Attachment E
2009 Final Environmental Impact Statement
Response to Comments Received

Summary of Central Corridor LRT Comments and Responses

The following summarizes all comments and responses to substantive issues raised in comments received on the Central Corridor Light Rail Transit (LRT) Final Environmental Impact Statement (FEIS). Issues are noted in parentheses following the heading. Copies of letters received, notated by issue area, are also included in Attachment C-1.

Access to Community Facilities – Churches of St. Louis King of France and Central Presbyterian (A-1)

One commenter noted that impacts to the two historic churches in downtown St. Paul were not adequately addressed in the FEIS.

RESPONSE: Access impacts to the churches were discussed in Section 3.2 of the FEIS (Community Facilities), including commitments for mitigation. Noise and vibration impacts were discussed in Sections 4.6 and 4.7 respectively, including commitments for mitigation. Finally, the Programmatic Agreement discloses other commitments for mitigation of these and other historic properties along the Central Corridor LRT alignment.

Access Impacts to Big Top Liquors (A-2)

Big Top Liquors expressed concern about decrease in access due to the proposed action.

RESPONSE: As documented in the FEIS, there will be no change in access to Big Top Liquors as a result of the proposed action.

Alternative Alignments for Central Corridor LRT Project

Northern Alignment at the U of M Campus (AL-1)

Several comments were submitted by persons concerned about LRT impacts to the University of Minnesota's (U of M's) research corridor suggesting that an alternative alignment for Central Corridor north of the East Bank campus be studied.

RESPONSE: Northern alignment alternatives for the Central Corridor LRT were analyzed during the 2001 scoping process. These alternatives were not carried forward for consideration in the Alternatives Analysis /Draft Environmental Impact Statement (AA/DEIS) as they did not meet criteria developed during the scoping process to identify alternatives best capable of meeting project purpose and need. During the early stages of preliminary engineering, the U of M submitted comments on the proposed scope of the Central Corridor LRT project and requested that further study of the feasibility of a Northern Alignment of the Central Corridor LRT be conducted. The results of this study were published in the SDEIS (June 2006) and the entirety of the study was included in the appendix of the SDEIS. Due to a number of issues identified, including ROW acquisition, travel time and ridership, environmental concerns, and the ability for this alignment alternative to meet Federal Transit Administration (FTA) New Starts cost-effectiveness criteria, the Northern Alignment was again scoped out of the project development process. A Northern Alignment of the Central Corridor LRT, using the Burlington Northern Santa Fe (BNSF) right-of-way north of the East Bank campus is not part of the Preferred Alternative for the proposed action.

Alternative Alignment at State Capitol (Rice Street to St. Peter Street in downtown St. Paul) (AL-2)

One comment was submitted requesting study of an alternative route for the LRT in the Capitol Area, specifically to use an alignment along Rice Street to St. Peter Street into downtown St. Paul. This commenter also requested that such a consideration not derail or delay the project.

RESPONSE: A similar option to the one proposed was analyzed during the Central Corridor LRT scoping process in 2001. This alternative was not carried forward for consideration in the AA/DEIS as it did not meet criteria developed during the scoping process to identify alternatives best capable of meeting project purpose and need. Specifically, this alternative did not serve the core of St. Paul's downtown business district and, since it entered downtown St. Paul on 5th and 6th Streets, would disrupt bus service. This alternative would also have had negative impacts by routing LRT on streets that had direct and indirect access to the regional roadway system.

Alternative Alignment on Jackson Street in Downtown St. Paul (AL-3)

One comment was submitted detailing the benefits of a Jackson Street alignment of Central Corridor LRT in downtown St. Paul as opposed to the Preferred Alternative alignment.

RESPONSE: A Jackson Street alignment of the Central Corridor was evaluated during project scoping in 2001. This alternative was not carried forward for consideration in the AA/DEIS as they did not meet criteria developed during the scoping process to identify alternatives best capable of meeting project purpose and need. Specifically, there were significant traffic concerns identified with the use of Jackson Street, including a roadway closure. In addition, it did not well serve the St. Paul downtown business district.

Tunnel Alignment for LRT (AL-4)

One comment was received requesting study of a tunnel alignment for the Central Corridor LRT.

RESPONSE: A tunnel alignment was considered at the U of M campus in the 2006 AA/DEIS. This option was eliminated for a number of reasons, as documented in the 2008 Supplemental Draft Environmental Impact Statement (SDEIS). Constructing a tunnel for the LRT for the entirety of the alignment was not under serious consideration at any stage of project planning due to the extraordinary costs and other associated impacts.

Constructing the LRT on the U of M Transitway behind KSTP (AL-5)

One comment was received suggesting that consideration be given to constructing the Central Corridor LRT on the U of M transitway behind the KSTP broadcasting studios.

RESPONSE: This alignment was not studied during previous phases of Central Corridor LRT project development because it would not meet project objectives due to increased travel time and isolation from populations likely to use the Central Corridor LRT.

Alternative Alignment off University Avenue Right-of-Way Acquiring Homes North of the Avenue (AL-6)

One comment was received requesting analysis of an alternative alignment that would acquire homes and properties north of University Avenue, to avoid issues regarding traffic and access.

RESPONSE: An alternative requiring the acquisition and demolition of multiple homes and businesses was not considered in the project development process because these impacts are avoidable with the Preferred Alternative.

Freeway Alignment (AL-7)

One comment was received requesting study of a freeway alignment of the LRT.

RESPONSE: A freeway alignment of the Central Corridor was studied in the early 1990s and was identified at that time as the preferred alignment for Central Corridor LRT. This project was not developed beyond the environmental review phase and the planning process was re-opened in 2001 with scoping of the current Central Corridor LRT project. The planning process was reopened to identify an alignment of the Central Corridor that would better meet the future transit needs of the Central Corridor LRT study area and to support the economic development goals of the Central Corridor LRT study area. An alignment on University Avenue was identified as best meeting these goals, as documented in the 2006 Central Corridor Alternatives Analysis / Draft Environmental Impact Statement (AA/DEIS).

Construction of LRT Stations at Hamline Avenue, Victoria Street, and Western Avenue (AS-1)

Several comments were received stating that full construction of the additional stations at Hamline Avenue, Victoria Street, and Western Avenue should occur during initial project construction. The FEIS project definition includes the below-grade infrastructure and other street improvements (including associated systems infrastructure) required to construct the stations but does not include full station buildout.

RESPONSE: During the formal public comment period following publication of the AA/DEIS (April 2006), numerous comments were received expressing concern about station spacing on University Avenue in the City of St. Paul. In response to comments received, the Metropolitan Council analyzed the potential ridership impacts and costs associated with the construction of additional stations at Hamline Avenue, Victoria Street, and Western Avenue. During the early stages of preliminary engineering, the Metropolitan Council prepared a technical memorandum, *Central Corridor LRT: Evaluation of Western, Victoria, and Hamline Station Options, Issue #15a, 15b, and 15c*, (see Attachment 1, FEIS Appendix J5). This memorandum documents that constructing these stations as part of the project results in a net increase in LRT operating time, loss in overall corridor ridership and user benefits and an overall increase in the project's cost effectiveness index (CEI). Consequently, the Metropolitan Council and Central Corridor Management Committee (CCMC) deemed that including full construction of the stations at Hamline Avenue, Victoria Street, and Western Avenue was not consistent with the primary principles the CCMC established for major scoping decisions, namely that scoping decisions must be made in keeping with project cost effectiveness criteria used to evaluate projects in the federal New Starts process. Adding a complete station to the project scope would increase the project CEI by $0.28 to $0.50, which would exceed the FTA threshold. Consequently, the Central Corridor LRT Preferred Alternative was modified to include the infrastructure for the Hamline Avenue, Victoria Street, and Western Avenue future stations, but does not include

complete build out with the initial phase of construction. The Metropolitan Council has precedents with the Hiawatha LRT and Northstar Commuter Rail projects of adding stations or project features as a later phase. Further, the Metropolitan Council has resolved that construction of one of these stations, after further environmental review, would be the first priority in the event that contingency dollars become available during the course of Central Corridor LRT project construction.

Construction of an LRT Station at Cleveland Avenue (AS-2)

One comment was received stating that construction of an LRT station at Cleveland Avenue should be part of the proposed action.

RESPONSE: Constructing a Central Corridor LRT station at Cleveland Avenue is not part of the Preferred Alternative project definition. A Cleveland Avenue station was not identified as an option during the 2001 process of scoping alternatives, during which process criteria, including intermodal connectivity and connection to transit service routes, were established for locating future transit stations. The City of St. Paul has not identified Cleveland Avenue as a location for a future LRT station as part of official comments submitted, nor has it been identified in any current city land use or other development plans, including the St. Paul's *Central Corridor Development Strategy.* The Central Corridor LRT Preferred Alternative will not be modified to include a station at Cleveland Avenue.

Air Quality Impacts (AQ-1)

One comment was received on the air quality analysis and questioning whether there would be any benefits to air quality as a result of the project.

RESPONSE: The focus of the air quality analysis disclosed in Section 4.5 of the FEIS was on identifying the potential for any adverse effects related to the proposed action. There was no discussion of proposed project benefits and this analysis has not and will not be completed as part of the NEPA process for the Central Corridor LRT project. The project is included in the MPO's regional transportation plan, which has been shown to be in conformity with air quality plans for the area; any significant benefits of planned transit system improvements, including the Central Corridor LRT project, were taken into account during the regional air conformity analysis of the metropolitan transportation plan.

Business Impacts during Construction (BI-1)

Several comments were received regarding impacts to businesses during construction and mitigation of potential adverse impacts.

RESPONSE: The Metropolitan Council is responsible for construction mitigation activities. This includes developing and implementing a construction communication plan that provides multiple ways people can get construction information and submit comments or concerns. People can get current information from the weekly construction updates, monthly newsletter, construction updates webpage, construction meetings and conversations with the outreach staff. People will

be able to submit comments via the general project office phone number, online comment form, standard project email or contact with their community outreach coordinator or resident engineer. The community outreach staff and the resident engineers will work closely with impacted businesses and properties to maintain access and minimize impacts during construction.

The Metropolitan Council is also coordinating with local organizations, foundations and non-profits that are providing business assistance. The Central Corridor Partnership is working on developing a corridor wide brand and marketing campaign to bring customers into the corridor before, during and after construction. The University Avenue Business Preparation Collaborative's mission is to assist existing small businesses along University Avenue "survive and thrive" before, during, and after the construction of the Central Corridor LRT. They have hired two small business consultants, established a business resource center and hired two marketing interns. The Central Corridor Funders Collaborative has raised funds to support these organizations with implementation. The Energy Innovation Corridor collaborative is looking at ways to make businesses and properties more energy efficient.

Potential for Gentrification to Dislocate Community and Affect Community Cohesion (CC-1)

Several commenters raised concerns about the potential for gentrification to dislocate the existing communities adjacent to the Central Corridor LRT.

RESPONSE: The FEIS discussed planning efforts and other activities that would limit the potential for adverse secondary and cumulative effects. The City of St. Paul addressed this concern in their *Central Corridor Development Strategy*, which identifies areas of stability and areas of change. The areas of stability identified in this planning document are primarily the residential areas north and south of University Avenue and the vibrant business areas along University Avenue. The areas of change are areas identified for redevelopment including property surrounding the planned LRT stations, vacant auto dealerships and underutilized auto-oriented malls and parking lots. The *Central Corridor Development Strategy* was adopted by the City Council as a chapter of the Saint Paul Comprehensive Plan on October 24, 2007. The City has also updated its zoning ordinances to be consistent with and implement the recommendations of the *Central Corridor Development Strategy*.

In addition to adoption of land use policies, the City and Metropolitan Council have provided grants for affordable housing and redevelopment along the corridor. Following is a summary of Metropolitan Council funding to support affordable housing activities in the corridor:

- In 2007, the Metropolitan Council awarded a $1.05 million grant for a mixed use development at the intersection of Dale and University that will include 46 units of affordable housing. The project will be developed by a collaboration that includes the Aurora Saint Anthony Neighborhood Development Corp.
- In 2008, the Metropolitan Council awarded a $150,000 grant to assist Model Cities in the acquisition and renovation of foreclosed/vacant homes in Thomas-Dale and Summit-University.

- In 2008, the Metropolitan Council authorized a $1 million loan to help the City of St. Paul with land acquisition for affordable housing near the Central Corridor LRT route along University Avenue.
- In 2009, the Metropolitan Council approved $448,800 for asbestos abatement at a vacant nursing home on Lexington Parkway North near the future Central Corridor LRT line. The building will be converted into 48 supportive apartments for people who have been homeless for a long time.

The City of St. Paul has also provided funding assistance for affordable housing in the corridor:

- 808 Berry (267 rental); financing closed in 2002
- Episcopal Homes (47 units for the elderly) - University and Fairview; financing closed in 2003
- Emerald Gardens (211 ownership) - University and Emerald; financing closed in 2003/2004
- Model Cities, Phase II (6 rental) - 849 University Avenue, financing closed in 2004
- University and Dale Apartments (98 rental) - University and Dale, financing closed in 2005
- Carleton Place Lofts (169 rental) - University and Carleton; financing closed in 2005
- The Metro (67 ownership) - 2650 University; financing closed in 2005
- Dale Street Townhomes (16 units; some with Habitat for Humanity) - 636-674 North Dale; financing closed in 2006
- Carty Heights (50 units for the elderly; Episcopal Homes) - University and Lexington; financing closed in 2006
- 2700 University Avenue (97 units); financing not yet closed
- Frogtown Square (46 units for the elderly) - University and Dale; financing not yet closed

Environmental Justice

Several letters of comment were received that focused, in the main, on issues of environmental justice along the Central Corridor and the adequacy of the analysis of impacts in the FEIS. These issues are summarized and responded to as follows:

Adequacy of Demographic Analysis (EJ-1)

The Alliance for Metropolitan Stability, Jewish Community Action, and the District Councils Collaborative submitted comments on the adequacy of the Central Corridor LRT FEIS in documenting and describing project area demographics as part of the environmental justice analysis presented in Section 3.8 of the FEIS.

RESPONSE: The demographic analysis conducted for and documented in the Central Corridor LRT FEIS relied on local and federal guidance and precedent for describing populations and identifying the presence of environmental justice populations in a project's area of effect. Using county

populations (Hennepin and Ramsey) was a "maximum impact" scenario for identifying environmental justice populations as the concentration of populations at the county level for race/ethnicity and poverty tend to be less than for the cities of St. Paul and Minneapolis. Census data on income and race/ethnicity were reported in the FEIS at the census block group level, for consistency of reporting. It is acknowledged that race/ethnicity data is available at the census block level. However, reporting on it as such in the FEIS would not have changed the conclusions of the analysis, namely the identification of concentrations of environmental justice populations in the Cedar-Riverside community, on University Avenue between Hamline Avenue and Rice Street, and in the Capitol Area at the Mt. Airy Homes public housing complex.

Adequacy of Identification of Environmental Justice Populations (EJ-2)

A comment submitted by Jewish Community Action focused on the identification of low-income populations and specifically the identification of populations in the University/Prospect Park segment of the project area. The comment notes the large number of students at the U of M who reside in this area and whose poverty is, presumably, temporary and differs from poverty that may be found elsewhere in the project area.

RESPONSE: The FEIS acknowledges in Section 3.8 that the low-income population identified in this segment of the project area is "specifically in the Cedar-Riverside area of Minneapolis" and was not intended to include the areas consisting of student housing in closer proximity to the U of M's west and east bank campus areas. The Cedar Riverside area includes a very high concentration of low income, minority and immigrant residents.

Adequacy of Ridership Analysis (EJ-3)

Several comments were submitted focused on the adequacy of the ridership analyses completed during the Central Corridor LRT project development process.

RESPONSE: In 2000 – 2001 the Metropolitan Council, in cooperation with the Minnesota Deparment of Transportation (Mn/DOT), conducted the 2000 Travel Behavior Inventory (TBI). This study included two origin-destination surveys: a Home Interview Survey and an External Station Survey. The Council also conducted a highway speed survey. The surveys provided data to update and recalibrate the region's travel demand model. This model is a state of the practice four-step travel demand model. The four steps are trip generation, trip distribution, mode choice, and assignment to the highway and/or transit systems. The model was reviewed by the FTA subsequent to the model's development over a two year period before the release of the Central Corridor AA/DEIS. As part of that review the mode choice portion of the model was calibrated to the observed ridership counts of the Hiawatha line to ensure a realistic forecast of future ridership in the Central Corridor (the TBI survey was conducted and the initial model was developed prior to the opening of the Hiawatha LRT corridor). This model was used to provide ridership forecast results for various scenarios during the preliminary engineering phase of the project, when the scope of the proposed action was being determined. It was used to forecast the results of adding additional stations at Hamline Avenue, Victoria Street, and Western Avenue

and has been used to forecast ridership and attendant cost effectiveness of the Preferred Alternative.

Much time and effort has been invested by FTA, consultants and Metropolitan Council staff to ensure that the model is as accurate as possible.

Adequacy of Title VI Service Analysis (EJ-4)

The District Councils Collaborative (DCC) submitted a letter of comment on the FEIS that discussed the Metropolitan Council's Title VI review and specifically questioned the adequacy of the methodology used to complete the review.

RESPONSE: The Title VI review was completed by staff at Metro Transit, an entity within the Metropolitan Council responsible for planning and operating the regional transit system, including the Central Corridor LRT project. Metro Transit's Title VI review of the Central Corridor LRT project uses the same Title VI methodology that has been used for several recent major service changes. This methodology is based on measuring the change in access- to-transit to each census unit, with access to transit defined as the number of transit vehicle trips serving each census unit. The analysis did include as part of its assumptions for future service conditions, the reduction of frequency in Route 16 service as noted by the DCC in their letter of comment. A separate analysis focusing solely on this change of service to the Route 16 bus is not warranted because such a service change would never be considered in the absence of implementation of Central Corridor LRT service.

The Title VI review of future Central Corridor LRT service was completed as part of the Metropolitan Council's efforts to explore fully all the potential environmental justice effects of implementing the project. Because the Title VI review methodology relies heavily on an assumed walking distance to transit stops, it was important to determine a reasonable walking-distance assumption for LRT service and whether the same assumptions should be used for bus as for LRT. For bus service, Metro Transit assumes that all census units with a center point within ¼-mile of a bus stop are served by that bus stop. Metro Transit staff researched whether the same walk distance assumption should apply to light rail stops given the unique features of light rail transit, including faster speed, better reliability, and higher passenger amenities. Metro Transit's own experience with the Hiawatha Line, from the *2007 Vehicle, Pedestrian and Bike Rail Safety Survey,* found that 54 percent of respondents lived 3 to 10 blocks from a rail station and 10 percent lived within 2 blocks. The survey did not specify short blocks or long blocks, so 10 blocks can be presumed as a distance somewhere between 0.625 and 1.25 miles With two-thirds (64 percent) of respondents coming from an area within 10 blocks of a station, Metro Transit made a conservative estimation that a large portion of riders were walking more than ¼-mile and less than 1 mile to an LRT station. This suggests that light rail customers are willing to walk further than bus transit customers.

A follow-up customer survey conducted in October 2008 confirmed these findings. This survey, also conducted of Hiawatha LRT riders, found that 26 percent of riders walked to light rail and that, of those, 58 percent walked ¼-mile or less and 22 percent walked ¼- to ½-mile. Combined, 80 percent of riders who walked to light rail were within ½-mile from an LRT station. In addition

to reviewing data on the patterns of Hiawatha LRT customers, Metro Transit staff also looked at other agencies' standards for measuring LRT station service areas. Seattle's Sound Transit used a 0.5-mile buffer around stations to analyze the net benefit of the project on low-income and minority populations in the environmental justice section of its 2006 North Link Light Rail Project SEIS. http://www.soundtransit.org/x3009.xml, Chapter 4a) A follow-up e-mail discussion with Sound Transit's Jim Moore and Matt Sheldon confirmed that their organization uses ½-mile walk distance for light rail service and that they generally strive for average LRT stop spacing of no closer than one mile. Likewise, Los Angeles Metro included all population within ½-mile of rail stations in the SEIS/SEIR for its Metro Gold Line Eastside Extension project (http://www.metro.net/projects_studies/eastside/eir.htm) Finally, a 1996 survey of U.S. and Canadian transit properties found that a ½-mile rail walking distance is also the accepted guideline for TransLink of Vancouver and New Jersey Transit (S. O'Sullivan and J. Morrall, Walking distances to and from light-rail transit stations, *Transportation Research Record* 1538 (1996), pp. 19-26). The practice of these peer agency experiences, coupled with the findings of the Hiawatha LRT customer survey, indicated that ½-mile is the appropriate walking distance standard for light rail stations. This standard was used for the Central Corridor LRT Title VI review to determine access to light rail transit in the project area. In all other respects, the Central Corridor LRT Title VI review methodology was the same as prior Title VI reviews conducted by Metro Transit and accepted by the FTA.

The DCC comment letter contains data comparing the demographics of riders of the Hiawatha LRT who walk to stations to riders of the Route 16 bus service. The Metropolitan Council has acknowledged the need to consider the unique transit needs of the community as part of implementation of committed mitigation for the Central Corridor LRT project. Specifically, the Metropolitan Council will develop a targeted transit service plan for the environmental justice community, involving members of the community in its development, and implementing its recommendations concurrent with the start of LRT service.

Adequacy of Environmental Justice review in NEPA Decision Making (EJ-5)

In the comment letter submitted by the Preserve and Benefit Historic Rondo Community (PBHRC) to the Central Corridor LRT FEIS, the PHBHRC alleges that the Metropolitan Council "has failed to recognize that environmental justice requirements are triggered so long as the Project's impacts are 'predominantly borne by a minority population and/or low income population.'"

RESPONSE: Presumably, PBHRC is referring to the requirement that a project proponent demonstrate that (1) additional mitigation is not practicable; (2) a substantial need for the project exists; and (3) alternatives with less adverse effects on protected populations would either (i) have more severe adverse impacts or (ii) would involve substantially increased costs. This additional analysis is required only where the proposed project will have a disproportionately high and adverse effect on minority or low-income populations. A disproportionately high and adverse effect on minority and low-income populations is an adverse effect which is:

(1) predominantly borne by a minority population and/or low-income population, or

(2) will be suffered by the minority populations and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority and/or non-low-income population.
See 62 Fed. Reg. at 18,380.1

The potential adverse effects of the Central Corridor LRT project are identified and analyzed in the AA/DEIS, SDEIS, and the FEIS. These documents indicate that there are no "high and adverse" effects on minority and/or low income populations. Moreover, the detailed analysis demonstrates that (1) the potential adverse effects are not predominantly borne by a minority or low-income population (the potential adverse effects are shared by all populations along the proposed route, including non-minority and non-low-income populations); and (2) the potential adverse effects suffered by the minority or low-income populations are not appreciably more severe or greater in magnitude than the adverse effects that will be suffered by other populations along the proposed route. These documents confirm that the majority of the impacts cited by the PBHRC (i.e., business interruption, increased property values, traffic impacts, and parking impacts) will be experienced along the entire route and, as is the case with parking impacts, may be greater in magnitude in the non-minority and non-low income areas. Moreover, the substantial benefits that will accrue to the minority, low-income, and transit dependent populations more than offset nearly all of the potential adverse impacts of the Central Corridor LRT project. Among other benefits, the project will provide increased transit access to employment and activity centers, significant travel time savings, and the creation of jobs through new development along the route. FEIS, Chapter 5 (Economic Effects) and Chapter 6 (Transportation Effects).

The only potential effect which is not completely offset by a corresponding benefit is the projected decrease in transit service for individuals residing in a three-census block area of the larger minority population. As explained in section 3.8 of the FEIS, this potential effect is not limited to the minority population and will be experienced by individuals residing in a total of ten census blocks – including seven census blocks in non-minority and non-low –income areas. Moreover, Metropolitan Council has committed to developing a transit plan which will mitigate completely the potential decrease in transit service for the affected three-census block area. This mitigation was neither offered to nor contemplated for the affected census blocks outside of the minority communities.

Since there is no basis for concluding that the Central Corridor LRT project will have disproportionately high and adverse effects on minority or low-income populations, the Metropolitan Counsel is not required to demonstrate that alternatives with less adverse effects on protected populations would (1) result in more severe adverse effects or (2) involve increased costs of extraordinary magnitude before proceeding with the project

Adequacy of Committed Mitigation for Environmental Justice Impacts (EJ-6)

Comments were received by Jewish Community Action, the District Councils Collaborative and the Preserve and Benefit Historic Rondo Committee noting that additional mitigation beyond that committed to in the FEIS is required to address impacts to environmental justice populations.

RESPONSE: As discussed above, since the FTA has found that the environmental justice review in the Central Corridor FEIS is adequate, including its assessment of population, effects and mitigation, there is no additional mitigation being committed to address impacts to environmental justice populations, beyond that described in the FEIS and summarized in the record of decision.

Funding Assumptions (F-1)

One comment was received questioning the validity of the funding assumptions for the Central Corridor LRT project.

RESPONSE: An analysis of financial impacts of constructing, operating and maintaining the Central Corridor LRT project was disclosed in Chapter 8 of the FEIS. This analysis was based on the best available data at the time the information was prepared, including financial forecasts and committed capital resources.

City of Minneapolis Comments to FEIS

The City of Minneapolis submitted comments on the FEIS's response to comments, on utilities and on traffic and transportation issues. Responses are summarized below by issue raised. A notated copy of the city's comments is included in Attachment C-1.

Response to Comment M-1

A plan for management of traffic diverted from the Washington Avenue Bridge (WAB should it require closure for repairs or any other activities that would limit accessibility for a 24-hour or greater period will be developed during final design. This plan will be developed jointly by all affected entities, including the City of Minneapolis, the Metropolitan Council, Mn/DOT, Hennepin County, and the University of Minnesota.

Response to Comment M-2

The City's comments regarding parking loss are addressed in comments M-11 below.

Response to Comment M-3

It is noted that p. 4.9-9 of the FEIS contains outdated information on an existing sanitary sewer line along Washington Avenue. A single sanitary line will be installed, not the dual-line noted. This statement in response to the comment received is intended to clarify the matter.

Response to Comment M-4

The FEIS did disclose in Section 3.3 all impacts to individual business accesses resulting from implementation of the Transit Mall at the U of M. No further discussion or analysis of impacts is required based on the proposed action.

Response to Comment M-5

An analysis of 2014 traffic impacts was not completed as part of studying traffic impacts of converting Washington Avenue to a Transit Mall. An analysis of impacts in 2030 was completed to determine impacts of converting Washington Avenue to a Transit Mall and the results are summarized in the referenced table. Consistent with other traffic analyses which identified 2014 impacts, resultant commitments for mitigation were actually made based on the 2030 forecast

year, therefore no change to mitigation commitments would result from running a 2014 forecast. No further analysis will be completed as part of the proposed action.

Response to Comment M-6

The FEIS commits the Metropolitan Council to take action to mitigate for traffic impacts occurring at the intersection of University/Huron/23rd streets. The Council will continue to work with the City of Minneapolis throughout the process of final design, including seeking formal comment on 60-percent design plans submitted in late summer 2009. The Council and the City will determine jointly the exact measures implemented to mitigate for traffic impacts at this location and will consider the effects of implementation of mitigation strategies on adjacent intersections as part of determining the appropriate final design for these measures.

Response to Comment M-7

The FEIS commits the Metropolitan Council to take action to mitigate for traffic impacts occurring in the Cedar-Riverside community of Minneapolis. The Council will continue to work with the City of Minneapolis throughout the process of final design, including seeking formal comment on 60-percent design plans submitted in late summer 2009. The Council and the City will determine jointly the exact measures implemented to mitigate for traffic impacts in this neighborhood and will consider the effects of parking loss or impacts to planned bike facilities as part of determining the appropriate final design for these measures.

Response to Comment M-8

The proposal to remove parking on the north side of Franklin Avenue to allow two-lanes of westbound traffic is intended to only cover the block immediately east of TH 280 in the City of St. Paul. The response to this comment and its inclusion in the Record of Decision provides clarity regarding the exact extent of this impact.

Response to Comment M-9

There are numerous contributing factors that could lead to future issues with intersection levels of service at the intersection of 5th Street and 2nd Avenue N in downtown Minneapolis, including the extension of the Hiawatha LRT, and implementation of recommendations from the city's Access Minneapolis plan. The Metropolitan Council will work with the City to develop refined estimates, including visual simulations, of future traffic operations at this location. Based on these estimates, the City and the Council will determine if any striping or other intersection modifications within the existing roadway right-of-way may be required as part of refining final mitigation strategies.

Response to Comment M-10

The Metropolitan Council will continue to work with the City and local businesses to ensure that freight loading capabilities for the businesses on Washington Avenue is maintained and/or adequately replaced based on final project designs.

Response to Comment M-11

Parking impacts noted in Section 6.3.3.2, under the heading "Midway East and Midway West did include parking lost along University Avenue in the City of Minneapolis. Section 6.3.5 of the FEIS, Parking Mitigation, was intended to discuss a range of parking mitigation solutions that will be

applied in the City of Minneapolis as well as the City of St. Paul. The response to this comment and its inclusion in the Record of Decision is intended to clarify this matter.

Response to Comment M-12

The Metropolitan Council will continue to coordinate with City of Minneapolis as final design proceeds, including the opportunity to review and comment on 60 percent design plans. The Central Corridor LRT project will require changes to the City's planned bike facility along University Avenue and the Metropolitan Council will continue to work with the City to coordinate these changes.

Response to Comment M-13

The referenced section of the FEIS did not propose streetscaping as a mitigation element, but described the potential opportunity for streetscaping to result in an improved environment.

Minnesota State Historic Preservation Office Comments to FEIS

Comments to the FEIS were submitted by the Minnesota State Historic Preservation Office (MnSHPO), many of which focused on the Section 4(f) Evaluation, published as Chapter 7 of the FEIS. A notated copy of the city's comments is included in Attachment C-1.

Response to Comment SHPO-1

The FTA concurs with the statement made by MnSHPO that the executed Programmatic Agreement (PA) for the Central Corridor project specifically calls for additional study of the potential effects of vibration and/or noise on several historic properties. It is appropriate for this additional noise and vibration study to occur, and in actuality be dependent upon final design. The FTA carefully considered this, and other stipulations set forth in the referenced PA in making a no effect determination specific to potential noise and vibration impacts to surrounding historic properties. The referenced study will be completed in accordance with the requirements of the PA. All possible planning has been done and will be done to minimize harm associated with potential noise- and vibration-related impacts to surrounding historic resources. The detailed findings of the noise and vibration study completed for the project, and associated mitigation measures can be found in Sections 4.6 and 4.7 of the FEIS. Based on the findings in the FEIS, the stipulations called for in the executed PA, and the commitment to fulfill the requirements of the PA; FTA stands by the determination that noise and vibration will not substantially diminish the historic activities, features, and attributes of referenced historic properties.

Response to Comment SHPO-2

The FTA concurs with the statement made by MnSHPO that Stipulation I.B.3 of the executed PA for the project outlines that consultation resolving effects on access to Central Presbyterian Church and St. Louis King of France Church will continue in subsequent project phases. FTA also concurs with the conclusion that the project does not result in a taking of Section 4(f) property. MnSHPO's comment specifically references future development on the Minnesota Public Radio (MPR) parking lot parcel, and the potential impact future development could have on this project's commitment to maintain access to the Church. The Metropolitan Council and the FTA have developed a solution for this specific area based on current development on the project

site. FTA cannot control potential future development on the MPR lot, and its potential impact on this proposed action.

Response to Comment SHPO-3

The FTA concurs with MnSHPO's adverse effect determination to the two historic landscape triangles in the Prospect Park Residential Historic District. We acknowledge that although they are in public street right of way, they are contributing elements of the Historic District, and hence the proposed action would result in a use of this Section 4(f) resource. The Record of Decision (ROD) includes this finding. The FTA has determined that, based on safety and access issues associated with the project design in this specific location, there are no prudent and feasible alternatives to the use and that all possible planning to minimize harm has been conducted. The measures to minimize harm to the triangular traffic islands are included in the Record of Decision in Section XXX.

Response to Comment SHPO-4

Similar to FTA's response to comment SHPO-3 above, FTA finds that the project does require the use of East River Road, a historic resource, as suggested by MnSHPO, and has included this finding in the ROD. The FTA has determined that, based on safety and road continuity in this area, there is no prudent and feasible alternative to the use, and that all possible planning to minimize harm has been conducted. The reconfiguration of the intersections will be designed to be as consistent with the original historic design as possible while ensuring road safety and continuity.

Response to Comment SHPO-5

Although the preferred alternative includes placement of project infrastructure outside the existing curbline of Washington Avenue near the intersection of Church Street (at the east border of the Campus Mall Historic District) this placement is within the existing street/public right-of-way and will not result in a direct taking of Historic District land. It is therefore FTA's finding that the preferred alternative would not result in a use of this Section 4(f) property.

Response to Comment SHPO-6

The executed PA for the Central Corridor (which is Attachment A of this ROD) calls for specific stipulations to address the project effects on the St. Paul Union Depot and on the Lowertown Historic District. The commitments called for in the PA will be adhered to for this project.

Response to Comment SHPO-7

The executed PA for the Central Corridor calls for specific stipulations to address the project effects on the State Capitol Mall Historic District. The commitments called for in the PA will be adhered to for this project.

Response to Comment SHPO-8

The FTA concurs with MnSHPO's comment that it is important to be clear that the Section 4(f) Evaluation completed in the FEIS treated Leif Erikson lawn as a park resource separately from Leif Erikson Lawn as an element of the State Capitol Mall Historic District. Indeed, the Section 4(f) Evaluation, published as Chapter 7 of the FEIS, provided distinction between these two separate uses of this same resource, disclosing impacts to Leif Erikson Lawn as a historic resource in

Section 7.5.2.4 and as a park in Section 7.5.2.5. In addition, Table 7-2 in the FEIS summarized impacts to Leif Erikson Lawn as a historic resource separate from its potential use as a park resource.

Response to Comment SHPO-9

The FTA seriously considers and conducts a rigorous analysis of the adequacy of efforts to avoid and minimize impacts to properties protected under Section 4(f). The Section 4(f) Evaluation conducted for the Central Corridor project underwent significant scrutiny and legal sufficiency review. The outcome of this rigorous review was FTA's final Section 4(f) determination, which received concurrence from the U.S. Department of the Interior by e-mail dated July 22, 2009.

Response to Comment SHPO-10

Section 7.6.4.4. of the FEIS includes an avoidance alternative evaluation specific to the contributing elements to the State Capitol Mall Historic District, namely, the Cedar Street lawn panels. The FEIS record stands corrected with the incorrect reference to 23 CFR 774.13 (c), pertaining to properties that have late designations, removed. FTA concludes that this reference is not relevant to this specific Section 4(f) resource, and that an appropriate alternative evaluation was completed and documented in the FEIS/Section 4(f) Evaluation. This analysis resulted in the determination that alignments that avoid the resource are not feasible and prudent alternatives to the use of the Section 4(f) protected property, namely, the Cedar Street lawn panels.

Requirement to Fulfill Mitigation Commitments (MI-1)

Several commenters noted the expectation for fulfillment of mitigation commitments made by the Metropolitan Council in the FEIS.

RESPONSE: Mitigation commitments made in the FEIS will be fulfilled. Reporting on the progress of commitments to mitigation will become part of the project reporting process to the FTA, who will also monitor the implementation of mitigation commitments. Attachment B of this ROD is intended to be the first version of a dynamic document used during final design and construction to monitor the implementation of mitigation commitments

Adequacy of Noise Analysis (St. Louis Church) (N-1)

St. Louis King of France Church submitted a comment regarding assumptions of the noise analysis completed and documented in the FEIS. Specifically, they questioned the exclusion of LRT horn noise from the analysis of project impacts. The church further noted concerns with impacts to the rectory, which is a Category 2 (residential) property.

RESPONSE: The Metropolitan Council is committed, as documented in the FEIS, to establishing standard operating procedures for the Central Corridor LRT, eliminating the use of LRT horns under typical operating conditions. LRT horn use will be limited to emergency situations which, by their nature, are occasional and unpredictable. The results of the noise analysis, as disclosed in the FEIS, did not identify any noise impacts to the church (as a Category 3, institutional

property) or to the rectory (as a Category 2, residential property). No change to noise modeling to include LRT horn use is being proposed.

Vibration and Noise Impacts at MPR

MPR submitted comments on the noise and vibration analysis completed as part of the Central Corridor LRT FEIS and mitigation commitments made therein.

Methodology of Noise Analysis (N-2)

MPR notes that their own consultant's analysis of effects differed from that completed by the Metropolitan Council's technical consultant but acknowledges that the Mitigation Agreement (Appendix F-1 of the FEIS), if timely and fully performed by the Council and the Central Corridor Project Office, are intended to mitigate those noise impacts to the extent required under FTA guidelines.

Design of Vibration Mitigation at MPR (V-2)

RESPONSE: The Metropolitan Council acknowledges MPR's desire to include a floating-slab that would, in MPR's view, account for uncertainties in the analysis, climatic and other site conditions. The Metropolitan Council will fulfill its obligations under the Mitigation Agreement (Appendix F-1) in this matter.

Operations and Maintenance Costs (OM-1)

A comment was received regarding operating and maintenance costs for the Central Corridor LRT.

RESPONSE: Operations and maintenance costs of the Central Corridor LRT were discussed in Chapter 8 of the FEIS. This information will be updated annually as the project moves forward, consistent with FTA New Starts reporting requirements.

Loss of On-Street Parking and Associated Mitigation (P-1)

Several commenters to the FEIS noted the loss of on-street parking resulting from LRT and concerns regarding impacts to businesses and residents.

RESPONSE: Parking loss on roadways on which the Central Corridor LRT would operate was noted in Chapter 6 of the FEIS. Mitigation strategies were committed to address this loss of on-street parking. As noted by the City of Minneapolis (see response M-11), the mitigation strategies noted were also intended to identify mitigation that would be appropriate for the loss of parking in Minneapolis. No additional mitigation, beyond that described in the FEIS, is being proposed. In summer 2009, the City of St. Paul and CCPO staff held eleven workshops with the property owners, businesses and a neighborhood representative to identify site-specific mitigation strategies and develop detailed plans for mitigating the loss of on-street parking. The City of St. Paul has also identified $300,000 for grants to implement these mitigation strategies and is working to identify additional resources to provide incentives for making parking lot improvements and sharing spaces. As these detailed plans are developed during final design,

they will be shared with the affected businesses, neighborhoods and residents and posted on the Central Corridor LRT Web site for public review.

Constructing Sidewalks to the Maximum Feasible Width (Ped-1)

One comment was received regarding the desire to build sidewalks to the maximum feasible width in order to safely accommodate pedestrians

RESPONSE: Metropolitan Council staff worked very closely with the cities of Minneapolis and St. Paul, as well as other neighborhood groups and interested stakeholders to ensure that the width of sidewalks in areas adjacent to the Central Corridor LRT were maintained at their current width, or in some instance made wider. There were locations where this goal was not achievable due to right-of-way constraints. In these instances, Metropolitan Council staff worked with affected parties to ensure that the sidewalk width was maintained to its maximum feasible width.

Meaningful Participation in Central Corridor LRT Project Planning (PI-1)

The Metropolitan Council has been intentional about engaging all project stakeholders. One of the initial steps in the creation of the Communication and Public Involvement Strategic Plan was a stakeholder analysis including low income, transit dependent and minority populations. The information gathered in the stakeholder analysis influenced the development and implementation of the outreach program by identifying strategies to engage low income and minority populations including:

- Providing materials in alternate languages
- Creating the Business Advisory Council, the Community Advisory Committee and Station Art Committees that have representatives from these populations including two members of the PBHRC, Veronica Burt and Metric Giles
- Hiring outreach staff that are familiar with the corridor and fluent in languages commonly spoken, including Vietnamese, Hmong and Spanish
- Holding informational meetings, listening sessions and public hearings in the corridor at locations easily accessible by public transit
- Staffing an informational table at community events such as the Hmong Resource Fair, Vietnamese Fest and Rondo Days
- Making contacts at and engaging ethnic and neighborhood media such as Asian American Press, Spokesman-Recorder, Midway Monitor, Somali TV and Hmong radio program on KFAI (an independent community station)

The Metropolitan Council's approach to public involvement includes communicating with the public to identify issues and concerns early in the Preliminary Engineering phase of the project so that those impacts can be avoided or minimized through the engineering process. Comments on the AA/DEIS and meetings with community groups and the Community Advisory Committee identified community concerns early in the process including:

- Concern about community cohesion, specifically, the perception of LRT being another barrier dividing the community similar to what resulted from construction of I-94

- Ability for pedestrians, especially children, to safely cross University Avenue (safety concerns)
- Request for additional stations at Hamline, Victoria and Western
- Interest in having University Avenue reconstructed building face to building face
- Noise and vibration impacts
- Changes in bus service frequency, importance of providing connections between bus and LRT service

Many of these issues were identified during the July, August and September 2007 CAC meetings that focused on the NEPA process and Environmental Justice issues. The outcome of these meetings was an outline of the issues and summary of how the issues would be addressed in the FEIS or other planning documents. The result of these three focused meetings with the CAC was a change to the Communications and Public Involvement Strategic Plan to address community concerns. Changes to the project due to public comments have been presented to the community through various means including public open houses, advisory committee meetings, *Making Tracks* and reports posted on the www.centralcorridor.org webpage:

- Infrastructure for the future stations at Hamline, Victoria and Western (Jan.-Feb. 2008 scoping open houses)
- Non-signalized pedestrian crossings, including safety features (Nov. 2007 BAC and CAC)
- Replacement of the sidewalks from façade to façade (Dec. 2007 BAC, CAC)
- Changes to the public involvement activities including addition of listening sessions (Feb. 2008, ongoing)
- Relocation of crossovers to avoid noise impacts to low income residential areas (documented in Section 4.7 of the FEIS)

Compatibility of LRT Operations and Maintenance Facility with Neighborhood Plans (PL-1)

The District Councils Collaborative noted that the Metropolitan Council committed to mitigation addressing potential conflicts with neighborhood plans resulting from using the Diamond Products facility as an LRT operations and maintenance facility.

RESPONSE: All mitigation commitments in the FEIS will be adhered to, as required by NEPA and MEPA. The Metropolitan Council has formed the Operation and Maintenance Facility Task Force (OMFTF), which includes representation by the surrounding businesses and residences as well as the Capitol River Council. This group has met several times to develop final design recommendations. The FTA will monitor implementation of mitigation commitments as final design proceeds and through construction of the Central Corridor LRT to ensure that all mitigation commitments are met.

Long-term Population Patterns (PL-2)

One commenter noted the long-term population patterns as an issue.

RESPONSE: All ridership and other forecasting done as part of justifying the project's purpose and need and cost-effectiveness was based on long-range population forecasts prepared by the Metropolitan Council.

Purpose and Need for Proposed Action (PL-3)

The purpose and need for the Central Corridor LRT project was documented in the 2006 AA/DEIS, the 2008 SDEIS, and in the FEIS. The purpose of the Central Corridor LRT is to meet the future transit needs of the Central corridor LRT study area and the Twin Cities metropolitan region, and to support the economic development goals for the Central Corridor LRT study area. The Metropolitan Council's regional 2030 Transportation Policy Plan identified this corridor as a top priority for early implementation. Due to increasing traffic congestion and major redevelopment in the physically constrained corridor, a need currently exists for an alternative to auto travel. The introduction of fixed-guideway transit to the Central Corridor is proposed as a cost-effective measure aimed at improving mobility by offering an alternative to auto travel for commuting and discretionary trips. The Central Corridor LRT would help to minimize congestion increases, offer travel time savings, provide better transit service and capacity to the diverse population of existing and future riders in the corridor, and optimize significant public investments in the regional transit system.

Neighborhood Livability (PL-4)

One commenter expressed concern with neighborhood livability in and around the U of M campus.

RESPONSE: Although "livability" is not a stand-alone element analyzed in the FEIS, many effects such as traffic, noise, vibration, air quality, impacts to parklands and historic properties are part of the analysis. The effects of constructing the Preferred Alternative on these and other issues that could be construed as contributing to "livability" were documented in the FEIS.

Personal Rapid Transit (PRT-1)

The use of personal rapid transit (PRT) was suggested by one commenter as a preferred mode for the Central Corridor LRT process.

RESPONSE: PRT was considered as a travel mode for the Central Corridor in the 2001 scoping phase of the project. It was not considered feasible for implementation in the Central Corridor and was eliminated from further consideration.

Process of Right-of-Way Acquisition and Relocation (RW-1)

One comment was received from a business owner of a recording studio at 1951 University whose studio was identified as being affected by groundborne noise and vibration.

RESPONSE: Section 4.7 of the FEIS did note the potential for adverse effect to the recording studio at 1951 University Avenue (p. 4.7-19). Table 4.7-10, Summary of Detailed Vibration

Assessment Mitigation for Category 1 Land Uses, notes that mitigation may include relocating the studio. Upon issuance of the Record of Decision, right-of-way acquisition and relocation assistance can proceed. All such activities will take place consistent with statutory requirements of NEPA and the Uniform Relocation Assistance and Real Property Acquisition Policies Act.

Safety and Security (SS-1)

Several comments focused on the need to ensure that measures were taken to protect LRT riders and others and ensure overall system safety and security.

RESPONSE: Safety and security measures were discussed in Section 3.7 of the FEIS. As discussed in Section 3.7.5, Mitigation, the Metropolitan Council will implement a Safety and Security Management Plan for the Central Corridor LRT. This plan covers requirements for safety and security design criteria, hazard analyses, threat and vulnerability analyses, construction safety and security, operational staff training, and emergency response measures. Security and safety for the Central Corridor LRT project will also be facilitated by a Metro Transit Fire Life Safety Committee. No further mitigation is being proposed.

Traffic Impacts (TR-1)

Several comments were submitted regarding future traffic operations and the belief that operations on roadways would deteriorate with LRT in place.

RESPONSE: The results of future traffic operations were discussed in Chapter 6 of the FEIS. Mitigation activities, including signal timing improvements and other system and intersection improvements are committed to address impacts.

Maintaining Route 16 Service Frequency (TS-1)

Several comments were submitted regarding changes in frequency to the Route 16 local bus operating on University Avenue and the desirability of maintaining the existing peak- and off-peak-service frequency.

RESPONSE: At the request of the Central Corridor Management Committee, the Central Corridor Project Office completed an analysis of the impacts of maintaining the existing Route 16 bus service at current levels along University Avenue. Results of this analysis were shared at the August 27, 2008 meeting of the CCMC. Compared to the service frequency reported and analyzed as part of the Preferred Alternative (20-minute peak / 30-minute off-peak) a Route 16 bus operated at current levels of frequency would increase project operations and maintenance costs by approximately $947,000 a year. The resultant impact to the project's overall cost effectiveness was to increase it above the threshold required to qualify for federal funding.

Effects on Research Activities at the University of Minnesota's East Bank Campus

A large number (over 170) of comments were received expressing concern regarding the Central Corridor LRT project's effect on research activities at the U of M. Many comments were received

in response to a solicitation made by the U of M on their Web site, noting the publication of the FEIS, the U of M's concerns regarding noise and vibration impacts, and directing interested parties on how FEIS comments could be submitted. The issues raised in each of the comments relating to the effects on research activities at the U of M are addressed in the responses below to the 31-page letter of comment submitted by U of M General Counsel, Mark Rotenberg.

As a preliminary matter, the Metropolitan Council has acknowledged the importance of maintaining the U of M's ability to conduct research, retain faculty, train graduate students, and provide facilities for students and researchers around the country to conduct research. Staff and technical consultants from the Central Corridor Project Office (CCPO) have been meeting frequently with U of M staff and its consultants for several months to work collaboratively to gather and share data, discuss the results of various analyses, and to reach a consensus regarding the final design of mitigation measures. This effort will continue through advanced preliminary engineering, final design, construction, and even into revenue-service operations.

The following responses address the substantive issues raised in the U of M's comment letter; not the legal conclusions. As set forth in the Record of Decision, the Federal Transit Administration has determined that the Final Environmental Impact Statement fulfills all legal requirements.

Process of Identifying Laboratories/Equipment and Conducting Tests on Campus (UM-1)

The U of M notes the provision of data, specifically a list of sensitive research equipment, to the CCPO and alleges that staff "completely ignored this list," such that "the existing background conditions for vibration at the majority of University Laboratories and the predicted vibration levels from Central Corridor LRT operations at these laboratories are unknown.

RESPONSE: Contrary to the U of M's assertion, CCPO and U of M staff worked cooperatively to identify from the long list of equipment submitted a manageable sub-set of research equipment, representing that most sensitive to vibration and/or electromagnetic interference (EMI) as well as that most likely to be affected by LRT operations (i.e., in close proximity to the alignment). The U of M was made aware of the plan for testing and meetings were held with faculty, staff, and researchers after the initial round of testing in May 2008 to discuss preliminary results. The CCPO determined that supplemental vibration testing was required. As part of planning for this supplemental testing, the U of M's vibration consultant requested that additional ambient tests be completed at 15 different laboratories. The CCPO conducted ambient conditions measurements at all these laboratories, in addition to laboratories identified by U of M liaison staff in medical / health-related locations on campus. Extensive coordination has occurred to conduct similar tests of ambient conditions and assessment of impacts for equipment sensitive to EMI.

It should be noted that all data gathered, which provides the basis for the vibration impact analysis and the assessment of ambient conditions, has been shared with the U of M and with their vibration consultant, that staff from the U of M have been part of all plans for conducting vibration testing, and that their support has been invaluable in facilitating access to research labs for testing.

Definition of Impact Criteria – Ambient Vibration Conditions (UM-2)

The U of M comment letter noted that the FEIS states that vibration from the operation of the Central Corridor LRT should be mitigated to "existing background" or ambient conditions. It further notes that the Metropolitan Council's definition of ambient vibration on campus differs from the definition of ambient conditions that the U of M is proposing and from the definition of ambient conditions used in an early version (July 2008) of ATS Consulting's Vibration Report.

RESPONSE: The early draft version of the vibration report did report Leq conditions for the labs where vibration propagation tests were performed. However, the early draft did not state that the ambient vibration was considered a threshold for impact. The average ambient (Leq) was shown in the graphs to provide the reader a perspective on how the predicted train vibration compared to existing vibration in the labs. A change made in the December 2008 final draft version was to define ambient conditions as a threshold for impact.

There is no FTA or other requirement to mitigate to ambient conditions; however, the Metropolitan Council recognized the U of M's interests in maintaining the existing vibration environment in the future as part of mitigating LRT effects on the Washington Avenue research corridor. Criteria for impact to ambient conditions were identified by the Metropolitan Council in the December 2008 final draft Vibration Report and in Section 4.7 of the FEIS. No impact to ambient conditions was considered to occur if: (1) the predicted train vibration was lower than the measured L1 in all 1/3 octave bands up to 100 Hz, or (2) the predicted train vibration was at least 5 decibels below the FTA's VC-E curve at all frequencies. L1 represents the vibration level that is exceeded at least 36 seconds out of an hour, or one percent of any given time period. This measure was selected to represent ambient conditions at the U of M because, if the train vibration in any 1/3 octave band approaches the ambient L1, the total time that the train vibration would be at that level in an hour would be approximately two seconds for each train. Based on peak-hour LRT operations at the U of M campus, this would mean that the train vibration might approach L1 at specific frequencies for a maximum of 20 to 25 seconds in an hour (less than the 36 second L1 timeframe). Thus, over a one-hour period, the ambient vibration would exceed the vibration generated by the train. For equipment that is sensitive to vibration, one or two disruptive vibration events are usually sufficient that the measurement or experiment would be unsuccessful. Because there would be times that the ambient (L1) vibration would exceed the train vibration, there would be a substantially higher probability for ambient vibration to cause a measurement or experiment to fail than the train vibration.

The Metropolitan Council disagrees with the U of M's assertion that nighttime Leq should be used to establish the ambient vibration conditions. Such a criterion would artificially decrease the magnitude of the ambient vibrations by focusing exclusively on the overnight hours when the vibrations are lesser in magnitude and disregarding the higher than average, yet nonetheless frequent, vibrations that occur on a daily basis. Although Metropolitan Council maintains that the L1 criterion accurately reflects ambient conditions for purposes of analyzing the potential impacts of the CCLRT project, Metropolitan Council has committed to implementing mitigation measures capable of maintaining ambient conditions determined using the L10 criteria.

Vibration Mitigation to Frequencies above 100 Hz / Use of VC Curves (UM-3)

The U of M states that the FEIS erroneously assumes that Central Corridor LRT vibration at frequencies higher than 80 Hz will not adversely affect the University's research and relies on the VC curves to limit mitigation.

RESPONSE: The Metropolitan Council is proposing to mitigate the effects of Central Corridor LRT-generated vibration at the U of M's campus at frequencies up to 100 Hz. A citation contained on p. 12 of the U of M's letter, stating that the FEIS proposed to mitigate only to 80 Hz at the U of M was a misinterpretation of the FEIS text, which was intended to be a factual restating of the VC curves, which are used by the FTA to identify vibration impacts from proposed LRT projects. In the December 2008 Final Draft Vibration Report, and in all supplemental analysis completed since that time, the CCPO's vibration consultant has reported impacts in frequencies up to 160 Hz. However, the limit for impacts at the U of M has consistently been defined by the Metropolitan Council at 100 Hz. Vibrations at higher frequencies tend to attenuate quickly from the source (dissipating within 5-15 feet of the LRT tracks) and would not be anticipated to reach or to affect the U of M's sensitive research equipment. Finally, it should be noted that the Master Implementation Agreement between Sound Transit and the University of Washington, which is referenced by the U of M and attached to their letter of comment, mitigates only to frequencies of 100 Hz.

Adequacy of Committed Mitigation at the U of M (UM-4)

The U of M comment letter took exception to the vibration mitigation design solution proposed at the U of M's East Bank campus, specifically the use of high-resilience track fasteners. They requested that a floating slab track be installed through the entire 1,800' Mitigation Zone instead.

RESPONSE: The final design of the vibration mitigation measures will be refined through final design and engineering. Such refinements may include the construction of some shorter independent floating slabs in key locations in conjunction with resilient fasteners. The Council and the U of M agree that the first and best option for mitigation is at the source, or at the LRT alignment. Many factors, including cost-effectiveness, will influence the selection of the appropriate and final mitigation design at the U of M to address vibration impacts. At locations where full mitigation cannot be met with improvements at the source, the Metropolitan Council will coordinate with the U of M to determine the appropriate receiver-based mitigation measures. Receiver-based mitigation could include active or pneumatic (passive) vibration isolation systems for individual equipment. Although unlikely, it may include relocation of sensitive research equipment.

System Maintenance and Monitoring – Vibration (UM-5)

The U of M requests commitments for monitoring of vehicle condition and cites a system planned for construction in Seattle in proximity to the University of Washington, including real-time monitoring, to identify trains with wheel flats or other conditions that may cause higher-than-average levels of vibration.

RESPONSE: The Metropolitan Council has committed to vibration testing and/or monitoring at select and appropriate locations at the U of M's East Bank campus to ensure that vibration measures are working as specified. The details of this program are being developed in consultation with the U of M. The Metropolitan Council is considering the installation of real-time wheel monitoring systems that would measure conditions of light rail vehicles in operation. This system would be used to identify vehicles that would cause higher-than-anticipated levels of vibration so that maintenance could be performed as soon thereafter as practical. Such a measure will benefit all properties adjacent to the Central Corridor LRT, in addition to U of M research uses adjacent to the Washington Avenue research corridor.

Completion of an Uncertainty Analysis for Vibration Assessment (UM-6)

The U of M requested analysis of the "level of uncertainty associated with the CCLRT Project's vibration mitigation strategy" as part of the FEIS.

RESPONSE: The CCPO's technical consultant has completed numerous analyses at the request of U of M staff and their technical consultant. One such analysis investigated the effects of vibration predictions with low data coherence, or for locations where the predictions are close to the ambient. Test results showed that low coherence means that the measured LSTM, or line source transfer mobility, a means of measuring the transmissibility of LRT vibration, is an upper bound, or worst-case scenario. The true LSTM is often 10+ decibels lower. Further testing with heavier weights subsequently verified these predictions. In addition, since the Metropolitan Council is willing to implement mitigation measures to maintain ambient conditions based upon L10 data, rather than the L1 values used to assess potential impacts, this will provide an additional "margin of error" from the originally proposed L1 values. The Council does not believe that conducting additional tests of uncertainty, beyond that already completed, is required or of benefit and no such analysis is currently planned.

Construction Impacts (UM-7)

The U of M expressed concerns regarding the impacts of Central Corridor LRT construction on their research equipment and the adequacy and detail provided for mitigation of construction impacts in the FEIS.

RESPONSE: In an effort to inform the U of M regarding anticipated construction activities on Washington Avenue for the Central Corridor LRT, the CCPO developed a potential schedule providing detailed, block by block information identifying construction activity sequencing and activity durations. This schedule was provided to the U of M in July 2009. The schedule identifies construction activities with anticipated higher levels of noise and vibration. The combined durations of which for a single block are approximately six-to-eight weeks in duration.

Upon receipt of a federal funding and award of construction contracts, the Metropolitan Council will work with the U of M and project Construction Contractors to reduce the duration and extent of construction-induced vibrations, particularly immediately adjacent to sensitive research laboratories in Kolthoff, Hasselmo, Amundson, and Weaver Densford halls by staging construction activities to shorten durations and avoid critical times and/or employ alternative

construction methods such as compacting backfill using static rolling or hand-held compaction equipment and using additional saw cutting in lieu of hoe rams.
In recent conversations with U of M staff discussing project impacts and means to avoid and/or minimize impacts, there was discussion of lessons learned from the recent construction of the TCF Bank Stadium on the East Bank campus. According to discussions with U of M staff, this project, involving pile driving (which is not required for Central Corridor LRT construction) and other activities with high noise and vibration thresholds has been managed in a way to minimize disruptions to sensitive research activities nearby. Additionally, the U of M recently completed demolition of an older campus classroom building and is in the midst of constructing a new Science Teaching and Student Services Center along Washington Avenue near the Mississippi River. The CCPO will work closely with U of M staff to implement the construction protection measures found to be successful in prior construction at the U of M and which are appropriate for use mitigating potential impacts associated with the Central Corridor LRT project construction.

Electromagnetic Interference – Mitigation to Ambient Conditions (UM-8)

The U of M has requested that ambient conditions of electromagnetic emissions be used as a criterion to establish impacts caused by Central Corridor LRT operations requiring mitigation.
RESPONSE: The potential impacts of EMI, and potential mitigation measures were identified and evaluated in the FEIS. As the U of M's experts have acknowledged, ambient conditions for EMI are extremely difficult to establish given that widely varying electromagnetic fields exist throughout the campus, due to numerous sources of EMI. In addition, some of the sensitive equipment generates significant electromagnetic fields such as the Hasselmo nuclear magnetic resonator (NMR) equipment, which produces fields of 5,000 milligauss, some amount of which extends beyond the building walls. The Metropolitan Council and its technical consultants have been working closely with U of M staff and their technical consultants for over a year to understand the potential for Central Corridor LRT to disrupt research equipment due to electromagnetic interference. In recent months, this work has focused on development of a state-of-the-art computer model, which has been used to simulate the EMI fields that will be created by the Central Corridor LRT and assist in further refinement of mitigation measures. This model is based on well-accepted scientific principles and formulas and has been validated using data collected from the existing Hiawatha LRT system. In recent conversations with the U of M and their technical consultant, it was agreed that good progress has been made in gathering data and developing a model accurate enough to predict future impacts. However, the U of M's consultants have not completed their validation of the model. The recommended mitigation measure in the FEIS, namely a "double-split" power supply system is based on results from the model, validated with actual field measurements from the Hiawatha LRT system. Refinements to the proposed mitigation strategies will continue through the advancement of preliminary engineering and final design and engineering.

EMI Mitigation – Length and Location (UM-9)

The U of M requested that the FEIS provide detail as to the length and location of the proposed EMI mitigation strategy.

RESPONSE: In Section 4.9.6.1 (p. 4.9-10) of the FEIS, the EMI mitigation system proposed is described as being "installed on Washington Avenue from approximately 75 feet east of the East River Parkway to approximately 50 feet west of Ontario Street. The exact boundaries may change by some distance to the east or west as the U of M and the Metropolitan Council continue to negotiate the details of the final mitigation design.

Effectiveness of EMI Mitigation at Transition Zones (beginning and end of mitigation zone) (UM-10)

The U of M's comment letter stated that there is no information in the FEIS establishing that EMI mitigation will be sufficient at the beginning and end of the proposed mitigation segment.

RESPONSE: As described in response to comment UM-8 above, the Metropolitan Council has been working with the U of M and their technical consultants in recent months to develop and refine a forecast model for EMI emissions on the U of M campus that can be used to refine the mitigation measures and has been used to generate information about the effectiveness of transition zones at the beginning and end of the mitigation zone on Washington Avenue. This information has been shared with the U of M and their technical consultants and mitigation design appropriate to address issues at transition zones continues to be refined during preliminary and final design activities.

Completion of an Uncertainty Analysis for EMI Assessment (UM-11)

The U of M requested completion of an uncertainly analysis associated with elements of the EMI analysis.

RESPONSE: Validation of the Central Corridor LRT EMI model against actual EMI values emitted from operations of the Hiawatha LRT system was performed with excellent results and has removed much of the uncertainty of the analysis. The U of M consultant expressed much satisfaction from the test results. It is not necessary to conduct additional tests of uncertainty.

System Maintenance and Monitoring – EMI (UM-12)

The U of M's comment letter stated that acceptable EMI mitigation must include integration of real time monitoring of EMI conditions along Washington Avenue.

RESPONSE: The Metropolitan Council has committed in the FEIS to testing and/or monitoring at select and appropriate locations. The details of this testing and/or monitoring program are being developed in consultation with the U of M.

Constructive Use, under Section 4(f), of the University Campus Mall Historic District (UM-13)

The U of M contended that the Central Corridor LRT project will result in the constructive use of the Campus Mall Historic District and that the FEIS must therefore include a Section 4(f) avoidance analysis.

RESPONSE: A "constructive use" of a Section 4(f) property occurs where "a transportation project does not incorporate land from a Section 4(f) resource, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired. Substantial impairment occurs only when the

protected activities, features, or attributes of the resource are substantially diminished." 23 C.F.R. 774.15(a). The impacts of the Central Corridor LRT project, as disclosed in the FEIS, do not rise to the level to which a constructive use finding would be made. Specifically, constructing a modern light rail line within roadway right-of-way (along which a streetcar had operated historically) does not rise to the level of substantial impairment of the Campus Mall Historic District that would result in a constructive use of this resource.

Use and Adequacy of a Programmatic Agreement in the Section 106 Process (UM-14)

The U of M questioned the use of a Programmatic Agreement to analyze and address Central Corridor LRT effects to historic resources. The U of M also stated that their concerns regarding the Section 4(f) and Section 106 processes were not responded to by the Metropolitan Council.

RESPONSE: A Programmatic Agreement may be used to analyze and address effects to historic resources:

(i) When effects on historic properties are similar and repetitive or are multi-State or regional in scope;

(ii) When effects on historic properties cannot be fully determined prior to approval of an undertaking;

(iii) When nonfederal parties are delegated major decisionmaking responsibilities;

(iv) Where routine management activities are undertaken at Federal installations, facilities, or other land-management units; or

(v) Where other circumstances warrant a departure from the normal section 106 process.

36 CFR § 800.14(b)(1).

The FTA has determined that use of a Programmatic Agreement is appropriate for the Central Corridor LRT project, as stated in the Programmatic Agreement, because the "full range of effects on historic properties will not be known prior to the approval of grant funds." The Programmatic Agreement was made in consultation with the Minnesota State Historic Preservation Officer, the federal Advisory Council on Historic Preservation and other consulting parties to the process. Public involvement in the Section 106 process was coordinated with the scoping, public review and comment, and public hearings conducted by FTA and the Metropolitan Council to comply with NEPA and its implementing regulations.

The University of Minnesota was invited to join as a consulting party to the Programmatic Agreement, developed as part of the Section 106 process, in fall 2008 and declined to do so. Nevertheless, draft copies of the Programmatic Agreement were shared with the U of M. The U of M was invited to meetings to receive input into the draft Programmatic Agreement, and comments on the draft agreement were received from the U of M and incorporated into the Programmatic Agreement, as appropriate. As the Section 106 consultation proceeds, consistent with stipulations in the Programmatic Agreement, the U of M will continue to be invited to be involved in the process, to consult regarding proposed project effects, to avoid effects if possible, minimize where practicable and, if avoidance and minimization is not practicable, to develop mitigation plans as appropriate.

Design of Vibration Mitigation on Cedar Street in St. Paul (St. Louis Church) (V-1)

St. Louis King of France Church submitted a comment stating their concerns about the efficacy of the floating slab technology proposed in the FEIS to mitigate groundborne noise impacts predicted at the church and requesting additional commitments to test the slab after a number of freeze-thaw cycles.

RESPONSE: The Metropolitan Council has committed in the FEIS and in the MPR Mitigation Agreement (Appendix F1 of the FEIS) to testing the effectiveness of the installation and performance of the floating slab on Cedar Street during pre-revenue service and during the first year of revenue service operations. Furthermore, the commitment was made to conduct testing in the summer and in the winter to account for climatic conditions and variation.

Visual Effects to Big Top Liquors (VE-1)

Big Top Liquors expressed concern about altered visibility to their business from University Avenue.

RESPONSE: Based on the results of analysis performed and reported in the FEIS (Chapter 3) there are no adverse effects to visual quality anticipated to result to Big Top Liquors as a result of the proposed action.

Vibration and Noise Impacts to Residents (VN-1)

One comment was received from a member of the general public expressing concern about impacts from noise and vibration to residents along the Central Corridor LRT alignment.

RESPONSE: The effects of potential noise and vibration effects of the Central Corridor LRT project were discussed in Sections 4.6 and 4.7 of the FEIS. Potential adverse effects to residences will be avoided by relocation of special trackwork away from sensitive receptors. In the instance of the one severe impact that is anticipated, even after relocation of trackwork, which will occur to a City of St. Paul firehouse, mitigation is committed to increasing the resistance of the residence to sound by improved windows or other appropriate treatments.

Adequacy of Traffic Analysis of Washington Avenue Transit Mall Impacts (WA-1)

Several commenters noted the effects on traffic patterns related to closure of Washington Avenue to automobile traffic and the adequacy of mitigation commitments.

RESPONSE: As part of analyzing effects of implementation of the Preferred Alternative, a comprehensive traffic study of over 45 intersections surrounding an approximately five-square-mile area around the University of Minnesota's East Bank campus was completed. This process is discussed and the results disclosed in Chapter 6 of the FEIS. Mitigation to address all identified impacts, including improvements to intersections on the east and west sides of the Mississippi River in the City of Minneapolis and on the University of Minnesota has been identified and is committed in the FEIS and in the record of decision. No additional analysis or additional mitigation commitments are being proposed.