

10.0 PROJECT DEVELOPMENT AND PRIORITIZATION

The projects identified for consideration in the future needs analysis were each evaluated based on goals and objectives adopted by the Metropolitan Planning Organization (MPO) Transportation Policy Committee. Seven general categories of criteria were used to assess the likely benefits associated with proposed transportation improvements. A weight was assigned to each category in the form of a maximum possible score. Within each category projects were awarded points depending on how likely they were to advance the stipulated objective (see box at right). In some cases, the total points that could be awarded within a given category were allocated among two or more sub-categories as explained below.

Project Evaluation Categories (Range of Possible Points)

- Project Benefit (0-40)
- Connectivity/Continuity (0-15)
- Economic Development/Modal Benefit (0-15)
- Environmental and Community Impacts (0-5)
- Safety (0-20)
- Plan Consistency/Local Commitment (0-5)

10.1 PROJECT BENEFIT

Some benefits of transportation improvements are quantifiable and can even be monetized. Expressing the value of projected benefits in monetary terms makes it possible to compare what one expects to get out of a project with what one will have to put into it (i.e., the monetary expenditure required to build a new facility, install new equipment or initiate new service). While some benefits are not so easily monetized, and may not even be subject to quantification, the value of travel time-savings has long been a primary measure of the worth attributable to transportation investments. The standard approach to the valuation of travel time is based on median annual household income for personal travel and the average wage rate for business travel. Different rates are frequently developed for varying travel purposes and vehicle types. Examples include specific rates for trips made by workers during the workday, commuting trips and personal travel, as well as rates for medium and heavy-truck travel.

In order to estimate the value of travel time-savings likely to result from transportation projects considered for inclusion in the long-range plan, separate monetary rates for passenger-vehicle and freight-truck travel were adopted. The value of travel time-savings was calculated by applying these standardized hourly cost factors to the reduction in travel time projected to result from a proposed improvement. Travel-time savings are easily derived from travel demand model output for separate network assignments representing the unimproved and improved conditions respectively. Time-savings correspond to the difference in vehicle-hours traveled (VHT) between the base case and the build alternative under consideration.

Trucks--The value of travel time for individuals traveling in trucks considers both the average wage paid drivers and other relevant factors such as excess costs avoided by on-time delivery. Failure to make a delivery on time may result in additional costs due to product spoilage or other consequences of a missed delivery window. For example, the delivery of concrete or cement beyond its useful life may mean loss of the product itself. The arrival of a truck for pick-up or delivery after a gate or loading dock has been closed may extend delivery time into the following day, requiring the payment of additional wages to the

driver, possibly at a higher rate. The U. S. Department of Transportation recommends using an hourly rate of \$25.80 for time-savings associated with travel in trucks (U. S. Department of Transportation, *2015 Benefit-Cost Analysis Guidance for TIGER Grant Applicants*). The analysis awarded up to five points—of the 40 allocated to the first evaluative category—for travel time-savings benefiting the users and operators of trucks.

Passenger Vehicles—Passenger-vehicle benefits are affected by a variety of factors. Commuting trips are very sensitive to the costs of lost productivity due to travel time variability under congested road conditions. The analysis also took into consideration workers making trips during the day. These include, for instance, trips to secure repair services, make package deliveries and to travel to and from meetings. Excess time spent in traffic results in extra expenses related to workers' wages and overhead costs. Congestion delay causes more time in traffic which also increases fuel costs. The U. S. Department of Transportation recommends a value of \$19.00 per hour for intercity personal-vehicle travel. This is a weighted average based on a distribution of travel by trip purpose that assumes 78.6 percent personal travel and 21.4 percent business travel. The analysis awarded up to five points (of the categorical total of 40) for travel time-savings expected to benefit personal vehicle operators and passengers.

Benefit-Cost Ratio

The objective of a benefit-cost analysis is to translate the effects of an investment into monetary terms and to account for the fact that benefits generally accrue over a long period of time while capital costs are incurred primarily in the initial years. The primary transportation-related elements that can be monetized are travel-time costs, vehicle operating costs, safety costs, ongoing maintenance costs, and remaining capital value (a combination of capital expenditure and salvage value). For some kinds of projects, such as bypasses, travel time and safety may improve but operating costs may increase due to longer travel distance. A properly conducted benefit-cost analysis should indicate whether travel time savings and safety benefits related to reduced accidents, injuries and deaths exceed the costs of design and construction and the long-term increased operating costs.

In economic terms, the cost of a transportation investment is the value of the resources that must be consumed to bring about the project. The total value of construction and any additional maintenance costs must be estimated. It is important to note that the analysis does not emphasize who incurs the cost but rather aims to include any and all costs involved in implementing the project. In addition to the points awarded for time-savings identified as project benefits, the evaluation assigned up to five points (of the 40 allotted to this category) for an overall benefit-cost ratio greater than 1.00.

Mitigate Traffic Congestion and Enhance Quality of Life

Due the Mississippi Gulf Coast region's continuing recovery from Hurricane Katrina and ongoing population and economic growth, roadways are likely to experience increasing traffic volumes and congestion in the years ahead. In connection with development of the 2040 Metropolitan Transportation Plan (MTP), the GRPC Congestion Management Program (CMP) and travel demand forecasting model were updated. These important tools help planners identify areas of current and potential future

congestion and to quantify the associated travel delay. The CMP uses travel-time data to identify areas of existing vehicle delay; the travel demand model is used to identify areas of projected future traffic congestion. Results generated by these tools helped to score and prioritize transportation projects based on anticipated benefits.

The analysis conducted with regard to this particular category posed two questions, awarding up to 10 points in each case for a positive answer:

- *Does this project address an existing congestion problem?*
- *Is this project intended to meet expected future travel demand?*

While increasing traffic volumes are usually a good thing for business, neighborhoods can be very vulnerable to high volumes and vehicle speeds. Noise, safety and air quality impacts, and the potential disruption of community cohesion, may all adversely affect a community as traffic volumes and travel speeds increase. Measures may be required to mitigate such effects, or it may be necessary to alter or forego a project likely to have excessive adverse impacts such as these. In order to account for the benefits accruing from diverting excess through traffic from residential areas, or slowing traffic passing through neighborhoods, up to five points were awarded for a positive response to the following question:

- *Does this project reduce and/or slow traffic in residential neighborhoods?*

The following summarizes the range of possible points that could be awarded in each of the six sub-categories included in the first evaluation category:

Project Benefit:	Truck time-savings (0-5)
	Auto time-savings (0-5)
	Overall benefit-cost ratio (0-5)
	Addresses existing congestion (0-10)
	Meets expected future travel demand (0-10)
	<u>Reduces/slows traffic in residential neighborhoods (0-5)</u>
Total Possible Points:	0-40

10.2 CONNECTIVITY AND CONTINUITY

Connectivity benefits play an important part in maintaining and expanding the functionality of the transportation system, by providing or supporting alternative travel choices, including both diverging paths and multiple travel routes. Projects were given points based on the scale of the transportation project’s service area. Up to five points were awarded for a project intended to serve a particular land use. Up to 10 points were granted for a project intended to serve a specific corridor, provided it was not one of the designated mobility corridors. Another 10 points were awarded for a project intended to improve a designated mobility corridor, benefiting the entire system or a significant portion of it. Notable

examples of projects that might enhance the continuity of the system as a whole, or major portions thereof, include the following:

- *Extension of Beatline Road from Railroad Street to Highway 90* would provide a direct route in the western half of Harrison County from US 90 to Interstate 10 (I-10) at the County Farm Road interchange.
- *Construction of a new road connecting Popp’s Ferry Road to the I-10 Woolmarket interchange* would establish a direct route in the eastern half of Harrison County roughly midway between Highway 605 in Gulfport and Interstate 110 (I-110 in downtown Biloxi).
- *Widening Popp’s Ferry Road from Riverview Drive to the Back Bay of Biloxi and from the Back Bay to Pass Road* would complement ongoing projects to construct a new bridge across the Back Bay and to extend Popp’s Ferry Road from Pass Road to Beach Boulevard (US 90), significantly enhancing north-south mobility in west Biloxi.

The indicated sub-categories are mutually exclusive, such that an improvement serving a particular land use can only be awarded up to five points; a project that improves access to a corridor that is not a designated mobility corridor cannot be awarded more than 10 points; and only an improvement enhancing connectivity to a designated mobility corridor can garner as many as 15 points in this category. The following summarizes the range of possible points that could be awarded in each of the three sub-categories included in the second evaluation category:

Connectivity/Continuity:	Serves local land use (0-5)
	Serves specific corridor (0-10)
	<u>Serves designated mobility corridor (0-15)</u>
Total Possible Points:	0-15

10.3 ECONOMIC DEVELOPMENT OR MODAL BENEFIT

The analysis of projects within this evaluation category posed three questions and awarded up to five points for each positive response:

- *Does this project serve freight use on an identified freight connector?* The overall performance of the transportation system is enhanced by measures that promote the availability and efficient interaction of different modes linked in ways that facilitate the safe and efficient movement of people and goods.
- *Is this project on a roadway with fixed-route transit service?* Projects that improve the efficiency of transit are also beneficial to the region as a whole. As transit options attract more daily commuters and other regular riders, fewer vehicles will be on the road, resulting in lower vehicle emissions and reduced traffic congestion. Therefore, projects that are on roadways used for

regularly scheduled transit service benefit not just those who use public transportation but other travelers and the service area as a whole.

- *Will this project generate new economic development and help attract people to the area?* This item addresses whether a project would be likely to have a significant positive effect on the attractiveness of the area as a place to live or locate a business. A transportation project can affect an area’s ability to attract new businesses and encourage them to stay and grow. Success in such an endeavor can have the public benefit of raising property values in the vicinity of the project. Some projects have obvious economic development impacts that expand a community’s tax base and enhance the quality of life for people who live in the area. Examples include roadway improvements that enhance access to shopping centers, major employers or casinos.

Potential projects that might address categorical needs pinpointed by the questions posed above include the following:

- *Construction of Highway 601 from I-10 to the Mississippi State Port at Gulfport* would reduce truck traffic on congested U. S. Highway 49 (US 49) by approximately 30 percent, according to output from the regional travel demand forecasting model.
- *Construction of the proposed Pine Street extension at the east end of Biloxi* would complete the Back Bay loop, linking Back Bay Boulevard, Beach Boulevard, Caillavet Street and Bayview Avenue to provide a continuous route with convenient access to casinos, MGM Park, the Biloxi Transit Center, the Ohr-O’Keefe Museum, the Maritime and Seafood Industry Museum, Point Cadet Plaza, St. Michael’s Catholic Church, the Bay of Biloxi bridge and multiuse path, and numerous other attractions.
- *US 90 improvements from Azalea Drive to I-110 and from I-110 to Keller Avenue*—including improved channelization, access management measures, transit signal preemption facilities, and transit lanes or cutouts in these segments--would facilitate better transit service and make public transportation more attractive to potential riders.
- *Reconstruction of Pass Road and the implementation of access management measures from Cowan Road to Washington Avenue in Gulfport and from DeBuys Road to Stennis Drive in Biloxi* would help to improve the safety and efficiency of transit operations on what is already one of Coast Transit Authority’s heavily patronized routes.

The following summarizes the range of possible points that could be awarded in each of the three sub-categories included in the third evaluation category:

Economic Development/ Modal Benefit:	Serves freight use (0-5) On transit route (0-5) <u>Will generate economic activity (0-5)</u>
Total Possible Points:	0-15

10.4 ENVIRONMENTAL AND COMMUNITY IMPACTS

To ensure that environmental concerns, Title VI compliance and environmental justice principles are incorporated in the planning process, GRPC planners mapped areas with concentrations of minority and low-income residents. This was done to comply with Federal requirements that the benefits and burdens of transportation investments be equitably distributed. Environmentally sensitive areas were also mapped in order to identify locations where project impacts might occur. For the purposes of project evaluation in the context of long-range plan development, the following criteria were used to specify foreseeable environmental and community impacts:

- *Wetlands and Other Biological Resources*—There are many diverse upland and wetland habitats throughout Mississippi, but nowhere in the state are habitats more functionally important than those in the coastal wetlands located along the beautiful Mississippi Gulf Coast in Hancock, Harrison and Jackson counties. Adverse impacts on natural resources are to be avoided whenever possible and mitigated when they cannot be avoided, as required by environmental law and regulation. Up to five points were added to a project’s score depending on how well it could avoid or mitigate environmental impacts and have beneficial rather than negative impacts on biological resources.
- *Community Impacts*--New construction and widening projects in or near traditionally underserved areas have the potential to provide positive benefits to communities but also may have negative impacts due to disruption of community cohesion and the displacement of residents and businesses. In the event of anticipated negative impacts, points were limited or withheld altogether, depending on the nature and extent of the foreseen effects. Where severe and potentially irremediable community disruption or environmental degradation seemed likely or even highly possible a project was simply disqualified from further consideration. At the same time, a roadway reconstruction project in or near a traditionally underserved area may have a significant positive effect on its attractiveness as a place to live or locate a business without displacing people who live or do business there. Property values may rise as a result of increasing demand for property, which is itself frequently a direct consequence of rising incomes and profits. Intersection projects improve travel time and decrease congestion, usually without having a significant impact on personal property. Up to five points were added to a project’s score where positive environmental or community impacts were anticipated.

Most of the projects proposed in the MTP would have no significant impact on traditionally underserved communities or on sensitive environmental resources, but it is essential to identify those that could. The following merited careful consideration:

- *Construction of the Harrison County East-West Multimodal Corridor adjacent to the CSX Railroad* would locate a new road in proximity to several low-income and minority residential areas adjacent to the rail line. While providing access to a high-quality transportation facility in the area, it is possible that the route would require acquisition of right-of-way resulting in the

displacement of some residents and businesses. Some wetland impacts are probably unavoidable, especially at the west end of the route in the Pass Christian area.

- *Construction of Highway 601, possibly as a controlled-access urban expressway, connecting the Mississippi State Port at Gulfport to I-10* along an alignment that would traverse low-income and minority areas in west Gulfport may disrupt neighborhoods and undermine community cohesion. It would also have an impact on wetlands.
- *Construction of the proposed Woolmarket Connector linking Popp's Ferry Road to the I-10 interchange at Woolmarket* would require a long elevated section traversing wetlands
- *Intersection projects of possible concern* include improvements on MS 63 at Dantzler Street and on Highway 613 at Grierson Street in Moss Point; on US 90 at Blue Meadow Road in Bay Saint Louis; and on US 49 at Dedeaux Road and US 49 at Community Road in Gulfport. All of these are located on the edge of low-income and minority areas.
- *Roadway reconstruction and widening projects* on Pass Road and on Three Rivers Road would not need significant right-of-way while benefiting traditionally underserved communities. These transportation improvements would enhance traffic flow for residents of these communities as they travel to and from their homes.

Potential impacts relating to cultural resources, noise, hazardous materials, residential property or business establishments are difficult to evaluate in the absence of a reasonably well-defined project location. The requisite degree of specificity is simply not possible with regard to most of the projects considered. An attempt was made to identify known impediments to the implementation of projects, but the task of minimizing adverse effects or avoiding them altogether will have to be taken up at the next stage of project development.

10.5 SAFETY CONSIDERATIONS

Enhanced safety is one of the principal positive outcomes hoped for from a transportation improvement. Benefits occur when the number and/or severity of crashes is reduced on a facility or set of facilities because of the transportation improvement. Such benefits can be measured in terms of accidents, property damage, injuries and fatalities avoided as a result of improvements to a roadway. Projects recommended for the fiscally constrained long-range plan were proposed primarily on the basis of their ability to enhance mobility in the region. Nevertheless, the degree to which they would also make the transportation system safer was also an important consideration in the evaluation process. The MPO Safety Management Program (*Get to B*) uses Surface Transportation Program (STP) funds, set aside for safety-related projects, to identify needed improvements on the basis of accident records and systematic analysis of relevant conditions. Crash rates were calculated for each proposed project location on the basis of a comprehensive vehicular accident database provided by the Mississippi Department of Transportation (MDOT) and traffic volume estimates based on actual counts conducted by GRPC in 2013.

Projects were given priority based on their crash rates expressed in collisions per million vehicle miles. The equations that were used were the following:

- Corridor crash rate = $(N * 1,000,000) / (365 * AADT * L)$
- Intersection Crash Rate = $(N * 1,000,000) / (365 * AADT)$

Where:

N	=	Average annual number of crashes
AADT	=	Annual average daily traffic
L	=	Length of the roadway segment in miles

Evaluations were done on proposed project sites with high accident frequency to discover what type of accidents were occurring. The roadway segments at the top of the list below would all benefit from improved channelization and access management achieved by the installation of medians. Safety audits should be performed at the intersection sites to determine the causes of frequent accidents. Up to 20 points were added to a project’s score depending on the degree to which it could be expected to enhance the safety of motorists and others traversing a roadway segment or intersection.

BILOXI - US 90 BETWEEN I-110 AND KELLER AVE	The majority of accidents occurring on this segment are due to cars leaving their lanes and hitting other cars.
GULFPORT – PASS ROAD AND COWAN ROAD INTERSECTION	Most of the accidents at this intersection are rear-end accidents. Angle crashes are less frequent.
GULFPORT – US 49 AND CREOSOTE ROAD INTERSECTION	Most of the accidents at this intersection are rear-end crashes. Angle crashes are less frequent.
GULFPORT – COWAN ROAD FROM MAGNOLIA STREET TO PASS ROAD	Mostly rear-end crashes occur on this segment.
GULFPORT – US 49 AT MS 53 INTERSECTION	The accidents occurring at this intersection include both rear-end crashes and those involving left-turning vehicles.
PASCAGOULA – US 90 AT HOSPITAL ROAD INTERSECTION	The accidents occurring at this intersection include rear-end crashes, angle accidents and those involving left-turning vehicles.
BILOXI – POPP’S FERRY ROAD FROM THE BACK BAY BRIDGE TO PASS ROAD	Mostly rear-end crashes are occurring here.
BILOXI – CEDAR LAKE ROAD FROM I-10 TO POPP’S FERRY ROAD	There is no predominant accident type occurring here. Accidents include rear-end, sideswipe, angle, etc.

10.6 PLAN CONSISTENCY/LOCAL COMMITMENT

The evaluation awarded up to five additional points if it could be demonstrated that a project satisfied one or both of the following criteria regarding consistency with an adopted local plan and a local commitment of support for the project:

- The project was already listed in a local planning document, such as a major thoroughfares plan or the transportation element of a comprehensive plan; and
- The local county or municipal government having jurisdictional responsibility for the proposed improvements had demonstrated a commitment to provide the matching funds required to secure additional Federal funding necessary to pay for its implementation.

In the event of it being determined that the local jurisdiction had actually already appropriated funds for the proposed project and was fully committed to its implementation, the evaluation process was rendered moot; and the improvement was advanced to the Staged Improvement Program without further consideration of its merits.

The results of the project evaluation and prioritization process are summarized in Appendix C.