



# IH 35 PEL Study Report

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## 1.0 Introduction

In September 2011, the Alamo Regional Mobility Authority (Alamo RMA) and Texas Department of Transportation (TxDOT), in cooperation with the San Antonio-Bexar County Metropolitan Planning Organization (MPO), began the Interstate Highway (IH) 35 Planning and Environmental Linkages (PEL) Study to identify transportation needs and potential improvements for IH 35 from Hubertus Road/Farm-to-Market Road (FM) 1103 in Schertz to the intersection with IH 37/U.S. Highway (US) 281 in downtown San Antonio, and a segment of IH 410 that connects IH 35 to IH 10. The purpose of the IH 35 PEL Study Report is to summarize the multiple elements of the IH 35 PEL Study and explain how each contributed to the overall study. Multiple technical reports are provided as appendices to this report in order to provide additional, detailed analysis or explanation that is not captured in this document. **Appendix A** provides a history of previous projects in the corridor. **Appendix B** supplies detailed information supporting the need and purpose of the project. **Appendices C and D** contain documentation of the agency coordination and public involvement efforts which have taken place since the inception of the IH 35 PEL Study. **Appendix E** provides baseline environmental conditions in the form of an affected environment technical report. The alternative concepts development and evaluation technical report provided in **Appendix F** describes the process and key technical findings used to recommend alternative concepts to study through future environmental analyses under the National Environmental Policy Act (NEPA) process.

## 2.0 Study Overview and Background Information

### 2.1 What is a PEL Study?

A PEL Study represents an approach that fosters a collaborative and integrated transportation decision-making process. A PEL Study is generally executed early in the transportation planning process when decision-makers consider environmental, community, and economic goals and carry these goals through to the project development and environmental review process, and ultimately through design, construction, and maintenance. The goal of PEL is to create a seamless decision-making process that minimizes duplication of effort, promotes environmental stewardship, and reduces delay from planning through project implementation.<sup>1</sup>

Many PEL studies can be classified as corridor or subarea studies because they are more focused than regional planning efforts typically conducted by a Metropolitan Planning Organization (MPO), but coarser than traditional project-specific environmental analyses typically conducted during the NEPA process. Corridor and subarea studies can be used to produce a wide range of analyses or decisions for Federal Highway Administration (FHWA) review, consideration, and possible adoption during the NEPA process for an individual transportation project, including.<sup>2,3</sup>

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<sup>1</sup> FHWA. 2008. *Planning and Environmental Linkages Implementation Resource Guide*.

<sup>2</sup> FHWA. 2011. *Guidance on Using Corridor and Subarea Planning to Inform NEPA*.

<sup>3</sup> AASHTO. 2008. *Using the Transportation Planning Process to Support the NEPA Process*.

- Purpose and need or goals and objective statement(s);
- General travel corridor and/or general mode(s) definition;
- Preliminary screening of alternatives and eliminations of unreasonable alternatives;
- Basic description of the environmental setting; and/or
- Preliminary identification of environmental impacts and environmental mitigation.

In order to be seamlessly incorporated into the NEPA process, all corridor and subarea studies utilizing the PEL Study approach must adhere to certain standards and must include extensive public involvement and agency coordination. The regulations for a PEL Study are formalized in the *Statewide Transportation Planning; Metropolitan Transportation Planning; Final Rule (23 CFR 450)*, which details how results or decisions of transportation planning studies may be used as part of the overall project development process consistent with NEPA. Appendix A to Part 450—*Linking the Transportation Planning and NEPA Processes (23 USC 139)* describes how information, analysis, and products from transportation planning can be incorporated into and relied upon in NEPA documents under existing laws.<sup>4</sup> Some of the key criteria that a Federal agency must consider in deciding whether to adopt planning-level analyses or decisions in the NEPA process include:<sup>5</sup>

- Involvement of interested state, local, tribal, and Federal agencies;
- Public review;
- Reasonable opportunity to comment during the development of the corridor or subarea planning study;
- Documentation of relevant decisions in a form that is identifiable and available for review during the NEPA scoping process and can be appended to or referenced in the NEPA document; and
- The review by FHWA and the Federal Transit Administration (FTA), as appropriate.

To help maximize the utility of the results from subarea or corridor plans to inform NEPA, FHWA has developed a PEL Questionnaire. The questionnaire is intended to act as both a guide and summary of the planning process and ease the transition from planning to NEPA analysis. The questionnaire is consistent with the planning regulations contained in 23 CFR 430 and other FHWA policies on the PEL process. The IH 35 PEL Study was conducted in accordance with the regulations provided in 23 CFR 450 and the completed FHWA PEL Questionnaire for the study is a stand-alone document that is included as a supplement to this report.

## 2.2 IH 35 PEL Study Overview

### 2.2.1 Purpose of IH 35 PEL Study

The IH 35 PEL Study seeks to build upon the results of previous planning studies, such as the *Northeast IH 35 Corridor 1996 Major Investment Study (MIS)*, the *I-35 Corridor Advisory Committee Plan (My 35 Plan)*, and the San Antonio-Bexar County MPO's *Mobility 2035 Plan*. These plans have all identified a

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<sup>4</sup> FHWA. 2008. *Planning and Environmental Linkages Implementation Resource Guide*.

<sup>5</sup> AASHTO. 2008. *Using the Transportation Planning Process to Support the NEPA Process*.

need for transportation improvements within the Study Area, but have not been advanced to the NEPA process for further development and impacts analysis. The PEL approach provides a tool for re-engaging the public and agencies in developing improvements for this section of the IH 35 corridor and creates a link between past, current, and future transportation decisions in the Study Area, thus potentially minimizing any duplication of effort and time lost between studies. Additionally, this PEL study has the potential to shorten the time needed to implement a project by allowing planning-level decisions to be carried into future, more detailed environmental studies. Ultimately, the goal of this PEL Study is to help plan for long-term transportation improvements along IH 35. In order to produce results that will be most useful to future NEPA studies, the IH 35 PEL Study:

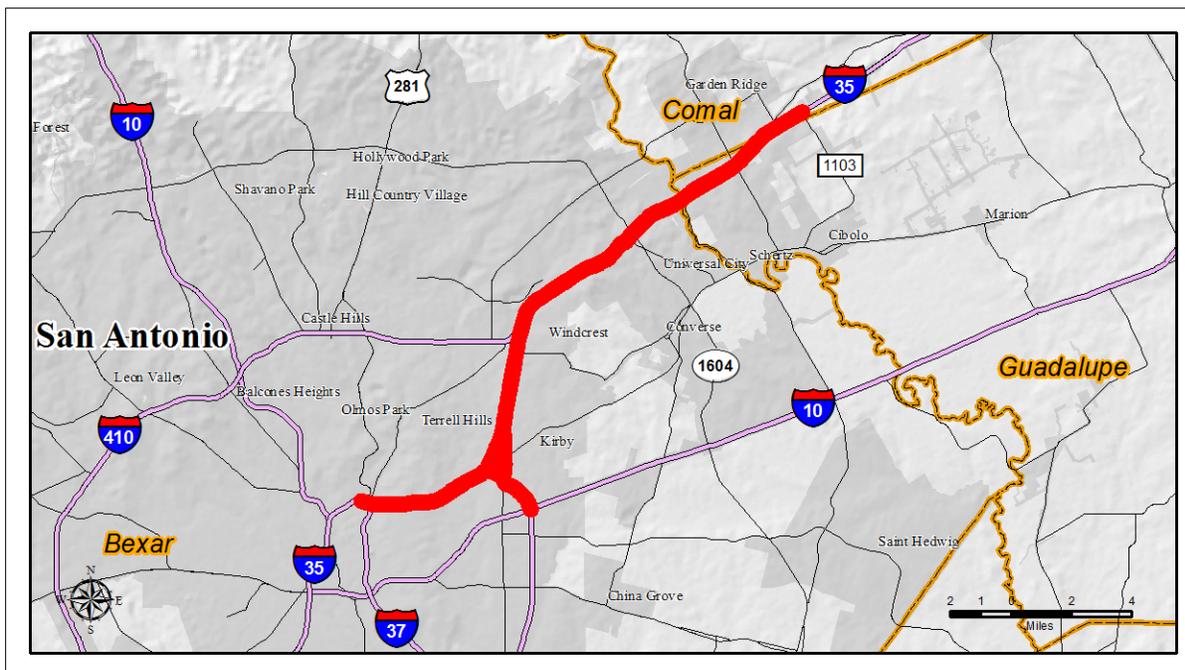
- Engaged stakeholders (public, agencies, etc.) early and often throughout the planning process;
- Identified the transportation needs and issues within the Study Area;
- Identified potential solutions (called alternative concepts) to meet the identified needs, and evaluated them for their potential mobility benefits and impacts;
- Recommended viable transportation alternative concepts that can be carried forward into future, more specific environmental studies; and
- Documented all activities, coordination, and results related to the IH 35 PEL Study.

### **2.2.2 IH 35 PEL Study Area**

In the broad context, the existing IH 35 corridor spans approximately 550 miles across the state of Texas from the Mexican border to the Oklahoma state line. The corridor serves as the primary trade route for North American Free Trade Agreement (NAFTA) traffic between Mexico and Canada. As the only Interstate Highway connecting Mexico and Canada through the U.S. heartland, the majority of Mexico's trade with the U.S. and Canada passes through Texas along the IH 35 corridor via commercial trucks and rail. The IH 35 corridor is considered to be one of the most critical corridors in the state of Texas in terms of future growth and economic development. Thus, the IH 35 corridor is the backbone of the Texas economy and plays a critical role in improving business productivity in the state.

More locally, IH 35 in the San Antonio region is uniquely positioned to serve both the local and regional travel demand of area residents and employees in addition to facilitating national and international trade movements. As a primary trade and travel route for the region, IH 35 serves a critical role in the efficient function of the regional transportation system. Located within this region, the IH 35 PEL Study Area (Study Area) is approximately 24.3 miles in length and extends from downtown San Antonio to north of San Antonio in Schertz. The Study Area includes approximately 21.3 miles of the existing IH 35 facility from the intersection of US 281/IH 37 in downtown San Antonio to FM 1103 in Schertz, and includes a 3 mile section of existing IH 410 from IH 35 to IH 10 northeast of downtown San Antonio. The Study Area includes a ¼-mile buffer along each side of the existing IH 35 and IH 410 facility center-lines between the study termini to form the outer boundary of the study limits. A map depicting the approximate IH 35 PEL Study Area is provided in **Figure 1**.

Figure 1 – IH 35 PEL Study Area Map



## 2.3 Previous Plans and Studies

There have been numerous previous studies conducted within the IH 35 PEL Study Area. Many of these studies have identified the need for transportation improvements in the Study Area but have not progressed to the environmental study or implementation phases of project development due to a lack of funding. This section summarizes several of the major plans and studies that are relevant to the PEL Study, including the San Antonio-Bexar County MPO's *Mobility 2035 Plan*, 1996 *Northeast Corridor Major Investment Study* (MIS) and the *My 35 Plan*. **Appendix A – IH 35 PEL Study Summary of Previous Studies** contains a detailed account of the previous studies conducted within the Study Area.

### 2.3.1 San Antonio-Bexar County MPO Plan

The San Antonio-Bexar County MPO is responsible for long-range transportation planning in the greater San Antonio metropolitan area. Their most recent Metropolitan Transportation Plan (MTP) is the San Antonio-Bexar County MPO *Mobility 2035 Plan*. This multi-modal plan forecasts population and employment growth and transportation needs and solutions based on that growth for the next 25 years. The *Mobility 2035 Plan* also communicates the region's transportation vision, goals and strategies for surface modes of transportation. The project list is constrained by the amount of funding that is anticipated to be available to the region over the life of the plan, and the plan identifies over \$11.5 billion in funded transportation improvements for the region over the 2010-2035 time period.<sup>6</sup> Among these improvements, the *Mobility 2035 Plan* identifies the need for additional roadway capacity in the IH 35 PEL Study Area along IH 35 from Schertz Parkway to IH 37/US 281 in downtown San Antonio.

<sup>6</sup> *Mobility 2035 Plan*, Page ES-12. San Antonio-Bexar County MPO (2009).

Additionally, the plan lists operational improvements planned on IH 35 from FM 3009 to Judson Road and from IH 410N to IH 37, including a direct connector at IH 35 and IH 410S. These IH 35 improvements total over \$2.1 billion in estimated cost. There is only one planned improvement for the section of existing IH 410 located in the Study Area, which involves the installation of a concrete median barrier and illumination enhancements from IH 35N to IH 10E.<sup>7</sup>

### **2.3.2 Northeast (IH 35) Corridor Major Investment Study**

The *Northeast (IH 35) Corridor MIS* was sponsored by the San Antonio-Bexar County MPO and performed in collaboration with TxDOT and VIA Metropolitan Transit (VIA) in 1996. The project Study Area extended along IH 35 from IH 37 in downtown San Antonio to Loop 1604 in northeastern Bexar County. It also included the IH 410 roadway segment that connects IH 35 to IH 10. The MIS evaluated the transportation issues in the corridor and determined that “travel demands on the corridor have exceeded available capacity. The resulting congestion is inhibiting the movement of people in cars and transit, delaying the delivery of goods by local, interstate, and international trucks, increasing the potential for accidents, and consuming more energy.”<sup>8</sup> To address these issues, the MIS defined, developed, and evaluated eight alternative strategies, which were divided into three categories:

- Base Case – Maintain existing transportation system and near future committed improvements
- Minimal Improvements – Minimal corridor operating system improvements and improved bus service
- Major Improvements – Safety and operations improvements at major interchanges

The MIS identified a Locally Preferred Alternative which incorporated elements of several alternative strategies and included major capacity improvements to IH 35. Specifically, the Locally Preferred Alternative involved improving the section to six general purpose freeway lanes and four barrier-separated special purpose lanes. The four special purpose lanes would consist of one express lane and one diamond marked HOV lane in each direction. It was believed that this alternative would provide an incentive for commuters to car pool or use transit, allow for congestion pricing (or the sale of excess capacity), and channel the through movement traffic efficiently from Loop 1604 to downtown San Antonio.

Although the MIS provided extensive analysis of the underlying transportation issues associated with the corridor and provided several potential solutions, no major capacity improvements and only minor operational improvements have been implemented in the corridor since the study was released, primarily because of funding constraints. In many ways, the same problems identified by the MIS still exist today, with the only difference being they are much more severe than in 1996. Thus, many elements of the need and purpose identified in the MIS are still relevant and are built upon and updated in the current PEL study.

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<sup>7</sup> *FY 2011-2014 STIP, TxDOT San Antonio District February Quarterly Revisions.*

<sup>8</sup> *Northeast (IH 35) Corridor Major Investment Study, Page 1-1. San Antonio-Bexar County MPO (1996).*

### 2.3.3 I-35 Corridor Advisory Committee Plan (*My 35 Plan*)

In addition to the MPO planning process and the MIS, the IH 35 Corridor Advisory Committee, a citizen-led needs-based planning entity responsible for long-range statewide planning in the IH 35 corridor, has identified several improvements relevant to the IH 35 PEL Study Area in their *I-35 Corridor Advisory Committee Plan*, or *My 35 Plan*.<sup>9</sup> First, the *My 35 Plan* recommends interchange improvements at IH 35/Loop 1604 and both IH 35/IH 410 interchanges on the north side of the San Antonio metroplex, all of which are located in the IH 35 PEL Study Area. Additionally, the *My 35 Plan* recommends expanding general IH 35 mainlane capacity to a minimum of eight lanes, in addition to constructing a managed lane in each direction for the entire section of IH 35 located in the IH 35 PEL Study Area and extending to south Austin.

### 2.3.4 Other Previous Plans and Studies (2000 - 2010)

In addition to the MPO Plan, MIS, and MY 35 Plan, there have been numerous other studies that have been performed in recent years related to this section of the IH 35 and/or IH 410 corridor(s). A listing of these studies (in chronological order beginning with the most recent) is provided below:

- *IH 35 Corridor Level-2 Tolled Lanes Planning Study, Draft Final Report*, 2010, for the Alamo Regional Mobility Authority (RMA) and TxDOT-TTA, by Rodriguez Transportation Group
  - *IH 35 Managed Lanes Project, Initial Conceptual Alternatives Studies (Phase 1), From: Bexar/Guadalupe County Line, To: US 281, Bexar County, Texas*, for the Alamo RMA, by HNTB
- This series of studies included:
- *IH 35 Environmental Constraints DRAFT*, March 2007
  - *Conceptual Drainage Assessment Technical Memorandum DRAFT*, March 2007
  - *Initial Screening of Conceptual Alternatives Technical Memorandum DRAFT*, revised May 11, 2007
  - *Traffic Demand Modeling Technical Memorandum DRAFT*, March 2007
  - Draft Utilities Mapping, 2007
  - Draft Right of Way Mapping, 2007
  - Conceptual Schematic Drawings, 2007
- *San Antonio I-35 Northeast Corridor Value Pricing Study*, 2005, for Texas Department of Transportation and Federal Highway Administration, by the Texas Transportation Institute
  - *IH 35 San Antonio Northeast Corridor From IH 37/US 281 to Loop 1604, IH 35 at Loop 1604 Interchange, Interchange Study*, January 2003, for Texas Department of Transportation San Antonio District, by Rodriguez Transportation Group
  - *IH 35 (San Antonio) Comparison of Existing and Proposed Traffic Patterns*, by Carter Burgess, January 8, 2003
  - *IH 35 San Antonio Northeast Corridor Schematic Design Study, Managed Lanes At-Grade in Median Area, From IH 410 North to IH 410 South*, Prepared for Texas Department of Transportation San Antonio District, Prepared by Carter & Burgess, Inc., December 2002

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<sup>9</sup> *I-35 Corridor Advisory Committee Plan, My 35*, I-35 Corridor Advisory Committee (August, 2011).

- *IH 35 San Antonio Northeast Corridor, From IH 37/US 281 to Loop 1604, Evaluation of Railroad Grade Separations at Walzem, Eisenhower and Rittiman with Intersection of the Union Pacific Railroad*, Prepared for Texas Department of Transportation San Antonio District, Prepared by Carter & Burgess, Inc., December 2002
- *IH 35 San Antonio Northeast Corridor, From IH 37/US 281 to Loop 1604, Evaluation of Minimum Right-of-Way Requirements, IH 37/US 281 to Loop 410 North*, Prepared for Texas Department of Transportation San Antonio District, Prepared by Carter & Burgess, Inc., December 2002
- *IH 35 San Antonio Northeast Corridor Traffic Report, Operational Analysis Performed on the Lane Arrangement Concepts*, Prepared for Texas Department of Transportation San Antonio District, by Carter & Burgess, Inc., November 2001
- *IH 35 San Antonio Northeast Corridor Traffic Report, Travel Demand Model Activities Performed on the Lane Arrangement Concepts*, Prepared for Texas Department of Transportation San Antonio District, and Carter & Burgess, Inc., Prepared by: Alliance-Texas Engineering Company, Austin, Texas, November 2001
- *IH 35 Traffic Impact Assessment, Transportation Analysis for the IH 35 Corridor*, Prepared for Texas Department of Transportation San Antonio District, Prepared by Carter & Burgess, Inc., January 2001
- *IH 35 San Antonio Operational Analysis Travel Modeling, Travel demand model activities performed for the IH 35 Corridor, From: Olympia To: US 281, and IH 410 From: IH 35 To: IH 10*, Sponsors: Carter & Burgess, Inc. and Texas Department of Transportation San Antonio District, Prepared by: Alliance-Texas Engineering Company, Austin, Texas, February 15, 2000

The volume of previous analyses that have been performed for this corridor further highlights the intense need for improvement in this critical corridor. As with the 1996 MIS, regional funding constraints have prevented any of the previous studies from advancing past the planning stage and into the implementation phase with regard to any significant capacity improvements. These studies were reviewed for relevance in the PEL Study.

### **3.0 Need and Purpose**

The San Antonio Region is uniquely positioned to serve both the local and regional travel demand of area residents and employees in addition to facilitating national and international trade. As a primary trade and travel route for the region, IH 35 serves a critical role in the efficient function of the regional transportation system. But necessary improvements on IH 35 have not kept pace with population growth and subsequent increases in vehicular thru traffic over the years. Thus, travel demand on the IH 35 corridor in the San Antonio Region of Bexar, Comal, and Guadalupe counties has now exceeded available capacity. **Appendix B - IH 35 PEL Study Need and Purpose Technical Report** provides detailed information related to population trends and projections, major traffic generators, historic and future traffic projections, and roadway design and safety conditions which support the need for improvements along the IH 35 corridor within the Study Area.

Improvements to IH 35 within the Study Area are needed to address the following issues:

- Increasing traffic demand and congestion
- Inadequate roadway capacity
- Roadway safety and operational concerns
- Structural and functional roadway deficiencies
- Limited integration of IH 35 with other existing and planned transportation modes

These issues lead to increased vehicle delay and have negative economic and environmental consequences to area residents, commuters, businesses, and freight movements.

The purpose of the IH 35 PEL study is to develop transportation alternatives that improve mobility and safety in the IH 35 corridor in a manner that will manage vehicle congestion for the projected 25-year planning horizon, promote efficient use of existing transportation facilities, minimize impacts to the natural and built environment, and complement other modes of transportation and economic development initiatives in the region.

#### **4.0 Public Involvement and Agency Coordination**

As part of the public and agency participation process, the Alamo RMA and TxDOT formed a Technical Advisory Committee (TAC) and Community Advisory Committee (CAC) to provide advice and recommendations regarding transportation needs and proposed improvements for IH 35 within the Study Area. Each of these committees met four times throughout the PEL Study to receive project updates and provide feedback and guidance. In addition to conducting meetings with the TAC and CAC, the IH PEL project team also conducted one-on-one meetings with a number of key state, local, and federal agencies in the Study Area. Summaries of agency and stakeholder coordination conducted during the course of the IH 35 PEL Study are provided in **Appendix C – IH 35 PEL Study Agency and Stakeholder Coordination Technical Report**.

Four rounds of public meetings were held in the Study Area to provide background study information and to allow the public to provide feedback on transportation needs and possible solutions in the Study Area. The first round of public workshops was held in November 2011 and focused on developing the need and purpose statement. The second round of public workshops was held in February 2012 and focused on developing evaluation criteria and potential alternatives. The third round of public workshops was held in May 2012 and focused on the evaluation of proposed alternatives. In October 2012, a final round of public meetings was held in the Study Area to review the PEL process and present recommended alternatives for future environmental analysis. The **IH 35 PEL Study Public Meeting Summary and Analysis Reports** are provided in **Appendix D**.

The information obtained from the public involvement and agency coordination efforts will be carried forward into further project development efforts and environmental studies (NEPA). The PEL stakeholders will also be re-engaged in the NEPA process to ensure continuing coordination.

## 5.0 Affected Environment

Environmental resources were examined in the IH 35 PEL Study to establish a baseline context and generally describe the existing conditions in the Study Area. Also, the resource information was utilized during the alternative concept analysis process to broadly assess the potential impacts associated with each of the proposed alternative concepts.

The existing conditions for the following human and natural environmental resources located within the IH 35 PEL Study Area were analyzed and documented:

- Land Use and Planning
- Socioeconomic Factors
- Neighborhoods and Community Resources
- Transportation Infrastructure
- Surface Water
- Groundwater
- Air Quality/Area Emissions
- Traffic Noise
- Hazardous Materials
- Threatened and Endangered Species
- Natural Areas and Preserves
- Parklands and Recreation Areas
- Historic and Cultural Resources
- Utilities/Transmissions
- Mine and Quarry Locations
- Prime Farmland

**Appendix E - IH 35 PEL Study Affected Environment Technical Report** contains detailed assessments for each of the resources listed above. In addition to informing the alternative concept analysis process, the resources examined in the **IH 35 PEL Study Affected Environment Technical Report** will serve as a starting point for further refinement in future, project-specific environmental analyses.

## 6.0 Alternative Concept Development

This section describes the alternative concept development process for the IH 35 PEL Study and provides summary descriptions for each of the initial 11 preliminary alternative concepts under consideration. Detailed descriptions of the alternative concepts screening, evaluation methodology, results, and recommendations are provided in **Appendix F – IH 35 PEL Study Alternative Concepts Development and Evaluation Technical Report**.

## 6.1 Alternative Concepts Development Process

The alternative concepts development process for the IH 35 PEL Study builds upon previous studies, and incorporates current technical analyses and input from the public and agencies.<sup>10</sup> Previous planning efforts served as a starting point for developing the universe of alternative concepts under consideration in the IH 35 PEL Study. The concepts developed in the 1996 *Northeast (IH 35) Corridor MIS* were presented to the public and stakeholder groups during the PEL Study to get feedback on their relevance, and to solicit other ideas for potential alternative concepts.<sup>11</sup> The agency coordination and public involvement efforts conducted for this project are documented in **Appendices D** and **E**.

The alternative concept development process also incorporated the recommendations of relevant transportation planning efforts that have occurred in the Study Area. For example, the San Antonio-Bexar County MPO has identified the need for between four to six lanes of additional IH 35 mainlane capacity between US 281/IH 37 and Schertz Parkway. Also, the *My 35 Plan* has recommended interchange improvements at IH 35/Loop 1604 and IH 35/IH 410 on the north side of the San Antonio metro area. In addition, the *My 35 Plan* recommends expanding IH 35 mainlane capacity to a minimum of eight lanes and constructing managed lanes in the IH 35 PEL Study Area. The identified needs and recommendations from these planning efforts were considered in the universe of conceptual alternatives.

Development of alternative concepts for the IH 35 PEL Study involved a two-phased screening and evaluation process. Phase I of the screening process provided a high-level analysis of the universe of alternative concepts to determine their abilities to meet the need and purpose of the project. Phase I primarily involved qualitative analyses meant to identify the alternative concepts with fatal flaws early in the alternative development process so those concepts could be eliminated.

The alternative concepts that passed the Phase I screening moved into the Phase II evaluation, where they were measured against criteria developed in coordination with the IH 35 PEL TAC. This evaluation process intended to identify the alternative, or group of alternatives, with the highest potential to provide transportation improvements that meet the need and purpose of the project in a way which achieves the most benefit, while minimizing impacts in the Study Area. The recommended alternative concept or concepts which emerged from the alternative concept development and evaluation process in the IH 35 PEL Study will be used as a starting point in subsequent environmental studies.

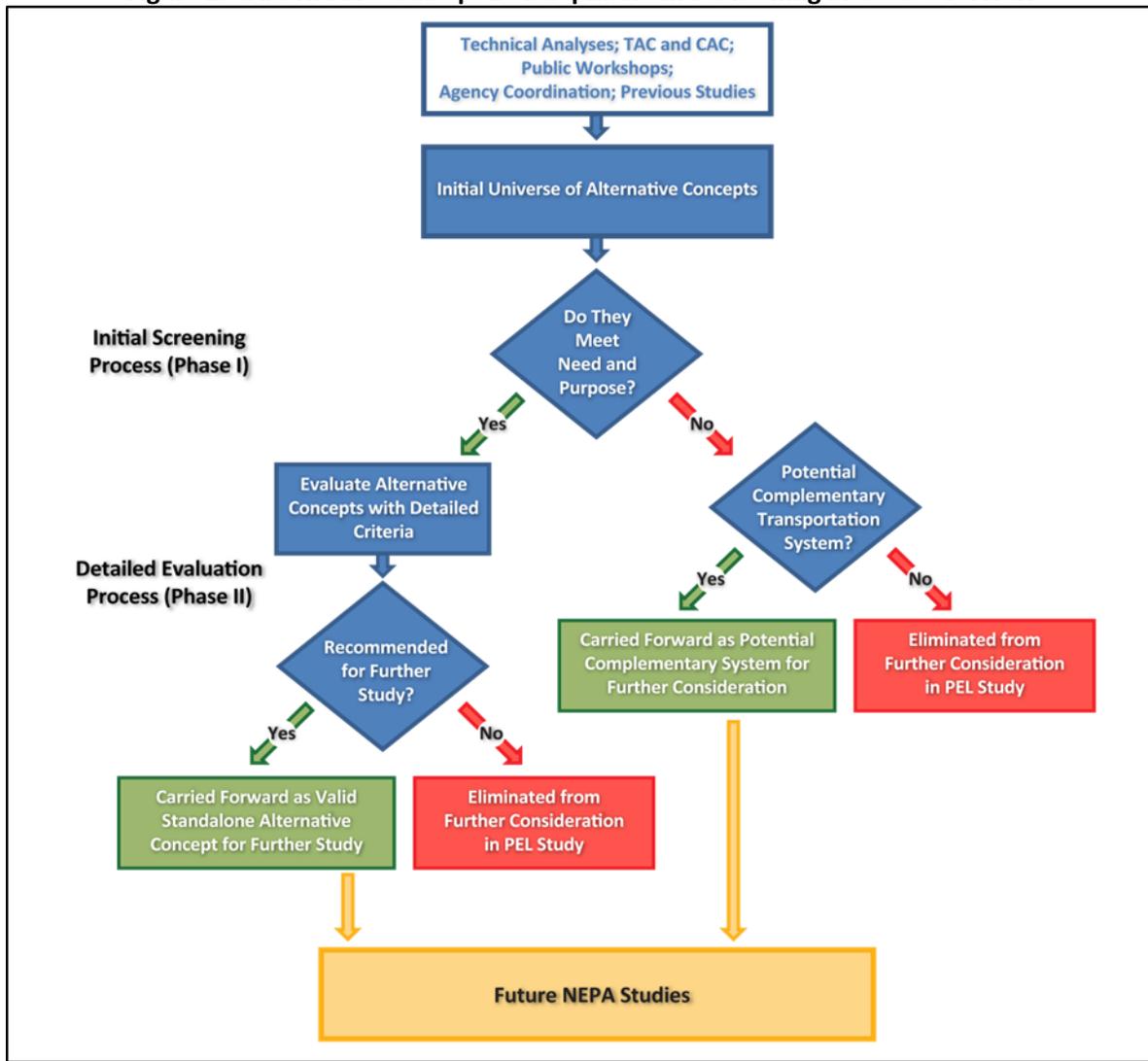
An overview of the alternative concept development and screening process utilized for the IH 35 PEL Study is provided in **Figure 2**.

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<sup>10</sup> It should be noted that the level of alternative development undertaken at this stage of the IH 35 PEL Study was planning-level as opposed to a detailed, project-level analysis. Also, any mention of the term “alternatives” in this document refers to “alternative concepts” and not project-level alternatives.

<sup>11</sup> San Antonio-Bexar County MPO. *Northeast (IH 35) Corridor Major Investment Study-Final Report*. October 1996.

Figure 2 – Alternative Concept Development and Screening Process Overview



## 6.2 Description of Alternative Concepts

This section provides a brief descriptions of the 11 preliminary alternative concepts representing the universe of alternative concepts under consideration in the IH 35 PEL Study. An initial viability determination for each of these alternatives is provided in **Appendix F – IH 35 PEL Study Alternative Concepts Development and Evaluation Technical Report**. Note that any mention of the term “alternatives” in this section refers to “alternative concepts” and not project-level alternatives.

The alternatives developed assume that all reasonably foreseeable transportation improvements are likely to occur regardless of the outcome of the IH 35 PEL Study (i.e., all improvements contained in the No Build Alternative); however, any major general purpose capacity improvements to the existing IH 35 and IH 410 facilities (including those listed in the 2035 MTP) over the 25-year planning horizon of the

PEL Study are not included in the No Build Alternative so that the incremental benefits of the proposed IH 35 and/or IH 410 improvements examined in the PEL Study can be analyzed and compared.

### **6.2.1 No Build Alternative**

The No Build Alternative, or Base Case, is the benchmark against which all other Alternatives are compared. The No Build Alternative provides a baseline to gauge how effective various Build Alternatives will be at accomplishing the need and purpose of the project. This alternative is required to be considered in PEL and NEPA analyses.

The No Build Alternative includes the preservation of the existing transportation network and any programmed transportation improvements that are reasonably expected to occur regardless of the outcome of the IH 35 PEL Study. As such, the No Build Alternative includes all of the short-term operational improvements currently underway and planned for IH 35 in the San Antonio area<sup>12</sup>, in addition to all other programmed transportation projects in the region that are contained in the most recently adopted San Antonio-Bexar County MPO Long-Range Plan (2035 MTP).<sup>13</sup> However, the No Build Alternative assumes that no major capacity improvements are implemented on existing IH 35 and IH 410 (including those listed in the *Mobility 2035 MTP*) over the 25-year planning horizon of the PEL Study.

### **6.2.2 TDM/TSM/ITS-Only Alternative Concept**

Traffic Demand Management (TDM) focuses on driver behavior with actions or programs which encourage people to travel at alternative times or with fewer vehicles (carpooling) in order to reduce congestion. TDM is often aimed at employers in an effort to prompt them to adopt measures to reduce employee commuting trips. Examples of employer-based TDM programs include commute information programs, in-house ride-matching programs, transit pass subsidies, home-based telecommuting, compressed workweeks, and alternative work hours.

Transportation System Management (TSM) focuses on minor improvements, generally within existing right-of-way, such as signal improvements, signing, ramp modifications, auxiliary lane additions, or minor construction that enables the existing system to operate more efficiently and safely.

Intelligent Transportation Systems (ITS) focuses on advanced technologies such as surveillance cameras, message signs, and web-based alerts to enable drivers to operate vehicles with greater knowledge about existing traffic conditions such as congestion, construction, accidents, and emergencies. *TransGuide* is San Antonio's existing ITS system and is currently operational within the PEL Study Area.<sup>14</sup>

The TDM/TSM/ITS-Only Alternative Concept involves the implementation of new and/or enhancement of existing TDM/TSM/ITS services in the IH 35 PEL Study Area. This alternative would include the promotion of various combinations of operational and demand-management strategies, policies,

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<sup>12</sup> Operational improvements on IH-35 are currently planned between Judson Road and FM 3009 and from IH 37 to IH 410N, including the construction of a direct connector from IH 35 SB to IH 410 SB.

<sup>13</sup> San Antonio-Bexar County MPO. *Mobility 2035: Metropolitan Transportation Plan*. December 2009. *Roadway projects list* last updated March 5, 2012.

<sup>14</sup> TxDOT-San Antonio District. *TransGuide Intelligent Transportation System*. <http://www.transguide.dot.state.tx.us/>

incentives, and the enhanced use of technology to address the mobility issues identified in the IH 35 PEL Study Area.

### **6.2.3 Rail-Only Alternative Concept**

The Rail-Only Alternative Concept involves the implementation of rail transit service, either within a new dedicated right-of-way or within existing Union Pacific Railroad (UP) freight line right-of-way near the IH 35 PEL Study Area. The latter option would include construction of separate rail lines within the existing freight rail right-of-way, relocation of existing UP rail operations to a new dedicated corridor, or shared use of the existing freight railroad with separate schedules for freight and passenger transit services. The Rail-Only Alternative would also potentially include grade-separations at select roadway crossings to address any existing safety concerns related to the interaction of rail and vehicular traffic movements.

### **6.2.4 Transit-Only Alternative Concept**

The Transit-Only Alternative Concept involves the implementation of new and/or enhanced bus transit service in the IH 35 PEL Study Area. This Alternative would potentially include some or all of the following elements: the construction of additional park-and-ride facilities, expansion of existing bus routes and/or service, implementation of express bus and/or bus rapid transit (BRT) service, in addition to the promotion of any policies or programs that encourage or incentivize enhanced transit ridership in the IH 35 PEL Study Area.

### **6.2.5 Truck-Only Alternative**

The Truck-Only Alternative Concept involves the construction of a dedicated lane, or lanes, on the existing IH 35 and/or IH 410 facility that is restricted solely for use by large trucks (e.g., eighteen-wheelers). The Truck-Only Alternative would effectively separate freight-carrying truck traffic from passenger vehicle traffic on IH 35 by requiring all trucks on IH 35 to utilize the Truck-Only Lane while the rest of the passenger vehicles on IH 35 utilize the existing general purpose lanes. The Truck-Only Lane Alternative would allow for efficient travel for thru-truck trips that do not originate or terminate in the San Antonio Region and provide limited access points for trucks to enter/exit the Truck-Only Lane and mingle with the general purpose lanes for trips that originate, or are bound for destinations, in and around San Antonio.

### **6.2.6 At-Grade Expansion of IH 35 Alternative**

Three options were developed for the At-Grade Expansion Alternative Concept and are described below.

- **At-Grade Expansion Alternative Option 1** involves the expansion of the existing IH 35 and IH 410 facilities in the Study Area by constructing an additional three northbound (NB) and three southbound (SB) mainlanes (six lanes total) on each respective facility. The additional lanes associated with this alternative would be constructed at-grade with the existing facilities, and would require additional right-of-way at various locations, especially towards the north end of the IH 35 PEL Study Area where developmental constraints encroach on the existing corridor.
- **At-Grade Expansion Alternative Option 2** involves the expansion of the existing IH 35 and IH 410 facilities in the Study Area by constructing additional at-grade capacity based on applying

high-level engineering judgment to optimize lane balancing, transitions, and merging/weaving. For the existing IH 35 facility, the total number of additional NB/SB mainlanes constructed varies from zero to five lanes depending on the configuration of the existing facility and existing right-of-way. For the existing IH 410 facility, the alternative includes the construction of an additional three NB and three SB mainlanes for a total of six additional lanes. The additional lanes associated with this alternative would all be constructed at-grade with the existing facilities and would stay within the existing right-of-way.

- **At-Grade Expansion Alternative Option 3** involves the expansion of the existing IH 35 and IH 410 facilities in the Study Area by constructing additional at-grade capacity based on applying high-level engineering judgment to optimize lane balancing, transitions, and merging/weaving. This alternative is similar to the Option 2 with the primary difference being that Option 3 allows for the slight deviation from the existing right-of-way in certain locations where the existing right-of-way is relatively narrow or constrained as compared to other sections in the Study Area. For the existing IH 35 facility, the total number of additional NB/SB mainlanes constructed varies from zero to five lanes depending on the configuration of the existing facility. For the existing IH 410 facility, the alternative includes the construction of an additional three NB and three SB mainlanes for a total of six additional lanes. The additional lanes associated with this alternative would all be constructed at-grade with the existing facilities and the IH 35 expansion would involve the acquisition of additional right-of-way, whereas the IH 410 expansion could be accommodated within the existing right-of-way.

### **6.2.7 Elevated Expansion of IH 35 Alternative**

The Elevated Expansion Alternative involves the expansion of the existing IH 35 and IH 410 facilities in the Study Area by constructing an additional three NB and three SB mainlanes (six lanes total) on each respective facility. The additional lanes associated with this alternative would be elevated throughout the entire Study Area and would be constructed within the existing right-of-way. This alternative is very similar to the At-Grade Expansion Alternative Option 1, with the only difference being that the Elevated Expansion Alternative proposes to add elevated capacity while the At-Grade Expansion Alternative Concept 1 proposes to add the capacity to the existing facilities at-grade.

### **6.2.8 Elevated/At-Grade Mix Expansion of IH 35 Alternative Concept**

The Elevated/At-Grade Mix Expansion Alternative Concept involves the expansion of the existing IH 35 and IH 410 facilities in the Study Area by constructing an additional three NB and three SB mainlanes (six lanes total) on each respective facility. The additional lanes associated with this alternative would be a combination of at-grade and elevated capacity based on the constraints of the existing right-of-way. Locations that contain adequate existing right-of-way for expansion at-grade would be constructed as such, and locations where existing right-of-way widths are narrow and could not accommodate at-grade expansion would be elevated. All expansions associated with this alternative would be within the existing right-of-way. Essentially, this alternative is a combination of the At-Grade Expansion Alternative (Option 1) and the Elevated Expansion Alternative, which has been maximized to utilize at-grade expansions, where feasible, and elevate where necessary to stay within the existing right-of-way.

### **6.2.9 Depressed Expansion of IH 35 Alternative Concept**

The Depressed Expansion Alternative Concept involves the expansion of the existing IH 35 and IH 410 facilities in the Study Area by constructing an additional three NB and three SB mainlanes (six lanes total) on each respective facility. The additional lanes associated with this alternative would be depressed throughout the entire Study Area and would be constructed within the existing right-of-way. This alternative is very similar to the At-Grade Expansion Alternative Option 1 Alternative and the Elevated Expansion Alternative, with the only difference being that the Depressed Expansion Alternative proposes to add depressed capacity, while the Elevated Expansion Alternative proposes to add elevated capacity and the At-Grade Expansion Alternative Option 1 proposes to add the capacity to the existing facilities at-grade.

### **6.2.10 New Location Highway Alternative Concept**

The New Location Highway Alternative Concept involves the construction of a greenfield controlled-access highway that would attempt to capture the same travel market that is currently utilizing the existing IH 35 facility in the Study Area to alleviate congestion issues on existing IH 35. The New Location Highway Alternative would be constructed in close enough proximity to the existing IH 35 facility so as to be able to serve the same travel market under consideration in the IH 35 PEL Study, i.e., from Schertz to Downtown San Antonio. In order to accomplish this, the New Location Highway Alternative would require the acquisition of new right-of-way to accommodate a six-lane highway facility with frontage roads.

### **6.2.11 Expansion of Parallel Facility Alternative Concept**

The Expansion of Parallel Facility Alternative Concept involves the expansion and upgrade of an existing roadway, or combination of multiple roadways, that parallel the existing IH 35 corridor in the IH 35 PEL Study Area. Similar to the New Location Highway Alternative, this Alternative would attempt to serve the same travel market currently utilizing the existing IH 35 facility and alleviate congestion on IH 35 by providing an alternative route for travelers. As such, the parallel facility defined in this Alternative would need to follow existing facilities within densely populated portions of the city of San Antonio.

There are two major existing roadways that run parallel and in relative proximity to IH 35 in the Study Area. These are FM 2252/Nacogdoches Road located approximately two miles north/west of IH 35 and FM 1976/FM 78 located approximately three miles east/south of IH 35. FM 2252/Nacogdoches Road and FM 78 are four-lane roadways and FM 1976 is a two-lane roadway. It is likely that the major upgrade and expansion of one or more of these facilities, or other facilities that exhibit similar characteristics, would be included as part of this Alternative.

## **7.0 Alternative Concept Evaluation**

This section describes the Phase I screening methodology that was utilized to evaluate the alternative concepts of the IH 35 PEL Study. More detailed information regarding the alternative development, screening, and results can be found in **Appendix F – IH 35 PEL Study Alternative Concepts Development and Evaluation Technical Report**.

The purpose of the Phase I screening process was to identify those alternative concepts which had the potential to meet the need and purpose as described in **Section 3.0 – Need and Purpose**. It should be noted that the level of screening analysis performed during Phase I was a high-level, pass/fail form of analysis intended to eliminate alternatives that would not meet the identified need and purpose of the project. The Phase II Alternative Concept Evaluation involved quantitative screening measures which resulted in a more detailed evaluation compared to what was examined in Phase I. **Figure 2** provides an overview of the alternative development and screening process for the IH 35 PEL Study (**Section 2.1 – Alternative Development Process of Appendix F**).

## 7.1 Phase I Alternative Concept Screening

Each of the 11 concepts in the initial universe of alternatives was taken through the Phase I screening analysis. Phase I of the alternative concepts screening process was performed to provide comparative results among the alternative concepts and involved a pass/fail assessment of the overall ability of the various alternative concepts to meet the need and purpose of the project. Each of the alternative concepts were examined with regard to several broad factors (screening criteria) that were tied to the need and purpose. Information regarding the screening criteria used at this stage of analysis is discussed further in **Section 7.2 – Screening Criteria**. Qualitative data was primarily used to screen the concepts at this stage. After this screening, the alternative concepts were then grouped into two distinct categories:

- Alternative Concepts Eliminated from Further Study as Standalone Solutions – Defined as those alternative concepts considered in the IH 35 PEL Study which, as standalone solutions, failed to adequately address the need and purpose for improvements identified in the Study Area over the planning-horizon of the Study. These alternative concepts, as standalone solutions, are not recommended to be carried forward for further analysis in the PEL Study.
- Reduced Set of Alternative Concepts to be Carried Forward for Further Study – Defined as those alternative concepts considered in the IH 35 PEL Study which, as standalone solutions, had the potential to adequately address the need and purpose for improvements identified in the Study Area over the planning-horizon of the Study. These alternative concepts are recommended to be carried forward for further evaluation in Phase II of the alternative concept development and screening process.

The alternative concepts identified as “*Alternatives Eliminated from Further Study as Standalone Solutions*” were then examined further to see if any individual components or elements associated with each respective alternative concept would lend themselves to potential inclusion as a complementary transportation system solution (CTSS) in one or more of the other standalone alternatives.<sup>15</sup>

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<sup>15</sup> A Complementary Transportation System Solution (CTSS) is an alternative concept that has been eliminated as a standalone alternative, but that has the potential to complement and enhance the other alternative concepts still under consideration as standalone alternatives in the PEL Study. These are recommended for additional discussion and analysis in future studies to improve the overall transportation system function.

The output of the Phase I screening analysis was used as a basis for further quantitative evaluation in Phase II of the alternative concept evaluation process.

The screening criteria utilized in the Phase I analysis focused on broad evaluation factors directly related to the need and purpose of the project. These broad factors sought only to provide a rough characterization and differentiation between: (1) those alternative concepts with a high probability of meeting the need and purpose of the project, and (2) those alternative concepts which will not meet the need and purpose and thus should be eliminated from further study at this point.

The transportation issues identified in the IH 35 PEL Study Area, as discussed in **Appendix B – IH 35 PEL Study Need and Purpose Technical Report**, include:

- Increasing traffic demand and congestion
- Inadequate roadway capacity
- Roadway safety and operational concerns
- Roadway maintenance deficiencies
- Limited integration of IH 35 with other existing and planned transportation modes

These issues were used to develop the following broad screening criteria that were used in the Phase I screening. The criteria sought to answer the following questions for each alternative concept:

- Does the alternative concept have the potential to address the projected transportation needs over the 25-year planning horizon of the study?
- Does the alternative concept have the potential to improve mobility and safety in a manner that will manage vehicle congestion?
- Does the alternative concept have the potential to encourage integration with other transportation modes?
- Does the alternative concept have the potential to be compatible with economic development initiatives in the region?

Each alternative concept was examined with regard to the Phase I screening criteria listed above, and a determination was made to assign either a “Yes” or “No” for each of the assessment criteria. Alternative concepts that received all “Yes” answers were deemed to have a high probability of meeting the need and purpose as standalone concepts, whereas, any alternative concepts that received a “No” answer for any criteria were deemed less likely to accomplish the need and purpose, and were either recommended to be eliminated as standalone concepts or identified as a CTSS.

**Table 1** provides a summary of the Phase I PEL Study Alternative Concept Screening results.

**Table 1 – Phase I Alternative Concept Screening Overview**

Alternative Concepts	Assessment Criteria based on Need and Purpose				Recommendation
	Addresses projected transportation needs over the Study's 25-year planning horizon	Improves mobility and safety in a manner that will manage vehicle congestion	Encourages integration with other transportation modes	Compatible with economic development initiatives in the region	
No Build Alternative	N	N	N	N	Study in Phase II (required)
TDM/TSM/ITS-Only Alternative	N	Y	Y	N	Consider as a CTSS*
Rail-Only Alternative	N	Y	Y	Y	Consider as a CTSS*
Transit-Only Alternative	N	Y	Y	Y	Consider as a CTSS*
Truck-Only Lane Alternative	N	Y	N	Y	Do not study further
Expansion Alternative - At-Grade Option 1	Y	Y	Y	Y	Study in Phase II
Expansion Alternative - At-Grade Option 2	Y	Y	Y	Y	Study in Phase II
Expansion Alternative - At-Grade Option 3	Y	Y	Y	Y	Study in Phase II
Expansion Alternative - Elevated Option	Y	Y	Y	Y	Study in Phase II
Expansion Alternative - Elevated/At-Grade Mix	Y	Y	Y	Y	Study in Phase II
Expansion Alternative - Depressed Option	Y	Y	Y	Y	Study in Phase II
New Location Highway Alternative	Y	Y	Y	Y	Study in Phase II
Parallel Facility Alternative	Y	Y	Y	Y	Study in Phase II

\*Complementary Transportation System Solution (CTSS)

Four of the 11 concepts in the universe of alternatives are recommended for elimination from further study as standalone alternative concepts because they did not meet the need and purpose of the project. Many of these alternative concepts addressed one or more elements of the need and purpose, however, as standalone alternatives, they would not adequately address all of the elements of the need

and purpose. Although these alternatives are not recommended for further study as standalone alternatives, it is recognized that various components and elements of these alternative concepts may have potential to be incorporated into other standalone alternatives as project development moves forward.

The following alternative concepts have been eliminated from further analysis as standalone alternative concepts in the Phase II alternative evaluation process, but are being carried forward as possible CTSS for further consideration in future environmental studies:

- TDM/TSM/ITS-Only Alternative
- Rail-Only Alternative
- Transit-Only Alternative

The Truck-Only Alternative has been eliminated from further analysis as a standalone alternative concept and as a CTSS. It does not meet the need and purpose of the project and does not encourage integration with other types of transportation solutions or address the mobility needs in the Study Area over the planning horizon of the study.

Alternatives with the highest potential to meet the need and purpose were recommended to be carried forward for further analysis. The following alternative concepts, plus the No Build, are recommended for further analysis as standalone alternative concepts in the Phase II alternative evaluation process:

- Expansion Alternative – At-Grade
- Expansion Alternative – Elevated
- Expansion Alternative – Elevated/At-Grade Mix
- Expansion Alternative – Depressed
- New Location Highway Alternative
- Parallel Facility Alternative

## **7.2 Phase II Alternative Concept Evaluation**

Phase II of the alternative concepts development and screening process involved the evaluation of the reduced set of alternative concepts resulting from the Phase I screening.

Once the Phase I screening process was completed, it became apparent that the standalone alternative concepts which passed the screening could be generalized and grouped into two distinct alternative concepts:

- **Add Roadway Capacity to the Existing IH 35 Facility**
  - Expansion Alternative – At-Grade Concept
  - Expansion Alternative – Elevated Concept
  - Expansion Alternative – Elevated/At-Grade Mix Concept
  - Expansion Alternative – Depressed Concept

- **Add Roadway Capacity Away from the Existing IH 35 Facility**
  - New Location Highway Alternative
  - Parallel Facility Alternative

These two generalized alternative concepts represented the best conceptual approaches for meeting the need and purpose of the project. Therefore, the Phase II alternative concept evaluation examined and compared these two concepts (add roadway capacity to IH 35 and add roadway capacity away from IH 35) to determine which generalized approach would be the most successful at meeting the need and purpose of the project. The intent of this analysis was to identify the best conceptual approach for improvements in the PEL Study Phase, while deferring project-specific decisions to NEPA (e.g., number of lanes, construction approaches, project financing), when they are further developed for decision-making. However, discussions of these issues are included in the technical report (**Appendix F – IH 35 PEL Study Alternative Concepts Development and Evaluation Technical Report**), based on the information that was available at the PEL Study level of analysis, to inform the NEPA process to the maximum extent possible.

Evaluation criteria for the Phase II analysis were developed based on input from the IH 35 PEL TAC, CAC, and the general public. At their January 2012 meetings, the TAC and CAC developed objectives they considered important in developing and evaluating solutions for the Study Area. The objectives were presented to the general public at the February 2012 meetings to solicit input. The objectives were then modified based upon comments from the public, and criteria identified that could be quantitatively measured and would likely provide a distinction among alternative concepts for comparison. The criteria and measures used to compare the alternative concepts include the following:

- **Mobility**
  - Average Speed
  - Travel Time
  - Total Vehicle Volume
- **Potential Impacts**
  - Potential Impacts to Residents
  - Potential Impacts to Businesses
  - Potential Impacts to the Environment

Project cost estimates were not used to differentiate amongst alternatives at this level of analysis since the alternative concepts examined were generalized and would require more project-specific details to provide meaningful information. Project costs and potential funding sources would be discussed in detail in subsequent NEPA studies.

### 7.2.1 Phase II Evaluation Results

For the comparison of the two alternative concepts, generalized facility configuration assumptions were used for traffic modeling and potential impact estimation. Specifically, the alternative concepts compared in the Phase II evaluation were defined as follows:

- **Add Roadway Capacity to the Existing IH 35 Facility**
  - 6 lanes of roadway capacity added to IH 35 facility
  - Additional lanes modeled as general purpose lanes
  
- **Add Roadway Capacity Away from the Existing IH 35 Facility**
  - 6 lanes of roadway capacity added to a new or existing parallel roadway (in relative proximity to IH 35 corridor)
  - Additional lanes modeled as general purpose lanes

Based on these assumptions, **Table 2** presents the comparison of the two alternative approaches, and the No Build, with regard to mobility benefits and potential impacts. In **Table 2**, an x ('x') signifies relatively poor performance and a check mark ('✓') signifies a relatively positive performance for any given metric. More detailed information regarding the results of the IH 35 PEL Study alternative concept Phase II evaluation are included in **Appendix F - IH 35 PEL Alternatives Development and Evaluation Technical Report**.

**Table 2 – Phase II Alternative Concept Evaluation Results**

Alternative Concept	Improve Mobility			Minimize Potential Impacts		
	Avg. Speed	Travel Time	Total Volume	Residential	Business	Environment
No Build	x	x	x	✓	✓	✓
Add Roadway Capacity to the Existing IH 35 Facility	✓	✓	✓	✓	✓	✓
Add Roadway Capacity Away from the Existing IH 35 Facility	✓	✓	✓	x	x	x

As shown in **Table 2**, both alternative concepts would provide significant mobility benefits as compared to the No Build Alternative. However, the alternative concept that proposes to Add Roadway Capacity

Away from the Existing IH 35 Facility (i.e., new location or existing parallel upgrade) would have many more potential impacts to the built and natural environment as compared to the expansion of the existing IH 35 facility. Furthermore, it should be noted that in order to achieve mobility benefits, the Add Roadway Capacity Away from the Existing IH 35 Facility concept would have to be built in relative proximity to the existing IH 35 facility in order to serve the same origin-destination pair under consideration in the PEL study, and the available existing transportation facilities and/or undeveloped land for a new location highway that would need to be utilized for this concept would impart substantial impacts to the built and natural environment, above and beyond any potential impacts to roadway expansion within the existing IH 35 corridor. The potential impacts to the built and natural environment are far less for the on-facility IH 35 expansion concept because the existing IH 35 corridor has already been developed as an interstate highway corridor and there is potential to minimize the need for additional right-of-way acquisition under this alternative concept due to availability of existing right-of-way.

## **8.0 Recommendations for NEPA**

Based on the results of the evaluation analysis, it is recommended to carry forward one alternative concept into the NEPA process that involves the construction of additional roadway capacity on the existing IH 35 facility. It was determined that this approach to enhanced mobility would provide the best method of meeting the need and purpose of the project. Other approaches, such as expanding existing roadway capacity away from the IH 35 facility, constructing a new transportation facility, or constructing/enhancing other modes of transportation, either didn't meet the need and purpose or were deemed relatively less successful at meeting the need and purpose and thus were eliminated from further consideration. Project-specific determinations regarding the proposed number of lanes to add to existing IH 35, construction approaches (i.e., elevated, at-grade, depressed, or some combination thereof), and project funding or tolling remain to be analyzed and decided upon through the NEPA process.