in the 2005 LRTP. Consequently, future CO emissions would also be less than predicted by the modeling based on the older, 2003 ISER forecasts. In other words, although the differences would be small, using the most recent 2005 ISER forecasts would reduce projected CO emissions and make it easier to meet the allowable emissions budget. Thus, the conformity analysis performed for the 2005 LRTP provides a “conservative” analysis of Anchorage prospects for meeting its budget.

CONFORMITY ANALYSIS

Transit Service

Section 93.110 of the air quality conformity regulations state that the conformity determination for LRTPs must discuss how transit operating policies (including fares and service levels), and assumed transit ridership have changed since the previous LRTP conformity determination was approved.

According to the Municipality of Anchorage Public Transportation Department, there have been no changes in bus fares since they were increased from \$1.25 to \$1.50 in January 2004. There has been an increase in service levels and ridership over the past seven years. Figures 3 and 4 show how transit service levels (as indicated by weekday revenue hours) and weekday ridership have increased since 2002.

Figure 3
Trend in Transit Service (2002 -2008)

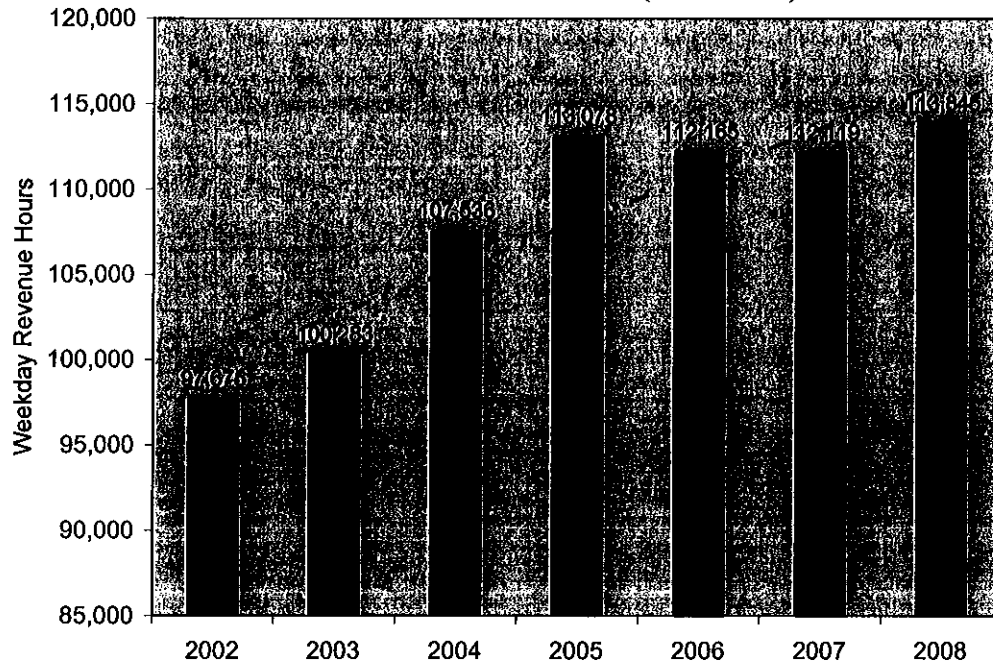
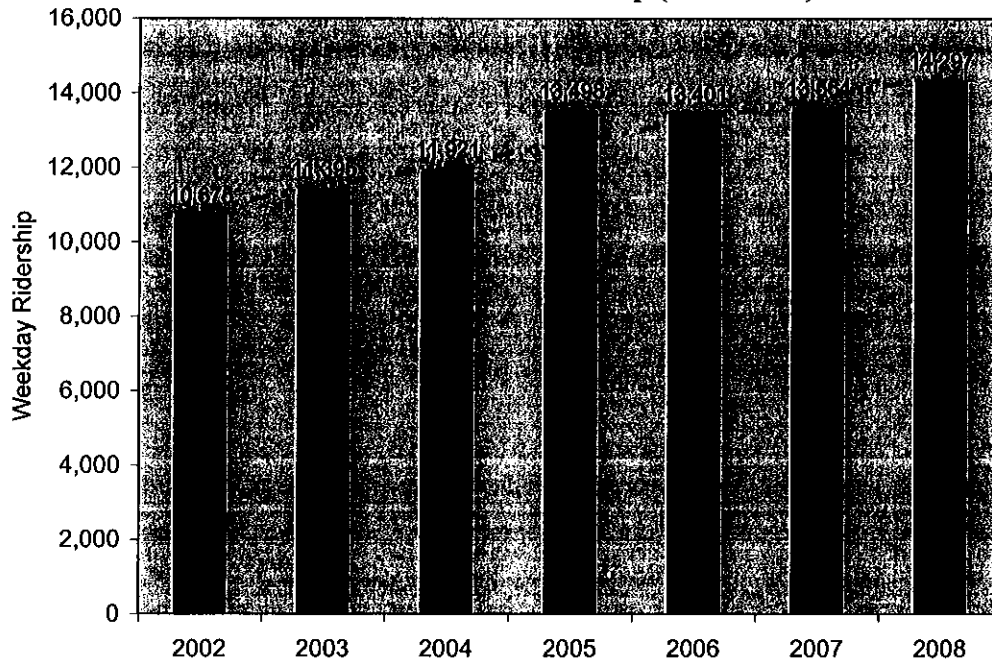


Figure 3
Trend in Transit Ridership (2002 -2008)



Transportation Control Measures (TCMs)

In maintenance areas such as the Municipality of Anchorage, priority must be given to the implementation of TCMs included in the SIP. According to Air Quality Conformity regulations (40 CFR Part 93), transportation control measures are defined as any measure that is specifically identified and committed to in the applicable implementation plan or any other measure for the purpose of reducing emissions or concentrations of air pollutants from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions. Notwithstanding the above, vehicle technology-based, fuel-based and maintenance based measures which control the emissions from vehicles under fixed traffic conditions are not TCMs for the purposes of this subpart.

Ridesharing is the only TCM identified in CO Maintenance Plan and is fully funded in the Transportation Improvement Program. The Ridesharing consists of both carpooling and vanpooling elements. In 2007, when the last conformity determination was completed, there were 365 individuals in 181 carpools. At the end of 2008, the number of carpools was nearly the same; 361 individuals in 177 carpools. The vanpool program had a total 589 participants in 42 vanpools in 2007. By the end of 2008 this number had grown to 810 individuals in 52 vanpools. The vanpool program has experienced substantial growth since its inception and there is an on-going demand for more vanpools especially among long distance commuters living outside of Anchorage in the Matanuska Susitna Valley, Eagle River-Chugiak and Girdwood. Table 11 shows the growth that has occurred in the vanpool program over the past 13 years.

Table 11
Vanpool Program Participation (1996-2008)

Year	Number of Vanpools	Number of Vanpoolers
1996	9	126
1997	10	137
1998	11	151
1999	14	184
2000	18	231
2001	18	260
2002	21	270
2003	23	323
2004	24	363
2005	24	375
2006	41	569
2007	42	589
2008	52	810

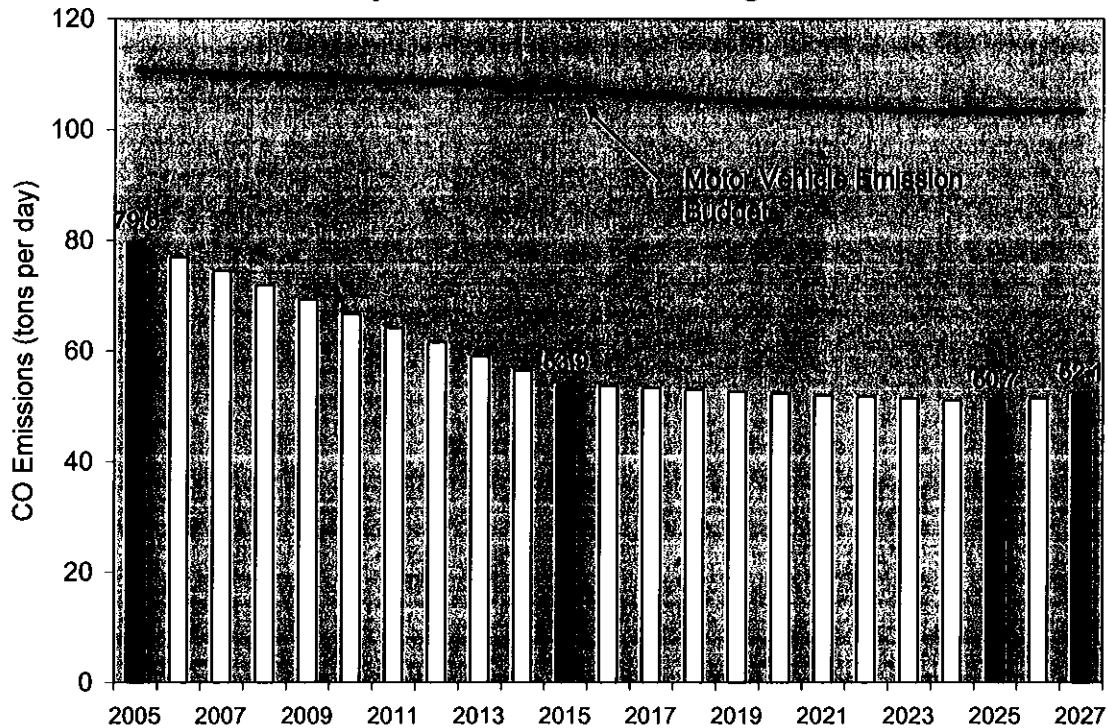
Evaluation of Carbon Monoxide Conformity Criteria

Results of CO emissions projections performed for the conformity analysis are summarized in Table 12 for each analysis year. Figure 5 shows that the CO emissions projected for each year through 2027 are well below the budget.

Table 12.
Summary of Results

Analysis Year	Population	Total Vehicle Starts (per day)	Total VMT (mi/day)	Warm-up Idle Emissions (tons per day)	Travel Emissions (tons per day)	Total Mobile Source Emissions (tons per day)	Mobile Source Emissions Budget (tons per day)
2005	214,206	624,807	3,277,672	19.9	59.6	79.5	110.7
2015	233,054	680,134	3,616,385	12.9	40.9	53.9	107.1
2025	267,543	753,990	4,155,939	11.5	39.2	50.7	103.1
2027	274,441	769,393	4,287,893	11.8	40.3	52.1	103.1

Figure 5
Projected CO Emissions vs. Budget



CONCLUSION

Based on the above discussion, the proposed 2009 Anchorage Long Range Transportation Plan Revisions have been determined to be in conformity with the Federal Clean Air Act as amended in 1990. Furthermore, it has been determined that transportation plan will not undermine the ability of the Municipality of Anchorage to maintain compliance with the national ambient air quality standard for CO.

Appendix A

SUMMARY MINUTES 2027 Long-Range Transportation Plan Air Quality Conformity April 6, 2009 Consultation Team Teleconference

Present:

MOA- Air Quality Section: Steve Morris
FTA: Ned Conroy
EPA: Wayne Elson
MOA- AMATS: Lance Wilber, Craig Lyon, Vivian Underwood, Teresa Brewer
DEC: Cindy Heil
DOT: Aneta Synan

Guests:

KABATA: Dale Paulson, William Greene, Andrew Niemiec, and Kevin Doyle from HDR.
Jon Spring

This air quality conformity consultation team teleconference was held to discuss the assumptions and methodology to be used in the CO Air Quality Conformity Determination for the proposed 2027 Long-Range Transportation Plan (LRTP) amendment. This proposed amendment removes the Knik Arm Crossing (KAC) Bridge project from the long range plan. AMATS Coordinator, Mr. Craig Lyon facilitated the meeting.

(1) **Background:** Steve Morris, MOA – Air Quality provided an overview of the proposed interim amendment and resulting conformity analysis. AMATS is considering a proposed interim amendment to remove the Knik Arm Crossing Bridge from the 2007 LRTP. This requires a new conformity determination. AMATS and MOA staff recommended using the approved 2005 Conformity Analysis. While the Institute of Social and Economic Research at the University of Alaska, Anchorage has prepared more recent economic forecasts, these forecasts indicate slower growth than previously and thus would reduce CO emission projections.

(2) **Methodology:** Steve Morris, MOA – Air Quality, outlined the recommended methodology. The methodology includes the 2005, 2015, and 2025 projections for vehicles miles traveled (VMT), vehicle starts, and socio-economic data (population, employment, land use, emissions, vehicle fleet types, etc.). The network is identical to the network modeled in 2005 LRTP. To model the CO emissions, a linear extrapolation will be prepared for 2026 and 2027.

Vivian Underwood, AMATS Staff noted that for Air Quality Conformity Analysis, the regulations allow for planning data assumptions that are more than 5 years old - if written justification is provided. The inter-agency consultation team agreed with the methodology to use the same assumptions for land use, population, and employment that were used for the Anchorage Bowl 2025 LRTP, extrapolated to 2027. Steve Morris clarified that the Horizon Year is 2027. Ms. Vivian Underwood, AMATS staff noted that with an interim amendment, the Horizon year need not be extended.

(3) **CO Conformity :** It is anticipated that projects included in the LRTP revisions will not contribute to new violations of the national ambient air quality standard (NAAQS) for CO, increase the frequency or severity of any existing violations in the problem zone, or delay timely attainment of the NAAQS. The 2003 ISER population and employment projections are actually higher than the more recent projections. As a result, the regional –wide CO emissions forecasts prepared with these older ISER forecasts are expected to result in higher regional emissions and thus provide a “conservative” analysis of conformity.

With the Knik Arm Crossing Bridge, the Anchorage Bowl would likely experience slightly lower CO emissions than without the KAC because more of the region-wide growth would be expected to occur in the Anchorage bowl if a bridge is not built. The Anchorage Bowl would expect to a minor increase in population and employment (approximately 5%) without the bridge. At this time, the projected CO emissions are well-below the allowable emission budget. Discussion regarding PM-10 conformity analysis followed. It was unclear whether a PM-10 conformity analysis is required. Steve Morris offered to review the earlier LRTPs to determine whether PM-10 conformity was included. If PM-10 conformity is required, the same methodology

used for the 2005 CO analysis applied to the PM-10 conformity. Steve will update the text Proposed Conformity Methodology with a discussion about PM10 conformity and share with the consultation team.

(4) **Schedule:** Vivian Underwood, AMATS staff explained that a draft Conformity Determination Report for public review is due 16 April 2009. AMATS staff expects to have a draft available for the Air Quality Conformity team on 10 April 2009. The public review and comment period will be for 30 days. The consultation team will also have the entire 30-day public review period to review the draft, and to make comments.

(5) **Questions:** Mr. Andrew Neimeic, KABATA asked if it mattered (to the CO emissions budget) whether the KAC project was in or out. Mr. Craig Lyon, AMATS Coordinator responded that the Air Quality Conformity Team was tasked with examining the 2005 analysis without the bridge. Cindy Heil also explained that the region is well within the emissions budget. When regionally significant projects are examined, teams look at potentially adverse effects and must be in compliance with EPA and FTA guidance and regulations.

Mr. William Greene, KABATA inquired about the short-time line, schedule, and if new data was available. Mr. Steve Morris stated that more recent ISER data shows a slightly slower growth rate and using that re-doing the CO emissions projections using the new data would have very little impact on the results. Cindy Heil noted that federal agencies, such as EPA and FTA oversee the process and ensure that the requirements are met.

Mr. Kevin Doyle, HDR wondered if the 2005 network was financially constrained. Mr. Jon Spring clarified that the new financing requirement and inflation proofing was taken into account. Additional information will be presented at the 9 April 2009 Technical Advisory Committee meeting. Vivian Underwood, AMATS staff also noted that some projects were already completed. At this time, there are no changes to the network.

Appendix B

**Municipality of Anchorage
Department of Health and Human Services
April 6, 2009**

Proposed Conformity Analysis Methodology for Amended 2007-2027 Anchorage Long Range Transportation Plan

(Revised after Inter-Agency Consultation, April 6, 2009)

Background

As a CO maintenance area, Anchorage Long Range Transportation Plans are subject to conformity requirements for CO. The Anchorage bowl is considered an attainment area for other criteria pollutants and is therefore not subject to conformity requirements for pollutants other than CO.^{††} AMATS is now considering amending the 2007 LRTP by removing the Knik Arm Crossing (KAC). This amendment triggers a new conformity determination because KAC is a regionally significant project.

Anchorage developed a LRTP in 2005 that covered the period 2005-2025. In 2007, this LRTP was amended to add the KAC and a new conformity determination was performed covering the period 2007-2027. Except for roadway network changes resulting from the bridge, the assumptions used in the conformity modeling were virtually the same. For the 2005 LRTP, population and employment projections were based on projections developed by ISER^{†††} in 2003 and they do not include the effect of the KAC. In the amended 2007 LRTP, population and employment projections were based on ISER projections developed in 2005 and include predicted changes in land development patterns resulting from the KAC.

The 2007 LRTP did not examine a "no bridge" scenario. If CO emissions are to be modeled for a new, amended LRTP without the KAC, we must rely either on the older, 2003 ISER population and employment projections or develop entirely new transportation model runs using the more recent ISER forecasts. AMATS staff believes that preparing new transportation model runs based on the updated ISER forecasts is unnecessary because the changes in these forecasts have been small and they would not have an appreciable effect on CO emission projections or the results of the conformity analysis.

In lieu of preparing new model runs with the most recent ISER forecasts we are proposing the following methodology.

^{††} Eagle River, which is located within the Municipality of Anchorage, is currently designated as a nonattainment area for PM-10. The Anchorage LRTP, however, does not include projects in the Eagle River area. The Eagle river area is covered by a separate Long Range Transportation Plan. That plan is subject to PM-10 conformity requirements.

^{†††} ISER is the University of Alaska Anchorage Institute of Social and Economic Research. ISER maintains the state's largest economic database and forecasts population and employment growth.

Methodology

1. Use population, employment and land use assumptions developed from 2003 ISER projections to model vehicle travel activity (VMT, speed, vehicle starts, trip type, etc.).

If the KAC is removed from the 2007 LRTP the resulting transportation network will be *identical* to the network modeled in the 2005 LRTP. Although there have been revisions to population, employment and land use development projections since the 2005 LRTP, these changes have been very minor. According to Scott Goldsmith of ISER, their more recent projections suggest slightly *slower* population and employment growth over the next 20 years than the projections they developed in 2003. Because modeled CO emissions are largely a function of the amount of VMT and vehicle starts that occur, this means that if the conformity analysis for the 2005 LRTP were re-done using the more recent ISER assumptions, region-wide CO emissions would be *lower* than originally projected. In other words, using the older 2003 ISER projections provides for a more conservative conformity analysis.

2. Model travel activity and CO emissions in analysis years 2005, 2015 and 2025.

Because neither the transportation network nor the emissions modeling assumptions have changed, this analysis will be identical to that performed for the 2005 LRTP. As noted earlier, the transportation network contemplated in the proposed amended 2007-2027 LRTP is the same as that considered in the 2005 LRTP. The Anchorage CO Maintenance Plan / SIP has not changed, thus assumptions regarding motor vehicle emissions modeling will be identical to those used in the 2005 LRTP.

3. Extrapolate from 2015 and 2025 travel model outputs to estimate travel activity in 2026 and 2027.

The amended LRTP will extend through 2027. The last available travel model run is for 2025. Growth rates between 2015 and 2025 will be extrapolated through 2027 to estimate the value of key parameters in 2026 and 2027. These key parameters include VMT, the number of vehicle starts and vehicle speed.

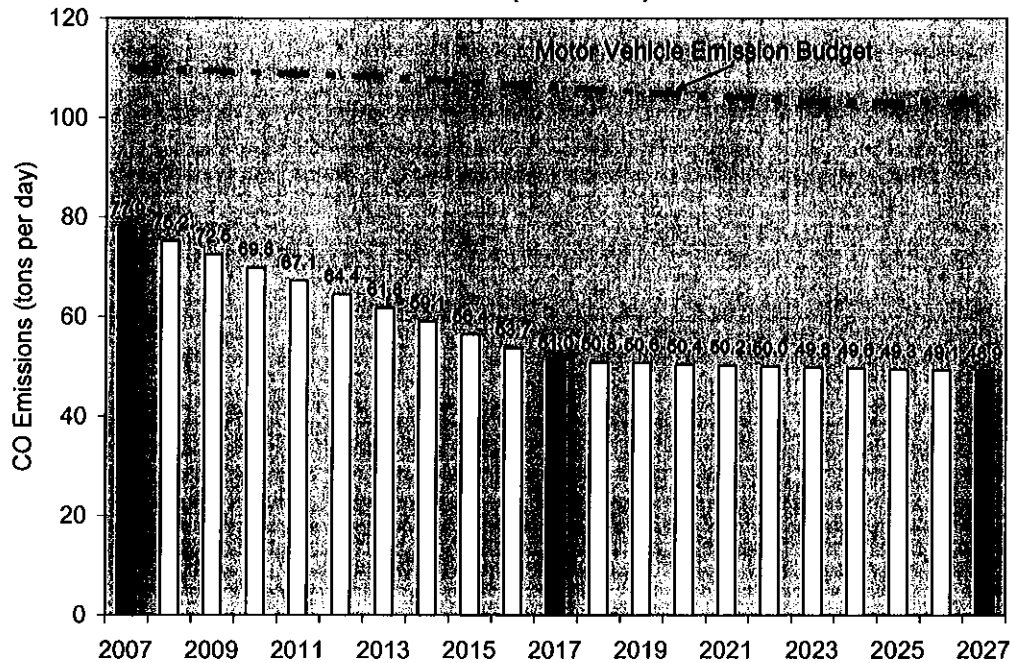
4. Produce new MOBILE6 model runs to estimate CO emission factors for 2026 and 2027
Estimate regional emissions.

New MOBILE6 emission factors will be used with the new travel activity estimates for 2026 and 2027 to estimate region-wide CO emissions for these two years.

Discussion

Anchorage is currently well under the CO conformity budget. The current 2007-2027 LRTP, with the KAC, estimates region-wide CO emissions will be 48.9 tons per day; this is less than The previous LRTP, prepared in 2005 which did not include the KAC, had very similar, but slightly higher emissions estimates in the out years. In the 2005 LRTP, CO emissions were projected to be about 2.8% higher in analysis year 2025 because more development and consequent CO emissions were anticipated to occur within the Anchorage bowl area if a bridge is not built. Nevertheless, CO emissions were projected to be just half the allotted emission budget.

Projected CO Emissions vs. Budget 2007 LRTP (with KAC)



Summary

Conformity analyses performed on LRTPs developed in 2005 and 2007 demonstrate that Anchorage is well under the allowable emission budget with or without the KAC. Although ISER has made slight adjustments to population and employment forecasts for the Anchorage area since the conformity analysis for the 2005 LRTP was prepared, using these updated forecasts would have very little effect on the amount of CO emissions projected. In fact, using these updated population and employment projections would have the effect of lowering projected CO emissions because ISER is now projecting population and employment growth to be slower than previously anticipated.

Given the fact that CO emissions are projected to be about half the allowable emission budget at the end of the LRTP period in 2027 and that the methodology proposed for this conformity analysis will be conservative with regard to CO emission projections, AMATS staff is recommending that the consultation team approve the proposed conformity analysis methodology for the amended LRTP under consideration by AMATS.