



## 7.0 Evaluation of Alternatives

This chapter presents the results of the evaluation and trade-offs analysis conducted for the alternatives developed for the Desire Streetcar Line study area. The purpose of this chapter is to bring together the key findings, both qualitative and quantitative, for each alternative so that benefits, costs, and environmental consequences can be evaluated against the stated project goals and objectives presented in Chapter 1.0, Purpose and Need. The intent of this comparative analysis is to facilitate the decision-making process for the RTA Board of Commissioners, as well as public officials, interested residents, businesses, and institutions in the project area.<sup>1</sup> Consideration of these findings will lead to the selection and implementation of the best alternative for providing enhanced public transportation services for the Desire Streetcar Line study area.

### 7.1 Evaluation Framework

The transportation goals and objectives set forth in Chapter 1.0 provide the overall framework for analyzing and comparing the alternatives and selecting the best alternative for implementation. The alternatives are a No-Build Alternative and a Build Alternative. The Build Alternative has four different design options for the streetcar line. These options are:

- Option A – Streetcar trackway arrangement with both inbound and outbound tracks located in the left travel lanes next to the neutral ground on North Rampart Street, McShane Place, and St. Claude Avenue between Toulouse Street and Elysian Fields Avenue;
- Option B – Streetcar trackway arrangement with the inbound track located in the neutral ground and the outbound track located in the left travel lane on North Rampart Street, McShane Place, and St. Claude Avenue between Toulouse Street and Elysian Fields Avenue;
- Option C – At-grade crossing of the Norfolk Southern Railway tracks at Press Street; and
- Option D – Grade separated crossing of the Norfolk Southern Railway tracks at Press Street with the streetcar line located in an underpass.

Any combination of the trackway arrangement and railroad crossing options (i.e., options A, B, C, and D) described in Section 2.2.3 of Chapter 2.0, Alternatives Considered, could be selected as the locally preferred alternative. The combination of the two track arrangement options (i.e., options A and B) and the two grade crossing options (i.e., options C and D) creates four total options under the Build Alternative for evaluation in the DEIS. The four combinations of options are: (1) options A+C, (2) options A+D, (3) options B+C, and (4) options B+D. For the purpose of evaluation of alternatives, each combination of options is considered to be a distinct alternative.

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<sup>1</sup> Acronyms and abbreviations are defined at their first use in the document. The definitions are not repeated in each chapter. Hence, in review of this chapter there may be acronyms or abbreviations that are not defined since they were used earlier in the document. A complete list of acronyms and abbreviations used in this DEIS is contained in Appendix B.



The evaluation considers each alternative from five different perspectives:

- Effectiveness (Goals Achievement) – This criterion examines how well each alternative helps achieve the purpose of, and satisfy the need for, transportation improvements in the project area. It focuses on how well each alternative helps attain the goals and objectives defined for the project in Chapter 1.0.
- Efficiency (Cost-Effectiveness) – This criterion examines the effectiveness of each alternative in attracting new ridership relative to estimated capital and operating costs. In effect, it relates value received (in terms of benefits obtained) to the resources invested in each alternative.
- Financial Feasibility – This criterion focuses on the RTA's ability to pay for each alternative's capital and operating costs. Consequently, an assessment of potential funding sources and the relative financial feasibility of each alternative was carried out during preparation of this DEIS and is summarized here.
- Equity – Each alternative may benefit certain groups more effectively than other groups. This criterion examines the question of equity from the perspectives of service, financial, and environmental benefits and impacts among affected groups.
- Trade-Offs – The important differences between alternatives are highlighted. This permits decision-makers to apply their individual value judgments with respect to costs and benefits, i.e., what is being given up relative to what is being gained for each alternative. The objective of the trade-offs analysis is to substantiate the rationale for the selection of the alternative, or combination of alternatives, which will become the refined LPA.

The above criteria, as well as public, agency, and other stakeholder comments on the findings of the DEIS will be used to make three decisions. The first decision will be a Build/No-Build decision. A build decision would affirm the decision to implement the Desire Streetcar Line project that was made by the RTA and the RPC, or area's MPO, in association with the FTA in 1999 and 2000.<sup>2</sup> The decision-making process that led to the 1999/2000 decisions is described in Section 2.2.1 in Chapter 2.0. With a no-build decision, the RTA would select the No-Build Alternative with the expectation that no major transportation investment will be implemented in the study area in the foreseeable future. If the decision to build the Desire Streetcar Line were approved, the following additional decisions would be made:

- Track Arrangement – First, decision-makers would decide whether to build Option A with both the inbound and outbound streetcar tracks on North Rampart Street, McShane Place, and St. Claude Avenue between Toulouse Street and Elysian Fields Avenue located in the left travel lanes next to the neutral ground or Option B with the inbound track located in the neutral ground and the outbound track in the left travel lane between Toulouse Street and Elysian Fields Avenue.
- Railroad Crossing – Second, decision-makers would decide whether to build Option C with the crossing of the Norfolk Southern Railway tracks at-grade or Option D with an underpass for the streetcar line.

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<sup>2</sup> The RTA Board of Commissioners adopted the LPA for advancement into PE/DEIS on August 24, 1999. The RPC adopted the project into the region's LRTP on June 20, 2000.

The applicability of the five evaluation criteria to each of the three decisions is illustrated in Table 7-1. The remaining sections in this chapter describe in detail each of the first four evaluation criteria, the evaluation findings associated with each criterion, and the relevance of those findings to the three decisions by comparing trade-offs among the alternatives.

**Table 7-1  
Applicability of Evaluation Criteria to Decisions**

Decisions to be Made	Evaluation Criterion				
	Effectiveness (Goals Achievement)	Efficiency (Cost-Effectiveness)	Financial Feasibility	Equity	Trade-Offs
No-Build or Build	✓	✓	✓	✓	✓
Track Arrangement	✓	✓			✓
Railroad Crossing	✓	✓	✓	✓	✓

Source: Parsons Brinckerhoff.

## 7.2 Effectiveness (Goal Achievement)

This evaluation criterion examines how well each alternative achieves the purpose of, and satisfies the need for, transportation improvements in the study area. It focuses on how well each alternative attains the goals and objectives defined for the project in Chapter 1.0. Its primary focus is on what the Desire Streetcar Line project could achieve over the No-Build Alternative (i.e., the No-Build/Build decision). Effectiveness also relates to the track arrangement and railroad crossing decisions, because the different options provide different levels of streetcar service and have different transportation and environmental consequences.

The goals of the Desire Streetcar Line project and the effectiveness of the alternatives in achieving them are summarized in this section. Each goal is preceded by a brief summary of the transportation problems and needs the goal is intended to address. This is important to understanding the context in which the goal was identified.

### 7.2.1 Goal 1: Provide a Transportation Mode Compatible with the Historic Character of Corridor Neighborhoods

The study area contains the historic French Quarter, Tremé, Faubourg Marigny, and Bywater neighborhoods, all of which date from the eighteenth century and are included on the NRHP. These neighborhoods once were served by several historic streetcar lines, including the Desire (generally, along Bourbon/Dauphine Street and Royal Street), the North Claiborne (along North Claiborne Avenue and Villere Street), and the St. Claude (along North Rampart Street and St. Claude Avenue) streetcar lines. Diesel-powered buses have replaced all of these streetcar lines. However, residents state that the buses are not compatible with the historic character of the neighborhoods. In several locations, the buses must travel along narrow residential streets not well designed for large modern buses, and vibrations from the buses threaten the structural integrity of historic structures located close to many of the streets. Exhaust emissions from idling buses operating on congested streets are another problem. In short, buses are not considered to be compatible with the neighborhoods; hence, the goal of providing a transportation mode compatible with the historic character of corridor neighborhoods.



The achievement of this goal is expressed in terms of three objectives:

1. Reduce the use of diesel- and gasoline-powered buses in the historic neighborhoods;
2. Help preserve the neighborhoods; and
3. Enhance the aesthetic character of the neighborhoods.

The Build Alternative would achieve this goal more effectively than the No-Build Alternative by replacing the current buses with electric-powered streetcars. The vintage-looking streetcars would be more compatible with the historic and aesthetic character of the neighborhoods within the study area than buses.

Comparison of the options under the Build Alternative reveals that the trackway arrangement options would be equally compatible with the historic character of the neighborhoods, although Option A would have less of an adverse effect than Option B because it would preserve more of the neutral ground. However, there would be differences between the effectiveness of the railroad crossing options. The at-grade crossing under Option C would be more effective in preserving the neighborhoods and be more compatible with their aesthetic character than the underpass crossing under Option D. The underpass would have much greater construction impacts from noise and vibration than the at-grade crossing. The anticipated visual and aesthetic changes from construction of the underpass under Option D would be substantial and would have an adverse effect on the Faubourg Marigny and Bywater historic districts.

### **7.2.2 Goal 2: Provide Better Transit Service and Attract More Transit Customers**

The New Orleans CBD, French Quarter, and Medical District have important concentrations of activity and employment for the entire region. The commercial, civic, retail, service, and entertainment activities located within these centers account for much of the employment within the region and attract tourists and visitors from throughout the region and beyond. Although the existing transit system provides the residents and visitors access to the CBD, French Quarter, and Medical District, and to many areas within the corridor, the system does not have either the capacity or the level of service to attract any significant portion of the demand generated by these centers. There is also a lack of connectivity between the existing bus system and other modes of travel that significantly reduces their collective potential in serving the demands of the study area and region. The limited levels of service and lack of capacity and connectivity restrict mobility and reduce access to activities. Without improvements in transit service, the mobility of residents and tourists will be impaired.

The goal of the project is to improve transit service for residents, workers, students, and visitors within the corridor and study area, and attract more transit customers. The achievement of this goal is expressed in terms of two objectives:

1. Improve mobility to, from, and within the corridor; and
2. Improve connectivity between the corridor and the rest of the regional transit system.

The Desire Streetcar Line under the Build Alternative would improve mobility by providing a higher frequency of service operating at higher speeds than buses under the No-Build Alternative. The proposed streetcar stops on the Desire Streetcar Line in the CBD would



be convenient for transfers to and from the Canal Street and St. Charles streetcar lines. Bus transfers would also be convenient at the Poland Avenue terminal stop.

Comparison of the trackway arrangement options indicates that Option B with the inbound track located in the neutral ground and the outbound track in the left travel lane between Toulouse Street and Elysian Fields Avenue would offer faster travel times because streetcar operating speeds would be higher than those with both the inbound and outbound tracks in the left travel lanes next to the neutral ground. Thus, Option B could be considered to be slightly more effective in improving mobility than Option A.

Comparison of the railroad crossing option indicates that Option D with the underpass would be more reliable and result in less delay to transit riders. Therefore, Option D could be considered to be more effective in improving mobility than Option C, and as a result would attract more transit customers, which is a goal of the project. The increase in transit trips under Option D is projected to total approximately 400 daily in 2025. However, Option D would eliminate two stops, thus reducing service to the Faubourg Marigny and Bywater neighborhoods. All of the options are equally effective in improving connectivity among modes.

### **7.2.3 Goal 3: Provide More Efficient Transit Service**

This goal is intended to provide more efficient transit service to benefit both the corridor and the regional transit system. The efficiency of existing transit services operated by the RTA is highly related to the traffic congestion that exists on the major arterials serving the corridor. During peak hours, North Rampart Street, St. Claude Avenue and North Claiborne Avenue are congested with delays due to high traffic volumes and buses stopping in the outside curb lane for passenger loading and unloading. Congestion increases delay to buses, which affects travel time and reduces ridership. Poor traffic conditions and consequent congestion also affect air quality from vehicle emissions, a major source of air pollution, particularly as a result of idling diesel buses spending hours of delay moving slowly through heavily congested intersections.

The achievement of this goal is expressed in terms of three objectives:

1. Reduce traffic congestion and improve air quality;
2. Eliminate duplication of service; and
3. Maintain or lower the RTA system's operating costs and recurring capital costs.

Under the No-Build Alternative, buses would continue to operate in mixed traffic with automobiles. Congestion and emissions from buses would remain unchanged. No changes are anticipated in bus routings to eliminate duplications of service. Operating and capital costs for bus service in the study area also would remain unchanged.

The proposed streetcar project under the Build Alternative would have streetcars operating in the neutral ground of St. Claude Avenue downriver of Elysian Fields Avenue where the street is more congested due to commercial traffic. Streetcars in the neutral ground would have better transit travel times than the existing buses, and could lead to increased ridership. The project also would result in the removal of some buses from the corridor, thus reducing delays to traffic from buses stopping to pick up or discharge passengers. Thus, compared to the No-Build Alternative, the Build Alternative would be more effective in achieving this goal.



Comparison of the trackway arrangement options shows that Option B with the inbound track located in the neutral ground and the outbound track in the left travel lane between Toulouse Street and Elysian Fields Avenue would result in less impact to traffic than Option A with both the inbound and outbound tracks in the left travel lanes next to the neutral ground. Although the levels of service would generally be the same, Option B could be considered to be more efficient than Option A because of the reduced delay to traffic. Under Option B, inbound streetcars would operate in the neutral ground. This would result in less delay to streetcars than under Option A where the inbound streetcars would operate in mixed traffic. The reduction in streetcar delay under Option B would translate into slightly lower O&M costs than Option A. Thus, Option B could be considered to be more efficient.

Option D would result in better transit travel times and improved service reliability by eliminating delays to the streetcar from train operations that would continue to exist under Option C with its at-grade railroad crossing. Although service reliability would be improved, O&M costs for vehicle operations would be approximately the same under both options. However, O&M costs for facility operations would be slightly higher under Option D than C because maintenance costs for the underpass would be higher than for the at-grade crossing.

#### **7.2.4 Goal 4: Provide Economic and Transportation Benefits**

Lack of adequate transportation connections between the study area neighborhoods and CBD hinders efforts to promote economic revitalization. The study area neighborhoods of Tremé, Faubourg Marigny, St. Roch, and Bywater are among the oldest residential neighborhoods in New Orleans. They were developed largely in the pre-automobile age when residents relied on walking and public transit for access to services and activities. Very few of the homes have off-street parking. With the post-war shift to automobile reliance, the densely built older homes with no off-street parking lost their appeal and the neighborhoods witnessed a period of decline. In the last ten years, there has been some renewal of interest in these historic neighborhoods. However, bus service from the neighborhoods to employment, entertainment, and shopping activities in the French Quarter, the CBD, and the Medical District is slow and indirect. With improved transportation connections, these neighborhoods could become more attractive to people seeking affordable, historical housing within easy reach of New Orleans' active center. Improved transportation would also make these neighborhoods more accessible to tourists, and help promote economic revitalization.

The purpose of this goal is to provide economic and transportation benefits to corridor residents, institutions, and businesses. The achievement of this goal is expressed in terms of three objectives:

1. Provide better transit access to corridor jobs;
2. Serve key activity centers and commercial areas; and
3. Support on-going and new neighborhood revitalization efforts.

The Build Alternative would achieve this goal more effectively than the No-Build Alternative because the streetcar line would provide a higher frequency of service operating at higher speeds and with a greater reliability than buses under the No-Build Alternative. As demonstrated by the St. Charles streetcar line, the restoration of streetcar service along North Rampart Street/St. Claude Avenue could help revitalize the neighborhoods by making them more accessible to tourists. Many of the tourists include



a streetcar ride as part of their experience in New Orleans. All of the options under the Build Alternative would be equally effective in achieving this goal. However, economic impacts from construction spending would be greater under Option D because of the higher construction cost of the underpass.

### 7.3 Efficiency (Cost-Effectiveness)

This evaluation criterion provides local decision-makers with a means to compare the total expected costs of each alternative to its expected ridership benefit, which is the number of additional annual new transit riders attracted to the proposed project. The evaluation of cost effectiveness uses the FTA New Starts cost-effectiveness measure. Like effectiveness, the primary focus of efficiency is on what the project could achieve over the No-Build Alternative (the No-Build/Build decision). Efficiency also relates to the trackway arrangement and railroad crossing decisions, because the different options provide different levels of streetcar service at different costs.

The incremental cost per incremental new rider, or cost-effectiveness index, is used by the FTA to compare proposed New Start projects from across the country and make recommendations for funding. The cost of all New Start projects seeking discretionary New Starts funding far exceeds available funds. Each year, the FTA rates the competing projects and submits funding recommendations to Congress. The cost-effectiveness index is one of several factors considered in the ratings. Others include mobility improvements, environmental benefits, operating efficiencies, local commitments to transit supportive land use, the degree of local financial commitment, and project management.

The index used to calculate cost effectiveness is as follows:

$$\text{Cost Effectiveness Index} = (\Delta \$CAP + \Delta \$O\&M) / \Delta \text{Annual Linked Trips}$$

where the  $\Delta$  's represent changes in costs and linked trips resulting from the New Starts investment compared to the New Starts baseline, and

$\$CAP$	=	Total capital costs, annualized over the life of the project based on the useful life of each component and a 7 percent discount rate;
$\$O\&M$	=	Annualized operating and maintenance costs; and
<i>Annual Trips</i>	=	Annual transit ridership, measured in "linked" trips.

Alternatives that have low cost-effectiveness index values are more cost-effective than alternatives with high values. A cost-effectiveness ratio greater than \$20.00 is generally considered higher than desirable to be competitive with other transit systems seeking federal funding. A cost-effectiveness ratio of \$10.00 to \$20.00 is generally competitive. A cost-effectiveness ratio of \$10.00 or less is considered highly competitive.

Table 7-2 presents the input data and results of the cost effectiveness analysis of the Build Alternative options using the No-Build Alternative as a baseline for comparison. The cost-effectiveness values range from a low of \$20.44 to a high of \$25.56. The options with the at-grade railroad crossing are the most cost effective due to their much lower costs. The underpass options (i.e., Options A+D and B+D) reduce the project's cost effectiveness by



**Table 7-2  
 Cost-Effectiveness**

Streetcar Options	Annual Costs (millions)		Annual Riders (millions)	Change in Annual Costs Over Baseline (millions)		Change in Riders Over Baseline (millions)	Cost Effectiveness Per Change in Rider
	Capital Cost	O & M Cost		Capital Cost	O & M Cost		
A+C	\$8.70	\$92.86	32.16	\$7.04	\$2.77	0.48	\$20.44
A+D	\$11.12	\$92.88	32.16	\$9.46	\$2.78	0.48	\$25.56
B+C	\$8.59	\$92.86	32.16	\$6.93	\$2.77	0.48	\$20.21
B+D	\$11.09	\$92.88	32.16	\$9.43	\$2.78	0.48	\$25.44

Source: Parsons Brinckerhoff.

approximately 25 percent. The cost-effectiveness index differences between the trackway arrangement options are insignificant - \$20.21 versus \$20.44, a difference of approximately 1 percent.

These findings indicate that the cost effective indices for the at-grade options are slightly higher than the \$20.00 threshold of competitiveness for federal funding, while the underpass options are significantly higher than desirable to be competitive with other transit projects. The reason for the undesirable index values is the low number of incremental new riders over the baseline or No-Build Alternative. Most of the riders attracted by the project would be existing bus riders in the corridor. The majority of new riders are projected to be visitors who would not likely ride buses in the corridor. Additional non-visitor riders will be required to produce a desirable cost effective index below the \$20.00 threshold of competitiveness for federal funding. Otherwise the costs will have to be reduced for the underpass options in order to achieve a more desirable index.

## 7.4 Financial Feasibility

A further consideration in the selection of a preferred alternative is the RTA's ability to finance the associated capital and operating costs. Chapter 6.0, Financial Analysis, summarized RTA's Financial Plan including costs and proposed funding sources for the Build Alternative. It also notes some of the uncertainties that are implicit in the financial plan.

A financial feasibility assessment identifies the financial implications of each alternative, enabling federal and local decision-makers to judge the practicality of building and operating each of them. As such, the financial feasibility criterion relates to all decisions that have substantive differences in capital and operating costs. Thus, this criterion is related to the No-Build/Build decision, as well as to the decision about terminus and railroad crossing options. The difference in costs of the track arrangement options is not considered significant enough for financial feasibility to be relevant to the decision.

The Financial Plan shows that Build Alternative options A+C and B+C would be financially feasible under a certain set of economic growth, funding, schedule, and other assumptions. Noteworthy assumptions are:

- Sales tax revenues will grow by approximately 3 percent per year;
- The FTA will fund 80 percent of the Canal streetcar line and 60 percent of the Desire Streetcar Line;
- The RTA will be able to borrow an additional \$10.4 million, backed by the existing dedicated sales tax on hotel and motel rooms.



The federal share for both the Canal and Desire Streetcar Line projects is a significant unknown that may not be resolved before Congress reauthorizes the FTA program late in 2003.

The RTA Financial Plan does not address the underpass options (i.e., Options A+D or B+D), which would increase the capital cost by some 25 percent, or the options under which the streetcar would have a temporary or permanent terminus at Franklin Avenue. The underpass option could require additional borrowing, the deferral of other capital expenditures, or development of new capital funding sources. A permanent terminus at Franklin Avenue would be the most financially feasible of the streetcar options, because its capital costs are less than those of the longer options.

The Financial Plan shows that the RTA will maintain sufficient operating cash flow to operate both the Desire Streetcar Line from Canal Street to Poland Avenue and RTA's other bus and streetcar service. The Desire Streetcar Line is projected to result in a net increase in operating costs of \$1.7 million (2006 dollars) per year, which would represent a very small element of the RTA's overall operating budget. Under the assumptions stated in the Financial Plan, the RTA operating budget remains balanced over the 20-year projection period.

## 7.5 Equity

Equity is defined as the fairness of the distribution of costs, benefits, and impacts across various population subgroups. The equity of the alternatives considered was evaluated with respect to the following three categories:

- Service Equity – The extent to which transit provides service to various population segments, particularly those that tend to be transit-dependent;
- Financial Equity – The distribution of the project's cost across population segments through funding arrangements covering the local contribution to construction and operation; and
- Environmental Equity – The incidence of any substantial environmental impacts, particularly in low-income and minority communities immediately adjacent to proposed facilities.

This criterion relates to the decisions to be made by addressing the following questions:

- Would the service provided by the Desire Streetcar Line project be equitably distributed among various population groups?
- Would funding the Desire Streetcar Line project place an unequal burden on any particular RTA community or population group?
- Would the implementation of the Desire Streetcar Line and any particular track arrangement or railroad crossing option place an inequitable burden on minority or low-income populations or are the impacts evenly distributed among communities of various socio-economic characteristics?

Following is a summary of the findings on the service, financial, and environmental equity of the alternatives considered.



### **7.5.1 Service Equity**

Improved, enhanced, and/or increased accessibility to employment opportunities under the Build Alternative would result in direct and indirect benefits to all persons in the study area. The Desire Streetcar Line stops are distributed such that they provide equitable service to the population groups found within the study area, including in particular the transit dependent, elderly, minority, and low-income groups. The distribution also provides accessibility to employment opportunities.

The No-Build Alternative would provide accessibility to transit service similar to the Build Alternative for all population groups and employment centers but would lack the speed, reliability, and frequency of service provided by the streetcar line.

### **7.5.2 Financial Equity**

Sales taxes on hotel and motel rooms, which provide the RTA with local funds, do not affect one population group substantially more than others. Therefore, financial equity is not an issue of concern either under the Build Alternative or the No-Build Alternative.

### **7.5.3 Environmental Equity**

The Desire Streetcar Line project would not result in inequitable environmental impacts on low-income and minority communities and businesses. As with any major transportation project, it is likely that residents within the project area will endure some impacts because of the construction and operation of the streetcar project. The primary potential impacts would be related to increased noise levels, visual changes and effects on cultural resources, water quality and contamination impacts from the underpass, and construction impacts. These impacts, however, would not be disproportionately high or adverse for low-income and minority residents of the area.

Among the positive effects of the project for these residents are enhanced mobility options, greater access to regional jobs and non-job opportunities such as educational, shopping and entertainment activities, and potential revitalization of the neighborhoods. Site-specific impacts on particular properties along the alignment would vary slightly among the track arrangement and railroad crossing options; but the options would not have substantially differing neighborhood impacts. However, the Faubourg Marigny Improvement Association has expressed concern regarding the impact of diverted traffic during construction of the underpass at the railroad crossing.

No environmental impacts would occur under the No-Build Alternative.

## **7.6 Trade-Offs**

The purpose of the trade-offs analysis is to provide decision-makers with a comparison of the alternatives using the key differences among the alternatives across all four perspectives – effectiveness, efficiency, financial feasibility, and equity. In selection of the LPA, decision-makers will consider the evaluation results presented in this document and comments from government agencies and the public during the public hearings and circulation period for the DEIS.

As described in Chapter 5.0, Environmental Consequences, the Build Alternative and its four options were evaluated on the basis of environmental impacts. The trade-offs analysis highlights the environmental impacts that were found to be significantly different.



These include transportation, visual quality and aesthetics, cultural and historic resources; Section 4(f) impacts on historic resources, water quality, contamination, and construction impacts.

In the comparison of trade-offs, attention is given first to the No-Build versus Build decision. Second, the trackway arrangement decision is addressed through a comparison of the trade-offs between the left travel lane versus the neutral ground option for the inbound track of the streetcar alignment between Toulouse Street and Elysian Fields Avenue. Third, trade-offs involved in the decision on the crossing of the Norfolk Southern Railway tracks are addressed – whether the streetcar line crossing is at grade or in an underpass.

### 7.6.1 No-Build Versus Build Alternative Trade-Offs

Table 7-3 presents a comparison of trade-offs between the No-Build and Build alternatives. The Desire Streetcar Line under the Build Alternative would be more effective in meeting the project goals and objectives identified in Chapter 1.0 than the No-Build Alternative. Most importantly, it would improve mobility and support neighborhood revitalization efforts. The No-Build Alternative would continue to operate bus service without any major transit investment in the study area.

**Table 7-3  
Comparison of No-Build Alternative Versus Build Alternative Trade-Offs**

Evaluation Criterion	Alternative	
	No-Build	Build
Effectiveness		
• Provide a Transportation Mode Compatible with Historic Character of Neighborhoods	○	●
• Provide Better Transit Service and Attract More Transit Customers	○	●
• Provide More Efficient Transit Service	○	●
• Provide Economic and Transportation Benefits	○	●
Efficiency (Cost-Effectiveness)	●	○
Financial Feasibility	●	○
Equity	●	○
Air Quality Impacts	○	●
Transportation Impacts		
• Transit Travel Time	○	●
• Transit Ridership	○	●

Rating: ● Better ○ Worse ● Neutral

Source: Parsons Brinckerhoff.

In terms of cost-effectiveness, the Build Alternative would achieve the purpose and need in an efficient manner. Although implementation of the Build Alternative represents a significant investment of local financial resources, the Build Alternative is financially feasible; however, debt would be incurred during the construction period. The Desire Streetcar Line service under the Build Alternative would be provided on an equitable basis in terms of population groups served, sources of funds, and in general, environmental impacts.

Because the No-Build Alternative encompasses planned transit and highway improvements that will be built whether or not the Desire Streetcar Line project is built, the No-Build Alternative is considered to have no environmental impacts, but the project benefits of the Build Alternative, likewise, would not occur. The alternatives would differ from the perspectives of transportation and air quality impacts.



Implementation of the Build Alternative would have only a minimal effect on forecast vehicle miles traveled in 2025 in the New Orleans region encompassed by the regional travel model compared to the No-Build Alternative. The Build Alternative would result in a slight increase in total transit trips because of the higher level of transit service and greater reliability provided by the Desire Streetcar Line. However, travel-time benefits for transit users would be notable for transit trips that divert from bus to streetcars under the Build Alternative. The Build Alternative would shift a substantial number of transit trips from buses to streetcars that would be less affected by traffic congestion, and would consistently provide lower transit travel times than the No-Build Alternative. The streetcar service provided under the Build Alternative could have modest localized traffic impacts at intersections where the trackway is in the neutral ground and along segments where the streetcars will be operating in mixed-traffic. The Build Alternative would contribute to a small reduction in regional motor vehicle emissions.

### 7.6.2 Trackwork Arrangement Trade-Offs

The comparison of trade-offs between the two track arrangement options under the Build Alternative is presented in Table 7-4. Both track arrangement options would be equally effective in meeting the purpose and need established for the project. Because of its lower cost, Option B with the inbound track in the neutral ground would be slightly more cost effective than Option A with both the inbound and outbound tracks in the left travel lanes. However, the difference is considered to be insignificant so the cost effectiveness of the two options is considered to be the same.

**Table 7-4  
Comparison of Track Arrangement Trade-Offs**

Evaluation Criterion	Option	
	A	B
<b>Effectiveness</b>		
• Provide a Transportation Mode Compatible with Historic Character of Neighborhoods	○	○
• Provide Better Transit Service and Attract More Transit Customers	○	○
• Provide More Efficient Transit Service	○	●
• Provide Economic and Transportation Benefits	○	○
<b>Efficiency (Cost-Effectiveness)</b>	○	○
Financial Feasibility	○	○
Equity	○	○
<b>Environmental Impacts</b>		
• Land Use/Neighborhoods	○	○
• Visual Quality/Aesthetics	●	○
• Air Quality	○	○
• Noise and Vibration	○	○
• Water Quality	○	○
• Historic and Cultural Resources	●	○
• Parklands/Section 4(f)	○	○
• Geology/Soils	○	○
• Contamination	○	○
Traffic Impacts	○	●
Construction Impacts	○	○

Rating: ● Better ○ Worse ● Neutral  
Source: Parsons Brinckerhoff



Although capital costs would be approximately \$1.4 million more under Option A with both tracks in the left travel lanes, the option is still financially feasible, so no financial issues exist with either option. Likewise, no equity issues exist with either option. Environmental impacts would be similar under both options. The principal difference is that Option A would preserve more of the neutral ground and thus have less of an adverse effect on the historic character of the districts through which it passes. Option B would have the least impact on traffic because the inbound streetcars would be located in the neutral ground between Poland Avenue and Canal Street/Basin Street. Depending on traffic congestion, transit travel times may be lower and one less streetcar may be required under Option B. During stakeholder meetings, residents expressed a strong preference for Option A because it preserves the neutral ground.

### 7.6.3 Railroad Grade Crossing Trade-Offs

Table 7-5 presents the comparison of trade-offs between the two railroad crossing options under the Build Alternative. The options would be equally effective in meeting the project goals and objectives; however, the at-grade crossing would better address the goal of providing a transportation improvement compatible with the neighborhoods, while the underpass option would better address the goal of providing more efficient transit service.

**Table 7-5  
Comparison of Railroad Crossing Trade-Offs**

Evaluation Criterion	Option	
	C	D
Effectiveness		
• Provide a Transportation Mode Compatible with Historic Character of Neighborhoods	●	○
• Provide Better Transit Service and Attract More Transit Customers	○	●
• Provide More Efficient Transit Service	○	●
• Provide Economic and Transportation Benefits	○	●
Efficiency (Cost-Effectiveness)	●	○
Financial Feasibility	●	○
Equity	○	○
Environmental Impacts		
• Land Use/Neighborhoods	●	○
• Visual Quality/Aesthetics	●	○
• Air Quality	○	○
• Noise and Vibration	○	○
• Water Quality	●	○
• Historic and Cultural Resources	●	○
• Parklands/Section 4(f)	●	○
• Geology/Soils	●	○
• Contamination	●	○
Traffic Impacts	○	○
Construction Impacts	●	○

Rating: ● Better ○ Worse ○ Neutral  
Source: Parsons Brinckerhoff

The at-grade crossing under Option C would be more compatible with the adjacent neighborhoods than the underpass crossing of Option D. The anticipated visual and aesthetic changes from construction of the underpass would be substantial and are expected to have potential adverse effects on the Faubourg Marigny and Bywater historic districts. Impacts during construction also would be greater for the underpass



than for the at-grade crossing. Potential impacts would consist of increased noise and vibration from construction equipment, impacts on water quality from disturbance of contaminated soils and groundwater that exist near the crossing, and impacts on residents from exposure to contaminated dust released during soil excavation.

By grade separating the streetcar operations at the railroad, the streetcar line would be able to operate more reliable service because it would be subject to less delay than the at-grade crossing. The reduced delay and more reliable service under Option D would have a positive impact on ridership. Thus, the underpass could be considered to be more effective and address the goal of providing better transit service and attracting more transit riders.

From the perspective of cost effectiveness, Option C with the at-grade crossing of the railroad tracks is more cost effective because of its significantly lower capital cost – \$27 million less than Option D. The significantly higher cost of the underpass reduces the project's cost effectiveness by approximately 25 percent.

Option D with the underpass is not financially feasible with existing local sources of funds. The higher capital cost of the underpass option could require additional borrowing, the deferral of other capital expenditures, or development of new capital funding sources. In terms of equity, neither of the options would result in inequitable environmental impacts on low-income and minority communities and businesses. As with any major transportation project, it is likely that residents within the project area will endure some impacts because of the construction and operation of the streetcar project. These impacts, however, would not be disproportionately high and adverse for low-income and minority residents of the area. The only equity issue that exists between the options is the Faubourg Marigny Improvement Association's concern that the neighborhood will be impacted by diverted traffic during construction of the underpass in Option D. Option D would be most desirable from a railroad operations standpoint. Representatives of the Norfolk Southern Railway have expressed a preference for the underpass. However, local residents prefer Option C.

Finally, the two railroad crossing options were found to have significantly different environmental impacts. The underpass would have greater visual and aesthetic impacts, cultural resource impacts, Section 4(f) impacts, and construction impacts, all requiring mitigation.

## **7.7 Conclusion**

In making a decision on Build versus No-Build, the costs of the Desire Streetcar Line under the Build Alternative must be weighed against achievement of the project goals and objectives. The Build Alternative addresses the transportation needs of the study area, particularly the need for improvements in mobility. It also provides the necessary improvements in transportation facilities and services to support neighborhood revitalization efforts. Although the Build Alternative represents a significant investment of local financial resources, it would achieve the purpose and need in an efficient manner, and it is financially feasible. The principal trade-off is its environmental impacts. The No-Build Alternative would cause no environmental impacts, but it would not provide the mobility and neighborhood revitalization benefits of the Build Alternative.

Given the decision to build the Desire Streetcar Line, two additional decisions must be made. The first decision is on track arrangement between Toulouse Street and Elysian Fields Avenue. This decision involves trade-offs between costs and preserving the



neutral ground. Locating both the inbound and outbound tracks in the left travel lanes under Option A would preserve more of the neutral ground, with only the streetcar stops located in the neutral ground. Local residents also prefer this option. However, costs and traffic impacts would be greater than under Option B with the inbound track in the neutral ground. Because of the potential for reduced traffic impacts, the New Orleans DPW prefers Option B.

The second build decision pertains to the railroad crossing options – whether the streetcar cross the Norfolk Southern Railway tracks at grade or in an underpass. This decision involves trade-offs in transit service levels, costs, and environmental impacts. By grade separating the streetcar operations at the railroad, the streetcar line would be able to operate more reliable service because it would be subject to less delay than the at-grade crossing. The reduced delay and more reliable service under Option D would have a positive impact on ridership. Thus, the underpass could be considered to address the goal of providing better transit service and attracting more transit customers more effectively. However, this goal can be achieved only at a significantly high cost, which reduces the project's cost effectiveness by approximately 25 percent. Furthermore, the higher cost of the underpass cannot be funded with existing local revenue sources. New funding sources will have to be investigated if this option is selected. In addition, the at-grade crossing under Option C would be more compatible with the adjacent neighborhoods than the underpass crossing under Option D and would present fewer environmental impacts. Impacts during construction would be greater for the underpass than the at-grade crossing. Implementation of the at-grade crossing could be difficult given that representatives of the Norfolk Southern Railway are opposed to the at-grade option. An agreement with the railroad will be required prior to issuance of a ROD for the project. The residents of the neighborhoods, on the other hand, are opposed to the underpass option because of its potential negative impacts on the neighborhood.

Because of issues related to the railroad crossing, a decision may be made to implement the project in phases. The first phase would be from Canal Street to Franklin Avenue and the second phase would be from Franklin Avenue to Poland Avenue and beyond to the Lower Ninth Ward across the Industrial Canal. The phasing of the project would create a temporary terminus at Franklin Avenue. The impacts of a temporary terminus at Franklin Avenue are relatively minor and would consist primarily of the reconfiguration of bus service. No new environmental impacts should result from the temporary terminus. However, ridership would be less than the full-length project and fewer neighborhoods would be served with a terminus at Franklin Avenue. The decision on phasing of the project, as well as the other design decisions, will be subject to comments received during the comment period on the DEIS.