SH 121: FM 423 TO SH 121 AT US 75 INTERCHANGE

RE-EVALUATION
FOR PROPOSED TOLL FACILITY

PREVIOUSLY APPROVED
ENVIRONMENTAL DOCUMENTS

SH 121 FROM FM 423 TO US 75
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SH 121 AT US 75 INTERCHANGE
CSJ: 0364-04-040

DENTON AND COLLIN COUNTIES, TEXAS

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U.S. DEPARTMENT OF TRANSPORTATION
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Introduction and History

State Highway (SH) 121 has been in various stages of planning, design, and construction since the mid-1980s. Previous environmental approvals consist of a Finding of No Significant Impact (FONSI) issued on November 22, 1991 which approved the expansion of SH 121 from a two-lane undivided highway to a six lane-lane divided freeway with three-lane frontage roads in both directions from Farm-to-Market (FM) 423 to United States Highway (US) 75, and a FONSI issued on April 20, 2006 for the construction of the interchange of SH 121 at US 75. In addition, since issuance of the FONSIs, a number of re-evaluations have been prepared and approved. The purpose of this re-evaluation is to assess impacts that would result should – as currently proposed – SH 121 be constructed and operated as a toll road. The "Re-evaluation Limits" are SH 121 from FM 423 to US 75 and includes SH 121 at US 75 interchange. For purposes of this re-evaluation, the proposed "Toll Project" is defined as the SH 121 mainlanes between Dallas North Tollway (DNT) and SH 121 at US 75 interchange. Likewise, the "Toll Project Limits" would extend from DNT to SH 121 at US 75 interchange (See **Appendix A: Figure 1**). In **Section 3.0**, the SH 121 project history and associated documents are discussed in further detail.

In summary, this re-evaluation concludes that:

1. The modifications needed to complete the Toll Project would not cause substantial direct or indirect impacts over and above those considered in the previous environmental approvals; and
2. The modifications needed to complete the Toll Project would not cause any substantial cumulative impacts – when added to other past, present and reasonably foreseeable future actions – to any resources/issues such as natural resources, land use, community, or any other resource; and
3. All findings found in the prior environmental approvals remain valid.

In accordance with the November 22, 1991 and April 20, 2006 environmental approvals, construction of SH 121 as a six lane controlled-access facility with three lane frontage roads in each direction was initiated in 2002. To date, frontage roads have been constructed from FM 423 to US 75. The mainlanes of SH 121 from FM 423 to east of Hillcrest Road (Rd.) are under construction. Funding to construct the remaining portion of SH 121, the mainlanes from east of

Hillcrest Rd. to US 75, would not be available until at least 2016 (and possibly as late as 2025) if the improvements were to be funded through the traditional "pay-as-you-go" process.

To accelerate the completion of SH 121, the Regional Transportation Council (RTC) of the North Central Texas Council of Governments (NCTCOG) – the metropolitan planning organization (MPO) for the Dallas-Fort Worth (DFW) region – voted to use toll financing. Accordingly, SH 121 from the DNT to SH 121 at US 75 interchange is identified as a toll-financed project in the fiscally-constrained long-range transportation plan for the region. Although several delivery methods were considered, the private or public sector financing of SH 121 had no bearing on the decision of this re-evaluation. These delivery methods are presented in this re-evaluation strictly for informational purposes.

In April 2006, the Federal Highway Administration (FHWA) approved two documents that assessed the impacts that would result from tolling SH 121 in Denton and Collin Counties. One document was an Environmental Assessment (EA)/FONSI (SH 121 from 0.23 mile west of Business SH 121 to east of MacArthur Blvd.) and the other was a FONSI re-evaluation (SH 121 from east of MacArthur Blvd. To DNT), both approved on Apri1 14, 2006 (See **Table 3-1: SH 121 History** and **Appendix A: Figure 1**). Because SH 121 is approved as a toll facility from 0.23 mile west of Business SH 121 to east of MacArthur Blvd. to the DNT, this re-evaluation focuses on potential tolling impacts from the DNT to SH 121 at US 75 interchange.

With the ability to outsource the development of SH 121, the Texas Department of Transportation (TxDOT) has the opportunity to expedite the delivery of SH 121 while maximizing the benefits of available transportation funding. Although the mainlanes of SH 121 are proposed for tolling, the frontage roads would remain non-tolled. No additional right-of-way (ROW) would be required to accommodate tolling nor would tolling result in changes to the location, design, or footprint of the roadway. Construction of structures called "gantries" would be necessary to support the toll collection equipment. **Section 4.0** contains additional information regarding gantries and the proposed toll collection system.

The total estimated cost to construct the SH 121 mainlanes from east of Hillcrest Rd. to US 75 and SH 121 at US 75 interchange is approximately $205 million. This total includes approximately $20 million to construct the electronic toll components of the proposed SH 121 toll facility (**See Table 3-3**). The proposed Toll Project would be 100 percent funded from the toll development process. This project is listed in the *Mobility 2030,* the 2006-2008

Transportation Improvement Program (TIP) which the United States Department of Transportation (US DOT) found to conform to the State Implementation Plan (SIP) on June 12, 2007, and in the Draft 2008-2011 Statewide Transportation Improvement Program (STIP) which should be approved by FHWA/Federal Transit Administration (FTA) in October of 2007.

The Toll Project would allow the mainlane construction (from Hillcrest Rd. to US 75) to be implemented as early as 9 to 18 years sooner than previously programmed. Tolling would also generate revenue for the operation and maintenance of SH 121 as well as funding other projects in comparable timeframes. These projects would be funded under the Regional Toll Revenue Funding Initiative and are discussed in more detail in **Section 2.2** of this re-evaluation. Under the RTC's Regional Toll Revenue Funding Initiative policy, when a previously planned tax supported highway is shifted into a toll facility, those original gas tax funds are to be reallocated to projects that serve the same transportation system users, and the newly identified projects are to be completed in comparable timeframes. To date, over 560 Regional Toll Revenue Funding Initiative projects have been submitted for funding**.** Final determination of funded projects will be determined by the RTC during the regularly scheduled October 2007 RTC meeting. All of the "near neighbor/near timeframe" projects previously approved as a result of the implementation of tolling SH 121 in Denton County as described in the SH 121 Memorandum of Understanding (MOU) funding strategy would be funded under the Regional Toll Revenue Funding Initiative. (See **Appendix B: 2007 Regional Toll Revenue Funding Initiative Update**).

The RTC voted to recommend the North Texas Tolling Authority (NTTA) to develop the project as the Public Sector Comparator on June 14, 2007. A Public Sector Comparator is used to determine whether a project would be better delivered by the government alone, the government in partnership with the private sector, or the private sector alone. It provides the financial benchmark for assessing the value of a private-sector bid and includes the value of shifting project risk from the government to a private party. These funding mechanisms, or tools that allow TxDOT to obtain revenue or finance a project, are possible because House Bill (HB) 3588 brought Texas new tools for financing roadway projects.

No additional ROW would be required to accommodate the proposed Toll Project nor would tolling result in changes to the location, design, or footprint of the roadway. An electronic toll collection (ETC) system would be implemented on SH 121. Acquisition of right-of-way

(ROW) has been ongoing since the previously approved documents and is now 100 percent complete.

What is a "re-evaluation?"

A re-evaluation assesses significance and discloses impacts that are generated due to a change in the project as disclosed in the original environmental document and subsequent approvals. A re-evaluation, although its focus is on the change to the project, must assess whether or not that change alters the original decision in context and intensity of the impacts previously disclosed. When a change to a project that received previous environmental clearance occurs, the preparation of a re-evaluation is required under 23 Code of Federal Regulations (C.F.R.) 771.129(c) and 43 Texas Administrative Code (TAC) §2.13.

What changes have occurred since SH 121 was approved requiring a re-evaluation?

The change that requires the re-evaluation is the funding mechanism proposed for SH 121, which would implement tolling along the mainlanes of SH 121 from DNT to SH 121 at US 75 interchange. The tolling of SH 121 would also accelerate the construction by 9 to 18 years.

If a re-evaluation assesses changes to the previously approved project as well as impacts that were disclosed under previous environmental documents, where is that analysis located?

That analysis is disclosed in **Section 5.0: Direct Impacts**, **Section 6.0: Indirect Impacts**, and **Section 7.0: Cumulative Impacts**.

Why does the cover page say that the SH 121 re-evaluation limits are from FM 423 to the SH 121 At US 75 interchange?

The re-evaluation limits extend from FM 423 to US 75 and includes SH 121 at US 75 interchange; thus, this document re-evaluates the EAs and the related FONSIs and subsequent re-evaluations in light of the impacts resulting from the tolling of SH 121 from the DNT to SH 121 at US 75 interchange. In **Section 3.0**, the SH 121 project history and associated documents are discussed in further detail.

What is the Need for this project?

As documented in previous EAs, re-evaluations, and subsequent approvals, the need for SH 121 is to respond to considerable on-going growth of commercial and residential development along and near SH 121 that has and will continue to produce a major travel demand on this transportation system.

What is the purpose for this project?

The purpose of SH 121 is to improve system linkage and mobility in the area. The proposed tolling of SH 121 would support the overall project need and purpose by responding to population increases and associated development which have resulted in traffic increases that have created congestion in the study area and across the region. SH 121 was originally proposed to be constructed in stages due to financial constraints. The mainlanes are currently under construction from FM 423 to Hillcrest Rd. The purpose of the project was, and still is, to improve the transportation network and level of service (LOS) in the study area and region. The Toll Project would allow for the construction schedule to be accelerated for certain key facilities related to SH 121 such as the mainlanes from Hillcrest Rd. to US 75 in Collin County and the reconstruction of the US 75 interchange. Tolling SH 121 would allow the mainlane construction (from Hillcrest Rd. to US 75) to be implemented as early as 9 to 18 years sooner than previously programmed. In addition, the Toll Project would generate revenue for the operation and maintenance of SH 121 as well as funding other projects in comparable timeframes. These projects would be funded under the Regional Toll Revenue Funding Initiative and are further discussed in **Section 2.2**.

Why must SH 121 be tolled? If SH 121 is not tolled, would it still be constructed?

The mainlanes of SH 121 would likely be constructed without tolling in 9 to 18 years. The decision to pursue tolling SH 121 was made by the RTC who is responsible for overseeing the metropolitan transportation planning process. The decision process included coordination and consensus of local elected or appointed officials representing cities and counties, and transportation provider representatives.

What are the impacts of the Toll Project?

There are three types of impacts that may be caused by the Toll Project: direct, indirect, and cumulative.

What are the direct impacts associated with the Toll Project?

Direct impacts are defined by the Council on Environmental Quality (CEQ) regulations as impacts "caused by the action and occur at the same time and place." An example of a direct impact would be the potential increase in traffic noise associated with the redistribution of traffic from the mainlanes to the frontage roads. **Section 5.0** discusses the direct impacts due to the Toll Project.

What are the impacts due to the Toll Project on Farmlands, Waters of the U.S., including wetlands, Floodplains, Navigable Waters of the U.S., Vegetation, Water Quality, Threatened/Endangered Species, Land Use, Section 4(f) properties, Relocations and Displacements Public Facilities and Services, Hazardous Materials, Cultural Resources and Items of a special Nature (which include Airway-Highway Clearance, Coastal Zone Management Plan, Essential Fish Habitat, and Wild and Scenic Rivers)?

There are no impacts due to the Toll Project on those resources.

How is that possible?

The Toll Project would not require any additional ROW. The impacts to those resources result from the construction of SH 121 whether or not it is tolled. As such, those impacts are discussed in the previously approved EAs and subsequent approvals. However, **Section 5.0** of this re-evaluation summarizes the direct impacts due to the construction of SH 121 and tolling of SH 121. Direct impacts to the following resources related to the Toll Project are discussed in **Section 5.0** of the re-evaluation:

Natural Resources

Air Quality

Community Impact Assessment

Traffic Operations
Traffic Noise
Air Quality
Lighting and Visual Impacts
Socio-Economic Impacts
Economic Impact of Tolling
Environmental Justice

What are indirect impacts?

Indirect impacts are defined as impacts that are "caused by an action and occur later in time or farther removed in distance, but are still reasonably foreseeable" according to the CEQ (40 C.F.R. 1508.8) and may "include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems." All indirect impacts would occur outside of the ROW. Indirect impacts can be linked to direct impacts in a causal chain (National Cooperative Highway Research Program [NCHRP] Report 466).

What indirect impacts were studied for the Toll Project and what was the result?

The potential Toll Project indirect impacts are related to community issues, including environmental justice populations. Community related impacts studied included effects to air quality, public facilities and services, traffic operations, traffic noise, and environmental justice populations. Summaries of each resource are provided below, but also see **Section 6.0, Indirect Impacts** for more details.

Air Quality

The proposed Toll Project would result in some redistribution of traffic within the indirect impacts study area as drivers who do not elect or can only on occasional basis afford to pay the toll, seek non-tolled alternatives via other area roadways. Traffic would redistribute to the arterials in the adjacent municipalities. To the degree that this redistribution would result in increased congestion, slower speeds or increase idling conditions, the proposed Toll Project would result in indirect air quality impacts. However, as vehicles become more efficient and emissions are reduced, any adverse impacts of the proposed Toll Project and redistribution of traffic would be expected to decrease over time.

Public Facilities and Services

The potential for adverse indirect impacts to the 15 public facilities located within the indirect effects study area (six fire facilities, one government building, four hospitals, two police facilities, and two post offices) is not anticipated as transportation improvements are typically intended to improve congestion, mobility and access.

Traffic Operations

The LOS comparison derived from the NCTCOG 2030 traffic volumes and Complete Performance Report reflecting the SH 121 non-toll and toll scenarios reveals minimal change in the frontage road LOS due to changes in traffic patterns and minimal change in the LOS in the adjacent transportation network. Additionally, the analysis reveals slight improvements in the congestion delay and average free speeds along the local transportation network.

Traffic Noise

An analysis was conducted to determine the potential impacts the proposed Toll Project would have on noise levels within the municipalities adjacent to SH 121. These effects were based on the amount of change (increase) in noise levels that would result from the redistribution of traffic onto collectors and minor arterials within these municipalities. According to FHWA's Noise Policy/Guidance, a noise level change of 3 decibels (dB) is barely perceptible to the human ear. The average traffic noise level change (increase) in each municipality would be well below 1 dB and; therefore, there would be no associated, perceptible indirect effects and no mitigation would be warranted.

What are Cumulative Impacts?

Cumulative impacts are the incremental impacts that the project's direct and indirect impacts have on a resource in the context of the myriad of other past, present, and future impacts on that resource from unrelated activities (CEQ 40 C.F.R. § 1508.7). This analysis of cumulative impacts relies heavily on both existing land use impacts and the anticipated land use changes anticipated to occur in the project area and the impacts these changes would have on the resources considered in this analysis. In order to have a cumulative impact on the resource, the proposed action must have either a direct or indirect impact on that resource.

This re-evaluation addresses cumulative impacts which are best described by the following formula:

Cumulative impacts = direct impacts due to the Toll Project + indirect impacts due to the Toll Project + impacts due to actions that would be occurring whether or not the Toll Project happens.

What cumulative impacts were studied for the proposed Toll Project?

As documented in **Sections 5.0** and **6.0** in this document, it was determined that the proposed action would not have considerable direct or indirect impacts on the following resources or in the study area: Farmlands, Waters of the U.S., including Wetlands, Floodplains, Navigable Waters of the U.S., Vegetation, Water Quality, Threatened/Endangered Species, Land Use, Section 4(f) Properties, Relocations and Displacements, Public Facilities and Services, Hazardous Materials, Cultural Resources, and Items of a Special Nature (which include Airway-Highway Clearance, Coastal Zone Management Plan, Essential Fish Habitat, and Wild and Scenic Rivers).

Cumulative impacts are analyzed in terms of the specific resource being affected. The resources to consider in this analysis are community related:

Community (Resource)
- Traffic Operations
- Traffic Noise
- Air Quality (Resource)
- Lighting and Visual Impact
- Socio-Economic Impact
- Economic Impact of Tolling
- Environmental Justice (Resource)

See **Section 7.0: Cumulative Impacts** for more details.

What about Mobile Source Air Toxics (MSATs)? How is the Toll Project going to affect MSATs?

A quantitative MSAT analysis was performed for the Toll Project and results indicate that although the vehicle miles traveled (VMT) for the Toll Project would increase approximately 92 percent by 2030, when compared to 2007 the MSAT emissions would decrease at least 51 percent by 2030 as stated in **Section 5.1.8**.

What is an Environmental Justice (EJ) population? What is the potential impact to EJ populations due to the proposed Toll Project and how was this determined? What are the cumulative impacts due to the proposed Toll Project as related to EJ Populations?

An EJ population, as defined by the FHWA, is characterized by minority and low-income populations. Minority populations are defined by FHWA as Black, Hispanic, Asian American, or American Indian/Alaskan Native. A person whose median household income is at or below the Department of Health and Human Services (DHHS) poverty guidelines (2007 - $20,650 for a family of four) is considered low-income by FHWA.

Through a direct impact analysis, it was determined low-income populations would be impacted by toll rates, toll collection, and other matters associated with user fees. Should a low-income person be unable to pay the toll or utilize non-toll alternatives, this may result in a difference of time travel associated with utilizing non-toll alternatives. The economic impact of tolling would be higher for low-income users because the cost of paying tolls would represent a higher percentage of household income than for non-low-income users.

It is reasonable to assume that there would be a cumulative effect on environmental justice populations upon build-out of the toll system in 2030.

Where can I find a discussion on Community Impact Assessment due to the implementation of the Toll Project?

Section 5.0: Direct Impacts, **Section 6.0: Indirect Impacts**, and **Section 7.0 Cumulative Impacts** each investigate various elements of Community Impact Assessment.

What are the impacts related to traffic operations and level of service due to the proposed Toll Project?

Traffic redistribution due to tolling was considered in the NCTCOG traffic model and analyzed. However, the proposed tolling of SH 121 is not expected to substantially affect traffic movements on the frontage roads or local arterials. Using traffic volumes provided by NCTCOG (from *Mobility 2030*) the initial analysis indicates that the frontage roads in the eastern portion of the corridor, under the tolling scenario, would have unused capacity that would draw traffic off the main lanes should the main lanes be tolled. The frontage roads in the western portion, under the tolling scenario, have no unused capacity and would likely result in the movement of seven percent of the traffic to the local arterials. Using Complete Performance Reports from the NCTCOG *Mobility 2030* model, arterials within the municipalities of Allen, Fairview, Frisco, McKinney, and Plano would experience an increased LOS due to the construction of the Toll Project and little to no change in LOS between the toll and non-toll scenarios on their arterial streets.

This impact is discussed in **Section 5.3.3: Traffic Operations**, **Section 6.0: Indirect Impacts,** and **Section 7.0: Cumulative Impacts**.

Is the redistributed traffic going to result in noise impact as a result of the proposed Toll Project?

The re-evaluation includes an analysis of the potential affects of the redistribution of traffic on SH 121 from tolled mainlanes to non-tolled frontage roads and adjacent local arterials.

These traffic noise impacts from traffic redistributions to the frontage roads were determined by the associated change (increase or decrease) in sound pressure [noise] levels expressed in dB. Although traffic redistribution of the Toll Project would result in an increase in the average daily traffic (ADT) on many of the non-tolled frontage roads, any increase in noise levels associated solely with an increase in traffic on the frontage roads would be offset by the greater decrease (ADT) in faster (louder) traffic on the tolled mainlanes. The result would be an overall decrease in noise levels for areas along/adjacent to SH 121.

Also, while traffic would be redistributed onto collectors and minor arterials within adjacent municipalities, the associated increase in noise levels would be less than 1 dB and would not be perceptible to the human ear.

These impacts are discussed in **Section 5.3.4: Traffic Noise, Section 6.0 Indirect Impacts**, and **Section 7.0: Cumulative Impacts** of the re-evaluation.

Will traffic redistribution resulting from the proposed Toll Project cause any air quality impacts?

Implementation of the proposed Toll Project is anticipated to increase non-toll traffic demand along the frontage roads; therefore, the potential exists for localized increase of air emissions along the frontage roads. As traffic congestion increases along the frontage roads, traffic would redistribute to the arterials in the adjacent municipalities. To the degree that this redistribution would result in increased congestion, slower speeds or increase idling conditions; then the proposed Toll Project would result in indirect air quality impacts. However, as vehicles become more efficient and emissions are reduced, any adverse impacts of the proposed Toll Project and redistribution of traffic would be expected to decrease over time.

These impacts are discussed in **Section 5.1.8: Air Quality, Section 6.0 Indirect Impacts**, and **Section 7.0: Cumulative Impacts** of the re-evaluation.

Will the redistribution of traffic onto frontage roads and arterials as a result of the proposed Toll Project negatively impact safety?

No known safety issues would occur due to tolling (i.e. increased traffic on the local transportation network due to traffic redistribution). Although some traffic is redistributed throughout the local neighborhoods, the level of service remains nearly unchanged (See **Table 6-11** and **6-12** in **Section 6.0, Indirect Impacts**).

Adjacent municipalities have developed different strategies to handle traffic, including truck traffic on their local street networks. When necessary, traffic control devices such as signs or pavement markings are installed or modified.

The Toll Project is supposed to advance regionally significant projects. Where can I find the impacts related to those projects?

Section 2.2: Regional Toll Revenue Funding Initiative Projects provides background information related to the concepts of "Excess Toll Revenue Sharing" and "Regional Toll Revenue Funding Initiative" and can be reviewed in **Appendix B: Excess Toll Revenue Sharing Policy** and **2007 Regional Toll Revenue Funding Initiative Update**. Before implementation, Regional Toll Revenue Funding Initiative projects would be environmentally evaluated and would comply with applicable federal, state, and local requirements. The impacts associated with the Regional Toll Revenue Funding Initiative projects are discussed throughout **Section 7.0: Cumulative Impacts.**

Besides helping advance locally significant projects, how will up-front payments received by the RTC be used?

Per the RTC Resolution approved on April 13, 2006 and modified on September 14, 2006, all excess toll revenue generated from an individual toll project will remain in the TxDOT district from which it is generated. Excess revenue generated from toll projects shall be placed in county specific accounts and pro-rated based on the residential county of the toll payer (i.e., based on the county in which the vehicle is registered) on all toll roads (e.g. Collin County drivers who use a toll road in another county in the North Texas region would still contribute to the Collin County specific fund for future improvements). The RTC established a comprehensive development agreement (CDA) Task Force and developed a Regional Toll Revenue Funding Initiative to determine which projects would receive the available funding anticipated from the Toll Project. Project submittals were due by August 2007 and draft recommendations for projects are anticipated to a few months later.

There are already several toll roads in the DFW area. How many more are being proposed?

The 2007 transportation network for North Central Texas (calculated in mainlane lane-miles) consists of 4,397 lane-miles. Of the total system, 434 of the lane-miles are tolled and 3,963 are non-tolled. In other words, the tolled mileage accounts for approximately 11 percent of the 2007 North Central Texas network. The anticipated 2030 transportation network for North Central Texas (also calculated in mainlane lane-miles) would consist of approximately

8,569 mainlane lane-miles, of which 30 percent (approximately 2,542 lane-miles), are proposed to be tolled. The anticipated increase of tolled mainlanes from 11 to 30 percent is indicative of an emerging regional tolling network.

What will the toll rate be?

Using 2010 dollars and following the business terms for setting toll rates established by the RTC, it is estimated that the user fee for SH 121 would be approximately 14.5 cents/mile. Initially, there would be a set toll of an average of 14.5 cents/mile for the entire day. After some evaluation has been completed, a set of peak and off-peak tolls are likely to be established to better optimize the facility operations. The maximum average toll rate is the average of the maximum Peak-Hour Toll rate (17 cents/mile) and the maximum Off-Peak toll rate (12.5 cents/mile).

Do I need to obtain a toll transponder or other device to use SH 121? How do I purchase it?

A toll transponder is not required; a driver may use the video billing system. Under the video billing system, a photograph would record the vehicle's license plate as it travels through a toll gantry. The license plate information would then be used to identify the registered owner who would be sent a monthly invoice for the incurred tolls. This system allows for use of the facility by those that do not have an active toll account. The toll rates for drivers without a toll transponder would include an additional percentage premium of up to 45% plus a processing fee.

Toll transponders can be obtained from TxDOT, NTTA, and the Harris County Toll Road Authority (HCTRA). TxDOT TxTag® stickers, the NTTA TollTag® (Dallas area), and the HCTRA EZ TAG® (Houston area) would be accepted on the SH 121 facility. Some entities would require prepayments, deposits and/or charge fees to obtain a toll transponder which is further discussed in **Section 5.3.7.1, Economic Impact of Tolling**.

How was public involvement involved as part of the re-evaluation process?

The purpose of the public involvement activities during the re-evaluation process was to ensure every reasonable opportunity to participate was made available to interested citizens, civic groups, organizations, and public officials. Since initiation of the re-evaluation, TxDOT has maintained an active public involvement effort for this Toll Project including conducting a

public meeting, public hearing and maintaining a website (http://www.keepitmovingdallas.com). TxDOT followed federally approved TAC public involvement procedures and policy based on 43 TAC § 2.5 through 2.9 and 23 C.F.R. Part 771.111. Information presented at the July 2006 public meeting and the February 2007 public hearing, including the conceptual toll plan and re-evaluation have also been available at http://www.keepitmovingdallas.com and at the TxDOT Dallas District Office for public review and inspection. A copy of the July 2006 public meeting summary can be found in **Appendix D: Public Meeting Summary**.

At the meetings, plans, maps, and exhibits illustrating the proposed improvements were displayed for public view and comment. These illustrations included the conceptual toll plan, project location map, toll gantry location map, project timeline, and exhibit boards outlining the TxDOT challenge, and TxTag® interoperability. In addition, a three dimensional (3-D) rendering of the proposed toll facility was available for citizens to view. Copies of the TxDOT Relocation Assistance booklet, TxDOT State Purchase of ROW booklet, and copies of the re-evaluation that was approved by FHWA as satisfactory to proceed to public hearing were also available. TxDOT and other project personnel knowledgeable about the proposed project were available at the exhibit areas to discuss comments and questions posed by the citizens.

In addition to the aforementioned public involvement, TxDOT has either hosted or attended 50 additional meetings from October 16, 2005 to the present. These meetings were held with local officials and entities, including: Collin County, the Cities of Plano, Frisco, Allen, and McKinney, the NTTA, and the RTC. Topics discussed in these meetings include:

- Toll Feasibility
- Study of Funding Options
- Discussions on Local Government Corporation
- Review of Finance and Delivery Options
- Reviews and Discussions on NTTA to Finance and Deliver
- Task force meetings (CDA Procurement, Schedules, Contract Overview, and Near Neighbor/ Near Timeframe projects)
- CDA Overview
- CDA Value and Contract Requirements
- Presentation of Tolling Procedure Status

Many of these meetings were in response to a Collin County Commissioners Court Resolution requesting TxDOT, NCTCOG, and the NTTA to perform a funding feasibility study for SH 121 from DNT to US 75. A complete listing of meetings can be found in **Appendix B: Coordination and Policy**.

How did public involvement influence the process?

During preparation of this re-evaluation, there have been many opportunities for public and agency comments regarding the proposed Toll Project. The primary issues raised were environmental justice, air quality/pollution, selling of SH 121 to a foreign/private developer, funding availability, tolling concerns (i.e. toll rate, video billing), public involvement procedures, the tolling process (Private Developer or Public Sector Comparator), preparation and content of the re-evaluation, and traffic redistribution/congestion. All written comments, letters, comment forms, and verbal comments from the public involvement have been reviewed and thoroughly analyzed and additional analyses has been conducted and included as a result of this outreach. For example, origin destination data and traffic redistribution information are now included in the re-evaluation in order to respond to questions and comments received through the public involvement process.

What agencies were involved in the Toll Project and how was input obtained?

The decision to pursue tolling SH 121 was made by the RTC who is responsible for overseeing the metropolitan transportation planning process. The decision process included coordination and consensus of local elected or appointed officials representing cities and counties, and transportation provider representatives. Because of mobility needs and a lack of funding to construct SH 121 in Collin County, the Collin County Commissioners Court asked regional planning authorities to assist the County in conducting a feasibility study on the Collin County portions of SH 121 in order to study roadway options and funding strategies. A SH 121 feasibility study team was assembled which included representatives from Collin County, the NCTCOG, TxDOT, the NTTA, and the impacted cities along the corridor. In order to conduct a feasibility study for the Collin County portions of SH 121, a technical planning process was mapped out and followed. The planning process was developed and started in the fall of 2004, and was completed in the spring of 2005. Several meetings of the SH 121 feasibility study team took place during this time to monitor and discuss the results of each task. SH 121 has been incorporated as a toll facility into the financially constrained long-range plan known as the

Mobility 2030 Metropolitan Transportation Plan (MTP). To date TxDOT has hosted or attended 50 meetings with local entities and agencies (including NCTCOG, NTTA, the Cities of Allen, Frisco, McKinney and Plano, and Collin County) to discuss the development, financing, and operation of SH 121. Although local input and wishes were considered, other factors such as financial constraints and regional mobility contributed to the decision to pursue tolling SH 121.

The following municipalities are adjacent to the proposed project: Plano, Frisco, Allen, McKinney, and Fairview. Support for the proposed tolling of SH 121 has been passed by four of the adjacent entities. Plano, Allen, and McKinney have passed resolutions in support of SH 121 as a toll facility, with various conditions for local authorities, NTTA and excess toll revenue decisions. Frisco does not support the decision to toll SH 121 based on the most current resolution passed by the City on April 4, 2006. Fairview has passed a resolution in favor of tolling.

Why did the contract for the Toll Project get awarded to a private developer the day after the public hearing?

TxDOT is following the RTC's request to develop the corridor as rapidly as possible. FHWA approved TxDOT's continuing work on the procurement because there is already an approved environmental document for each segment of the facility. FHWA concluded that the procurement work could proceed during the re-evaluation of the environmental document for the portion of the facility in Collin County.

Most importantly, TxDOT has not executed a contract. In February 2007, TxDOT announced the selection of an apparent best value proposer. As stipulated in TxDOT Minute Order 110863, the contract has been conditionally awarded to, subject to, and effective upon the concurrence of, all of the following:

- the successful completion of negotiations;
- concurrence in award by FHWA and any other applicable FHWA approvals as identified by TxDOT, including FHWA's acceptance of the FONSI Re-evaluation;
- receipt by TxDOT of all of the documents and payment required to be provided under the Request for Proposal (RFP) prior to execution of the contract; and
- mutual execution and delivery of the CDA by the Executive Director of the TxDOT and the Proposer.

In May 2007, NTTA submitted a Binding Commitment as a Public Sector Comparator. On August 23, 2007, the conditional award of the apparent best value proposal selected in February 2007 was cancelled and the Texas Transportation Commission (TTC) approved Minute Order 111030 which authorizes TxDOT to enter into a project agreement with the NTTA, subject to environmental clearance of this re-evaluation. It is expected that the final contract to develop SH 121 will be awarded to NTTA.

Does NTTA have a role in this project?

In August 2006, TxDOT and NTTA agreed to "The Proposed TxDOT/NTTA Protocol" that allowed for the NTTA to participate in the SH 121 project by collecting the tolls for the first five years of the operations. At that time, NTTA agreed not to compete for the Developer portion of SH 121. The NTTA and TxDOT committed to supporting the CDA delivery by TxDOT of SH 121 in accordance with the CDA MOU executed by those parties.

In February 2007, the selection and conditional award of the apparent best value proposal for the development of SH 121 was announced. In March 2007, State Senator John Carona requested and the RTC reconsidered its action plan for the tolling initiative following numerous comments on the proposals. The RTC provided the NTTA options which included the ability to submit a Binding Commitment for the SH 121 Project in Denton/Collin Counties to the RTC that is in full compliance with the terms and conditions of the SH 121 CDA procurement process. In April 2007, the NTTA notified the RTC that a Binding Commitment for the SH 121 project would be prepared and submitted on or before May 25, 2007. In response to this notification, the TTC waived a section of the Protocol between TxDOT and the NTTA on May 15, 2007 stating "the action is consistent with their plan to accelerate transportation projects by driving down costs through competition and empowering regional leaders to solve transportation problems." The RTC held a workshop on June 14, 2007 to hear evaluations of the Cintra and NTTA proposals. Following the workshop, the RTC met on June 18, 2007 and voted to recommend the NTTA (the Public Sector Comparator) to develop the project. On August 23, 2007, the TTC approved Minute Order 111030 which authorizes TxDOT's Executive Director to enter into the project agreement with the NTTA, subject to environmental clearance. It is anticipated that the final contract would be signed with NTTA upon environmental clearance. See **Section 2.0: Need and Purpose, Toll Funding Initiatives** for information.

What is status and recommendation for the Toll Project?

Since the time of the last environmental documentation for this project, there have been no changes in design or ROW requirements. The previously approved environmental documents and subsequent approvals were completed without the consideration of tolling. One public meeting and one public hearing were held to inform the public about the Toll Project. This re-evaluation assessed the project changes associated with the electronic tolling of SH 121. The project modifications to toll the proposed facility would not result in substantive impacts (direct + indirect). In addition, when combined with impacts as disclosed under the cumulative impacts section; and, the previous studies conducted for SH 121, including those further analyzed in this re-evaluation, do not result in substantive impacts.

What happens next?

In June 2007, the RTC met and selected the NTTA as the Public Sector Comparator to develop, finance, design, construct, maintain, and operate SH 121. The current schedule anticipates that the mainlanes of SH 121 from East of Hillcrest Rd. to US 75 would be complete and open to traffic by 2011. SH 121 at US 75 interchange would be complete and open to traffic by 2015.

1.0 INTRODUCTION

State Highway (SH) 121 has been in various stages of planning, design, and construction since the mid-1980s. Previous environmental approvals consist of a Finding of No Significant Impact (FONSI) issued on November 22, 1991 which approved the expansion of SH 121 from a two-lane undivided highway to a six lane-lane divided freeway with three-lane frontage roads in both directions from Farm-to-Market (FM) 423 to United States Highway (US) 75, and a FONSI issued on April 20, 2006 for the construction of a fully directional interchange[1] at SH 121 and US 75. In addition, since issuance of the FONSIs, a number of re-evaluations have been prepared and approved. The purpose of this re-evaluation is to assess impacts that would result should – as currently proposed – the SH 121 mainlanes between the Dallas North Tollway (DNT) and SH 121 at US 75 interchange be implemented as a toll facility. The "Re-evaluation Limits" are SH 121 from FM 423 to US 75 and includes SH 121 at US 75 interchange. (See **Appendix A: Figure 1** for the Project Location Map and **Appendix C: Corridor Map**.)

In accordance with the November 22, 1991 and April 20, 2006 environmental approvals, construction of SH 121 as a six lane controlled-access facility with three lane frontage roads was initiated in 2002. To date, frontage roads have been constructed from FM 423 to US 75. The mainlanes of SH 121 from FM 423 to east of Hillcrest Road (Rd.) are under construction. Funding to construct the remaining portion of SH 121, the mainlanes from east of Hillcrest Rd. to US 75, would not be available until at least 2016 (and possibly as late as 2025) if the improvements were to be funded through the traditional "pay-as-you-go" process.

To accelerate the completion of SH 121, the Regional Transportation Council (RTC) of the North Central Texas Council of Governments (NCTCOG) – the metropolitan planning organization (MPO) for the Dallas-Fort Worth (DFW) region– voted to use toll financing to complete SH 121. Although several delivery methods are currently under consideration, the private or public sector financing of SH 121 has no bearing on the decision of this re-evaluation. These delivery methods are presented in this re-evaluation strictly for informational purposes. Accordingly, SH 121 from DNT to SH 121 at US 75 interchange is identified as a toll-financed project in the fiscally-constrained long-range transportation plan for the region.

[1] A fully directional interchange is an interchange where all turn movements are provided by direct connections. Fully directional interchanges are designed for expressway to expressway connections where high turn volumes exist in all directions, and high speed uninterrupted flow is needed.

The Re-evaluation Limits extend from FM 423 to US 75 and include the SH 121 at US 75 interchange; thus, this document re-evaluates the environmental assessments (EAs) for which the above-mentioned FONSIs were issued. In April 2006, the Federal Highway Administration (FHWA) approved two documents that assessed the impacts that would result from tolling SH 121 in Denton and Collin Counties. One document was an EA/FONSI (SH 121 from 0.23 mile west of Business SH 121 to east of MacArthur Blvd.) and the other was a FONSI re-evaluation (SH 121 from east of MacArthur Blvd. To DNT), both approved on Apri1 14, 2006 (See **Appendix A: Figure 1**). Because SH 121 is approved as a toll facility to the DNT, this re-evaluation focuses on potential tolling impacts from the DNT to SH 121 at US 75 interchange. For purposes of this re-evaluation, the proposed "Toll Project" is defined as the SH 121 mainlanes between DNT and SH 121 at US 75 interchange. Likewise, the "Toll Project Limits" would extend from DNT to SH 121 at US 75 interchange (See **Appendix A: Figure 1**). In **Section 3.0**, the SH 121 project history and associated documents are discussed in further detail.

With the ability to outsource the development of SH 121, the Texas Department of Transportation (TxDOT) has the opportunity to expedite the delivery of SH 121 while maximizing the benefits of available transportation funding. Although the mainlanes[2] of SH 121 are proposed for tolling, the frontage roads would remain non-tolled. No additional right-of-way (ROW) would be required to accommodate the Toll Project nor would tolling result in changes to the location, design, or footprint of the roadway. Construction of structures called "gantries" would be necessary to support the toll collection equipment.[3] **Section 4.0** contains additional information regarding gantries and the proposed toll collection system.

1.1 Approach

This re-evaluation has been prepared in accordance with FHWA Texas Division Office policy memorandum, *Policy for Planning, Environment and Project Development for Toll Roads* and TxDOT's *Guidance on the Environmental Process for Toll Roads*. The statements, studies, and conclusions documented in this re-evaluation have been examined and analyzed in three steps – the findings of each step are documented in this re-evaluation.

[2] A mainlane is an expressway lane. Defined by NCTCOG, an expressway is a wide road built for fast moving traffic traveling long distances, with a limited number of points at which drivers can enter and exit. Expressways may be tolled or non-tolled.

[3] Gantries are structures that resemble the sign-bridges typically found along Texas highways.

Step 1 entailed identifying changes to the project's location, design, or footprint that would result from the Toll Project (See **Section 4.0: Project Changes/Tolling.**).

During Step 2, environmental conditions were assessed to identify changes to the project area and regulatory environment that have occurred since the issuance of the previous approvals. (See **Section 8.0: Review of Regulatory Changes**.)

Finally, during Step 3, the environmental consequences of tolling SH 121, as proposed in the long-range transportation plan, were analyzed. The findings of these analyses are documented in **Section 5.0: Direct Impacts, Section 6.0: Indirect Impacts,** and **Section 7.0: Cumulative Impacts. Section 9.0: Public Involvement** summarizes the public involvement efforts. **Section 10.0** documents the conclusions drawn from the re-evaluation process.

2.0 NEED AND PURPOSE

2.1 Need and Purpose of SH 121 Improvements

As documented in previous EAs, subsequent approvals, and re-evaluations, the need for SH 121 is to respond to considerable on-going growth of commercial and residential development along and near SH 121 that has and will continue to produce a major travel demand on this transportation system. The purpose of SH 121 is to improve system linkage and mobility in the area.

The proposed tolling of SH 121 would support the overall project need and purpose by responding to population increases and associated development which have resulted in traffic increases that have created congestion in the study area and across the region. SH 121 was originally proposed to be constructed in stages due to financial constraints. The mainlanes are currently under construction from FM 423 to Hillcrest Rd. The purpose of tolling SH 121 was, and still is, to improve the transportation network and level of service (LOS) in the study area and region by adding capacity to SH 121. The tolling of SH 121 would allow for the construction schedule to be accelerated for certain key facilities related to SH 121 such as the mainlanes from Hillcrest Rd. to US 75 in Collin County and the reconstruction of the US 75 interchange. Tolling SH 121 would allow the mainlane construction (from Hillcrest Rd. to US 75) to be implemented as early as 9 to 18 years sooner than previously programmed. In addition, the Toll Project would generate revenue for the operation and maintenance of SH 121 as well as funding other projects in comparable timeframes. These other projects would be funded by the Regional Toll Revenue Funding Initiative and are further discussed in Section 2.2.

SH 121 in Collin County is at a crossroads. As Collin County's principal route to the DFW International Airport, and a vital east-west corridor connecting US 75 in McKinney to Denton County and points west, SH 121 continues to become more congested and strained every day. Currently, commuters experience severe congestion during both the morning and evening commute periods along SH 121 (the *NCTCOG Commuter Traffic Report* is available to confirm observed congestion values).[4] Traffic counts have more than doubled between 1995 and 1999, and have more than tripled at the intersection of SH 289 (Preston Rd.) and SH 121. As

[4] NCTCOG, *DFW Commuter Traffic Study – 1999/2000*, http://www.nctcog.org/trans/data/aerial/1999/index.asp

southwest Collin County continues to grow in both employment and population, the SH 121 corridor will continue to experience exponential growth in traffic.[5]

As a testament to the roadway's regional significance, SH 121 in southern Collin and Denton Counties has been targeted for large-scale improvements for several decades, identified first in 1986 as a limited-access freeway or parkway in the Regional Transportation Commission (RTC) *Mobility 2000: The Regional Transportation Plan for North Central Texas*. Early design schematics for SH 121 as a limited-access facility were produced as early as 1989 by TxDOT, and indicated that the corridor would carry six mainlanes and six frontage road lanes.[6]

By 2002, new design initiatives were completed throughout the corridor and additional funding had been secured to allow the full limited-access facility and frontage roads to be built between the west end of the Lewisville Bypass and Hillcrest Rd. in Frisco. Between Hillcrest Rd. and US 75 in McKinney, however, only frontage roads were funded, except for a lone grade separation project at FM 2478 (Custer Rd.). Despite the intense construction efforts underway, a major turning point in the future of SH 121 occurred in September 2004. The RTC, through a regional partnership program with TxDOT, Denton County, and the Cities of Carrollton, Coppell, Frisco, Lewisville, and The Colony, took action to fund and construct SH 121 as a toll facility in Denton County as part of the RTC-initiated Partnership Program in conjunction with the development of the *Texas Metropolitan Mobility Plan*. This proposal was enacted to reprogram gas tax supported funding for SH 121 toward large-scale improvements and construction, otherwise known as the near neighbor/near timeframe policy.[7]

Because of mobility needs and a lack of funding to construct SH 121 in Collin County, the Collin County Commissioners Court asked regional planning authorities to assist the County in conducting a feasibility study on the Collin County portions of SH 121 in order to study roadway options and funding strategies. In September 2004, the Collin County Commissioners Court requested that TxDOT, NCTCOG and North Texas Tollway Authority (NTTA) prepare a funding feasibility study for SH 121 from DNT to US 75. A SH 121/Collin County Task Force was formed which included Collin County, TxDOT, NCTCOG, NTTA and the Cities of Allen, Frisco, Plano and McKinney. The Task Force began meeting in order to develop a financing options report for SH 121 in Collin County. The meetings began in September 2004 and

[5] *Two Futures for Collin County: Incremental Versus Leveraged (SH 121 Feasibility Study Report)*, April 2005. http://www.nctcog.org/trans/corridor/SH121/SH121FeasibilityStudyReport.pdf
[6] *Ibid.*
[7] *Ibid.*

continued until April 2005 when NCTCOG and TxDOT presented a summary of the financing options to the Collin County Commissioners Court and City Councils of Allen, Frisco, McKinney and Plano.[8]

In July of 2005, the Collin County Commissioners Court adopted a resolution to consider financing SH 121 in Collin County through a Local Government Corporation (LGC). From August 2005 until November 2005, TxDOT staff met monthly with Collin County and the Cities of Allen, Frisco, Plano and McKinney regarding design-build, comprehensive development agreements (CDA) and private financing options. Ultimately, Collin County reconsidered financing SH 121 and withdrew its LGC proposal.

The decision to pursue tolling SH 121 in Collin County was made by the RTC who is responsible for overseeing the metropolitan transportation planning process. The decision process included coordination and consensus of local elected or appointed officials representing cities and counties, and transportation provider representatives. SH 121 has been incorporated as a toll facility into the financially constrained long-range plan known as *Mobility 2030:* Metropolitan Transportation Plan (MTP*)*. Although local input and wishes were considered, other factors such as financial constraints and regional mobility contributed to the decision to pursue tolling of SH 121 in Collin County.

Objectives of the Project

The primary objective of the proposed Toll Project is to provide a solution to the "Texas Transportation Challenge" by utilizing new funding tools to further expedite the construction of the transportation network in this region by:[9]

- Providing toll revenue as an additional funding source to pay for the capital cost, as well as operation and maintenance of the proposed Toll Project;
- Creating a revenue source to fund future capacity improvements along SH 121;
- Allocating future excess toll revenue so that it would be reinvested in future (near timeframe) transportation projects in the local area (near neighbor);[10]

[8] *Ibid.*
[9] *The Texas Transportation Challenge*. Texas Department of Transportation, http://www.dot.state.tx.us/publications/government_and_public_affairs/challenge.pdf
[10] Excess toll revenue is defined by the RTC as annual toll revenue after the annual debt service, and after annual reserve funds have been set aside to cover facility operational costs, anticipated preventive maintenance activities, assigned profit, and related expenses for the CDA, and the expected cost of rehabilitation or reconstruction of the facility.

- Accelerating future project construction schedules and help alleviate congestion; and
- Enhancing economic development and even accelerating the local tax-base growth.

Due to funding shortfalls and adherence to the NCTCOG's financially constrained plan, a diversified approach to funding SH 121 was evaluated. The financially constrained plan focuses only on what a region can afford, not what it actually needs. Without innovative funding solutions, the mainlanes of SH 121 would not be funded until at least 2016 and possibly until 2025.

Toll Funding Initiatives

Statewide Perspective

Texas House Bill (HB) 3588, enacted in the 78th legislative session, relates to the construction, acquisition, financing, maintenance, management, operation, ownership, and control of transportation facilities and the progress, improvement, policing, and safety of transportation in the state. The bill addresses the full scope of transportation issues facing the state by integrating existing transportation policies and providing a means to fund them.

With HB 3588 enacted, TxDOT now has the authority to utilize a toll facility option for highway funding. HB 3588 provides for a revenue source for the Texas Mobility Fund (TMF), a one-time bond program that would infuse billions in funding for mobility projects over several years.

In December 2003, the Texas Transportation Commission (TTC) approved a policy instructing TxDOT to evaluate all controlled-access highway projects as possible candidates for tolling. On March 24, 2004, the TTC approved Minute Order 109615, which allows TxDOT to issue bonds and other public securities to fund state highway system improvements. It is TxDOT policy to evaluate all controlled-access highway projects as possible candidates for tolling. This includes all controlled-access projects, including those under construction and those in the planning stage involving new lane construction.

Regional/Local Decisions

As mentioned previously, the RTC of NCTCOG voted to use toll financing to complete the construction of SH 121. The RTC approved the *Mobility 2030* recommendations and amended 2006-2008 Transportation Improvement Program (TIP), which included the proposed Toll Project. In the foreseeable future, the proposed Toll Project could substantially benefit

communities in the project area by generating revenue for additional transportation projects that could also improve system linkage and mobility.

The following municipalities are located along the Toll Project Limits: the Cities of Plano, Frisco, Allen, McKinney, and the Town of Fairview. Support for the proposed Toll Project has been passed by four of the adjacent entities. The Cities of Plano, Allen, and McKinney have passed resolutions in support of the proposed Toll Project, with various conditions for local authorities, NTTA, and excess toll revenue decisions. The City of Frisco does not support the decision to pursue tolling SH 121 based on the most current resolution passed by the city on April 4, 2006. The Town of Fairview has passed a resolution in favor of tolling. (See **Appendix B: Municipal Resolutions**.)

An unsolicited proposal to develop and finance SH 121 through Denton and Collin Counties was received by TxDOT in January 2005. A Request for Competing Proposals and Qualifications for Development was authorized by the TTC in February 2005 and by July 2005, four teams had proposed to finance and develop SH 121. In August 2006, TxDOT issued a Final Request for Detailed Proposals for SH 121.

In August 2006, TxDOT and NTTA agreed to "The Proposed TxDOT/NTTA Protocol" that allowed for the NTTA to serve as the toll collection entity for the first five years of the toll road operations. (See **Appendix B: TxDOT/NTTA Regional Protocol Summary**.) At that time, NTTA agreed not to compete for the Developer portion of SH 121.

The Protocol is an agreement to allow the implementation of future regional toll facilities. The agreement clarified commitments regarding planning, funding, construction, and operation of toll and managed facilities in the region. This agreement is a result of the regional partnership requested by the RTC of the NCTCOG. The NTTA and TxDOT committed to supporting the CDA delivery by TxDOT of SH 121 in accordance with the CDA Memorandum of Understanding (MOU) executed by those parties.

Three detailed proposals were submitted for SH 121 in January 2007 and in February 2007 the selection and conditional award of the apparent best value proposal for the development of SH 121 was announced.

In March 2007, State Senator John Carona requested and the RTC reconsidered its action plan for the tolling initiative following numerous comments on the proposals. The RTC provided the NTTA with two options:

1) Submit a Binding Commitment for the development of SH 121 in Denton/Collin Counties to the RTC that is in full compliance with the terms and conditions of the SH 121 CDA procurement process, or
2) Respond to the previous RTC Requests to determine an action plan for the remaining toll projects in the region.

In addition, TxDOT was directed to determine if the options given to the NTTA violates the Protocol and would therefore require an amendment.

In April 2007, the NTTA notified the RTC that a Binding Commitment for SH 121 would be prepared and submitted on or before May 25, 2007. In response to this notification, the TTC waived a section of the Protocol between TxDOT and the NTTA on May 15, 2007 stating "the action is consistent with their plan to accelerate transportation projects by driving down costs through competition and empowering regional leaders to solve transportation problems." (See **Appendix B: TxDOT/NTTA Regional Protocol Waiver**.) The RTC held a workshop on June 14, 2007 to hear evaluations of the Cintra and NTTA proposals. Following the workshop, the RTC met on June 18, 2007 and voted to recommend NTTA (Public Sector Comparator) to develop the project. On August 23, 2007, the TTC approved Minute Order 111030 which authorizes TxDOT's Executive Director to enter into the project agreement with the NTTA, subject to environmental clearance. It is anticipated that the final contract would be awarded to the NTTA upon environmental clearance.

Innovative Funding Solutions

The mobility needs in Texas are significant. Transportation planners have identified billions of dollars of funding shortfalls to achieve an acceptable level of mobility in 2030. To close the substantial funding gap between projected needs and traditional funding, the Texas Legislature has expanded the transportation funding options available for use. The five tools and key strategies for funding critically needed projects in order to meet the State's mobility objectives include:

- Regional Mobility Authorities
- Toll Roads

- Pass-Through Toll Financing
- State Infrastructure Bank Loans
- CDAs

CDAs and toll road development are among those options and are key strategies for funding critically needed projects in order to meet the objectives of SH 121. The remaining SH 121 construction may be funded and constructed through a CDA, which is a mechanism for funding which involves partnerships with private interests. The CDA process allows multiple competitors to propose various solutions to TxDOT. This process allows TxDOT the opportunity to select the best solution for the region while maintaining control of operational and maintenance issues for the corridor. This funding mechanism is possible because HB 3588 brought Texas new tools for financing roadway projects. The RTC's policy on the Regional Toll Revenue Funding Initiative identifies the conditions and stipulations that must be met.

2.2 Regional Toll Revenue Funding Initiative Projects

Under the RTC's near neighbor/near timeframe policy, when a previously planned tax supported highway is shifted into a toll facility, those original gas tax funds are to be reallocated to projects that serve the same transportation system users, and the newly identified projects are to be completed in comparable timeframes. Frontage roads, the Custer Rd. overpass, and the mainlanes from DNT to Hillcrest Rd. received gas tax funding; however, in accordance with the RTC's Regional Toll Revenue Funding Initiative policy, an up-front payment would be placed in county specific accounts and pro-rated based on the residential county of the toll payer (i.e., based on the county in which the vehicle is registered) on all toll roads (e.g. Collin County drivers who use a toll road in another county would still contribute to the Collin County specific fund for future improvements). Under this policy, participating counties and associated municipalities would submit to the RTC the locally significant projects suggested to be funded through the up-front payment. Based on the suggested listing of projects, the RTC selects and identifies projects for funding. (See **Appendix B: Excess Toll Revenue Sharing Policy** and **2007 Regional Toll Revenue Funding Initiative Update**.)

Preliminary Regional Toll Revenue Funding Initiative projects anticipated from the excess toll revenue have yet to be identified by RTC officials. Projects benefiting from the proposed tolling implementation in terms of accelerated schedules include the SH 121/DNT and SH 121/US 75 interchanges. A selection process would assist with the identification of additional projects to be funded by tolling SH 121. To date, two near neighbor/near timeframe

projects were identified in Collin County as a result of the implementation of tolling SH 121 primarily in Denton County as described in the SH 121 MOU funding strategy (See **Appendix B: SH 121 Funding Strategy MOU**). The two near neighbor/near timeframe projects located in Collin County are FM 3537 from SH 289 to FM 2478 and US 75 at Parker Rd. Additional Regional Toll Revenue Funding Initiative projects anticipated from the excess toll revenue have yet to be identified by the RTC, however a funding initiative has been initiated by the RTC to distribute the excess funds that would be generated from the proposed Toll Project (See **Appendix B: 2007 Regional Toll Revenue Funding Initiative Update**).

By partnering together, state and local officials can leverage additional state transportation funds, freeing existing allocations for critical, but otherwise unbudgeted, safety, capacity, and air quality projects. This shift allows new projects that were originally budgeted through gasoline tax revenue, such as SH 121, to be built or opened as toll facilities with accelerated construction schedules. This revenue would then be used to build additional transportation facilities with accelerated construction schedules. By leveraging the tax supported capital investment in SH 121, estimated at approximately $300 million, TxDOT would be able to develop a total program of over $700 million (present value) in new construction.[11]

[11] *Two Futures for Collin County: Incremental Versus Leveraged (SH 121 Feasibility Study Report)*, April 2005. http://www.nctcog.org/trans/corridor/SH121/SH121FeasibilityStudyReport.pdf

3.0 SH 121 HISTORY

The planning, design, and construction of SH 121 has been in development since the mid-1980s. **Table 3-1** depicts the previously approved environmental documents and history of SH 121.

TABLE 3-1: SH 121 HISTORY

CSJ Number(s)	Limits	Document Type	Approval Date	Status
FM 423 to US 75				
0364-03-067	FM 423 to US 75	EA	11/22/1991	FHWA FONSI
0364-03-067	FM 423 to US 75	Notice of Continuous Activity	Submitted to FHWA for files 6/3/1999	Received by FHWA
0364-03-067, etc.	FM 423 to US 75	FONSI Re-evaluation	10/17/2002	Approved by FHWA
0364-04-043	FM 423 to US 75 (West of Ohio Dr. to East of Hillcrest Rd.)	FONSI Re-evaluation	4/7/2006	Approved by FHWA
SH 121 at US 75 Interchange				
0364-04-040	SH 121 at US 75 Interchange	EA	4/20/2006	FHWA FONSI
SH 121 Re-evaluation for Tolling				
0364-04-046*	FM 423 to US 75 (DNT to SH 121 At US 75 Interchange)	FONSI Re-evaluation	Pending	Pending; subject of this re-evaluation
3547-01-001	0.23 Mile West of Business SH 121 to East of MacArthur Blvd.	EA	4/14/2006	FHWA FONSI
0364-03-065**	East of MacArthur Blvd. to DNT	FONSI Re-evaluation	4/14/2006	Approved by FHWA

*Construction and tolling would be implemented for 0364-04-040 and 0364-03-067 within the limits specified.
**The FONSI Re-evaluation approved the construction and tolling of SH 121 for the following projects: SH 121/IH 35E Interchange (From East of MacArthur Blvd. to East of IH 35E); SH 121 Bypass (from East of IH 35E to 0.05 Mile East of FM 423); and SH 121 from FM 423 to DNT.

Previously Approved Environmental Documents

As shown in **Table 3-1**, three EAs and four re-evaluations (from which three have been approved to date) have been prepared for SH 121 since its inception. The decision documents for the previously approved projects can be reviewed in **Appendix B: Coordination and Policy**. Summaries of the previously approved documents are listed below.

1) EA/FONSI (Approved November 22, 1991), Notice of Continuous Activity (Submitted to FHWA by TxDOT letter dated June 3, 1999 for files), FONSI Re-evaluation (Approved October 17, 2002), and *FONSI Re-evaluation (Approved April 7, 2006)*
SH 121: From FM 423 to US 75
CSJs: 0364-03-067 (Original CSJ), 0364-03-066, 0364-04-022, 0364-04-024, 0364-04-037, 0364-04-038, and 0364-04-043

The proposed improvements evaluated in the above stated documents, other than SH 121 from West of Ohio Dr. to East of Hillcrest Rd., included the construction of mainlanes and frontage roads from FM 423 to US 75. TxDOT held a public hearing on October 23, 1990. The purpose of the Notice of Continuous Activity was to document that continuous activity had taken place and there were no changes in design, land use or impacts. The Notice of Continuous Activity was received by FHWA on June 3, 1999. The purpose of the FONSI Re-evaluation was to document changes in the design and affected environment since FHWA approval of the EA in 1991, assess impacts associated with those changes, and re-confirm the validity of the FONSI. The FONSI Re-evaluation received FHWA clearance on October 17, 2002. The FONSI Re-evaluation for SH 121 from West of Ohio Dr. to East of Hillcrest Rd. addressed the need for a jug-handle overpass at the intersection of SH 121 and Ohio Dr. Meetings with affected property owners were documented and submitted to TxDOT's Environmental Affairs Divisions (ENV) on January 26, 2006. The new overpass was evaluated and the FONSI Re-evaluation was approved by FHWA on April 7, 2006.

2) EA/FONSI (Approved April 20, 2006)
SH 121: At US 75 Interchange
CSJ: 0364-04-040

The proposed improvement evaluated in the above stated document was the construction of a fully directional interchange at SH 121 and US 75. TxDOT held a public meeting on April 8, 2003 and a public hearing on October 6, 2005. The project received a FONSI on April 20, 2006.

3) EA/FONSI & FONSI Re-evaluation (Approved April 14, 2006)
SH 121 from 0.23 Mile West of Business SH 121 (Lewisville) to East of MacArthur Blvd.
SH 121 from East of MacArthur Blvd. to DNT
CSJs: 0364-03-065 & 3547-01-001

This action consisted of the approval of two documents: the SH 121 EA from 0.23 Mile West of Business SH 121 to East of MacArthur Blvd. and the FONSI re-evaluation for the tolling of SH 121 from FM 423 to US 75 (Denton County section spans from east of MacArthur Blvd. to DNT). SH 121 was approved to be constructed as an electronic toll facility from 0.23 Mile West of Business SH 121 to DNT. TxDOT held public meetings in the Cities of Coppell and The Colony on June 14 and 16, 2005 and two public hearings in the same cities on January 17 and January 24, 2006. The projects received FHWA approval on April 14, 2006.

SH 121 Proposed Design & Construction Update

The proposed Toll Project would not result in changes to the ROW, design or footprint of SH 121. An electronic toll collection (ETC) system would be implemented within the Toll Project Limits. See **Section 4.0: Project Changes/Tolling** for additional information about the proposed ETC system. Acquisition of ROW has been ongoing since the previously approved documents and is now 100 percent complete. **Table 3-2** lists the current SH 121 construction status. The section of the roadway extending from DNT to east of Hillcrest Rd. is now under construction and expected to be open to traffic in 2007. The construction of the mainlanes for the section of SH 121 between east of Hillcrest Rd. to US 75 and the construction of the interchange of SH 121 and US 75, if approved as a toll facility, would be expected to be open to traffic in 2011 and 2015, respectively.

TABLE 3-2: SH 121 CONSTRUCTION UPDATE

CSJ Number	Construction Limits	Approximate Percent Complete	Estimated Construction Completion Date
0364-03-066	FM 2281 to DNT	75%	2007
0364-04-037	DNT to East of Hillcrest Rd.	98%	2007
0364-03-043	West of Ohio Dr. to East of Hillcrest Rd.	55%	2009
0364-03-067, 0364-03-066, 0364-04-022 & 024, 0364-04-037 & 038	East of Hillcrest Rd. to US 75	Mainlanes - 0% Frontage Roads – 100%	2011 Complete
0364-04-040	SH 121 at US 75 Interchange	0%	2015

Cost Estimate

The total estimated cost of SH 121 is approximately $462 million. Of this total, approximately $257 million is under construction or has been constructed. Of the remaining $205 million, approximately $20 million is for the electronic toll components of the proposed SH 121 toll facility. The proposed implementation of tolling and remaining construction costs of $205 million would be 100 percent funded from the CDA process. This project is listed in the 2006-2008 TIP and the 2008-2011 Draft TIP. **Table 3-3** shows a detailed listing of the total

project cost (mainlane and frontage road construction from FM 423 to US 75 and SH 121 at US 75 interchange.)

TABLE 3-3: SH 121 CONSTRUCTION COSTS

CSJ Number	Construction Limits	Elements Funded	Estimated Construction Costs
Under Construction			
0364-03-066, etc.	FM 2281 to DNT (includes FM 423 to DNT)	Mainlanes and Frontage Roads	$103,514,797.78*
0364-04-037	DNT to East of Hillcrest	Mainlanes and Frontage Roads	$85,501,189.35*
0364-04-043	West of Ohio Dr. to East of Hillcrest Rd.	Interchange	$22,121,250.16*
0364-04-022	Frontage Roads from Custer Rd. to US 75	Frontage Roads	$46,479,737.00*
		SUBTOTAL	**$257,616,974.29**
To Be Constructed			
0364-03-067, etc.	East of Hillcrest Rd. to US 75	Mainlanes	$93,444,000.00
0364-04-046	DNT to US 75	Electronic Tolling Implementation	$20,000,000.00
0364-04-040	SH 121 at US 75 Interchange	Interchange	$91,545,000.00
		SUBTOTAL	**$204,989,000.00**
		TOTAL CONSTRUCTION COST	**$462,605,974.29**

Source: TxDOT Monthly Cost Estimates (* Actual Cost)
Current cost estimates from the Design Construction Information System.

4.0 SH 121 CHANGES/TOLLING

As stated previously in **Section 1.0: Introduction**, this re-evaluation assesses the impacts that would result from the proposed Toll Project. No additional ROW would be required to accommodate the proposed Toll Project nor would tolling result in changes to the location, design, or footprint of the roadway. SH 121 from FM 423 to DNT was previously approved as an electronic toll facility and is currently under construction.

An ETC system is proposed for the Toll Project meaning there would be no toll-collection booths. Instead, toll collection would occur electronically; thus, users would be required to open pre-paid accounts or pay a premium for "video billing."

As proposed, ETC equipment would be located on gantries spanning the roadway. Gantries are structures that resemble the sign-bridges typically found along Texas highways. One mainlane gantry, spanning both directions of travel, would be required and would be located near Alma Dr. Smaller gantries, spanning exit or entrance ramps, are proposed. The gantries would support ETC reader units, video enforcement system cameras, illumination devices, automatic vehicle identification antennae, communications gear, and other necessary equipment. This equipment would be supported approximately 20 feet (ft) above the roadway surface and would be used to collect electronic toll data.

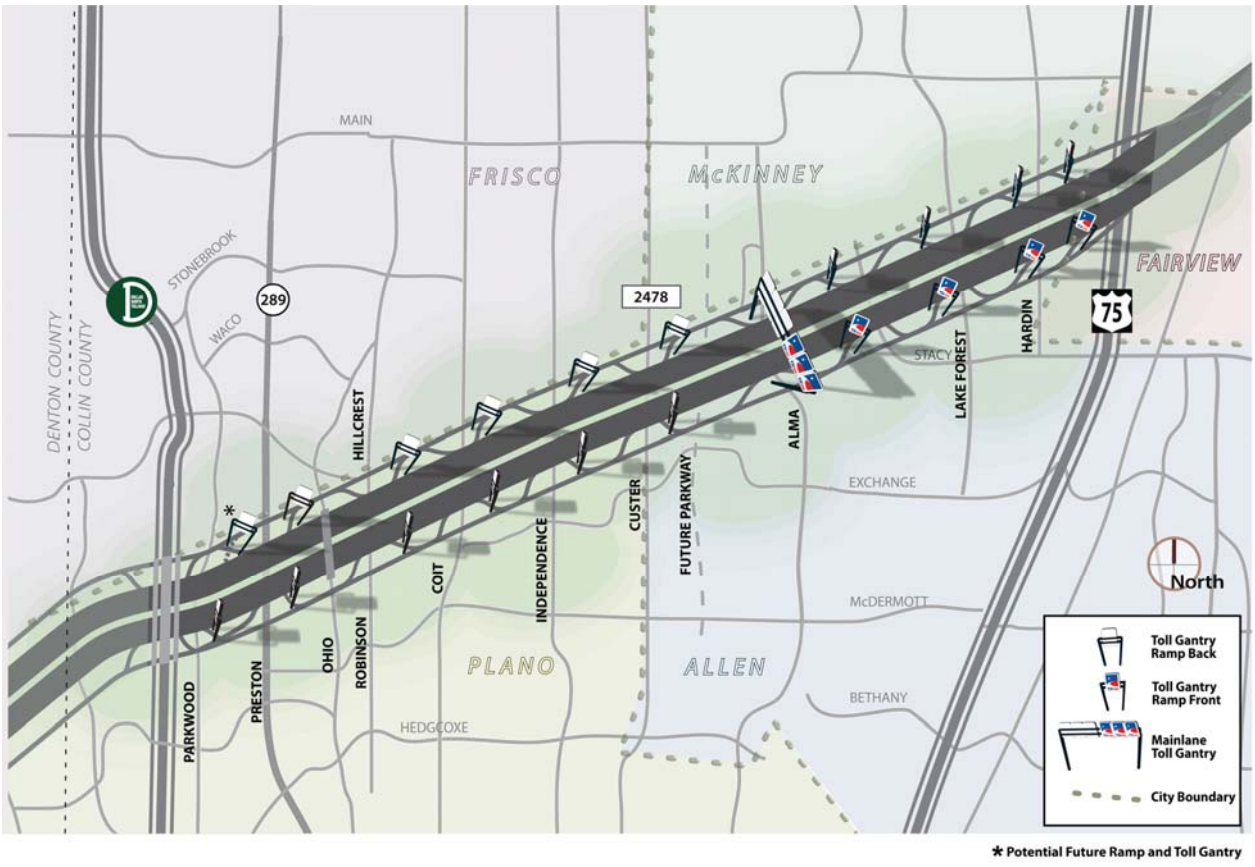
Figures 4-1 and **4-2** are examples of typical toll gantries located across the mainlanes and an exit ramp along SH 121 in Denton County.

FIGURE 4-1: MAINLANE TOLL GANTRY

FIGURE 4-2: RAMP TOLL GANTRY

Figure 4-3 provides an artist's rendering of the proposed toll gantry locations (ramps and mainlane) within the proposed Toll Project Limits (also see **Appendix C: Gantry Locations** for enlarged image).

FIGURE 4-3: SH 121 PROPOSED TOLL GANTRY LOCATIONS



While ETC tolling technology would be new to SH 121 in Collin County, other local toll facilities such as DNT, President George Bush Turnpike (PGBT), and SH 121 in Denton County utilize ETC technology and thus would provide roadway users an opportunity to become familiar with using this technology prior to the opening of the proposed Toll Project. TxDOT is in the process of implementing a program aimed at educating the public on where to purchase electronic toll transponders and how to use them on the toll roads.[12]

TxDOT's objective is to establish interoperable toll accounts throughout the state. Once fully implemented, a single ETC account established by motorists with state or local toll authorities (currently established in Austin, Dallas, San Antonio and Houston) would provide access to toll roads in any of these areas. TxDOT will work with new toll authorities to ensure interoperability statewide. To achieve interoperability, toll transponders issued by the toll authority in one area of the state would be read by the toll systems in other areas of the state. The toll would then be deducted from the user's "home" account.

[12] TxTag, http://www.txtag.org/

Although cash would not be accepted while driving on the facility, a video billing system is proposed. Under the video billing system, a photograph would record the vehicle's license plate as it travels through a toll gantry. The license plate information would then be used to identify the registered owner who would be sent a monthly invoice for the incurred tolls. This system allows for use of the facility by those that do not have an active toll account. The toll rates for drivers without a toll transponder would include an additional percentage premium plus a processing fee. Alternate means of cash payments are available and are discussed in further detail in **Section 5.3.7.1**.

5.0 DIRECT IMPACTS

The Council on Environmental Quality (CEQ) has established regulations for implementing provisions of the National Environmental Policy Act (NEPA) of 1969, as amended. The CEQ regulations direct agencies to assess the potential for project related direct, indirect, and cumulative impacts. Direct impacts are those impacts which are caused by the proposed action and occur at the same time and place as the action [40 Code of Federal Regulations (C.F.R.) §1508.8]. This section assesses the direct impacts that would result from the proposed Toll Project. For purposes of this re-evaluation, impacts have been grouped into four categories: natural resources, land use, community, and other resources.

TxDOT would ensure that the NTTA (Public Sector Comparator) would complete required mitigation, coordination, and commitments identified in the following section prior to construction.

5.1 NATURAL RESOURCES

5.1.1 Farmlands

The proposed Toll Project would not require additional ROW; therefore, there would be no impacts to farmlands above those levels disclosed and discussed in previously approved EAs and re-evaluations for SH 121. For this reason, no additional coordination with the Natural Resources Conservation Service (NRCS) is required.

5.1.2 Waters of the U.S., including Wetlands

Section 404

The proposed Toll Project would not increase impacts to waters of the U.S., including wetlands, above the levels disclosed and discussed in previously approved EAs and re-evaluations. Coordination and Section 404 permitting for the frontage roads has been completed and disclosed in the previously approved EAs and subsequent approvals. The following summarizes the results of these evaluations and coordination with the U.S. Army Corps of Engineers (USACE) and any additional actions required. (See **Appendix A: Figure 1** for project limits.)

SH 121: From FM 423 to US 75

This portion of SH 121 was separated into three sections for Section 404 permitting purposes. Requirements of Section 404 of the Clean Water Act (CWA) were satisfied by applying for two Individual Permits (IP) and one Nationwide Permit (NWP) 14 - Linear Transportation Crossings requiring a Pre-Construction Notification (PCN). The Section 404 permits for the three sections below only assessed impacts to the frontage roads which have been constructed and are open to traffic. Section 404 permits have not been obtained for impacts due to the construction of the SH 121 mainlanes from FM 423 to US 75.

The first section is from FM 423 to west of the DNT. This section crossed four jurisdictional waters and required the filling of a 0.67 acre on-channel stock pond. An IP was required due to impacts at the pond which exceeded the 0.5 acre threshold for NWP 14. The USACE assigned Project Number was 200200254 and the IP originally submitted to the USACE-Fort Worth District on April 15, 2002. The public notice was published June 11, 2002. No comments were received that required modification to the application. However, the USACE requested revisions to the Compensatory Mitigation Plan and the IP was issued on May 12, 2003. Mitigation for impacts to the on-channel stock pond resulted in the purchase of 1.3 credits from the Trinity River Mitigation Bank in January 2003. [13]

The second section is from east of the DNT to east of Custer Rd. This section crossed six jurisdictional waters and required filling 0.56 acre of an on-channel stock pond. An IP was required due to impacts at the pond which exceeded the 0.5 acre threshold for NWP 14. The USACE assigned Project Number was 200200297 and the IP application was submitted to the USACE-Fort Worth District on May 13, 2002. The public notice was published June 12, 2002. No comments were received that required modification to the application and the IP was issued on November 20, 2002. The Compensatory Mitigation Plan resulted in the purchase of 1.1 credits from the Trinity River Mitigation Bank in January 2003.

The third section is from west of Custer Rd. to US 75. This section crossed eight jurisdictional waters. The impacts at seven crossings were less than the 0.1 acre threshold and were authorized under NWP 14. The impacts at West Rowlett Creek were greater than 0.1 acre and required a PCN. The USACE assigned Project Number 200200470 and the NWP 14 with a PCN application was submitted to the USACE-Fort Worth District on August 16, 2002. The

[13] The mitigation banking guidance defines a credit as "a unit of measure representing the accrual or attainment of aquatic functions at a mitigation bank; the measure of function is typically indexed to the number of wetland acres restored, created, enhanced or preserved" (Federal Register. 60 (November 28):58605–58614).

permit was issued on May 12, 2003. The Compensatory Mitigation Plan resulted in the purchase of 3.2 credits from the Trinity River Mitigation Bank in January 2003.

SH 121: From West of Ohio Dr. to East of Hillcrest Rd.

The section of roadway crossed White Rock Creek and a tributary to White Rock Creek, both jurisdictional waters of the U.S.; however, there were no impacts to jurisdictional waters, including wetlands, associated with the implementation of the this section of roadway. This section of SH 121 is currently under construction.

SH 121: At US 75 Interchange

This section of SH 121 would cross three jurisdictional waters and is anticipated to impact approximately 1,050 linear ft of stream channel. The previously approved EA determined that a NWP 14 with a PCN would be needed for the proposed improvements at the US 75 interchange. The mitigation anticipated for these impacts were estimated to require the purchase of 11.35 banking credits from a USACE approved regional mitigation bank. The Section 404 permit process and associated Compensatory Mitigation Plan has not been initiated with the USACE and would be required before construction could begin.

Section 404 Summary

The purchase of a 5.6 credits from the Trinity River Mitigation Bank satisfied the Section 404 requirements for the impacts associated with the construction of the frontage roads of SH 121 from FM 423 to US 75. A Section 404 permit for SH 121 from west of Ohio Dr. to east of Hillcrest Rd. was not required.

The proposed Toll Project would not result in additional impacts to waters of the U.S.; however, the Section 404 permits have not been obtained for the construction of the SH 121 mainlanes from DNT to US 75, and SH 121 at US 75 interchange. A Section 404 permit, including appropriate compensatory mitigation would need to be obtained for the construction of the SH 121 mainlanes and for SH 121 at US 75 interchange. It is anticipated that a NWP 14 with a PCN would be needed for the proposed improvements; however, formal coordination with the USACE has not been initiated.

Because the construction of SH 121 from DNT to SH 121 at US 75 interchange would be financed and managed by a Public Sector Comparator (NTTA), it would be NTTA's responsibility to complete, if necessary, and adhere to all previously approved Section 404 permit commitments. Monitoring will be provided by TxDOT to ensure that all above described

permits, commitments, and mitigation in compliance with USACE regulations occur during and after construction of the facility.

Section 401

The SH 121 improvements that are currently under construction comply with the CWA Section 401 Water Quality Certification requirements with one best management practice from each of the three Best Management Practice categories for Tier I projects. For example, these include block sod for erosion control, detention basins for sedimentation control, and vegetative filter strips for total suspended solids (TSS) controls. Previous Texas Commission on Environmental Quality (TCEQ) commitments regarding water quality certification remain valid.

Section 401 Summary

The proposed Toll Project does not warrant additional commitments for Section 401 certification under Tier I guidelines; however impacts from the construction of the SH 121 mainlanes and interchange at US 75 would require additional Section 401 Water Quality Certification requirements.

5.1.3 Floodplains

The proposed Toll Project lies within the 100-year floodplain of White Rock Creek, West Rowlett Creek, Rowlett Creek, Cottonwood Creek, and Sloan Creek. The hydraulic design of SH 121 would be in accordance with the current TxDOT and FHWA policy standards. Construction of the roadway would not increase the base flood elevation; and therefore, would not violate applicable floodplain regulations and ordinances.

The proposed Toll Project would not result in floodplain impacts above those discussed in the previously approved EAs and re-evaluations. As a reference, the Federal Emergency Management Agency (FEMA) floodplains mapped for the project area are listed in **Appendix A: Figure 2**.

5.1.4 Navigable Waters of the U.S.

The proposed Toll Project would not cross any navigable lakes, rivers, or streams. A navigational clearance under the General Bridge Act of 1946, Section 9 of the Rivers and Harbors Act of 1899 (administered by the U.S. Coast Guard [USCG]) and Section 10 of the Rivers and Harbors Act of 1899 (administered by the USACE) is not applicable. Coordination

with the USCG (for Section 9 and the Bridge Act) and the USACE (for Section 10) would not be required for the proposed Toll Project.

5.1.5 Vegetation

The following sections summarize habitat characterizations and impact descriptions that have been included in previously approved EAs and subsequent approvals, including coordination with the Texas Parks and Wildlife Department (TPWD). (See **Appendix A: Figure 1** for project limits.)

SH 121: From FM 423 to US 75

Within these limits, vegetation abutting or within the SH 121 ROW is consistent with mapped vegetation according to the Vegetation Types of Texas (TPWD, 1984), which lists the vegetation as Urban and Crops. Several unusual vegetation and special habitat features exist. These features are riparian corridors and stream crossings which intersect SH 121. Surveys in the early 1990's estimated that the construction of this SH 121 section would disturb approximately 11 acres of riparian habitat. In accordance with a mutual agreement to coordinate highway projects with the TPWD, and as disclosed in the 2002 FONSI Re-evaluation, the planting of 11.7 acres of trees has been proposed as mitigation. It has been determined that the mitigation plantings would occur at Lake Lavon which is owned by the USACE. Coordination has occurred with USACE staff to determine planting areas. The mitigation plantings have not yet been initiated. The trees to be planted would consist of the standard TxDOT Dallas District mix and ratio (See **Appendix C: Exhibits)**. It should be noted that in recent years, development has greatly reduced the actual acreage of riparian habitat adjacent to the proposed ROW.

SH 121: From West of Ohio Dr. to East of Hillcrest Rd.

Vegetation abutting or within the ROW of this section of SH 121 is consistent with mapped vegetation according to the Vegetation Types of Texas (TPWD, 1984), which lists the vegetation as Urban. No unusual vegetation species and no special habitat features would be impacted per the 2006 FONSI Re-evaluation. No compensatory mitigation was proposed per the TxDOT-TPWD Memorandum of Agreement (MOA).

SH 121: At US 75 Interchange

Vegetation abutting or within the ROW of this section of SH 121 is consistent with mapped vegetation according to the Vegetation Types of Texas (TPWD, 1984), which lists the vegetation as Crops and Native or Introduced Grassland. No unusual vegetation species and no

special habitat features would be impacted per the 2006 FONSI Re-evaluation. No compensatory mitigation was proposed per the TxDOT-TPWD Memorandum of Agreement (MOA).

Vegetation Summary

Impacts to the riparian areas associated with the stream crossings disclosed in the 2002 FONSI Re-evaluation for SH 121 from FM 423 to US 75 require continued coordination with the USACE. The proposed mitigation consisted of planting approximately 11.7 acres of trees at Lake Lavon. Because the proposed Toll Project would not alter the design, location, or ROW footprint of SH 121, there would be no impacts to unusual or special vegetation species habitat. Additionally, the Toll Project would not impact habitat that occurs for state or federally listed threatened or endangered species; therefore, no additional compensatory mitigation is proposed and no additional coordination with TPWD is required. It would be the responsibility of the NTTA (Public Sector Comparator) to ensure that the 11.7 acres of plantings previously committed to on behalf of TxDOT are met.

5.1.6 Water Quality

The Toll Project would not alter the design, location, or ROW footprint of SH 121; therefore, no water quality impacts would occur. Along the Toll Project, there is no river or stream designated in the 2004 CWA Section 303(d) list as a threatened or impaired water and the project is not within five miles upstream of a threatened or impaired water segment. Therefore, coordination with TCEQ is not required for total maximum daily loads.

No permanent water quality impacts are expected as a result of the Toll Project. Subsurface water would not be required for the Toll Project; therefore, no adverse impacts to groundwater are expected to occur. Existing surface drainage patterns would be maintained. The area's public water supply treatment facilities and water distribution systems would not be affected by the Toll Project. Temporary water quality impacts because of erosion and sedimentation would be controlled by job specifications. This includes on-site inspections during construction, silt fences, and by seeding during, and at the completion of the Toll Project. TxDOT contract specifications require the contractor to minimize negative impacts to water quality at all times during construction.

The CWA makes it unlawful to discharge storm water from construction sites into waters of the U.S., unless authorized by the TCEQ's Texas Pollutant Discharge Elimination System (TPDES) General Permit. The current SH 121 construction activities within the Re-evaluation Limits comply with TCEQ requirements such as the TPDES General Permit for Construction Activity and filing and preparing a Notice of Intent (NOI) and Storm Water Pollution Prevention Plan (SW3P).

Water Quality Summary

The proposed Toll Project would not require additional coordination with the TCEQ; however, because the future construction of the SH 121 mainlanes and SH 121 at US 75 interchange would disturb more than one acre, the NTTA (Public Sector Comparator) would be required to comply with the TCEQ – TPDES General Permit for Construction Activity. Also, the construction would disturb more than five acres; therefore, a NOI would be filed to comply with TCEQ requirements and a SW3P would be in place during construction. The SW3P would utilize the temporary control measures as outlined in the Department's manual *Standard Specifications for the Construction of Highways, Streets, and Bridges*. Impacts would be minimized by avoiding work by construction equipment directly in the stream channels and/or adjacent areas. No long-term water quality impacts are expected as a result of the proposed Toll Project.

5.1.7 Threatened/Endangered Species

The Toll Project would not alter the design, location, or ROW footprint of SH 121; therefore, no effects would occur to species that are historically found within Denton and Collin Counties, Texas. The following contains a summary of the federally listed species and potential affects in the previously approved EAs and subsequent re-evaluations.

SH 121: From FM 423 to US 75

According to the 1991 EA/FONSI and subsequent approvals, one federally listed species, the whooping crane (*Grus americana*), was identified. Denton and Collin County are within the migration route of the whooping crane. However, due to the lack of suitable habitat no effects were anticipated.

SH 121: From West of Ohio Dr. to East of Hillcrest Rd.

According to the 2006 FONSI Re-evaluation, two federally listed species, the bald eagle (*Haliaeetus leucocephalus*) and whooping crane, were assessed for potential effects due to the construction of the SH 121/Hillcrest Rd. interchange. It was determined that no suitable habitat for any of the federally listed endangered/threatened species for Collin County was located within the above limits. Further it was determined that the interchange would not encroach or affect a population of any federally listed endangered or threatened species. The interchange was determined not to affect a population or habitat of any federally listed species.

SH 121: At US 75 Interchange

According to the 2006 EA/FONSI, three federally listed species, the bald eagle, interior least tern (*Sterna antillarum anthalassos*), and whooping crane were assessed for potential effects due to the construction of SH 121 at US 75 interchange. No suitable habitat for any of the federally listed species was observed within this section of SH 121. The interchange was determined not to affect a population or habitat of any federally listed species.

Summary

According to the USFWS, there are currently two federally listed species for Collin County, the bald eagle and whooping crane. There are four federally listed species for Denton County, the bald eagle, interior least tern, piping plover (*Charadrius melodus*), and whooping crane. The TPWD Annotated County Lists of Rare Species was reviewed and **Table 5-1** lists the state and federal threatened (T) and endangered (E) species indigenous to Denton and Collin Counties, Texas. (See **Appendix B: Coordination and Policy**.)

TABLE 5-1: FEDERAL AND STATE LISTED THREATENED/ENDANGERED SPECIES OF DENTON AND COLLIN COUNTIES

Species	Federal Status	State Status	Description of Suitable Habitat	Habitat Present	Pertinent Information	Species Effect
Birds						
American Peregrine Falcon *Falco peregrinus anatum*	—	E	Nests in tall cliff eyries; migrates through Texas; winters along coast and farther south. Occupies wide range of habitats during migration including urban, concentrations along coast and barrier islands; low altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	No	Lake areas tend to provide suitable foraging areas for various water and shore birds that are preferred prey species of the Peregrine Falcon during its migration. No suitable habitat is present within the Toll Project Limits.	No
Arctic Peregrine Falcon *Falco peregrinus tundrius*	—	T	Migrant throughout state from far northern breeding range, winters along coast and farther south. Occupies wide range of habitats during migration including urban, concentrations along coast and barrier islands; low altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	No	Lake areas tend to provide suitable foraging areas for various water and shore birds that are preferred prey species of the Peregrine Falcon during its migration. No suitable habitat is present within the Toll Project Limits.	No
Bald Eagle *Haliaeetus leucocephalus*	AD, T	T	Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds.	No	Within the Toll Project Limits, there are no rivers or lakeshores with large, tall trees.	No
*Interior Least Tern *Sterna anitllarum athalassos*	E	E	Nests along sand and gravel bars within braided streams and rivers; also known to nest on man-made structures.	No	The Toll Project Limits do not contain bare or sparsely vegetated sand, shell, and gravel beaches, sandbars, islands, and saltflats associated with rivers and reservoirs.	No
Peregrine Falcon *Falco peregrinus*	—	E,T	Subspecies (*F.p. tundrius*) potential migrant through most of state, winters along coast; subspecies (*F.p. anatum*) resident, nests in west Texas. Because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level. See subspecies for habitat.	No	Lake areas tend to provide suitable foraging areas for various water and shore birds that are preferred prey species of the Peregrine Falcon during its migration. No suitable habitat was present within the Toll Project Limits.	No
*Piping Plover *Charadrius melodus*	E,T	T	Wintering migrant along the Texas Gulf Coast; beaches and bayside mud or salt flats.	No	There are no sandy beaches and lakeshores which are preferred habitats of the species within the Toll Project Limits.	No
White-faced Ibis *Plegadis Chihi*	—	T	Prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats.	No	No suitable habitat consisting of bays, marshes, lakes, ponds are within the Toll Project Limits.	No

Species	Federal Status	State Status	Description of Suitable Habitat	Habitat Present	Pertinent Information	Species Effect
Whooping Crane *Grus americana*	E	E	Potential migrant via plains throughout most of state to coast. Winters in coastal marshes of Aransas, Calhoun, and Refugio counties.	No	No suitable habitat consisting of large wetland areas are within the Toll Project Limits.	No
Wood Stork *Mycteria americana*	—	T	Forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, inhabits mud flats and other wetlands.	No	Potential migrant to the area. No short grassed areas with sufficient distance from urban development were observed within the Toll Project Limits.	No
Mammals						
Red Wolf *Canis rufus*	—	E	Extirpated; formerly known throughout eastern half of Texas in brushy and forested areas, as well as coastal prairies.	No	There are no brushy and forested areas of suitable habitat within the Toll Project Limits.	No
Reptiles						
Alligator Snapping Turtle *Macrochelys temminckii*	—	T	Perennial water bodies; deep water of rivers, canals, lakes, and oxbows; also swamps, bayous, and ponds near deep running water; sometimes enters brackish coastal waters; usually in water with mud bottom and abundant aquatic vegetation; may migrate several miles along rivers; active March-October; breeds April-October.	No	No deep water bodies with abundant aquatic vegetation were found within the Toll Project Limits.	No
Texas Horned Lizard *Phrynosoma cornutum*	—	T	Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; sandy to rocky soil.	No	No open areas with sparse vegetation and consisting of sandy or rocky soil were found within the Toll Project Limits.	No
Timber/ Canebrake Rattlesnake *Crotalus horridus*	—	T	Swamps, floodplains, upland woodlands, riparian zones, abandoned farmland; prefers dense ground cover, i.e. grapevines or palmetto.	No	The species is not known to remain around urbanized areas to any great extent. Due to the amount of urbanization and the presence of frontage roads within the Toll Project Limits, no riparian zones with dense ground cover were observed.	No
E, T - Federally Listed Endangered/Threatened AD - Federally Proposed Delisted DL- Federally Delisted * - Only Federally listed in Denton County _ - Not listed				E, T - State Endangered/Threatened		

Source: US Fish & Wildlife Service, (May 2007), Texas Parks and Wildlife Department (May 3, 2007) and survey of project area.

The federally listed species in Denton and Collin Counties are all avian species and considered migratory. As stated in **Table 5-1**, no suitable habitat is present for the listed species.

The Toll Project would not change the footprint of the roadway as proposed. It was determined that the Toll Project would not effect a population or habitat of any federally listed species.

All avian species considered migratory are protected under the Migratory Bird Treaty Act (MBTA). The MBTA makes it unlawful to take, kill, possess, transport or harm migratory birds, their eggs, parts, and nests. If construction or clearing is to take place during nesting season, which could extend from March through July, the area would need to be checked for active nests prior to the commencement of work. If any active nests are found, the local USFWS biologist should be contacted by TxDOT to determine an appropriate plan of action. The federal and state listed species in Denton and Collin Counties that are avian species are considered migratory. No suitable nesting habitat was found within the existing ROW for the federal or state listed species and no adverse impacts are anticipated as a result of the tolling project. Other migratory species observed not listed as threatened or endangered were the Red tail hawk (*Buteo jamaicensis*), American Crow (*Corvus brachyrhynchos*), Northern cardinal (*Cardinalis cardinalis*), Northern mockingbird (*Mimus polyglottos*), Great tailed grackle (*Quiscalus mexicanus*), Mourning dove (*Zenaida asiatica*), European starling (*Sturnus vulgaris*), and Bluejay (*Cyanocitta cristata*). Some specimens may be local residents year round but the species in general does migrate. No active nesting activities were observed for the non-listed species and no adverse effects are anticipated because the proposed Toll Project would not alter the design, location, or ROW footprint of SH 121.

5.1.8 Air Quality

In order to protect human health and the environment, the Clean Air Act (CAA) of 1970 mandated the establishment of the National Ambient Air Quality Standards (NAAQS) and regulations to reduce air pollutants. When the pollutant level within an area exceeds the NAAQS, U.S. Environmental Protection Agency (EPA) designates the area as "nonattainment" for the pollutant. In addition, EPA also develops regulations to reduce air pollutants from specific sources, including both industry and motor vehicles.

Conformity Under the Clean Air Act

As previously mentioned, areas determined by EPA to exceed a NAAQS are designated as nonattainment areas. The NAAQS include: ozone, carbon monoxide (CO), sulfur dioxide, nitrogen dioxide, lead, and particulate matter ($PM_{2.5}$ and PM_{10}). A State Implementation Plan (SIP) is a collection of requirements that delineates how a state would reduce emissions to attain the NAAQS. This SIP must be approved by EPA. For nonattainment areas, the 1990 Clean Air

Act Amendments (CAAA) required the MPOs and the state transportation departments to demonstrate that transportation plans, programs, and projects funded under Title 23 U.S. Code (U.S.C) or the Federal Transit Act conform to State or Federal Implementation Plans. Under the federal CAAA all transportation projects that are subject to FHWA approval must first be found to conform with the EPA approved SIP.

The proposed North Central Texas project is located in Collin County, which is part of the EPA designated nine-county nonattainment area for the 8-hour standard for the pollutant ozone; therefore, the transportation conformity rule applies. The proposed project is consistent with the area's financially constrained long-range *Mobility 2030* MTP and the 2006-2008 TIP, as proposed by the NCTCOG. The U.S. Department of Transportation (FHWA/FTA) found the MTP and TIP to conform to the SIP on June 12, 2007. All projects in the NCTCOG's TIP that are proposed for federal or state funds were initiated in a manner consistent with requirements of amended 23 U.S.C. 134, 23 U.S.C. 135, 176(c) of the CAA (42 U.S.C. 7506(c)) and 49 U.S.C. 5303. Energy, environment, air quality, cost and mobility considerations are addressed in the programming of the TIP. The proposed project is also found in the Draft 2008-2011 Statewide Transportation Implementation Plan (STIP) which should be approved by FHWA/FTA in October of 2007. See **Appendix B: *Mobility 2030*: Funded Recommendations, February 2007 Revisions to the FY 2006-2008 STIP, and 2006-2008 TIP.**

Traffic Air Quality Analysis (TAQA)

A TAQA is an analysis to determine potential effects of CO emissions related to a proposed transportation project. This analysis is based on traffic data that was obtained from NCTCOG. The NCTCOG toll traffic volumes for 2030 can be found in **Appendix C: 2030 Traffic Volumes**. For this re-evaluation, a TAQA was conducted in accordance with the *TxDOT 2006 Air Quality Guidelines*.

The topography and meteorological conditions of the area in which the Toll Project is located would not seriously restrict dispersion of air pollutants. The traffic volumes resulting in the highest modeled CO concentrations are 138,478 vehicles per day (vpd) for 2015, the estimated time of completion, between Preston Rd. and Ohio Dr. The traffic volumes resulting in the highest modeled CO concentrations for design year (2030) are 181,238 vpd and correspond to the Build-non-toll scenario between Coit Rd. and Independence Pkwy. The modeled CO concentration for the Build-non-toll is 2 percent higher than the highest modeled CO concentration (between Preston Rd. and Ohio Dr.) for the Build-toll scenario. The slight increase is due to a higher number of vehicles traveling the frontage road closer to the receiver

(ROW line) between Coit Rd. and Independence Pkwy.

The CO concentrations for the Build-toll and Build-non-toll scenarios were modeled using CALINE3 and MOBILE6.2 and factoring in adverse meteorological conditions for receptors at the ROW line in accordance with the *TxDOT 2006 Air Quality Guidelines.* Local concentrations of CO are not expected to exceed NAAQS at any time. **Table 5-2** summarizes the results of the analysis in parts per million (ppm).

TABLE 5-2:
CARBON MONOXIDE CONCENTRATIONS

Year	1HR CO ppm*	1 HR % NAAQS	8 HR CO (ppm)*	8 HR % NAAQS
2015 Build-toll**	4.5	12.9	2. 8	30.9
2030 Build-toll	4.6	13.1	2.9	31.6
2030 Build non-toll	4.7	13.4	2.9	32.2

*The NAAQS for CO is 35 ppm for 1-hour and 9 ppm for 8-hour. Analysis includes a 1-hour background concentration of 3.7 ppm and an 8-hour background concentration of 2.3 ppm.
** Determination of CO emission concentrations for the 2015 Build-non-toll scenario was not completed because the 2025 MTP represented mainlanes open to traffic by 2025.

Congestion Management Process

Congestion Management Process (CMP) refers to several methods of roadway management. Included in the process are Intelligent Transportation Systems (ITS), Transportation System Management (TSM), and Travel Demand Management (TDM). These programs seek to improve traffic flow and safety through better operation and management of transportation facilities. Additionally, these programs provide low cost solutions that can be constructed in less time and provide air quality benefits to the region. The proposed Toll Project was developed from the NCTCOG operational CMP, which meets all requirements of 23 C.F.R. § 500.109.

Operational improvements and travel demand reduction strategies are commitments made by the region at two levels: the program level and the project implementation level. Program level commitments are inventoried in the regional CMP and are included in the financially constrained MTP. The following summarize the *Mobility 2030* CMP recommendations for its components:[14]

[14] NCTCOG Proposed Recommendations for *Mobility 2030*. (Draft subject to change and intended for public review /comment only). http://www.nctcog.org/trans/mtp/2030/Mobility_2030_DRAFT_Publication_000.pdf

Intelligent Transportation System

ITS aids transportation operators and emergency response personnel as they monitor traffic, detect and respond to incidents, and inform the public of traffic conditions via the internet, roadway devices, and the media. *Mobility 2030* includes a number of ITS improvements featuring recommendations for 22 Traffic Management Centers, and 1,142 centerline miles of ITS deployment.

Transportation System Management

TSM attempts to identify improvements that would enhance the capacity of the existing transportation system. Better management and operation of existing facilities improves traffic flow, air quality, movement of vehicles and goods, and enhances system accessibility and safety. TSM strategies include intersection and signal improvements, freeway bottleneck removals, special events management, and data collection to monitor system performance. *Mobility 2030* recommendations include a number of TSM. The 2030 plan calls for 1,081 intersection improvements which would include traffic control devices, turn lanes, traffic islands, and grade separations. *Mobility 2030* also recommends 7,291 traffic signal improvements. These improvements would call for improved signal timing, signal optimization, signal equipment upgrades, and better system interconnectedness. Additionally, *Mobility 2030* would implement programs to address the removal of freeway bottlenecks, as well as, better mitigation of congestion created by special events.

Travel Demand Management

TDM addresses alternative forms of transportation to commuters. Programs seek to reduce congestion and air pollution and to increase efficiency of the transportation system. TDM programs may include carpools, vanpools, transit, telecommuting, compressed work weeks, park-and-ride facilities, bike and pedestrian transportation, and Transportation Management Associations. *Mobility 2030* recommendations under this category include an Employer Trip Reduction Initiative, 1,780 vanpools, 30 additional park and ride facilities, and the creation of the Transportation Management Associations.

At the project implementation level, travel demand reduction strategies and commitments would be added to the regional TIP or included in the construction plans. The regional TIP provides for programming of these projects at the appropriate time with respect to the Single Occupancy Vehicle (SOV) facility implementation and project specific elements.

Committed congestion reduction strategies and operational improvements considered to be beneficial to SH 121 within the re-evaluation limits would consist of grade separations, addition of lanes, a new roadway, and ITS projects. TxDOT, under the Congestion Mitigation and Air Quality Improvement Plan (CMAQ) program, would manage these projects, which are included in the regional CMP and TIP. The SH 121 related projects are listed in **Table 5-3**.

TABLE 5-3:
OPERATIONAL IMPROVEMENTS*

Location	Type	Implementation Year	Funding Source	TIP #	Cost
SH 121 at SH 289 (Preston Rd.)	Grade Separation**	2004	Collin County	11008.0000	$7,713,170
SH 121 at Hillcrest Rd.	Grade Separation	2006	Collin County	11431.0000	$14,884,000
Independence Pkwy from McDermott Rd. to SH 121	Addition of Lanes	2009	Collin County	COL 166	$1,600,000
Craig Ranch-Weiskopf Ave.	New Roadway	2005	City of McKinney	11323.3000	$376,747
Citywide Signal System Video Detectors and Communication (two intersections along SH 121)	ITS	2006	City of McKinney	11455.0000	$1,021,500

Source: NCTCOG, http://nctcog.org/, Transportation Improvement Program Information System (TIPINS)
*SH 121 between FM 423 and SH 121 At US 75 Interchange.
**Grade separation is a process of aligning a junction of two or more transport axes at different heights (grades) such that they do not disrupt the flow of traffic on one another when they cross. This is achieved by building bridges over the crossing site, allowing roads to pass another without interrupting the flow of traffic. An example of a grade separation is an *interchange*, as opposed to an *intersection* which is not grade separated.

In an effort to reduce congestion and the need for SOV lanes in the region, TxDOT and NCTCOG would continue to promote appropriate congestion reduction strategies through the CMAQ program, the CMP, and the MTP.

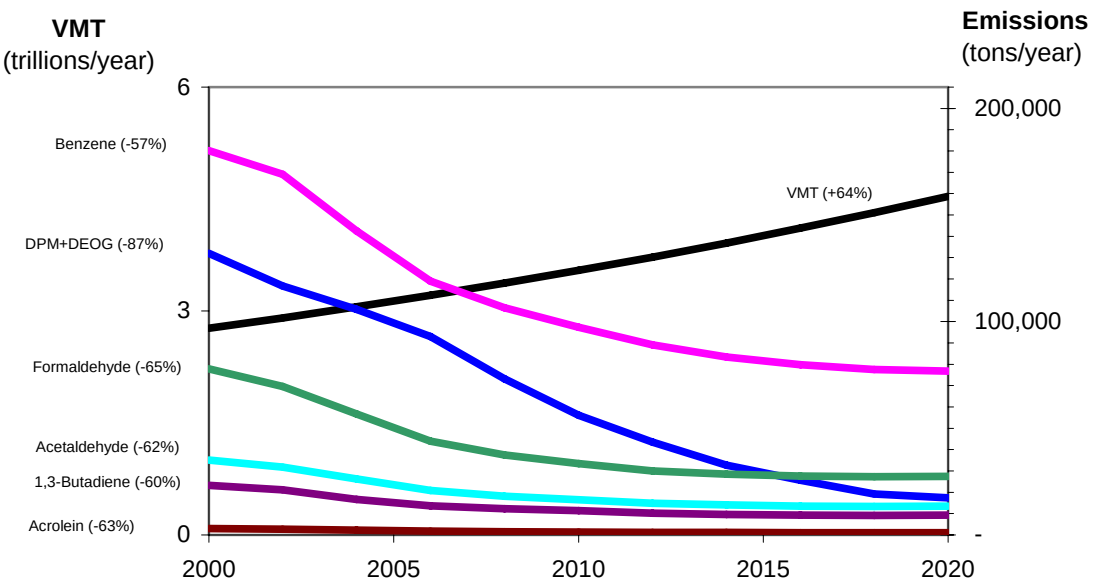
Mobile Source Air Toxics (MSATs)

In addition to the criteria air pollutants for which there are NAAQS, EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries).

MSATs are a subset of the 188 air toxics defined by the CAA. The MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

The EPA is the lead federal agency for administering the CAA and has certain responsibilities regarding the health effects of MSATs. The EPA controls emissions of air pollutants through one of two major strategies: NAAQS or regulatory controls that result in specific emission reductions. Both strategies provide for increased protection of human health and the environment. For MSATs, in order to more quickly implement emission reductions, EPA has focused efforts on nationwide regulatory controls. The EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources, (66 Federal Register (FR) 17229, March 29, 2001). This rule was issued under the authority in § 202 of the CAA. In its rule, EPA examined the impacts of existing and newly promulgated mobile source control programs, including its reformulated gasoline (RFG) program, its national low emission vehicle (NLEV) standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 2000 and 2020, FHWA projects that even with a 64 percent increase in vehicle miles traveled (VMT), these programs would reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, acrolein, and acetaldehyde between 57 percent and 65 percent, and will reduce on-highway diesel particulate matter and diesel organic gas emissions by 87 percent, as shown in **Figure 5-1**.

FIGURE 5-1:
U.S. ANNUAL VEHICLE MILES TRAVELED (VMT) VS. MOBILE SOURCE AIR TOXICS EMISSIONS, 2000-2020*



Notes: For on-road mobile sources. Emissions factors were generated using MOBILE6.2. Methyl tertiary-butyl ether (MTBE) proportion of market for oxygenates is held constant, at 50%. Gasoline Reid Vapor Pressure (RVP) and oxygenate content are held constant. VMT: *Highway Statistics 2000*, Table VM-2 for 2000, analysis assumes annual growth rate of 2.5%. "DPM + DEOG" is based on MOBILE6.2-generated factors for elemental carbon, organic carbon and sulphate from diesel-powered vehicles, with the particle size cutoff set at 10.0 microns.

Source: FHWA Interim Guidance on Air Toxic Analysis in NEPA Documents, February 3, 2006.
*National trend information is provided as background. For specific locations, the trend lines may be different, depending on local parameters defining vehicle mix, fuels, meteorology and other factors.

In an ongoing review of MSATs, the EPA finalized additional rules under authority of CAA Section 202(l) to further reduce MSAT emissions. The EPA issued Final Rules on Control of Hazardous Air Pollutants from Mobile Sources (72 FR 8427, February 26, 2007) under Title 40 C.F.R. Parts 59, 80, 85 and 86. As a result of this review, EPA adopted the following new requirements to significantly lower emissions of benzene and the other MSATs by: 1) lowering the benzene content in gasoline; 2) reducing non-methane hydrocarbon (NMHC) exhaust emissions from passenger vehicles operated at cold temperatures (under 75 degrees); and 3) reducing evaporative emissions that permeate through portable fuel containers. A summary of the benefits of this rule are provided below, based on information provided by EPA in the preamble to the rule.

Beginning in 2011, petroleum refiners must meet an annual average gasoline benzene content standard of 0.62 percent by volume, for both reformulated and conventional gasoline, nationwide. Although the national benzene content of gasoline in 2007 is about 1.0 percent by

volume; the DFW area ozone SIP results in benzene content of 0.48 percent in summer and 0.64 percent in winter. EPA standards to reduce NMHC exhaust emissions from new gasoline-fueled passenger vehicles will become effective in phases. Standards for light vehicles become effective during the period of 2010 to 2013, and standards for heavy vehicles during the period of 2012 to 2015. Evaporative requirements for portable gas containers become effective with containers manufactured in 2009. Evaporative emissions must be limited to 0.3 grams of hydrocarbons per day.

In addition, EPA has adopted more stringent evaporative emission standards for new passenger vehicles. The new standards are equivalent to current California state standards, and become effective in 2009 for light vehicles and in 2010 for the heavy vehicles. In addition to the reductions from the 2001 rule, the new rules significantly reduce annual national MSAT emissions. For example, EPA estimates that emissions in the year 2030, when compared to emissions in the base year prior to the rule, will show a reduction of 330,000 tons of MSATs (including 61,000 tons of benzene), reductions of more than 1,000,000 tons of volatile organic compounds (VOCs), and reductions of more than 19,000 tons of $PM_{2.5}$.[15,16] Please note that EPA has not updated MOBILE6.2 emission factors to capture the February 2007 Rule emission reductions; therefore, it is not possible to reflect these emission reductions in the quantitative MSAT analysis provided below.

Monitored Levels of MSATs Near the Project Area

The Dallas/Collin County area monitors for various air pollutants using an established air monitoring network. This network of monitors measures air quality and determines the levels of the various pollutants in the air. Not all monitors sample for the same pollutants, and not all monitors have one year of complete data to compile an annual average for any given pollutant. For this reason, data from multiple monitors must be examined in order to analyze the pollution concentrations in the proposed project area.

Three monitoring sites are located near the Toll Project area in Collin County; however, these only contained data pertinent to criteria air pollutants. Dallas County monitoring sites reported on air toxics including compounds listed as MSATs and were, therefore, also utilized in

[15] See glossary for PM definitions.
[16] EPA Fact Sheet/Regulatory Announcement: *Control of Hazardous Air Pollutants from Mobile Sources: Final Rule to Reduce Mobile Source Air Toxics, EPA, Office of Transportation and Air Quality*, EPA420-F-07-017, February 2007, page 4.

this report and included in **Table 5-4**. The approximate distance to each site from the proposed Toll Project is listed in **Table 5-4**.

The official monitor data is found on EPA's national air quality monitor web site (www.epa.gov/air/data). According to the EPA, monitoring of ambient concentrations of hazardous air pollutants is not mandated by the CAA, and monitoring is not the norm. However, EPA is in the process of developing regulations to limit hazardous air pollutant emissions, to prevent ambient hazardous air pollutant concentrations from reaching levels that would pose significant health risks. (See http://www.epa.gov/air/data/info.html.)

TABLE 5-4: LOCAL MONITOR DATA FOR AIR TOXICS

Air Monitor Site	Activation Date	Annual Average O3 (ppm) 2006 (Standard is a 3 year average which must be 0.08 ppm or below)	Annual Average - PM_{10} 2006	Annual Average - $PM_{2.5}$ 2006	Annual Average - NO 2006	Annual Average - Lead 2006	Annual Average - Acetaldehyde (ppb) 2006	Annual Average - Acrolein (ppb) 2006	Annual Average - Benzene (ppb) 2006	Annual Average - 1,3 Butadiene (ppb) 2006	Annual Average - Formaldehyde (ppb) 2006	Approximate Distance (miles) from proposed Toll Project
48-085-0003	1/1/84	N/A	N/A	N/A	N/A	0.59	N/A	N/A	N/A	N/A	N/A	4 mi
48-085-0005	5/7/92	0.063 389	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2 mi
48-085-0007	14/1/94	N/A	N/A	N/A	N/A	0.36	N/A	N/A	N/A	N/A	N/A	4 mi
48-113-0069-43503-5	1/1/86	N/A	N/A	N/A	N/A	N/A	1.911	N/A	N/A	N/A	N/A	19 mi
48-113-0069-43505-5	1/1/86	N/A	N/A	N/A	N/A	N/A	N/A	0.145	N/A	N/A	N/A	19 mi
48-113-0069-45201-10	1/1/86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.271	N/A	N/A	19 mi
48-113-0057-45201-1	1/1/82	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.79	N/A	N/A	22 mi
48-113-0057-43218-1	1/1/82	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.128	N/A	22 mi
48-113-0069-43502-5	1/1/86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3. 008	19 mi

Source: EPA www.epa.gov/air/data (Compiled in March 2007)

Note- EPA disclaimer regarding these data: "Readers are cautioned not to infer a qualitative ranking order of geographic areas based on Air Data reports. Air pollution levels measured in the vicinity of a particular monitoring site may not be representative of the prevailing air quality of a county or urban area. Pollutants emitted from a particular source may have little impact on the immediate geographic area and the amount of pollutants emitted does not indicate whether the source is complying with applicable regulations."

Sensitive Receptor Analysis

Sensitive receptors within the re-evaluation limits were identified, field verified, and the distance from the ROW to each receptor was measured and noted. The documented sensitive receptors include public and private schools, hospitals, senior citizen/skilled-nursing care facilities, and licensed daycare facilities. Three sensitive receptors were located within 328 ft (100 meters) of the ROW and six sensitive receptors were located within 1,640 ft (500 meters) of the ROW. See **Table 5-5** below for sensitive receptor counts.

TABLE 5-5: SUMMARY OF SENSITIVE RECEPTORS

Re-evaluation Limits	Length	Number of Receptors within:	
		328 ft (100 meters)	1,640 ft (500 meters)
From FM 423 to SH 121 At US 75 Interchange	16.1 miles	3	6

Source: ESRI ArcMap 9.1; www.google.com and field reconnaissance (December 2006 and May 2007).

Sensitive receptors located within the re-evaluation limits are presented in **Table 5-6** and shown on **Appendix A: Figure 3**. These receptors include schools and licensed daycares.

TABLE 5-6:
LIST OF SENSITIVE RECEPTORS

ID	Facility	Address	City	Zip Code	Distance from ROW in ft*
SR1	Children's Garden Montessori Academy	8565 Gratitude Trl.	Plano	75024	1,502
SR2	Medical Center of McKinney	4510 Medical Center Dr., Suite 112	McKinney	75069	163
SR3	Medical Center at Craig Ranch	8080 SH 121	McKinney	75070	137
SR4	Bert & Eloise Isbell Elementary School	6000 Maltby Dr.	Frisco	75035	1,301
SR5	Centennial Medical Center	4401 Lebanon Rd.	Frisco	75035	290
SR6	Warren Montessori School	10274 Warren Pkwy.	Frisco	75035	1,476

Source: ESRI ArcMap 9.1; www.google.com (December 2006); Field reconnaissance (December 2006).
* Distance provided is an approximation.

MSATs Environment Consequences

MSAT Modeling

The EPA's highway vehicle emission factor model, MOBILE is a program that provides average in-use fleet emission factors for criteria pollutants (CO and NO_X) and also provides emission factors for VOCs. These emission factors can be estimated for any year between 1952 and 2050 and under various conditions affecting in-use emission levels. The output from the model is in the form of emissions factors expressed as grams of pollutant per VMT in grams per mile (g/mi). A quantitative analysis of the mass of air toxic emissions in the travel study area containing the proposed Toll Project was completed using the latest version of the EPA's mobile emission factor model (MOBILE6.2). The MOBILE6.2 emission factors are consistent with

those used to develop the SIP and conformity determination for the DFW region. These factors do not yet reflect the EPA Final Rules on Control of Hazardous Air Pollutants from Mobile Sources (72 FR 8427, February 26, 2007) under Title 40 C.F.R. Parts 59, 80, 85 and 86 that when implemented, will significantly reduce emissions of benzene and other MSATs. The rule became effective on April 27, 2007.

The MSAT study area is composed of the affected transportation network. The SH 121 affected transportation network includes the proposed network links and other transportation model links reflecting a plus or minus 5 or greater percent change in traffic volume between the Build and No-Build scenarios for the years 2015 and 2030.[17] The plus or minus 5 percent threshold was adopted as the basis to determine the affected transportation network study area and was coordinated with and approved by FHWA. Because the 2007 base year scenario represents the existing condition, the affected transportation network for 2007 is composed of those links determined to change plus or minus 5 or greater percent in 2015 and 2030 and which currently exist in the 2007 network. The resulting affected transportation network for years 2015 and 2030 includes those links determined to change plus or minus 5 or greater percent in 2015 and 2030, which are also included in the 2015 and 2030 networks respectively. The parameters used to characterize the travel activity utilized in the analysis included directional speeds and traffic volumes for the AM peak period, PM peak period and off-peak period. See **Appendix A: Figure 4** for the Affected Transportation Network maps.

For the purpose of this analysis six scenarios were modeled:

- "Base" or existing condition (2007);
- "Build-toll 2015" or toll scenario in 2015;
- "No-Build 2015" or no-build scenario in 2015;
- "Build-toll 2030" or toll scenario in 2030;
- "Build-non-toll 2030" or non-toll scenario in 2030; and
- "No-Build 2030" or no-build scenario in 2030.

Total Emission of MSATs for the Build and No-Build Scenarios

Specific data from the MSAT study area of the NCTCOG Regional Transportation Model were used to determine the mass of MSAT emissions associated with the Build (proposed toll project), Build-non-toll and No-Build scenario. In addition, the base or existing conditions mass of MSATs was also modeled. The total mass of MSATs in the year 2007 (base) was higher than

[17] See glossary for link definition.

either the Build or No-Build scenarios in the years 2015 and 2030. This is reflective of the overall national trend in MSATs as previously described. The 2015 Build-non-toll option was not provided because according to the 2025 MTP (under the non-toll option) the SH 121 mainlanes would not be open to traffic by 2015. The mass of emissions associated with the base scenario, opening year, and design year are shown in **Table 5-7**.

TABLE 5-7: MASS OF MSAT EMISSIONS IN TONS/DAY

Scenario	Associated VMT	Acetaldehyde	Acrolein	Benzene	1,3-Butadiene	DPM	Formaldehyde	TOTAL* (tons/Day)
Base 2007	7,967,693	0.038	0.002	0.118	0.017	0.062	0.049	0.286
No-Build 2015	9, 357,093	0.020	0.001	0.063	0.009	0.018	0.027	0.137
Build-toll 2015*	9,758,167	0.020	0.001	0.065	0.009	0.020	0.028	0.143
No-Build 2030	14,394,790	0.021	0.002	0.063	0.009	0.010	0.030	0.134
Build-toll 2030	15,268,964	0.022	0.002	0.065	0.009	0.010	0.031	0.139
Build-non-toll 2030	15,375,084	0.022	0.002	0.065	0.009	0.011	0.032	0.140

* Determination of MSAT emission concentrations for the 2015 Build-non-toll scenario was not completed because the 2025 MTP represented mainlanes open to traffic by 2025.

Discussion

Although the VMT for the SH 121 Build-toll scenario would increase approximately 92 percent by 2030 when compared to 2007, total MSAT emission for the same scenario would decrease at least 51 percent by 2030. The total MSAT loads for the Build-toll scenario in 2015 is 0.006 ton/day higher than the No-Build scenario. In 2030, total MSAT loads for the Build-toll scenario is 0.001 ton/day lower than the Build-non-toll scenario. The higher levels of MSAT emissions in 2015 for the Build-toll scenarios are due to a higher VMT when compared to the No-Build scenario. MSATs for the Build-non-toll scenario is higher than the Build-toll and the No-Build scenarios possibly due to the greater number of vehicles utilizing the mainlanes of the Build-non-toll facility at lower speeds. As a result, the average congestion speed for the Build-non-toll scenario would decrease during the off peak periods. This reduction in congestion speed would result in higher emission factors, which as expected, would increase MSAT emissions.

Regardless of the alternative chosen, emissions would likely be lower than present levels in the future year as a result of EPA's national control programs that are projected to reduce MSAT emissions by 57 to 87 percent between 2000 and 2020, and even more than these reductions when factoring in the 2007 MSAT rule. Local conditions may differ from these national projections in terms of fleet mix, vehicle turnover rates, VMT growth rates, and local

control measures. However, the magnitude of the EPA-projected reductions is so great that MSAT emissions in the study area are likely to be lower in the future in all cases.

When evaluating the future options for upgrading a transportation corridor, the major mitigating factor in reducing MSAT emissions is the implementation the EPA's new motor vehicle emission control standards. Substantial decreases in MSAT emissions will be realized from a current base year (2007) through the proposed project's opening year and design year. Accounting for anticipated increases in VMT and varying degrees of efficiency of vehicle operation, total MSAT emissions were predicted to decline by 51 percent from 2007 to 2030 for the Build-toll and the Build-non-toll scenarios. MSAT emissions for the Build-toll scenario were predicted to decline by 52 percent from 2007 to 2015.

Unavailable Information for Project Specific MSAT Impact Analysis

This re-evaluation includes a basic analysis of the likely MSAT emission impacts of the Toll Project. However, available technical tools do not enable one to predict the project-specific health impacts of the emission changes associated with the alternatives in this document. Due to these limitations, the following discussion is included in accordance with CEQ regulations (40 C.F.R. § 1502.22(b)) regarding incomplete or unavailable information:

Information that is Unavailable or Incomplete

Evaluating the environmental and health impacts from MSATs on a proposed highway project would involve several key elements, including emissions modeling and dispersion modeling in order to estimate ambient concentrations resulting from the estimated emissions; exposure modeling in order to estimate human exposure to the estimated concentrations; and then final a determination of health impacts based on the estimated exposure. Each of these steps is encumbered by technical shortcomings or uncertain science that prevents a more complete determination of the MSAT health impacts of this project.

1. Emissions: The EPA tools to estimate MSAT emissions from motor vehicles are not sensitive to key variables determining emissions of MSATs in the context of highway projects. While MOBILE6.2 is used to predict emissions at a regional level, it has limited applicability at the project level. MOBILE6.2 is a trip-based model--emission factors are projected based on a typical trip of 7.5 miles, and on average speeds for this typical trip. This means that MOBILE6.2 does not have the ability to predict emission factors for a specific vehicle operating condition at a specific location at a specific time. Because of this limitation, MOBILE6.2 can only approximate the operating speeds and

levels of congestion likely to be present on the largest-scale projects, and cannot adequately capture emissions effects of smaller projects. For PM, the model results are not sensitive to average trip speed, although the other MSAT emission rates do change with changes in trip speed. Also, the emissions rates used in MOBILE6.2 for both PM and MSATs are based on a limited number of tests of mostly older-technology vehicles. Lastly, in its discussions of PM under the conformity rule, EPA has identified problems with MOBILE6.2 as an obstacle to quantitative analysis.

These deficiencies compromise the capability of MOBILE6.2 to estimate MSAT emissions. MOBILE6.2 is an adequate tool for projecting emissions trends, and performing relative analyses between alternatives for very large projects such as SH 121 but it is not sensitive enough to capture the effects of travel changes tied to smaller projects or to predict emissions near specific roadside locations. However, MOBILE6.2 is currently the only available tool for use by FHWA/TxDOT and so it was used for the comparison of scenarios.

2. Dispersion. The tools to predict how MSATs disperse are also limited. The EPA's current regulatory models, CALINE3 and CAL3QHC, were developed and validated more than a decade ago for the purpose of predicting episodic concentrations of CO to determine compliance with the NAAQS. The performance of dispersion models is more accurate for predicting maximum concentrations that can occur at some time at some location within a geographic area. This limitation makes it difficult to predict accurate exposure patterns at specific times at specific highway project locations across an urban area to assess potential health risk. The National Cooperative Highway Research Program (NCHRP) is conducting research on best practices in applying models and other technical methods in the analysis of MSATs. This work also will focus on identifying appropriate methods of documenting and communicating MSAT impacts in the NEPA process and to the general public. Along with these general limitations of dispersion models, FHWA is also faced with a lack of monitoring data in most areas for use in establishing project-specific MSAT background concentrations.

3. Exposure Levels and Health Effects. Finally, even if emission levels and concentrations of MSATs could be accurately predicted, shortcomings in current techniques for exposure assessment and risk analysis preclude one from reaching meaningful conclusions about project-specific health impacts. Exposure assessments are difficult because it is difficult to accurately calculate annual concentrations of MSATs near

roadways, and to determine the portion of a year that people are actually exposed to those concentrations at a specific location. These difficulties are magnified for 70-year cancer assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions factors) over a 70-year period. There are also considerable uncertainties associated with the existing estimates of toxicity of the various MSATs, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population. Because of these shortcomings, any calculated difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with calculating the impacts.

Summary of Existing Credible Scientific Evidence Relevant to Evaluating the Impacts of MSATs.

Research into the health impacts of MSATs is ongoing. For different emission types, there are a variety of studies that show that some either are statistically associated with adverse health outcomes through epidemiological studies (frequently based on emissions levels found in occupational settings), or that animals demonstrate adverse health outcomes when exposed to large doses.

Exposure to toxics has been a focus of a number of EPA efforts. Most notably, the agency conducted the National Air Toxics Assessment (NATA) in 1996 to evaluate modeled estimates of human exposure applicable to the county level. While not intended for use as a measure of or benchmark for local exposure, the modeled estimates in the NATA database best illustrate the levels of various toxics when aggregated to a national or State level.

The EPA is in the process of assessing the risks of various kinds of exposures to these pollutants. The EPA Integrated Risk Information System (IRIS) is a database of human health effects that may result from exposure to various substances found in the environment. The IRIS database is located at http://www.epa.gov/iris. The following toxicity information for the six prioritized MSATs was taken from the IRIS database *Weight of Evidence Characterization*[18] summaries. This information is taken verbatim from EPA's IRIS database and represents the Agency's most current evaluations of the potential hazards and toxicology of these chemicals or mixtures.

[18] EPA Office of Research and Development, National Center for Environmental Assessment: IRIS database of human health effects that may result from exposure to various substances found in the environment. http://www.epa.gov/iris/ See glossary for "weight of evidence" definition.

- **Benzene** is characterized as a known human carcinogen.
- The potential carcinogenicity of **Acrolein** cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure.
- **Formaldehyde** is a probable human carcinogen, based on limited evidence in humans, and sufficient evidence in animals.
- **1,3-Butadiene** is characterized as carcinogenic to humans by inhalation.
- **Acetaldehyde** is a probable human carcinogen based on increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure.
- **Diesel exhaust** (DE) is likely to be carcinogenic to humans by inhalation from environmental exposures. Diesel exhaust as reviewed in this document is the combination of diesel particulate matter and diesel exhaust organic gases.
- **Diesel exhaust** also could contribute to chronic respiratory effects, possibly the primary noncancer hazard from MSATs. Prolonged exposures may impair pulmonary function and could produce symptoms, such as cough, phlegm, and chronic bronchitis. Exposure relationships have not been developed from these studies.

There have been other studies that address MSAT health impacts in proximity to roadways. The Health Effects Institute, a non-profit organization funded by EPA, FHWA, and industry, has undertaken a major series of studies to research near-roadway MSAT hot spots, the health implications of the entire mix of mobile source pollutants, and other topics. The final summary of the series is not expected for several years.

Some recent studies have reported that proximity to roadways is related to adverse health outcomes -- particularly respiratory problems.[19] Much of this research is not specific to MSATs, instead surveying the full spectrum of both criteria and other pollutants. In addition, as mentioned previously, EPA has not developed a health based standard for MSATs. The FHWA cannot evaluate the validity of these studies, but more importantly, these studies do not provide information that would be useful to alleviate the uncertainties listed above and enable us to perform a more comprehensive evaluation of the health impacts specific to this project. In

[19] South Coast Air Quality Management District, Multiple Air Toxic Exposure Study-II" (MATES II) (2000); Highway Health Hazards, The Sierra Club (2004) summarizing 24 studies on the relationship between health and air quality; NEPA's Uncertainty in the Federal Legal Scheme Controlling Air Pollution from Motor Vehicles, Environmental Law Institute, 35 Environmental Law Report (ELR) 10273 (2005) with health studies cited therein; the US 95 Nevada Study and associated case law; and Health Effects of Particulate Matter and Ozone Air Pollution (2004), California Environmental Protection Agency - Air Resources Board.

addition, as mentioned previously, EPA has not developed health based standard for MSATS, and instead has focused on regulation to significantly reduce on-road MSAT emissions nationwide.

Relevance of Unavailable or Incomplete Information to Evaluating Reasonably Foreseeable Significant Adverse Impacts on the Environment, and Evaluation of impacts based upon theoretical approaches or research methods generally accepted in the scientific community.

Because of the uncertainties outlined above, an assessment of the effects of MSAT emissions impacts on human health cannot be made at the project level. While available tools do allow us to predict relative MSAT emission changes between alternatives for a proposed project of this magnitude, the amount of MSAT emissions from each of the project alternatives are presented here for consideration of alternatives and for disclosure purposes and are not intended for estimating potential human exposure or health impacts. Therefore, the relevance of the unavailable or incomplete information is that it is not possible to make a determination of whether any of the alternatives would have "significant adverse impacts on human health" as related to MSAT emissions.

In this document, a quantitative analysis of MSAT emissions relative to the various alternatives has been conducted. The analysis indicates that project alternatives may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain, and because of this uncertainty, the health effects from these emissions cannot be estimated. As mentioned previously, Congress directed EPA to reduce MSAT emissions under authority of CAA Section 202(l). EPA has focused efforts on developing a number of regulations specific not only to reducing MSAT emissions, but also to reduce all vehicle emissions. EPA has not developed ambient air standards for MSATs, or health effects thresholds for MSATs.

The MSATs from mobile sources, especially benzene, have dropped dramatically since 1995, and are expected to continue dropping. The introduction of RFG has lead to a substantial part of this improvement. In addition, Tier 2 automobiles introduced in model year 2004 will continue to help reduce MSATs. Diesel exhaust emissions have been falling since the early 1990s with the passage of the CAA Amendment. The CAA Amendment provided for improvement in diesel fuel through reductions in sulfur and other diesel fuel improvements. In addition, the EPA has further reduced the sulfur level in diesel fuel, effective in 2006. The EPA

also has called for dramatic reductions in NO_X emissions, and particulate matter from on-road and off-road diesel engines. This year, EPA implemented an additional MSAT rule to further reduce both MSAT and VOC emissions.

MSAT emissions decreases from the base year are substantial even with the associated increase in VMT in the travel study area. Some sensitive receptors do exist, but their exposure would decrease from the base year to the design year due to improvements of vehicle technology and fuels.

In the case of SH 121, if the mainlanes are constructed and as a result there is an increase in VMT, the localized level of MSAT emissions for the Build scenarios could be higher relative to the No-Build scenario; however, this could be offset due to reductions in congestion (which are associated with lower MSAT emissions). As shown in **Table 5-7**, total MSAT emissions in 2030 are estimated to be the highest for the Build-non-toll (0.140 ton/day), followed by the Build-toll and No-Build scenarios (0.139 ton/day and 0.134 ton/day respectively). On a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

5.1.9 Natural Resources Mitigation & Monitoring Commitments

As described and summarized in **Sections 5.1.2**, **5.1.5**, and **5.16**, several natural resources commitments require continued monitoring and compliance. Although the construction of SH 121 from DNT to SH 121 At US 75 interchange would be financed and managed by the NTTA (Public Sector Comparator), and the NTTA would likely initiate and complete all natural resources commitments and requirements, it would be NTTA's responsibility to complete, if necessary, and adhere to all previously approved Section 404 permit commitments. Monitoring will be provided by TxDOT to ensure that all above described permits, commitments, and mitigation in compliance with USACE regulations occur during and after construction of the facility.

Section 404

The proposed Toll Project would not result in additional Section 404 impacts; however, Section 404 permits have not been obtained for the construction of the SH 121 mainlanes or SH 121 at US 75 interchange. A Section 404 permit, including appropriate compensatory mitigation would need to be obtained for the mainlanes of SH 121 and for the SH 121 at US 75 interchange.

It is anticipated that a NWP 14 with a PCN would be needed for the proposed improvements; however, formal coordination with the USACE has not been initiated. Formal coordination with the USACE would be initiated by the NTTA (Public Sector Comparator); however, ultimate responsibility for mitigation compliance and meeting all conditions of the Section 404 permit would remain with TxDOT.

Section 401

Impacts from the construction of the SH 121 mainlanes and interchange at US 75 would require additional Section 401 Water Quality Certification requirements. It would be the responsibility of the NTTA (Public Sector Comparator) to initiate coordination and secure the necessary permits to comply with Section 401; however, ultimate responsibility for mitigation compliance to ensure that Section 401 Water Quality Certification requirements are met would remain with TxDOT.

Vegetation

Impacts to the riparian areas associated with the stream crossings associated with the 2002 FONSI Re-evaluation for SH 121 from FM 423 to US 75 require continued coordination with the USACE. The proposed mitigation consisted of planting approximately 11.7 acres of trees at Lake Lavon. The NTTA (Public Sector Comparator) would ensure that the 11.7 acres of plantings previously committed to on behalf of TxDOT are met. TxDOT would remain ultimately responsible for the proposed mitigation.

Water Quality

The proposed Toll Project would not require additional coordination with the TCEQ; however because the future construction of the SH 121 mainlanes and SH 121 at US 75 interchange would disturb more than one acre, the NTTA (Public Sector Comparator) would be required to comply with the TCEQ – TPDES General Permit for Construction Activity. Also, the construction would disturb more than five acres; therefore, a NOI would be filed to comply with TCEQ requirements and a SW3P would be in place during construction. The SW3P would utilize the temporary control measures as outlined in the Department's manual *Standard Specifications for the Construction of Highways, Streets, and Bridges*. Impacts would be minimized by avoiding work by construction equipment directly in the stream channels and/or adjacent areas. TxDOT is ultimately responsible for ensuring these commitments are met.

5.2 LAND USE

The proposed Toll Project would not alter the design, location, or ROW footprint of SH 121. As indicated previously in this document, the SH 121 corridor is experiencing rapid growth and development. SH 121 is needed to address demand generated by such growth. The project area has experienced rapid conversion from undeveloped uses to residential and commercial uses since the previous environmental documents and subsequent approvals were approved. Existing commercial and industrial land uses located along the SH 121 corridor are likely to continue to develop. By establishing the proposed corridor through land use controls (zoning) and future land use planning, the Cities of Plano, Frisco, Allen, McKinney, and the Town of Fairview have collectively minimized potential adverse land use impacts along the established SH 121 transportation corridor. **Sections 6.0** and **7.0** investigate indirect and cumulative implications for land use.

5.2.1 Section 4(f) Properties

The proposed Toll Project would not require the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge or historic sites of national, State or local significance; therefore, a Section 4(f) evaluation would not be required. There would be no Section 4(f) properties impacted by the proposed Toll Project.

5.3 COMMUNITY IMPACT ASSESSMENT

Transportation investments have major influences on society and have the potential to impose economic and social consequences. Community impact assessment is a process to evaluate the effects of a transportation action on a community and its quality of life. The assessment is to examine topics of importance to people, such as relocations and displacements, public facilities and services, traffic, traffic noise, air quality, lighting and visual impacts, and socio-economic impacts.

5.3.1 Relocations and Displacements

The proposed Toll Project would require no additional ROW acquisition; therefore, no additional displacement or relocations would result.

5.3.2 Public Facilities and Services

The proposed Toll Project would not adversely impact any public facilities or services, because access changes or displacements are not associated with the proposed Toll Project. The purpose of SH 121 is to respond to congestion caused by population increases and development; therefore, service times for emergency and transit vehicles utilizing the SH 121 tolled mainlanes are anticipated to improve as congestion decreases. However, emergency and transit vehicles using the SH 121 frontage roads would experience longer travel times than those using the tolled SH 121 mainlanes due to a lower posted speed limit and traffic signals along the frontage roads. Emergency and transit vehicles would be exempt from toll charges.

5.3.3 Traffic Operations

As stated in **Section 3.0**, the construction of SH 121 from DNT to SH 121 At US 75 interchange was previously approved as a non-toll facility. Due to the proposed Toll Project, updated SH 121 traffic projections and modeling were requested from the NCTCOG to aid in the assessment of potential effects. The updated traffic projections and modeling were based on the *Mobility 2030* traffic network for the entire metropolitan planning area (MPA). Two scenarios were developed for the modeling year 2030 - one scenario represents SH 121 as a non-toll facility and the second scenario represents SH 121 as a toll facility. (**See Appendix C: 2030 Traffic Volumes**.)

A comparison of non-toll and toll traffic volumes was done to determine the extent of traffic redistribution due to the proposed Toll Project. The proposed Toll Project Limits were divided into three sections according to current development and usage: 1) DNT to Coit Rd., 2) Coit Rd. to Alma Dr., and 3) Alma Dr. to the SH 121 at US 75 interchange. Analysis of the average daily traffic revealed that approximately 7 percent of the mainlane volume (10,000 vehicles per day) between DNT and Coit Rd. would be redistributed to the frontage road/local arterial system due to the proposed Toll Project. Between Coit Rd. and Alma Dr. approximately 29 percent of the mainlane vehicles (41,200 vehicles per day) redistributed to the frontage roads and local transportation network. Finally, the section between Alma Dr. and US 75, approximately 28 percent of the mainlane traffic (39,400 vehicles per day) would be redistributed to the frontage roads and local transportation network. See **Appendix A: Figure 5: 2030 Traffic Redistribution Tolling Scenario** shows the effect of tolling, in vehicles per day, on the transportation network within the Cities of Plano, Frisco, Allen, McKinney, and the Town of Fairview.

In order to properly analyze the affects of this traffic redistribution on the local transportation network, 16 local arterials were analyzed for changes in traffic volume due to the proposed Toll Project. The following arterials were analyzed:

- Alma Dr.
- Coit Rd.
- Custer Rd.
- Eldorado Pkwy.
- Exchange Pkwy.
- Hardin Blvd.
- Hedgecoxe Rd.
- Independence Pkwy.
- Lebanon Rd.
- Legacy Dr.
- Main St./FM 720/FM 3537
- McDermott Rd.
- Preston Rd./SH 289
- Ridgeview Dr.
- Stonebrook Pkwy./Rolater Dr.
- Virginia Pkwy.

The 16 roadways are comprised of 231 individual links and were analyzed for changes in volume between toll and non-toll scenarios.[20] The average increase in traffic volume per link was 3.61 vehicles during the AM peak period. The largest increase in volume (386 vehicles) occurred on Ridgeview Dr. between Custer Rd. and Exchange Pkwy. and the largest decrease (251 vehicles) occurred on Preston Rd. at SH 121. Similarly, the PM Peak Hour revealed an average increase of 16.34 vehicles per link. The largest increase in traffic volume (373 vehicles) occurred on Ridgeview Dr. between Alma Rd. and Stacy Rd. and the largest decrease in traffic (151 vehicles) occurred on Exchange Pkwy. between Ridgeview Dr. and Alma Rd. See **Appendix C: Difference in Peak Period Volume Due to Tolling** for a detailed listing of volume changes due to tolling.

Overall, the redistribution of traffic is evenly dispersed along the local transportation network and no single roadway encounters substantial increases in vehicular traffic.

[20] See Glossary for link definition.

5.3.4 Traffic Noise

The previously approved traffic noise analysis, conducted in 1991 and re-evaluated in 2002, concluded that the project would result in a traffic noise impact with no feasible and reasonable abatement. A current land use analysis indicated that although there has been new development within the project area, none of the development adjacent to the Toll Project would be impacted by traffic noise and benefit from any feasible and reasonable noise abatement.

This re-evaluation included an analysis of the potential effects of the redistribution of traffic on SH 121 from tolled mainlanes to non-tolled frontage roads. These affects were determined by the associated change (increase or decrease) in sound pressure [noise] levels expressed in decibels (dB). Although the toll facility would result in an increase in the average daily traffic (ADT) on many of the non-tolled frontage roads, any increase in noise levels associated solely with an increase in traffic on the frontage roads would be offset by the greater decrease (ADT) in faster (louder) traffic on the tolled mainlanes (**Table 5-8**). The result would be an overall decrease in noise levels for areas along/adjacent to SH 121.

TABLE 5-8:
NOISE LEVEL CHANGE DUE TO TRAFFIC REDISTRIBUTION ON SH 121
(2030 NON-TOLL vs. TOLL TRAFFIC)

SH 121 Facility Segment		Non-Toll to Toll Average Traffic Redistribution*	Noise Level Change**
DNT to Coit Rd.	Frontage roads	4% decrease (-1,767 ADT)	-0.3 dB
	Mainlanes	7% decrease (-10,191 ADT)	
Coit Rd. to Alma Dr.	Frontage roads	37% increase (+10,907 ADT)	-0.9 dB
	Mainlanes	29% decrease (-41,274 ADT)	
Alma Dr. to SH 121 At US 75 Interchange	Frontage roads	55% increase (+8,838 ADT)	-1.4 dB
	Mainlanes	38% decrease (-39,891 ADT)	

* Source: NCTCOG TransCAD® data for 2030 non-toll and toll scenarios
**Average noise level changes at distances ranging from 100-400 ft from the ROW. The decibel (dB) is the unit of measurement used to express the magnitude of sound energy (noise).

Based on the above information (current land use and **Table 5-8**), the conclusion of the original analysis remains valid for the proposed toll facility.

Future land use and zoning maps obtained from the Cities of Plano, Frisco, Allen, McKinney, and the Town of Fairview currently indicate that the undeveloped land directly adjacent to the proposed project would be developed for more noise compatible (non-residential) land uses.

Noise associated with the construction of the project is difficult to predict. Heavy machinery, the major source of noise in construction, is constantly moving in unpredictable patterns. However, construction normally occurs during daylight hours when occasional loud noises are more tolerable. None of the receivers are expected to be exposed to construction noise for a long duration; therefore, any extended disruption of normal activities is not expected. Provisions will be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

A copy of this traffic noise analysis will be made available to local officials. On the date of approval of this re-evaluation, the NTTA (Public Sector Comparator), FHWA, and TxDOT are no longer responsible for providing noise abatement for new development adjacent to the project.

5.3.5 Air Quality

The proposed North Central Texas project is located in Collin County, which is part of the EPA designated nine-county nonattainment area for the eight-hour standard for the pollutant ozone; therefore, the transportation conformity rule applies. The proposed project is consistent with the area's financially constrained long-range *Mobility 2030* MTP and the 2006-2008 TIP, as proposed by the NCTCOG. The U.S. Department of Transportation (FHWA/FTA) found the MTP and TIP to conform to the SIP on June 12, 2007. All projects in the NCTCOG's TIP that are proposed for federal or state funds were initiated in a manner consistent with requirements of amended 23 U.S.C. 134, 23 U.S.C. 135, 176(c) of the CAA (42 U.S.C. 7506(c)) and 49 U.S.C. 5303. Energy, environment, air quality, cost and mobility considerations are addressed in the programming of the TIP. The proposed project is also found in the Draft 2008-2011 STIP which should be approved by FHWA/FTA in October of 2007.

On-road emissions are anticipated to decrease over time due to the implementation of EPA regulations to improve vehicle technology and fuel. Overall, MSAT, CO and precursors to ground-level ozone (NOx and VOCs) emissions are anticipated to decrease.

Modeling results under the worst case conditions indicate that CO concentrations would not exceed the NAAQS for the toll scenario either in 2015 or 2030. It is expected, that congestion relief would result in less fuel combustion as there are less vehicles on the road for less periods of time which generally result in less emissions; however, it yields to an increase of

VMT (as more roads are built to relief congestion). In addition, congestion relief that reduces idling would reduce idling emissions. MSAT emissions would be reduced as fewer cars are anticipated to travel the mainlanes and therefore provide relief to the traffic congestion, which would otherwise occur under the non-toll condition. Less congestion translates into less cars traveling at lower speeds or idling conditions, for shorter periods of time during peak periods (heavy traffic) and result in less fuel combustion and lower idling emissions. In addition, a quantitative MSAT analysis indicates that by 2030, although VMT increases, MSAT emissions would decrease by 51 percent when compared to 2007. Please refer to **Section 5.1.8** for further details.

Construction activities may temporarily degrade air quality through dust and exhaust gases associated with construction equipment. Measures to control fugitive dust would be considered and incorporated into the final design and construction specifications.

5.3.6 Lighting and Visual Impacts

The toll gantries are an additional visual element associated with the proposed Toll Project. The gantries would include various components of video enforcement equipment such as cameras, lighting, and an interface with the electronic toll transponders. Although additional lighting would be incorporated as part of the violation enforcement system, these additional lighting components would add minimal lighting in comparison to the lighting structures currently planned for the roadway currently under construction. The gantry lighting design, although not complete at this time, would be designed to minimize glare and ambient lighting.

5.3.7 Socio-Economic Impacts

To determine potential effects of the proposed Toll Project, the following elements and potential impacts of tolling were identified and evaluated: community cohesion, Limited English Proficiency (LEP) populations, access, non-toll alternatives, and transit usage. The proposed Toll Project is bordered by 10 census tracts.

Community Cohesion

The proposed Toll Project would not adversely affect community cohesion. Community cohesion refers to the aggregate quality of a residential area. The proposed Toll Project is not anticipated to disturb local neighborhoods and businesses. Frontage roads have been constructed between DNT and US 75; thus, the proposed Toll Project would not impinge community

cohesion. The proposed Toll Project would not affect, separate, or isolate any distinct neighborhoods, ethnic groups, or other specific groups.

Limited English Proficiency (LEP) Populations

Executive Order (EO) 13166 on LEP calls for all agencies to ensure that their federally conducted programs and activities are meaningfully accessible to LEP individuals. The US DOT defines LEP persons as individuals with a primary or home language other than English who must, due to limited fluency in English, communicate in that primary or home language if the individuals are to have an equal opportunity to participate effectively in or benefit from any aid, service or benefit provided by the transportation provider or other US DOT recipient.

Census tract (CT) data was obtained from the U.S. Census Bureau *Census 2000* database. According to the information, the "Ability to Speak English," for the population five years and older indicates 4.7 percent of the population within the 10 census tracts along the proposed Toll Project Limits speaks English "Not Well" or "Not at All." In a windshield survey along the proposed Toll Project Limits, English was the only language observed on billboards and signs.

Preparation for the July 2006 public meeting and February 2007 public hearing included published announcements in local papers, including the Spanish publication *Al Dia*, which informed citizens of the opportunity to request an interpreter (for language or other special communication needs) to be present at the public meetings. Such steps would continue to be taken to ensure that such persons have meaningful access to the programs, services, and information that TxDOT provides.

Access

Access to the mainlanes of SH 121 would be limited to those who elect or can only on occasional basis afford to pay the toll. The SH 121 frontage roads would include a total of six travel lanes (three in each direction) and would provide a non-toll alternative for motorists who do not elect or can only on occasional basis afford to travel the tolled mainlanes. Under normal operating conditions, motorists (including emergency vehicles) using the frontage roads would experience longer travel times than motorists using the tolled mainlanes due to a lower posted speed limit and traffic signals along the frontage roads. According to traffic data and Complete Performance Reports generated by the NCTCOG, the frontage road system shows an increase in total delays (signalized delays and congestion delays) under a toll scenario (20,992.17 hours of delay/day under the toll scenario vs. 20,514.72 hours of delay/day under the non-toll scenario). See **Section 5.3.3** for additional analysis regarding traffic impacts.

The difference in travel times between the tolled mainlanes and the non-tolled frontage roads would be the highest during peak periods of travel when traffic congestion within the SH 121 project limits would be the greatest. However, the overall added capacity the on-going and remaining construction provides would relieve traffic congestion for all motorists using SH 121 whether they use the mainlanes or frontage roads compared to the existing facility. Furthermore, motorists would have access to the same number of non-toll lanes within the proposed Toll Project Limits (i.e. frontage roads) as currently exist.

Non-Toll Alternatives

Alternative non-toll routes include the SH 121 frontage roads, that would include a total of six travel lanes (three in each direction), as well as local arterial roadways (i.e. Legacy Dr., Lebanon Dr., Hedgcoxe Rd., and Main St./FM 720/McKinney Ranch Pkwy., etc.). The use of frontage roads would provide non-tolled alternatives for motorists who do not elect or can only on occasional basis afford to travel the tolled mainlanes. Motorists using the frontage road may experience longer travel times than motorists using the tolled mainlanes due to a lower posted speed limit and signalization. This difference in travel times between the tolled mainlanes and the non-tolled frontage roads would be the highest during peak periods of travel when traffic congestion within the proposed Toll Project Limits would be greatest. **Section 5.3.3** examines the anticipated changes in LOS associated with the proposed Toll Project. Comparison of 2030 traffic volumes reflecting the SH 121 non-toll and toll scenarios reveals minimal change in LOS for both the frontage road and adjacent transportation network.

Transit Usage

The proposed Toll Project is not expected to adversely affect transit usage. SH 121 is located within the Collin County Area Regional Transit (CCART) service area. CCART serves the elderly, school districts, and public transportation needs with over 1,000,000 miles of service per year provided in Collin County. CCART's service is open to the public, and all persons desiring transit have an equal opportunity for this service. There are no regularly scheduled trips along the proposed Toll Project Limits; scheduling is on a first-contact, first-served basis.[21]

[21] Collin County Area Regional Transit (CCART), http://www.cccoaweb.org/ccart.asp

Per RTC policy, should CCART vehicles utilize SH 121, no toll charges would be applied to CCART. As stated previously, transit vehicles would be exempt from toll charges along SH 121. Toll road users, including environmental justice populations (consisting of minority and/or low-income individuals), might decide to reduce their personal economic impact of tolls by using transit, where tolls would be waived for the transit provider. (**See Appendix B: Business Terms for TxDOT-Sponsored Toll Roads on State Highways**.)

5.3.7.1 Economic Impact of Tolling

Toll Rate

The toll rates for SH 121 would be consistent with other toll rates in the region. The toll rates guidelines for SH 121 are the result of public outreach and decisions made by the RTC. In September 2006, the RTC agreed on the following business terms for setting the toll rates along SH 121: 1) Maximum average toll rate in 2010 would be 14.5 cents per mile and 2) Transit and emergency vehicles would be exempt from toll charges. (See **Appendix B: Business Terms for TxDOT-Sponsored Toll Roads on State Highways**.)

Toll rates for SH 121 would be determined prior to the facility opening. Potential impacts from the proposed Toll Project can be illustrated using the following scenario.

For example, assume that the toll rate would be set at 14.5 cents per mile and that the average household would make 250 round-trips per year.[22] Under this scenario, the annual cost to use the entire 12.5-mile tolled section of SH 121 would be approximately $906 per year. A user with an annual household income equal to the median household income of Collin County ($70,835) would spend less than two percent (1.2 percent) of their annual household income on SH 121 tolls. However, households with incomes at or below the poverty level of $20,650 (for a family of four) would spend 4.3 percent of the annual household income on SH 121 tolls, approximately 3.1 percent more than the median Collin County household. Toll road users might decide to reduce their personal economic impact of tolls by carpooling or using transit, where tolls would be divided among many travelers or waived for the transit provider.

As previously stated, an ETC system would be implemented along SH 121. The facility would not offer "on site" or automated cash payment options through toll booths, toll plazas, toll stations, or toll gates. Instead, other methods of toll collection would be implemented as described below.

[22] Average number of work trips per year based on tolling industry observations provided by the NTTA.

Methods of Toll Charge Collection[23]

TxDOT TxTag® stickers, the NTTA TollTag® (Dallas area), and the Harris County Toll Road Authority (HCTRA) EZ TAG® (Houston area) would be accepted on the SH 121 ETC facility. Toll charges could be automatically deducted from a prepaid credit account or would be mailed as a monthly statement to the driver if the video billing method is utilized. If the driver has a TxTag® or other toll transponder account, the tolls would automatically be deducted from the account when the facility is used. The account would be a prepay account which means the driver must maintain sufficient funds in his/her account to cover incurred toll charges, such as for accounts currently in use for existing toll roads.

TxTag® Account Payment Methods

With a TxTag® "AutoPay" account, the user would pay a minimum installment of $29.65 ($20 credit and a $9.65 one time fee for the TxTag®) through a credit or debit card. The account would then be established with a $20 credit, which would be reduced each time the transponder passes through an operating toll gantry. The account holder's credit or debit card would be automatically charged when the funds in the "AutoPay" account exceed a pre-set threshold value. There is no fee for this service. A user can sign up for "AutoPay" by accessing the account online and providing credit card information or by calling the TxTag® Customer Service Center.

For those who choose to maintain a prepaid TxTag® "Manual Pay" account, an initial deposit of $9.65 would be required for the toll transponder, as well as a $20 payment to establish the account. The account would then be established with a $20 credit, which would be reduced each time the transponder passes through an operating toll gantry. The user would be responsible for maintaining sufficient funds in his/her account to cover incurred toll charges. Toll rates would be the same as "AutoPay" account toll rates. "Manual Pay" accounts can be replenished via credit card, cash, or check/money order. Paying by credit card can be handled online (www.TxTag.org), via the phone (1-888-468-9824), or at the TxTag® Customer Service Center located in Austin, Texas. Cash payments must be made at the TxTag® Customer Service Center in Austin. Check or money orders can be taken or mailed to the TxTag® Customer Service Center in Austin.

[23] Costs and amounts discussed in this section are subject to change as TxDOT, NTTA, and HCTRA policies may vary.

The TxTag® sticker must be permanently placed on the windshield and cannot be moved between vehicles without damaging the toll transponder. If a user has more than one vehicle, the user can order more transponders and manage them all through one account. Regardless of the user type, TxTag® accounts may be monitored free of charge via the internet. Should the user request a monthly invoice, a $1.00 charge per five pages invoiced would be incurred each month.

TollTag® Account Payment Methods

With a TollTag® prepaid "credit user" account, the driver would pay a minimum amount of $40 installment through a credit or debit card. The account would then be established with a $40 credit, which would be reduced each time the transponder passes through an operating toll gantry. When the driver's account reaches $10 or less, the "credit user" credit or debit card would again be charged $40 to automatically increase the available balance. Should the "credit user" lose or fail to surrender the TollTag® when the account is closed, the credit or debit card would be charged $25 to cover the cost of the transponder.

Similar to the TxTag® "Manual Pay" account, the NTTA also allows cash payments. For those who choose to maintain a prepaid "cash user" account, an initial deposit of $25 would be required for the toll transponder as well as a $40 payment to establish the account. Per NTTA policy, this automatic deposit is required of "credit user" accounts. The "cash user" deposit can be refunded without interest if the user returns the transponder in good condition or if the "cash user" account is converted into a "credit user" account. The prepaid "cash user" account would require the driver to maintain sufficient funds in his/her account to cover incurred toll charges. Toll rates would be the same as "credit user" account toll rates. When passing through a toll lane equipped with a traffic signal, a yellow light on the traffic signal indicates that the account balance is at or below $10. A red light indicates that the account balance is $0. The NTTA must receive payment at one of the TollTag® locations before the account reaches $0 to avoid the incurrence of toll violations.

The TollTag® may only be displayed in the vehicle specifically assigned to that TollTag®. The license plate number of a vehicle listed on the TollTag® account can not be registered on another TollTag® account. Regardless of the user type, TollTag® accounts may be monitored free of charge via the internet. Should the user request a monthly invoice, a $1.50 charge would be incurred each month.

Video Billing Payment Methods

Through a system known as video billing, it would still be possible to drive the mainlanes of SH 121 without an electronic toll transponder or prepaid user account. The user's license plate would be recorded and matched to the State's vehicle registration file, and a monthly bill would be mailed to the registered owner of the vehicle for the accumulated toll charges. The toll rates for drivers without a toll transponder would include an additional percentage toll rate premium plus an incidental administrative fee commensurate with the costs related to processing the vehicle registration information.

The owner of the vehicle may be charged a toll rate premium of up to 45 percent, which is to offset the costs related to processing license plate information. In addition to this premium, incidental administrative fees would be incurred. These include such things as costs to prepare and mail the monthly statements.

For example, assume that the toll rate would be set at 14.5 cents per mile and that a low-income individual would make 20 round-trips per month traveling from the City of McKinney to places of employment in the City of Frisco (approximately 6 miles one-way). Assuming this toll rate, the cost to drive SH 121 with a TxTag® would be approximately $417.60 a year. This equates to 2.0 percent of an income at or below the poverty level of $20,650 (for a family of four). For a low-income individual who does not have a TxTag® account, the cost to drive the same amount of mileage, including the $1.00 processing fee for mailing the monthly statement and a maximum toll rate premium of 45 percent, would be 3.0 percent of a yearly income at or below the poverty level of $20,650 (for a family of four). This scenario demonstrates that not maintaining a pre-paid TxTag® account results in higher costs for those who utilize the video billing option.

The maximum processing fee is allowed to increase proportionally with the toll rate. There is no interest charged on unpaid tolls; however, there are delinquent penalty fees associated with an unpaid or delinquent bill. Common penalties are listed below:[24]

Returned Check (Insufficient Funds)	$25.00
Administrative Fee - Violation Notice *	$5.00
Administrative Fee - Violation in Collections *	$25.00
Administrative Fee - Violation Sworn Complaint Issued *	$100.00

* Fee amounts are pending final determination and will be adjusted annually per Texas Administrative Code.

[24] Texas Department of Transportation, http://www.txtag.org/

If the registered owner does not have a toll transponder, he/she would receive a bill every month for the balance. There is no minimum threshold for video billing to occur. As with the prepaid account, video billing would allow for cash or credit payments.

Comparison of Payment Methods

Not maintaining a prepaid account would impact any user, including low-income users, because the cost of paying the accumulated toll charges without an account would represent a higher toll rate than toll charges affiliated with a prepaid account. Cash payment options are available for each payment method; however, only those users who maintain automatic and manual pay prepaid accounts would benefit from reduced toll rates compared to the video billing policy. In summary, toll rates are generally one-third more for drivers who do not have an electronic toll transponder to offset the costs related to processing the license plate information associated with video billing. Although certain toll transponder account holders are required to pay up-front fees or deposits for toll transponders ($9.65 fee per transponder for TxTag® accounts and $25 deposit for TollTag® "cash users" accounts), the toll transponder account holders would benefit from lower toll rates compared to the total toll rates associated with video billing. In other words, the up-front fees associated with toll transponders may be offset through time when considering the premium and processing fees affiliated with the video billing method of payment.

5.3.8 Environmental Justice

Environmental justice is defined by the EPA's Office of Environmental Justice as the fair treatment of all people in terms of the distribution of benefits and costs resulting from transportation projects, programs, and policies. Fair treatment means that a disproportionate share of adverse effects will not fall upon the low-income or minority populations and also promotes no denial of benefits.

In response to EO 12898, signed by President Clinton on February 11, 1994, the US DOT developed an environmental justice strategy that operates within the framework of NEPA and Title VI of the Civil Rights Act of 1964 which was clarified in the Civil Rights Restoration Act of 1987.[25] EO 12898 mandates that Federal agencies identify and address, as appropriate, disproportionately high and adverse human health or environmental effects, including social and

[25] U. S. Department of Transportation, Federal Highway Administration. *FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 6640.23.* December 2, 1998.

economic effects, of their programs on minority and low-income populations. FHWA Order 6640.23 defines a minority as a person who is:

1) Black (having origins in any of the black racial groups of Africa);
2) Hispanic (of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race);
3) Asian American (having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands); or
4) American Indian and Alaska Native (having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition).

EO 12898 further defines minority population as any readily identifiable groups of minority persons who live in geographic proximity, and if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed FHWA program, policy, or activity.

Low-income is defined as a household income at or below the Department of Health and Human Services (DHHS) poverty guidelines.[26] The poverty guidelines are determined by the U.S. Census Bureau. The U.S. Census Bureau uses a set of money income thresholds that vary by family size and composition to determine who is low-income and follows the Office of Management and Budget's (OMB) Statistical Policy Directive 14 in establishing the thresholds. In 2007, the weighted average low-income threshold for a four person family is at or below $20,650.

Adverse effects are defined in the FHWA Order as the totality of significant individual or cumulative human health or environmental effects, including interrelated social and economic effects, which may include, but are not limited to: bodily impairment, infirmity, illness or death; air, noise, and water pollution and soil contamination; destruction or disruption of man-made or natural resources; destruction or diminution of aesthetic values; destruction or disruption of community cohesion or a community's economic vitality; destruction or disruption of the availability of public and private facilities and services; vibration; adverse employment effects; displacement of persons, businesses, farms, or nonprofit organizations; increased traffic congestion; isolation, exclusion, or separation of minority or low-income individuals within a

[26] *Ibid.*

given community from the broader community; and the denial of, reduction in, or significant delay in the receipt of, benefits of FHWA programs, policies, or activities.

Under EO 12898, disproportionately high and adverse effects are defined as effects that "will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population."

The potential effects of the proposed Toll Project have been evaluated in accordance with the requirements of EO 12898. The *Census 2000* data for census tracts were used in the following analyses. As stated previously, the proposed Toll Project is located within 10 census tracts (see **Appendix A: Figure 6)**. These 10 census tracts comprise the environmental justice direct impacts study area. Two census tracts were also included for comparison purposes in the racial and ethnic characteristics discussion ("comparison census tracts"). These comparison census tracts were chosen due to their close vicinity to the proposed Toll Project and because they exhibit transportation characteristics similar to SH 121 (i.e., CT 304.02 is traversed by DNT and CT 315.03 is traversed by US 75).

Income

The median household incomes within the study area ranged from $30,653 to $102,367 and are shown in **Table 5-9**. A total of 5.1 percent (3,278 persons) of the population residing within the 10 adjacent census tracts exhibited *Census 2000* incomes below the poverty level. CT 309.00, located within the City of McKinney and the Town of Fairview, exhibits a meaningfully greater low-income population compared to the regional average.[27] Overall, the populations located within the study area represent some of the higher median household incomes and lower poverty rates in the State of Texas.[28]

[27] "Meaningfully greater" as defined in CEQ guidance was used for this study. Meaningfully greater was determined as twice the percentage of the regional average of the total population in poverty. The regional average is equated to the DFW Metropolitan Statistical Area (MSA). The DFW MSA total population in poverty according to *Census 2000* is 10.8 percent.

[28] U.S. Census Bureau, 2003 Median Household Income Ranking Tables, http://www.census.gov/acs/www/Products/Ranking/2003/R07T050.htm

TABLE 5-9:
MEDIAN HOUSEHOLD INCOME and POVERTY STATUS

Area/Census Tracts	Population*	Median Household Income	Persons Below Poverty Level	
			Number	Percent
CT 305.01	9,594	$87,220	146	1.5
CT 305.02	9,280	$79,152	5	0.01
CT 306.01	7,258	$102,367	153	2.1
CT 308.00	7,189	$39,946	792	11.0
CT 309.00	6,315	$30,653	1,673	26.5
CT 314.01	10,288	$98,974	288	2.8
CT 316.39	1,744	$99,250	41	2.4
CT 316.40	3,506	$88,362	49	1.4
CT 316.44	3,043	$79,079	29	0.9
CT 316.50	4,680	$85,099	102	2.2
Total Study Area	**62,897**	**N/A**	**3,278**	**5.1**

*Population for whom poverty status has been determined. Source: U.S. Census Bureau. *Census 2000.* http://factfinder.census.gov.

Racial and Ethnic Characteristics

For purposes of the analysis in this re-evaluation, an environmental justice population is present when the total minority population percentage within the Toll Project Limits or individual census tracts is greater than 50 percent of the total study area population. **Table 5-10** contains the percent minority population for each census tract and the study area.

Overall, the minority population within the proposed Toll Project Limits represents 23.3 percent of the total population. The population of the study area is primarily White and Hispanic. The total minority percentages exhibited by the comparison census tracts are 31.3 percent and 10.3 percent. The comparison census tracts are located in the near vicinity of the study area and are traversed by highway facilities similar to that of SH 121. Pacific Islanders represent the smallest racial minority, totaling four persons of the total project area population. Hispanics constitute 12.7 percent of the project area population. Only one census tract, CT 309.00, exhibits a minority population greater than 50 percent. This census tract is located near the SH 121/US 75 interchange.

TABLE 5-10:
RACIAL AND ETHNIC COMPOSITION OF THE POPULATION

Area/ Census Tract	Total Population	Population of One Race / Not Hispanic or Latino					Hispanic or Latino of Any Race	Total Minority Population
		White	Black or African American	American Indian/ Alaska Native	Asian	Pacific Islander		
Comparison Census Tracts								
CT 304.02	7,044	5,513 78.2%	271 3.8%	19 <0.1%	65 0.9%	0 0.0%	1,856 26.3%	2,211 31.3%
CT 315.03	4,659	4,215 90.4%	124 2.6%	31 0.6%	91 2.0%	0 0.0%	235 5.0%	481 10.3%
Study Area								
CT 305.01	9,614	8,673 90.2%	287 3.0%	50 0.5%	352 3.7%	0 0.0%	457 4.7%	1,146 11.9%
CT 305.02	9,294	8,099 87.1%	482 5.2%	85 0.9%	316 3.4%	0 0.0%	673 7.2%	1,556 16.7%
CT 306.01	7,258	6,772 93.3%	141 1.9%	22 0.3%	168 2.3%	0 0.0%	278 3.8%	609 8.4%
CT 308.00	7,254	5,080 70.0%	514 7.1%	61 0.8%	0 0.0%	0 0.0%	2,171 29.9%	2,746 37.9%
CT 309.00	6,510	2,752 42.3%	1,408 21.6%	5 0.1%	12 0.2%	0 0.0%	3,263 50.1%	4,688 72.0%
CT 314.01	10,292	9,469 92.0%	150 1.5%	24 0.2%	362 3.5%	4 <0.1%	470 4.6%	1,010 9.8%
CT 316.39	1,753	1,354 77.2%	148 8.4%	40 2.3%	172 9.8%	0 0.0%	116 6.6%	476 27.1%
CT 316.40	3,506	2,989 85.3%	114 3.3%	21 0.6%	195 5.6%	0 0.0%	214 6.1%	544 15.5%
CT 316.44	3,043	2,461 80.9%	162 5.3%	0 0.0%	346 11.4%	0 0.0%	96 3.1%	604 19.8%
CT 316.50	4,680	3,461 74.0%	247 5.3%	32 0.7%	794 17.0%	0 0.0%	274 5.8%	1,347 28.8%
Total Study Area	**63,204**	**51,110 80.9%**	**3,653 5.8%**	**340 0.5%**	**2717 4.3%**	**4 <0.1%**	**8,012 12.7%**	**14,726 23.3%**

Source: U.S. Census Bureau. *Census 2000.* http://factfinder.census.gov

Origin-Destination Analysis

Overview

Origin-destination (O&D) data secured from the NCTCOG was used for further analysis of "user impacts" of the proposed Toll Project on low-income and minority populations. Studying O&D data can determine travel patterns of traffic along a transportation facility during

a typical day. This form of analysis is useful in assessing "user impacts" as the number of trips associated with specific population characteristics can be studied to provide general travel assumptions of those specific populations. Trips are defined as a one-way movement from where a person starts (origin) to where the person is going (destination).

Assessing "user impacts" in the form of an O&D analysis is an integral component of the environmental justice analysis for the proposed Toll Project. As funding mechanisms evolve, the trend towards utilization of facilities in this region would, through time, create "user impacts" as access to highway systems becomes an issue to the economically disadvantaged. The O&D analysis revealed anticipated users and associated travel patterns of the proposed Toll Project in 2030 and identified environmental justice populations in order to assess the intensity of use by those protected populations.

Traffic Serial Zones, Study Area, and Data Sources

The information associated with the O&D analysis is organized by traffic serial zones (TSZs) which are small geographic units of area that are developed as a basis for estimate of travel. TSZs may vary in size, are determined by the roadway network and homogeneity of development, and directly reflect demographic data generated by the U.S. Census Bureau. Delineated by state and/or transportation officials for tabulating traffic-related data, TSZs usually consist of one or more census blocks, block groups, or census tracts.

The study area of the O&D analysis essentially consists of the NCTCOG MPA. Given regional operating characteristics of SH 121, it is reasonable to assume the NCTCOG MPA contains the proposed Toll Project daily users. This study area consists of 5,000 square miles and encompasses five entire counties (Collin, Dallas, Denton, Rockwall, and Tarrant Counties) and four partial counties (Ellis, Johnson, Kaufman, and Parker Counties). A total of 4,874 TSZs comprise the O&D study area. Of the total number of TSZs located within the O&D study area, 1,596 TSZs are anticipated to regularly utilize the SH 121 facility in 2030 (originating at least one trip per day). This represents 32.7 percent of the total study area TSZs. All but two of these individual 1,596 TSZs would utilize the SH 121 facility if it were to be operated as a non-toll facility. (It should be noted the two TSZs projected to not utilize the non-toll SH 121 are only anticipated to each contribute one trip to the frontage roads in the toll scenario.) This indicates the vast majority of identified "user" TSZs would utilize the facility in 2030, regardless if the facility is toll or non-toll.

TransCAD®, a GIS-based transportation planning software, was utilized by the NCTCOG to generate the traffic data analyzed during the O&D analysis. The NCTCOG conducted a "select-link analysis" based on 2030 AM peak period traffic in order to generate O&D data associated with the proposed Toll Project.[29] Traffic data exported directly from TransCAD® select-link matrices was then correlated with U.S. Census Bureau data in order to provide a demographic profile of users anticipated to utilize the proposed SH 121 toll facility in 2030.

Identification of Environmental Justice TSZs

Analysis of the O&D trip data was concentrated on those TSZs with high proportions of low-income and/or minority populations within the study area that are anticipated to utilize the proposed toll facility in 2030. The threshold for an environmental justice TSZ ("EJ TSZ") was defined as a TSZ with an environmental justice population (specifically low-income and minority populations) equal to or greater than 51 percent of the total TSZ population. A total of 1,685 EJ TSZs were identified within the NCTCOG study area. Of the identified EJ TSZs, a total of 332 are anticipated to regularly utilize the proposed SH 121 toll facility (originating at least one trip per day) according to both the non-toll and toll scenario results. See **Appendix C: SH 121 Origin-Destination Analysis Data** for demographic profiles and number of trips associated with all TSZs anticipated to utilize SH 121 as well as census tracts affiliated with the EJ TSZs. See **Appendix A: Figure 7** for the locations of EJ TSZs and non-EJ TSZs anticipated to use SH 121.

Analysis Results

Data analysis indicates that of approximately 73,743 total trips which originate from TSZs anticipated to utilize SH 121 in the toll scenario; approximately 5.4 percent (4,012 trips) of the total trips originate from EJ TSZs. For the non-toll scenario, the total number of trips generated by TSZs anticipated to utilize SH 121 is approximately 73,287. Approximately 5.7 percent, or 4,246 trips, originating from EJ TSZs are projected to utilize the non-toll SH 121 facility. The relatively low EJ TSZ trip percentage for the non-toll and toll scenarios suggests that a majority of trips anticipated to utilize the proposed SH 121 toll facility would not originate from areas identified with high concentrations of environmental justice populations within the study area. The projected EJ TSZ non-toll and toll overall trip percentages indicate

[29] "AM peak period traffic" represents the vehicles that pass a point on a highway during the time period of 6:30 AM and 8:59 AM. Note - AM peak period traffic does not reflect total ADT along SH 121. AM peak traffic is the preferred form of traffic data for O&D analysis because it is the most effective means to convey daily trips linked to TSZs.

environmental justice populations may utilize SH 121. **Table 5-11** compares the non-toll and toll scenario O&D results.

TABLE 5-11: COMPARISON OF SH 121 ORIGIN-DESTINATION DATA

Scenario	Total TSZs Anticipated to Utilize SH 121	Total TSZ Trips	Total EJ TSZs Anticipated to Utilize SH 121	Total EJ TSZ Trips	% EJ TSZ Trips of Total Trips
SH 121 (2030 Toll Scenario)	1,596	73,743	332	4,012	5.4%
SH 121 (2030 Non-Toll Scenario)	1,594	73,287	332	4,246	5.7%

Source: NCTCOG TransCAD® data for 2030 non-toll and toll scenarios
The study area (NCTCOG MPA) is composed of 4,874 total TSZs and 1,685 EJ TSZs.

Appendix A: Figure 8 illustrates the TSZs within the study area which are anticipated to use the proposed toll facility, the number of trips anticipated to be generated from those TSZs, and those TSZs identified as areas with high concentrations of low-income and/or minority populations. **Appendix A: Figure 9** portrays the range of trips originating from TSZs containing a majority of environmental justice populations.

It is not anticipated that there would be any disproportionate impacts to low-income or minority populations with implementation of the proposed project due to the low distribution of trips between identified low-income and/or minority populations and the low percentage of these populations within the proposed project study area. The proposed SH 121 project would benefit users and adjacent populations as a result of improved system linkage and mobility within the study area and region.

Summary of Environmental Justice Impacts

Based on the analysis provided above, no significant direct environmental justice impacts would result from the proposed Toll Project. Although the study area contains a total minority population of 23.3 percent, the project impacts would not be isolated within a limited number of census tracts, but would be distributed among all users of the SH 121 facility. Low-income populations would be impacted by toll rates, toll collection, and other matters associated with user fees. Should a low-income person be unable to pay the toll and/or utilize non-toll alternatives, this may result in a difference of time travel associated with utilizing non-toll alternatives. In addition, the economic impact of tolling would be higher for low-income users because the cost of paying tolls would represent a higher percentage of household income than for non-low-income users. However, toll road users (including environmental justice populations) might decide to reduce their personal economic or time travel impact of tolls by

using transit, where tolls would be waived for the transit provider. As indicated in the O&D analysis results, a majority of trips anticipated to utilize the toll facility would not originate from areas identified with high concentrations of environmental justice populations. O&D data based on projected trips indicates EJ TSZs would utilize SH 121 as a toll or non-toll facility.

The EO 12898 term "disproportionately high and adverse effect" considers the *totality* of significant individual or cumulative human health or environmental impacts. The benefits associated with the proposed Toll Project would include the acceleration of infrastructure improvements to support the increased development and commerce in the immediate area, provision of mobility and relief of traffic congestion for all motorists using the systems funded by the proposed Toll Project, and capacity improvements to the existing SH 121 facility. The future added capacity associated with the Regional Toll Revenue Funding Initiative projects would provide mobility and relieve traffic congestion for all motorists using the systems funded by the proposed tolling of SH 121. Non-toll alternatives would be available to all travelers, including low-income populations, via frontage roads (when available) and local arterials. The use of these alternative non-toll routes may result in a difference in time travel due to a lower speed limit and signalization. In the case of implementing tolling along SH 121 and considering the totality of effects of this project, there appears to be an overall benefit provided to environmental justice populations, as well as the entire community. Over the long term, the entire corridor and users would benefit from the proposed Toll Project as a result of improved system linkage and mobility in the area. There do not appear to be any disproportionately high and adverse impacts on minority or low-income populations associated with the proposed Toll Project.

5.4 OTHER RESOURCES

5.4.1 Hazardous Materials

Under the previous EAs and subsequent approvals, a thorough investigation of public records and initial site assessments were performed for the project ROW to identify possible hazardous materials within the project limits. Based on the results received from the data base search and site assessments, there were no properties found within the project limits of SH 121 that were considered "at risk" of contamination from hazardous materials. There are no anticipated hazardous material impacts from the proposed toll facility.

The contractor would take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction staging area. The use of construction equipment within environmentally sensitive areas such as streams or wetlands would be minimized or eliminated entirely. All construction materials used for this project would be removed as soon as the work schedules permit. Any unanticipated hazardous materials and/or petroleum contamination encountered during construction would be handled according to applicable federal, state, and local regulations per TxDOT Standard Specifications.

5.4.2 Cultural Resources

Historical Sites

On November 26, 1990, the State Historic Preservation Officer (SHPO)/Texas Historical Commission (THC) concurred with TxDOT's determination that none of the historic-age structures along the SH 121 Re-evaluation Limits were eligible for listing in the National Register of Historic Places (NRHP) submitted under CSJs: 0364-03-067, etc. An additional reconnaissance survey was conducted in 1998 and in a letter dated May 28, 1998, the THC again concurred that no eligible properties were located within the SH 121 area of potential effect (APE). (See **Appendix B: Coordination and Policy**.**)**

Due to the nine year lapse since the 1998 survey, TxDOT conducted appropriate research to identify and evaluate any historic-age properties that were not previously identified to be NRHP eligible. A review of the NRHP, the list of State Archeological Landmarks (SAL), and the list of Recorded Texas Historic Landmarks (RTHL) indicated that no historically significant resources have been previously documented within the APE. It has been determined through consultation with TxDOT Environmental Affairs Division (ENV) that the APE for the proposed project is 150 ft from the existing ROW. A field visit revealed that there are seven historic-age resources (built prior to 1962) located within the project APE that were not previously documented by the 1990 and 1998 surveys. TxDOT determined that none of the historic-age resources are NRHP eligible. There is one Official Texas Historical Marker (OTHM) commemorating the Rowlett Creek Baptist Church and Cemetery located within the APE. The marker would not need to be relocated due to the proposed Toll Project and would not be affected during construction of the proposed Toll Project.

Pursuant to Stipulation VI "Undertakings with Potential to Cause Effects" of the First Amended Statewide Programmatic Agreement (PA) for Cultural Resources among the FHWA, the SHPO, the Advisory Council on Historic Preservation (ACHP), TxDOT, and the MOU,

TxDOT-ENV historians determined that none of the historic-age resources are eligible for listing in the NRHP. Because the proposed Toll Project would not alter the design, location, or ROW footprint of SH 121 there would be no affect to historic properties; therefore, individual coordination with SHPO is not required.

Archeological Sites

The SHPO/THC concurred with TxDOT on October 9, 1991 that no sites of archeological significance are located within the Re-evaluation Limits. (See **Appendix B: Coordination and Policy.)** One cemetery, the Rowlett Creek Cemetery, is located within the vicinity of the proposed Toll Project. However, it is anticipated that the cemetery would not be affected by the proposed Toll Project because it is located several hundred feet from the SH 121/Custer Rd. intersection.

A TxDOT archeologist evaluated the potential for the proposed undertaking to affect archeological historic properties or State Archeological Landmarks in the Area of Potential Effects. Section 106 review and consultation proceeded in accordance with the PA among TxDOT, the THC, FHWA, and the Advisory Council on Historic Preservation, as well as the MOU between THC and TxDOT. In the event that unanticipated archeological deposits are encountered during construction, work in the immediate area will cease and TxDOT archeological staff will be contacted to initiate post-review discovery procedures under the provisions of the PA and MOU.

5.4.3 Items of a Special Nature

Airway-Highway Clearance

The proposed Toll Project Limits would not be located within 20,000 ft of any airport property. There are no aircraft clearance issues associated with the proposed Toll Project.

Coastal Zone Management Plan

SH 121 is not located within the Texas Coastal Zone Management Program boundary; therefore, the proposed Toll Project is not subject to the guidelines of the associated plan.

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act, as amended on October 11, 1996, directs that all Federal agencies, whose actions would impact fish habitat, must consult with the National Marine Fisheries Service regarding potential adverse impacts.

This requires any project that receives federal funding to address potential impacts to essential fish habitat. Due to the nature and location of the proposed Toll Project, essential fish habitat would not be impacted.

Wild and Scenic Rivers

There are no wild and scenic rivers within the proposed Toll Project Limits; therefore there would be no impacts to a river designated as a component or proposed for inclusion in the national system of Wild and Scenic Rivers.

6.0 INDIRECT IMPACTS

The purpose of this chapter is to assess the indirect effects related to the proposed Toll Project. The CEQ defines indirect effects as:

> *"effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect impacts may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems"* (40 C.F.R. § 1508.8).

This indirect effects analysis was conducted in accordance with the *Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects*, Report 466, NCHRP, 2002 (NCHRP Report 466). The NCHRP Report 466 specifies an eight-step process (**Table 6-1)** for determining indirect effects.

TABLE 6-1:
EIGHT STEP APPROACH TO ESTIMATE INDIRECT IMPACTS

Step 1 – Scoping: The basic approach, effort required, and geographical boundaries of the study are determined.
Step 2 – Identify the Study Area's Direction and Goals: Information regarding the study area is compiled with the goal of defining the context for assessment.
Step 3 – Inventory the Study Area's Notable Features: Additional data on environmental features are gathered and synthesized with a goal of identifying specific environmental issues by which to assess the project.
Step 4 – Identify Impact-Causing Activities of Proposed Action and Alternatives: Fully describe the component activities of each project alternative
Step 5 – Identify Potentially Significant Indirect Effects for Analysis: Indirect effects associated with project activities and alternatives are cataloged, and potentially significant effects meriting further analysis are identified.
Step 6 – Analyze Indirect Effects: Qualitative and quantitative techniques are employed to estimate the magnitude of the potentially significant effects identified in Step 5 and describe future conditions with and without the proposed transportation improvement.
Step 7 – Evaluate Analysis Results: The uncertainty of the results of the indirect effects analysis is evaluated for its ramification on the overall assessment.
Step 8 – Assess Consequences and Develop Mitigation: The consequences of indirect effects are evaluated in the context of the full range of project effects. Strategies to avoid or lessen any effects found to be unacceptable are developed. Effects are reevaluated in the context of those mitigation strategies.

All indirect effects would occur outside of the ROW. As to the cause and effect relationship between the proposed Toll Project and the indirect impact, CEQ states that indirect effects may include induced changes to land use resulting in resource impacts (40 C.F.R. § 1508.8). Indirect effects can be linked to direct effects in a causal chain (NCHRP Report 466).

The chain can be extended as indirect effects produce further consequences. Examples of direct and indirect effects of several types of transportation projects are summarized in **Table 6-2**.

TABLE 6-2: EXAMPLES OF INDIRECT EFFECTS

Project Action	Direct Effect	Indirect Effect
Bypass Highway	Improved Access	Farmland converted to residential use. New residences produce new labor force attracting new businesses.
New Light Rail	Improved Access	New businesses open producing jobs/taxes. Traditional businesses/ residents priced out.
New Highway	Improved Access	Development alters character of historic area. Visitors increase to historic area

Source: NCHRP Report 466, *Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects* (2002).

Probability also helps distinguish indirect effects from direct effects; direct effects are often inevitable while indirect effects are merely probable.

Each step of the eight-step process has been applied to the proposed Toll Project and the findings documented in this re-evaluation.

Step 1: Scoping

Approach

This step involves conducting an inventory of notable environmental features, including socio-economic features, to identify specific environmental issues by which to assess the project. The indirect impact-causing activities of the proposed action and alternatives are then detailed. The outcome is identification of potentially significant indirect effects for further analysis (it should be noted that indirect effects to a resource might occur even in the absence of direct effects, e.g. water quality may not be a direct impact of a transportation project but subsequent development spurred by the transportation improvement may result in impacts to water quality). Qualitative and quantitative techniques, including analysis of GIS data, would then be employed to estimate the magnitude of the potentially significant effects. Finally, strategies that avoid or lessen any effects found to be unacceptable are reported, if warranted.

Geographic Boundaries of the Study Area

The geographic boundaries of the indirect effects study area are US 75 on the east, Eldorado Pkwy. on the north, the DNT on the west, and Legacy Dr. on the south. This boundary is formed by adjacent major roadways (expressways or arterial roadways). Because of the similarity of their respective indirect effects, it is reasonable to assume that the indirect effects of one major roadway would largely become eclipsed by those of nearby major roadways as one nears those roadways; therefore, nearby major roadways are a reasonable choice for the study area boundary. Defining the study area in this manner is one of several acceptable methods identified in the NCHRP Report 466. The indirect effects study area encompasses 43,023 acres and is shown in **Appendix A, Figure 10: Indirect Impacts Analysis Study Area.**

Step 2: Identify the Study Area's Direction and Goals

The proposed Toll Project lies within the limits of the Cities of Plano, Frisco, Allen, McKinney, and the Town of Fairview. Existing zoning and Future Land Use Plans (FLUPs) produced by municipalities adjacent to the Toll Project Limits reveal undeveloped areas within the indirect effects study area would likely be developed primarily for commercial/industrial (mixed intensities) and general business development by 2030. (See **Appendix C: Future Land Use Plans**.)

Following World War II, American cities began a great suburban expansion that continues today. Land use adjacent to SH 121 is no exception as the primary area of growth in the DFW metropolitan area has occurred in the northern suburban sector. Collin County and the indirect effects study area are expected to grow dramatically through the year 2030. The NCTCOG 2030 Demographic Forecast indicates Collin County can expect to have 1,166,645 residents in 2030,' representing nearly 674,369 new residents since 2000.[30] This represents an approximate increase of 137 percent. This substantial population increase is expected to continually impact the growth and development of the indirect effects study area.

Each of the larger municipalities within Collin County have experienced tremendous growth rates during the last two decades. The City of Frisco continues to grow at a fast pace. The city issued 3,669 single-family permits in 2005 and a record 3,393 in 2004.[31] The Cities of Plano and McKinney have also claimed "fastest growing city" status according to the U.S.

[30] North Central Texas Council of Governments. *North Central Texas 2030 Demographic Forecast,* www.nctcog.org

[31] http://www.friscoedc.com/

Census in 2000 and 2005, respectively.[32] The City of Allen has also experienced record-breaking growth. The city's population of approximately 77,000 is expanding with an estimated 8 percent growth rate and is anticipated to reach 89,000 by the year 2010.[33] With the anticipated rapid growth along US 75 and Greenville Ave. (SH 5) corridors, the Town of Fairview has designated more than 800 acres of land as a Commercial Planned Development District (CPDD). The area is zoned for mixed uses to include both commercial and complementing higher density residential uses.[34]

Each of the largest municipalities located in Collin County boast similar quality of life elements with their respective economic development agency outreach: quality communities with top-ranked educational systems, family-oriented residential communities, unique recreational facilities, high income levels, premiere business parks, and overall growth potential. The sustained growth of diverse economic sectors is evident in the business climate that exists throughout these municipalities. Clusters of large employment generators such as EDS, JC Penney, Frito Lay, and Perot Systems have contributed and benefited from the local business climate which accommodates corporate headquarters and associated support businesses in the indirect effects study area.

Of the 43,023 acres within the indirect effects study area, approximately 53 percent is currently developed. An additional 9,907 acres (approximately 23 percent) is in the development process. The remaining approximate 10,412 acres (approximately 24 percent) is undeveloped. **Table 6-3** illustrates 2005 Land Use in the indirect effects study area.

TABLE 6-3: INDIRECT IMPACTS STUDY AREA – 2005 LAND USE

Land Use Type	1995 Acreage	% of Total Acreage	2005 Acreage	% of Total Acreage
Residential	4,963	11.5	9,021	21.0
Commercial	257	0.6	1,407	3.3
Industrial	161	0.4	361	0.8
Other	2,294	5.3	11,915	27.7
Vacant	35,348	82.2	20,319	47.2
Indirect Effects Study Area Total	43,023	100.0	43,023	100.0

Source: NCTCOG, www.nctcog.org

[32] http://www.plano.gov/departments/ecodev/ and http://www.mckinneytxedc.com/
[33] http://www.allentx.com/
[34] http://www.fairviewtexasedc.com/

All of the undeveloped land in the indirect effects study area would be developed in the future assuming full-implementation of local FLUPs. (See **Appendix C: Future Land Use Plans**.)

Other Indictors of Growth

Residential growth, specifically home construction, was utilized as an indicator of historical growth in the indirect effects study area. Research indicates that 2,475 homes in Collin County were constructed prior to 1940. After that, development was gradual as 1,765 homes were constructed by 1950. Construction in the 1950s slightly increased as the number of homes nearly doubled to 3,472. Throughout the following decades, a boost in home construction resulted in 8,771 homes built in the 1960s, 27,696 homes built in the 1970s, 53,121 homes built in the 1980s, and 97,592 homes built in the 1990s. This past development defined the construction of public facilities and implementation of public services as well as commercial/retail land uses that occurred after the 1990s.[35]

Real Estate Center

Single-family building permit information was collected for Collin County from 1980 to 2006. The number of building permits increased over the past 26 years as shown in **Table 6-4**.

TABLE 6-4:
COLLIN COUNTY SINGLE-FAMILY BUILDING PERMITS

Year	Number of Permits	% Change
1980	1,684	-
1990	2,658	58%
2000	9,621	262%
2006	11,580	20%

Source: Texas A&M Real Estate Center

Development within Collin County has occurred within large subdivisions composed of single family residential lots of 7,500 ft^2 or less in size. Within the past 15 years, larger master planned subdivisions have developed, particularly west of the City of McKinney and in the City of Frisco. The majority of the master planned developments are also dominated by single-family residential uses.

[35] NCTCOG, www.nctcog.org

American Metro Study Corporation

According to proprietary data prepared by American Metro Study Corporation for Collin County, there are approximately 117 planned subdivisions totaling approximately 9,907 acres in the indirect effects study area. American Metro Study Corporation is a consultant to the residential development industry on development projects. Major planned subdivisions and site plans in the study area, including respective sizes (lots, acres), are listed in **Appendix C: Major Planned Subdivisions**.

Texas Education Agency

Four school districts are located within the indirect effects study area. Frisco ISD was identified as the fastest-growing school district within the NCTCOG MPA with a 172.6 percent enrollment change between the 2000-01 to 2005-06 school years. Most of the four school districts within the indirect effects study area exhibited considerable growth over the past five years as shown in **Table 6-5**.

TABLE 6-5: SCHOOL DISTRICT ENROLLMENT TOTALS

District Name	2000-2001 Enrollment	2005-2006 Enrollment	5-year Growth	% Growth
Allen ISD	10,668	15,961	5,293	49.6%
Frisco ISD	7,294	19,881	12,587	172.6%
McKinney ISD	12,082	19,743	7,661	63.4%
Plano ISD	47,378	53,238	5,860	12.4%

Source: Texas Education Agency, http://www.tea.state.tx.us/

2030 NCTCOG Projects

Numerous added capacity projects within Collin County were identified in NCTCOG's *Mobility 2030*. See **Appendix C: Mobility 2030 Regionally Significant Arterial Projects for Collin County** for the list of corridors containing added capacity projects within the county. It is anticipated that these projects would convert approximately 6,186 acres of land from existing land uses to transportation uses.

NCTCOG Development Monitoring

The NCTCOG maintains a development monitoring database that tracks over 8,000 major developments that are either existing, under construction, announced, or in the conceptual stages within the NCTCOG MPA. Major developments are over 100,000 square feet and/or 100 employees. The information in **Appendix C: Collin County Ongoing and Foreseeable**

Development Projects lists those developments within Collin County municipalities that are either under construction or announced.

As reflected above, the indirect effects study area, like Collin County as a whole, is undergoing a transition toward more intense urbanization. This transition, which is consistent with the goals and objectives of local municipalities, has intensified in recent years and is expected to continue well into the foreseeable future.

Step 3. Inventory of Study Area's Notable Features

Notable features that could be indirectly impacted within the study area mirror the list of features evaluated for direct impacts in **Section 5.0: Direct Effects.** For purposes of this indirect effects analysis, potential impacts have been categorized as either: natural resources impacts, land use impacts, community impacts, or other resources. **Table 6-6** identifies the resources evaluated under each category.

TABLE 6-6: NOTABLE FEATURES FOR INDIRECT IMPACT ANALYSIS

Resource Category	Issue/Resource Evaluated
Natural Resources	Farmlands Waters of the U.S., including Wetlands Floodplains Navigable Waters of the U.S. Vegetation Water Quality Threatened/Endangered Species
Land Use	Section 4(f) Properties
Community Impacts	Relocations and Displacements Public Facilities and Services Traffic Operations Traffic Noise Air Quality Lighting and Visual Impacts Socio-Economics Environmental Justice
Other Resources	Hazardous Materials Cultural Resources Items of a Special Nature

Step 4. Identify Impact-Causing Activities of the Proposed Improvements

Indirect effects are commonly related to land use changes. For example, when a transportation project is constructed, the enhanced access to the project area may attract new development or accelerate already planned development in the area. The development may occur in the form of residential developments or in the form of restaurants, gas stations, and other commercial establishments. This "induced development" would be an indirect impact of the proposed project. Generally, it would be reasonable to expect that projects on new locations or larger scale projects (e.g. upgrading an existing facility to a controlled access freeway) would have more potential to cause indirect effects than smaller scale projects or projects being constructed in already developed areas.

Examples of indirect impacts that could potentially occur or may already have occurred as a result of SH 121 would be the influx of businesses that depend upon proximity to freeways with frontage roads, and increased business patronage due to improved access from highway improvements. Similarly, residential development could be enhanced due to improved access provided by the improvements. However, SH 121 has been a transportation corridor in Collin County since the 1940s and land use planning for the region reflects the presence of SH 121. Current and future land uses have been developed around the roadway and assume its full build-out. Further, it should be recognized, that the SH 121 ROW was acquired under authority granted through previous environmental approvals; sections of SH 121, including frontage roads through Collin County, have been constructed; and the proposed Toll Project would not alter the ROW, design or footprint of the roadway. For these reasons, land use related indirect impacts are not anticipated to result from the proposed Toll Project.

Step 5. Identify Potentially Significant Indirect Effects

For each of the study area's notable features, Step 5 examines the potential for significant indirect impacts potentially associated with the proposed Toll Project. All of the resource categories considered in this re-evaluation were candidates for analysis with regard to indirect effects.

Natural Resources

Farmlands

According to the Natural Resources Conservation Service's (NRCS) *Soil Survey of Collin County, Texas* (1969), there are approximately 30,921 acres of prime farmland soil within the

approximately 43,022 acre indirect effects study area. In other words, approximately 72 percent of the study area contains prime farmland soils. However, as stated previously, the study area is undergoing a rapid transition toward more intense urbanization and as a result only 14,719 acres (approximately) of prime farmland soils, or 34 percent of the prime farmland soils in the study area, remain in agricultural use. It should be noted that 100 percent of the land in the indirect effects study area is within incorporated areas; thus, it is considered to be dedicated to urban use and is no longer regulated under the Farmland Protection Policy Act. Based on the current urban classification as well as reasons cited in Step 4, the proposed Toll project would not result in indirect impacts to Prime Farmlands. Accordingly, this resource will not be evaluated in Steps 6 – 8.

Waters of the U.S., including Wetlands

Determinations subject to USACE jurisdiction under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act, were only performed on those features which intersected the project limits. Waters of the U.S., including wetlands, are regulated by the USACE under authority of Section 404 of the CWA. Section 404 of the CWA authorizes the USACE to issue permits for the discharge of dredged or fill material into waters of the U.S., including wetlands.

Based on information from USGS maps, field observations, and aerials there are eight jurisdictional streams in the indirect effects study area. These are White Rock Creek, West Rowlett Creek, Rowlett Creek, Cottonwood Creek, Sloan Creek, Stewart Creek, Cottonwood Branch of Panther Creek, and Panther Creek. Each of these are intermittent or perennial stream systems with an associated woody riparian corridor. Several intermittent and ephemeral tributaries of these streams are also within the indirect effects study area. In all, approximately 124 miles of streams are in the indirect effects study area.

Within the indirect effects study area there are approximately 16.7 acres of wetlands. The wetlands are adjacent to the stream systems and other drainage features. The wetlands are small in size, with approximately two-thirds of them 0.3 acre or smaller. They are primarily emergent wetlands with some located within open areas of wooded riparian corridors. Many of the wetland areas have been disturbed from agricultural practices and urban development.

Waters of the U.S. and wetlands in the indirect effects study area could potentially be impacted by land use changes; however, the proposed Toll Project would not result in indirect land use changes. Accordingly, no indirect effects on waters of the U.S. and wetlands would

result from the proposed Toll Project. Indirect effects on these resources will not be evaluated in Steps 6 – 8.

Floodplains

In their natural condition, floodplains serve vital functions including temporary storage of floodwaters, moderation of peak flood flows, maintenance of water quality, groundwater recharge, prevention of erosion, and habitat for wildlife. In total, approximately 3,098 acres of floodplains are present with the indirect effects study area and include 100-year floodplains associated with White Rock Creek, West Rowlett Creek, Rowlett Creek, Cottonwood Creek, Sloan Creek, Stewart Creek, Cottonwood Branch of Panther Creek, and Panther Creek. These local floodplains have been affected by land clearing, soil compaction, riparian corridor encroachment, and modifications to the surface water drainage network as a result of past and present agricultural practices and urban development.

Within the study area, floodplain encroachment has been limited such that nearly all of the floodplain areas within the watershed remain vacant even though urban development has occurred immediately adjacent to the floodplains. Where encroachments have occurred, the encroaching land use has been generally compatible with the floodplain (i.e. parks and open space).

Floodplains in the indirect effects study area could potentially be impacted by land use changes; however, because the Toll Project would not result in indirect land use impacts, no indirect effects on floodplains would result from the proposed Toll Project. For this reason, indirect effects on floodplains will not be evaluated in Steps 6 – 8.

Navigable Waters of the U.S.

The indirect effects study area contains no navigable waterways; thus, the proposed Toll Project would not result in indirect effects on this resource. Navigable waters will not be assessed further within this re-evaluation.

Vegetation

The indirect effects study area is located within the Blackland Prairie natural region of Texas. Historically, the Blackland Prairie was dominated by tall-grass prairies consisting of little bluestem (*Schizachyrium scoparium),* big bluestem (*Andropogon gerardii),* sideoats grama (*Bouteloua curtipendula)*, Indian grass (*Sorghastrum nutans)*, and silver bluestem *(Bothriochloa saccharoides).* Although classified as a true prairie, the Blackland Prairie also contains wooded

areas, especially along the riparian corridors associated with streams, creeks and rivers. Major woody vegetation species include oaks (*Quercus spp.*), pecan (*Carya illinoinensis*), cedar elm *(Ulmus crassifolia),* and bois d'arc (*Maclura pomifera).*

Due to the fertile soils found within the natural region, the Blackland Prairie has been extensively cultivated. Much of the native vegetation was removed as fields were prepared for cultivation. The indirect effects study area, like the Blackland Prairie as a whole, has been extensively impacted by agricultural activities. Riparian corridors along study area streams and creeks do contain remnants of native woody species. However these corridors have been reduced in size over time as a result of agricultural practices and land development. Woody vegetation associated with the riparian corridors still remains, primarily within the floodplains.

Vegetation in the study area could potentially be impacted by land use changes; however, since the Toll Project would not result in indirect land use changes, no indirect effects on vegetation would result from the proposed Toll Project. For this reason, indirect effects on vegetation will not be evaluated in Steps 6 – 8.

Water Quality

White Rock Creek, West Rowlett Creek, Rowlett Creek, Cottonwood Creek, Sloan Creek, Stewart Creek, Cottonwood Branch of Panther Creek, and Panther Creek are within the indirect effects study area. According to the 2004 CWA Section 303(d) list, there are no rivers or streams listed as a threatened or impaired water in the indirect effects study area. Water quality in the indirect impacts study area could potentially be indirectly impacted by land use changes; however, since the proposed Toll Project would not result in indirect land use changes, no indirect water quality impacts would result from the proposed Toll Project. For this reason, indirect effects on water quality will not be evaluated further in Steps 6-8.

Threatened and Endangered Species

Agricultural activities and urbanization have permanently and irreversibly changed vegetation and wildlife habitat within the indirect effects study area. The urbanized areas contain vegetation associated with landscaping and some fence rows but do not represent suitable habitat for many wildlife species. Consequently, only wildlife species that have been able to adapt to the impacts of these human encroachments have survived in the area, and species abundance and diversity has declined and would be expected to decline further as natural habitat is replaced by urban development

The indirect effects study area is located within Collin County. **Table 6-7** identifies Collin County species that are listed on either the State or Federal threatened and endangered species list.

TABLE 6-7: FEDERAL AND STATE LISTED THREATENED/ENDANGERED SPECIES OF COLLIN COUNTY

Species	Federal Status	State Status	Description of Suitable Habitat	Habitat Present in Study Area	Pertinent Project Information	Species Effect
Birds						
American Peregrine Falcon *Falco peregrinus anatum*	—	E	Nests in tall cliff eyries; migrates through Texas; winters along coast and farther south. Occupies wide range of habitats during migration including urban, concentrations along coast and barrier islands; low altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	No	Lake areas tend to provide suitable foraging areas for various water and shore birds that are preferred prey species of the Peregrine Falcon during its migration. No suitable habitat was present within the indirect effects study area.	No
Arctic Peregrine Falcon *Falco peregrinus tundrius*	—	T	Migrant throughout state from far northern breeding range, winters along coast and farther south. Occupies wide range of habitats during migration including urban, concentrations along coast and barrier islands; low altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	No	Lake areas tend to provide suitable foraging areas for various water and shore birds that are preferred prey species of the Peregrine Falcon during its migration. No suitable habitat was present within the indirect effects study area.	No
Bald Eagle *Haliaeetus leucocephalus*	AD, T	T	Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds.	No	Within the indirect effects study area there are no rivers or lakeshores with large, tall trees. No suitable habitat was present within the indirect effects study area.	No
Interior Least Tern *Sterna anitllarum athalassos*	—	E	Nests along sand and gravel bars within braided streams and rivers; also known to nest on man-made structures.	No	The indirect effects study area do not contain bare or sparsely vegetated sand, shell, and gravel beaches, sandbars, islands, and saltflats associated with rivers and reservoirs.	No
Piping Plover *Charadrius melodus*		T	Wintering migrant along the Texas Gulf Coast; beaches and bayside mud or salt flats.	No	There are no sandy beaches and lakeshores which are preferred habitats of the species within the indirect effects study area.	No

Species	Federal Status	State Status	Description of Suitable Habitat	Habitat Present in Study Area	Pertinent Project Information	Species Effect
Whooping Crane *Grus americana*	E	E	Potential migrant via plains throughout most of state to coast. Winters in coastal marshes of Aransas, Calhoun, and Refugio counties.	No	Suitable habitat consisting of large wetland areas may be present within the northern portion of the indirect effects study area.	No
Wood Stork *Mycteria americana*	—	T	Forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, inhabits mud flats and other wetlands.	No	Suitable habitat consisting of prairie ponds, flooded pastures or fields, ditches, and other shallow standing water may be present within the northern portion of the indirect effects study area.	No
Mammals						
Red Wolf *Canis rufus*	—	E	Extirpated; formerly known throughout eastern half of Texas in brushy and forested areas, as well as coastal prairies.	No	There are no brushy and forested areas of suitable habitat within the indirect effects study area.	No
Reptiles						
Alligator Snapping Turtle *Macrochelys temminckii*	—	T	Perennial water bodies; deep water of rivers, canals, lakes, and oxbows; also swamps, bayous, and ponds near deep running water; sometimes enters brackish coastal waters; usually in water with mud bottom and abundant aquatic vegetation; may migrate several miles along rivers; active March-October; breeds April-October.	No	The perennial streams within the indirect effects study area may contain deep water with abundant aquatic vegetation.	No
Timber/ Canebrake Rattlesnake *Crotalus horridus*	—	T	Swamps, floodplains, upland woodlands, riparian zones, abandoned farmland; prefers dense ground cover, i.e. grapevines or palmetto.	No	Some riparian zones with dense ground cover are within the indirect effects study area. The species is typically found in the eastern third of the state.	No
E, T - Federally Listed Endangered/Threatened AD - Federally Proposed Delisted DL- Federally Delisted				E, T - State Endangered/Threatened		

Source: US Fish & Wildlife Service, (May 2007), Texas Parks and Wildlife Department (May 3, 2007) and survey of project area.

Of the 13 species, nine are avian and are considered migratory. Although it's possible that these species may migrate through the indirect effects study area, it is unlikely any of the avian species would stay for an extended period of time. These listed avian species most likely select more favorable areas containing their preferred habitat away from urbanized areas.

Other State listed species consist of the red wolf, alligator snapping turtle, Texas horned lizard, and Timber/canebrake rattlesnake. The red wolf is extirpated in Texas and its preferred habitat of brushy and forested areas is not found in the North Texas region. The alligator snapping turtle prefers deep water habitats and the perennial streams in the indirect effects study area may contain the species preferred habitat. The Texas horned lizard prefers rocky or sandy soils and within the indirect effects study area the soils are primarily clays. The Timber/canebrake rattlesnake is found within riparian corridors with dense vegetation away from urbanized areas. The riparian corridors within the indirect effects study area do contain areas of dense vegetation. However, the species is typically found in the eastern third of the state.

Endangered species habitat in the indirect impacts study area could potentially be impacted by land use changes. However, as discussed previously, the indirect effects study area is undergoing a rapid transition toward more intense urbanization. Rather than inducing development, the proposed Toll Project is needed to keep pace with traffic demand resulting from growth and development trends. This growth would occur even in the absence of the proposed Toll Project; thus, indirect impacts to land use would not occur. For this reason, no indirect effects to endangered species or their habitat would occur and these resources will not be evaluated further in Steps 6-8.

Air Quality

The proposed project is located in Collin County, which is part of the EPA's designated 8-hour, nine county nonattainment area for the pollutant ozone. The proposed Toll Project would result in some redistribution of traffic within the indirect impacts study area as drivers who do not elect or can only on occasional basis afford to pay the toll, seek non-tolled alternatives via other area roadways. Redistribution of traffic could result in indirect air quality impacts – these impacts will be evaluated further in Steps 6 – 8.

Land Use

As stated previously, the indirect effects study area is undergoing a rapid transition toward more intense urbanization. Rather than inducing development, the proposed Toll Project is needed to keep pace with traffic demand resulting from growth and development trends. This growth would occur even in the absence of the proposed Toll Project; thus, indirect impacts to land use would not occur. For this reason, land use impacts will not be evaluated further in Steps 6-8.

Section 4(f) Properties

Section 4(f) properties found within the indirect effects study area include publicly-owned parks and recreational areas and cultural resource sites (i.e. historical and archeological sites) listed or eligible for listing on the NRHP.

According to data from the NCTCOG, there are 16 parks within the indirect impacts study area. Collectively, these 16 parks total approximately 535 acres. They range in size from less than two acres to 194 acres. The smallest of the properties are neighborhood parks which contain amenities such as maintained open areas, playground equipment and basketball courts. There are four larger parks (greater than 25 acres) in the indirect impacts study area. The largest facility is a complex of athletic fields for sports such as baseball, softball, soccer, and football. The parks are described in **Table 6-8**.

TABLE 6-8: SECTION 4(f) PROPERTIES WITHIN THE INDIRECT IMPACTS STUDY AREA

Park Name	Location (City)	Approximate Size (Acres)
Raintree Greenbelt Park	Allen	7.5
Ridgeview Memorial Park	Allen	43.3
Bicentennial Park	Frisco	16.1
Hickory Park	Frisco	5.7
Park	Frisco	1.8
Preston Park North	Frisco	0.9
Enfield Park	Plano	16.7
Frank Beverly Park	Plano	11.1
Heritage Yards At Plano	Plano	57.8
Hidden Meadow Park	Plano	8.0
Hoblitzelle Park	Plano	137.5
Prairie Meadow Park	Plano	9.1
Ridgeview Park	Plano	5.3
Russell Creek Park	Plano	194.1
Russell Steindam Park	Plano	8.4
Tejas Park	Plano	12.5
Total		**535.8**

According to available data from THC, there are no NRHP sites located within the indirect impacts study area.

Potential indirect effects to Section 4(f) properties would be driven by changes in land use. Because the proposed Toll Project would not result in induced development, no indirect land use impacts would occur. For this reason, indirect effects on Section 4(f) properties are not anticipated and the resource will not be addressed further in Steps 6-8.

Community Impacts

Transportation investments have major influences on society and have the potential to impose economic and social consequences. Community impact assessment is a process to evaluate the impact of a transportation action on a community and its quality of life. The term "community impacts" encompasses a broad range of potential effects and issues of importance to people, such as relocations and displacements, public facilities and services, traffic operations, traffic noise, air quality, lighting and visual impacts, and socio-economic impacts (including environmental justice). Each of these topics is discussed below.

With respect to relocations and displacements, indirect impacts would be driven by changes in land use (i.e. conversion of existing residential or commercial development to another use would require the relocation/displacement of the original occupant). The indirect impacts study area is undergoing a rapid transition toward more intense urbanization. The transition is unrelated to the proposed Toll Project and would be expected to occur even in the absence of the Toll Project. For this reason, indirect relocations and displacements would not occur. This issue will not be addressed further (Steps 6 – 8).

As stated previously, the proposed Toll Project would not effect land use within the indirect impact study area and would not result in induced development; therefore, lighting and visual impacts associated with development in the study area would not be an indirect effect of the proposed Toll Project. For this reason, lighting and visual community-related indirect impacts will not be revaluated further in Steps 6-8.

The potential indirect impacts of the proposed Toll Project could include substantial community impacts relating to public facilities and services, traffic operations, traffic noise and environmental justice populations. These potential effects are evaluated along with discussion of mitigation measures, as appropriate, in Steps 6-8.

Steps 6 – 8. Analyze Indirect Effects, Evaluate Analysis Results, and Assess Consequences / Develop Mitigation

As stated above, the potential for substantial Toll Project indirect impacts is limited to air quality and community-related impacts. Community-related impacts could include effects to public facilities and services, traffic operations, traffic noise and environmental justice populations. Each of these potential impacts is analyzed below.

Air Quality

The proposed Toll Project is located in Collin County, which is part of the EPA's designated 8-hour, nine county nonattainment area for the pollutant ozone. The nine county nonattainment area has an attainment date of June 15, 2010. The Toll Project is consistent with the 2030 MTP that was found to conform to the ozone SIP for DFW. The SIP is required by the CAAA to improve regional air quality for ozone. It should be noted that the ozone nonattainment SIP and two future 10-year ozone maintenance plan SIPs would require measures to prevent degradation of air quality associated with any increase in urbanization. The 10-year ozone maintenance SIPs would be developed once attainment is achieved in 2010. The expected increase in urbanization in the indirect effects study area would require these measures irrespective of the improvements.

Less congestion on the frontage roads, associated with the non-tolled condition, translates into fewer cars traveling at lower speeds or in idling conditions, for shorter periods of time during peak periods (heavy traffic), resulting in less fuel combustion, and lower idling emissions. Conversely, as indicated in the NCTCOG Complete Performance Report, the implementation of the proposed Toll Project is anticipated to increase traffic along the frontage roads; therefore, the potential exists for localized increase of air emissions along the frontage roads. As traffic congestion increases along the frontage roads, traffic would redistribute to the arterials in the adjacent municipalities. To the degree that this redistribution would result in increased congestion, slower speeds or increase idling conditions, the proposed Toll Project would result in indirect air quality impacts. However, as vehicles become more efficient and emissions are reduced, any adverse impacts of the proposed Toll Project and redistribution of traffic would be expected to decrease over time.

The EPA predicts substantial future air emission reductions as the agency's new light-duty and heavy-duty on-highway fuel and vehicle rules come into effect (EPA, 1999). These projected air emission reductions would be realized even with the predicted continued growth in VMT (EPA, 2001; EPA, 1999; TCEQ, 1997) because technology is improving at a pace that exceeds the effect of increased VMT. Further reductions will be achieved in MSATs, $PM_{2.5,}$ and in VOCs due to the February 2007 EPA regulation on MSATs (EPA 2007). Even though the predicted mobile source emission reductions take into consideration increased VMT, redistribution of traffic attempting to avoid the toll by traveling on the frontage roads and local arterial streets, may still have indirect air quality impacts by redistributing mobile source emissions (including MSATs) through out the community.

Without tolling, construction of the SH 121 mainlanes would be delayed until sometime after 2015 (according to Mobility 2025). The delay would translate to an increase in congestion as the existing transportation network (i.e., frontage roads, arterials, collectors, etc.) would be responsible to meet the transportation needs of the area. This situation could lead to higher mobile source emissions along SH 121 and neighboring communities. Under the proposed tolling condition, fewer cars are anticipated to travel the mainlanes and therefore provide relief to the traffic congestion, which would otherwise occur under the non-toll condition. Less congestion translates into less cars traveling at lower speeds or idling conditions, for shorter periods of time during peak periods (heavy traffic), and result in less fuel combustion and lower idling emissions.

No change in attainment status is expected to occur as a result of the proposed Toll Project.

Public Facilities and Services

In general, the need for additional public services, particularly emergency services, is based on response times. The less time needed for responders to reach persons and facilities in their service areas, the better. Improved roadways, including toll ways, usually facilitate quicker response times and expedite access. It is incumbent among community leaders and public service entities to be apprised of areas under development and to periodically evaluate needs for additional fire stations, police stations, and emergency response services.

The potential for adverse indirect impacts to the 15 public facilities located within the indirect effects study area (six fire facilities, one government building, four hospitals, two police facilities, and two post offices) is unlikely as transportation improvements are typically intended to improve congestion, mobility and access. **Table 6-9** lists the public facilities within the indirect impact study area.

TABLE 6-9: PUBLIC FACILITIES LOCATED IN THE INDIRECT IMPACTS STUDY AREA

Type	Name	Address	City
Fire Station	Frisco Fire Station 1	8860 Tomlin Dr.	Frisco
	McKinney Fire Station 3	4269 W. Eldorado Pkwy.	McKinney
	Plano Fire Station 8	4555 Hedgcoxe Rd.	Plano
	Plano Fire Station 10	5340 McDermott Dr.	Plano
	Allen Fire Station 4	615 N. Alma Dr.	Allen
	Frisco Fire Station 2	3711 Ohio Dr.	Frisco
Government Building	Frisco City Hall/Library Complex	South east corner of Main St. and Dallas Pkwy.	Frisco
Hospital	Presbyterian Hospital of Allen	1105 N. Central Expressway	Allen
	Children's Medical Center of Legacy	South west corner of Hedgcoxe Rd. and Preston Rd.	Plano
	Centennial Medical Center	12505 Lebanon Rd.	Frisco
	Select Medical Rehabilitation Hospital of Frisco	Lebanon Rd.	Frisco
Police Station	Plano Police Substation	4555 Hedgcoxe Rd.	Plano
	Frisco Police Station	7200 Stonebrook Pkwy.	Frisco
Post Office	Frisco Main Post Office	8700 Stonebrook Pkwy.	Frisco
	Plano NW Post Office	3905 Hedgcoxe Rd.	Plano

Source: NCTCOG, www.nctcog.org

The indirect effects to public facilities and services associated with proposed Toll Project would be beneficial and would result from the expedited delivery of the SH 121 mainlanes between DNT and US 75. By tolling the main lanes, it is estimated that the facility would be completed 9 to 18 years earlier than if funded through a traditional pay-as-you-go scenario. The beneficial effects of accelerated project delivery include increased mobility and reduced congestion for the users of the Centennial Medical Center and other public facilities in the study area; however, motorists (including emergency vehicles) using the frontage roads of SH 121 and other local arterials would experience longer travel times than motorists using the SH 121 tolled mainlanes due to a lower posted speed limit and traffic signals along the frontage roads.

Potential negative indirect impacts to the public facilities located within the indirect effects study area is not anticipated; therefore, consideration of mitigation measures would not be necessary.

Traffic Operations

In terms of traffic operations, the proposed Toll Project would generally be realized as direct effects (described in **Section 5.3.3**); the only indirect effects would be the potential increase in congestion along the frontage roads and the local transportation system due to

vehicles redirecting off the mains lanes to avoid paying the toll. Congestion can best be described in terms of LOS and travel speeds along a roadway.

The LOS is a qualitative measure of describing operational conditions within a traffic stream or at an intersection, generally described in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. The LOS are designated A through F (A being the best and F the worst) and cover the entire range of traffic operations that may occur. Descriptions of LOS A through F are presented in **Table 6-10**.

TABLE 6-10: LEVELS OF SERVICE

LOS	Flow Conditions	Technical Description
A		Highest quality of service. Traffic flows freely with little or no restrictions on speed or maneuverability. **No Delays**
B		Traffic is stable and flows freely. The ability to maneuver in traffic is only slightly restricted **No Delays**
C		Few restrictions on speed. Freedom to maneuver is restricted. Drivers must be more careful in making lane changes. **Minimal Delays**
D		Speeds decline slightly and density increases. Freedom to maneuver is noticeably limited. **Minimal Delays**
E		Vehicles are closely spaced, with little room to maneuver. Driver comfort is poor. **Significant Delay**
F		Very congested traffic with traffic jams, especially in areas where vehicles have to merge. **Considerable Delays**

Source: California Department of Transportation (Caltrans), 2003.

In addition to comparing traffic volumes between 2030 non-toll and toll scenarios (**Section 5.3.3**), NCTCOG generated a performance report for the proposed project. (**See Appendix C: NCTCOG Complete Performance Reports**.) NCTCOG Complete Performance Reports are designed to document the performance of the regional traffic model, reporting items such as total miles of roadway within a defined area, number of trips generated, average time to make the trip, and the LOS of all major roadway classifications. The Complete Performance Report modeled the 2030 non-toll and toll scenarios. The boundary (or study area) for the Complete Performance Report encompasses the Cities of Plano, Frisco, Allen, McKinney, and the Town of Fairview and spans approximately 320 square miles. Approximately 82 percent of all trips anticipated to utilize SH 121 in 2030 (toll scenario) originate within these five municipalities.[36]

A project level comparison of the SH 121 non-toll and toll scenarios was performed utilizing updated traffic projections and modeling based on the *Mobility 2030* traffic network. A system level comparison was also conducted to determine the impact of tolling on the traffic network for the five adjacent municipalities. Results of the two analyses are reported in terms of LOS to describe the anticipated change in traffic flow conditions along SH 121.

Project Level Analysis

The project level analysis entailed the comparison of non-toll and toll traffic volumes. The proposed Toll Project Limits were divided into three sections according to current development and usage: 1) DNT to Coit Rd., 2) Coit Rd. to Alma Dr., and 3) Alma Dr. to SH 121 at US 75 interchange.

A comparison of the SH 121 non-toll and toll scenarios indicates that some traffic would redistribute to the frontage roads over the tolled mainlanes if SH 121 is implemented as a tolled facility. **Table 6-11** summarizes the anticipated 2030 LOS due to the change in traffic along SH 121 for the non-toll and toll scenarios.

[36] Trip data generated from O&D analysis discussed in **Section 5.3.8**.

TABLE 6-11:
2030 LEVEL OF SERVICE ALONG SH 121 (TOLL PROJECT LIMITS)

SH 121 Facility Segment		LOS Non-Toll Scenario	LOS Toll Scenario	Resulting Condition
DNT to Coit Rd.	Frontage roads	F	F	Unchanged
	Mainlanes	F	F	Unchanged
Coit Rd. to Alma Dr.	Frontage roads	D	E	Declined
	Mainlanes	F	D	Improved
Alma Dr. to SH 121 At US 75 Interchange	Frontage roads	B	C	Declined
	Mainlanes	D	C	Improved

Source: NCTCOG TransCAD® data for 2030 average daily traffic for non-toll and toll scenarios

Overall, the changes in traffic volume do not represent a substantial change in demand, as LOS would stay the same between DNT to Coit Rd., would improve at the mainlanes between Coit Rd. and SH 121 At US 75 interchange, and the LOS would decline by one level (decline) on the frontage roads between Coit Rd. and SH 121 At US 75 interchange. These results demonstrate that the transportation network is dynamic and that:

- Unused capacity on the frontage roads is utilized in less congested locations, and
- As congestion increases, drivers who elect or can only on occasional basis afford to pay tolls choose the route that offers less delays.

System Level Analysis

A system level analysis was conducted using the Complete Performance Reports provided by NCTCOG. According to the performance reports, the tolling of SH 121 does not appear to cause substantial changes in LOS on the local arterials or collectors. **Table 5-10** shows a summary of LOS changes provided by the Complete Performance Report for the major classes of roadways within the study area. Additionally, **Appendix A, Figure 5: 2030 Traffic Redistribution Tolling Scenario** shows the effect of tolling, in vehicles per day, on the transportation network within the Cities of Plano, Frisco, Allen, McKinney, and the Town of Fairview. As seen in **Table 6-12**, the total number of lane-miles in each LOS category/roadway type remains nearly unchanged when tolling is implemented.[37]

[37] Trip data generated from O&D analysis discussed in **Section 5.3.8**.

TABLE 6-12: LEVEL OF SERVICE FOR INDIRECT IMPACTS STUDY AREA (2030)

Location	LOS Non-Toll Scenario	LOS Toll Scenario
Frontage Roads (329.78 total lane-miles)	A-B-C (197.86 lane-miles)	A-B-C (189.27 lane-miles)
	D-E (23.82 lane-miles)	D-E (32.79 lane-miles)
	F (108.10 lane-miles)	F (107.72 lane-miles)
Local Arterials (2,136.88 total lane-miles)	A-B-C (1075.85 lane-miles)	A-B-C (1068.39 lane-miles)
	D-E (370.17 lane-miles)	D-E (395.02 lane-miles)
	F (690.86 lane-miles)	F (673.47 lane-miles)
Local Collectors (831.06 total lane-miles)	A-B-C (511.71 lane-miles)	A-B-C (503.87 lane-miles)
	D-E (89.29 lane-miles)	D-E (105.69 lane-miles)
	F (230.06 lane-miles)	F (221.50 lane-miles)

Source: NCTCOG TransCAD® data for 2030 daily traffic non-toll and toll scenarios (April 2007 Performance Report)

Additionally, the 16 local arterials described in **Section 5.3.3** were analyzed for changes in LOS and changes in average speed on a "link by link" basis. See **Appendix C: Difference in AM Peak Period LOS Due to Tolling, Difference in PM Peak Period LOS Due to Tolling, Difference in Daily LOS Due to Tolling, and Difference in Arterial Speed Due to Tolling**. Results from the link by link analysis indicate that of the 231 links analyzed; only 6.5 percent (15 links) have an LOS that worsens under the toll scenario. Similarly, the PM peak period LOS indicated that only 2.6 percent (6 links) have an LOS that is worse under the tolling scenario. When the LOS is averaged for the daily values, the local transportation system has 3.9 percent of the links (9 links) that have a worse LOS. When analyzed for speed, the results indicate that the average AM Peak Hour change in speed decreases 0.01miles per hour (MPH). The largest decrease in speed (3.34 MPH) occurred on FM 3537 between Custer Rd. and Alma Dr. The largest increase in speed (3.42 MPH) occurred on Exchange Parkway between Ridgeview Dr. and Alma Rd. PM Peak Hour Speeds showed similar results. The average PM speed declined 0.10 MPH. The largest decline in speed (1.70 MPH) occurred on Eldorado Parkway between US 75 and Medical Center Blvd. and the largest increase in speed (1.62 MPH) occurred on Exchange Parkway between Ridgeview Dr. and Alma Dr.

According to the Complete Performance Reports provided by NCTCOG, vehicle hours of total delay (signalized delays and congestion delays) within the Cities of Plano, Frisco, Allen, McKinney, and the Town of Fairview decrease 0.53 percent when SH 121 is tolled (198,437.91 hours of delay/day toll versus 199,490.41 hours of delay/day non-toll). Overall, this percent change would result in minimal effect to users of the major/minor arterials and frontage roads in the study area. The Complete Performance Reports also indicated the average free speed of used roadways (MPH) is virtually unchanged between the 2030 toll and non-toll scenarios. **Table 6-13** illustrates the anticipated change in free speed for the toll and non-toll scenarios. According

to the Texas Transportation Institute (TTI), the most recent value of travel delay (2005 dollars) is $14.60/hour of delay for non-commercial vehicles and $77.10/hour for commercial vehicles.[38] Using the cost for non-commercial vehicles, there would be a benefit of $15,366.50 per day (2005 dollars) to the users within the incorporated limits of the five municipalities adjacent to SH 121 should SH 121 become a toll facility.[39]

TABLE 6-13: 2030 AVERAGE FREE SPEED OF USED ROADWAY (MPH)

Roadway Classification	Toll Scenario			Non-Toll Scenario			%Change		
	AM	PM	Daily	AM	PM	Daily	AM	PM	Daily
Major Arterials	44.14	44.11	44.45	44.09	44.10	44.42	-0.11%	-0.02%	-0.07%
Minor Arterials	35.30	35.35	35.42	35.31	35.35	35.41	0.03%	0.00%	-0.03%
Frontage Roads	36.00	36.06	36.35	35.78	35.84	35.96	-0.61%	-0.61%	-1.07%

Source: NCTCOG TransCAD® data for 2030 non-toll and toll scenarios (April 2007 Performance Report)

Traffic Operations Summary

The LOS comparison derived from the NCTCOG 2030 traffic volumes and Complete Performance Report reflecting the SH 121 non-toll and toll scenarios reveals minimal change in the frontage road LOS due to changes in traffic patterns and minimal change in the LOS in the adjacent transportation network. Additionally, the analysis reveals slight improvements in the congestion delay experienced and average free speeds along the local transportation network.

Traffic Noise

An analysis was conducted to determine the potential impacts the proposed Toll Project would have on noise levels within the municipalities adjacent to SH 121. These effects were based on the amount of change (increase) in noise levels that would result from the redistribution of traffic onto collectors and minor arterials within these municipalities. According to FHWA's Noise Policy/Guidance, a noise level change of 3 dB is barely perceptible to the human ear. As indicated in **Table 6-14**, the average traffic noise level change (increase) in each municipality would be well below 1 dB and; therefore, there would be no associated, perceptible indirect effects and no mitigation would be warranted.

[38] *2007 Annual Urban Mobility Report*, Texas Transportation Institute, the Texas A&M University System, 2007.
[39] The Annual Urban report was released on September 7, 2007.

TABLE 6-14:
NOISE LEVEL CHANGE DUE TO TRAFFIC REDISTRIBUTION WITHIN ADJACENT MUNICIPALITIES
(2030 NON-TOLL vs. TOLL TRAFFIC)

Municipalities	Street Network	Non-Toll to Toll Average Traffic Redistribution*	Noise Level Change**
City of Frisco	Collectors and Minor Arterials within the Municipality	6% increase	+0.3 dB
City of McKinney		15% increase	+0.6 dB
City of Allen		14% increase	+0.6 dB
Town of Fairview		2% increase	+0.1 dB
City of Plano		4% increase	+0.2 dB

*Source: NCTCOG TransCAD® data for 2030 non-toll and toll scenarios.
**The decibel (dB) is the unit of measurement used to express the magnitude of sound energy (noise).

Environmental Justice

The environmental justice community, as a subset of the larger study area community, would experience indirect effects that mirror those of the general population. Impacts relating to the economic impacts of tolling on environmental justice populations are considered a direct effect and have been addressed elsewhere in this re-evaluation.

Indirect effects pertaining to air quality, access to public facilities and services, traffic operations and traffic noise – all of which have been addressed previously within this section – would be experienced by the environmental justice population to the same extent and in the same manner (whether positive or negative) as experienced by the general population. The proposed Toll Project would not result in disproportionate or adverse indirect effects on environmental justice populations.

The NCTCOG is the metropolitan planning organization responsible for transportation planning in the region including the proposed project. The NCTCOG's long range metropolitan plan (*Mobility 2030*) includes an environmental justice analysis. Specifically, NCTCOG did an accessibility analysis (travel time) comparing the No-Build and Build 2030 roadway and transit networks for various environmental justice and non-environmental justice groups. The analysis concludes that the 2030 plan does not adversely impact protected populations disproportionately when compared to unprotected class populations. However, this analysis did not consider the impacts of tolls.

7.0 CUMULATIVE IMPACTS

7.1 Introduction and Methodology

CEQ regulations (40 C.F.R. § 1508.7) define cumulative impacts (i.e., effects) as "the impact on the environment which results from the incremental impact of the proposed action when added to other past, present and reasonably foreseeable future actions." The purpose of cumulative effects analysis is to view the direct and indirect impacts of the proposed project within the larger context of past, present, and future activities that are independent of the proposed project, but which are likely to affect the same resources in the future. This approach allows the decision maker to evaluate the incremental impacts of the proposed Build alternative in light of the overall health and abundance of selected resources. The evaluation process for each resource considered may be expressed in shorthand form as follows:

BASELINE CONDITION + FUTURE EFFECTS + PROJECT IMPACTS = CUMULATIVE EFFECTS

(historical and current) (expected projects) (direct and indirect)

The following eight-step approach as described in TxDOT's *Guidance on Preparing Indirect and Cumulative Impact Analyses* (December 2006), was utilized to assess the potential cumulative impacts of the past, present, and reasonably foreseeable actions to the resources in the project area:

1. Identify the resources to consider in the analysis.
2. Define the study area for each affected resource. Cumulative impacts are considered within spatial and temporal boundaries. Each resource has its own resource study area (RSA) to best assess the impacts to that individual resource. Each RSA was defined by professionals experienced in the study and analysis of each resource.
3. Describe the current health and historical context for each resource. The examination of the current health and historical context of each resource is necessary to establish a baseline for determining the effects of the proposed action and other reasonably foreseeable actions on the resource.
4. Identify direct and indirect impacts that may contribute to a cumulative impact. The analysis of cumulative impacts must look at the impacts of the proposed action in combination with the impacts of other past, present, or reasonably foreseeable actions within the RSAs. Identification of the direct and indirect impacts of the proposed action will also assist in determining the project's contribution to the cumulative

impact on the resource.

5. Identify other reasonably foreseeable action that may affect the resources.
6. Assess potential cumulative impacts to the resources.
7. Report the results.
8. Assess and discuss mitigation issues for all adverse impacts.

Steps 1 through 6 will be applied to each resource. Once each resource is analyzed, Steps 7 and 8 will follow and address all identified resources.

In order to have a cumulative impact on the resource, the proposed action must have either a direct or indirect impact on that resource. Additionally, the cumulative impact analysis focuses on those resources substantially impacted by the proposed action and resources currently in poor or declining health, even if the direct and indirect impacts resulting from the project are relatively small (less than significant). All of the resource categories considered in this re-evaluation were candidates for analysis with regard to cumulative impacts. As documented in **Sections 5.0** and **6.0** in this document, it was determined that the proposed action would not have considerable direct or indirect impacts on the following resources or in the study area: Farmlands, Waters of the U.S., including Wetlands, Floodplains, Navigable Waters of the U.S., Vegetation, Water Quality, Threatened/Endangered Species, Land Use, Section 4(f) Properties, Relocations and Displacements, Public Facilities and Services, Hazardous Materials, Cultural Resources, and Items of a Special Nature (which include Airway-Highway Clearance, Coastal Zone Management Plan, Essential Fish Habitat, and Wild and Scenic Rivers).

Cumulative impacts are analyzed in terms of the specific resource being affected. The resources to consider in this analysis are community related:

Community (Resource)

- Traffic Operations
- Traffic Noise
- Air Quality (Resource)
- Lighting and Visual Impact
- Socio-Economic Impact
- Economic Impact of Tolling
- Environmental Justice (Resource)

The goal is to determine whether the proposed action's direct and indirect impacts, considered with other reasonably foreseeable actions, would result in substantial degradation of a resource that would not result from the proposed action considered alone. TxDOT's *Guidance on Preparing Indirect and Cumulative Impact Analyses* (December 2006) states: "If a project would not cause direct or indirect impacts on a resource, it would not contribute to a cumulative impact on the resource. The cumulative impact analysis should focus only on: 1) those resources substantially impacted by the project; and 2) resources currently in poor or declining health or at risk even if project impacts are relatively small (less than significant)."

Cumulative impacts were evaluated using the following factors: the historical context of each resource, current condition and trend, future land use and zoning plans, and the pertinent regulations and standards associated with each resource. These factors capture the influences that have shaped and are shaping the amount and quality of each resource, and which would continue to shape the resources into the future. Implicit in the approach to predicting the future condition of resources are several key assumptions:

- All reasonably foreseeable actions would be completed as currently planned.
- The relationships between the resources, ecosystems, and human communities that have been identified from historical experience would continue into the future.
- The sponsors of government and private projects would comply with relevant federal, state, and local laws designed to protect each resource. Regulatory agencies would perform their duties in accordance with legal requirements and internal guidelines.

Of particular importance is the assumption concerning compliance with relevant environmental laws designed to ensure the sustainability of resources. Over the past several decades federal, state, and local lawmaking bodies have enacted statutes, regulations, and ordinances designed to preserve and enhance the abundance and quality of natural resources by requiring project sponsors to avoid, minimize, and mitigate the environmental impacts of their projects or actions. Cumulative impacts analysis focuses on the "net effects" on each resource that remain after full compliance with the regulatory requirements at all levels.

As stated in **Section 2.2**, it is anticipated that the Toll Project would provide a revenue stream to fund other projects in the NCTCOG MPA (Regional Toll Revenue Funding Initiative projects). With the exception of two previously identified near neighbor/near timeframe projects to be implemented in Collin County associated with SH 121 improvements in Denton County, the Regional Toll Revenue Funding Initiative projects associated with the Toll Project have not

been identified to date. These Regional Toll Revenue Funding Initiative projects could be located anywhere within the counties associated with the NCTCOG MPA.

Cumulative effects would result from the proposed acceleration and construction of the Regional Toll Revenue Funding Initiative projects discussed in **Section 2.2.** Under the Regional Toll Revenue Funding Initiative policy, local governmental entities would partner with TxDOT and the RTC to identify priority projects listed in *Mobility 2030* to be funded with surplus toll revenue generated from SH 121 or tax dollars originally programmed for SH 121. To date, only two near neighbor/near timeframe projects have been identified in Collin County as a result of the implementation of tolling SH 121 in Denton County (2006). Additional Regional Toll Revenue Funding Initiative projects anticipated from the up-front payment provided by the NTTA have yet to be identified by the RTC, however a funding initiative has been initiated by the RTC to distribute the up-front payment that would be generated from the proposed Toll Project (See **Appendix B: 2007 Regional Toll Revenue Funding Initiative Update**). The two Collin County near neighbor/near timeframe projects identified to date are listed in **Table 7-1.**

TABLE 7-1: COLLIN COUNTY
NEAR NEIGHBOR/NEAR TIME FRAME PROJECTS*

Project Name	Limits	Improvements
FM 3537	From SH 289 to FM 2478	Widen from a 2-lane to 6-lane divided facility
US 75	At Parker Road	Ramp improvements and reconstruct interchange

* These projects are associated with the implementation of tolling SH 121 in Denton County (2006). These commitments will be honored through the Regional Toll Revenue Funding Initiative policy.

It is anticipated that tolling SH 121 would provide a revenue stream from which the Regional Toll Revenue Funding Initiative projects would be funded; thus, tolling SH 121 would indirectly result in the construction of these projects. For this reason, the Regional Toll Revenue Funding Initiative projects that have yet to be identified would be considered an indirect effect of the proposed SH 121 project. Before implementation, Regional Toll Revenue Funding Initiative projects would be environmentally evaluated and would comply with applicable federal, state, and local requirements.

Other reasonably foreseeable effects include additional transportation projects associated with *Mobility 2030*, commercial development, and residential development – primarily master planned developments dominated by single-family residential uses. The emergence of a regional tolling system is also a reasonably foreseeable effect.

The resources or environmental issues related to the proposed project with the potential for cumulative effects are listed in **Table 7-2**. As recommended by the CEQ guidance, specific indicators of each resource's condition have been identified and are shown in **Table 7-2**. The use of indicators of a resource's health, abundance, and/or integrity are helpful tools in formulating quantitative or qualitative metrics for characterizing overall effects to resources. These indicators are also key aspects of each resource that have already been evaluated in terms of the project's direct and indirect impacts, and facilitate greater consistency and objectivity in the analysis of cumulative effects. See **Appendix A, Figure 11: Cumulative Impacts Analysis Study Areas**.

TABLE 7-2:
RESOURCE INDICATORS AND STUDY AREAS FOR THE CUMULATIVE IMPACTS ANALYSIS

Resource Category	Indicators of Resource Condition and Potential Impacts	Resource Study Area (RSA)
Air Quality	8-Hour Ozone Standard: ability of the region to meet this air quality standard	9-county nonattainment area for the DFW Metropolitan Area (includes Collin County)
	Carbon Monoxide: carbon monoxide concentrations modeled along the ROW under worst meteorological conditions	Project ROW line
	MSAT: trend of emissions over time	Plus or minus 5 or greater percent affected transportation network (NCTCOG MPA)
Community	Air Quality, Environmental Justice, Traffic Operations, Traffic Noise, Socio-Economic Impact of Tolling, Economic Impact of Tolling, Lighting and Visual Impacts	9-county NCTCOG area
Environmental Justice	U.S. Census Bureau: quantitative data regarding minority and low-income populations	NCTCOG MPA (represented by five entire counties - Collin, Dallas, Denton, Rockwall and Tarrant Counties and four partial counties - Ellis, Johnson, Kaufman, and Parker Counties)

7.2 Air Quality

Step 1: Resource Identification - Air Quality

Ozone and Carbon Monoxide

In order to protect human health and the environment, the CAA of 1970 mandated the establishment of the NAAQS and regulations to reduce air pollutants. When the pollutant level within an area exceeds the NAAQS, EPA designates the area as "nonattainment" for the pollutant.

MSAT

In addition to NAAQS, EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries).

Step 2: Resource Study Area - Air Quality

Evaluating air quality consists of three distinct RSAs. See **Appendix A, Figure 11: Cumulative Impacts Analysis Study Areas**. The temporal boundaries for the cumulative effects analysis are the years 1990 to 2030. The early date was established because the CAAA of 1990 authorized the EPA to designate areas in "nonattainment" or failing to meet established air quality standards (known as the NAAQS). Present actions are those actions which have occurred between 2006 and 2008. These dates were chosen to correlate with the FY 2006-2008 TIP. The year 2030 was chosen to correlate with NCTCOG's *Mobility 2030*.

Ozone

The RSA for evaluating the ozone NAAQS was designated as the DFW 8-hour ozone nonattainment area, which includes Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant Counties.

Carbon Monoxide

The RSA for CO was based on the hot spot analysis along the ROW representing the worst case scenario that would result in the highest potential CO concentrations. The RSA for CO includes specific locations along the SH 121 ROW line at the following roadway sections:

1) Preston Rd. and Ohio Dr.;
2) Coit Rd. and Independence Pkwy.; and
3) Lake Forest Dr. and Hardin Blvd.

As stated previously, analyses for other motor vehicle pollutants such as VOCs, NOx (both precursors to ground-level ozone), and ozone, are regional in nature, and, accordingly, concentrations of these pollutants for the purpose of comparing the results with the NAAQS are modeled by the TCEQ or by the regional air quality planning agency for the SIP with oversight provided by TCEQ.

MSAT

The MSAT RSA is specified by an affected transportation network. The SH 121 affected transportation network includes the proposed network links and other transportation model links reflecting a plus or minus 5 or greater percent change in traffic volume between the Build and No-Build scenarios for the years 2015 and 2030. The plus or minus 5 percent threshold was adopted as the basis to determine the affected transportation network study area and was coordinated with and approved by FHWA. Because the 2007 base year scenario represents the existing condition, the affected transportation network for 2007 is composed of those links determined to change plus or minus 5 or greater percent in 2015 and 2030 and which currently exist in the 2007 network. The resulting affected transportation network for years 2015 and 2030 includes those links determined to change plus or minus 5 or greater percent in 2015 and 2030, which are also included in the 2015 and 2030 networks respectively. The application of the threshold was adopted as the basis to determine the affected transportation network RSA and located within the NCTCOG MPA. This large area represents the management unit for mobile source pollutants as regulated by federal, state, and local government agencies. Unlike the other resources evaluated, air quality impacts from mobile sources are evaluated and managed on a regional basis primarily through the NCTCOG, in coordination with the EPA, TCEQ, TxDOT, and FHWA.

Step 3: Resource Health and Historical Context - Air Quality

Health

According to NCTCOG, the DFW metropolitan area has been one of the fastest growing areas in the United States, and it is expected to continue to grow. Growth often results in an increase of development, increase in vehicles, and an increase in VMT. Traffic congestion has become one of the greatest challenges in the DFW metropolitan area, as on-road mobile sources

(such as cars and trucks) contribute to air pollution. This challenge is evidenced as the DFW metropolitan area was ranked the ninth most congested area in the nation.[40]

Throughout recent decades, multiple regional and local initiatives have been planned and implemented in an effort to reduce air pollution from mobile sources. Several of these initiatives specific to the area's transportation system included increased capacity highways and roadways (through construction of additional travel lanes and bottleneck improvements), construction of high-occupancy vehicle lanes, and the promotion of alternative transportation (e.g., hike and bike trails, bus, and light rail).

National Ambient Air Quality Standards

Currently, the project is located within an attainment area for CO and in a nonattainment area for ozone. Ozone is formed in the presence of light, NOx, and VOCs. Nitrogen oxides are usually a by-product of high-temperature combustion. Common sources are cars and power plants. VOCs include organic chemicals that vaporize easily, such as gasoline. The NCTCOG and the RTC has developed a broad range of air quality programs that focus on reducing ozone-causing emissions. In order to reduce ozone and come into compliance with NAAQS, the formulation of a SIP is required for all nonattainment areas. NCTCOG works in cooperation with federal, state, and local partners to ensure that all air quality requirements are met.

NCTCOG's air quality strategies seek to reduce emissions in a variety of ways, from energy and fuel efficiency to advancing clean technologies to encouraging changes in daily behavior. Such strategies are being implemented throughout the region to reduce emissions from different types of sources; however, many of the programs implemented through NCTCOG target transportation-related emissions due to the fact that on-road mobile sources (such as cars and trucks) account for nearly one-half of all ozone precursor emissions in North Central Texas.

Although no NAAQS for MSAT exist, EPA has certain responsibilities regarding the health effects of MSATs. The EPA controls emissions of air pollutants through one of two major strategies: NAAQS or regulatory controls that result in specific emission reductions. Both strategies provide for increased protection of human health and the environment. For MSATs, in order to more quickly implement emission reductions, the EPA has focused efforts on nationwide regulatory controls.

[40] Traffic Engineering, Third Edition. Roger P. Roess, Elana S. Prassas, and William R. McShane

Historic Context

Ozone

Under the CAAA of 1990, the EPA was authorized to designate areas in "nonattainment" or failing to meet established air quality standards (known as the NAAQS). In July 1997, the EPA announced a new NAAQS for ground-level ozone. The EPA phased out and replaced the previous 1-hour standard with an 8-hour standard to protect public health against longer exposure to this air pollutant.

In 2004, the EPA designated nine counties in North Central Texas as nonattainment for the 8-hour ozone in accordance with the NAAQS. As previously mentioned, Collin County is located within the designated nonattainment area for ozone. Although there have been year-to-year fluctuations in ozone concentrations, these concentrations demonstrate a reduction over time, which indicates improvements to air quality over time. Ozone trend continues to show improvement as the number of daily exceedances of the federal standards for ozone has decreased within the past decade. This trend of air quality improvement in the DFW region is attributable in part to the effective integration of highway and alternative modes of transportation, cleaner fuels, improved emission control technologies, and NCTCOG's regional clean air initiatives.

Carbon Monoxide

According to EPA studies, approximately 95 percent of the CO in typical U.S. cities results from mobile sources.[41] However, according to TCEQ, as of May 17, 2007, the one-hour standard for CO has never been exceeded in Texas. Air quality monitors measure concentrations of CO throughout the country. EPA, state, tribal and local agencies use that data to ensure that CO remains at levels that protect public health and the environment. Nationally, average CO concentrations have decreased substantially over the years.

MSAT

On March 29, 2001 the EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources, (66 FR 17229, March 29, 2001). This rule was issued under the authority in § 202 of the CAA. In its rule, EPA examined the impacts of existing and newly promulgated mobile source control programs, including its RFG program, its NLEV standards,

[41] http://www.epa.gov/otaq/invntory/overview/pollutants/carbonmon.htm

its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 2000 and 2020, FHWA projects that even with a 64 percent increase in VMT, these programs will reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, acrolein, and acetaldehyde between 57 percent and 65 percent, and will reduce on-highway diesel particulate matter and diesel organic gas emissions by 87 percent, as shown in **Figure 5-1**.

On February 26, 2007 the EPA finalized additional rules under authority of CAA Section 202(l) to further reduce MSAT emissions. The EPA issued Final Rules on Control of Hazardous Air Pollutants from Mobile Sources (72 FR 8427) under Title 40 C.F.R. Parts 59, 80, 85 and 86. EPA adopted the following new requirements to significantly lower emissions of benzene and the other MSATs by: 1) lowering the benzene content in gasoline; 2) reducing NMHC exhaust emissions from passenger vehicles operated at cold temperatures (under 75 degrees); and 3) reducing evaporative emissions that permeate through portable fuel containers.

Step 4: Direct and Indirect Impacts - Air Quality

Direct Impacts

On-road MSAT, VOC, NOx, CO emissions are anticipated to decrease over time due to the implementation of EPA regulations to improve vehicle technology and fuel.

Modeling results under the worst case conditions indicate that CO concentrations would not exceed the NAAQS for the toll scenario either in 2015 or 2030. It is expected, that congestion relief would result in less fuel combustion as there are less vehicles on the road for less periods of time which generally result in less emissions; however, it yields to an increase of VMT (as more roads are built to relief congestion). In addition, congestion relief that reduces idling would reduce idling emissions. MSAT emissions would be reduced as fewer cars are anticipated to travel the mainlanes and therefore provide relief to the traffic congestion, which would otherwise occur under the non-toll condition. Less congestion translates into less cars traveling at lower speeds or idling conditions, for shorter periods of time during peak periods (heavy traffic) and result in less fuel combustion and lower idling emissions. In addition, a quantitative MSAT analysis indicates that by 2030, although VMT increases, MSAT emissions would decrease by 51 percent when compared to 2007. Please refer to **Section 5.1.8** for further details.

In order to protect human health and the environment, the CAA of 1970 mandated the establishment of the NAAQS and regulations to reduce air pollutants. When the pollutant level within an area exceeds the NAAQS, EPA designates the area as "nonattainment" for the pollutant. In addition, EPA also develops regulations to reduce air pollutants from specific sources, including both industry and motor vehicles.

Conformity Under the Clean Air Act

As previously mentioned, areas determined by EPA to exceed a NAAQS are designated as nonattainment areas. The NAAQS include: ozone, CO, sulfur dioxide, nitrogen dioxide, lead, and particulate matter ($PM_{2.5}$ and PM_{10}). A SIP is a collection of requirements that delineates how a state would reduce emissions to attain the NAAQS. This SIP must be approved by EPA. For nonattainment areas, the 1990 Clean Air Act Amendments (CAAA) required the MPOs and the state transportation departments to demonstrate that transportation plans, programs, and projects Funded under Title 23 U.S.C or the Federal Transit Act conform to State or Federal Implementation Plans. Under the federal CAAA all transportation projects that are subject to FHWA approval must first be found to conform with the EPA approved SIP.

The proposed North Central Texas Toll Project is located in Collin County, which is part of the EPA's designated 8-hour, nine county nonattainment area for the pollutant ozone; therefore, the transportation conformity rule applies. The proposed SH 121 Toll Project is consistent with the area's financially constrained long-range plan known as *Mobility 2030* and the 2006-2008 Statewide Transportation Improvement Program (STIP)/TIP. The US DOT found the *Mobility 2030* and FY 2006-2008 TIP to conform to the SIP on June 12, 2007. The proposed Toll Project is also located in the Draft 2008-2011 STIP which should be approved by FHWA/FTA in October of 2007. See **Appendix B: *Mobility 2030*: Funded Recommendations, February 2007 Revisions to the FY 2006-2008 STIP, and 2006-2008 TIP.**

Traffic Air Quality Analysis (TAQA)

A TAQA is an analysis to determine potential effects of CO emissions related to a proposed transportation project. This analysis is based on traffic data that was obtained from NCTCOG. The NCTCOG toll traffic volumes for 2030 can be found in **Appendix C: 2030 Traffic Volumes**. For this re-evaluation, an air analysis was conducted in accordance with the *TxDOT 2006 Air Quality Guidelines*.

The topography and meteorological conditions of the area in which the Toll Project is located would not seriously restrict dispersion of air pollutants. The traffic volumes resulting in

the highest modeled CO concentrations are 138,478 vehicles per day (vpd) for 2015, the estimated time of completion, between Preston Rd. and Ohio Dr. The traffic volumes resulting in the highest modeled CO concentrations for design year (2030) are 181,238 vpd and correspond to the Build-non-toll scenario between Coit Rd. and Independence Pkwy. The modeled CO concentration for the Build-non-toll is 2 percent higher than the highest modeled CO concentration (between Preston Rd. and Ohio Dr.) for the Build-toll scenario. The slight increase is due to a higher number of vehicles traveling the frontage road closer to the receiver (ROW line) between Coit Rd. and Independence Pkwy.

The CO concentrations for the Build-toll and Build-non-toll scenarios were modeled using CALINE3 and MOBILE6.2 and factoring in adverse meteorological conditions for receptors at the ROW line in accordance with the *TxDOT 2006 Air Quality Guidelines*. Local concentrations of CO are not expected to exceed NAAQS at any time. **Table 5-2** summarizes the results of the analysis in parts per million (ppm).

Congestion Management Process

Congestion Management Process (CMP) refers to several methods of roadway management. Included in the process are Intelligent Transportation Systems (ITS), Transportation System Management (TSM), and Travel Demand Management (TDM). These programs seek to improve traffic flow and safety through better operation and management of transportation facilities. Additionally, these programs provide low cost solutions that can be constructed in less time and provide air quality benefits to the region. The proposed Toll Project was developed from the NCTCOG operational CMP, which meets all requirements of 23 C.F.R. § 500.109.

Operational improvements and travel demand reduction strategies are commitments made by the region at two levels: the program level and the project implementation level. Program level commitments are inventoried in the regional CMP and are included in the financially constrained MTP. The following summarize the *Mobility 2030* CMP recommendations for its components:[42]

[42] NCTCOG Proposed Recommendations for *Mobility 2030*. (Draft subject to change and intended for public review /comment only). http://www.nctcog.org/trans/mtp/2030/Mobility_2030_DRAFT_Publication_000.pdf

Intelligent Transportation System

ITS aids transportation operators and emergency response personnel as they monitor traffic, detect and respond to incidents, and inform the public of traffic conditions via the internet, roadway devices, and the media. *Mobility 2030* includes a number of ITS improvements featuring recommendations for 22 Traffic Management Centers, and 1,142 centerline miles of ITS deployment.

Transportation System Management

TSM attempts to identify improvements that would enhance the capacity of the existing transportation system. Better management and operation of existing facilities improves traffic flow, air quality, movement of vehicles and goods, and enhances system accessibility and safety. TSM strategies include intersection and signal improvements, freeway bottleneck removals, special events management, and data collection to monitor system performance. *Mobility 2030* recommendations include a number of TSM. The 2030 plan calls for 1,081 intersection improvements which would include traffic control devices, turn lanes, traffic islands, and grade separations. *Mobility 2030* also recommends 7,291 traffic signal improvements. These improvements would call for improved signal timing, signal optimization, signal equipment upgrades, and better system interconnectedness. Additionally, *Mobility 2030* would implement programs to address the removal of freeway bottlenecks, as well as, better mitigation of congestion created by special events.

Travel Demand Management

TDM addresses alternative forms of transportation to commuters. Programs seek to reduce congestion and air pollution and to increase efficiency of the transportation system. TDM programs may include carpools, vanpools, transit, telecommuting, compressed work weeks, park-and-ride facilities, bike and pedestrian transportation, and Transportation Management Associations. *Mobility 2030* recommendations under this category include an Employer Trip Reduction Initiative, 1,780 vanpools, 30 additional park and ride facilities, and the creation of the Transportation Management Associations.

At the project implementation level, travel demand reduction strategies and commitments would be added to the regional TIP or included in the construction plans. The regional TIP provides for programming of these projects at the appropriate time with respect to the Single Occupancy Vehicle (SOV) facility implementation and project specific elements.

Committed congestion reduction strategies and operational improvements considered to be beneficial to SH 121 within the re-evaluation limits would consist of grade separations, addition of lanes, a new roadway, and ITS projects. TxDOT, under the Congestion Mitigation and Air Quality Improvement Plan (CMAQ) program, would manage these projects, which are included in the regional CMP and TIP. The SH 121 related projects are listed in **Table 5-3**.

In an effort to reduce congestion and the need for SOV lanes in the region, TxDOT and NCTCOG would continue to promote appropriate congestion reduction strategies through the CMAQ program, the CMP, and the MTP.

Mobile Source Air Toxics (MSATs)

In addition to the criteria air pollutants for which there are NAAQS, EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries).

MSATs are a subset of the 188 air toxics defined by the CAA. The MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

The EPA is the lead Federal Agency for administering the CAA and has certain responsibilities regarding the health effects of MSATs. The EPA controls emissions of air pollutants through one of two major strategies: NAAQS or regulatory controls that result in specific emission reductions. Both strategies provide for increased protection of human health and the environment. For MSATs, in order to more quickly implement emission reductions, EPA has focused efforts on nationwide regulatory controls. The EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources, (66 Federal Register (FR) 17229, March 29, 2001). This rule was issued under the authority in § 202 of the CAA. In its rule, EPA examined the impacts of existing and newly promulgated mobile source control programs, including its reformulated gasoline (RFG) program, its national low emission vehicle (NLEV) standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 2000 and 2020, FHWA projects that even with a 64

percent increase in vehicle miles traveled (VMT), these programs would reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, acrolein, and acetaldehyde between 57 percent and 65 percent, and will reduce on-highway diesel particulate matter and diesel organic gas emissions by 87 percent, as shown in **Figure 5-1**.

In an ongoing review of MSATs, the EPA finalized additional rules under authority of CAA Section 202(l) to further reduce MSAT emissions. The EPA issued Final Rules on Control of Hazardous Air Pollutants from Mobile Sources (72 FR 8427, February 26, 2007) under Title 40 C.F.R. Parts 59, 80, 85 and 86. As a result of this review, EPA adopted the following new requirements to significantly lower emissions of benzene and the other MSATs by: 1) lowering the benzene content in gasoline; 2) reducing non-methane hydrocarbon (NMHC) exhaust emissions from passenger vehicles operated at cold temperatures (under 75 degrees); and 3) reducing evaporative emissions that permeate through portable fuel containers. A summary of the benefits of this rule are provided below, based on information provided by EPA in the preamble to the rule.

Beginning in 2011, petroleum refiners must meet an annual average gasoline benzene content standard of 0.62 percent by volume, for both reformulated and conventional gasoline, nationwide. Although the national benzene content of gasoline in 2007 is about 1.0 percent by volume; the DFW area ozone SIP results in benzene content of 0.48 percent in summer and 0.64 percent in winter. EPA standards to reduce NMHC exhaust emissions from new gasoline-fueled passenger vehicles will become effective in phases. Standards for light vehicles become effective during the period of 2010 to 2013, and standards for heavy vehicles during the period of 2012 to 2015. Evaporative requirements for portable gas containers become effective with containers manufactured in 2009. Evaporative emissions must be limited to 0.3 grams of hydrocarbons per day.

In addition, EPA has adopted more stringent evaporative emission standards for new passenger vehicles. The new standards are equivalent to current California state standards, and become effective in 2009 for light vehicles and in 2010 for the heavy vehicles. In addition to the reductions from the 2001 rule, the new rules significantly reduce annual national MSAT emissions. For example, EPA estimates that emissions in the year 2030, when compared to emissions in the base year prior to the rule, will show a reduction of 330,000 tons of MSATs (including 61,000 tons of benzene), reductions of more than 1,000,000 tons of volatile organic compounds (VOCs), and reductions of more than 19,000 tons of $PM_{2.5}$. Please note that EPA has not updated MOBILE6.2 emission factors to capture the February 2007 Rule emission

reductions; therefore, it is not possible to reflect these emission reductions in the quantitative MSAT analysis provided below.

Monitored Levels of MSATs Near the Project Area

The Dallas/Collin County area monitors for various air pollutants using an established air monitoring network. This network of monitors measures air quality and determines the levels of the various pollutants in the air. Not all monitors sample for the same pollutants, and not all monitors have one year of complete data to compile an annual average for any given pollutant. For this reason, data from multiple monitors must be examined in order to analyze the pollution concentrations in the proposed project area.

Three monitoring sites are located near the Toll Project area in Collin County; however, these only contained data pertinent to criteria air pollutants. Dallas County monitoring sites reported on air toxics including compounds listed as MSATs and were, therefore, also utilized in this report and included in **Table 5-4**. The approximate distance to each site from the proposed Toll Project is listed in **Table 5-4**.

The official monitor data is found on EPA's national air quality monitor web site (www.epa.gov/air/data). According to the EPA, monitoring of ambient concentrations of hazardous air pollutants is not mandated by the CAA, and monitoring is not the norm. However, EPA is in the process of developing regulations to limit hazardous air pollutant emissions, to prevent ambient hazardous air pollutant concentrations from reaching levels that would pose significant health risks. (See http://www.epa.gov/air/data/info.html.)

Sensitive Receptor Analysis

Sensitive receptors within the re-evaluation limits were identified, field verified, and the distance from the ROW to each receptor was measured and noted. The documented sensitive receptors include public and private schools, hospitals, senior citizen/skilled-nursing care facilities, and licensed daycare facilities. Three sensitive receptors were located within 328 ft (100 meters) of the ROW and six sensitive receptors were located within 1,640 ft (500 meters) of the ROW. See **Table 5-5** for sensitive receptor counts.

Sensitive receptors located within the re-evaluation limits are presented in **Table 5-6** and shown on **Appendix A: Figure 3**. These receptors include schools and licensed daycares.

MSATs Environment Consequences

MSAT Modeling

The EPA's highway vehicle emission factor model, MOBILE is a program that provides average in-use fleet emission factors for criteria pollutants (CO and NO_X) and also provides emission factors for VOCs. These emission factors can be estimated for any year between 1952 and 2050 and under various conditions affecting in-use emission levels. The output from the model is in the form of emissions factors expressed as grams of pollutant per VMT in grams per mile (g/mi). A quantitative analysis of the mass of air toxic emissions in the travel study area containing the proposed Toll Project was completed using the latest version of the EPA's mobile emission factor model (MOBILE6.2). The MOBILE6.2 emission factors are consistent with those used to develop the SIP and conformity determination for the DFW region. These factors do not yet reflect the EPA Final Rules on Control of Hazardous Air Pollutants from Mobile Sources (72 FR 8427, February 26, 2007) under Title 40 C.F.R. Parts 59, 80, 85 and 86 that when implemented, will significantly reduce emissions of benzene and other MSATs. The rule became effective on April 27, 2007.

The MSAT study area is composed of the affected transportation network. The SH 121 affected transportation network includes the proposed network links and other transportation model links reflecting a plus or minus 5 or greater percent change in traffic volume between the Build and No-Build scenarios for the years 2015 and 2030. The plus or minus 5 percent threshold was adopted as the basis to determine the affected transportation network study area and was coordinated with and approved by FHWA. Because the 2007 base year scenario represents the existing condition, the affected transportation network for 2007 is composed of those links determined to change plus or minus 5 or greater percent in 2015 and 2030 and which currently exist in the 2007 network. The resulting affected transportation network for years 2015 and 2030 includes those links determined to change plus or minus 5 or greater percent in 2015 and 2030, which are also included in the 2015 and 2030 networks respectively. The parameters used to characterize the travel activity utilized in the analysis included directional speeds and traffic volumes for the AM peak period, PM peak period and off-peak period. See **Appendix A: Figure 4** for the Affected Transportation Network maps.

For the purpose of this analysis six scenarios were modeled:

- "Base" or existing condition (2007);
- "Build-toll 2015" or toll scenario in 2015;
- "No-Build 2015" or no-build scenario in 2015;

- "Build-toll 2030" or toll scenario in 2030;
- "Build-non-toll 2030" or non-toll scenario in 2030; and
- "No-Build 2030" or no-build scenario in 2030.

Total Emission of MSATs for the Build and No-Build Scenarios

Specific data from the MSAT study area of the NCTCOG Regional Transportation Model were used to determine the mass of MSAT emissions associated with the Build (proposed toll project), Build-non-toll and No-Build scenario. In addition, the base or existing conditions mass of MSATs was also modeled. The total mass of MSATs in the year 2007 (base scenario) was higher than either the Build or No-Build scenarios in the years 2015 and 2030. This is reflective of the overall national trend in MSATs as previously described. The 2015 Build-non-toll option was not provided because according to the 2025 MTP (under the non-toll option) the SH 121 mainlanes would not be open to traffic by 2015. The mass of emissions associated with the base scenario, opening year, and design year are shown in **Table 5-7**.

Discussion

Although the VMT for the SH 121 Build-toll scenario would increase approximately 92 percent by 2030 when compared to 2007, total MSAT emission for the same scenario would decrease at least 51 percent by 2030. The total MSAT loads for the Build-toll scenario in 2015 is 0.006 ton/day higher than the No-Build scenario. In 2030, total MSAT loads for the Build-toll scenario is 0.001 ton/day lower than the Build-non-toll scenario. The higher levels of MSAT emissions in 2015 for the Build-toll scenarios are due to a higher VMT when compared to the No-Build scenarios. MSAT for the Build-non-toll scenario is higher than the Build-toll and the No-Build scenarios possibly due to the greater number of vehicles utilizing the mainlanes of the Build-non-toll facility at lower speeds. As a result, the average congestion speed for the Build-non-toll scenario would decrease during the off peak periods. This reduction in congestion speed would result in higher emission factors, which as expected, would increase MSAT emissions.

Regardless of the alternative chosen, emissions would likely be lower than present levels in the future year as a result of EPA's national control programs that are projected to reduce MSAT emissions by 57 to 87 percent between 2000 and 2020, and even more than these reductions when factoring in the 2007 MSAT rule. Local conditions may differ from these national projections in terms of fleet mix, vehicle turnover rates, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great that MSAT emissions in the study area are likely to be lower in the future in all cases.

When evaluating the future options for upgrading a transportation corridor, the major mitigating factor in reducing MSAT emissions is the implementation the EPA's new motor vehicle emission control standards. Substantial decreases in MSAT emissions will be realized from a current base year (2007) through the proposed project's opening year and design year. Accounting for anticipated increases in VMT and varying degrees of efficiency of vehicle operation, total MSAT emissions were predicted to decline by 51 percent from 2007 to 2030 for the Build-toll and the Build-non-toll scenarios. MSAT emissions for the Build-toll scenario were predicted to decline by 50 percent from 2007 to 2015.

Relevance of Unavailable or Incomplete Information to Evaluating Reasonably Foreseeable Significant Adverse Impacts on the Environment, and Evaluation of impacts based upon theoretical approaches or research methods generally accepted in the scientific community.

Because of the uncertainties outlined above, an assessment of the effects of MSAT emissions impacts on human health cannot be made at the project level. While available tools do allow us to predict relative MSAT emission changes between alternatives for a proposed project of this magnitude, the amount of MSAT emissions from each of the project alternatives are presented here for consideration of alternatives and for disclosure purposes and are not intended for estimating potential human exposure or health impacts. Therefore, the relevance of the unavailable or incomplete information is that it is not possible to make a determination of whether any of the alternatives would have "significant adverse impacts on human health" as related to MSAT emissions.

In this document, a quantitative analysis of MSAT emissions relative to the various alternatives has been conducted. The analysis indicates that project alternatives may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain, and because of this uncertainty, the health effects from these emissions cannot be estimated. As mentioned previously, Congress directed EPA to reduce MSAT emissions under authority of CAA Section 202(l). EPA has focused efforts on developing a number of regulations specific not only to reducing MSAT emissions, but also to reduce all vehicle emissions. EPA has not developed ambient air standards for MSATs, or health effects thresholds for MSATs.

The MSATs from mobile sources, especially benzene, have dropped dramatically since 1995, and are expected to continue dropping. The introduction of RFG has lead to a substantial

part of this improvement. In addition, Tier 2 automobiles introduced in model year 2004 will continue to help reduce MSATs. Diesel exhaust emissions have been falling since the early 1990s with the passage of the CAA Amendment. The CAA Amendment provided for improvement in diesel fuel through reductions in sulfur and other diesel fuel improvements. In addition, the EPA has further reduced the sulfur level in diesel fuel, effective in 2006. The EPA also has called for dramatic reductions in NO_X emissions, and particulate matter from on-road and off-road diesel engines. This year, EPA implemented an additional MSAT rule to further reduce both MSAT and VOC emissions.

MSAT emissions decreases from the base year are substantial even with the associated increase in VMT in the travel study area. Some sensitive receptors do exist, but their exposure would decrease from the base year to the design year due to improvements of vehicle technology and fuels.

In the case of SH 121, if the mainlanes are constructed and as a result there is an increase in VMT, the localized level of MSAT emissions for the Build scenarios could be higher relative to the No-Build scenario; however, this could be offset due to reductions in congestion (which are associated with lower MSAT emissions). As shown in **Table 5-7**, total MSAT emissions in 2030 are estimated to be the highest for the Build-non-toll (0.140 ton/day), followed by the Build-toll and No-Build scenarios (0.139 ton/day and 0.134 ton/day respectively). On a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

Indirect Impacts

The proposed Toll Project is located in Collin County, which is part of the EPA's designated 8-hour, nine county nonattainment area for the pollutant ozone. The nine county nonattainment area has an attainment date of June 15, 2010. The Toll Project is consistent with the 2030 MTP that was found to conform to the ozone SIP for DFW. The SIP is required by the CAAA to improve regional air quality for ozone. It should be noted that the ozone nonattainment SIP and two future 10-year ozone maintenance plan SIPs would require measures to prevent degradation of air quality associated with any increase in urbanization. The 10-year ozone maintenance SIPs would be developed once attainment is achieved in 2010. The expected increase in urbanization in the indirect effects study area would require these measures irrespective of the improvements.

Less congestion on the frontage roads, associated with the non-tolled condition, translates into fewer cars traveling at lower speeds or in idling conditions, for shorter periods of time during peak periods (heavy traffic), resulting in less fuel combustion, and lower idling emissions. Conversely, as indicated in the NCTCOG Complete Performance Report, the implementation of the proposed Toll Project is anticipated to increase non-toll traffic demand along the frontage roads; therefore, the potential exists for the localized increase of air emissions along the frontage roads. As traffic congestion increases along the frontage roads, traffic would redistribute to the arterials in the adjacent municipalities. To the degree that this redistribution would result in increased congestion, slower speeds or increase idling conditions, the proposed Toll Project would result in indirect air quality impacts. However, as vehicles become more efficient and emissions are reduced, any adverse impacts of the proposed Toll Project and redistribution of traffic would be expected to decrease over time.

The EPA predicts substantial future air emission reductions as the agency's new light-duty and heavy-duty on-highway fuel and vehicle rules come into effect (EPA, 1999). These projected air emission reductions would be realized even with the predicted continued growth in VMT (EPA, 2001; EPA, 1999; TCEQ, 1997) because technology is improving at a pace that exceeds the effect of increased VMT. Further reductions will be achieved in MSATs, $PM_{2.5}$ and in VOCs, due to the February 2007 EPA regulation on MSATs (EPA 2007). Even though the predicted mobile source emission reductions take into consideration increased VMT, redistribution of traffic attempting to avoid the toll by traveling on the frontage roads and local arterial streets, may still have indirect air quality impacts by redistributing mobile source emissions (including MSATs) through out the community.

Without tolling, construction of the SH 121 mainlanes would be delayed until sometime after 2015 (according to Mobility 2025). The delay would translate to an increase in congestion as the existing transportation network (i.e., frontage roads, arterials, collectors, etc.) would be responsible to meet the transportation needs of the area. This situation could lead to higher mobile sources along SH 121 and neighboring communities. Under the proposed tolling condition, fewer cars are anticipated to travel the mainlanes and therefore provide relief to the traffic congestion, which would otherwise occur under the non-toll condition. Less congestion translates into less cars traveling at lower speeds or idling conditions, for shorter periods of time during peak periods (heavy traffic), and result in less fuel combustion and lower idling emissions.

No change in attainment status is expected to occur as a result of the proposed Toll Project.

Step 5: Reasonably Foreseeable Actions - Air Quality

The states where the nonattainmnet areas are located are required to submit a SIP to the EPA. The SIP document is a collection of regulations that explain how the State would reduce emissions and help meet ozone standards. Nine counties are designated nonattainment for ground level ozone in the DFW area, including: Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Tarrant and Rockwall Counties. As such, the long-range financially constrained plan known as *Mobility 2030* is required to be in conformity with the SIP for air quality. Any future widening of the facility would be required to be consistent with the MTP and TIP documents, and therefore meet conformity with the SIP.

Land use changes associated with Regional Toll Revenue Funding Initiative projects could potentially result in an increase in air emissions, as the potential acceleration of land use changes associated with Regional Toll Revenue Funding Initiative projects or other land use changes may result in an increase of on-road mobile sources (e.g., cars), new area sources (e.g., dry cleaners), and new point sources (e.g., refineries). In order to reduce ozone, the SIP is implemented to reduce emissions of the ozone precursors, VOC and NOx. The Regional Toll Revenue Funding Initiative projects that are regionally significant would be required to be consistent with the conforming MTP/TIP. In summary, it is anticipated that new area sources and/or industry/manufacturing point sources would meet necessary federal and Texas CAA provisions to prevent air quality degradation.

If excess toll revenues occur as a result of tolling SH 121, then transportation improvements (i.e., in the case of Regional Toll Revenue Funding Initiative projects) could be constructed sooner than planned under financial constraints from traditional funding. As Regional Toll Revenue Funding Initiative projects are constructed years earlier than planned, the improvements would redistribute some traffic throughout portions of the community before the technological advancements demonstrated graphically in **Figure 5-1** are fully realized through improved technology and fuel.

Because preliminary Regional Toll Revenue Funding Initiative projects associated with the proposed tolling of SH 121 in Collin County have yet to be identified by the RTC; project specific information such as the type of project, how long in advance would the projects be open

to traffic, etc. is not available. However, the environmental documents prepared for each of these projects would address specific air quality issues pertinent to each project. Any Regional Toll Revenue Funding Initiative project considered to be regionally significant would be required to be consistent to the conforming TIP and MTP.

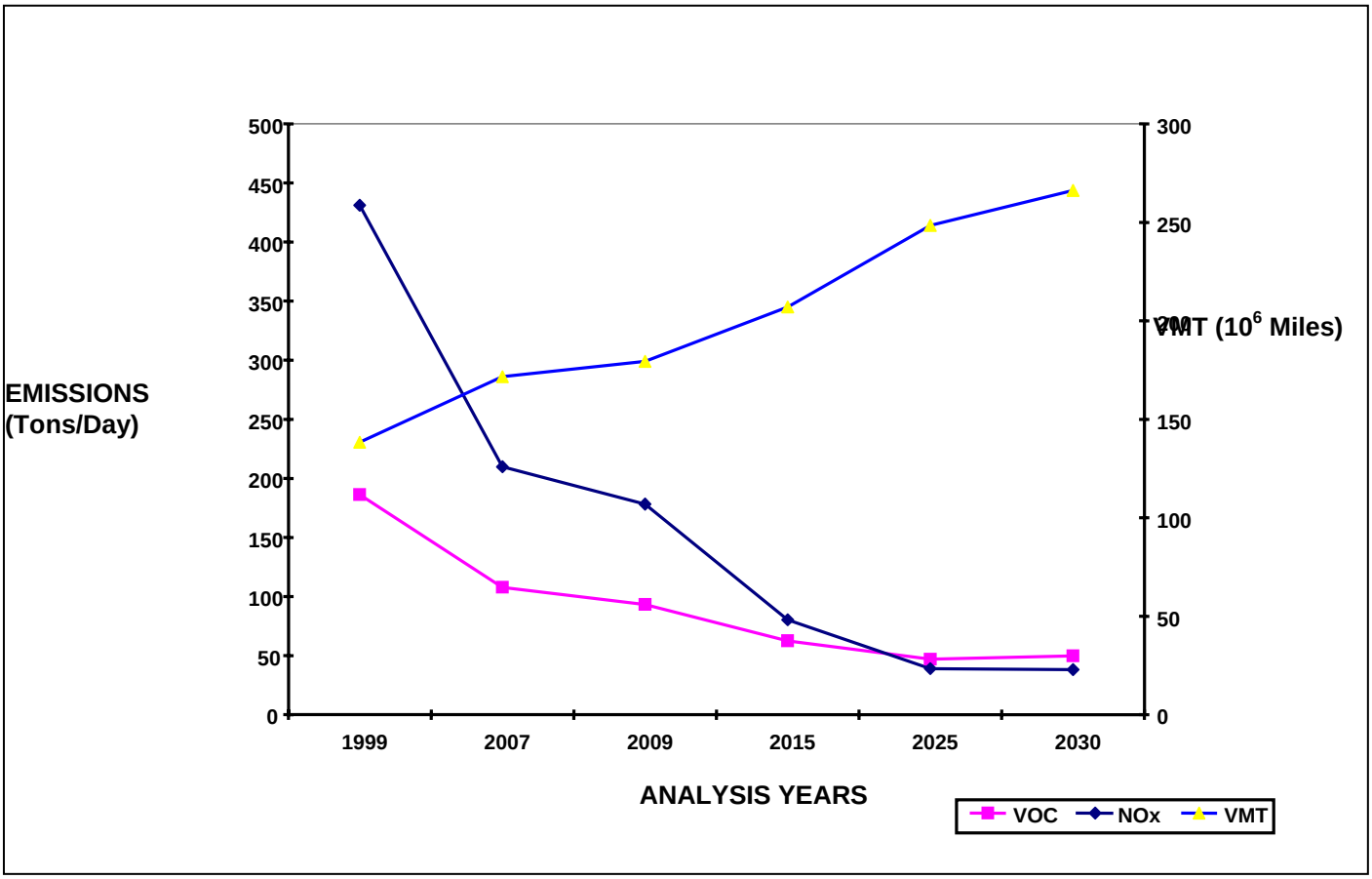
Step 6: Cumulative Impacts Assessment - Air Quality

The cumulative impact on air quality from the proposed project and other reasonably foreseeable transportation projects are addressed at the regional level by analyzing the air quality impacts of transportation projects in the MTP and the TIP. The proposed Toll Project and the other reasonably foreseeable transportation projects were included in the MTP and the TIP and have been determined to conform to the ozone nonattainment SIP.

The DFW region is expected to continue to experience substantial population growth, urbanization, and economic development. The cumulative impact of reasonably foreseeable future growth and urbanization on air quality would be minimized by enforcement of federal and state regulations, by the EPA and TCEQ, which are mandated to ensure that such growth and urbanization would not prevent compliance with the ozone standard or threaten the maintenance of the other air quality standards, along with regulated entities in compliance with regulations.

All throughout the region, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions of on-road emissions including CO, MSAT and the ozone precursors (VOC and NOx). Modeling results under the worst case conditions indicate that CO concentrations would not exceed the NAAQS for the toll scenario either in 2015 or 2030. A quantitative MSAT analysis indicates that by 2030, although VMT increases, MSAT emissions would decrease by 51 percent when compared to 2007. Please refer to **Section 5.1.8** for further details. Likewise, **Figure 7-1** and **Table 7-3** show that although VMT in the DFW area is projected to increase over time, VOC and NOx on-road emission trends are expected to decrease over time.

FIGURE 7-1: VEHICLE MILES OF TRAVEL AND EMISSIONS TRENDS



Source: NCTCOG Transportation Department. Graph is consistent with *Mobility 2030* for the nine ozone nonattainment counties (Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant Counties).

TABLE 7-3: DFW EMISSIONS AND VMT TRENDS

Analysis Years	VOC (Tons/day)	NOx (Tons/day)	VMT (10^6 miles)
1999	186	431	138
2007	108	210	172
2009	93	178	179
2015	62	80	207
2025	47	39	248
2030	50	38	266

Source: NCTCOG Transportation Department. The emissions shown in the table do not include reductions from the transportation control measure and TERP programs. These emissions consist of the total loads in tons/day from the nine DFW nonattainment counties (Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant Counties).

7.3 Community

Step 1: Resource Identification - Community

The proposed toll facility has the potential to directly impact communities within the nine counties which compose the NCTCOG MPA.

Step 2: Resource Study Area - Community

The RSA for community conditions is the nine counties found within the NCTCOG MPA (Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant Counties). Evaluating community as a resource consists of several elements: air quality, environmental justice, traffic operations, traffic noise, socio-economic impacts, economic impacts, and lighting/visual impacts. See **Appendix A, Figure 11: Cumulative Impacts Analysis Study Area**. The temporal boundaries for the cumulative effects analysis are the years 1990 to 2030. The early date was established because the region experienced unprecedented growth between 1990 and 2000 and in 1990 the EPA was authorized to designate areas in "nonattainment" or failing to meet established air quality standards (known as the NAAQS). Present actions are those actions which have occurred between 2000 and 2007. The year 2030 was chosen to correlate with NCTCOG's *Mobility 2030*.

Step 3: Resource Health and Historical Context - Community

According to the U.S. Census Bureau 2005 American Community Survey, the total population of the community RSA is comprised of approximately 5,569,118 persons.

Air Quality

According to NCTCOG, the DFW metropolitan area has been one of the fastest growing areas in the United States, and it is expected to continue to grow. Growth often results in an increase of development, increase in vehicles, and an increase in VMT. Traffic congestion has become one of the greatest challenges in the DFW metropolitan area, as on-road mobile sources (such as cars and trucks) contribute to air pollution. This challenge is evidenced as the DFW metropolitan area was ranked the ninth most congested area in the nation.

Throughout recent decades, multiple regional and local initiatives have been planned and implemented in an effort to reduce air pollution from mobile sources. Several of these initiatives specific to the area's transportation system included increased capacity highways and roadways (through construction of additional travel lanes and bottleneck improvements), construction of high-occupancy vehicle lanes, and the promotion of alternative transportation (e.g., hike and bike trails, bus, and light rail).

Environmental Justice

The thresholds used to identify areas with high concentrations of low-income and/or minority populations in the study area were set based on the definitions of low-income and minority established in the FHWA Order and by the CEQ, Environmental Justice Guidance under NEPA documentation.

Table 7-4 lists a comparative breakdown of environmental justice populations for each of the counties located within the NCTCOG MPA for the years 1990 and 2005. The total environmental justice population percentage for the RSA increased by approximately 21.8 percent from 1990 to 2005.

TABLE 7-4: NCTCOG MPA ENVIRONMENTAL JUSTICE POPULATIONS

County	1990			2005			EJ Population Percent Change 1990 to 2000 (%)
	Total Population	Percentage Minority Population (%)	Percentage Low Income Population (%)	Total Population	Percentage Minority Population (%)	Percentage Low Income Population (%)	
Collin	264,036	14.2	3.9	655,994	31.3%	6.2%	19.4
Dallas	1,852,810	40.3	10.4	2,267,080	63.5%	16.9%	29.7
Denton	273,525	14.9	4.5	544,511	30.0%	7.4%	18.0
Ellis	85,167	23.9	10.3	131,480	30.9%	10.4%	7.1
Johnson	97,165	11.1	8.8	143,757	20.0%	14.5%	14.6
Kaufman	52,200	21.2	12.3	87,655	26.4%	9.8%	2.7
Parker	64,785	6.0	8.3	99,846	11.0%	9.3%	6.0
Rockwall	25,604	10.2	5.1	43,080*	16.3%*	4.7%*	5.7
Tarrant	1,170,103	27.0	8.2	1,595,715	44.0%	13.5%	22.3
NCTCOG MPA TOTAL	3,885,395	30.8	8.8	5,569,118	48.2	13.2	21.8

Source: *Census 1990*, * *Census 2000,* and NCTCOG (2005 American Community Survey)

Of the counties located within the RSA, Dallas County contained the largest concentration of minority and/or low-income populations in 2005. Dallas County exhibits a minority population of approximately 64 percent and a low-income population (those living below the 2007 $20,650 poverty threshold for a family of four) of 17 percent. The remaining RSA counties exhibit minority populations which range from approximately 11 to 44 percent and low-income populations ranging from approximately 5 to 15 percent.

Traffic Operations

Tolling in the DFW Metroplex began in the 1950s with the construction and operation of the Dallas-Fort Worth Turnpike. In 1953, the State legislature created the Texas Turnpike Authority (TTA), which raised the funding to build the project. Constructed in 1955-1956, the Dallas-Fort Worth Turnpike was a 30-mile toll highway that connected downtown Dallas and downtown Fort Worth. On September 1, 1997, the NTTA was created to finance, construct and oversee turnpike projects in North Texas. At that time, the TTA's assets and liabilities in North Texas were transferred to NTTA. Today, the NTTA operates almost 51 miles of toll roads in North Texas and has over 700 employees.

Traffic operations in the NCTCOG MPA experienced a decline in the 1990s due to the rapid population growth the DFW region experienced. In response to the demands on the transportation system associated with high population growth rates, the NCTCOG, in cooperation with TxDOT and local transit agencies, have worked cooperatively together to maximize the use of the existing transportation network and transportation funding. In recent

years, the region has utilized innovative financing tools and has promoted the use of managed/HOV facilities to increase ridership to decrease the demand on the regional transportation system.

Traffic Noise

As stated earlier, the DFW metropolitan area has been one of the fastest growing areas in the United States, and it is expected to continue to grow. Growth often results in an increase of development, increase in vehicles, and an increase in VMT. In fact, traffic counts have more than doubled between 1995 and 1999 (**Section 2.1**). Historically, the primary source of sound/noise in the DFW area has been highway traffic noise. As projected population growth and associated land use increases the transportation demand, it is expected that highway traffic noise will continue to be the primary source of noise in the area.

Step 4: Direct and Indirect Impacts - Community

Air Quality

Direct Impacts

On-road VOC, NOx, CO, MSAT and CO emissions are anticipated to decrease over time due to the implementation of EPA regulations to improve vehicle technology and fuel. Overall, MSAT and CO emissions are anticipated to decrease.

Modeling results under the worst case conditions indicate that CO concentrations would not exceed the NAAQS for the toll scenario either in 2015 or 2030. It is expected, that congestion relief would result in less fuel combustion as there are less vehicles on the road for less periods of time which generally result in less emissions; however, it yields to an increase of VMT (as more roads are built to relief congestion). In addition, congestion relief that reduces idling would reduce idling emissions. MSAT emissions would be reduced as fewer cars are anticipated to travel the mainlanes and therefore provide relief to the traffic congestion, which would otherwise occur under the non-toll condition. Less congestion translates into less cars traveling at lower speeds or idling conditions, for shorter periods of time during peak periods (heavy traffic) and result in less fuel combustion and lower idling emissions. In addition, a quantitative MSAT analysis indicates that by 2030, although VMT increases, MSAT emissions would decrease by 51 percent when compared to 2007. Please refer to **Section 5.1.8** for further details.

In order to protect human health and the environment, the CAA of 1970 mandated the establishment of the NAAQS and regulations to reduce air pollutants. When the pollutant level within an area exceeds the NAAQS, EPA designates the area as "nonattainment" for the pollutant. In addition, EPA also develops regulations to reduce air pollutants from specific sources, including both industry and motor vehicles.

Conformity Under the Clean Air Act

As previously mentioned, areas determined by EPA to exceed a NAAQS are designated as nonattainment areas. The NAAQS include: ozone, CO, sulfur dioxide, nitrogen dioxide, lead, and particulate matter ($PM_{2.5}$ and PM_{10}). A SIP is a collection of requirements that delineates how a state would reduce emissions to attain the NAAQS. This SIP must be approved by EPA. For nonattainment areas, the 1990 Clean Air Act Amendments (CAAA) required the MPOs and the state transportation departments to demonstrate that transportation plans, programs, and projects Funded under Title 23 U.S.C. or the Federal Transit Act conform to State or Federal Implementation Plans. Under the federal CAAA all transportation projects that are subject to FHWA approval must first be found to conform with the EPA approved SIP.

The proposed North Central Texas Toll Project is located in Collin County, which is part of the EPA's designated 8-hour, nine county nonattainment area for the pollutant ozone; therefore, the transportation conformity rule applies. The proposed SH 121 Toll Project is consistent with the area's financially constrained long-range plan known as *Mobility 2030* and the 2006-2008 Statewide Transportation Improvement Program (STIP)/TIP. The US DOT found the *Mobility 2030* and amended FY 2006-2008 TIP to conform to the SIP on June 12, 2007. The proposed Toll Project is also found in the Draft 2008-2011 STIP which should be approved by FHWA/FTA in October of 2007. See **Appendix B: *Mobility 2030*: Funded Recommendations, February 2007 Revisions to the FY 2006-2008 STIP, and 2006-2008 TIP.**

Traffic Air Quality Analysis (TAQA)

A TAQA is an analysis to determine potential effects of CO emissions related to a proposed transportation project. This analysis is based on traffic data that was obtained from NCTCOG. The NCTCOG toll traffic volumes for 2030 can be found in **Appendix C: 2030 Traffic Volumes**. For this re-evaluation, an air analysis was conducted in accordance with the *TxDOT 2006 Air Quality Guidelines*.

The topography and meteorological conditions of the area in which the Toll Project is located would not seriously restrict dispersion of air pollutants. The traffic volumes resulting in the highest modeled CO concentrations are 138,478 vehicles per day (vpd) for 2015, the estimated time of completion, between Preston Rd. and Ohio Dr. The traffic volumes resulting in the highest modeled CO concentrations for design year (2030) are 181,238 vpd and correspond to the Build-non-toll scenario between Coit Rd. and Independence Pkwy. The modeled CO concentration for the Build-non-toll is 2 percent higher than the highest modeled CO concentration (between Preston Rd. and Ohio Dr.) for the Build-toll scenario. The slight increase is due to a higher number of vehicles traveling the frontage road closer to the receiver (ROW line) between Coit Rd. and Independence Pkwy.

The CO concentrations for the Build-toll and Build-non-toll scenarios were modeled using CALINE3 and MOBILE6.2 and factoring in adverse meteorological conditions for receptors at the ROW line in accordance with the *TxDOT 2006 Air Quality Guidelines.* Local concentrations of CO are not expected to exceed NAAQS at any time. **Table 5-2** summarizes the results of the analysis in parts per million (ppm).

Congestion Management Process

Congestion Management Process (CMP) refers to several methods of roadway management. Included in the process are Intelligent Transportation Systems (ITS), Transportation System Management (TSM), and Travel Demand Management (TDM). These programs seek to improve traffic flow and safety through better operation and management of transportation facilities. Additionally, these programs provide low cost solutions that can be constructed in less time and provide air quality benefits to the region. The proposed Toll Project was developed from the NCTCOG operational CMP, which meets all requirements of 23 C.F.R. § 500.109.

Operational improvements and travel demand reduction strategies are commitments made by the region at two levels: the program level and the project implementation level. Program level commitments are inventoried in the regional CMP and are included in the financially constrained MTP. The following summarize the *Mobility 2030* CMP recommendations for its components:[43]

[43] NCTCOG Proposed Recommendations for *Mobility 2030*. (Draft subject to change and intended for public review /comment only). http://www.nctcog.org/trans/mtp/2030/Mobility_2030_DRAFT_Publication_000.pdf

Intelligent Transportation System

ITS aids transportation operators and emergency response personnel as they monitor traffic, detect and respond to incidents, and inform the public of traffic conditions via the internet, roadway devices, and the media. *Mobility 2030* includes a number of ITS improvements featuring recommendations for 22 Traffic Management Centers, and 1,142 centerline miles of ITS deployment.

Transportation System Management

TSM attempts to identify improvements that would enhance the capacity of the existing transportation system. Better management and operation of existing facilities improves traffic flow, air quality, movement of vehicles and goods, and enhances system accessibility and safety. TSM strategies include intersection and signal improvements, freeway bottleneck removals, special events management, and data collection to monitor system performance. *Mobility 2030* recommendations include a number of TSM. The 2030 plan calls for 1,081 intersection improvements which would include traffic control devices, turn lanes, traffic islands, and grade separations. *Mobility 2030* also recommends 7,291 traffic signal improvements. These improvements would call for improved signal timing, signal optimization, signal equipment upgrades, and better system interconnectedness. Additionally, *Mobility 2030* would implement programs to address the removal of freeway bottlenecks, as well as, better mitigation of congestion created by special events.

Travel Demand Management

TDM addresses alternative forms of transportation to commuters. Programs seek to reduce congestion and air pollution and to increase efficiency of the transportation system. TDM programs may include carpools, vanpools, transit, telecommuting, compressed work weeks, park-and-ride facilities, bike and pedestrian transportation, and Transportation Management Associations. *Mobility 2030* recommendations under this category include an Employer Trip Reduction Initiative, 1,780 vanpools, 30 additional park and ride facilities, and the creation of the Transportation Management Associations.

At the project implementation level, travel demand reduction strategies and commitments would be added to the regional TIP or included in the construction plans. The regional TIP provides for programming of these projects at the appropriate time with respect to the Single Occupancy Vehicle (SOV) facility implementation and project specific elements.

Committed congestion reduction strategies and operational improvements considered to be beneficial to SH 121 within the re-evaluation limits would consist of grade separations, addition of lanes, a new roadway, and ITS projects. TxDOT, under the Congestion Mitigation and Air Quality Improvement Plan (CMAQ) program, would manage these projects, which are included in the regional CMP and TIP. The SH 121 related projects are listed in **Table 5-3**.

In an effort to reduce congestion and the need for SOV lanes in the region, TxDOT and NCTCOG would continue to promote appropriate congestion reduction strategies through the CMAQ program, the CMP, and the MTP.

Mobile Source Air Toxics (MSATs)

In addition to the criteria air pollutants for which there are NAAQS, EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries).

MSATs are a subset of the 188 air toxics defined by the CAA. The MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

The EPA is the lead Federal Agency for administering the CAA and has certain responsibilities regarding the health effects of MSATs. The EPA controls emissions of air pollutants through one of two major strategies: NAAQS or regulatory controls that result in specific emission reductions. Both strategies provide for increased protection of human health and the environment. For MSATs, in order to more quickly implement emission reductions, EPA has focused efforts on nationwide regulatory controls. The EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources, (66 Federal Register (FR) 17229, March 29, 2001). This rule was issued under the authority in § 202 of the CAA. In its rule, EPA examined the impacts of existing and newly promulgated mobile source control programs, including its reformulated gasoline (RFG) program, its national low emission vehicle (NLEV) standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control

requirements, and its proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 2000 and 2020, FHWA projects that even with a 64 percent increase in vehicle miles traveled (VMT), these programs would reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, acrolein, and acetaldehyde between 57 percent and 65 percent, and will reduce on-highway diesel particulate matter and diesel organic gas emissions by 87 percent, as shown in **Figure 5-1**.

In an ongoing review of MSATs, the EPA finalized additional rules under authority of CAA Section 202(l) to further reduce MSAT emissions. The EPA issued Final Rules on Control of Hazardous Air Pollutants from Mobile Sources (72 FR 8427, February 26, 2007) under Title 40 C.F.R. Parts 59, 80, 85 and 86. As a result of this review, EPA adopted the following new requirements to significantly lower emissions of benzene and the other MSATs by: 1) lowering the benzene content in gasoline; 2) reducing non-methane hydrocarbon (NMHC) exhaust emissions from passenger vehicles operated at cold temperatures (under 75 degrees); and 3) reducing evaporative emissions that permeate through portable fuel containers. A summary of the benefits of this rule are provided below, based on information provided by EPA in the preamble to the rule.

Beginning in 2011, petroleum refiners must meet an annual average gasoline benzene content standard of 0.62 percent by volume, for both reformulated and conventional gasoline, nationwide. Although the national benzene content of gasoline in 2007 is about 1.0 percent by volume; the DFW area ozone SIP results in benzene content of 0.48 percent in summer and 0.64 percent in winter. EPA standards to reduce NMHC exhaust emissions from new gasoline-fueled passenger vehicles will become effective in phases. Standards for light vehicles become effective during the period of 2010 to 2013, and standards for heavy vehicles during the period of 2012 to 2015. Evaporative requirements for portable gas containers become effective with containers manufactured in 2009. Evaporative emissions must be limited to 0.3 grams of hydrocarbons per day.

In addition, EPA has adopted more stringent evaporative emission standards for new passenger vehicles. The new standards are equivalent to current California state standards, and become effective in 2009 for light vehicles and in 2010 for the heavy vehicles. In addition to the reductions from the 2001 rule, the new rules significantly reduce annual national MSAT emissions. For example, EPA estimates that emissions in the year 2030, when compared to emissions in the base year prior to the rule, will show a reduction of 330,000 tons of MSATs

(including 61,000 tons of benzene), reductions of more than 1,000,000 tons of volatile organic compounds (VOCs), and reductions of more than 19,000 tons of $PM_{2.5}$. Please note that EPA has not updated MOBILE6.2 emission factors to capture the February 2007 Rule emission reductions; therefore, it is not possible to reflect these emission reductions in the quantitative MSAT analysis provided below.

Monitored Levels of MSATs Near the Project Area

The Dallas/Collin County area monitors for various air pollutants using an established air monitoring network. This network of monitors measures air quality and determines the levels of the various pollutants in the air. Not all monitors sample for the same pollutants, and not all monitors have one year of complete data to compile an annual average for any given pollutant. For this reason, data from multiple monitors must be examined in order to analyze the pollution concentrations in the proposed project area.

Three monitoring sites are located near the Toll Project area in Collin County; however, these only contained data pertinent to criteria air pollutants. Dallas County monitoring sites reported on air toxics including compounds listed as MSATs and were, therefore, also utilized in this report and included in **Table 5-4**. The approximate distance to each site from the proposed Toll Project is listed in **Table 5-4**.

The official monitor data is found on EPA's national air quality monitor web site (www.epa.gov/air/data). According to the EPA, monitoring of ambient concentrations of hazardous air pollutants is not mandated by the CAA, and monitoring is not the norm. However, EPA is in the process of developing regulations to limit hazardous air pollutant emissions, to prevent ambient hazardous air pollutant concentrations from reaching levels that would pose significant health risks. (See http://www.epa.gov/air/data/info.html.)

Sensitive Receptor Analysis

Sensitive receptors within the re-evaluation limits were identified, field verified, and the distance from the ROW to each receptor was measured and noted. The documented sensitive receptors include public and private schools, hospitals, senior citizen/skilled-nursing care facilities, and licensed daycare facilities. Three sensitive receptors were located within 328 ft (100 meters) of the ROW and six sensitive receptors were located within 1,640 ft (500 meters) of the ROW. See **Table 5-5** for sensitive receptor counts.

Sensitive receptors located within the re-evaluation limits are presented in **Table 5-6** and shown on **Appendix A: Figure 3**. These receptors include schools and licensed daycares.

MSATs Environment Consequences

MSAT Modeling

The EPA's highway vehicle emission factor model, MOBILE is a program that provides average in-use fleet emission factors for criteria pollutants (CO and NO_X) and also provides emission factors for VOCs. These emission factors can be estimated for any year between 1952 and 2050 and under various conditions affecting in-use emission levels. The output from the model is in the form of emissions factors expressed as grams of pollutant per VMT in grams per mile (g/mi). A quantitative analysis of the mass of air toxic emissions in the travel study area containing the proposed Toll Project was completed using the latest version of the EPA's mobile emission factor model (MOBILE6.2). The MOBILE6.2 emission factors are consistent with those used to develop the SIP and conformity determination for the DFW region. These factors do not yet reflect the EPA Final Rules on Control of Hazardous Air Pollutants from Mobile Sources (72 FR 8427, February 26, 2007) under Title 40 C.F.R. Parts 59, 80, 85 and 86 that when implemented, will significantly reduce emissions of benzene and other MSATs. The rule became effective on April 27, 2007.

The MSAT study area is composed of the affected transportation network. The SH 121 affected transportation network includes the proposed network links and other transportation model links reflecting a plus or minus 5 or greater percent change in traffic volume between the Build and No-Build scenarios for the years 2015 and 2030. The plus or minus 5 percent threshold was adopted as the basis to determine the affected transportation network study area and was coordinated with and approved by FHWA. Because the 2007 base year scenario represents the existing condition, the affected transportation network for 2007 is composed of those links determined to change plus or minus 5 or greater percent in 2015 and 2030 and which currently exist in the 2007 network. The resulting affected transportation network for years 2015 and 2030 includes those links determined to change plus or minus 5 or greater percent in 2015 and 2030, which are also included in the 2015 and 2030 networks respectively. The parameters used to characterize the travel activity utilized in the analysis included directional speeds and traffic volumes for the AM peak period, PM peak period and off-peak period. See **Appendix A: Figure 4** for the Affected Transportation Network maps.

For the purpose of this analysis six scenarios were modeled:

- "Base" or existing condition (2007);
- "Build-toll 2015" or toll scenario in 2015;
- "No-Build 2015" or no-build scenario in 2015;
- "Build-toll 2030" or toll scenario in 2030;
- "Build-non-toll 2030" or non-toll scenario in 2030; and
- "No-Build 2030" or no-build scenario in 2030.

Total Emission of MSATs for the Build and No-Build Scenarios

Specific data from the MSAT study area of the NCTCOG Regional Transportation Model were used to determine the mass of MSAT emissions associated with the Build (proposed toll project), Build-non-toll and no-build scenario. In addition, the base or existing conditions mass of MSATs was also modeled. The total mass of MSATs in the year 2007 (base scenario) was higher than either the Build or No-Build scenarios in the years 2015 and 2030. This is reflective of the overall national trend in MSATs as previously described. The 2015 Build-non-toll option was not provided because according to the 2025 MTP (under the non-toll option) the SH 121 mainlanes would not be open to traffic by 2015. The mass of emissions associated with the base scenario, opening year, and design year are shown in **Table 5-7**.

Discussion

Although the VMT for the SH 121 Build-toll scenario would increase approximately 92 percent by 2030 when compared to 2007, total MSAT emission for the same scenario would decrease at least 51 percent by 2030. The total MSAT loads for the Build-toll scenario in 2015 is 0.006 ton/day higher than the No-Build scenario. In 2030, total MSAT loads for the Build-toll scenario is 0.001 ton/day lower than the Build-non-toll scenario. The higher levels of MSAT emissions in 2015 for the Build-toll scenarios are due to a higher VMT when compared to the No-Build scenarios. MSAT for the Build-non-toll scenario is higher than the Build-toll and the No-Build scenarios possibly due to the greater number of vehicles utilizing the mainlanes of the Build-non-toll facility at lower speeds. As a result, the average congestion speed for the Build-non-toll scenario would decrease during the off peak periods. This reduction in congestion speed would result in higher emission factors, which as expected, would increase MSAT emissions.

Regardless of the alternative chosen, emissions would likely be lower than present levels in the future year as a result of EPA's national control programs that are projected to reduce MSAT emissions by 57 to 87 percent between 2000 and 2020, and even more than these reductions when factoring in the 2007 MSAT rule. Local conditions may differ from these

national projections in terms of fleet mix, vehicle turnover rates, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great that MSAT emissions in the study area are likely to be lower in the future in all cases.

When evaluating the future options for upgrading a transportation corridor, the major mitigating factor in reducing MSAT emissions is the implementation the EPA's new motor vehicle emission control standards. Substantial decreases in MSAT emissions will be realized from a current base year (2007) through the proposed project's opening year and design year. Accounting for anticipated increases in VMT and varying degrees of efficiency of vehicle operation, total MSAT emissions were predicted to decline by 51 percent from 2007 to 2030 for the Build-toll and the Build-non-toll scenarios. MSAT emissions for the Build-toll scenario were predicted to decline by 50 percent from 2007 to 2015.

Relevance of Unavailable or Incomplete Information to Evaluating Reasonably Foreseeable Significant Adverse Impacts on the Environment, and Evaluation of impacts based upon theoretical approaches or research methods generally accepted in the scientific community.

Because of the uncertainties outlined above, an assessment of the effects of MSAT emissions impacts on human health cannot be made at the project level. While available tools do allow us to predict relative MSAT emission changes between alternatives for a proposed project of this magnitude, the amount of MSAT emissions from each of the project alternatives are presented here for consideration of alternatives and for disclosure purposes and are not intended for estimating potential human exposure or health impacts. Therefore, the relevance of the unavailable or incomplete information is that it is not possible to make a determination of whether any of the alternatives would have "significant adverse impacts on human health" as related to MSAT emissions.

In this document, a quantitative analysis of MSAT emissions relative to the various alternatives has been conducted. The analysis indicates that project alternatives may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain, and because of this uncertainty, the health effects from these emissions cannot be estimated. As mentioned previously, Congress directed EPA to reduce MSAT emissions under authority of CAA Section 202(l). EPA has focused efforts on developing a number of regulations specific not only to reducing MSAT emissions, but also to reduce all vehicle emissions. EPA has not developed ambient air standards for MSATs, or

health effects thresholds for MSATs.

The MSATs from mobile sources, especially benzene, have dropped dramatically since 1995, and are expected to continue dropping. The introduction of RFG has lead to a substantial part of this improvement. In addition, Tier 2 automobiles introduced in model year 2004 will continue to help reduce MSATs. Diesel exhaust emissions have been falling since the early 1990s with the passage of the CAA Amendment. The CAA Amendment provided for improvement in diesel fuel through reductions in sulfur and other diesel fuel improvements. In addition, the EPA has further reduced the sulfur level in diesel fuel, effective in 2006. The EPA also has called for dramatic reductions in NO_X emissions, and particulate matter from on-road and off-road diesel engines. This year, EPA implemented an additional MSAT rule to further reduce both MSAT and VOC emissions.

MSAT emissions decreases from the base year are substantial even with the associated increase in VMT in the travel study area. Some sensitive receptors do exist, but their exposure would decrease from the base year to the design year due to improvements of vehicle technology and fuels.

In the case of SH 121, if the mainlanes are constructed and as a result there is an increase in VMT, the localized level of MSAT emissions for the Build scenarios could be higher relative to the No-Build scenario; however, this could be offset due to reductions in congestion (which are associated with lower MSAT emissions). As shown in **Table 5-7**, total MSAT emissions in 2030 are estimated to be the highest for the Build-non-toll (0.140 ton/day), followed by the Build-toll and No-Build scenarios (0.139 ton/day and 0.134 ton/day respectively). On a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

Indirect Impacts

The proposed Toll Project is located in Collin County, which is part of the EPA's designated 8-hour, nine county nonattainment area for the pollutant ozone. The nine county nonattainment area has an attainment date of June 15, 2010. The Toll Project is consistent with the 2030 MTP that was found to conform to the ozone SIP for DFW. The SIP is required by the CAAA to improve regional air quality for ozone. It should be noted that the ozone nonattainment SIP and two future 10-year ozone maintenance plan SIPs would require measures to prevent degradation of air quality associated with any increase in urbanization. The 10-year ozone

maintenance SIPs would be developed once attainment is achieved in 2010. The expected increase in urbanization in the indirect effects study area would require these measures irrespective of the improvements.

Less congestion on the frontage roads, associated with the non-tolled condition, translates into fewer cars traveling at lower speeds or in idling conditions, for shorter periods of time during peak periods (heavy traffic), resulting in less fuel combustion, and lower idling emissions. Conversely, as indicated in the NCTCOG Complete Performance Report, the implementation of the proposed Toll Project is anticipated to increase non-toll traffic demand along the frontage roads; therefore, the potential exists for the localized increase of air emissions along the frontage roads. As traffic congestion increases along the frontage roads, traffic would redistribute to the arterials in the adjacent municipalities. To the degree that this redistribution would result in increased congestion, slower speeds or increase idling conditions, the proposed Toll Project would result in indirect air quality impacts. However, as vehicles become more efficient and emissions are reduced, any adverse impacts of the proposed Toll Project and redistribution of traffic would be expected to decrease over time.

The EPA predicts substantial future air emission reductions as the agency's new light-duty and heavy-duty on-highway fuel and vehicle rules come into effect (EPA, 1999). These projected air emission reductions would be realized even with the predicted continued growth in VMT (EPA, 2001; EPA, 1999; TCEQ, 1997) because technology is improving at a pace that exceeds the effect of increased VMT. Further reductions will be achieved in MSATs, $PM_{2.5}$ and in VOCs, due to the February 2007 EPA regulation on MSATs (EPA 2007). Even though the predicted mobile source emission reductions take into consideration increased VMT, redistribution of traffic attempting to avoid the toll by traveling on the frontage roads and local arterial streets, may still have indirect air quality impacts by redistributing mobile source emissions (including MSATs) through out the community.

Without tolling, construction of the SH 121 mainlanes would be delayed until sometime after 2015 (according to Mobility 2025). The delay would translate to an increase in congestion as the existing transportation network (i.e., frontage roads, arterials, collectors, etc.) would be responsible to meet the transportation needs of the area. This situation could lead to higher mobile sources along SH 121 and neighboring communities. Under the proposed tolling condition, fewer cars are anticipated to travel the mainlanes and therefore provide relief to the traffic congestion, which would otherwise occur under the non-toll condition. Less congestion translates into less cars traveling at lower speeds or idling conditions, for shorter periods of time

during peak periods (heavy traffic), and result in less fuel combustion and lower idling emissions.

No change in attainment status is expected to occur as a result of the proposed Toll Project.

Environmental Justice

Direct Impacts

Based on the analysis provided above, no significant direct environmental justice impacts would result from the proposed Toll Project. Although the study area contains a total minority population of 23.3 percent, the project impacts would not be isolated within a limited number of census tracts, but would be distributed among all users of the SH 121 facility. Low-income populations would be impacted by toll rates, toll collection, and other matters associated with user fees.

For example, assume that the toll rate would be set at 14.5 cents per mile and that the average low-income household would make 20 round-trips per month traveling from the City of McKinney to places of employment in the City of Frisco (approximately 6 miles one-way). Assuming this toll rate, the cost to drive SH 121 with a TxTag® would be approximately $417.60 a year. This equates to 2.0 percent of an income at or below the poverty level of $20,650 (for a family of four). For a low-income individual who does not have a TxTag® account, the cost to drive the same amount of mileage, including the $1.00 processing fee for mailing the monthly statement and a maximum toll rate premium of 45 percent, would be 3.0 percent of a yearly income at or below the poverty level of $20,650 (for a family of four). This scenario demonstrates that not maintaining a pre-paid TxTag® account results in higher costs for those who utilize the video billing option.

Should a low-income person be unable to pay the toll and/or utilize non-toll alternatives, this may result in a difference of time travel associated with utilizing non-toll alternatives. In addition, the economic impact of tolling would be higher for low-income users because the cost of paying tolls would represent a higher percentage of household income than for non-low-income users. As indicated in the O&D analysis results, a majority of trips anticipated to utilize the toll facility would not originate from areas identified with high concentrations of environmental justice populations. O&D data based on projected trips indicates EJ TSZs would utilize SH 121 as a toll or non-toll facility.

The EO 12898 term "disproportionately high and adverse effect" considers the *totality* of significant individual or cumulative human health or environmental impacts. The benefits associated with the proposed Toll Project would include the acceleration of infrastructure improvements to support the increased development and commerce in the immediate area, provision of mobility and relief of traffic congestion for all motorists using the systems funded by the proposed Toll Project, and capacity improvements to the existing SH 121 facility. In the case of implementing tolling along SH 121 and considering the totality of effects of this project, there appears to be an overall benefit provided to environmental justice populations, as well as the entire community. Over the long term, the entire corridor and users would benefit from the proposed Toll Project as a result of improved system linkage and mobility in the area. There do not appear to be any disproportionately high and adverse impacts on minority or low-income populations associated with the proposed Toll Project.

Indirect Impacts

The environmental justice community, as a subset of the larger study area community, would experience indirect effects that mirror those of the general population. Impacts relating to the economic impacts of tolling on environmental justice populations are considered a direct effect and have been addressed elsewhere in this re-evaluation.

Indirect effects pertaining to air quality, access to public facilities and services, traffic operations and traffic noise would be experienced by the environmental justice population to the same extent and in the same manner (whether positive or negative) as experienced by the general population. For these reasons, with regard to indirect effects the proposed Toll Project would not result in disproportionate or adverse effects on environmental justice populations.

Traffic Operations

Direct Impacts

As stated in **Section 3.0**, the construction of SH 121 from DNT to SH 121 At US 75 interchange was previously approved as a non-toll facility. Due to the proposed Toll Project, updated SH 121 traffic projections and modeling were requested from the NCTCOG to aid in the assessment of potential effects. The updated traffic projections and modeling were based on the *Mobility 2030* traffic network for the entire metropolitan planning area (MPA). Two scenarios were developed for the modeling year 2030 - one scenario represents SH 121 as a non-toll facility and the second scenario represents SH 121 as a toll facility. (**See Appendix C: 2030 Traffic Volumes**.)

A comparison of non-toll and toll traffic volumes was done to determine the extent of traffic redistribution due to the proposed Toll Project. The proposed Toll Project Limits were divided into three sections according to current development and usage: 1) DNT to Coit Rd., 2) Coit Rd. to Alma Dr., and 3) Alma Dr. to the SH 121 at US 75 interchange. Analysis of the average daily traffic revealed that approximately 7 percent of the mainlane volume (10,000 vehicles per day) between DNT and Coit Rd. would be redistributed to the frontage road/local arterial system due to the proposed Toll Project. Between Coit Rd. and Alma Dr. approximately 29 percent of the mainlane vehicles (41,200 vehicles per day) redistributed to the frontage roads and local transportation network. Finally, the section between Alma Dr. and US 75, approximately 28 percent of the mainlane traffic (39,400 vehicles per day) would be redistributed to the frontage roads and local transportation network. See **Appendix A, Figure 5: 2030 Traffic Redistribution Tolling Scenario** shows the effect of tolling, in vehicles per day, on the transportation network within the Cities of Plano, Frisco, Allen, McKinney, and the Town of Fairview.

In order to properly analyze the affects of this traffic redistribution on the local transportation network, 16 local arterials were analyzed for changes in traffic volume due to the proposed Toll Project. The following arterials were analyzed:

- Alma Dr.
- Coit Rd.
- Custer Rd.
- Eldorado Pkwy.
- Exchange Pkwy.
- Hardin Blvd.

- Hedgecoxe Rd.
- Independence Pkwy.
- Lebanon Rd.
- Legacy Dr.
- Main St./FM 720/FM 3537
- McDermott Rd.
- Preston Rd./SH 289
- Ridgeview Dr.
- Stonebrook Pkwy./Rolater Dr.
- Virginia Pkwy.

The 16 roadways are comprised of 231 individual links and were analyzed for changes in volume between toll and non-toll scenarios. The average increase in traffic volume per link was 3.61 vehicles during the AM peak period. The largest increase in volume (386 vehicles) occurred on Ridgeview Dr. between Custer Rd. and Exchange Pkwy. and the largest decrease (251 vehicles) occurred on Preston Rd. at SH 121. Similarly, the PM Peak Hour revealed an average increase of 16.34 vehicles per link. The largest increase in traffic volume (373 vehicles) occurred on Ridgeview Dr. between Alma Rd. and Stacy Rd. and the largest decrease in traffic (151 vehicles) occurred on Exchange Pkwy. between Ridgeview Dr. and Alma Rd. See **Appendix C: Difference in Peak Period Volume Due to Tolling** for a detailed listing of volume changes due to tolling.

Overall, the redistribution of traffic is evenly dispersed along the local transportation network and no single roadway encounters substantial increases in vehicular traffic.

Indirect Impacts

Traffic Operations Indirect Impacts to Air Quality

The proposed Toll Project is located in Collin County, which is part of the EPA's designated 8-hour, nine county nonattainment area for the pollutant ozone. The nine county nonattainment area has an attainment date of June 15, 2010. The Toll Project is consistent with the 2030 MTP that was found to conform to the ozone SIP for DFW. The SIP is required by the CAAA to improve regional air quality for ozone. It should be noted that the ozone nonattainment SIP and two future 10-year ozone maintenance plan SIPs would require measures to prevent degradation of air quality associated with any increase in urbanization. The 10-year ozone maintenance SIPs would be developed once attainment is achieved in 2010. The expected

increase in urbanization in the indirect effects study area would require these measures irrespective of the improvements.

Less congestion on the frontage roads, associated with the non-tolled condition, translates into fewer cars traveling at lower speeds or in idling conditions, for shorter periods of time during peak periods (heavy traffic), resulting in less fuel combustion, and lower idling emissions. Conversely, as indicated in the NCTCOG Complete Performance Report, the implementation of the proposed Toll Project is anticipated to increase traffic along the frontage roads; therefore, the potential exists for localized increase of air emissions along the frontage roads. As traffic congestion increases along the frontage roads, traffic would redistribute to the arterials in the adjacent municipalities. To the degree that this redistribution would result in increased congestion, slower speeds or increase idling conditions, the proposed Toll Project would result in indirect air quality impacts. However, as vehicles become more efficient and emissions are reduced, any adverse impacts of the proposed Toll Project and redistribution of traffic would be expected to decrease over time.

The EPA predicts substantial future air emission reductions as the agency's new light-duty and heavy-duty on-highway fuel and vehicle rules come into effect (EPA, 1999). These projected air emission reductions would be realized even with the predicted continued growth in VMT (EPA, 2001; EPA, 1999; TCEQ, 1997) because technology is improving at a pace that exceeds the effect of increased VMT. Further reductions will be achieved in MSATs, $PM_{2.5}$ and in VOCs, due to the February 2007 EPA regulation on MSATs (EPA 2007). Even though the predicted mobile source emission reductions take into consideration increased VMT, redistribution of traffic attempting to avoid the toll by traveling on the frontage roads and local arterial streets, may still have indirect air quality impacts by redistributing mobile source emissions (including MSATs) through out the community.

Without tolling, construction of the SH 121 mainlanes would be delayed until sometime after 2015 (according to Mobility 2025). The delay would translate to an increase in congestion as the existing transportation network (i.e., frontage roads, arterials, collectors, etc.) would be responsible to meet the transportation needs of the area. This situation could lead to higher mobile source emissions along SH 121 and neighboring communities. Under the proposed tolling condition, fewer cars are anticipated to travel the mainlanes and therefore provide relief to the traffic congestion, which would otherwise occur under the non-toll condition. Less congestion translates into less cars traveling at lower speeds or idling conditions, for shorter

periods of time during peak periods (heavy traffic), and result in less fuel combustion and lower idling emissions.

Traffic Operations Indirect Impacts to Local Arterials

In terms of traffic operations, the proposed Toll Project would generally be realized as direct effects (described in **Section 5.3.3**); the only indirect effects would be the potential increase in congestion along the frontage roads and the local transportation system due to vehicles redirecting off the mains lanes to avoid paying the toll. Congestion can best be described in terms of LOS and travel speeds along a roadway.

The LOS is a qualitative measure of describing operational conditions within a traffic stream or at an intersection, generally described in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. The LOS are designated A through F (A being the best and F the worst) and cover the entire range of traffic operations that may occur. Descriptions of LOS A through F are presented in **Table 6-10**.

In addition to comparing traffic volumes between 2030 non-toll and toll scenarios (**Section 5.3.3**), NCTCOG generated a performance report for the proposed project. (**See Appendix C: NCTCOG Complete Performance Reports**.) NCTCOG Complete Performance Reports are designed to document the performance of the regional traffic model, reporting items such as total miles of roadway within a defined area, number of trips generated, average time to make the trip, and the LOS of all major roadway classifications. The Complete Performance Report modeled the 2030 non-toll and toll scenarios. The boundary (or study area) for the Complete Performance Report encompasses the Cities of Plano, Frisco, Allen, McKinney, and the Town of Fairview and spans approximately 320 square miles. Approximately 82 percent of all trips anticipated to utilize SH 121 in 2030 (toll scenario) originate within these five municipalities. [44]

A project level comparison of the SH 121 non-toll and toll scenarios was performed utilizing updated traffic projections and modeling based on the *Mobility 2030* traffic network. A system level comparison was also conducted to determine the impact of tolling on the traffic network for the five adjacent municipalities. Results of the two analyses are reported in terms of LOS to describe the anticipated change in traffic flow conditions along SH 121.

[44] Trip data generated from O&D analysis discussed in **Section 5.3.8**.

Project Level Analysis

The project level analysis entailed the comparison of non-toll and toll traffic volumes. The proposed Toll Project Limits were divided into three sections according to current development and usage: 1) DNT to Coit Rd., 2) Coit Rd. to Alma Dr., and 3) Alma Dr. to SH 121 at US 75 interchange.

A comparison of the SH 121 non-toll and toll scenarios indicates that some traffic would redistribute to the frontage roads over the tolled mainlanes if SH 121 is implemented as a tolled facility. **Table 6-11** summarizes the anticipated 2030 LOS due to the change in traffic along SH 121 for the non-toll and toll scenarios.

Overall, the changes in traffic volume do not represent a substantial change in demand, as LOS would stay the same between DNT to Coit Rd., would improve at the mainlanes between Coit Rd. and SH 121 At US 75 Interchange, and the LOS would decline by one level (decline) on the frontage roads between Coit Rd. and SH 121 At US 75 Interchange. These results demonstrate that the transportation network is dynamic and that:

- Unused capacity on the frontage roads is utilized in less congested locations, and
- As congestion increases, drivers who elect or can only on occasional basis afford to pay tolls choose the route that offers less delays.

System Level Analysis

A system level analysis was conducted using the Complete Performance Reports provided by NCTCOG. According to the performance reports, the tolling of SH 121 does not appear to cause substantial changes in LOS on the local arterials or collectors. **Table 6-12** shows a summary of LOS changes provided by the Complete Performance Report for the major classes of roadways within the study area. Additionally, **Appendix A, Figure 5: 2030 Traffic Redistribution Tolling Scenario** shows the effect of tolling, in vehicles per day, on the transportation network within the Cities of Plano, Frisco, Allen, McKinney, and the Town of Fairview. As seen in **Table 6-12**, the total number of lane-miles in each LOS category/roadway type remains nearly unchanged when tolling is implemented.[45]

Additionally, the 16 local arterials described in **Section 5.3.3** were analyzed for changes in LOS and changes in average speed on a "link by link" basis. See **Appendix C: Difference in**

[45] Lane-miles are calculated by multiplying the centerline roadway length by the number of through lanes.

AM Peak Period LOS Due to Tolling, Difference in PM Peak Period LOS Due to Tolling, Difference in Daily LOS Due to Tolling, and Difference in Arterial Speed Due to Tolling. Results from the link by link analysis indicate that of the 231 links analyzed; only 6.5 percent (15 links) have an LOS that worsens under the toll scenario. Similarly, the PM peak period LOS indicated that only 2.6 percent (6 links) have an LOS that is worse under the tolling scenario. When the LOS is averaged for the daily values, the local transportation system has 3.9 percent of the links (9 links) that have a worse LOS. When analyzed for speed, the results indicate that the average AM Peak Hour change in speed decreases 0.01 MPH. The largest decrease in speed (3.34 MPH) occurred on FM 3537 between Custer Rd. and Alma Dr. The largest increase in speed (3.42 MPH) occurred on Exchange Parkway between Ridgeview Dr. and Alma Rd. PM Peak Hour Speeds showed similar results. The average PM speed declined 0.10 MPH. The largest decline in speed (1.70 MPH) occurred on Eldorado Parkway between US 75 and Medical Center Blvd. and the largest increase in speed (1.62 MPH) occurred on Exchange Parkway between Ridgeview Dr. and Alma Dr.

According to the Complete Performance Reports provided by NCTCOG, vehicle hours of total delay (signalized delays and congestion delays) within the Cities of Plano, Frisco, Allen, McKinney, and the Town of Fairview decrease 0.53 percent when SH 121 is tolled (198,437.91 hours of delay/day toll versus 199,490.41 hours of delay/day non-toll). Overall, this percent change would result in minimal effect to users of the major/minor arterials and frontage roads in the study area. The Complete Performance Reports also indicated the average free speed of used roadways [miles per hour (MPH)] is virtually unchanged between the 2030 toll and non-toll scenarios. **Table 6-13** illustrates the anticipated change in free speed for the toll and non-toll scenarios. According to the Texas Transportation Institute (TTI), the most recent value of travel delay (2005 dollars) is $14.60/hour of delay for non-commercial vehicles and $77.10/hour for commercial vehicles.[46] Using the cost for non-commercial vehicles, there would be a benefit of $15,336.50 per day (2005 dollars) to the users within the incorporated limits of the five municipalities adjacent to SH 121 should SH 121 become a toll facility.[47]

Traffic Operations Summary

The LOS comparison derived from the NCTCOG 2030 traffic volumes and Complete Performance Report reflecting the SH 121 non-toll and toll scenarios reveals minimal change in the frontage road LOS due to changes in traffic patterns and minimal change in the LOS in the

[46] *2007 Annual Urban Mobility Report*, Texas Transportation Institute, the Texas A&M University System, 2007.
[47] The Annual Urban report was released on September 7, 2007.

adjacent transportation network. Additionally, the analysis reveals slight improvements in the congestion delay experienced and average free speeds along the local transportation network.

Traffic Operations Indirect Impacts to Traffic Noise

An analysis was conducted to determine the potential impacts the proposed Toll Project would have on noise levels within the municipalities adjacent to SH 121. These effects were based on the amount of change (increase) in noise levels that would result from the redistribution of traffic onto collectors and minor arterials within these municipalities. According to FHWA's Noise Policy/Guidance, a noise level change of 3 dB is barely perceptible to the human ear. As indicated in **Table 6-14**, the average traffic noise level change (increase) in each municipality would be well below 1 dB and; therefore, there would be no associated, perceptible indirect effects and no mitigation would be warranted.

Traffic Noise

Direct Impacts

The previously approved traffic noise analysis, conducted in 1991 and re-evaluated in 2002, concluded that the project would result in a traffic noise impact with no feasible and reasonable abatement. A current land use analysis indicated that although there has been new development within the project area, none of the development adjacent to the Toll Project would be impacted by traffic noise and benefit from any feasible and reasonable noise abatement.

This re-evaluation included an analysis of the potential effects of the redistribution of traffic on SH 121 from tolled mainlanes to non-tolled frontage roads. These affects were determined by the associated change (increase or decrease) in sound pressure [noise] levels expressed in decibels (dB). Although the toll facility would result in an increase in the average daily traffic (ADT) on many of the non-tolled frontage roads, any increase in noise levels associated solely with an increase in traffic on the frontage roads would be offset by the greater decrease (ADT) in faster (louder) traffic on the tolled mainlanes (**Table 5-8**). The result would be an overall decrease in noise levels for areas along/adjacent to SH 121.

Based on the above information (current land use and **Table 5-8**), the conclusion of the original analysis remains valid for the proposed toll facility.

Future land use and zoning maps obtained from the Cities of Plano, Frisco, Allen, McKinney, and the Town of Fairview currently indicate that the undeveloped land directly

adjacent to the proposed project would be developed for more noise compatible (non-residential) land uses.

As discussed in **Section 5.3.4**, a noise analysis was performed to determine any potential traffic noise effects resulting from the redistribution of traffic on SH 121 from tolled mainlanes to non-tolled frontage roads. These affects, which were determined by the associated change (increase or decrease) in sound pressure [noise] levels expressed in decibels (dB), would be offset by the greater decrease (ADT) in faster (louder) traffic on the tolled mainlanes. The result would be an overall decrease in noise levels for areas along/adjacent to SH 121.

Indirect Impacts

An analysis was conducted to determine the potential impacts the proposed Toll Project would have on noise levels within the municipalities adjacent to SH 121. These effects were based on the amount of change (increase) in noise levels that would result from the redistribution of traffic onto collectors and minor arterials within these municipalities. According to FHWA's Noise Policy/Guidance, a noise level change of 3 dB is barely perceptible to the human ear. As indicated in **Table 6-14**, the average traffic noise level change (increase) in each municipality would be well below 1 dB and; therefore, there would be no associated, perceptible indirect effects and no mitigation would be warranted.

Socio-Economic Impacts

Direct Impacts

Access

Access to the mainlanes of SH 121 would be limited to those who elect or can only on occasional basis afford to pay the toll. The SH 121 frontage roads would include a total of six travel lanes (three in each direction) and would provide a non-toll alternative for motorists who do not elect or can only on occasional basis afford to travel the tolled mainlanes. Under normal operating conditions, motorists (including emergency vehicles) using the frontage roads would experience longer travel times than motorists using the tolled mainlanes due to a lower posted speed limit and traffic signals along the frontage roads. According to traffic data and Complete Performance Reports generated by the NCTCOG, the frontage road system shows an increase in total delays (signalized delays and congestion delays) under a toll scenario (20,992.17 hours of delay/day under the toll scenario vs. 20,514.72 hours of delay/day under the non-toll scenario). See **Section 5.3.3** for additional analysis regarding traffic impacts.

The difference in travel times between the tolled mainlanes and the non-tolled frontage roads would be the highest during peak periods of travel when traffic congestion within the SH 121 project limits would be the greatest. However, the overall added capacity the on-going and remaining construction provides would relieve traffic congestion for all motorists using SH 121 whether they use the mainlanes or frontage roads compared to the existing facility. Furthermore, motorists would have access to the same number of non-toll lanes within the proposed Toll Project Limits (i.e. frontage roads) as currently exist.

Non-Toll Alternatives

Alternative non-toll routes include the SH 121 frontage roads, that would include a total of six travel lanes (three in each direction), as well as local arterial roadways (i.e. Legacy Dr., Lebanon Dr., Hedgcoxe Rd., and Main St./FM 720/McKinney Ranch Pkwy., etc.). The use of frontage roads would provide non-tolled alternatives for motorists who do not elect or can only on occasional basis afford to travel the tolled mainlanes. Motorists using the frontage road may experience longer travel times than motorists using the tolled mainlanes due to a lower posted speed limit and signalization. This difference in travel times between the tolled mainlanes and the non-tolled frontage roads would be the highest during peak periods of travel when traffic congestion within the proposed Toll Project Limits would be greatest. **Section 5.3.3** examines the anticipated changes in LOS associated with the proposed Toll Project. Comparison of 2030 traffic volumes reflecting the SH 121 non-toll and toll scenarios reveals minimal change in LOS for both the frontage road and adjacent transportation network.

Indirect Impacts

Access

Examples of indirect impacts that could potentially occur or may have already occurred as a result of the SH 121 would be the influx of businesses that depend on proximity to freeways with frontage roads, and increased business patronage due to improved access from highway improvements. Similarly, residential development could be enhanced due to improved access provided by the proposed Toll Project.

Economic Impact of Tolling

Direct Impacts

Toll Rate

The toll rates for SH 121 would be consistent with other toll rates in the region. The toll rates guidelines for SH 121 are the result of public outreach and decisions made by the RTC. In September 2006, the RTC agreed on the following business terms for setting the toll rates along SH 121: 1) Maximum average toll rate in 2010 would be 14.5 cents per mile and 2) Transit and emergency vehicles would be exempt from toll charges. (See **Appendix B: Business Terms for TxDOT-Sponsored Toll Roads on State Highways**.)

Toll rates for SH 121 would be determined prior to the facility opening. Potential impacts from the proposed Toll Project can be illustrated using the following scenario.

For example, assume that the toll rate would be set at 14.5 cents per mile and that the average household would make 250 round-trips per year.[48] Under this scenario, the annual cost to use the entire 12.5-mile tolled section of SH 121 would be approximately $906 per year. A user with an annual household income equal to the median household income of Collin County ($70,835) would spend less than two percent (1.2 percent) of their annual household income on SH 121 tolls. However, households with incomes at or below the poverty level of $20,650 (for a family of four) would spend 4.3 percent of the annual household income on SH 121 tolls, approximately 3.1 percent more than the median Collin County household. Toll road users might decide to reduce their personal economic impact of tolls by carpooling or using transit, where tolls would be divided among many travelers or waived for the transit provider.

Methods of Toll Charge Collection[49]

TxDOT TxTag® stickers, the NTTA TollTag® (Dallas area), and the HCTRA EZ TAG® (Houston area) would be accepted on the SH 121 ETC facility. Toll charges could be automatically deducted from a prepaid credit account or would be mailed as a monthly statement to the driver if the video billing method is utilized. If the driver has a TxTag® or other toll transponder account, the tolls would automatically be deducted from the account when the facility is used. The account would be a prepay account which means the driver must maintain

[48] Average number of work trips per year based on tolling industry observations provided by the NTTA.
[49] Costs and amounts discussed in this section are subject to change as TxDOT, NTTA, and HCTRA policies may vary.

sufficient funds in his/her account to cover incurred toll charges, such as for accounts currently in use for existing toll roads.

TxTag® Account Payment Methods

With a TxTag® "AutoPay" account, the user would pay a minimum installment of $29.65 ($20 credit and a $9.65 one time fee for the TxTag®) through a credit or debit card. The account would then be established with a $20 credit, which would be reduced each time the transponder passes through an operating toll gantry. The account holder's credit or debit card would be automatically charged when the funds in the "AutoPay" account exceed a pre-set threshold value. There is no fee for this service. A user can sign up for "AutoPay" by accessing the account online and providing credit card information or by calling the TxTag® Customer Service Center.

For those who choose to maintain a prepaid TxTag® "Manual Pay" account, an initial deposit of $9.65 would be required for the toll transponder, as well as a $20 payment to establish the account. The account would then be established with a $20 credit, which would be reduced each time the transponder passes through an operating toll gantry. The user would be responsible for maintaining sufficient funds in his/her account to cover incurred toll charges. Toll rates would be the same as "AutoPay" account toll rates. "Manual Pay" accounts can be replenished via credit card, cash, or check/money order. Paying by credit card can be handled online (www.TxTag.org), via the phone (1-888-468-9824), or at the TxTag® Customer Service Center located in Austin, Texas. Cash payments must be made at the TxTag® Customer Service Center in Austin. Check or money orders can be taken or mailed to the TxTag® Customer Service Center in Austin.

The TxTag® sticker must be permanently placed on the windshield and cannot be moved between vehicles without damaging the toll transponder. If a user has more than one vehicle, the user can order more transponders and manage them all through one account. Regardless of the user type, TxTag® accounts may be monitored free of charge via the internet. Should the user request a monthly invoice, a $1.00 charge per five pages invoiced would be incurred each month.

TollTag® Account Payment Methods

With a TollTag® prepaid "credit user" account, the driver would pay a minimum amount of $40 installment through a credit or debit card. The account would then be established with a $40 credit, which would be reduced each time the transponder passes through an operating toll gantry. When the driver's account reaches $10 or less, the "credit user" credit or debit card

would again be charged $40 to automatically increase the available balance. Should the "credit user" lose or fail to surrender the TollTag® when the account is closed, the credit or debit card would be charged $25 to cover the cost of the transponder.

Similar to the TxTag® "Manual Pay" account, the NTTA also allows cash payments. For those who choose to maintain a prepaid "cash user" account, an initial deposit of $25 would be required for the toll transponder as well as a $40 payment to establish the account. Per NTTA policy, this automatic deposit is required of "credit user" accounts. The "cash user" deposit can be refunded without interest if the user returns the transponder in good condition or if the "cash user" account is converted into a "credit user" account. The prepaid "cash user" account would require the driver to maintain sufficient funds in his/her account to cover incurred toll charges. Toll rates would be the same as "credit user" account toll rates. When passing through a toll lane equipped with a traffic signal, a yellow light on the traffic signal indicates that the account balance is at or below $10. A red light indicates that the account balance is $0. The NTTA must receive payment at one of the TollTag® locations before the account reaches $0 to avoid the incurrence of toll violations.

The TollTag® may only be displayed in the vehicle specifically assigned to that TollTag®. The license plate number of a vehicle listed on the TollTag® account can not be registered on another TollTag® account. Regardless of the user type, TollTag® accounts may be monitored free of charge via the internet. Should the user request a monthly invoice, a $1.50 charge would be incurred each month.

Video Billing Payment Methods

Through a system known as video billing, it would still be possible to drive the mainlanes of SH 121 without an electronic toll transponder or prepaid user account. The user's license plate would be recorded and matched to the State's vehicle registration file, and a monthly bill would be mailed to the registered owner of the vehicle for the accumulated toll charges. The toll rates for drivers without a toll transponder would include an additional percentage toll rate premium plus an incidental administrative fee commensurate with the costs related to processing the vehicle registration information.

The owner of the vehicle may be charged a toll rate premium of up to 45 percent, which is to offset the costs related to processing license plate information. In addition to this premium, incidental administrative fees would be incurred. These include such things as costs to prepare and mail the monthly statements.

For example, assume that the toll rate would be set at 14.5 cents per mile and that a low-income individual would make 20 round-trips per month traveling from the City of McKinney to places of employment in the City of Frisco (approximately 6 miles one-way). Assuming this toll rate, the cost to drive SH 121 with a TxTag® would be approximately $417.60 a year. This equates to 2.0 percent of an income at or below the poverty level of $20,650 (for a family of four). For a low-income individual who does not have a TxTag® account, the cost to drive the same amount of mileage, including the $1.00 processing fee for mailing the monthly statement and a maximum toll rate premium of 45 percent, would be 3.0 percent of a yearly income at or below the poverty level of $20,650 (for a family of four). This scenario demonstrates that not maintaining a pre-paid TxTag® account results in higher costs for those who utilize the video billing option.

The maximum processing fee is allowed to increase proportionally with the toll rate. There is no interest charged on unpaid tolls; however, there are delinquent penalty fees associated with an unpaid or delinquent bill. Common penalties are listed below:[50]

Returned Check (Insufficient Funds)	$25.00
Administrative Fee - Violation Notice *	$5.00
Administrative Fee - Violation in Collections *	$25.00
Administrative Fee - Violation Sworn Complaint Issued *	$100.00

* Fee amounts are pending final determination and will be adjusted annually per Texas Administrative Code.

If the registered owner does not have a toll transponder, he/she would receive a bill every month for the balance. There is no minimum threshold for video billing to occur. As with the prepaid account, video billing would allow for cash or credit payments.

Comparison of Payment Methods

Not maintaining a prepaid account would impact any user, including low-income users, because the cost of paying the accumulated toll charges without an account would represent a higher toll rate than toll charges affiliated with a prepaid account. Cash payment options are available for each payment method; however, only those users who maintain automatic and manual pay prepaid accounts would benefit from reduced toll rates compared to the video billing policy. In summary, toll rates are generally one-third more for drivers who do not have an electronic toll transponder to offset the costs related to processing the license plate information

[50] Texas Department of Transportation, http://www.txtag.org/

associated with video billing. Although certain toll transponder account holders are required to pay up-front fees or deposits for toll transponders ($9.65 fee per transponder for TxTag® accounts and $25 deposit for TollTag® "cash users" accounts), the toll transponder account holders would benefit from lower toll rates compared to the total toll rates associated with video billing. In other words, the up-front fees associated with toll transponders may be offset through time when considering the premium and processing fees affiliated with the video billing method of payment.

Lighting and Visual

Direct Impacts

The toll gantries are an additional visual element associated with the proposed Toll Project. The gantries would include various components of video enforcement equipment such as cameras, lighting, and an interface with the electronic toll transponders. Although additional lighting would be incorporated as part of the violation enforcement system, these additional lighting components would add minimal lighting in comparison to the lighting structures currently planned for the roadway currently under construction. The gantry lighting design, although not complete at this time, would be designed to minimize glare and ambient lighting.

Indirect Impacts

As stated previously, the proposed Toll Project would not affect land use within the indirect impacts study area and would not result in induced development; therefore, lighting and visual impacts associated with development in the study area would not be an indirect effect of the proposed Toll Project.

Step 5: Reasonably Foreseeable Actions - Community

Air Quality

The states where the nonattainmnet areas are located are required to submit a SIP to the EPA. The SIP document is a collection of regulations that explain how the State would reduce emissions and help meet ozone standards. Nine counties are designated nonattainment for ground level ozone in the DFW area, including: Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Tarrant and Rockwall Counties. As such, the long-range financially constrained plan known as *Mobility 2030* is required to be in conformity with the SIP for air quality. Any future widening of the facility would be required to be consistent with the MTP and TIP documents,

and therefore meet conformity with the SIP.

Land use changes associated with Regional Toll Revenue Funding Initiative projects could potentially result in an increase in air emissions, as the potential acceleration of land use changes associated with Regional Toll Revenue Funding Initiative projects or other land use changes may result in an increase of on-road mobile sources (e.g., cars), new area sources (e.g., dry cleaners), and new point sources (e.g., refineries). In order to reduce ozone, the SIP is implemented to reduce emissions of the ozone precursors, VOC and NOx. The Regional Toll Revenue Funding Initiative projects that are regionally significant would be required to be consistent with the conforming MTP/TIP. In summary, it is anticipated that new area sources and/or industry/manufacturing point sources would meet necessary federal and Texas CAA provisions to prevent air quality degradation.

If excess toll revenues occur as a result of tolling SH 121, then transportation improvements (i.e., in the case of Regional Toll Revenue Funding Initiative projects) could be constructed sooner than planned under financial constraints from traditional funding. As Regional Toll Revenue Funding Initiative projects are constructed years earlier than planned, the improvements would redistribute some traffic throughout portions of the community before the technological advancements demonstrated graphically in **Figure 5-1** are fully realized through improved technology and fuel.

Because Regional Toll Revenue Funding Initiative projects associated with the proposed tolling of SH 121 in Collin County have yet to be identified by the RTC, project specific information such as the type of project, how long in advance would the projects be open to traffic, etc. is not available. However, the environmental documents prepared for each of these projects would address specific air quality issues pertinent to each project. Any Regional Toll Revenue Funding Initiative project considered to be regionally significant would be required to be consistent to the conforming TIP and MTP.

Tolling

Existing toll facilities that factor into the cumulative impacts of the proposed toll system include DNT, PGBT, Addison Airport Toll Tunnel (AATT), Mountain Creek Lake Bridge (MCLB), and SH 121 in Denton County. Linkage to these toll facilities would be available to users of SH 121 as well as the non-tolled alternatives associated with those existing toll facilities. Other reasonably foreseeable toll projects in the immediate area include the northward expansion of DNT from Gaylord Parkway to US 380, construction of the Lewisville Lake Toll Bridge, SH

161, and managed lane improvements along the IH 635 corridor. Additional foreseeable toll projects in the RSA include the Regional Outer Loop, Loop 9, SH 170, Trinity Parkway, SH 190 East, SH 360 southern extension, and the Southwest Parkway in Fort Worth.

The 2007 transportation network for North Central Texas (calculated in mainlane lane-miles) consists of 4,397 lane-miles.[51] Of the total system, 434 of the lane-miles are tolled and 3,963 are non-tolled. In other words, the tolled mileage accounts for approximately 11 percent of the 2007 North Central Texas network. The anticipated 2030 transportation network for North Central Texas (also calculated in mainlane lane-miles) would consist of approximately 8,569 mainlane lane-miles[52], of which 30 percent (approximately 2,542 lane-miles)[53], are proposed to be tolled.[54] The anticipated increase of tolled mainlanes from 11 to 30 percent is indicative of an emerging regional tolling network. Of the anticipated lane-miles accounted for in the 2030 network, the proposed tolling of SH 121 would contribute 75 tolled lane-miles.

Traffic Operations

Numerous added capacity projects within the NCTCOG MPA were identified in NCTCOG's *Mobility 2030*. It is anticipated that these projects would be implemented in an accelerated timeframe due to the availability of up-front payments and redistribution of federal funding associated with the Regional Toll Revenue Funding Initiative projects that would otherwise have been used to construct SH 121.

Traffic Noise

The highway traffic noise associated with the proposed Toll Project and all other noise sources associated with past, present, and reasonably foreseeable future actions (including Regional Toll Revenue Funding Initiative projects, other transportation improvements, and other forms of commercial/residential/industrial development) were analyzed to determine their likely cumulative effects on the communities in the study area. The results indicated that highway traffic is, and would continue to be, the primary/dominant source of noise. The direct and indirect impacts/effects due to highway traffic noise have been addressed in previous sections of this re-evaluation. No other sources of noise associated with any other past, present, or future

[51] Mainlane lane-miles are calculated by multiplying the centerline roadway length by the number of through lanes. Mainlane lane-miles were utilized for this analysis in lieu of center-line lane-miles because measuring center-line miles on free (gas tax-funded) lanes and managed lanes on the same facility is not accurate.
[52] The 8,569 mainlane lane-miles is comprised of 5,034 free lane-miles, 2,542 tolled lane-miles, and 993 managed lane-miles.
[53] The 2,542 tolled lane-miles count does not include the 993 managed lane-miles. It should be noted that some of these 993 lane-miles may be tolled or non-toll.
[54] North Central Texas Council of Governments, *Mobility 2030: The Metropolitan Transportation Plan*.

actions are expected to substantially affect the overall noise environment.

Lighting and Visual

The RSA is undergoing a rapid transition toward a more intense urbanization. This transition will entail many types of development such as the Regional Toll Revenue Funding Initiative projects, additional transportation projects associated with *Mobility 2030*, and other forms of typical land use development (commercial, residential, industrial, etc.). Each form of future development would involve varying degrees of lighting and visual elements.

Step 6: Cumulative Impacts Assessment - Community

Air Quality

The cumulative impact on air quality from the proposed project and other reasonably foreseeable transportation projects are addressed at the regional level by analyzing the air quality impacts of transportation projects in the MTP and the TIP. The proposed project and the other reasonably foreseeable transportation projects were included in the MTP and the TIP and have been determined to conform to the ozone nonattainment SIP.

The DFW region is expected to continue to experience substantial population growth, urbanization, and economic development. The cumulative impact of reasonably foreseeable future growth and urbanization on air quality would be minimized by enforcement of federal and state regulations, by the EPA and TCEQ, which are mandated to ensure that such growth and urbanization would not prevent compliance with the ozone standard or threaten the maintenance of the other air quality standards, along with regulated entities in compliance with regulations.

All throughout the region, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions of on-road emissions including CO, MSAT and the ozone precursors (VOC and NOx). Modeling results under the worst case conditions indicate that CO concentrations would not exceed the NAAQS for the toll scenario either in 2015 or 2030. MSAT emissions would be reduced as fewer cars are anticipated to travel the mainlanes and therefore provide relief to the traffic congestion, which would otherwise occur under the non-toll condition. Less congestion translates into less cars traveling at lower speeds or idling conditions, for shorter periods of time during peak periods (heavy traffic) and result in less fuel combustion and lower idling emissions. In addition, a quantitative MSAT analysis indicates that by 2030, although VMT increases, MSAT emissions would decrease by 51 percent when compared to 2007. Please refer to **Section 5.1.8** for further details. Likewise, **Figure 7-1** and

Table 7-3 show that although VMT in the DFW area is projected to increase over time, VOC and NOx on-road emission trends are expected to decrease over time.

Environmental Justice

Historically, TxDOT has financed highway projects on a "pay-as-you-go" basis, using motor fuel taxes and other revenue deposited in the State highway fund. However, population increases and traffic demand have outpaced the efficiency of this traditional finance mechanism. As funding mechanisms evolve, the trend towards utilization of toll facilities in this region would through time create "user impacts" as access to highway systems becomes an issue to the economically disadvantaged.

Toll Rates and Low-Income Populations

As acknowledged in the environmental justice assessment (**Section 5.3.8**), the economic impact of tolling would be higher for low-income residents since the cost of paying tolls would represent a higher percentage of household income than for non-low-income households.

SH 121, as an element of the system of toll roads now being developed for the greater-DFW area, would contribute to a cumulative impact on low-income users of the system. If one were to assume usage of the entire 2030 proposed 419 mile toll system at an estimated toll rate of 14.5 cents per mile, the total cumulative cost for one complete trip would be approximately $60.75 (2010 future value). Although it is likely that a user may routinely travel one or more elements of the toll system en-route to and from various destination points throughout the city, it is unlikely that the user would travel the entire length of those elements. Further, given the lay-out and orientation of the regional system, it is virtually inconceivable that a driver would routinely travel the entire length of the entire system during the course of normal activities.

System Level Analysis

Currently, no travel time analysis of the proposed 2030 transportation network's impact on environmental justice communities in the RSA is available from NCTCOG or other government agencies. However, an O&D model prepared by NCTCOG (see **Section 5.3.8**) was analyzed regarding travel patterns of identified low-income and/or minority populations who may or may not utilize the proposed SH 121 ETC facility in 2030.

A system level analysis for LOS impacts associated with the implementation of tolling along SH 121 is provided in **Section 5.3.3**. According to the Complete Performance Reports provided by NCTCOG, vehicle hours of total delay (signalized delays and congestion delays)

within the Cities of Allen, Frisco, McKinney, Plano and the Town of Fairview decrease 0.53 percent when SH 121 is tolled (198,437.91 hours of delay/day toll versus 199,490.41 hours of delay/day non-toll). Additionally, the Complete Performance Report indicates the LOS for arterial streets in the cities have a slight improvement. As stated earlier, non-toll alternatives would be available to all travelers, including low-income populations, via frontage roads (when available) and local arterials. The use of these alternative non-toll routes may result in a difference in time travel due to a lower speed limit and signalization.

The 2007 transportation network for North Central Texas (calculated in mainlane lane-miles) consists of 4,397 lane-miles.[55] Of the total system, 434 of the lane-miles are tolled and 3,963 are non-tolled. In other words, the tolled mileage accounts for approximately 11 percent of the 2007 North Central Texas network. The anticipated 2030 transportation network for North Central Texas (also calculated in mainlane lane-miles) would consist of approximately 8,569 mainlane lane-miles[56], of which 30 percent (approximately 2,542 lane-miles)[57], are proposed to be tolled.[58] The anticipated increase of tolled mainlanes from 11 to 30 percent is indicative of an emerging regional tolling network. Of the anticipated lane-miles accounted for in the 2030 network, the proposed tolling of SH 121 would contribute 75 tolled lane-miles. It is reasonable to assume that there would be a cumulative effect on environmental justice populations upon build-out of the toll system. The emerging tolling network may create a net loss of free mainlane access for those who do not elect or can only on occasional basis afford to travel on tolled facilities.

Traffic Operations

In terms of traffic operations, the effects of the Toll Project would generally be realized as direct and indirect effects (described in **Sections 5.3.3 and 6.0**); the only cumulative effects would stem from implementation of the Regional Toll Revenue Funding Initiative projects. The improved mobility and reduced congestion resulting from the Regional Toll Revenue Funding Initiative projects would be positive and potentially felt throughout Collin, Dallas, Denton, and

[55] Mainlane lane-miles are calculated by multiplying the centerline roadway length by the number of through lanes. Mainlane lane-miles were utilized for this analysis in lieu of center-line lane-miles because measuring center-line miles on free (gas tax-funded) lanes and managed lanes on the same facility is not accurate.

[56] The 8,569 mainlane lane-miles is comprised of 5,034 free lane-miles, 2,542 tolled lane-miles, and 993 managed lane-miles.

[57] The 2,542 tolled lane-miles count does not include the 993 managed lane-miles. It should be noted that some of these 993 lane-miles may be tolled or non-toll.

[58] North Central Texas Council of Governments, *Mobility 2030: The Metropolitan Transportation Plan*.

Tarrant Counties. No adverse traffic operations cumulative effects would be anticipated.

Traffic Noise

The traffic noise associated with the proposed Toll Project and all other noise sources associated with past, present, and reasonably foreseeable future actions were analyzed to determine their likely cumulative effects on the communities in the study area. The results indicated that highway traffic is, and would continue to be, the primary/dominant source of noise. As discussed in previous sections, there would be no direct or indirect effects associated with the proposed Toll Project, and no other reasonable and foreseeable actions are expected to substantially affect the overall noise environment; therefore, no cumulative impacts to the community due to traffic noise are anticipated.

Socio-Economic Impacts

The socio-economic impacts associated with the proposed Toll Project associated with the past, present, and reasonably foreseeable future actions were considered to determine their likely cumulative effects on the communities in the study area. Access to the mainlanes of the emerging tolling network would be limited to those who elect or can only on occasional basis afford to pay the toll. The difference in travel times between the tolled mainlanes and the non-tolled frontage roads would be the highest during peak periods of travel when traffic congestion within the future regional transportation network would be the greatest. However, the overall added capacity the on-going and future transportation improvements provides would relieve traffic congestion for all motorists of the regional transportation network whether they use the mainlanes or frontage roads compared to the existing network.

Economic Impacts

The anticipated increase of tolled mainlanes in the regional transportation network from 11 to 30 percent (between 2007 and 2030) is indicative of an emerging regional tolling network. Of the anticipated lane-miles accounted for in the 2030 network, the proposed tolling of SH 121 would contribute 75 tolled lane-miles. It is reasonable to assume that there would be a cumulative effect on environmental justice populations upon build-out of the toll system; however, given the lay-out and orientation of the regional system, it is virtually inconceivable that a driver would routinely travel the entire length of the entire system during the course of normal activities. The emerging tolling network may create a net loss of free mainlane access for those who do not elect or can only on occasional basis afford to travel on tolled facilities.

Lighting and Visual

The lighting and visual impacts associated with the proposed Toll Project and other identified development types (transportation, commercial, residential, industrial etc.) were considered to determine their likely cumulative effects on the communities in the study area. The direct effects due to lighting and visual impacts have been addressed in **Section 5.3.6** of this re-evaluation. It was determined that lighting and visual effects would not be an indirect impact of the proposed Toll Project; thus, would not substantially affect the overall lighting and visual element of the community.

7.4 Environmental Justice

Step 1: Resource Identification - Environmental Justice

The proposed toll facility has the potential to directly impact low-income populations. A higher percentage of their income would be required to utilize the facility, than that of higher income populations.

Step 2: Resource Study Area - Environmental Justice

The RSA for socio-economic conditions is the NCTCOG MPA within which the regional toll system (of which SH 121 would be an element) is located. Quantitative U.S. Census Bureau data (*Census 1990*, *Census 2000* and 2005 American Community Survey) was evaluated to assess the potential for disproportionately high and adverse effects on minority and low-income populations. The temporal boundaries for the cumulative effects analysis are the years 1990 to 2030. The early date was established because the region experienced unprecedented growth between 1990 and 2000 and the census data for the year 1990 is available. Present actions are those actions which have occurred between 2000 and 2005. The year 2030 was chosen to correlate with NCTCOG's *Mobility 2030*.

Step 3: Resource Health and Historical Context - Environmental Justice

The thresholds used to identify areas with high concentrations of low-income and/or minority populations in the study area were set based on the definitions of low-income and minority established in the FHWA Order and by the CEQ, Environmental Justice Guidance under NEPA documentation.

Table 7-4 lists a comparative breakdown of environmental justice populations for each of the counties located within the NCTCOG MPA for the years 1990 and 2005. The total environmental justice population percentage for the RSA increased by approximately 21.8 percent between 1990 and 2005.

Of the counties located within the RSA, Dallas County contained the largest concentration of minority and/or low-income populations in 2005. Dallas County exhibits a minority population of approximately 64 percent and a low-income population (those living below the 2007 $20,650 poverty threshold for a family of four) of 17 percent. The remaining RSA counties exhibit minority populations which range from approximately 11 to 44 percent and low-income populations ranging from approximately 5 to 15 percent.

Step 4: Direct and Indirect Impacts - Environmental Justice

No significant direct socio-economic effects would result from tolling SH 121. The project impacts would not be isolated within a limited number of census tracts, but would be incurred by all users, including minority and low-income users, of the SH 121 facility. Although the impacts would not be significant, it should be noted that low-income populations would be impacted by toll rates, toll collection, and other matters associated with user fees.

For example, assume that the toll rate would be set at 14.5 cents per mile and that the average low-income household would make 20 round-trips per month traveling from the City of McKinney to places of employment in the City of Frisco (approximately 6 miles one-way). Assuming this toll rate, the cost to drive SH 121 with a TxTag® would be approximately $417.60 a year. This equates to 2.0 percent of an income at or below the poverty level of $20,650 (for a family of four). For a low-income individual who does not have a TxTag® account, the cost to drive the same amount of mileage, including the $1.00 processing fee for mailing the monthly statement and a maximum toll rate premium of 45 percent, would be 3.0 percent of a yearly income at or below the poverty level of $20,650 (for a family of four). This scenario demonstrates that not maintaining a pre-paid TxTag® account results in higher costs for those who utilize the video billing option.

Should a low-income person be unable to pay the toll, this may result in a difference of time travel associated with utilizing non-toll alternatives. In addition, the economic impact of tolling would be higher for low-income users since the cost of paying tolls would represent a higher percentage of household income than for non-low-income users.

Step 5: Reasonably Foreseeable Actions - Environmental Justice

Existing and Foreseeable Tolling Systems

Existing toll facilities that factor into the cumulative impacts of the proposed toll system include DNT, PGBT, Addison Airport Toll Tunnel (AATT), Mountain Creek Lake Bridge (MCLB), and SH 121 in Denton County. Linkage to these toll facilities would be available to users of SH 121 as well as the non-tolled alternatives associated with those existing toll facilities. Other reasonably foreseeable toll projects in the immediate area include the northward expansion of DNT from Gaylord Parkway to US 380, construction of the Lewisville Lake Toll Bridge, SH 161, and managed lane improvements along the IH 635 corridor. Additional foreseeable toll projects in the RSA include the Regional Outer Loop, Loop 9, SH 170, Trinity Parkway, SH 190 East, SH 360 southern extension, and the Southwest Parkway in Fort Worth.

The 2007 transportation network for North Central Texas (calculated in mainlane lane-miles) consists of 4,397 lane-miles.[59] Of the total system, 434 of the lane-miles are tolled and 3,963 are non-tolled. In other words, the tolled mileage accounts for approximately 11 percent of the 2007 North Central Texas network. The anticipated 2030 transportation network for North Central Texas (also calculated in mainlane lane-miles) would consist of approximately 8,569 mainlane lane-miles[60], of which 30 percent (approximately 2,542 lane-miles)[61], are proposed to be tolled.[62] The anticipated increase of tolled mainlanes from 11 to 30 percent is indicative of an emerging regional tolling network. Of the anticipated lane-miles accounted for in the 2030 network, the proposed tolling of SH 121 would contribute 75 tolled lane-miles.

Step 6: Cumulative Impacts Assessment - Environmental Justice

Historically, TxDOT has financed highway projects on a "pay-as-you-go" basis, using motor fuel taxes and other revenue deposited in the State highway fund. However, population increases and traffic demand have outpaced the efficiency of this traditional finance mechanism.[63] As funding mechanisms evolve, the trend towards utilization of toll facilities in

[59] Mainlane lane-miles are calculated by multiplying the centerline roadway length by the number of through lanes. Mainlane lane-miles were utilized for this analysis in lieu of center-line lane-miles because measuring center-line miles on free (gas tax-funded) lanes and managed lanes on the same facility is not accurate.
[60] The 8,569 mainlane lane-miles is comprised of 5,034 free lane-miles, 2,542 tolled lane-miles, and 993 managed lane-miles.
[61] The 2,542 tolled lane-miles count does not include the 993 managed lane-miles. It should be noted that some of these 993 lane-miles may be tolled or non-toll.
[62] North Central Texas Council of Governments, *Mobility 2030: The Metropolitan Transportation Plan*.
[63] North Central Texas Council of Governments. *Mobility 2025: Amended 2005*. http://www.nctcog.org/

this region would through time create "user impacts" as access to highway systems becomes an issue to the economically disadvantaged.

Toll Rates and Low-Income Populations

As acknowledged in the environmental justice assessment (**Section 5.3.8**), the economic impact of tolling would be higher for low-income residents since the cost of paying tolls would represent a higher percentage of household income than for non-low-income households.

SH 121, as an element of the system of toll roads now being developed for the greater-DFW area, would contribute to a cumulative impact on low-income users of the system. If one were to assume usage of the entire 2030 proposed 419 mile toll system at an estimated toll rate of 14.5 cents per mile, the total cumulative cost for one complete trip would be approximately $60.75 (2010 future value). Although it is likely that a user may routinely travel one or more elements of the toll system en-route to and from various destination points throughout the city, it is unlikely that the user would travel the entire length of those elements. Further, given the lay-out and orientation of the regional system, it is virtually inconceivable that a driver would routinely travel the entire length of the entire system during the course of normal activities.

System Level Analysis

As stated previously, the NCTCOG is the metropolitan planning organization responsible for transportation planning in the region including the proposed project. The NCTCOG's long range metropolitan plan (*Mobility 2030*) includes an environmental justice analysis. Specifically, NCTCOG did an accessibility analysis (travel time) comparing the No-Build and Build 2030 roadway and transit networks for various environmental justice and non-environmental justice groups. The analysis concludes that the 2030 plan does not adversely impact protected populations disproportionately when compared to unprotected class populations. However, this analysis did not consider the impacts of tolls. To further investigate the impacts of tolling, an O&D model prepared by NCTCOG (see **Section 5.3.8**) was analyzed regarding travel patterns of identified low-income and/or minority populations who may or may not utilize the proposed SH 121 ETC facility in 2030.

A system level analysis for LOS impacts associated with the implementation of tolling along SH 121 is provided in **Section 5.3.3**. According to the Complete Performance Reports provided by NCTCOG, vehicle hours of total delay (signalized delays and congestion delays)

within the Cities of Allen, Frisco, McKinney, Plano and the Town of Fairview decrease 0.53 percent when SH 121 is tolled (198,437.91 hours of delay/day toll versus 199,490.41 hours of delay/day non-toll). Additionally, the Complete Performance Report indicates the LOS for arterial streets in the cities have a slight improvement. As stated earlier, non-toll alternatives would be available to all travelers, including low-income populations, via frontage roads (when available) and local arterials. The use of these alternative non-toll routes may result in a difference in time travel due to a lower speed limit and signalization.

As stated in Step 5, the anticipated increase of tolled mainlanes in the regional transportation network from 11 to 30 percent (between 2007 and 2030) is indicative of an emerging regional tolling network. Of the anticipated lane-miles accounted for in the 2030 network, the proposed tolling of SH 121 would contribute 75 tolled lane-miles. It is reasonable to assume that there would be a cumulative effect on environmental justice populations upon build-out of the toll system; however, given the lay-out and orientation of the regional system, it is virtually inconceivable that a driver would routinely travel the entire length of the entire system during the course of normal activities. The emerging tolling network may create a net loss of free mainlane access for those who do not elect or can only on occasional basis afford to travel on tolled facilities.

Step 7: Results

Table 7-5 summarizes the existing resource conditions and potential impacts.

TABLE 7-5:
RESOURCES INCLUDED IN THE CUMULATIVE IMPACTS ANALYSIS

Resource Category	Indicator of Resource/Issue Condition	Direct Impacts + Indirect Impacts + Other Actions = Cumulative Impacts			
		Direct Impacts	**Indirect Impacts**	**Other Actions**	**Cumulative Impacts**
Air Quality	NAAQS	The proposed Toll Project is consistent with the area's financially constrained long-range plan known as *Mobility 2030* and the 2006-2008 Statewide Transportation Improvement Program (STIP)/*TIP*. The proposed Toll Project is also found in the Draft 2008-2011 STIP which should be approved by FHWA/FTA in October of 2007.	The proposed toll project would result in some redistribution of traffic within the indirect impacts studies area. Redistribution of traffic could result in indirect air quality impacts. The Toll Project is anticipated to increase non-toll traffic demand along the frontage roads; therefore, the potential exists for localized increase in mobile source air emissions along the frontage roads. However, less congestion is anticipated for the mainlanes under a toll condition, and therefore provides relief to the traffic congestion on the mainlanes. Less congestion translates into less cars traveling at lower speeds or idling conditions, for shorter periods of time during peak periods (heavy traffic) and result in less fuel combustion and lower idling emissions.	Regardless of the proposed Toll Project, other forms of development (i.e. transportation projects, commercial and residential development, etc.) could have an affect on air quality as on-road emission sources may result in an increase. In order to reduce ozone, the SIP is implemented to reduce emissions of the ozone precursors, VOC and NOx. The Regional Toll Revenue Funding Initiative projects that are regionally significant would be required to be consistent with the conforming MTP/TIP and, it is anticipated that new area sources and/or industry/manufacturing point sources would meet necessary federal and Texas CAA provisions to prevent air quality degradation. Therefore, no change in attainment status is expected.	Improvement in the regional transportation system and facilities should serve to reduce congestion on a regional scale. The proposed Toll Project and the other reasonably foreseeable transportation projects were included in the MTP and the TIP and have been determined to conform to the ozone nonattainment SIP. The DFW region is expected to continue to experience substantial population growth, urbanization, and economic development. The cumulative impact of reasonably foreseeable future growth and urbanization on air quality would be minimized by enforcement of federal and state regulations, by the EPA and TCEQ, which are mandated to ensure that such growth and urbanization would not prevent compliance with the ozone standard or threaten the maintenance of the other air quality standards, along with regulated entities in compliance with regulations. All throughout the region, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions of on-road emissions as shown in **Figure 7-1** and **Table 7-3**. In almost all cases, lower emissions will cause VOC and NOx levels to be significantly lower than they are today.
Air Quality	CO	The highest modeled CO concentration corresponds to the Build-non-toll scenario in 2030 between Coit Rd. and Independence Pkwy.	The proposed toll project would result in some redistribution of traffic within the indirect impacts studies area. Redistribution of traffic could result in indirect air quality impacts. The Toll Project is anticipated to increase non-toll traffic demand along the frontage roads; therefore, the potential exists for localized increase in mobile source air emissions along the frontage roads, although the quantitative MSAT analysis indicates the overall MSAT emissions are slightly less for the Build-toll condition versus the Build-non-toll condition. MSAT emissions overall would be reduced as fewer cars are anticipated to travel the mainlanes and therefore provide relief to the traffic congestion, which would otherwise occur under the non-toll condition. Less congestion translates into less cars traveling at lower speeds or idling conditions, for shorter periods of time during peak periods (heavy traffic) and result in less fuel combustion and lower idling emissions.		
Air Quality	MSAT	Regardless of the alternative chosen, emissions would likely be lower than present levels in the future year as a result of EPA's national control programs that are projected to reduce MSAT emissions by 57 to 87 percent between 2000 and 2020, and even more than these reductions when factoring in the recently approved 2007 MSAT rule. Local conditions may differ from these national projections in terms of fleet mix, vehicle turnover rates, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great that MSAT emissions in the study area are likely to be lower in the future in all cases. Although the VMT for the SH 121 Build-toll scenario would increase approximately 92 percent by 2030 when compared to 2007, total MSAT emission for the same scenario would decrease at least 51 percent by 2030. The total MSAT loads for the Build-toll scenario in 2015 is 0.006 ton/day higher than the No-Build scenario. In 2030, total MSAT loads for the Build-toll scenario is 0.001 ton/day lower than the Build-non-toll scenario.		Could potentially result in an increase of MSAT emissions, as the potential acceleration of land use changes associated with Regional Toll Revenue Funding Initiative projects or other land use changes may result in an increase of on-road mobile, new area, and new point sources. MSAT emissions could potentially increase at those locations adjacent to the Regional Toll Revenue Funding Initiative projects as these projects are constructed years earlier than planned, before the technological advancements demonstrated graphically in **Figure 5-1** are fully realized through improved technology and fuel.	

Resource Category	Indicator of Resource/Issue Condition	Direct Impacts + Indirect Impacts + Other Actions = Cumulative Impacts			
		Direct Impacts	**Indirect Impacts**	**Other Actions**	**Cumulative Impacts**
Community	Air Quality	The proposed SH 121 facility (tolled) is consistent with the area's financially constrained long-range plan known as *Mobility 2030* and the 2006-2008 Statewide Transportation Improvement Program (STIP)/TIP. The proposed Toll Project is also found in the Draft 2008-2011 STIP which should be approved by FHWA/FTA in October of 2007. CO concentrations modeled along the ROW, under the worst meteorological conditions, resulted in concentrations well below the NAAQS in 2015 and 2030. Regardless of the alternative chosen, emissions would likely be lower than present levels in the future year as a result of EPA's national control programs that are projected to reduce MSAT emissions by 57 to 87 percent between 2000 and 2020, and even more than these reductions when factoring in the 2007 MSAT rule. Local conditions may differ from these national projections in terms of fleet mix, vehicle turnover rates, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great that MSAT emissions in the study area are likely to be lower in the future in all cases. Six MSAT sensitive receptors were identified within 500 meters distance from the ROW. Even though the VMT for the SH 121 Build-toll scenario would increase approximately 92 percent by 2030 when compared to 2007, total MSAT emissions for the same scenario would decrease at least 51 percent by 2030. The total modeled MSAT emissions for the Build-toll scenario in 2015 is 0.006 ton/day higher than the No-Build scenario. In 2030, total modeled MSAT emissions for the Build-toll scenario are 0.001 ton/day higher than the Build-non-toll scenario.	No change in attainment status is expected. MSAT emissions would be reduced as fewer cars are anticipated to travel the mainlanes and therefore provide relief to the traffic congestion, which would otherwise occur under the non-toll condition. Less congestion translates into less cars traveling at lower speeds or idling conditions, for shorter periods of time during peak periods (heavy traffic) and result in less fuel combustion and lower idling emissions.	No change in attainment status is expected for NAAQS or CO. Could potentially result in an increase of MSAT emissions, as the potential acceleration of land use changes associated with Regional Toll Revenue Funding Initiative projects or other land use changes may result in an increase of on-road mobile, new area, and new point sources. MSAT emissions could potentially increase at those locations adjacent to the Regional Toll Revenue Funding Initiative projects as these projects are constructed years earlier than planned, before the technological advancements demonstrated graphically in **Figure 5-1** are fully realized through improved technology and fuel.	Improvement in the regional transportation system and facilities should serve to reduce congestion on a regional scale. The proposed Toll Project and the other reasonably foreseeable transportation projects were included in the MTP and the TIP and have been determined to conform to the ozone nonattainment SIP. The DFW region is expected to continue to experience substantial population growth, urbanization, and economic development. The cumulative impact of reasonably foreseeable future growth and urbanization on air quality would be minimized by enforcement of federal and state regulations, by the EPA and TCEQ, which are mandated to ensure that such growth and urbanization would not prevent compliance with the ozone standard or threaten the maintenance of the other air quality standards, along with regulated entities in compliance with regulations. All throughout the region, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions of on-road emissions as shown in **Figure 7-1** and **Table 7-3**. In almost all cases, lower emissions will cause VOC and NOx levels to be significantly lower than they are today."
Community	Environmental Justice	Low-income individuals would be impacted as a result of economic impact; those who are unable to travel the toll mainlanes would experience difference in time travel associated with non-toll alternatives.	Low-income individuals would be impacted as a result of economic impact; those who are unable to travel the toll mainlanes would experience difference in time travel associated with non-toll alternatives.	Future added capacity associated with the non-toll Regional Toll Revenue Funding Initiative projects would provide mobility and relieve traffic congestion for all motorists, including environmental justice populations, using the systems funded by the Toll Project.	The economic impact of tolling would be higher for low-income residents since the cost of paying tolls would represent a higher percentage of household income than for non-low-income households. Non-toll alternatives would be available to all travelers, including low-income populations, via frontage roads (when available) and local arterials. The use of these alternative non-toll routes may result in a difference in time travel due to a lower speed limit and signalization. Beneficial cumulative impacts may include the addition of infrastructure improvements constructed to support the increased development and commerce associated with SH 121 Regional Toll Revenue Funding Initiative projects and economic growth in the immediate area. The future added capacity associated with the Regional Toll Revenue Funding Initiative projects would provide mobility and relieve traffic congestion for all motorists using the systems funded by the proposed tolling of SH 121. The percentage of tolled lanes in the regional transportation network will increase 11 percent in 2007 to 30 percent in 2030. This increase is indicative of an emerging tolling network. The emerging tolling network may create a net loss of non-toll mainlane access for those who do not elect or can only on occasional basis afford to travel on tolled facilities.

Resource Category	Indicator of Resource/Issue Condition	Direct Impacts + Indirect Impacts + Other Actions = Cumulative Impacts			
		Direct Impacts	**Indirect Impacts**	**Other Actions**	**Cumulative Impacts**
Community	Traffic Operations	The construction of the SH 121 mainlanes would have positive implications - improved mobility and congestion reduction in Collin County.	The LOS comparison derived from the NCTCOG 2030 traffic volumes and Complete Performance Report reflecting the SH 121 non-toll and toll scenarios reveals minimal change in the frontage road LOS due to changes in traffic patterns and minimal change in the LOS in the adjacent transportation network. Additionally, the analysis reveals slight improvements in the congestion delay experienced and average free speeds along the local transportation network.	The implementation of the Regional Toll Revenue Funding Initiative projects and other *Mobility 2030* projects would have positive implications - improved mobility and congestion reduction in the NCTCOG MPA.	The implementation of the Regional Toll Revenue Funding Initiative projects would have positive implications - improved mobility and congestion reduction in the NCTCOG MPA.
Community	Traffic Noise	Although the Toll Project would result in an increase in the average daily traffic (ADT) on many of the non-tolled frontage roads, any increase in noise levels associated solely with an increase in traffic on the frontage roads would be offset by the greater decrease (ADT) in faster (louder) traffic on the tolled mainlanes. The result would be an overall decrease in noise levels for areas along/adjacent to SH 121.	No indirect effects - no perceptible increase in noise levels.	No other reasonable and foreseeable actions are expected to substantially affect the overall noise environment. Highway traffic is, and would continue to be, the primary/dominant source of noise.	It was determined there would be no direct or indirect effects associated with the proposed Toll Project, and no other reasonable and foreseeable actions are expected to substantially affect the overall noise environment; therefore, no cumulative impacts to the community due to traffic noise are anticipated.
Community	Socio-Economic Impacts	Access to the mainlanes of SH 121 would be limited to those who elect or can only on occasional basis afford to pay the toll . The difference in travel times between the tolled mainlanes and the non-tolled frontage roads would be the highest during peak periods of travel when traffic congestion within the SH 121 project limits would be the greatest. However, the overall added capacity the on-going and remaining construction provides would relieve traffic congestion for all motorists using SH 121 whether they use the mainlanes or frontage roads compared to the existing facility.	Examples of indirect impacts that could potentially occur or may have already occurred as a result of the SH 121 would be the influx of businesses that depend on proximity to freeways with frontage roads, and increased business patronage due to improved access from highway improvements. Similarly, residential development could be enhanced due to improved access provided by the proposed Toll Project.	Socio-economic impacts associated with other actions not quantified.	Access to the mainlanes of the emerging tolling network would be limited to those who elect or can only on occasional basis afford to pay the toll . The difference in travel times between the tolled mainlanes and the non-tolled frontage roads would be the highest during peak periods of travel when traffic congestion within the future regional transportation network would be the greatest. However, the overall added capacity the on-going and future transportation improvements provides would relieve traffic congestion for all motorists of the regional transportation network whether they use the mainlanes or frontage roads compared to the existing network.
Community	Economic Impacts	The annual cost to use the entire 12.5-mile tolled section of SH 121 would be approximately $906 per year. A user with an annual household income equal to the median household income of Collin County ($70,835) would spend less than two percent (1.2 percent) of their annual household income on SH 121 tolls. However, households with incomes at or below the poverty level of $20,650 (for a family of four) would spend 4.3 percent of the annual household income on SH 121 tolls, approximately 3.1 percent more than the median Collin County household. Not maintaining a prepaid account would impact any user, including low-income users, because the cost of paying the accumulated toll charges without an account would represent a higher toll rate than toll charges affiliated with a prepaid account. Cash payment options are available for each payment method; however, only those users who maintain automatic and manual pay prepaid accounts would benefit from reduced toll rates compared to the video billing policy. In summary, toll rates are generally one-third more for drivers who do not have an electronic toll transponder to offset the costs related to processing the license plate information associated with video billing.	Indirect economic impacts not quantified.	Economic impacts associated with other actions not quantified.	The economic impact of the Toll Project would be higher for low-income residents since the cost of paying tolls would represent a higher percentage of household income than for non-low-income households. Non-toll alternatives would be available to all travelers, including low-income populations, via frontage roads (when available) and local arterials. The use of these alternative non-toll routes may result in a difference in time travel due to a lower speed limit and signalization. Beneficial cumulative impacts of the Toll Project may include the addition of infrastructure improvements constructed to support the increased development and commerce associated with the Regional Toll Revenue Funding Initiative projects and economic growth in the immediate area. The future added capacity associated with the Regional Toll Revenue Funding Initiative projects would provide mobility and relieve traffic congestion for all motorists using the systems funded by the proposed tolling of SH 121.

Resource Category	Indicator of Resource/Issue Condition	Direct Impacts + Indirect Impacts + Other Actions = Cumulative Impacts			
		Direct Impacts	**Indirect Impacts**	**Other Actions**	**Cumulative Impacts**
Community	Lighting and Visual	Although additional lighting would be incorporated as part of the violation enforcement system, these additional lighting components would add minimal lighting in comparison to the lighting structures currently planned for the roadway currently under construction.	The proposed Toll Project would not affect land use within the indirect impacts study area and would not result in induced development; therefore, lighting and visual impacts associated with development in the study area would not be an indirect effect	The RSA is undergoing a rapid transition toward a more intense urbanization. This transition will entail many types of development such as the Regional Toll Revenue Funding Initiative projects, additional transportation projects associated with *Mobility 2030*, and other forms of typical land use development (commercial, residential, industrial, etc.). Each form of future development would involve varying degrees of lighting and visual elements.	It was determined that lighting and visual effects would not be a significant direct or indirect impact of the proposed Toll Project; thus, would not substantially affect the overall lighting and visual element of the community.
Environmental Justice	Minority and Low-Income Populations	Low-income individuals would be impacted as a result of economic impact; those who are unable to travel the toll mainlanes would experience difference in time travel associated with non-toll alternatives.	Low-income individuals would be impacted as a result of economic impact; those who are unable to travel the toll mainlanes would experience difference in time travel associated with non-toll alternatives.	Future added capacity associated with the non-toll Regional Toll Revenue Funding Initiative projects and other projects associated with *Mobility 2030* would provide mobility and relieve traffic congestion for all motorists, including environmental justice populations.	The economic impact of the Toll Project would be higher for low-income residents since the cost of paying tolls would represent a higher percentage of household income than for non-low-income households. Non-toll alternatives would be available to all travelers, including low-income populations, via frontage roads (when available) and local arterials. The use of these alternative non-toll routes may result in a difference in time travel due to a lower speed limit and signalization. The percentage of tolled lanes in the regional transportation network will increase 11 percent in 2007 to 30 percent in 2030. This increase is indicative of an emerging tolling network. The emerging tolling network may create a net loss of non-toll mainlane access for those who do not elect or can only on occasional basis afford to travel on tolled facilities. Beneficial cumulative impacts of the Toll Project may include the addition of infrastructure improvements constructed to support the increased development and commerce associated with the Regional Toll Revenue Funding Initiative projects and economic growth in the immediate area. The future added capacity associated with the Regional Toll Revenue Funding Initiative projects would provide mobility and relieve traffic congestion for all motorists using the systems funded by the proposed tolling of SH 121.

Any cumulative impacts on the resources analyzed are a result of the rapid urbanization of the area. The past and reasonably foreseeable actions in the area have and would impact the resources considered in this study as a result of prosperous economic growth and development patterns adopted by the municipalities. The proposed action's contribution to the cumulative impact on the resources studied is negligible. It is well documented that the area has been rapidly developing without regard to the potential of improvements to SH 121. This is particularly true of the southern portion of Collin County. The majority of large parcels of land that are undeveloped or not subject to development plans are in the northern part of the county. The development of those parcels is unlikely to be influenced by the proposed action.

Some beneficial cumulative impacts may include the addition of infrastructure improvements constructed to support the increased development and commerce associated with the Regional Toll Revenue Funding Initiative projects and economic growth in the immediate area. The future added capacity associated with the Regional Toll Revenue Funding Initiative projects would provide mobility and relieve traffic congestion for all motorists using the systems funded by the proposed tolling of SH 121. The Regional Toll Revenue Funding Initiative projects would comply with all applicable federal, state, and local requirements including the NEPA process.

The modifications proposed for the transportation network would improve the current traffic conditions within the NCTCOG MPA to a level greater than what currently exists and accommodate future traffic growth along the transportation network. As acknowledged in this document, low-income households would spend a higher proportion of household income to use the toll system when compared to the average non-low income household. Those who do not use the toll system mainlanes would experience some decline in LOS. However, when considering the totality of the effects of this project, there are overall benefits provided for the entire community, including low-income and minority populations.

Table 7-6 provides a comparison of cumulative effects described in the previous EAs and those determined as a result of this analysis. Details on the impacts to each resource are described in the appropriate section. The cumulative effects to resources presented in this section represent the anticipated development forecasted through 2030.

TABLE 7-6: COMPARISON OF POTENTIAL CUMULATIVE IMPACTS FROM SH 121 BETWEEN THE PREVIOUS EAs AND THE CURRENT RE-EVALUATION

Resource Category	Potential Cumulative Impacts Identified in the Previous EAs	Potential Cumulative Impacts Identified in the Current Re-Evaluation
Air Quality	Cumulative effects were not quantified.	Improvement in the regional transportation system and facilities should serve to reduce congestion on a regional scale. The proposed project and the other reasonably foreseeable transportation projects were included in the MTP and the TIP and have been determined to conform to the ozone nonattainment SIP. The DFW region is expected to continue to experience substantial population growth, urbanization, and economic development. The cumulative impact of reasonably foreseeable future growth and urbanization on air quality would be minimized by enforcement of federal and state regulations, by the EPA and TCEQ, which are mandated to ensure that such growth and urbanization would not prevent compliance with the ozone standard or threaten the maintenance of the other air quality standards, along with regulated entities in compliance with regulations. All throughout the region, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions of on-road emissions including CO, MSAT and the ozone precursors (VOC and NOx) in almost all cases, will result in lower emissions that would cause VOC and NOx levels to be significantly lower than they are today.
Community	Cumulative effects were not quantified. Beneficial effects include increased mobility and system linkage due to the improvements of the transportation infrastructure.	Cumulative effects of the following community resources were analyzed: air quality, lighting and visual effects, socio-economic effects, economic impact of tolling, environmental justice, traffic operations, and traffic noise. No significant impacts to community resources in terms of air quality, lighting and visual effects, socio-economic effects, economic impacts of tolling, environmental justice, traffic operations, or increased noise levels, or traffic operations.
Environmental Justice	Cumulative effects were not quantified. Beneficial effects would include increased mobility and reduced congestion for users of SH 121.	The anticipated 2030 transportation network for North Central Texas (also calculated in mainlane lane-miles) would consist of approximately 8,569 mainlane lane-miles, of which 30 percent (approximately 2,542 lane-miles), are proposed to be tolled. The anticipated increase of tolled mainlanes from 11 to

Resource Category	Potential Cumulative Impacts Identified in the Previous EAs	Potential Cumulative Impacts Identified in the Current Re-Evaluation
		30 percent is indicative of an emerging regional tolling network. If one were to assume usage of the entire 2030 proposed 419 mile toll system at an estimated toll rate of 14.5 cents per mile, the total cumulative cost for one complete trip would be approximately $60.75 (2010 future value). The economic impact of tolling would be higher for low-income residents since the cost of paying tolls would represent a higher percentage of household income than for non-low-income households. Non-toll alternatives would be available to all travelers, including low-income populations, via frontage roads (when available) and local arterials. The use of these alternative non-toll routes may result in a difference in time travel due to a lower speed limit and signalization. Beneficial cumulative impacts may include the addition of infrastructure improvements constructed to support the increased development and commerce associated with the Regional Toll Revenue Funding Initiative projects and economic growth in the immediate area. The future added capacity associated with the Regional Toll Revenue Funding Initiative projects would provide mobility and relieve traffic congestion for all motorists using the systems funded by the proposed tolling of SH 121.

Step 8: Mitigation

The mitigation of the rapid development of the area considered for this study would rest with the agencies with the authority to implement such controls. This authority rests with the municipal governments and to a lesser extent, the county governments. The responsibility of transportation providers such as TxDOT, local and regional transit agencies, and the local governments would be to implement a transportation system to complement the land use or development controls implemented.

Air Quality

Mitigation: Regulatory Controls

The evaluation for direct, indirect, and cumulative impacts from the proposed Toll Project did not result in the identification of any negative impacts for which specific mitigation actions are necessary and required. Due to traffic redistribution, traffic congestion along the frontage roads and the local arterial network is anticipated to increase, causing a potential for localized degradation of air quality. In an effort to reduce congestion, TxDOT and NCTCOG would continue to promote appropriate congestion reduction strategies through the CMAQ program, the CMP, and the MTP. Overall, current federal, state, and local regulatory controls as well as local plans and projects have had, and will continue to have a beneficial impact on overall regional air quality.

The CAA, as amended, provides the framework for federal, state, tribal, and local rules and regulations to protect air quality. The CAA required the EPA to establish NAAQS for pollutants considered harmful to public health and the environment. In Texas, the TCEQ has the legal authority to implement, maintain, and enforce the NAAQS. The TCEQ establishes the level of quality to be maintained in the state's air and to control the quality of the state's air by preparing and developing a general comprehensive plan. Authorization in the Texas Clean Air Act (TCAA) allows the TCEQ to do the following: collect information and develop an inventory of emissions; conduct research and investigations; prescribe monitoring requirements; institute enforcement; formulate rules; establish air quality control regions; encourage cooperation with citizens' groups and other agencies and political subdivisions of the state as well as with industries and the federal government; and to establish and operate a system of permits for construction or modification of facilities. Local governments having some of the same powers as the TCEQ can make recommendations to the commission concerning any action of the TCEQ that may affect their territorial jurisdiction, and can execute cooperative agreements with the TCEQ or other local governments. In addition, a city or town may enact and enforce ordinances for the control and abatement of air pollution not inconsistent with the provisions of the TCAA or the rules or orders of the TCEQ.

The CAA also requires states with areas that fail to meet the NAAQS prescribed for criteria pollutants to develop a SIP. The SIP describes how the state would reduce and maintain air pollution emissions in order to comply with the federal standards. Important components of a SIP include emission inventories, motor vehicle emission budgets, control strategies, and an attainment demonstration. The TCEQ develops the Texas SIP for submittal to the EPA. One

SIP is created for each state, but portions of the plan are specifically written to address each of the nonattainment areas. These regulatory controls, as well as other local transportation and development initiatives implemented throughout the DFW metropolitan area by local governments (and others) provide the framework for growth throughout the area consistent with air quality goals. As part of this framework, all regionally significant projects (including the proposed project) are evaluated at the regional level by the NCTCOG for conformity with the SIP.

EPA set two national health protection standards for CO: a one-hour standard of 35 ppm and an 8-hour standard of 9 ppm. Across the nation, air quality stations measure the levels of CO and other pollutants in the air. These measurements are compared to the standards. Areas that have CO levels that are too high must develop and carry out plans to reduce CO emissions. Currently, the proposed Toll Project is located within an area that is in attainment for CO.

The EPA national health protection standard for ozone is the 8-hour standard of 85 ppb. Currently, the Toll Project is part of the nine county nonattainment area for ozone; therefore, the transportation conformity rule applies. The NCTCOG and the RTC has developed a broad range of air quality programs that focus on major sources of ozone-causing emissions. In order to reduce ozone and come into compliance with NAAQS, the formulation of a SIP is required for all nonattainment areas. NCTCOG works in cooperation with federal, state, and local partners to ensure all air quality requirements are met. NCTCOG's air quality strategies seek to reduce emissions in a variety of ways, from energy and fuel efficiency to advancing clean technologies to encouraging changes in daily behavior. Such strategies are being implemented throughout the region to reduce emissions from different types of sources; however, many of the programs implemented through NCTCOG target transportation-related emissions due to the fact that on-road mobile sources (such as cars and trucks) account for nearly one-half of all ozone precursor pollution in North Central Texas. Although national air quality has improved over the last 20 years, many challenges remain in protecting public health and the environment.

In addition to the criteria air pollutants for which there are NAAQS, EPA also regulates MSATs for which health based standards or NAAQS have not been developed. MSATs, a subset of the 188 air toxics defined by the CAA, are compounds emitted from highway vehicles and non-road equipment. In an effort to control MSAT emissions the EPA utilizes regulatory controls that result in specific emission reductions. This strategy provides for increased protection of human health.

On March 29, 2001, EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources, (66 FR 17229, March 29, 2001). This rule was issued under the authority in § 202 of the CAA. In its rule, EPA examined the impacts of existing and newly promulgated mobile source control programs, including its RFG program, its NLEV standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 2000 and 2020, FHWA projects that even with an increase in VMT, these programs are expected to reduce on-highway MSAT emissions.

On February 26, 2007 the EPA finalized additional rules under authority of CAA Section 202(l) to further reduce MSAT emissions. The EPA issued Final Rules on Control of Hazardous Air Pollutants from Mobile Sources (72 FR 8427) under Title 40 C.F.R. Parts 59, 80, 85 and 86. EPA adopted the following new requirements to significantly lower emissions of benzene and the other MSATs by: 1) lowering the benzene content in gasoline; 2) reducing NMHC exhaust emissions from passenger vehicles operated at cold temperatures (under 75 degrees); and 3) reducing evaporative emissions that permeate through portable fuel containers.

Community

Mitigation: Regulatory Controls

Air Quality

The evaluation for direct, indirect, and cumulative impacts from the proposed Toll Project did not result in the identification of any negative impacts for which specific mitigation actions are necessary and required. Due to traffic redistribution, traffic congestion along the frontage roads and the local arterial network is anticipated to increase, causing a potential for localized degradation of air quality. In an effort to reduce congestion, TxDOT and NCTCOG would continue to promote appropriate congestion reduction strategies through the CMAQ program, the CMP, and the MTP. Overall, current federal, state, and local regulatory controls as well as local plans and projects have had, and will continue to have a beneficial impact on overall regional air quality.

The CAA, as amended, provides the framework for federal, state, tribal, and local rules and regulations to protect air quality. The CAA required the EPA to establish NAAQS for pollutants considered harmful to public health and the environment. In Texas, the TCEQ has the legal authority to implement, maintain, and enforce the NAAQS. The TCEQ establishes the level of quality to be maintained in the state's air and to control the quality of the state's air by

preparing and developing a general comprehensive plan. Authorization in the Texas Clean Air Act (TCAA) allows the TCEQ to do the following: collect information and develop an inventory of emissions; conduct research and investigations; prescribe monitoring requirements; institute enforcement; formulate rules; establish air quality control regions; encourage cooperation with citizens' groups and other agencies and political subdivisions of the state as well as with industries and the federal government; and to establish and operate a system of permits for construction or modification of facilities. Local governments having some of the same powers as the TCEQ can make recommendations to the commission concerning any action of the TCEQ that may affect their territorial jurisdiction, and can execute cooperative agreements with the TCEQ or other local governments. In addition, a city or town may enact and enforce ordinances for the control and abatement of air pollution not inconsistent with the provisions of the TCAA or the rules or orders of the TCEQ.

The CAA also requires states with areas that fail to meet the NAAQS prescribed for criteria pollutants to develop a SIP. The SIP describes how the state would reduce and maintain air pollution emissions in order to comply with the federal standards. Important components of a SIP include emission inventories, motor vehicle emission budgets, control strategies, and an attainment demonstration. The TCEQ develops the Texas SIP for submittal to the EPA. One SIP is created for each state, but portions of the plan are specifically written to address each of the nonattainment areas. These regulatory controls, as well as other local transportation and development initiatives implemented throughout the DFW metropolitan area by local governments (and others) provide the framework for growth throughout the area consistent with air quality goals. As part of this framework, all regionally significant projects (including the proposed project) are evaluated at the regional level by the NCTCOG for conformity with the SIP.

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reduce ozone and come into compliance with NAAQS, the formulation of a SIP is required for all nonattainment areas. NCTCOG works in cooperation with federal, state, and local partners to ensure all air quality requirements are met. NCTCOG's air quality strategies seek to reduce emissions in a variety of ways, from energy and fuel efficiency to advancing clean technologies to encouraging changes in daily behavior. Such strategies are being implemented throughout the region to reduce emissions from different types of sources; however, many of the programs implemented through NCTCOG target transportation-related emissions due to the fact that on-road mobile sources (such as cars and trucks) account for nearly one-half of all ozone precursor pollution in North Central Texas. Although national air quality has improved over the last 20 years, many challenges remain in protecting public health and the environment.

In addition to the criteria air pollutants for which there are NAAQS, EPA also regulates MSATs for which health based standards or NAAQS have not been developed. MSATs, a subset of the 188 air toxics defined by the CAA, are compounds emitted from highway vehicles and non-road equipment. In an effort to control MSAT emissions the EPA utilizes regulatory controls that result in specific emission reductions. This strategy provides for increased protection of human health.

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Environmental Justice

EO 12898 was intended to ensure that Federal departments and agencies identify and address disproportionately high and adverse human health and environmental effects of their policies, programs, and activities on minority populations and low-income populations. It reinforced Title VI of the Civil Rights Act of 1964. It reminded all government agencies receiving Federal funding that they are required to address discrimination as well as the consequences of their decisions or actions that might result in disproportionately high and adverse environmental and health impacts on minority and low-income communities.

Subsequent to EO 12898, US DOT Order 5610.2 was published in the *Federal Register* in 1997. It describes the process for incorporating environmental justice principles into all Department of Transportation programs, policies, and activities. The following year, FHWA Order 6640.23 was issued, establishing policies and procedures for the FHWA to use in complying with EO 12898 and US DOT Order 5610.2.

The proposed tolling of SH 121 would not result in disproportionately high and adverse effects on minority and low-income populations; therefore, according to EO 12898 regulation, mitigation associated with environmental justice is not currently proposed. Other options, such as community outreach, could be considered to benefit the public including environmental justice populations. Through the excess toll revenue generated from the proposed Toll Project, other transportation projects, including transit, could be programmed to benefit environmental justice populations. (See **Appendix B: 2007 RTC CDA/Regional Toll Revenue Funding Initiative**.)

Traffic Operations

Mitigation for redistribution of traffic onto the SH 121 frontage roads and the local transportation network is addressed by the implementation of the Regional Toll Revenue Funding Initiative policy set forth by the RTC. By accelerating the construction of the Regional Toll Revenue Funding Initiative projects, the local transportation network would be improved to handle the redistribution of traffic, along with the projected increase of traffic due to projected population growth.

Traffic Noise

Because the average traffic noise level change (increase) due to traffic redistribution within communities/municipalities adjacent to SH 121 would be well below 1dB, there would be no associated, perceptible indirect or cumulative effects and no mitigation would be warranted.

Indirect traffic noise impacts that may result from Regional Toll Revenue Funding Initiative projects would be determined by separate environmental studies conducted for each project. The associated traffic noise analyses would determine if the projects would result in noise impacts and if any mitigation would be warranted.

Environmental Justice

Mitigation: Regulatory Controls

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8.0 REVIEW OF REGULATORY CHANGES

Several laws, regulations and guidelines have emerged since previous projects were evaluated and approved for SH 121.

Toll Guidance

New guidelines emerged in response to the March 2004 TxDOT policy to evaluate all controlled-access highway projects as possible candidates for tolling. TxDOT developed toll regulations and guidelines to assist during the planning/development of a tolling project which include: the *2004 TxDOT Guidance on Traffic Noise Analysis for Toll Roads,* the *2004 Guidance on the Environmental Process for Toll Roads,* the *2005 Guidance on Planning and Air Quality Analysis for Toll Projects, and the FHWA Policy for Planning, Environment and Project Development for Toll Roads.*

Air Quality

In February 2006, FHWA issued the *Interim Guidance on Air Toxic Analysis in NEPA Documents*. In 2006, TxDOT updated the Air Quality Guidelines, which include new requirements to perform a CO Traffic Air Quality Analysis (TAQA) and quantitative/qualitative Mobile Source Air Toxics (MSAT) analyses.

In March 2001, the EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources, (66 FR 17229, March 29, 2001). This rule was issued under the authority in §202 of the CAA. In this Rule, EPA examined the impacts of existing and newly promulgated mobile source control programs, including its RFG program, its NLEV standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements.

In October 2006, EPA revised the NAAQS for PM in the 40 C.F.R. Part 50 (71 FR 61144, October 17, 2006) rule. EPA revised the primary and secondary NAAQS for PM to provide increased protection of public health and welfare, respectively. With regard to primary standards for fine particles ($PM_{2.5}$), EPA is revising the level of the 24-hour $PM_{2.5}$ standard to 35 micrograms per cubic meter ($\mu g/m^3$) and retaining the level of the annual $PM_{2.5}$ standard at $15\mu g/m^3$. With regard to primary standards for PM_{10}, EPA is retaining the 24-hour PM_{10} and revoking the annual PM_{10} standard. With regard to secondary PM standards, EPA is making

them identical in all respects to the primary PM standards, as revised. The revisions became effective on December 17, 2006.

In February 2007, EPA issued Final Rules on Control of Hazardous Air Pollutants from Mobile Sources (72 Federal Register (FR) 8427, February 26, 2007) under Title 40 C.F.R. Parts 59, 80, 85 and 86. As a result of this review, EPA adopted the following new requirements to significantly lower emissions of benzene and the other MSATs by: 1) lowering the benzene content in gasoline; 2) reducing NMHC exhaust emissions from passenger vehicles operated at cold temperatures (under 75 degrees); and 3) reducing evaporative emissions that permeate through portable fuel containers.

At the May 23, 2007 TCEQ Agenda Meeting, TCEQ adopted the 8-hour Ozone Attainment Demonstration and Reasonable Further Progress SIP packages for the DFW area.

Water

TCEQ added the 401 water quality certification conditions to the January 15, 2002 issuance of Nationwide Permits (NWP), as described in the Federal Register (Part II, Vol. 67, No. 10, pages 2020-2095). These conditions were included as part of TCEQ's certification finalized on April 12, 2002 and September 5, 2003.

Section 404

The USACE revised and renewed the nationwide permits for regulating work in wetlands and other waters of the United States under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. The new nationwide permits were published in the Federal Register on March 12, 2007 and went into effect on March 19, 2007. The former permits, which expire on March 18, 2007, were replaced with the new 2007 permits.

Indirect and Cumulative Impacts

In December 2006, TxDOT issued the updated *Guidance on Preparing Indirect and Cumulative Impact Analyses*. This guidance addresses cumulative impacts analysis for TxDOT projects that are subject to NEPA. The FHWA and the CEQ regulations both require that potential environmental impacts be considered during the NEPA process.

9.0 PUBLIC INVOLVEMENT

A public meeting was conducted in an open house format to inform the public of the proposed tolling of SH 121 and to gather feedback. The meeting was held on July 25, 2006 at the following location:

Plano Centre
2000 East Spring Creek Parkway
Plano, Texas 75074

The public meeting notice was published in the following newspapers. Copies of the public meeting notice were also mailed to abutting property owners and elected/public officials.

Dallas Morning News
Legal Notice: June 25, 2006 and July 15, 2006
Display Ad: July 21, 2006

Al Dia (Spanish Publication)
Legal Notice: June 24, 2006 and July 15, 2006
Display Ad: July 21, 2006

Plano Star Courier
Legal Notice: June 25, 2006 and July 15, 2006

Allen American
Legal Notice: June 22, 2006 and July 13, 2006

McKinney Messenger
Legal Notice: June 25, 2006 and July 16, 2006

Frisco Enterprise
Legal Notice: June 23, 2006 and July 14, 2006

A total of 99 citizens and four elected officials registered at the meeting. Drawings of the conceptual toll plan were available for public review during the public meeting, which was held from 4:00 pm to 8:00 pm. The conceptual toll plan depicted the layout of the proposed facility, toll gantry locations, and signage depicting SH 121 as a toll facility. Four citizens made verbal comments which were recorded by a licensed court reporter and twenty-three citizens provided written comments. Issues of concern included the cost of the tolls, who would manage the toll facility, air and noise pollution, and alternative non-toll routes. The July 2006 public meeting summary is available at the TxDOT Dallas District and can be found in **Appendix D: Public Meeting Summary** of this re-evaluation.

A public hearing was held in the City of Plano to gather feedback from the public regarding the proposed tolling of SH 121 on February 26, 2007 at the following location:

Legacy Church
4501 Legacy Drive
Plano, TX 75024

The public hearing notice was published in the following newspapers. Copies of the public hearing notice were also mailed to abutting property owners and elected/public officials.
Dallas Morning News (Collin County Edition)
Legal Notice: January 26, 2007 and February 16, 2007

Al Dia (Spanish Publication)
Legal Notice: January 26, 2007 and February 16, 2007

Plano Star Courier
Legal Notice: January 26, 2007 and February 16, 2007

Allen American
Legal Notice: February 1, 2007 and February 15, 2007

McKinney Courier Gazette
Legal Notice: January 26, 2007 and February 16, 2007

Frisco Enterprise
Legal Notice: January 26, 2007 and February 16, 2007

A total of 77 citizens attended the hearing. Plans, maps, and exhibits illustrating SH 121 as a toll facility were available for public view and comment during the open house period from 6:00 p.m. to 7:00 p.m. followed by a formal presentation. A total of 296 citizens spoke at the public hearing and/or submitted written comments during the comment period (either at the hearing or during the 10-day comment period that followed). At the public hearing, five verbal comments were received and three of the commentors also submitted written comments.

The comments received were broadly grouped in to the following twelve categories:

- Project Comments
- Environmental Justice
- Air Quality/Pollution
- Selling of SH 121
- Funding
- Tolling Concerns
- Public Involvement
- Tolling Process
- Design

- General (Other) Comments
- Environmental Re-evaluation
- Traffic

In addition to the aforementioned public involvement, TxDOT has either hosted or attended 50 additional meetings from October 16, 2005 to the present. These meetings were held with local officials and entities, including: Collin County, the Cities of Plano, Frisco, Allen, and McKinney, the NTTA, and the RTC. Topics discussed in these meetings include:

- Toll Feasibility
- Study of Funding Options
- Discussions on Local Government Corporation
- Review of Finance and Delivery Options
- Reviews and Discussions on NTTA to Finance and Deliver
- CDA Task force meetings (CDA Procurement, Schedules, Contract Overview, and Near Neighbor/ Near Timeframe projects)
- CDA Overview
- CDA Value and Contract Requirements
- Presentation of Tolling Procedure Status

Many of these meetings were in response to a Collin County Commissioners Court Resolution requesting TxDOT, NCTCOG, and the NTTA to perform a funding feasibility study for SH 121 from DNT to US 75. A complete listing of meetings can be found in **Appendix B: Coordination and Policy**.

TxDOT has maintained an active public involvement effort for this project including conducting a Public Meeting, Public Hearing and maintaining a website (http://www.keepitmovingdallas.com). Preparation for the July 2006 public meeting and February 2007 public hearing included published announcements in local papers, including Spanish publications such as *Al Dia*, which informed citizens of the opportunity to request an interpreter (for language or other special communication needs) to be present at the public meetings. Information presented at the July 2006 Public Meeting and the February 2007 Public Hearing, including the conceptual toll plan and re-evaluation have also been available at http://www.keepitmovingdallas.com and at the TxDOT Dallas District Office for public review and inspection.

A notice of availability of the public hearing summary and analysis and comment and response report will be published in local newspapers along with information on how to obtain copies. The document will also be made available at the TxDOT Dallas District.

10.0 CONCLUSION

Since the time of the last environmental documentation for this project, there have been no changes in design or ROW requirements. The previously approved environmental documents and subsequent approvals were completed without the consideration of tolling. One public meeting and one public hearing were held to inform the public about the Toll Project. This re-evaluation assessed the project changes associated with the electronic tolling of SH 121. The project modifications to toll the proposed facility would not result in substantive impacts (direct + indirect). In addition, when combined with impacts as disclosed under the cumulative impacts section; and, the previous studies conducted for SH 121, including those further analyzed in this re-evaluation, do not result in substantive impacts. As disclosed in this environmental re-evaluation document, implementation of the proposed tolling of SH 121 would not appreciably increase the potential for impacts beyond those considered in previous EAs and subsequent approvals. It is anticipated that no further environmental documentation would be required.

11.0 GLOSSARY

AADT -Annual Average Daily Traffic

Annual average daily traffic is a term used primarily in transportation planning and transportation engineering. It is the total volume of vehicle traffic in both directions of a highway or road for a year divided by 365 days. AADT is a useful and simple measurement of how busy the road is. It is also sometimes reported as "average annual daily traffic."

ACHP - Advisory Council on Historic Preservation

The Advisory Council on Historic Preservation is an independent United States Federal agency that promotes the preservation, enhancement, and productive use of the nation's historic resources, and advises the President and Congress on national historic preservation policy.

ADT – Average Daily Traffic

Average Daily Traffic is defined as the total traffic volume during a given period (from 1 to 364 days) divided by the number of days in that period. Current Average Daily Traffic volumes can be determined by continuous traffic counts or periodic counts. Where only periodic traffic counts are taken, Average Daily Traffic volume can be established by applying correction factors such as for season or day of week. For roadways having traffic in two directions, the Average Daily Traffic includes traffic in both directions unless specified otherwise.

APE – Area of Potential Effect (related to Historic Properties)

Area of Potential Effect is the geographic area or areas within which an undertaking may cause changes in the character or use of historic properties, if any such properties exist there. This area always includes the actual site of the undertaking and may also include other areas where the undertaking will cause changes in land use, traffic patterns or other factors that could affect historic properties. According to the PA [IX.D(1)b] among TxDOT, THC, FHWA, and ACHP, "unless TxDOT and SHPO in consultation determine a need for a wider APE due to potential indirect and cumulative effects of a specific project, the APE for other projects shall be defined as (i) 300 ft beyond the proposed ROW for projects constructed on new location not involving an existing transportation corridor; (ii) 150 ft beyond the proposed ROW for projects constructed in existing transportation corridors, including abandoned railroad lines."

APFO - Adequate Public Facilities Ordinances

Adequate Public Facilities Ordinances allow local governments to deny or delay new developments if existing government services (water and sewer, roads, schools, fire and police) cannot support it. An APFO can ensure that new development does not negatively impact a community's quality of life by overburdening public services. The APFO establishes standards for public facilities such as transportation (roads, transit, pedestrian facilities, bicycle facilities), schools, water, sewer, and fire protection.

Average Free Speed of Unused Roadway

Average Free Speed of Used Roadway is the volume-weighted average of free speed. The value is given in miles per hour (MPH).

CAA – Clean Air Act

The Clean Air Act of 1970 is a national policy that authorizes programs to safeguard the air resources from pollution by controlling or abating air pollution and emissions of air contaminants consistent with the protection of health, general welfare, and physical property of the people including the aesthetic enjoyment of the air resources by the people and the maintenance of adequate visibility.

CAAA – Clean Air Act Amendments of 1990

The Clean Air Act Amendments of 1990 is a set of revisions/amendments passed by congress to the Clean Air Act of 1970 (CAA). Includes procedures that apply to all transportation plans, programs, and projects as related to air quality. Reference 42 U.S.C §7410 et. Seq. *Transportation Planning and Programming Collection*.

CAL3QHC

CAL3QHC estimates total air pollutant concentrations (carbon monoxide or particulate matter) near highways from both moving and idling vehicles. This model also estimates the length of queues formed idling vehicles at signalized intersections.

CALINE3

CALINE3 is a steady-state Gaussian dispersion model designed to determine air pollution concentrations at receptor locations downwind of "at-grade," "fill," "bridge," and "cut section" highways located in relatively uncomplicated terrain.

CCART – Collin County Area Regional Transit

Collin County Area Regional Transit provides many transit services in Collin County including but not limited to On-Call/Demand Response, Contract Subscription, North Central Dart-On-Call in Plano, and various hourly bus routes in the Cities of McKinney and Frisco.

CDA – Comprehensive Development Agreement

A Comprehensive Development Agreement is a tool the Texas Department of Transportation uses to enable private investments in the Texas transportation system. It provides a competitive selection process for developing regional projects.

CEQ – Council on Environmental Quality

The Council on Environmental Quality coordinates federal environmental efforts and works closely with agencies and other White House offices in the development of environmental policies and initiatives.

C.F.R. – Code of Federal Regulations

The Code of Federal Regulations is the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the Federal Government. It is divided into 50 titles that represent broad areas subject to Federal regulation.

CMS – Congestion Management Process

A Congestion Management Process refers to several methods of roadway management. Included in the process are Intelligent Transportation Systems, Transportation System Management, and Travel Demand Management. These programs seek to improve traffic flow and safety through better operation and management of transportation facilities.

CMAQ – Congestion Mitigation and Air Quality Improvement Plan

A federal program which provides funds for a project in a nonattainment area that contributes to the attainment of natural ambient air quality standards or will have certified benefits to air quality.

CT – Census Tract

Census tracts are small, relatively permanent statistical subdivisions of a county. Census tracts are delineated for most metropolitan areas and other densely populated counties by local census statistical areas committees following Census Bureau guidelines.

CO – Carbon Monoxide

Carbon monoxide is a colorless, odorless, very toxic gas produced by the incomplete combustion of carbon-containing fuels, most notably by gasoline powered engines, power plants, and wood fires.

CWA – Clean Water Act

The Clean Water Act is a national policy that authorizes programs to safeguard surface water sources, including special aquatic sites, by regulating actions which could lead to the destruction or degradation of the quality of these resources. This includes safeguards from pollution, by controlling or abating water pollution and sources of water contaminants, and from actions that may result in the discharge of storm water, dredged and fill material into these waters, consistent with the protection of health, general welfare and physical property of the people including the enjoyment of the water resources by the people and the maintenance of adequate water quality and the protection of fish, wildlife, and critical habitat.

Complete Performance Report

Complete Performance Reports are designed to document the performance of the regional traffic model (the entire 2030 roadway network), reporting items such as total miles of roadway, number of trips generated, average time to make the trip, and the LOS of all major roadway classifications. These reports can be run for the region as a whole or for specific sub-areas.

Complete Performance Reports can only be generated after a complete model run and utilize the following sets of data:

- Demographics,
- Market Segmentation,
- Market Segmentation - Mode Choice,
- Mode Choice (Non-Transit),
- Mode Choice (Transit),
- Time of Day,
- Trip Table,
- Trip Data (Trip Distribution),
- Trip Data Totals, and
- Performance Measures

Controlled Access Highway

A Controlled Access Highway, in accordance with applicable state law, is a state highway on which owners or occupants of abutting lands and other persons are denied access to or from the highway except at some points only and in such manner as may be determined by the department.

DART – Dallas Area Rapid Transit

The Dallas Area Rapid Transit authority is a transit agency based in Dallas, Texas that operates buses, light rail (including an underground station), commuter rail, and High Occupancy Vehicle lanes in Dallas and 12 of its suburbs. It is the largest light rail operator in the state of Texas.

dB – Decibel

The decibel is the unit of measurement used to express the magnitude of sound energy (noise).

DE – Diesel Exhaust

Diesel exhaust is a pervasive airborne contaminant in workplaces where diesel-powered equipment is used.

DFW – Dallas/Fort Worth

DFW is the title designated by the United States Census as of 2003 and encompassing 12 counties within the state of Texas. The metropolitan area is further divided into two metropolitan divisions: Dallas–Plano–Irving and Fort Worth–Arlington. Residents of this region informally refer to it as the Dallas/Fort Worth Metroplex.

DHHS - Department of Health and Human Services

The Department of Health and Human Services is a Cabinet department of the United States government with the goal of protecting the health of all Americans and providing essential human services.

DNT – Dallas North Tollway

The Dallas North Tollway is a 22-mile controlled-access toll road operated by the North Texas Tollway Authority, which runs from Interstate 35E near downtown Dallas, Texas to State Highway 121 near Frisco, currently ending at Gaylord Parkway. The Phase 3 Extension from Gaylord Parkway North to US 380 is currently under construction.

EA – Environmental Assessment

An Environmental Assessment is the National Environmental Policy Act document performed for a project in which the significance of impacts on the environment is not clearly exhibited. The environmental assessment may lead to either a Finding of No Significant Impact or an Environmental Impact Statement.

ENV – Environmental Affairs Division

The Texas Department of Transportation's Environmental Affairs Division is responsible for central coordination and oversight of the environmental program. The division routinely addresses issues related to air and water quality, animal and plant ecology, archeology/historic properties, environmental justice, hazardous materials and traffic noise. The Division also performs environmental document review and coordination, develop, and deliver environmental training, act as a liaison to state and federal resource agencies, and provide needed support to Texas Department of Transportation districts.

EJ – Environmental Justice

Environmental justice is a process that focuses on the development, implementation, and enforcement of environmental laws, regulations and policies, as defined by the Environmental Protection Agency, by requiring the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income.

EO – Executive Order

An Executive Order is a President's or Governor's declaration which has the force of law, usually based on existing statutory powers, and requiring no action by the Congress or state legislature.

EPA – Environmental Protection Agency

The Environmental Protection Agency is the federal agency primarily responsible for environmental protection, including air quality. The Environmental Protection Agency is also responsible for developing and administering National Pollutant Discharge Elimination System regulations.

ESA - Endangered Species Act

The Endangered Species Act of 1973 was the most wide-ranging of dozens of United States environmental laws passed in the is crucial act was designed to protect critically imperiled species from extinction due to the consequences of economic growth and development untempered by adequate concern and conservation.

ETC – Electronic Toll Collection

Electronic Toll Collection, an adaptation of military "identification friend or foe" technology, aims to eliminate the delay on toll roads It is a technological implementation of a road pricing concept. It determines whether the cars passing are enrolled in the program, alerts enforcers for those that are not, and debits electronically the accounts of registered cars without their stopping, or even opening a window.

FEMA - Federal Emergency Management Agency

FEMA is an agency of the United States Department of Homeland Security. FEMA's purpose is to coordinate the response to a disaster which has occurred in the United States and which overwhelms the resources of local and state authorities.The Federal Emergency Management Agency administers programs providing for emergency and permanent repairs to facilities on the state highway system, but off the federal-aid system. In addition to the actual repairs, FEMA funds may also be used for engineering, planning, supervision, design and inspection.

FHWA – Federal Highway Administration

The Federal Highway Administration is a division of the United States Department of Transportation that specializes in highway transportation. The agency's major activities are grouped into two "programs," The Federal-aid Highway Program and the Federal Lands Highway Program. The Federal Highway Administration 's role in the Federal-aid Highway Program is to oversee federal funds used for constructing and maintaining the National Highway System (primarily Interstate Highways, United States Routes and most State Routes). This funding mostly comes from the federal gasoline tax and mostly goes to State departments of transportation. FHWA oversees projects using these funds to ensure that federal requirements for project eligibility, contract administration and construction standards are adhered to.

FLUP – Future Land Use Plans

A Future Land Use Plan is a policy document created for land use and growth management, which sets forth desired types of physical growth within a planning area.

FM – Farm to Market Road

The term Farm to Market Road indicates a road that is part of the state's system of secondary and connecting routes, built and maintained by the Texas Department of Transportation (TxDOT). This system was established in 1949 as a project to provide access to rural areas. The system consists primarily of paved, two-lane roads.

FONSI – Finding of No Significant Impact

A finding of no significant impact is a decision by the Federal Highway Administration or Environmental Affairs Division which indicates that no significant project impacts have been identified. The Finding of No Significant Impact follows approval of the environmental assessment and appropriate public involvement.

FPPA – Farmland Protection Policy Act

The Farmland Protection Policy Act of 1981 provides protection to farmland as defined in the law. Its purpose is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses, and to assure the federal programs are administered in a manner that to the extent practicable will be compatible with state, local government and private programs and policies to protect farmlands. America's private land owners and managers conserve their soil, water, and other natural resources.

FTA – Federal Transit Administration

The Federal Transit Administration is an agency within the United States Department of Transportation that provides financial and technical assistance to local public transit systems. The Federal Transit Administration is one of eleven modal administrations within the DOT.

GIS - Geographic Information System

A geographic information system is a system for capturing, storing, analyzing and managing data and associated attributes which are spatially referenced to the earth. GIS is a tool that allows users to create interactive queries (user created searches), analyze the spatial information, edit data, maps, and present the results of all these operations.

ft - foot/feet

Foot/feet is the unit of length originally derived from the length of the human foot. It is divided into 12 inches and equal to 30.48 centimeters.

HB – House Bill

A House Bill is a bill originating in the House of Representatives.

HOV – high occupancy vehicle

A vehicle having more than one occupant. Examples include carpools, vanpools, buses, and mini-buses. Transportation systems may encourage HOV use by having designated HOV lanes and designating a minimum number of occupants required to use these lanes.

IP – Individual Permit

An Individual Permit is a Department of the Army authorization that is issued following a case-by-case evaluation of a specific project involving the proposed discharge(s) in accordance with the procedures of 33 Code of Federal Regulations part 323 part and 33 Code of Federal Regulations part 325 and a determination that the proposed discharge is in the public interest pursuant to 33 Code of Federal Regulations part 320.

IRIS – Integrated Risk Information System

An Integrated Risk Information System is a database of human health effects that may result from exposure to various substances found in the environment.

ISD - Independent School District

School districts are a form of special-purpose district which serves to operate the local public primary and secondary schools. A school district is a unique body corporate and politic usually with districts being coequal to that of a city or a county, and has similar powers including taxation and eminent domain.

ITS – Intelligent Transportation System

An Intelligent Transportation System is an integrated system that uses video and other electronic detection devices to monitor traffic flows on major freeways. When problems (called "incidents") are detected, operators may use remote controls to redirect traffic, inform motorists (through the use of dynamic message signs) and notify emergency response services as appropriate. Intelligent Transportation System replaces the term intelligent vehicle highway system.

LGC - Local Government Corporation

Subchapter D of Chapter 431, Texas Transportation Code, currently authorizes a city to create a local government corporation to "aid and act on behalf of one or more local governments to accomplish any governmental purpose of those local governments." Texas Transportation Code §431.101(a). Subchapter D has been used by some local governments as an innovative and flexible tool to create non-profit corporations to aid in the construction of public works projects using alternative procurement and delivery methods, such as design-build and construction management. An local government corporation is legally permitted to use alternative construction methods because it is exempted from many of the restrictive statutory requirements presently applicable to the local government that creates it. For example, an LGC is exempt from the competitive bidding provisions that apply to cities and counties.

LEP – Limited English Proficiency

The term Limited English Proficiency applies to individuals who do not speak English as their primary language and who have a limited ability to read, speak, write, or understand English can be limited English proficient.

Limited Access Roadway

A Limited access roadway is a roadway especially designed for through traffic and over, from, or to which owners or occupants of abutting land or other persons have no right or easement of access by reason of the fact that their property abuts such limited access facility or for any other reason. Interstate highways, parkways, and freeways are usually developed as limited-access facilities

Link

Links represent the roadway segments within a transportation network utilized for traffic demand modeling. Each link contains, among other information, length, traffic volume,

number of lanes, speed and direction of flow characterize each link. NCTCOG provided the DFW transportation networks used in this re-evaluation.

LOS – Level of Service

Level of Service is a measure of traffic flow and congestion. As defined in the *Highway Capacity Manual* - A qualitative measure describing operational conditions within a traffic stream; generally described in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety.

Mainlane

A mainlane is an expressway lane. Defined by NCTCOG, an expressway is a wide road built for fast moving traffic traveling long distances, with a limited number of points at which drivers can enter and exit.

MATES-II – Multiple Air Toxics Exposure Study in the South Coast Air Basin

The Multiple Air Toxics Exposure Study for the South Coast Air Basin was originally published in March 2000. The online version of the report can be found in http://www.aqmd.gov/matesiidf/matestoc.htm as separate ".pdf" files of each chapter.

MPA - Metropolitan Planning Area

A metropolitan planning area is the geographic area in which the metropolitan transportation planning process required by 23 U.S.C §134 and 49 U.S.C §5303 of the Federal Transit Act must be carried out.

MOA - Memorandum of Agreement

A memorandum of agreement is a document written between parties to cooperatively work together on an agreed upon project or meet an agreed upon objective. The purpose of an MOA is to have a written understanding of the agreement between parties. The MOA can also be a legal document that is binding and hold the parties responsible to their commitment or just a partnership agreement.

MOBILE6.2

MOBILE6.2 is an emission factor model for predicting gram per mile emissions of hydrocarbons, carbon monoxide, nitrogen oxides, carbon dioxide, particulate matter, and toxics from cars, trucks, and motorcycles under various conditions.

MOU – Memorandum of Understanding

A Memorandum of Understanding is a formal document which outlines the relationship between agencies or parties, including responsibilities and jurisdiction of each party, which sets forth within its provisions agreements between parties.

MSAT – Mobile Source Air Toxics

Mobile Source Air Toxics are a subset of the 188 air toxics defined by the Clean Air Act. The Mobile Source Air Toxics are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned.

MTBE - methyl tertiary-butyl ether

Methyl tertiary-butyl ether is a chemical compound that is manufactured by the chemical reaction of methanol and isobutylene. MTBE is produced in very large quantities (over 200,000 barrels per day in the U.S. in 1999) and is almost exclusively used as a fuel additive in motor gasoline. It is one of a group of chemicals commonly known as "oxygenates" because they raise the oxygen content of gasoline. At room temperature, MTBE is a volatile, flammable and colorless liquid that dissolves rather easily in water.

MTP – Metropolitan Transportation Plan

The Metropolitan Transportation Plan is a comprehensive, multimodal "blueprint" for transportation systems and services aimed at meeting the mobility needs of the Dallas-Fort Worth Metropolitan Area through the next 25 years. Plans, projects, programs, and policies are proposed as transportation recommendations that reflect solutions to improve the over all quality of life for residents in the Dallas- Fort Worth area.

NAAQS – National Ambient Air Quality Standard

The United States Environmental Protection Agency has established National Ambient Air Quality Standards for six air pollutants: ozone, lead, carbon monoxide, sulfur dioxide, nitrogen dioxide, and respirable particulate matter. The standards were established to protect the public from exposure to harmful amounts of pollutants. When the pollutant levels in an area have caused a violation of a particular standard, the area is classified as "nonattainment" for that pollutant.

NATA – National Air Toxics Assessment

The National Air Toxics Assessment is the Environmental Protection Agency's ongoing comprehensive evaluation of air toxics in the United States. The activities associated with the National Air Toxics Assessment include expansion of air toxics monitoring, improving and periodically updating emission inventories, improving national and local scale modeling, continued research on health effects and exposures to both ambient and indoor air, and improvement of assessment tools.

NCHRP - National Cooperative Highway Research Program

The National Cooperative Highway Research Program is administered by the Transportation Research Board. It was created in 1962 as a means to conduct research in acute problem areas that affect highway planning, design, construction, operation, and maintenance nationwide.

NCTCOG – North Central Texas Council of Governments

The North Central Texas Council of Governments is a voluntary association of, by and for local governments, and was established to assist local governments in planning for common needs, cooperating for mutual benefit, and coordinating for sound regional development.

NEPA – National Environmental Policy Act

The National Environmental Policy Act [42 U.S.C. 4321 et seq.] was signed into law on January 1, 1970. The Act establishes national environmental policy and goals for the

protection, maintenance, and enhancement of the environment, and it provides a process for implementing these goals within the federal agencies. The Act also establishes the Council on Environmental Quality.

NLEV – National Low Emission Vehicle

The National Low Emission Vehicle is a voluntary national low emission vehicle program for light-duty vehicles and light-duty trucks.

NMHC- Non-Methane Hydrocarbons

A large variety of non-methane hydrocarbons are found throughout the troposphere. They are often conveniently lumped into the categories of alkanes, alkenes, aromatics and biogenically produced compounds. Emissions of non-methane hydrocarbons derive from fossil fuel burning, industrial and evaporative sources, biomass burning emissions by plants, and oceanic sources.

NRCS – Natural Resources Conservation Service

The United States Department of Agriculture Natural Resources Conservation Service, formerly the Soil Conservation Service, is the federal agency that works hand-in-hand with the American people to conserve natural resources on private lands.

NRHP – National Register of Historic Places

The National Register of Historic Places is a catalog of historic sites and buildings, districts, structures, and objects which have been entered on the list of the nation's outstanding cultural resources. It provides an authoritative guide to federal, state and local governments, private groups and citizens to recognize the nation's cultural resources, enabling these groups to protect and sustain these resources in the process of planning for the future.

NTTA – North Texas Tollway Authority

The North Texas Tollway Authority, a political subdivision of the State of Texas under Chapter 366 of the Transportation Code, is empowered to acquire, construct, maintain, repair and operate turnpike projects; to raise capital for construction projects through the issuance of Turnpike Revenue Bonds; and to collect tolls to operate, maintain and pay debt service on those projects.

NWP – Nationwide Permit

A Nationwide Permit is a type of general permit issued by the Chief of Engineers of the United States Army Corps of Engineers (USACE) that authorize categories of activities that have minimal individual and cumulative adverse effects on the aquatic environment.

NOx – Nitrogen Oxides

Nitrogen Oxides is the sum of the nitric oxide and nitrogen dioxide in the flue gas or emission point, collectively expressed as nitrogen dioxide.

OMB- Office of Management and Budget

The Office of Management and Budget is a Cabinet level and is the largest office within

the Executive Office of the President of the United States and is an important conduit by which the White House oversees the activities of federal agencies. OMB is tasked with giving expert advice to senior White House officials on a range of topics relating to federal policy, management, legislative, regulatory, and budgetary issues.

OTHM – Official Texas Historic Marker

Official Texas Historic Markers are markers and plaques that the Texas Historical Commission awards, approves or administers. They include centennial markers the State of Texas awarded in the 1930's; Civil War Centennial markers from the 1960's; and medallions and markers awarded by the Texas Historical Commission.

Origin-Destination Analysis

Analyzing Origin-Destination data can determine travel patterns of traffic along a transportation facility during a typical day. This form of analysis is useful in assessing "user impacts", as the number of trips associated with specific population characteristics can be studied to provide general travel assumptions of those specific populations.

PA – Programmatic Agreement

A programmatic agreement is a document that spells out the terms of a formal, legally binding agreement between a state Department of Transportation and other state and/or federal agencies. A programmatic agreement establishes a process for consultation, review, and compliance with one or more federal laws, most often with those federal laws concerning historic preservation.

PCN – Pre-Construction Notification

Advance notification to be submitted to a district engineer of the United States Army Corps of Engineers, so that the district engineer can determine whether the proposed work qualifies for nationwide permit authorization.

Peak Period Traffic or Peak Period

The Peak period traffic is the percentage of Average Daily Traffic that occurs during the "AM peak traffic" (6:30 AM to 8:59 AM) or the "PM peak traffic" (3:00 PM to 6:29 PM) and represents the number of vehicles that pass a point on a highway during these periods.

PGBT – President George Bush Turnpike

The President George Bush Turnpike is a 30.5-mile toll road running east-west through the northern suburbs of Dallas, Texas**.**

PM – Particulate Matter

Particulate matter is anything that is suspended in the air. It can be caused by natural phenomena or come from man-made sources. In high enough concentrations, particulates can aggravate existing respiratory problems or even trigger new ones.

$PM_{2.5}$

Particulate matter less than 2.5 microns in diameter.

PM_{10}

Particulate matter less than 10 microns in diameter.

ppb – Parts Per Billion

Parts per billion denote one particle of a given substance for every 999,999,999 other particles. This is roughly equivalent to one drop of ink in a lane of a public swimming pool, or one second per 32 years.

ppm – Parts Per Million

Parts per million denotes one particle of a given substance for every 999,999 other particles. This is roughly equivalent to one drop of ink in a 150 liter (40 gallon) drum of water, or one second per 280 hours (11 days, 16 hours). One part in 106, a precision of 0.0001%.

Re-evaluation Limits

SH 121 extends from FM 423 to US 75 and includes the SH 121 at US 75 interchange.

Regional Toll Revenue Funding Initiative

Under this RTC program, eligible counties can apply for and if selected, receive funding from NCTCOG. To date, over 560 Regional Toll Revenue Funding Initiative projects have been submitted to NCTCOG.

RFG – Reformulated Gasoline

Reformulated gasoline is a cleaner-burning blend of gasoline that reduces motor fuel emissions. While reformulated gasoline contains the same ingredients found in conventional gasoline, it reduces some of the more harmful, toxic compounds and adds more combustible, cleaner-burning compounds.

ROW – Right-of-Way

Right–of-way is a general term denoting land, property or interest therein, usually in a strip, acquired for or devoted to a highway for the construction of the roadway. It is the entire width of land between the public boundaries or property lines of a highway.

RSA – Resource Study Area

A Resource Study Area is the geographic area within which impacts on a particular resource are analyzed.

RTC – Regional Transportation Council

The Regional Transportation Council is the independent transportation policy body of the Metropolitan Planning Organization. The Regional Transportation Council, which meets the second Thursday of each month, is comprised of 40 members: 33 local elected or appointed officials representing cities and counties, and seven transportation provider representatives.

RTHL – Recorded Texas Historic Landmarks

The National Register of Historic Places is a catalog of historic sites and buildings, districts, structures, and objects which have been entered on the list of the nation's outstanding cultural resources. It provides an authoritative guide to federal, state and local governments, private groups and citizens to recognize the nation's cultural resources, enabling these groups to protect and sustain these resources in the process of planning for the future.

RVP - Reid Vapor Pressure

Reid vapor pressure is a common measure of gasoline volatility, as well as a generic term for gasoline volatility. EPA regulates the vapor pressure of all gasoline during the summer months (June 1 to September 15 at retail stations).

SAL – State Archeological Landmarks

State Archeological Landmark designation stipulates that the property cannot be removed, altered, damaged, salvaged or excavated without a permit from the Texas Historical Commission. This designation encourages preservation and ensures resources that cannot be preserved are at least properly documented.

SH – State Highway

A State Highway is a broad roadway designed for high speed traffic. A state highway is a roadway so designated by the Texas Transportation Commission.

SHPO – State Historic Preservation Officer

The State Historic Preservation Officer administers the national historic preservation program at the State level, reviews National Register of Historic Places nominations, maintains data on historic properties that have been identified but not yet nominated, and consults with federal agencies during Section 106 review. State Historic Preservation Officer is designated by the governor of his/her respective state or territory.

SIP – State Implementation Plan

The State Implementation Plan describes how the state would reduce and maintain air pollution emissions in order to comply with the federal standards. Important components of the State Implementation Plan include emission inventories, motor vehicle emission budgets, control strategies, and an attainment demonstration.

SOV – Single Occupancy Vehicle

Single Occupancy Vehicle is a vehicle having only one occupant.

STIP – Statewide Transportation Improvement Program

The Statewide Transportation Improvement Program includes the Transportation Improvement Program documents for the 24 Metropolitan Planning Organizations in Texas, plus all the rural transportation projects that are not included in metropolitan Transportation Improvement Program documents. Projects must be consistent with the state and metropolitan long-range plans, and in nonattainment areas such as the Dallas-Fort Worth area, projects must conform to State Implementation Plan. The Statewide

Transportation Improvement Program can only include projects for which full funding is reasonably anticipated to be available in order to complete the project. As is the case with the Dallas-Fort Worth Transportation Improvement Program, the Statewide Transportation Improvement Program is a short-term (four-year) planning and funding document.

SW3P – Storm Water Pollution Prevention Plan

A Storm Water Pollution Prevention Plan contains those erosion and sedimentation Best Management Practices that will be used to control wastes generated from the construction site, the stormwater management measures that will be implemented, and the plan for long-term maintenance of these measures.

TAC – Texas Administrative Code

The TAC is a compilation of all state agency rules in Texas. There are 16 titles in the TAC. Each title represents a category and relating agencies are assigned to the appropriate title.

TAQA - Traffic Air Quality Analysis

A TAQA is an analysis to determine potential effects of carbon monoxide emissions related to a proposed transportation project. This analysis is based on TxDOT approved traffic data that was obtained from NCTCOG.

TCAA – Texas Clean Air Act

The Texas Clean Air Act is the clean air legislation signed in Texas in 1965 which established the Texas Air Control Board under the Department of Health.

TCEQ – Texas Commission on Environmental Quality

The Texas Commission on Environmental Quality, formerly known as Texas Natural Resource Conservation Commission, is the state agency in charge of protecting water and air resources of the state. Texas Commission on Environmental Quality also regulates hazardous material sites and is responsible for the development of the State Implementation Plan.

TDR - Transfer of Development Rights

Provisions in a zoning law that allow for the purchase of the right to develop land located in a sending area and the transfer of these rights to land located in a receiving area. TDR programs are a method to shift development from one portion of a community to another. Local units of government identify *sending areas* (areas where development is discouraged) and *receiving areas* (areas where development is encouraged). Landowners seeking to develop in a receiving area must first buy a certain amount of development rights from landowners in a sending area.

THC – Texas Historical Commission

The Texas Historical Commission is the state agency for historic preservation. Texas Historical Commission staff consults with citizens and organizations to preserve Texas'

architectural, archeological and cultural landmarks. The agency is recognized nationally for its preservation programs.

TIP – Transportation Improvement Program

The Transportation Improvement Program is both a funding process and a funding document. Federal regulations, along with regional policies and practices, establish the process by which transportation projects are selected, modified, and implemented. The Transportation Improvement Program serves as a short-term planning document that lists four years of funded transportation projects designed to carryout the recommendations of the long-range metropolitan plan. More formally, the Transportation Improvement Program is a staged, multi-year listing of transportation projects with committed funding from federal, State, and local sources within the Dallas-Fort Worth Metropolitan Area. A new Transportation Improvement Program is developed every two to three years in accordance with the metropolitan planning requirements set forth in the Statewide and Metropolitan Planning Final Rule (23 C.F.R. Part 450, 49 CFP Part 613).

TMF – Texas Mobility Fund

The creation of the Texas Mobility Fund allows the Texas Department of Transportation to issue bonds secured by future revenue. This allows the acceleration of mobility projects throughout the state. The Texas Mobility Fund is to be administered by the Texas Transportation Commission (the Commission) as a revolving fund to provide a method of financing for the construction, reconstruction, acquisition and expansion of state highways, including costs of any necessary design and costs of acquisition of rights-of-way, as determined by the Commission in accordance with standards and procedures established by law.

Toll Project Limits –

SH 121 from the Dallas North Tollway to SH 121 at US 75 interchange.

TPDES – Texas Pollutant Discharge Elimination System

Texas Pollutant Discharge Elimination System program now has federal regulatory authority over discharges of pollutants to Texas surface water, with the exception of discharges associated with oil, gas, and geothermal exploration and development activities, which are regulated by the Railroad Commission of Texas.

TPWD – Texas Parks and Wildlife Department

The Texas Parks and Wildlife Department is the state agency with primary responsibility for protecting the state's parks, fish, and wildlife resources.

Trip

A trip is a one-way movement, from where a person starts (origin) to where the person is going (destination).

TSM – Transportation System Management

Transportation System Management involves those actions or construction measures that control or improve the movement of cars and trucks on the highway system and buses on

the transit system. Transportation System Management also includes the coordination of the available transportation systems for more efficient operation. A typical Transportation System Management activity is a low-cost, short-term, high-impact transportation-related improvement. A Transportation System Management action is the use of a freeway shoulder as an added traffic lane during peak traffic flow conditions.

TDM – Travel Demand Management

Travel Demand Management includes actions or programs which encourage people to travel at alternative times, or with fewer vehicles to reduce congestion. Travel Demand Management reduces traffic volumes through methods including: ridesharing, park-and-ride operations, staggered work hours, and transit improvements.

TSS – Total Suspended Solids

Total Suspended Solids is a water quality measurement parameter at one time called non-filterable residue. It is a term that refers to the identical measurement: the dry-weight of particles trapped by a filter, typically of a specified pore size.

TSZ – Traffic Serial Zone

A Traffic Serial Zone is a small geographic unit of area that is developed as a basis for estimate of travel. Traffic Serial Zones vary in size and are determined by the roadway network and homogeneity of development.

TTC – Texas Transportation Commission

The Texas Transportation Commission is the five-member board that governs the Texas Department of Transportation, which is headed by an executive director selected by the commission. The governor, with the advice and consent of the Texas Senate, appoints commission members, who serve overlapping six-year terms.

TxDOT – Texas Department of Transportation

The Texas Department of Transportation is the State agency responsible for planning, designing, constructing, maintaining, and operating state transportation facilities including roads, bridges, waterways, and airports.

US - United States Highway

The system of United States Numbered Highways U.S. Highways is an integrated system of roads and highways in the United States numbered within a nationwide grid. As these highways were coordinated among the states, they are sometimes referred to as Federal Highways, but they have always been maintained by state or local governments since their initial designation in 1926.

USACE – United States Army Corps of Engineers

The United States Army Corps of Engineers is the federal agency responsible for implementing civil projects for flood control and navigation improvements, and for regulating the discharge of dredged and fill material into waters of the United States which includes wetlands.

USCG – United States Coast Guard

The United States Coast Guard is the branch of the United States armed forces involved in maritime law enforcement, mariner assistance, search and rescue, and national defense. As one of the seven uniformed services of the United States, and the smallest armed service of the United States, its stated mission is to protect the public, the environment, and the United States economic and security interests in any maritime region in which those interests may be at risk, including international waters and America's coasts, ports, and inland waterways.

US DOT – United States Department of Transportation

The United States Department of Transportation is the executive department of the United States government, established by the Department of Transportation Act of 1966. Its chief executive officer, the secretary, is a member of the president's cabinet. Its mission is to serve the United States by ensuring a fast, safe, efficient, accessible and convenient transportation system that meets our vital national interests and enhances the quality of life of the American people, today and into the future.

USFWS – United States Fish and Wildlife Service

The United States Fish and Wildlife Service is the federal agency responsible for determining which wildlife species face extinction as a result of alteration of their habitat, protecting them from further decline and providing for their survival. The United States Fish and Wildlife Service administers the Endangered Species Act.

VMT – Vehicle Mile Traveled

Vehicle Mile Traveled is a unit to measure vehicle travel made by a private vehicle, such as an automobile, van, pickup truck, or motorcycle. Each mile traveled is counted as one vehicle mile regardless of the number of persons in the vehicle.

VOC – Volatile Organic Compound

A Volatile Organic Compound is any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions.

VPD – Vehicles Per Day

Vehicles per Day is a measure of traffic volume and is used as the unit for Average Daily Traffic.

Weight of evidence

A system used by the EPA for characterizing the extent to which the available data supports the hypothesis that an agent causes cancer in humans.