1.0 Project Background

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This section provides a general description of the Transport 2020 Project and sets forth the "Making the Case" narrative. The narrative includes a summary of the purpose and need for the project and a discussion of the benefits of this capital investment priority in the Madison/Dane County area.

Section 1.0 is organized as follows:

- 1.1 Transport 2020 Project Description;
- 1.2 Baseline Alternative;
- 1.3 Project Development Status; and
- 1.4 Making the Case for Transport 2020.
- 1.5 Uncertainties; and
- 1.6 Summary

1.1 Transport 2020 Project Description

The long-term transportation system vision proposed in Transport 2020 is a multi-modal system consisting of commuter rail, express bus services, park-and-ride lots, and improvements to local bus service. This "Full System" transit vision will represent significant progress toward meeting the regional transportation, economic development, and growth management goals established at the outset of the Transport 2020 project and goals that also are reflected in the adopted plans of Dane County communities.

The first piece of this long-term transit vision to move forward is the Locally Preferred Alternative (LPA) selected in May 2007 by the Implementation Task Force, made up of City of Madison, Dane County, state, university, Madison Area Metropolitan Planning Organization (MPO) and community representatives, emerged from a comprehensive planning process and alternatives analysis. The following are key elements of the LPA:

- Approximately 16-mile commuter rail line operating within an existing freight rail corridor between the City of Middleton and an area just southwest of the City of Sun Prairie, directly through the Isthmus of the City of Madison. This Start-Up System project is the first phase of an integrated multi-modal transit system for Madison and Dane County, and extensions of this system to serve many communities in Dane County are anticipated over time. Extensions of this system could serve a number of cities and villages in Dane County - including Fitchburg, McFarland, Stoughton,

Oregon, Verona, Cottage Grove, DeForest, Waunakee, Cross Plains, Black Earth and Mazomanie. In addition, a short near-term extension to the north could provide direct service to the Dane County Regional Airport (which would also provide a direct linkage to future high speed intercity passenger rail service at that location).

- New regional express bus service to numerous Dane County communities and improved local bus services to supplement and feed the rail service.

- 17 stations, including from west to east:

  - Two in Middleton: one at the intersection of Highways 12 and 14 and the other in the Middleton CBD.
  - Three in the Hill Farms subarea, located just west of the University of Wisconsin: one at Whitney Way, one near the railroad intersection with Midvale Boulevard, and one at the railroad intersection with Shorewood Boulevard.
  - Three in the University area: one at the University of Wisconsin and Veterans' Administration Hospitals, one at Union South, and one serving the Kohl Center.
  - Three in the Capitol area: one at Monona Terrace, one at Hancock Street, and one at the railroad intersection with Paterson Street.
  - Three in the East Isthmus Opportunity subarea: one at Baldwin Street, one in the heart of the Schenk-Atwood neighborhood near Second Street and Winnebago Streets, and one at Union Corners.
  - Three in the East Town subarea: one at the railroad intersection with Fair Oaks Avenue, one on Lien Road near the East Towne shopping mall, and one at the Reiner Road intersection north of Nelson Road.

- Four park-and-ride lots at: Highway 12/14; Whitney Way/Hill Farms; Fair Oaks; and Reiner Road

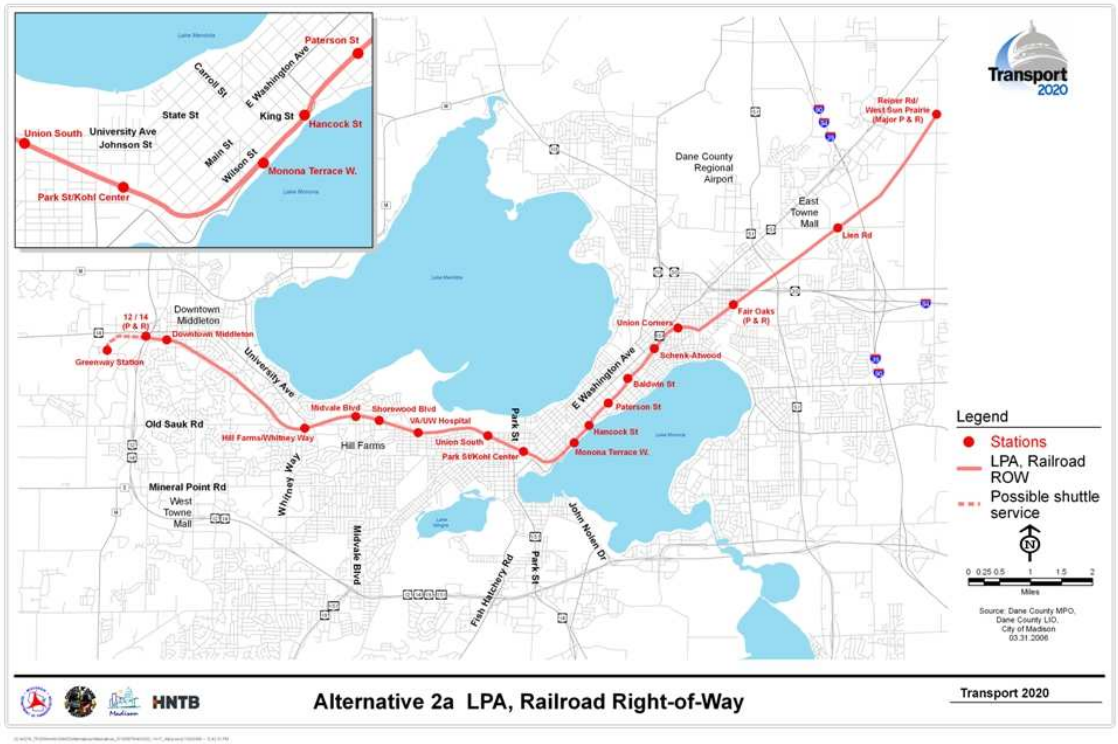
- Level of service:

  - Service provided in both directions during all weekday time periods;\
  - 20 minute peak headways;
  - 70 weekday trains;
  - Average operating speed of 23-26 miles per hour.

- Diesel-multiple-unit cars ("DMUs" or self-propelled coaches) or new hybrid technology commuter rail vehicles.

A map of the project is provided in Figure 1.1.

Figure 1.1 Transport 2020 Project



1.2 Baseline Alternative

The Baseline Alternative for the Transport 2020 project includes improvements that increase the attractiveness of existing bus services operated throughout the corridor and Madison metropolitan area. Madison Metro operates an expansive and well-utilized system in the corridor that would be enhanced with bus rapid transit (BRT) elements, as described below. This alternative represents a level of capital investment that is greater than the No-Build Alternative but substantially less than the Transport 2020 LPA or other build alternatives considered.

The Baseline Alternative includes a Transit Priority Corridor between Whitney Way and North Street/Milwaukee Street along University Avenue, Campus Drive, West Johnson Street, State Street, and East Washington Street through Capitol Square. This corridor removes on-street parking where it exists now or utilizes existing diamond lanes for use by buses. Some portions of the Transit Priority Corridor have buses operating mixed traffic due to street right of way constraints. Existing auto travel lanes are not converted for bus use in the Baseline Alternative.

To the west of the Campus Drive/University Avenue intersection and to the east of North/Milwaukee Street, buses would operate in mixed traffic. This Transit Priority Corridor is aligned with the east-west Transit Market Area identified for analysis in the Transport 2020 study, contains the heaviest concentration of overlapping bus routes, and enjoys the highest service levels in the Metro transit system.

The Baseline Alternative is projected to have limited benefits to transit riders, a direct consequence of the heavy traffic congestion that would limit the speeds of buses operating in the corridor. The low cost TSM approach, with a significant portion of the service running on essentially the same congested highways that riders are attempting to bypass, would provide an ineffective response to anticipated mobility problems in the corridor. Even with improvements to create a bus priority lane in parts of the corridor, where feasible, the travel time performance of the Baseline Alternative does not match that of the LPA.

Features of the Transit Priority Corridor include:

- **Branded Transit Service –** A branded bus service using vehicles with BRT elements will provide frequent service every 15 minutes throughout the day in each direction between a proposed park-and-ride facility near the interchange of University Avenue and US-12/14 in Middleton and an expanded park-and-ride at the American Center near the interchange of East Washington Avenue and I-90. The route will use 60-foot articulated low-floor diesel-electric hybrid vehicles with special paint schemes, onboard passenger information systems, and upgraded finishes to distinguish them from others in the Metro Transit fleet.

- **Traffic Signal Priority**. Conditional traffic signal priority will be implemented at all feasible intersections in the Transit Priority Corridor. Conditional priority gives extra green time to buses that have significant passenger loads and are running behind schedule as a means to manage headways between vehicles.

- **Bus Lanes**. Curbside bus and right turn lanes will be implemented where feasible throughout the Transit Priority Corridor. The majority of bus lane length is expected to consist of marked curbside diamond lanes in which right-turning traffic is allowed, but through traffic is restricted.

- **Enhanced Transit Stops**. Bus stops will be consolidated such that the average station spacing is between one-third and one-half mile. Express routes will skip some of these stops to serve only major activity centers.

- **Real-time Passenger Information**. Enhanced transit stops will also offer real-time schedule information and customer alerts. The branded route also will offer on-board passenger information, including automated next stop announcements.

1.3 Project Development Status

Planning for improvements in the Transport 2020 corridor date back well over a decade. Most significantly, in 1997 the *Vision 2020 Dane County Land Use and Transportation Plan* recognized that without improving transit, regional growth would affect mobility for Dane County residents, students, and workers. The plan recommended implementing a "balanced" transportation system to "increase reliance on transit…This is especially the case for work trips to central Madison during the peak hours and for school trips. This reduces the demand on the roadway network in terms of congestion and roadway capacity and provides mobility choices for those who wish to use other modes rather than an automobile or who do not have access to an automobile."[1] Based on those findings, a next phase of study was initiated, culminating in a proposed integrated multi-modal system for Dane County. The key elements of that system include improving commuter transit service between outlying population centers and the Isthmus, establishing opportunities for park-and-ride transit services into the downtown area, and developing alternatives to all-day commuter parking downtown and at the UW-Madison campus.

Focus was then placed on the first phase of that more expansive transit system. The Transport 2020 LPA was selected following consideration of previous study findings and an alternatives analysis. An LPA was selected in May 2007 and is now the subject of a Draft Environmental Impact Statement, anticipated to be completed in 2008.

1.4 Making the Case

The Setting

The City of Madison, the state Capitol of Wisconsin, is home to significant regional and statewide government, education, employment and cultural resources that attract both local and regional residents and visitors on a daily basis. Besides the State Capitol and government offices, the city is home to the University of Wisconsin-Madison (the nation's top public research university in total dollars), three major regional health care facilities, a new convention facility, and major cultural facilities. Additionally, the area is one of the top three tourist destinations for the state. The city, along with many of these facilities is uniquely situated on a narrow isthmus of land between lakes Mendota and Monona. Two primary arterial roadways serve as the east-west connection through the Isthmus; University Avenue on the west and East Washington Avenue on the east. An existing, but lightly used freight rail corridor runs roughly parallel with these two roadways through

[1] Dane County Regional Planning Commission, "Vision 2020 Dane County Land Use and Transportation Plan Summary," 1997, p. 42.

the Isthmus. The proposed project and the roadway network in the study area is shown above in Figure 1.1.

A planned regional land use strategy adopted in the 1970s has concentrated growth in the central area and existing suburban communities rather than in dispersed subdivisions. Civic re-investment has resulted in a vibrant urban fabric that consistently results in high ratings for the city and region in major national listings on quality of life.

Purpose

Current Conditions

According to an August 2007 Wisconsin Department of Administration report, Dane County has added more new residents since the 2000 U.S. Census than any other Wisconsin county. In fact, Dane County has added twice as many residents as Waukesha County, the county with the second most new residents added since 2000. As of 2002 (the modeling base year), there were just over 400,000 residents and 285,000 jobs in Dane County. In addition, residential growth in Dane County since the 2000 Census is outpacing current projections. Dane County has added 50,000 additional residents here since that time, and has a 2007 population of 476,000.

Many of these residents commute daily to jobs located along the Transport 2020 east-west travel corridor. A majority of residents in most communities outside Madison commute to Madison for employment. In addition, lower housing prices in communities outside of Dane County have created more commuters and longer commute times into Madison (real estate sales figures from 2006 show Dane County home prices at 25 to 40 percent higher than surrounding counties). In fact, the number of employees commuting to Dane County from surrounding counties has nearly doubled during the 10-year period 1990-2000, growing from 16,000 to 30,000, a trend that is expected to continue

The Transport 2020 study area contains the majority of the region's activity centers, representing 80 percent of the employment and two-thirds of the population in Dane County. The major destination for Isthmus trips is the University of Wisconsin (UW)-Madison Campus. The adopted campus plans call for no additional parking spaces on campus while envisioning continued growth in academic and research facilities. In fact, the campus land is too valuable as an investment in potential facilities for it to permit parking growth. Further, travel demand forecasts show that riders at the three UW area stations would be significant users of the proposed commuter rail system, with over 3,300 daily boardings in 2030 and half of these at the Union South station. Thus, improved regional transit is a requirement for the campus' future growth. The university is also the region's major economic engine, and the economic success of this region is tied to the UW's success.

Currently, traffic volumes during both the a.m. and p.m. peak periods on University and East Washington avenues are congested, operating primarily at highway Level of Service (LOS) E, with some spots now operating at LOS F. University Avenue currently carries

between 50,000 and 55,000 ADT (average daily traffic) and East Washington Avenue carries between 50,000 and 60,000 ADT. Neither of these arterial roads can accommodate added physical capacity due to dense commercial and residential developments on both sides of the streets. Ongoing street improvements for capacity are limited to spot upgrades at intersections.

Due to the fact that Madison's physical geography is constrained by two lakes, alternative east-west street corridors through the study area are limited. There is no alternative corridor to University Avenue on the west side of the study area. On the east side, Williamson Street and the Johnson Street/Gorham Street one-way pair provide alternative east-west routes to East Washington Avenue. Growth on these two east side parallel arterials has increased on average 25 percent over the past 10 years indicating that growing East Washington Avenue congestion is forcing additional trips onto these corridors. Both these corridors carry traffic at or near their maximum capacity with Williamson Street operating at LOS E and Johnson Street/Gorham Street at LOS F. These alternative corridors are similarly constrained by dense development and cannot be physically expanded to meet traffic demand.

The Metro Transit system supplies a very high level of service compared to those of its peer cities, providing more than twice the revenue miles per capita than the average for its peer group. Consequently, transit ridership per capita is nearly four times the average for similarly sized urban areas. In its most recent Transit Development Plan, Metro Transit notes that Core and Commuter Routes through the study area accounted for about 60 percent of all Metro Transit trips and 73 percent of total system revenue service hours. Because of Madison's unique geography, nearly 50 percent of all weekday routes travel through Capitol Square in the heart of downtown Madison. But while transit service is high through the study area, bus service suffers from the same congestion that other traffic experiences on the limited number of arterial streets serving the area.

Anticipated Conditions in 2030

By 2030, the population of Dane County is projected to reach almost 600,000 residents (a 36 percent increase from 2000). Note that if very recent current growth trends (2000-2007) are realized, Dane County would grow to a population of 630,000 by 2030. Over that same period, employment in Dane County is projected to increase to be 382,000 workers (an increase of 34 percent). Nearly 70 percent of the forecasted growth in jobs is expected to occur in the area served by the Transport 2020 project.

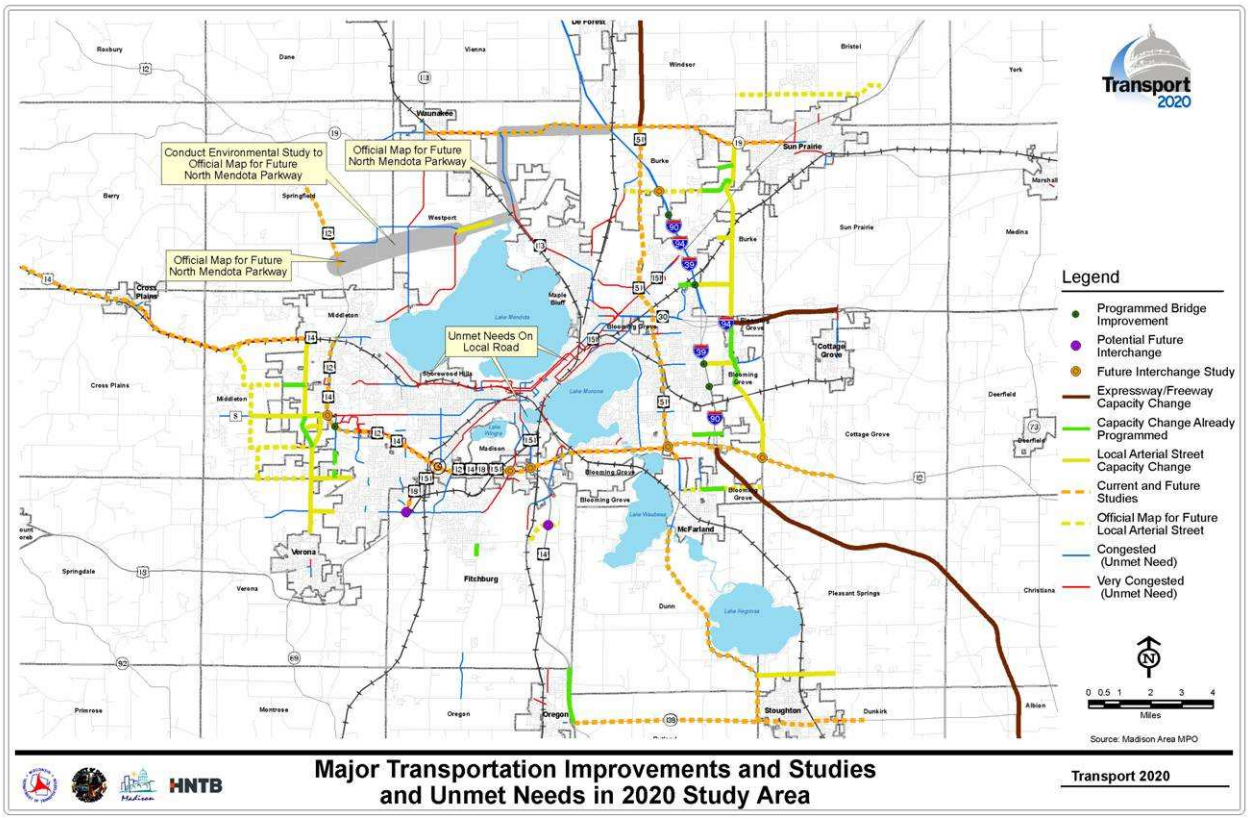
The Madison Area Metropolitan Planning Organization (Madison Area MPO) projected that in 2030, 48 percent of the labor force will reside in the City of Madison, but that the City of Madison will account for 64 percent of the employment in the County.

Congested roadways will make the Transport 2020 system an attractive option for many of these commuters, given the reliable, consistent nature of the rail service. Figure 1.2 shows the most severely congested roadway corridors in the year 2030 in Dane County, with the east-west travel corridor directly adjacent to the Transport 2020 service corridor.

Traffic projections for 2030 indicate that the entire length of University Avenue and about 85 percent of the length of East Washington Avenue will operate at LOS F during peak periods. Similarly, the parallel streets of Williamson Street and the Johnson Street/Gorham Street one-way pair will all operate at LOS F.

Future traffic congestion is particularly marked at intersections where traffic queues and delays will increase. For example, during the a.m. and p.m. peak hours, traffic delays at the intersections of John Nolen/Williamson Drive, Old Middleton Road/Whitney Way and University Avenue/University Bay Drive are projected to exceed two minutes, which translates into LOS F operating conditions. This delay is an increase of roughly one to six minutes more than existing conditions at each intersection. Another intersection reviewed during the alternatives analysis, Broom Street/John Nolen Drive, is also expected to fail during the a.m. peak in 2030, when intersection delay more than doubles. Thus, an auto trip in the corridor between Hill Farms and Reiner Road that currently take about 16.5 minute, with increase to 25.4 minutes in the year 2030, nearly a 50 percent increase. Additional travel time data will be obtained with a planned survey in the spring of 2008.

Figure 1.2 Congested Conditions in the Transport 2020 Corridor



The addition of new roadway capacity along the Isthmus corridor has been determined to be financially infeasible, due primarily to the very high cost of adding roadway capacity and the resulting destruction of existing neighborhoods. Therefore, alternative investments are required to maintain mobility through and quality of life in Dane County's densest employment and population center. Improved transit investment is a major component of the regional growth management strategy for Madison and Dane County.

The Case for the Transport 2020 Locally Preferred Alternative (LPA)

In recommending the LPA, analysis was done to evaluate other transit options including the Transportation Systems Management (TSM) or Baseline alternative. The Baseline option is a lower-cost approach that would introduce a new branded express bus service along East Washington Avenue (to the east) and University Avenue/Johnson Street (to the west). Proposed improvements in the Baseline alternative as described above in Section 1.2 include introduction of a branded route through the Isthmus with BRT elements, expanded use of designated bus lanes and limited-stop services, minor intersection and

roadway geometric improvements, curb extensions, and traffic signal priority. Due to right-of-way constraints, buses would operate in mixed traffic to the west of the Campus Drive/University Avenue intersection and to the east of North/Milwaukee Street on East Washington Avenue.

The Baseline alternative is projected to have limited benefits to transit riders, a direct consequence of the heavy traffic congestion that would limit the speeds of buses operating in the corridor. The low cost TSM approach, with a significant portion of the service running on essentially the same congested highways that riders are attempting to bypass, would provide an ineffective response to anticipated mobility problems in the corridor. Even with improvements to create a bus priority lane in parts of the corridor where feasible, the travel time performance of the Baseline Alternative does not match that of the LPA.

The proposed Transport 2020 LPA would provide significantly better transit options in the corridor and generate substantially higher mobility benefits than the Baseline alternative. Rail service will have a travel speed of 23-26 miles per hour, which includes stops; this is comparable to auto travel speeds today during peak periods. In addition, a major advantage of the commuter rail option is the fact that Transport 2020 LPA speeds/travel times will be the same on opening day as they will in 50 years (even though that is beyond the typical planning horizon for such projects).

In response to the substantial service improvements provided by the Transport 2020 LPA, ridership from the corridor is projected to be 11,000 riders per day in 2030 for work trips, or three million annually (including projected special event trips).

Overall, the proposed Transport 2020 service is projected to save riders 3,180 hours each day. Nearly 73% percent of the modeled user benefits are for the Home-Based Work trip purpose.

The capital cost of the project is estimated at $252.2 million in current year dollars. Compared to a $44.3 million capital cost for the Baseline alternative[2], the added capital costs of the LPA are approximately $15.3 million per year over the life of the project. With the added costs of operating and maintaining transit services, the proposed project would cost roughly $27.9 million per year. The projected time savings of 3,180 hours per day in 2030 translates into 826,800 hours per year. Overall, the ratio of incremental annualized cost per annualized user benefits is estimated to be $26.70 per hour for the project.

The Transport 2020 system will also help encourage new development to locate along the rail corridor, especially at station locations. A market study conducted during the

[2] Note: The Baseline bus alternative does not include the construction of new fixed-guideway bus travel lanes, as is common with bus-rapid transit (BRT) systems. The estimated capital cost of constructing additional lanes for a BRT system in the Baseline service corridor is approximately $192 million.

alternatives analysis found that investment in rail transit could translate into a 10 percent greater increase in households and over a 200 percent increase in employment.

1.5 Uncertainties

Cost Uncertainties

As with any major capital project, the Transport 2020 project must identify and address uncertainties as it moves forward to implementation. Every effort has been made to plan for cost increases, especially the commodities such as steel and concrete which make up about 40 percent of the hard construction costs. The well-defined project footprint will serve to mitigate the uncertainty of actual commodity needs. While rising commodity prices or a smaller pool of possible construction bidders could raise the price for construction of the Transport 2020 investment, a total contingency of 24 percent totaling $47.4 million should be able to account for any cost increases.

Other cost uncertainties, such as for right-of-way, are mitigated by the fact that the majority of the railroad right-of-way required for the project (over 80 percent) is already owned by Wisconsin DOT.

Benefit Uncertainties

The projected success of this project depends heavily on the continuation of population and employment growth trends in Dane County and the continued mobility needs of this population. As noted, recent growth projections have confirmed the magnitude of population growth assumed for this project. The Wisconsin Department of Administration notes that Dane County has experienced the largest population growth in the state between 2000-2007; more than twice that of Waukesha County, which was second in terms of population growth.

Any significant adjustment to the expected population growth would require unforeseen developments such as a combination of redirection of development policy, an extended real estate downturn, or community opposition that could hinder business investment. This seems unlikely in the near-term, given the recent activities of the regional Collaboration Council and Regional Economic Development Entity (REDE). These entities have identified transportation and growth management as the number one challenge to ensuring regional economic competitiveness for the area, and have developed a detailed plan to achieve specific economic growth goals.

A final source of uncertainty lies with the performance of the travel demand forecasting model used to estimate Transport 2020 ridership and benefits. The model uses demonstrated responses to modes that already exist in the study area. This model has been improved to take into account the unique aspects of the Transport 2020 project and

the travel patterns in the study area, such as the high number of student transit users. The existing transit system has been showing robust ridership. The most recent data show a 14 percent increase in ridership between 2000 and 2005; and Metro Transit is enjoying its highest ridership in 20 years with 12 million passenger trips in 2006. Furthermore, 50 percent of Metro's ridership profile is choice riders, i.e., have an automobile available but choose to use transit. This robust market should ensure a market for the Transport 2020 service and a sound foundation for the ridership estimate for the proposed project.

1.6 Summary

The Madison/Dane County area is a rapidly growing metropolitan area, adding the most new residents of any county in the State of Wisconsin (adding 50,000 new residents, a growth rate of 11.8 percent between 2000-2007). The growing region's transportation challenges are established by the placement of its core on an Isthmus between major lakes. The narrow Isthmus contains a grouping of concentrated destinations with many of the region's major activity centers located there. This geographic constraint, urban success, and resulting projected growth present major challenges and opportunities for regional transportation.

The Transport 2020 LPA will provide improved access to downtown Madison and the UW-Madison campus (the largest employment activity center in Dane County) from many peripheral Dane County communities. Transport 2020 LPA travel time between Union Corners and Hill Farms is expected to improve travel time by 15% compared to the Baseline alternative. The actual construction process, which involves rehabilitating and constructing new track in an existing freight rail corridor is expected to be relatively simple and both WSOR, which operates in the corridor, and WisDOT, which owns a substantial part of the corridor have been actively involved to support project implementation. Overall, the ratio of incremental annualized cost per annualized user benefits is estimated to be $26.70 per hour for the project.

The Transport 2020 project offers an opportunity to leverage an underused transportation corridor to provide an alternative to congested roads in a geographically constrained region. This opportunity, combined with a growing population and employment base, communities with transit-supportive policies, and continued work towards a sound financial plan will serve to support a successful investment in fixed-guideway transit service that will maintain mobility in this thriving region.