APPENDIX A.

PLANNING FACTORS

1. Preservation of existing transportation facilities and, where practical, ways to meet transportation needs by using existing transportation facilities more efficiently.

Part of the financial planning effort for the MTP includes an assessment of preservation and maintenance needs. An analysis was completed that determined that in this region historical expenditure levels would have to be increased by approximately 25% in order to maintain a comparable pavement condition rating throughout the MTP timeframe. The recent opening of the TRANSTAR emergency management center in Houston marks the beginning of a significant investment in high technology infrastructure to support traffic incident management. The Regional Computerized Traffic Signal System (RCTSS) program, which is included in the MTP is an extension of the technology to upgrade a network of more than 3000 city street intersections that will result in improved traffic operations. Some of the issues associated with the deployment of an RCTSS System and multipurpose transportation centers such as TranStar are addressed in the Intelligent Transportation Systems (ITS) Strategic Plan. This plan is scheduled for adoption on August 1, 1997. A copy of this final draft document is included elsewhere in this document.

A considerable and continuing funding commitment is also dedicated in the MTP for further enhancing traffic operations, surveillance and incident management programs. These commitments include Computerized Traffic Management Systems (CTMS) in all freeway corridors and Arterial Traffic Management Systems (ATMS) along congested arterial streets. A significant level of funding has been allocated for traffic management systems in the MTP.

2. The consistency of transportation planning with applicable federal, state, and local energy conservation programs, goals, and objectives.

In coordination with the Department of Energy's Clean Cities Program, Houston is scheduled to receive official designation this summer as a program participant. This should bolster local support for the Alternatives Fuels program that was initiated two years ago to encourage conversions to alternatively fueled vehicles by subsidizing the cost of the conversions. Several Transportation Demand Management programs have been implemented with CMAQ funding and will be continued in the MTP. These

programs include a Regional Commute Alternatives Program (RCAP) with initiatives to promote the development of Transportation Management Organizations (TMOs), carpooling, vanpooling and transit use. Regional ridematching and active marketing have been implemented to promote the usage of High Occupancy Vehicle (HOV) lanes by carpools, vanpools and transit buses. A transit half-fare subsidy program is planned to start in August of this year during Houston's peak ozone season. All of these activities result in fewer single occupant vehicles on the roadways and reduce energy requirements accordingly.

3. The need to relieve congestion and prevent congestion from occurring where it does not ever occur.

Improvement in mobility as measured by travel time savings is one of the primary project evaluation criterion that has been used in the MTP roadway project selection process. Proposed projects within congested travel corridors, or in proximity to them, have been prioritized for implementation within the time frame of the MTP. The prioritization process considers the level of congestion as well as the estimated time frame for the congestion. Proposed projects on currently congested facilities are higher priority than projects on facilities that are forecasted to be congested based on future growth assumptions. Chapter Four of the draft CMS Plan, located elsewhere in this document contains a brief description for calculating travel rate.

4. The likely effect of transportation policy decisions on land use and development and the consistency of transportation plans and programs with the provisions of all applicable short and long- term land use and development plans.

The Data Services Committee of H-GAC developed the 1995 Small Area Allocation forecasts of 2020 population, households and employment for this region. The ITLUP (Integrated Transportation and Land Use Package) was used and enhanced by staff to include other locally significant variables such as land availability, land use development patterns, accessibility, market forces and historical development trends. The forecasts from that process indicated a continuing trend towards increased suburban growth in jobs and population.

However, representatives of the Transportation Policy Council (TPC) agreed to adjust the forecasts for long range (MTP) planning purposes because of a proactive public policy and private investments that are stimulating faster growth in the urban core than was anticipated several years ago when the official forecasts were being developed. The City of Houston and Metro have an ambitious improvement plan for central city neighborhoods and the downtown business district. The combination of those plans and the concurrent redevelopment of tracts of land within the urban core of Houston, driven by market forces, have already resulted in higher rates of population and employment growth inside the Loop 610 area. Specifically, growth targets were developed that increased the number of households within the Loop 610 by 12,000 and the number of jobs within the Central Business District (CBD) by 23,000. Equivalent numbers of jobs and households were removed from areas in Harris County outside of the Loop 610 so

that the regional control totals for all counties were kept consistent with the official regional forecast. The revised forecasts were the basis for travel demand modeling for the MTP.

5. The programming of expenditures on transportation enhancement activities as required in section 133.

Several enhancement projects within the Houston-Galveston region have been selected for funding and are proceeding towards implementation. The most significant projects are part of the Regional Bicycle and Pedestrian facilities plan that has identified a comprehensive system of proposed trails and also noted needed projects in corridors for future development. These projects will become the foundation of a comprehensive network of bicycle and pedestrian facilities that will be expanded by an annual allocation of funding during the MTP time frame.

6. The effects of all transportation projects to be undertaken in the metropolitan area, with regard to whether such projects are publicly funded.

All regionally significant (public or private) roadway projects are included in the roadway networks that are developed for travel demand analyses. These networks include roadways with functional classifications above local streets. The forecasted traffic on those facilities is used to calculate travel time savings before-and-after project implementation. Projects are evaluated by their cost effectiveness and whether or not they improve the transportation system's level of mobility, connectivity or system continuity, among other factors. Projects that are proposed for CMAQ funding are evaluated by the impact they would have on air quality as estimated in the cost per pound of emissions reduced.

7. International border crossings and access to ports, airports, intermodal transportation facilities, major freight distribution routes, national parks, recreation areas, monuments, historic sites and military installations.

As part of the development of the 1997 MTP the movement of people, freight and goods have received more attention. All of the major intermodal facilities in the region, including airports, marine ports, truck terminals, park and ride lots and transit centers have been inventoried and mapped. The access roads connecting those facilities to the National Highway System routes can receive priority consideration in the roadway project evaluation process. These activities were accomplished during the 1995 Data Collection activities as part of the Commercial Vehicle Survey Contract. NHS connectors between the NHS system and the regionally significant Intermodal facilities were analyzed and incorporated into the NHS network prior to adoption by Congress.

Several Special Generator Surveys have been conducted at some of the major recreational and tourist attractions in the Houston area over the last two years. The results of that research will be used to develop better trip production rates for intra-zonal trip estimates in the travel demand modeling and emissions estimation processes.

8. The need for connectivity of roads within the metropolitan area with roads outside the metropolitan area.

The Houston metropolitan area is located at the center of a radial system of Interstate Freeways and other major highways that connect this metropolitan area with others in all directions. In addition, there are circumferential freeways (or beltways) located from five to fifteen miles from the Central Business District. Another loop system, the Grand Parkway, is included in the MTP. It is under construction in segments and is more than twenty miles from the CBD. The combination of the radial and circumferential freeway systems improve the mobility options for travelers desiring to go from one side of Houston, to another, bypassing the downtown area.

System connectivity is one of the criteria that has been considered in the roadway project selection process. Projects that improve mobility along discontinuous arterial streets by closing gaps and maintaining uniform lane widths to address bottlenecks have been recommended for prioritized funding over new construction projects in new locations.

9. The transportation needs identified through use of the management systems required by section 303 of this title.

The Congestion Management System (CMS) is currently required for Transportation Management Areas (TMA) in Texas, classified as severe or above for non-attainment of air quality standards. The CMS for this area will be implemented on October 1, 1997. The roadway project selection process that was used for the MTP is consistent with CMS guidelines that determine areas of need based on objective data relative to levels of congestion. The Level of Mobility (LOM) analysis criteria is used in both the MTP and the initial phase of the CMS plan. A more systematic measure of system performance called travel rate will be implemented as data permits. This measure is based on the volume of movements of people and goods over the roadway system within a certain time-period. Before this measure is implemented relevant system-wide factors that are used in the TCM (Transportation Control Measures) TOOLBOX (analysis software) will have to be verified and a significant amount of corridor level, data collection is needed. A copy of the Draft Congestion Management System Plan is included elsewhere in this document.

10. Preservation of rights-of-way for construction of future transportation projects, including identification of unused rights-of-way, which may be needed for future transportation corridors and identification of those corridors for which action is most needed to prevent destruction or loss.

Several corridors have been identified and rights-of-way have already been acquired (or is in process) to preserve those corridors for future transportation projects. These include the SH 249/Burlington Northern, Katy Freeway (Interstate 10 West) and Westpark abandoned railroad corridors.

11. Methods to enhance the efficient movement of freight.

A major project to extend rail access into the Barbours Cut Terminal in the Port of Houston was approved for CMAQ funding ($11 million) in the previous TIP (1996-1998). It was justified based on the removal of a substantial amount of truck traffic between the ships' unloading area and the nearest rail loading platform. The Port of Houston has recently proposed several new projects to improve the efficiency of cargo handling between ships, trucks and rail lines at the port. Two of the projects are recommended for funding with STP and CMAQ funding in the next (1998-2000) Transportation Improvement Program (TIP), the three year element of the MTP. Other port projects will be programmed for later implementation in the MTP depending on their cost effectiveness and/or air quality improvement ranking, and if they are financially feasible.

12. The use of life cycle costs in the design and engineering of bridges, tunnels, or pavement.

Surrogate measures of life-cycle costs (and benefits) are calculated based on the anticipated useful life of roadway projects as recommended in federal guidelines which have been adjusted to reflect local conditions in some cases. For example, the TxDOT Houston office has suggested that the design standards for urban freeways in this region require thicker pavement widths due to the higher levels of recurring congestion and truck traffic. In light of that recommendation a 30-year useful life is assumed for urban freeways and structures in the MTP instead of the 20-year useful life that was used previously. In addition, the design standards are different for urban and rural freeways and arterial streets. A net present value of the benefits is calculated over the MTP time frame and used with the annualized project cost to develop a benefit cost index that is one of the factors used in the project selection (ranking) process.

13. The overall social, economic, energy, and environmental effects of transportation decisions.

A regional socioeconomic analysis was completed for the roadway projects in the MTP and indicated positive impacts in the region as a whole. Environmental and energy-related factors are considered in the project evaluation process. That process reflects levels of improved mobility as measured by volume to capacity ratios and travel time savings resulting from faster average speeds. Projects that improve speeds or reduce the amount of vehicle idling on severely congested facilities are prioritized for implementation. Projects that are proposed for funding under the Congestion Mitigation and Air Quality Improvement program have been evaluated and have positive air quality benefits.

The MTP's successful demonstration of conformity shows that the transportation system in the region is, as a whole, reducing emissions over time, despite significant growth in regional travel. Changes in vehicle technology make vehicle miles of travel in the future cleaner than today's, which are far cleaner than those of 1970. The region is meeting all

of the commitments to Transportation Control Measures (TCMs) committed by the TPC as part of the region's State Implementation Plan (SIP) in 1993-1996.

14. Methods to expand and enhance transit services and to increase the use of such services.

The Metropolitan Transit Authority of Harris County (METRO) developed the long range (2020) transit plan for this region and it is incorporated into the MTP. That plan includes the Regional Bus Plan with service improvements to major employment centers. The plan also includes the consideration of high capacity fixed guideway transit alternatives in the SH249/ Burlington Northern and CBD to Dome (South Main) corridors.

METRO has also proposed a network of bi-directional High Occupancy Vehicle (HOV) lanes with improved access characteristics. Those enhancements to the HOV system should improve its effectiveness and efficiency. In addition, H-GAC and METRO have jointly implemented a regional vanpool program which complements the transit system by providing additional ridesharing opportunities to major employment centers. Expansion of the vanpool program, regional ridematching capabilities and carpool incentive programs will be continued throughout the time frame of the MTP.

15. Capital investments that would result in increased security in transit systems.

METRO has programmed funds for improving communications and surveillance systems through its intelligent vehicle highway system (IVHS) programs. METRO is also participating in the funding of TRANSTAR, a regional traffic control and emergency management center. These programs and systems should enhance safety and security.
The presence of the METRO Police Force over the past years has resulted in increased security in the transit system.

16. Consideration of recreational travel and tourism.

Union Station in downtown Houston will be renovated and would be adjacent to a proposed downtown sports stadium. Funding for the renovation was provided by the ISTEA Enhancement program. Along with the renovation of the station, the renewal of the excursion trains, the "Texas Limited", between downtown Houston and Galveston Island are planned. The possibility of using the same station as a multi-modal transportation terminal is being considered and would connect potential commuter rail services between downtown and Galveston Island with other modes of transportation. The Galveston Island Trolley serves a major tourist and recreational attraction in the area (the beaches) and an extension to the trolley system has been proposed in the MTP (pending preliminary engineering studies).

As discussed earlier, a comprehensive system of bicycle and pedestrian pathways is included in the MTP, which will improve non-motorized mobility for work trips as well as for recreational uses. Recreational traffic patterns going to the local beaches and lakes

in the summer months are not explicitly modeled in the travel demand analysis since the travel demand model inputs reflect typical fall weekdays. Local research has been completed for Special Generator Surveys for Memorial Park, Gulf Greyhound Park (the dog track), Galveston Island, and others, which assisted in developing better estimates of intra-zonal trip- making characteristics. The Galveston Island set of surveys was important in that motel/hotel guests were surveyed to determine their typical day. This enabled staff to capture intra-zonal tourist trips for the first time. Regular origin-destination surveys of households would not capture local taxi/rental car trips. The same thing is true for Greyhound Park but to a lesser extent. The result of this research has already contributed to improved travel forecasts for those areas.