

CLERK'S OFFICE

APPROVED

Date: 2-10-98

Submitted by: Chairman of the Assembly at the
Request of the Mayor
Prepared by: Community Planning and
Development
For reading January 27, 1998

Anchorage, Alaska
AR 98- 25

A RESOLUTION OF THE ASSEMBLY ADOPTING THE AMATS 1997 ANCHORAGE
BOWL LONG-RANGE TRANSPORTATION PLAN AND ASSOCIATED AIR QUALITY
CONFORMITY DETERMINATION

WHEREAS, the Assembly has reviewed the 1997 Anchorage Bowl Long-Range
Transportation Plan submitted by the Mayor; and

WHEREAS, the 1997 Anchorage Bowl Long-Range Transportation Plan update
does not change any of the transportation improvement recommendations contained in
the existing 1991 Anchorage Bowl Long-Range Transportation Plan, and

WHEREAS, the 1997 Anchorage Bowl Long-Range Transportation Plan has been
found to be in conformity with the Federal Clean Air Act as amended in 1990, and

WHEREAS, on January 12, 1998, a duly advertised public hearing was held by the
Planning and Zoning Commission.

NOW, THEREFORE, The Anchorage Assembly resolves:

Section 1. That the 1997 Anchorage Bowl Long-Range Transportation Plan is
adopted

Section 2. This resolution shall become effective immediately upon passage and
approval by the Anchorage Assembly.

PASSED AND APPROVED by the Anchorage Assembly this 10th day of
February, 1998.

ATTEST:

Chairman

Municipal Clerk

AM 61-98

Public Review Draft
1997
Anchorage Bowl
Long-Range Transportation Plan

Prepared as a joint effort by:

Municipality of Anchorage
Department of Community Planning and Development
in cooperation with the
State of Alaska
Department of Transportation and Public Facilities

as adopted by the AMATS Policy Committee on

JANUARY __, 1998

and

as per the conformity determination approved by the FHWA and FTA

on

1998

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BACKGROUND

The Anchorage Bowl Long-Range Transportation Plan (LRTP) is the document which guides long-term transportation improvements within the Anchorage Bowl. The last major update of the LRTP occurred in 1991. Since that time one minor review and update was conducted in 1994. No changes in the 1991 LRTP recommendations were made during the 1994 update. This report represents the second minor update of the 1991 LRTP. It also leaves the recommendations contained in the original Plan intact.

Although no changes in either the major transportation improvements or transportation plan goals and objectives are proposed, this interim update accomplishes several important tasks. First, it will review the assumptions and population projections that underpin the 1991 LRTP to determine if they are still valid. Second, the Plan update will extend the Plan period from 2010 to 2017. Third, the Plan will strengthen sections pertaining to ISTEA requirements. These sections include the Freight Mobility, Congestion Management System, and Major Investment Studies. (Note: The 1991 Plan was completed while the ISTEA regulations were first introduced but not fully adopted.) Fourth, the Plan will update critical sections of the Plan, such as the Financial Analysis, which are subject to change.

The following plan incorporates both elements of the 1991 LRTP which were not changed and new elements written specifically for this update. An attempt was made to consolidate all of the important elements of the LRTP into one updated document in order to avoid creating confusion which results when plans are spread between two or more overlapping documents. This update does not, however, include the extensive alternative analysis which was contained in the 1991 LRTP and associated Working Papers. Readers who are interested in this topic are referred to the original 1991 planning documents.

The Municipality of Anchorage Transportation Planning Division is currently preparing the groundwork for the next major update of the Plan which is expected to occur by the year 2000. As a part of this effort, transportation planning staff is conducting a complete overhaul of the existing transportation planning model. Besides providing an updated, more accurate traffic projection capability, the anticipated model will contain important new features, including transit, light rail, and pedestrian mode choice submodels. The model will also enhance the Municipality's ability to analyze the benefit-cost of proposed transportation improvement projects, air quality impacts, the effectiveness of travel demand strategies, and the interrelationship between land use and transportation improvements. Once the new model is up and running, the Municipality will be in a much better position to initiate a comprehensive study of the future transportation needs of the community. Attempting to make changes to major transportation improvements contained in the 1991 LRTP without this new tool would result in uninformed decision making.

A. Anchorage Metropolitan Area Transportation Study

The long-range transportation planning effort in the Anchorage Bowl and Chugiak-Eagle River is conducted under the auspices of the Anchorage Metropolitan Area Transportation Study (AMATS). AMATS is a cooperative process in which the State of Alaska and the Municipality of Anchorage jointly plan the improvement of local roadway, transit, and trail systems. The AMATS planning process consists of two principal parts; the Long-Range Transportation Plan (LRTP) and the Transportation Improvement Program (TIP).

Long-Range Transportation Plans are the key planning documents used by AMATS and others to plan the development and implementation of transportation system improvements 20 years into the future. The 1997 Anchorage Bowl Long-Range Transportation Plan update, when adopted, will serve this purpose for AMATS. The Transportation Improvement Program (TIP) is the short-range implementation plan used by AMATS to program federal funding for transportation improvements. The TIP programs the recommendations contained in the 20-year Transportation Plan into a short-term (3 year) timeframe. A rational transportation planning process requires both documents.

B. Study Area

The AMATS study area encompasses a major portion of the Municipality of Anchorage. As shown in Figure 1, the AMATS study area reaches from Eklutna on the north to Potter Creek on the south. The only population centers outside of the AMATS study area are the Turnagain Arm communities of Girdwood, Bird Creek, and Indian. This Long-Range Transportation Plan is an update of the Anchorage Bowl portion of the AMATS study area. A Transportation Plan for the Chugiak-Eagle River area was completed and approved in October 1996 and is not, therefore, scheduled to be updated for another two years.

C. Planning Horizon

ISTEA planning regulations, specifically 23 CFR 450.322(a), state that the transportation plan should address at least a 20 year planning horizon. The planning horizon for the 1991 Anchorage Bowl LRTP encompassed the years 1991 to 2010. In order to comply with the above referenced ISTEA regulations, the timeframe of the plan needs to be extended to the year 2017.

D. Population and Land Use Assumptions

23 CFR 450.322(a) also requires that the existing LRTP be reviewed to determine the consistency of the plan with the most recent population and employment projections. In order to comply with this requirement, the population and employment projections used to develop the 1991 plan were compared to the most recent population and employment projections prepared by the Institute of Social and Economic Research in 1996. As

Figure 1

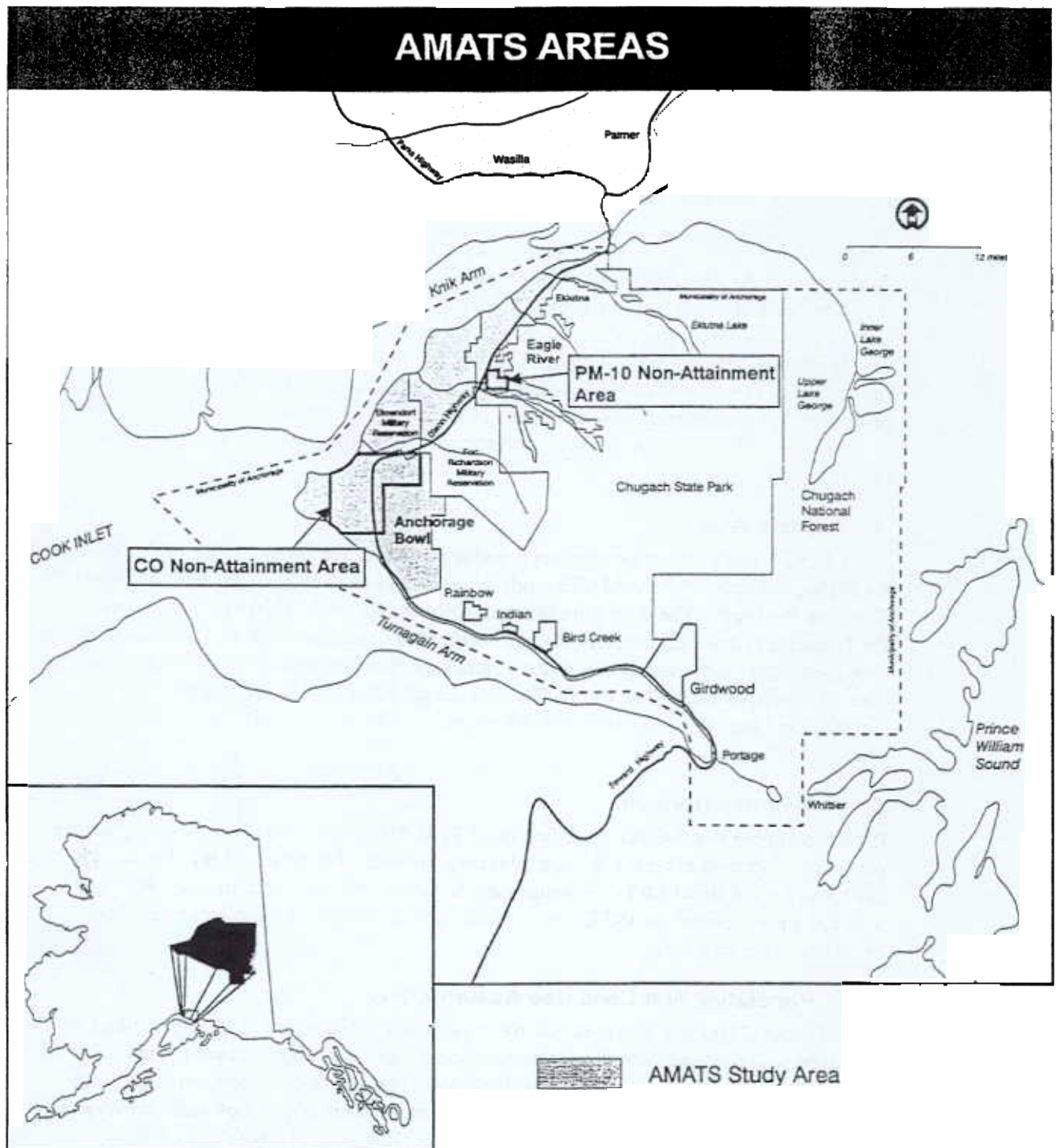


Table 1 indicates, the original forecast for the year 2010 is remarkably close to the new projection for the year 2017. (It appears that the original population projections were too high.) Thus, the old projections are suitable for use in this LRTP update.

Table 1 Population and Employment Projections		
	Projections Used in 1991 LRTP (Forecast Year 2010)	1996 ISER Projections (Forecast Year 2017)
Population	292,0719	288,545*
Employment	193,883	171,829**

Anchorage Bowl population estimates were obtained by subtracting the Chugiak-Eagle River population projections from the ISER projections for the entire Municipality of Anchorage. According to the Chugiak-Eagle River Comprehensive Plan, Chugiak-Eagle River is expected to absorb 25% of future Anchorage growth.

Anchorage Bowl employment projections were obtained by subtracting the estimated Chugiak-Eagle River employment, assumed to be 13% of its population, from the total ISER employment projections for the Municipality of Anchorage (Source: Chugiak-Eagle River Comprehensive Plan).

The distribution of population and employment used in the existing MinUTP model projections, which were based on the 1982 Comprehensive Plan, is also still valid. The land use map contained in the 1982 Comprehensive Plan largely reflected the underlying zoning in effect at the time of the Plan adoption. The Comprehensive Plan has not been revised since 1982. Thus, the underlying land use assumptions which form the foundation for the LRTP modeling work do not need to be revised for this review.

II. TRANSPORTATION PLAN GOALS AND OBJECTIVES

Goals and objectives show the direction where a community thinks it should be heading for the future. The following goals and objectives provide a balance between system travel needs and financial, environmental, and other community issues. The six goals are not listed in priority order but rather, each has its own importance in the evaluation of projects. The achievement of some of these goals cannot be fully realized until additional work items identified in the implementation plan are completed. As an example, the provision of transit service to 80 percent of the transit focus area population objective provides a basis for the review and update to the Transit Development Program (TDP). The objective provides a tool to measure how well the TDP meets the community transportation goals.

Transportation Plan Mission Statement --To provide a balanced transportation system that meets the future travel demands of the community through the support of roadway, transit, and complimentary services. The transportation system should also enhance the

area safety, meet environmental standards, and reduce impacts on residential neighborhoods.

Goal A Provide a transportation system that enhances the local economic conditions and the quality of life.

Objective A1 Minimize neighborhood through-traffic movements
Criteria A1 Percent of VMT on Collector or higher designated roadways

Objective A2 Minimize residential relocations due to transportation projects
Criteria A2 Number of residential relocations

Objective A3 Minimize business relocations due to transportation projects
Criteria A3 Number of business relocations

Objective A4 Minimize project impacts on parklands
Criteria A4 Acres of designated parklands used for transportation projects

Objective A5 Minimize project impacts on wetlands
Criteria A5 Acres of wetlands by value category impacted by transportation projects

This goal deals with the impacts of transportation projects on our community. An important objective of this plan is to decrease the through traffic use of subdivision streets to avoid congestion on the arterial street system. In addition, transportation projects which need additional right-of-way may have impacts on both the existing residences and businesses. A concern voiced by many of the public meeting speakers dealt with the loss of parklands or wetlands due to right-of-way takings. Objectives A4 and A5 deal with this issue. For each of the objectives, the intent is to minimize the effects and provide compensation and mitigation as appropriate.

Goal B Provide a transportation system that promotes public health and improves local air quality and area environmental standards by meeting and exceeding adopted environmental criteria

Objective B1 Reach and maintain National Ambient Air Quality Standards(NAAQS)
Criteria B1 Use standard air quality testing procedures to ascertain compliance with NAAQS

Goal B addresses the environmental concerns associated with the development and maintenance of a transportation system. Since Anchorage is designated as a non-attainment area for carbon monoxide, the achievement of this goal is very important to the community and our own physical health.

Goal C Develop a safe, reliable, and accessible transit system which provides a viable alternative to the automobile

- Objective C1 Increase public transit ridership by 200 percent
- Criteria C1 Number of passenger trips
- Objective C2 Provide 15-minute peak and 30 minute off-peak headway to 80 percent of the population in the transit focus area
- Criteria C2 Percent of transit focus area population within 1/4 mile of transit routes

This goal deals with the provision of a transit system that will provide a viable alternative to the automobile by including frequent service within the employment and housing areas of higher density development.

Goal D Increase transportation system efficiency during peak-hour periods

- Objective D1 Increase base year peak hour vehicle occupancy by 20 percent through greater participation in transit, ridesharing, and van pooling programs
- Criteria D1 Annual Vehicle Occupancy Survey showing occupancy rates of major employment sites.
- Objective D2 Decrease peak-hour home to work vehicle trips by 10 percent for employers with greater than 25 employees
- Criteria D2 Site surveys and number of arriving peak hour workers from the Annual Vehicle Occupancy Survey of major employment sites

The aim of this goal is to reduce the demand for peak hour trips. The objectives deal with reducing trips on the roadway system through municipally coordinated efforts at the employer level.

Goal E Provide a comprehensive roadway network that moves people and goods in an economical, efficient and safe manner

- Objective E1 Develop a roadway network that will minimize construction and maintenance costs
- Criteria E1a Total network project cost (1997 \$)
- Criteria E1b Total network maintenance cost (1997 \$)
- Objective E2 Provide a roadway network that operates at a Level of Service (LOS) "D" or better for 95 percent of the projected 2010 travel demands
- Criteria E2 Percent of total lane miles of roadway at LOS "D" or better
- Objective E3 Provide an arterial within 1/2 mile of at least 90 percent of area households
- Criteria E3 Percent of total households within 1/2 mile of the arterial system

- | | | |
|-----------|----|---|
| Objective | E4 | Minimize growth in Vehicle Miles of Travel (VMT) |
| Criteria | E4 | Miles of VMT from computer model output |
| Objective | E5 | Maximize use of the existing system by completing the grid pattern on the collector and arterial roadway system |
| Criteria | E5 | Miles of "missing link" projects in system |
| Objective | E6 | Improve non-project arterial intersection capacity by 15 percent for at least five intersections/year |
| Criteria | E6 | Comparison of intersection capacity before and after improvement |

Goal E addresses the roadway network needs for the area. It defines the level of service to be expected, includes measurement of system efficiency by tracking VMT, and provides basic growth of the system through the completion of the one-mile arterial grid pattern adopted for the area.

Goal F Provide and maintain complimentary transportation facilities that support alternatives to car usage

- | | | |
|-----------|----|--|
| Objective | F1 | Provide maintained sidewalks or trails to within 1/4 mile of 80 percent of the transit focus area population |
| Criteria | F1 | Percent of transit focus area population with maintained sidewalks/trails within 1/4 mile of homes |
| Objective | F2 | Provide a maintained pedestrian trail network that connects 80% of the transit focus area population to major employment centers |
| Criteria | F2 | Percent of transit focus area population within 1/2 mile of pedestrian bicycle trails/routes to major employment centers |

III. RECOMMENDED TRANSPORTATION IMPROVEMENTS

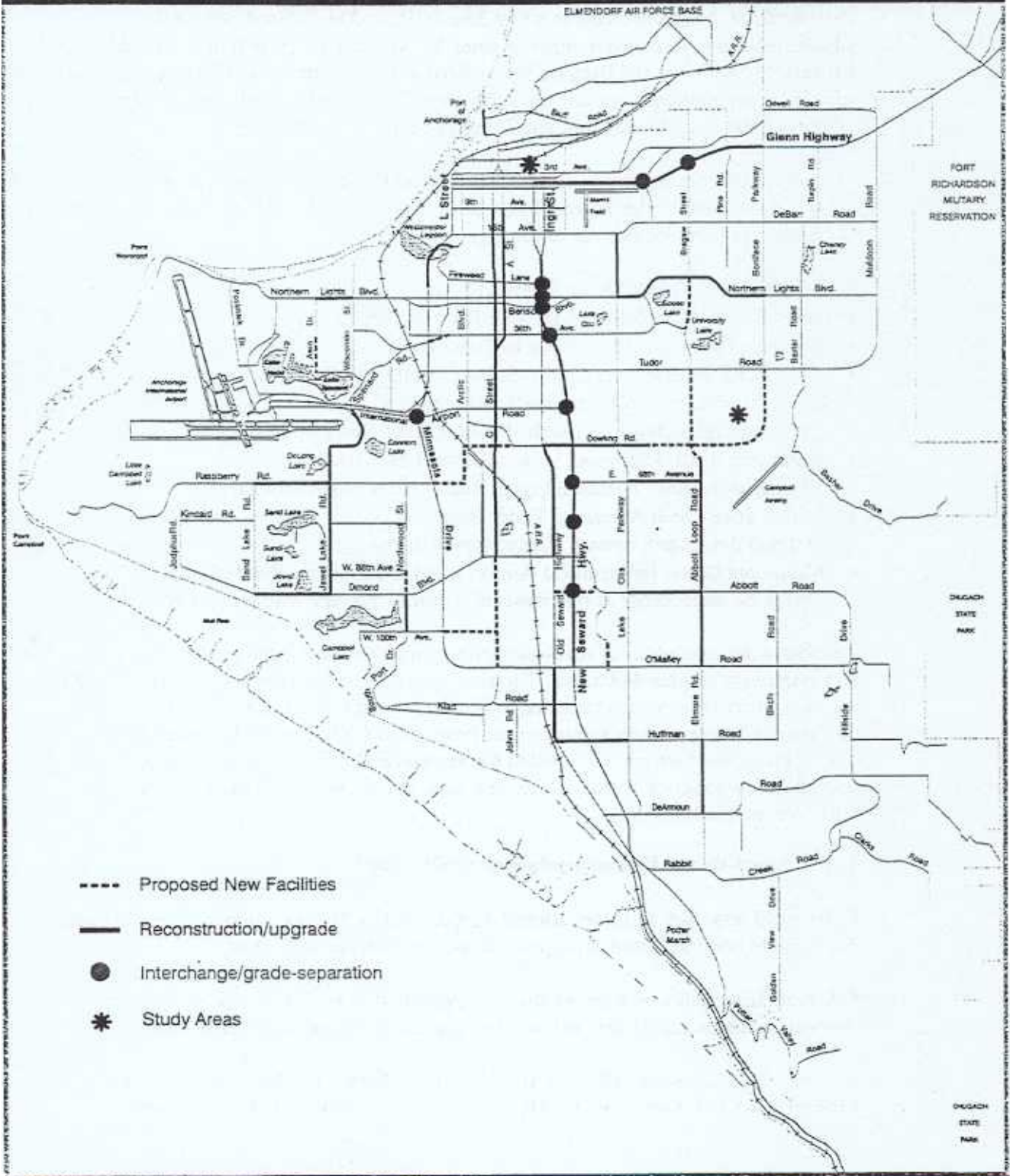
The following sections break out the LRTP recommendations into three categories: roadway, transit, and enhancement. Enhancement is a new category of recommendations which have been included as a part of this update in order to consolidate all relevant transportation improvement recommendations into one document.

A. Roadway Recommendations

As previously mentioned, it is not the purpose of this update to make major changes in the recommendations contained in the 1991 Anchorage Bowl Long-Range Transportation Plan. Nevertheless several changes have occurred since 1991 which need to be reflected in the list of roadway recommendations (see Figure 2). First, the AMATS Policy Committee approved two amendments to the Plan which affected the roadway recommendations. In 1994, the AMATS Policy Committee approved changing the LRTP recommendation for the Old Seward Highway between Dimond Blvd. and O'Malley

Figure 2

Roadway Improvement Recommendation 1997 - 2017



Road from a two lane to a four lane facility. (This roadway segment was subsequently built.) Another amendment was approved by the Policy Committee in 1997 to change the LRTP recommendation for the Old Seward Highway between Dowling Road and Dimond Blvd. from a two lane to a four lane facility. The Policy Committee simultaneously reduced the number of lanes for Arctic Blvd. from four to two lanes between E. 68th Ave. and Dimond Blvd. Both of these changes were deemed necessary in order to accommodate the unexpectedly rapid and intensive retail development in the vicinity of the Old Seward Hwy. and Dimond Blvd.

The list of roadway improvement recommendations also needs to be changed to reflect the fact that eleven of the projects listed in the 1991 LRTP have been completed. Completed projects include the following:

- 36th Avenue, Spenard Road to Arctic Blvd.
- 76th Avenue (Lore Road), Lake Otis Blvd. to Seward Highway
- Boniface Parkway, Debarr Road to Tudor Road
- Klatt Road, Realignment from C Street to Southport Drive
- Lake Otis Parkway, 68th Avenue to Abbott Road
- Northern Lights Blvd., LaTouche Street to Lake Otis Parkway
- Raspberry Road, Minnesota Drive to Jewel Lake Road
- Wisconsin Avenue, Northern Lights Boulevard to Lakeshore Drive
- Denali Street, 36th Avenue to Tudor Road
- Dimond Boulevard, Seward Highway to 88th Avenue
- Minnesota Drive, International Airport Road to Raspberry Road (Completed all except the interchange at International Airport Road and Minnesota Drive)

The following revised list of roadway recommendations have been broken out into short and long range recommendations. The short range recommendations include committed roadway projects which are expected to be constructed within the next six years either through the Transportation Improvement Program (TIP) or Capital Improvement Program (CIP). Projects which are only funded for design and ROW acquisition but are not funded for construction within the six year time period were not included in the short-range recommendation list.

1. Short-Range Recommendations (1998 - 2003)

C Street (Tudor Rd. to International Airport Rd.) - The portion of C Street between Tudor Road and International Airport Rd. will be widened to 6 lanes.

C Street (International Airport Rd. to Dimond Blvd.) - The portion of C Street between International Airport Rd. and Dimond Blvd. will be widened to 4 lanes.

Dowling Rd. (Lake Otis Pkwy to the Old Seward Hwy.) - The section of Dowling Rd. between Lake Otis Pkwy. and the Old Seward Hwy. will be widened to 4 lanes.

Old Seward Hwy. (Dowling Rd. to Dimond Blvd.) - This project involves widening the Old Seward Hwy. between Dimond Blvd. and Dowling Road from 2 to 4 lanes.

Arctic Blvd. (Dimond Blvd. to E. 68th Ave.) - This project involves the widening of Arctic Blvd. to a urban standard roadway. It will remain two lanes with left turn lanes added where needed.

E. 68th Ave. (Lake Otis Blvd. to Abbott Loop Rd.) - E. 68th Ave. will be widened and reconstructed as a 2 lane facility between Lake Otis Blvd. and Abbott Loop Rd. This project will be funded using Municipal bond funds.

36th Avenue Re-Alignment (at Spenard Road) - This project would provide a smooth transition of Spenard Road into 36th Avenue at that intersection.

Independence Drive (Colony Street to O'Malley Road) - This project will extend Independence Drive as a two lane collector to O'Malley Road. It is currently in the Municipal Capital Improvement Program to be funded with local funding.

Port Access - The roadway connections to the Port of Anchorage are substandard and need improvement. One of the proposed improvements would reduce the conflicts between trains and port truck traffic along Oceandock Road by realigning Alaska Railroad tracks. Additional study is needed to determine what other improvements are needed.

2. Long-Range Recommendations (2004 - 2017)

Fifth Avenue/Glenn Highway Expansion (Boniface Parkway to Gambell Street) - The roadway options analyzed in the 1991 Anchorage Bowl Long-Range Transportation Plan for the Glenn Highway to Seward Highway area included the expansion of Fifth Avenue, the 15th Avenue Bypass and the Glenn Highway/Seward Highway Connection. The Fifth Avenue expansion was selected due to its low impact on parklands, lack of disruption to the landfill area, and the lower impact on the relocation of residential units when compared with the 15th Avenue Bypass. Glenn Highway has been planned and right-of-way was already purchased to accommodate up to an eight lane facility east of Airport Heights. This allow for flexibility in the development of this facility to expand as demand grow.

Seward Highway (20th Avenue to O'Malley Road) - The freeway standard south of 36th Avenue, will be extended to the north of Fireweed Lane. The facility will include a six-lane primary roadway, with two lane frontage roads similar to the existing section . At the major intersections with Northern Lights Boulevard, Benson Boulevard, Fireweed Lane and 36th Avenue, the facility will be grade-separated allowing full flow on the cross streets over the freeway roadways. The frontage roads will provide the necessary access to the adjacent properties, with ramps to and from the freeway roadway. In order to

provide proper local circulation, the Plan also recommends the installation of overcrossings between the frontage roads along the Seward Highway. These overcrossings would be installed at International Airport Road, 68th Avenue, 76th Avenue, and 92nd Avenue.

A/C Couplet (9th Avenue to Tudor Road) - The existing portion of A/C couplet north of Tudor Road was constructed to handle an eventual 4 lanes each direction, but is currently striped for only three lanes in each direction. The design considered the use of the fourth lane for potential High Occupancy Vehicles (HOV, e.g., buses, carpools, vanpools, etc.). This Plan agrees with the expansion to four lanes as the demand grows and the possible use of the fourth lane for HOV.

C Street (Dimond Blvd. to Minnesota Drive) - The roadway south of International Airport Road has extensive right-of-way to Dimond Boulevard and should be upgraded to 4 to 6 lanes, depending on demand. The area south of Dimond Boulevard should be constructed as a new four lane facility to Minnesota Drive. (Note: the expansion of C Street between Tudor Road and International Airport Road was included as a short-range project since it is currently included in the six year illustrative program in the TIP.

Minnesota Drive Northbound (26th Avenue to 16th Avenue) - This one segment of Minnesota Drive is only two lanes and serves as a bottleneck for future traffic. The third lane should be constructed to provide full three lanes from Raspberry Road north to I Street.

Lake Otis Boulevard (15th Avenue to Northern Lights Boulevard) - The existing roadway in this area varies from two to four lanes. The facility should be constructed as a four lane roadway to complete the traffic grid pattern in this area.

Northern Lights Boulevard (Lake Otis Boulevard to Boniface Parkway) - This roadway serves as one of the main east/west roadways in the area. The expansion will include 6-8 lanes along its route depending upon the traffic demand.

Bragaw Street (Northern Lights Boulevard to O'Malley Road) - Of the various alternatives for north/south travel between the Hillside area and Goose Lake institutional facilities and on north to the military bases, Bragaw Street provides the most logical connection by completing the traffic grid pattern in this area. The various alternatives reviewed include the expansion of Lake Otis Parkway to six lanes by acquiring a row of businesses and houses along one side, the construction of Boniface Parkway south from Tudor Road to Abbott Road, and the expansion of the New Seward Highway to eight lanes. The modeling efforts showed results similar to what we see today in this area. As additional lanes are added to Lake Otis Parkway, it stays at full capacity, since it is the first facility available for access north/south for people coming to/from the Hillside area.

The analysis of roadway travel demand for the area between Lake Otis and Boniface Parkways is a comparison of the completion of the four lane Bragaw Street from

Providence Drive to Northern Lights Boulevard, the expansion of Lake Otis Boulevard to six lanes, or the six lane widening of Boniface Parkway south of Northern Lights Boulevard.

The major impacts on the residential community along Lake Otis Parkway or Boniface Parkway with any additional widening requirements oppose the objectives to minimize residential lane acquisition.

In addition, by adding the Bragaw segment, the projected traffic loads on adjacent facilities are balanced. This allows the other facilities to remain at their existing four lane configuration, without the need for further expansion of Boniface Parkway or Lake Otis Parkway.

Past discussions on Bragaw Street have addressed the problems with the road expansion crossing the University of Alaska-Anchorage (UAA) campus area. These lands are generally undesirable building sites due to soils and ground conditions. The current development plans for UAA show a focusing of the building development in the area west of Bragaw Street. A recent land trade consolidated the UAA land holdings surrounding the University Drive area. The campus would then have a more compact sense rather than a long spine if the areas east of Bragaw Street were incorporated. With the Bragaw Street construction, the role of University Drive from Northern Lights Boulevard to Providence Drive, which now divides the current UAA campus area, would be reduced to local access only.

Due to the issues described above, this area is designated as a study area (see Figure 2).

Dowling Road (Raspberry Road to Old Seward Highway/Lake Otis Boulevard to Boniface Parkway) - This roadway has been part of the proposed LRTP roadway network for many years and a majority of the necessary right-of-way already exists. It will serve a major east/west traffic flow and help to complete the traffic grid pattern. The roadway would be built to a minimum 4 lanes. This facility, combined with the central portion of the project between the Old Seward Highway and Lake Otis Boulevard (see short-range projects), will provide a major relief to congestion along Tudor Road.

Victor Road/Northwood Drive (88th Avenue to 104th Avenue) - This facility includes the expansion of the existing roadway to four lanes, and the connection of the existing four lane Northwood Drive from 88th Avenue over Campbell Creek to Dimond Boulevard. Existing land use in this area causes some congestion problems and, with additional development, the need for four lanes is easily met. The option of connecting Northwood Drive to Dimond Boulevard or expanding 88th Avenue and Arlene Street were alternatives reviewed for the northern portion of this project. The impacts on the residential areas along 88th Avenue and Arlene Street were far greater than the southern extension to Dimond Boulevard. Past experience has shown bridge facilities across Campbell Creek can be designed and constructed to provide minimal intrusion into the greenbelt area.

Huffman Road (Old Seward Highway to Lake Otis Parkway) - With the dense commercial frontage and the major connections to Lake Otis Parkway, New Seward Highway and Old Seward Highway, this section of Huffman Road will need expansion.

100th Avenue (Minnesota Drive to C Street) - This street will enhance local circulation and improve access to the proposed regional park facility located south of Minnesota Drive.

Abbott Road (Lake Otis Parkway to Bragaw Street) - This project would extend the newly constructed four lane section from Lake Otis Boulevard to Bragaw Street.

Jewel Lake Road (Dimond Blvd. to International Airport Road) - This road will need upgrading to include two - four lanes especially near Raspberry Road and Dimond Boulevard. This work will substantially improve the existing roadway.

Raspberry Road and Dimond Boulevard (Jewel Lake Road to Sand Lake Road) - These projects may need expansion to four lanes depending upon the area residential and commercial development associated with the Anchorage International Airport. These area will be monitored and projects implemented as the development warrants.

Elmore Road (Huffman Road to DeArmoun Road) - Construct two lane road to urban standards between Huffman Road to DeArmoun Road to complete the grid pattern in this area of southeast Anchorage.

Lakeshore Drive (Wisconsin Avenue to Aero Avenue) - Project involves extending Wisconsin Avenue to connect with Aero Avenue in order to improve traffic circulation in and out of the adjacent neighborhood.

Northern Lights Boulevard (Wisconsin Avenue to Aero Avenue) - Project involves upgrading a minor arterial to urban standards and expanding from 2 to 4 lanes.

Old Seward Highway (O'Malley Road to Huffman Road) - Project involves upgrading a minor arterial to urban standards and adding left-turn lanes where needed.

Beyond these projects, the existing roadways that are currently not designed and constructed to urban standards will also need to be upgraded during the span of this LRTP. This upgrading will normally replace existing roadways with new construction, but usually resulting in the same number of lanes for the road.

Additional work will also include the review of intersection locations where spot capacity improvements (widening, turn lanes, grade-separation, etc.) could be of benefit. At the time of project design, each of these roadways will be reviewed to determine the needs for inclusion of bicycle trails, pedestrian paths, landscaping, transit pullouts and other amenities.

B. Transit Recommendations

Transit services for the Anchorage area should focus on the Moderate Growth Level of Service in a Hub-and Link configuration. This would result in a 110 bus fleet requiring approximately 2-3 buses added each year to the system over the 20 year planning period. The majority of service would be directed in the transit focus area, resulting in 15-minute peak and 30-minute off-peak service headway. To encourage transit usage, both an aggressive marketing plan along with improvement to pedestrian access to the transit routes will need to be implemented. Due to the climatic conditions for a major portion of the year, the specialized elderly and disabled services should be continued. Even with proper winter sidewalk/trail maintenance, the users of the specialized service still need the enhanced transportation which the Older Alaskan Transportation System (OATS) and Specialized Transportation System (STS) programs provide.

C. Enhancement Programming

ISTEA regulations require that transportation plans incorporate the programming of enhancements. This process involves two steps: (1) identifying which types of enhancement projects will be funded with ISTEA money and (2) refining the list of specific projects which will be implemented during the timeframe of the Plan.

ISTEA regulations permits the following types of enhancement projects to be funded:

1. Provision of facilities for pedestrians and bicycles,
2. Acquisition of scenic easements and scenic or historic sites,
3. Scenic or historic highway programs,
4. Landscaping and other scenic beautification,
5. Historic preservation,
6. Rehabilitation and operation of historic transportation buildings, structures or facilities (including historic railroad facilities and canals),
7. Preservation of abandoned railway corridors (including the conversion and use thereof for Pedestrian or bicycle trails),
8. Control and removal of outdoor advertising,
9. Archaeological planning and research, and
10. Mitigation of water pollution due to highway runoff.

In the past, AMATS has generally funded three types of enhancement projects, i.e., bicycle and pedestrian trails, landscaping, and sedimentation basins. No sedimentation projects have been funded with federal highway money during the past few years, however. Due to the extensive need for additional bicycle, pedestrian facilities, and roadway landscaping, it is the recommendation of this Plan to largely focus future enhancement funding to these types of projects.

The Areawide Trails Plan serves as the official guide for the future development of trails within the Municipality of Anchorage and is incorporated by reference in this report. On pages 124 to 127, the Plan lists the top 50 trail projects which are to be implemented within the next 20 years (see Appendix A). These recommendations are incorporated by

reference in this update and will subsequently serve as a framework for programming future ISTEA enhancement money.

The Municipality of Anchorage does not, at this time, have a similarly adopted plan which sets priorities for street and roadway landscaping projects. The Municipality will soon release an RFP for a consultant to begin work on a new Streetscape Plan which will include design guidelines as well as identify landscaping priorities to be constructed along roadways. Until such time as this plan is adopted, the need for landscaping projects will be decided on a case by case basis (with input from the Urban Design Commission) in conjunction with the programming of roadway projects through the TIP process.

Policy issues regarding the level of spending on landscaping in conjunction with roadway projects also needs to be resolved. As an interim guideline, approximately 5 percent of the cost of roadway reconstruction projects should be targeted for landscaping improvements. This is in line with the existing level of expenditure.

IV. Congestion Management System

The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 represents a major change in how the federal government funds transportation improvement projects. In the past, transportation plans identified existing or future traffic congestion problems and automatically proposed the roadway expansion projects needed to overcome the congestion. ISTEA requires a more comprehensive look at transportation problems which emphasizes the following strategies:

Getting the most from the roadway network through Transportation Systems Management (TSM) strategies (e.g., signal system improvements, intersection improvements, roadway improvements, access management, etc.)

Overseeing system demand with Transportation Demand Management (TDM) initiatives (e.g., ridesharing programs, alternative work hours, improved transit, etc.)

- Constructing new roadway construction projects only when other non-construction methods can be shown to be ineffective in reducing the congestion to an acceptable level.

As a part of its effort to implement the Congestion Management System, AMATS adopted the "Congestion Management Program" report in 1994. The "Congestion Management Program" identified and recommended a set of congestion management strategies to employ in meeting travel demands and minimizing congestion. These strategies can be divided into two categories: (1) existing strategies recommended for expansion and (2) new strategy recommended for implementation. The existing strategies are listed in Table 2.

Table 2 Existing Congestion Management Strategies	
Access Management	Ridesharing Program
Priority Parking for Carpools/Vanpools	Employer Subsidized Transit Use
On-Site Transportation Coordinator	Rideshare/Transit/Bike Mktg. Programs
Alternative Work Hours	Telecommuting
Improvements to Bus Routes & Schedules	More Frequent Service
Transit Passenger Amenities	Transit Mktg. & Information Programs
Monthly Transit Passes	Improved Feeder Bus Service
Improved Express Bus Service	Park and Ride Facilities
Road Operational Changes	Paratransit Service
Intersection Improvements	Signal System Improvements
Roadway Improvements	Enforcement
Turn Prohibitions	
On-Street Parking Controls	
Bicycle Lockers, Racks, and Other Storage	Pedestrian Connections with Transit
Integration of Facilities for Bicyclists w/ Transit*	Safety Consideration for Sidewalks

The program to integrate facilities for bicyclist with transit was a new strategy recommended in the 1994 Congestion Management Program which was subsequently implemented since the plan was adopted.

The strategies in Table 2 reflect the existing congestion management system that is in place in Anchorage. This Long-Range Transportation Plan update recommends these strategies be maintained or expanded. These strategies should be regularly reviewed during the TIP process to determine their effectiveness in reducing congestion. AMATS has already adopted performance measures which can be used for this purpose. Data is currently being collected for most of these performance measures. There are, however, gaps in this data collection effort which need to be filled. This Plan recommends that AMATS commit to expanded data collection effort as part of the 1998 Unified Planning Work Program. This will greatly improve AMATS' ability to continuously monitor the effectiveness of the existing congestion management strategies and enhance its decision making process with respect to funding congestion management strategies.

The "Congestion Management Program" also recommended consideration of potential new strategies. (see Table 3 below). The "Congestion Management Program" acknowledged that these strategies require a significant change in the travel behavior of Anchorage residents. This behavior is most readily modified by a Trip Reduction Ordinance (TRO). Such an ordinance is not being pursued at this time. In addition, several of these new strategies would be more appropriately examined in the context of the Comprehensive Land Use Plan which is currently in the process of being updated. This is particularly true with respect to the land use policy and site design strategies. This Long Range Transportation plan therefore recommends that these new congestion management strategies be further evaluated and adopted through the Municipality before being considered in the SOV analysis, which is discussed later in this document.

The "Congestion Management Program" notes that the existing strategies, combined with new strategies (Table 3) could have the net benefit of reducing travel throughout the Anchorage bowl by five to six percent. Further analysis is required to determine the net benefit of the existing congestion management strategies.

Table 3 New Congestion Management Strategies	
Voluntary Trip Reduction Ordinance	Land Use Policies to Reduce SOV
Site Design Criteria to Increase Transit Use	Parking Requirements in Zoning Codes
Ordinance to require Bicycle Facilities	Education Programs
Guaranteed Ride Home	Employee Transportation Allowance
Eliminate Existing Employee Pkg. Subsidies	Joint Development Activities
Bus Traffic Signal Preemption	HOV Applicability
Arterial Concurrent-Flow HOV Lanes	Arterials with Limited Access
Reversible Lane Systems	Parking Supply Control
Preferential Parking for HOV Vehicles	Trails Coordinator
Education Programs for Bicyclists and Potential Cyclists	Showers and Clothing Lockers for Bicyclists/Pedestrians
Bicycle Media and Promotion Campaign	

As noted above, roadway improvements are one of many existing strategies identified in the "Congestion Management Program". Congestion Management System regulations treat this strategy different from the rest, however. According to 23 CFR 500.505, the Congestion Management System (CMS) shall provide an appropriate analysis of all reasonable (including multimodal) travel demand reduction and operational management strategies for the corridor that will result in a significant increase in capacity for Single Occupancy Vehicles (SOV). In other words, new highway construction projects which add general purpose lanes to an existing highway or new highway links can not be built until it is demonstrated that travel demand reduction strategies cannot fully satisfy the need for additional capacity and that additional Single Occupancy Vehicle (SOV) capacity is therefore warranted.

The 1991 Anchorage Bowl Long-Range Transportation Plan recommended a total of 31 roadway expansion projects which may result in a significant increase in SOV capacity (see Table 4). For those projects which use federal money, an SOV analysis must be conducted prior to programming money for construction. (Note: Some of the projects listed below will be exempt from this requirement if they are funded with local and State money.)

In order to ensure consistency in the preparation of the required SOV analyses, the following guidelines are provided:

Step 1: Determine the projected level of congestion in the next 20 years.

Step 2: Determine the difference between the projected level of congestion and the acceptable level of congestion.

Step 3: Analyze the effectiveness of existing congestion management strategies (see Table 2) in reducing the amount of congestion on the roadway to be expanded.

Step 4: Determine whether or not the travel demand reduction and operational management strategies can fully satisfy the need for additional capacity as determined in Step 2.

Step 5: If it is determined that the travel demand reduction and operational management strategies cannot meet demand, then identify all reasonable strategies to manage the new SOV facility effectively (or facilitate its management in the future).

Table 4 Recommended Roadway Improvement Projects Requiring SOV Analysis	
Seward Highway: O'Malley Rd to 20th Ave	Widen to 6 lanes and construct grade separations and frontage road
5th/Glenn Hwy Expansion: Boniface Pkwy to Gambell St	Widen to 6-8 lanes
Northern Lights Blvd: LaTouche St to Boniface Pkwy	Widen to 6-8 lanes
Jewel Lake Rd: Dimond Blvd to International Airport Rd	Upgrade to 2-4 lanes
"C" St: O'Malley Road to Dimond Blvd	Construct new 4 lane facility
"C" St: Dimond Blvd to Tudor Rd	Widen to 4-6 lanes
Boniface Pkwy.: Tudor Rd. to Bragaw Extended	Construct new 4 lane facility
Northern Lights Blvd: Wisconsin Ave to Aero Ave	
Bragaw St.: 48th Ave. to 68th Ave.	Construct new 4 lane facility
Lake Otis Pkwy: 15th Ave to Northern Lights Blvd	Widen to 4 lanes
O'Malley Rd.: New Seward Hwy. to Elmore St.	Widen to 4 lanes
Dowling Rd.: Old Seward Hwy. to Lake Otis	
Abbott Loop Rd.: Abbott Rd. to 68th Ave	
Dowling Rd.: Lake Otis Pkwy. to Bragaw St	facility
Dowling Rd.: Raspberry Rd. to Old Seward Hwy.	facility
Bragaw St.: Northern Lights Blvd. to Providence Dr.	
100th Ave.: Minnesota Dr. to C Street	
Bragaw St.: Abbott Rd. to O'Malley Rd.	
Abbott Rd.: Lake Otis to Abbott Loop Rd	
Elmore Rd.: Huffman Rd. to DeArmoun Rd	
Minnesota Dr Northbound: 26th Ave to 16th Ave	Construct 3rd lane
Huffman Rd.: Old Seward Hwy. to Lake Otis	Widen to 4 lanes
Northwood Dr.: 88th Ave. to Dimond Blvd.	Construct new 4 lane connection
Dimond Blvd.: Jewel Lake Rd. to Sand Lake Rd.	Widen to 4 lanes
Raspberry Rd.: Jewel Lake Rd. to Sand Lake Rd.	Widen to 4 lanes
Lakeshore Dr.: Wisconsin St. to Aero Ave	Construct new 2 lane connection.
Victor Rd.: Dimond Blvd. to 100th Ave.	Widen to 4 lanes
A/C Couplet: 9th Ave to Tudor Road	Stripe as 4 lanes as demands grow possibly using 4th lane as HOV lane

V. Major Investment Studies

The joint FHWA/FTA Planning Regulations for Metropolitan Areas requires Major Investment Studies (MIS) to be undertaken where the need for a major metropolitan transportation investment is identified that may potentially use federal funds. The purpose of a MIS is to develop or refine the Long-Range Transportation Plan (LRTP) and lead to decisions by AMATS, in cooperation with participating agencies, on the design concept and scope of transportation improvements.

The MIS is a subset of the more comprehensive metropolitan transportation planning process. The first step in the planning process includes an initial systems level analysis which identifies regional needs and assesses strategies for serving them (i.e., the Long-Range Transportation Plan). Normally, this first analytical effort relies on techniques which assess trends and demands at a relatively coarse level of detail. In selected cases, however, there may be a need to address transportation needs on a corridor or subarea scale, using more focused analyses to help decisionmakers understand the options for addressing corridor or subarea level transportation problems. The MIS serves this need by providing AMATS, the ADOT, the Municipal Public Transportation Department, and other local decisionmakers with more comprehensive corridor and/or subarea technical analysis early in the transportation decision making process.

It is the responsibility of AMATS in cooperation with the Alaska Department of Transportation and Public Facilities and the Municipal Public Transportation Department to identify projects within its jurisdiction which are subject to the Major Investment Study requirements. Towards this end, the following three criteria were developed to identify MIS projects: (1) cost of potential project must exceed \$70 million, (2) potential project must be classified as a freeway, and (3) potential project must be greater than one mile in length. (See "Major Investment Study Procedures Working Paper" for a complete description of how the criteria were developed.)

Most of the transportation improvements found in the 1991 LRTP are relatively small in scope and would not benefit from a MIS. Only two of the transportation improvements listed in the 1991 Anchorage Bowl LRTP and Chugiak-Eagle River Transportation Plan meet all three of the criteria discussed above. These include the following:

Seward Highway Corridor (20th Avenue to O'Malley Road) - The purpose of this project is to solve existing and future north/south traffic congestion problems along the Seward Highway Corridor. The 1991 Anchorage Bowl LRTP (see page 10) recommends that the existing freeway from 36th Avenue to O'Malley Road be investigated for possible widening from 4 to 6 lanes as well as the extension of the freeway standard from 20th Avenue to 36th Avenue. This standard would require that the major Seward Highway intersections at Northern Lights Boulevard, Benson Boulevard, Fireweed Lane, and 36th Avenue be grade separated. Additional overcrossings may be constructed at International Airport Road, 68th Avenue, 76th Avenue, and 92nd Avenue. The full cost

of this roadway project may be as high as \$168 million. The project length is about 5.5 miles.

Fifth Ave./Glenn Highway Corridor (Boniface Parkway to Gambell Street) - The purpose of this project is to solve existing and future traffic congestion problems along the east/west Fifth Ave./Glenn Hwy. Corridor. The 1991 Anchorage Bowl LRTP (see page 10) recommends expanding the Fifth Ave./Glenn Highway facility from four lanes to six lanes between Boniface Parkway to Gambell Street. This project involves upgrades to the existing freeway as well as the construction of freeway type interchanges at Airport Heights and Bragaw Street. The length of the project is 2.7 miles and will cost approximately \$72 million.

The procedures to be followed in preparing the two MISs described above is described in the "Major Investment Study Procedures Working Paper" report. As outlined in Section 3 of the report, Major Investment Studies require an extensive analysis of alternatives. All reasonable alternatives are treated equal and thoroughly analyzed as to its effectiveness in solving transportation problems identified in the Long-Range Transportation Plan. Thus, it is not possible to know, with absolute certainty, what alternative will eventually be selected for implementation in the final MIS report. Nevertheless, ISTEA planning regulations (see 23 CFR 450.322(b)(8)) require Long-Range Transportation Plans to identify a set of assumed alternatives for MIS projects in order to fulfill the requirements for financial constraint and air quality conformity.

ISTEA planning regulations provide two methods to decide what alternatives to use in the Plan: either (1) stipulate a set of assumptions (assumed alternatives) concerning the proposed improvements, or (2) assume a no-build condition pending the completion of a MIS. The 1991 Anchorage Bowl LRTP has already stipulated the assumed alternatives for the MIS projects (see projects listed in Section III.A). This set of assumed alternatives is in sufficient detail to utilize in the air quality conformity determinations required by 40 CFR part 51 as well as provide an adequate basis to develop the financial plan and thus meets ISTEA planning requirements for transportation plans. These assumed alternatives will be used as placeholders for the purpose of air quality conformity until such time as the Major Investment Studies are completed. If the assumed alternatives change as a result of the MIS process, then a new LRTP air quality conformity determination will be conducted which reflects the newly selected alternatives.

VI. Freight Mobility

The 1991 Anchorage Bowl Long-Range Transportation Plan primarily focused on the movement of individuals and families. ISTEA legislation challenged the nation as well as localities such as Anchorage to rethink its traditional approaches to transportation problems and solutions. It established a national goal of moving people and goods within an intermodal transportation system in an economic, efficient, and environmentally sound

manner. The 1997 update presents an opportunity to more fully incorporate freight mobility into the planning process.

There are four major aspects of freight mobility in Anchorage: waterborne transport, air transport, land transport, and rail transport. Each of these are discussed briefly in the following sections.

A. Waterborne Transport

The Port of Anchorage is a modern, efficient facility with two container/roll-on, roll-off berths, one berth usable for general cargo and two petroleum terminals, in addition to privately owned facilities. Container service from Seattle is five times weekly with barges arriving three times per week in the summer.

The Port of Anchorage is Alaska's largest general cargo port. Cargo volume at the port is about 3 million tons per year. Of this, approximately 20% is petroleum products inbound from the West Coast and Far East. This amount has declined both as a percentage and as an absolute amount as the state has become increasingly self-sufficient in its petroleum requirements. In fact, this amount is being supplanted by the outbound movement of petroleum products that are brought by rail from the refinery in North Pole.

General cargo has continued to increase, both absolutely and proportionately. About 90% of the general cargo is inbound, and about 90% of this is brought to the port on SeaLand container or Totem Ocean Trailer Express roll-on, roll-off ships operated from Tacoma. The remainder is generally bulk construction material brought from Seattle by barge. Of the general cargo, consumer merchandise represents about 35% and food products represent about 25%. The remainder is composed of a variety of construction and consumer items. Outbound freight has a similar uniform spread. Of the products moving into the port, about 60% are destined for Anchorage, with the remainder having final destinations throughout the state.

B. Air Transport

The Anchorage International Airport is the principal center for processing both domestic and international air cargo in the State. The Airport acts as (1) a redistribution center within the State for inbound cargo which, after arriving by air or ship, is transported to outlying communities by air due to the great distances involved, limited road network, and adverse road conditions, (2) a transfer and refueling stop for international all-cargo flights, which are flown with aircraft that require a refueling stop, and (3) the departure point for outbound shipments of perishable commodities (such as fish) during peak harvest periods.

According to the "Master Plan Update - Anchorage International Airport" (September 1995), there were 19 airlines operating all-cargo aircraft at the Airport in December 1992. In addition, other passenger airlines carried cargo in the baggage compartment of their passenger aircraft or operated combi aircraft. According to the U.S. Department of Transportation, the Airport ranked first in the nation in terms of total landed weight of all-

cargo aircraft (landed weight measures the weight of both the cargo and the aircraft itself) between 1987 and 1991.

Air cargo traffic and operations have become increasingly important to the Anchorage International Airport following the significant decline in international passenger traffic with both UPS and Federal Express recently opening large cargo facilities at the Airport. The State and Municipality are continuing their efforts to attract new cargo services to the Airport which could further increase the amount of cargo handled at the Airport in the future.

C. Land Transport

Little information is available concerning the movement of truck traffic within and out of Anchorage. The last major study of truck movement occurred in conjunction with the "Urban Goods Movement Study", prepared in June 1987. Major land use changes have taken place since this study was completed making its data suspect.

The State of Alaska Department of Transportation & Public Facilities, Highway Data Section, is the only agency which systematically collects data on truck traffic volumes within the Anchorage Bowl. ADOT collects vehicle classification data using counters at various locations determined by either HPMS statistical sampling requirements or highway construction projects. Unfortunately, up-to-date ADOT vehicle classification data is only available for 12 locations, which limits its usefulness in analyzing truck movement. Table 5 below lists the estimated amount of commercial type vehicles on area roadways based on the ADOT vehicle classification data.

Table 5 Light and Heavy Truck Volumes (Estimated Daily Average)		
Location of Truck Counts	Estimated No. of Buses, Rvs, and Delivery Trucks	Estimated No. of Heavy Trucks
Seward Hwy. South of Benson	1,867	837
E. 5th Ave. East of Airport Heights	1,289	553
Glenn Hwy. North of Eklutna	836	279
Glenn Hwy. North of Artillery Road	564	226
Tudor Rd. West of Patterson Rd.	812	174
Minnesota Dr. South of International	2,335	148
Seward Hwy. South of 76th Ave.	1,152	147
A Street at Chester Creek	559	134
Seward Hwy. at Potter's Marsh Ptr.	398	131
C Street at Chester Creek	527	131
Debarr Rd. bet. Sunrise and Columbine St.	612	13
Northern Lights Blvd. East of Redwood	936	0

A great deal more is known about truck movements within the Ship Creek area as a result of the "Port Area Transportation Analysis", prepared for the Port of Anchorage by Reid Middleton in February 1993. According to this report, most general cargo and locally distributed petroleum products move out of the Port Area by truck. Nearly 9,000 truck trips occur in the Port Area each week with over 3,600 of these associated with container movements.

The Port of Anchorage is served by a single route, i.e., Oceandock Road, into the Port Area, a virtual "cul-de-sac". Along the route there are eight at-grade rail crossings which result in considerable delays to trucks and passenger vehicles accessing the Port Area whenever switching operations occur. Currently there are typically 3 delays per day, 7 days a week, caused by rail/road conflicts each day. These delays average 20 minutes in length. Given an average hourly traffic count of 196 vehicles, potentially 65 vehicles are impacted by the 20 minute delay (45 passenger vehicles and 20 trucks. These delays result in a cost of over \$700,000 annually to the trucking industry, shippers and employers.

D. Rail Transport

The Alaska Railroad is the state's principal rail facility. The railroad runs 470 miles north from the ports of Seward and Whittier through Anchorage, Healy, Nenana, and Fairbanks.

Freight trains are operated five times weekly between Anchorage and Fairbanks, and either once or twice weekly from Anchorage to meet barges in Whittier. Coal trains move three times weekly from Healy to Seward and twice weekly from Healy to Fairbanks. Gravel trains run 12 to 14 times per week from Palmer to Anchorage during the summer. Annual freight volume is about 5.3 million tons with 70% of this composed of two commodities - gravel and coal. In 1993, 2.3 million tons of gravel was moved from Palmer to Anchorage in summer-operated unit trains.

Although traffic volumes are not heavy, the railroad is capable of handling all types of equipment between Whittier and Fairbanks, including 100-ton capacity vehicles and larger loads with special equipment. Two tunnels between Anchorage and Fairbanks limit loads to a maximum of 20 feet above top of rail and 14 feet in width.

E. Impact of LRTP Recommendations on Freight Mobility Problems

The transportation improvement recommendations contained in the LRTP will have a positive impact on solving at least some of the freight mobility problems facing Anchorage. Four projects will have a particularly significant impact. The proposed expansion of C Street from Tudor Road to Dimond Blvd. to 4-6 lanes will help facilitate the movement of trucks along this major truck route. ADOT data (see table 5 above) indicates that a substantial amount of light and heavy trucks use this facility. Discussions with private trucking industry representatives has confirmed that C Street is a primary truck route connecting the Port of Anchorage with existing warehouses located in the

industrial district along C Street. The extension of C Street from Dimond Blvd. to Minnesota Drive will also greatly improved access to large amounts of vacant industrial land in South Anchorage. This vacant industrial land represents the largest supply of future warehouse development in Anchorage.

The Oceandock Road improvement project would directly address some of the issues raised in the Reid Middleton report. This project would eliminate several of the existing railroad spurs which cross Oceandock Road thus substantially reducing the conflicts between trains and port truck traffic in this area of the port.

Improvements to the Glenn Highway and the Seward Highway would also have a beneficial impact on truck mobility. Both of these highways are major corridors for heavy truck traffic moving goods in and out of Anchorage (see table 5). Reducing the number of at-grade interchanges would substantially reduce congestion and have a positive effect on travel time.

As the above discussion indicates, several of the transportation improvement projects identified in the LRTP address freight mobility problems. There is no doubt, however, that there are many freight related problem areas which were not addressed in the Plan. A more comprehensive analysis needs to be done in the area of identifying the current and future freight mobility problem areas in Anchorage in order to fully incorporate freight related transportation improvement recommendations in the Plan. One of the issues that should be addressed in this analysis is the need for and feasibility of a northern access route for the Port of Anchorage through Elmendorf Air Force Base and Fort Richardson.

To begin this process, AMATS staff met with representatives of the freight industry to discuss general freight mobility issues. It was clear from this meeting that this subject needs to be addressed in a more systematic way. The first step is to develop a freight movement database. Data describing the types of commodities moved within and through Anchorage, their origins and destination, and weight would be particularly useful. This data will then be incorporated in the truck submodel of the new transportation planning model which will provide the Municipality with the capability of projecting future truck volumes. Transportation improvement projects designed to specifically address the problems identified in the freight mobility study can then be incorporated in the next update to the Long-Range Transportation Plan.

VII. Financial Plan

According to the joint FHWA/FTA Planning Regulations for Metropolitan Areas, all long-range transportation plans must include a financial plan that demonstrates the consistency of proposed transportation investments with already available and projected sources of revenue. The Anchorage Bowl Long-Range Transportation Plan identifies numerous roadway, alternative mode, and trail improvement needs for the next 20 years. This financial element of the Plan includes cost estimates of what it would take to

implement the Plan as well as estimates of all existing and contemplated sources of funds available to pay for these improvements.

As the following tables demonstrate, sufficient capital funds are expected to be available to implement the highway construction (see Table 6) as well as the transit recommendations (Table 8) of the Long-Range Transportation Plan. On the other hand, additional revenues will be needed to fund the operation and maintenance of the highway system (Table 7) and the operation of the municipal transit system (Table 8).

A. Roadway Capital Costs

According to Table 6, the cost of implementing the roadway construction recommendations contained in the Anchorage Bowl and Chugiak-Eagle River Long-Range Transportation Plans will be approximately \$31,400,000 per year (includes both National Highway System (NHS) and non-National Highway System (non-NHS) projects). Other roadway related expenses include: \$2,300,000 per year for roadway safety projects, \$2,300,000 per year for enhancement projects, \$1,700,000 per year for Congestion Management and Air Quality (CMAQ) projects, and \$6,800,000 per year for roadway rehabilitation projects such as repavement projects. The sum of these annual roadway expenditures is \$44,500,000. The annual revenues available to fund these projects total \$45,850,000 and include federal, state, and local funding sources. Thus, the revenue available for funding highway construction projects is roughly equal to the estimated cost.

Table 6 Annual Highway Construction Project Funding (1997 \$) (Includes both NHS and non-NHS Projects)		
1	New Roadway Construction (LRTPs only)	\$31,400,000
2	Roadway Safety Projects	
3	Enhancements	
		\$1,700,000
5	Roadway Rehabilitation Projects	\$6,800,000
	Projected Annual Cost of Highway Construction Projects	\$44,500,000
	Projected Federal Revenues Available for Highway Improvement Projects	
	Projected State and Local Revenues Available for Highway Improvement Projects	\$2,850,000
	Projected Total Revenues Available for Highway Improvement Projects	\$45,850,000

B. Roadway Maintenance Costs

Roadway operation and maintenance costs includes snow plowing, sanding, street sweeping, traffic and street light operation and maintenance, grading, pothole repair, etc. As illustrated in Table 7, the State of Alaska and the Municipality of Anchorage spend a combined \$17,400,000 per year maintaining the public road system in the Anchorage Bowl. The new roads built as a part of the Long-Range Transportation Plan implementation, will cost an additional \$1,360,000 per year to maintain. This represents

an overall increase of about 8 percent. It is expected that this amount will be funded by increases in the State of Alaska general fund and the Municipal Street Maintenance budget.

The above analysis of maintenance costs assumes that roadway maintenance will continue to be funded at current levels. The analysis did not examine whether or not current expenditures are adequate or if enough money is being spent on preventative maintenance. State and local maintenance budgets have traditionally been very tight. As a result, there is a tendency to defer needed roadway upkeep due to lack of funds.

Deferred maintenance has a hidden price, however. Depending on the amount of vehicular traffic on a roadway, preventative maintenance programs, such as crack sealing, can substantially prolong the life of a roadway, thus, reducing the frequency and total cost of rehabilitation projects. If preventative maintenance funding was increased, more ISTEA money could be spent on transportation improvement projects designed to reduce congestion and improve the mobility of Anchorage residents.

Another factor driving up the cost of roadway maintenance is pavement rutting caused by studded snow tires. According to the 1996-1998 TIP, roadway rutting problems will cost approximately \$15 million to rehabilitate during the three year period. This represents approximately 23 percent of the total ISTEA budget.

Overall roadway maintenance costs could be substantially reduced if motorists switched to lighter weight studs. An Alaska Department of Transportation report, entitled "Options for Reducing Stud-Related Pavement Wear" (August 30, 1996), concluded that requiring the use of lightweight studs can reduce pavement wear by up to 50 percent. Moreover, this reduction could be achieved without the loss of stopping protection.

Table 7 Highway Operation and Maintenance Funding (1997 \$)		
1	Existing Roadway Maintenance Cost (Local)	\$12,700,000
	Additional Local Roadway Maintenance Cost Due to Plan Implementation	\$1,100,000
2	Existing Roadway Maintenance Cost (State)	\$4,700,000
	Additional State Roadway Maintenance Cost Due to Plan Implementation	\$260,000
	Total Maintenance Cost of Future Roadway System	\$18,760,000
	Total Existing Revenues to Fund Maintenance Operations	\$17,400,000
	Net Operation and Maintenance Deficit	(\$1,360,000)

C. Transit Capital and Maintenance Costs

The 1991 Anchorage Bowl Long-Range Transportation Plan recommended that the size of the Municipal bus fleet be increased from 52 buses to 110 buses over a 20 year period. While it appears from Table 8 that there will be sufficient capital funding available to

finance the replacement as well as the new buses called for in the Plan, there is an \$11 million deficit in the transit operating budget. This more than doubles the existing transit budget. In order to implement the transit expansion recommendation, it will be necessary to revise the Transit Development Plan to include the purchase of the additional buses and request additional operating funding from the Municipal Assembly.

Table 8		
Annual Transit Capital and Operation Funding (1997 \$)		
Operations		
	Total Annual Cost of Operating Moderate Growth Transit System	\$19,500,000
	Existing Transit Budget	\$8,500,000
	Net Annual Operation Deficit	(\$11,000,000)
Capital		
	Transit/Bus Facility Capital Cost of Moderate Growth Transit System	\$2,560,000
	FTA Section 9 Grant Funding	\$1,900,000
	CMAQ Funding	\$700,000
	Total Capital Funding	\$2,600,000

For a more in-depth analysis of the projected costs and revenues available to implement the Long-Range Transportation Plan, see the "Financial Plan - Working Paper".

VIII. Air Quality Conformity

Federal funding for local transportation projects is statutorily tied to achieving and maintaining minimum National Ambient Air Quality Standards (NAAQS). Metropolitan Planning Organizations, which are located in areas which fail to meet these standards, must demonstrate that its Long-Range Transportation Plan will not undermine the local efforts to achieve air quality standards. This process is known as an air quality conformity determination.

A. Nature and Extent of the Air Quality Problem

There are two primary types of air pollutants which pose a potential health threat to Anchorage residents. They are carbon monoxide (CO) and PM-10 (dust). Carbon monoxide 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. The National Ambient Air Quality Standard (NAAQS) for CO is set at 35 ppm (parts per million) for a one-hour average and 9 ppm for an eight hour average. This health based standard is intended to protect those most sensitive to the effects of CO exposure.

Anchorage has been grappling with its carbon monoxide (CO) problem for a number of years. Roughly 80 percent of winter CO emissions in Anchorage are from motor

vehicles. All other factors remaining constant, CO emissions increase as vehicles grow in number, total vehicle mileage increase, and vehicle speeds slow due to congestion.

Most of the CO reduction programs adopted by the Municipality have been designed to reduce the amount of automobile emissions. Some of the most successful of these programs include the vehicle inspection and maintenance program (I/M), oxygenated gasoline requirement, and ridesharing program.

It appears that these programs, combined with federal emission control program for new cars has had the effect of reducing overall CO levels (see Table 9 below). The number of days exceeding the 9 ppm (eight-hour) NAAQS has dropped from 52 days in 1983 to three or fewer in 1994, 1995, and 1996. There were no exceedances recorded in calendar year 1995. The maximum and second maximum eight-hour concentrations have also fallen. The highest and second highest eight-hour CO periods measured during each calendar year also show a substantial decline since 1980.

Calendar Year	No. of Days Exceeding the NAAQS for CO	Highest 8-Hour Period (ppm)	Second Highest 8-Hour Period (ppm)
1980	41	27.4	26.2
1981	34	17.4	16.2
1982	35	21.6	18.1
1983	52	20.2	18.0
1984	38	17.3	17.1
1985	11	12.7	12.4
1986	6	12.4	11.7
1987	5	11.7	11.5
1988	15	12.3	11.8
1989	5	14.0	13.1
1990	11	13.0	11.6
1991	3	11.5	9.9
1992	2	10.8	10.8
1993	4	10.4	9.9
1994	2	11.3	11.0
1995	0	9.2	8.4
1996	3	11.0	10.5

The U.S. Environmental Protection Agency (EPA) currently classifies portions of the Anchorage Bowl as a moderate carbon monoxide (CO) non-attainment area. The Clean Air Act (CAA) requires moderate nonattainment areas like Anchorage to meet a December 31, 1995 attainment deadline. Two consecutive calendar years with one or fewer exceedances is required. Although Anchorage did not exceed the NAAQS in

calendar year 1995, a one year extension was necessary because of exceedances recorded in 1994 (see Table 8). The EPA extended the compliance deadline until December 31, 1996. There were, however, three exceedances during calendar year 1996. Although these exceedances may result in the future reclassification of Anchorage's CO air quality status from moderate to serious, no official action has been taken as of the date of this conformity review.

The 1992 Air Quality Attainment Plan contains two contingency measures that are to be triggered if Anchorage is found not to achieve the NAAQS by the CAA deadline or if growth in vehicle miles of travel (VMT) exceeds the projections assumed in the attainment demonstration. The first contingency measure was to expand the oxygenated gasoline control area to include portions of the Matanuska-Susitna Valley north of Anchorage. The second was to implement a compressed natural gas (CNG) vehicle conversion program for government fleets.

PM₁₀ is the second air pollutant which has reached levels high enough to cause health concerns in Anchorage. PM₁₀ is an acronym for particulate matter less than 10 microns in diameter. These are very fine particles; a human hair is about 100 microns in diameter. The air quality standard is set at 150 micrograms per cubic meter measured over a 24-hour period. High PM₁₀ levels have been linked with increases in asthma and bronchitis in Anchorage.

In Anchorage, PM₁₀ is composed mostly of very fine dust particles. During the past three years, PM₁₀ levels in the Anchorage bowl exceeded federal air quality standards a total of 16 times. The municipality and State have opted to take a proactive approach to the Anchorage PM₁₀ problem. Changes to road sanding and clean-up practices have already been implemented. A cleaner winter traction sand is now being used that should result in less dust in the spring. The municipality recently purchased six regenerative air sweepers that allow street sweeping to begin sooner in the spring. Municipal street maintenance is also using a chemical deicer, potassium acetate, to reduce the amount of traction sand required on our roads. In downtown areas, potassium acetate and/or magnesium chloride are being used almost exclusively in lieu of sand in the winter.

Under most circumstances, EPA would declare a community with a noncompliance record like Anchorage's a "nonattainment area." However, the Municipality of Anchorage, the State of Alaska and the EPA have entered into a memorandum of understanding (MOU) that may allow Anchorage to avoid becoming a nonattainment area. The EPA has agreed to delay nonattainment actions in recognition of the efforts currently being brought to bear on the problem by the municipality and State. If these efforts are successful, and we achieve attainment of the federal air quality standards for PM₁₀, EPA has agreed not to designate Anchorage a nonattainment area.

B. Conformity with the Anchorage Bowl Carbon Monoxide Control Plan

An air quality conformity analysis was conducted in conjunction with this LRTP update. Based on this analysis, the 1997 Anchorage Bowl LRTP update is found to be in

conformity with the Federal Clean Air Act as amended in 1990. Furthermore, it has been determined that the transportation improvements contained in the Plan will not undermine the ability of the Municipality of Anchorage to achieve compliance with the EPA carbon monoxide standards.

A conformity determination does not have to be completed for PM₁₀. According to 40 CFR 51.394(b), the federal conformity regulations shall apply "in all nonattainment and maintenance areas for transportation-related criteria pollutants for which the area is designated nonattainment or has a maintenance plan." Although there have been PM₁₀ exceedances in the past, the city has not been formally designated as a non-attainment area for dust. Thus, it is clear that conformity regulations do not apply to PM₁₀ in the Anchorage Bowl.

IX. Implementation Plan

The identification of transportation improvements in the LRTP is the first step to providing the system needs for our future transportation demands. The next phase is implementation. The most powerful implementation tool is the Transportation Improvement Program. The Transportation Improvement Program (TIP) is the short-range implementation plan used by AMATS to program federal funding for transportation improvements. The TIP essentially programs the recommendations contained in the 20-year Transportation Plan into a short-term (3 year) timeframe.

This Plan contains several recommendations which need to be reflected in the Unified Planning Work Program. They are as follows:

- 1) Develop a roadway landscaping prioritization plan to provide guidance to AMATS regarding the funding of landscaping projects.
- 2) Due to the extensive desire for additional bicycle, pedestrian facilities, and roadway landscaping, it is the recommendation of this Plan to largely restrict future enhancement funding to these types of projects.
- 3) The top 50 trail projects listed in the Areawide Trails Plan should serve as the framework for programming future ISTEA enhancement money for bicycle and pedestrian trails.
- 4) The existing strategies listed in the "Congestion Management Program" (1994) should be maintained or expanded. Additional feasibility studies should be conducted on the new congestion management strategies recommended in the CMP.
- 5) An expanded data collection effort should be undertaken to obtain information on the adopted congestion management objectives. A "Status of the System" report should

be prepared (based on this data collection effort) which provides an in-depth analysis of the nature and extent of congestion in Anchorage.

- 6) The AMATS Policy Committee should adopt congestion management standards based on the results of the "Status of the System" report.
- 7) Major Investment Studies need to be conducted for the Glenn Highway and New Seward Highway corridors. A timetable for development of these studies should be agreed upon by the Municipality of Anchorage and Alaska Department of Transportation & Public Facilities.
- 8) A freight mobility study should be developed in cooperation with the private sector. This study should focus on data collection efforts and the identification of freight mobility problem areas.
- 9) A new, updated transportation planning model needs to be developed. New capabilities of the model should include: transit mode share, pedestrian mode share, freight model, a transportation/land use interrelationship, and light rail analysis.
- 10) A new Long-Range Transportation Plan, complete with alternative analysis, should be finished by the year 2000. The new Plan, which will utilize the new model, should be integrated with the proposed update of the Comprehensive Land Use Plan.
- 11) Investigate new funding sources for preventative maintenance and promote the use of light weight studs.
- 12) Revise the Transit Development Plan to reflect moderate growth recommendation for the Municipal transit system and request appropriate funding from the Municipal Assembly to finance the operation of the expanded system.

APPENDIX A
TRAIL IMPROVEMENT PROJECTS

**Top 50 Trails Priorities
Identified in the Areawide Trails Plan**

A-C Couplet (North-South Trail)	Hillside Trail (Chugach Rim)
Abbott Loop: Campbell Creek to Abbott Rd.	Huffman Rd.: Birch to Elmore (unpaved)
ARR. Trail: Coastal Trail to Northern Lights	Little Peters Creek Trailhead
ARR Trail: Northern Lights to Tudor	Minnesota Bypass: Old Seward Hwy. to Tudor Rd.
ARR Trail: Tudor to Dimond	Moose Meadows: dedicate trail*
ARR Trail: Dimond to O'Malley	North Birchwood Loop: North Birchwood Interchange to Lorretta French Park
ARR Trail: O'Malley to Coastal Trail	O'Malley: Birch to Hillside (unpaved)
Bird Creek Regional Park Trailhead*	O'Malley: Lake Otis to Birch
Business Blvd. Sidewalks	Old Glenn Hwy.: Chugiak to Eagle River
Campbell Creek Trail: Old Seward to Tudor	Penland Parkway south side
Coastal Trail Lighting	Peters Creek Safety Trail
Coastal Trail: 2nd Ave. via Ship Creek Point to Glenn Hwy. at Boniface	Potter Marsh Nature Trail Extension
Coastal Trail: Kincaid to Potter Marsh	Rabbit Creek Road: Old Seward Hwy. to Goldenview (unpaved)
Coastal Trail: Ft. Rich to Mouth of Peters Creek Park	Section 36 Interpretive Trails (unpaved)
Coastal Trail: Mouth of Peters Creek Park to Eklutna	Seward Hwy.: Grade separated crossing at Bird*
Coastal Trail: Potter Marsh to Potter Section House	Seward Hwy.: Potter to Portage*
Coastal Trail: Widen shoulder 3rd to Earthquake Park	Tudor Road Crossing connections to Chester Creek southwest of University Lake and to Far North Bicentennial Park
DeArmoun Rd.: Seward Hwy. to Hillside (unpaved)	University Dr.: Providence to Northern Lights
DeArmoun Rd.: E. 140th Ave. to Birch (unpaved)	Upper Huffman Trailhead
Eagle River Greenbelt: connect to Hiland Drive	Windy Corner Dall Sheep viewing*
Eagle River Loop: Eagle River Rd. to Old Glenn Hwy.	Glacier Creek: dedicate trails*
Eklutna Waterline: dedicate trail	Glenn Hwy.: Boniface to Muldoon
Elmore: Rabbit Creek Rd. to DeArmoun, O'Malley to Abbott (unpaved)	Glenn Hwy.: Peters Creek to Mat-Su
Fire Creek Trail	Glenn Hwy.: Centennial Park to Eagle River snowmobile

* Project not located within AMATS boundaries.

Note: List is not prioritized.