I-40 Douglas Boulevard Interchange Reconstruction and Related Widening
Oklahoma County, Oklahoma

Submitted Previously for FASTLANE? YES
Name in Previous Application Same Project Name
Previously Incurred Project Cost: $4,909,700
Future Eligible Project Cost: $122,220,000
Total Project Cost: $127,129,700
FASTLANE Request: $73,332,000
Total Federal Funds (incl. FASTLANE) $97,776,000
Matching funds restricted to specific project component? NO
Project on NHFN? Yes NO
Project on NHS? Yes YES
Project to add Interstate capacity? Yes YES
Project in national scenic area? Yes NO
Rail grade crossing or separation included? NO
Intermodal or freight rail project, or freight project within freight rail, water, or intermodal facility? NO
If yes, specify: NSFHP $ to be spent on above two items: N/A

I-40 Douglas FASTLANE Application submitted by the Oklahoma Department of Transportation, 2017

Supporting information can be found at: https://www.ok.gov/odot/Progress_and_Performance/Federal_Grant_Awards/FASTLANE_Grants.html

ODOT Contact: Matthew Swift, SAPM Division Engineer, ODOT. (405) 521-2704 email: mswift@odot.org

State Oklahoma Inclusion in Planning Documents:
Begin Lat/Long: 35˚26'0"N, 97˚22'30"W TIP: NO*
End Lat/Long: 35˚24'8"N, 97˚17'17"W STIP: NO*
Size of project: Large MPO LRTP: YES
Urbanized Area (UA): Oklahoma City State LRTP: YES
UA population, 2014 919,230 State Freight Plan: NA

* Elements of this project are included in the current STIP and TIP documents
I-40 Douglas FASTLANE Application submitted by Oklahoma Department of Transportation, 2017
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Supporting Materials

Supporting documentation can be found at the project website Oklahoma I-40 DOT FASTLANE, and include:

- Reports and Technical Information (including the BCA Technical Memo)
- Certifications and Assurances
- Maps and Graphics
- Letters of Support
MEMORANDUM:

TO: U.S. Department of Transportation, Office of the Assistant Secretary for Transportation Policy

FROM: Matthew Swift, P.E., Strategic Asset and Performance Management Division Engineer

DATE: December 14, 2016

RE: I-40 Douglas Boulevard Interchange Reconstruction and Related Widening, Oklahoma County, Oklahoma

The Oklahoma Department of Transportation (ODOT) submitted the subject project to USDOT in the first round of FASTLANE grant improvements (FY 2016). With this application, ODOT is resubmitting the project for consideration in FY 2017. This memo documents the changes and updates to the application from FY 2016. While minor changes have been made throughout the application document, the major substantive changes are summarized here. In general, the physical project itself has not changed in terms of length or alignment, but the Douglas Boulevard interchange design alternatives have been refined, progress has been made in the environmental process, and the schedule and costs have been updated.

Project Description – The physical project is the same as what was submitted in the April 2016 FASTLANE I application. Only minor edits were made to this section, such as updated population and employment projections.

Project Cost – The pre-incurred cost has increased from $1.9 million to $4.9 million due to engineering work on the bridges east of Douglas Boulevard, and the inclusion of $3 million not yet encumbered for the design of the remainder of the Douglas Boulevard interchange. The eligible project cost increased just under 2% to $122.2 million, based on newer information from these efforts. Total project costs have therefore grown to $127.1 million. The amount of the FASTLANE grant requested has increased by approximately $2.4 million, with the matching percentage growing slightly from 40.0% to 40.9%. A new table in the Funding section was added to show uses of funds broken down by uses.

Cost Effectiveness – A new Benefit Cost Analysis (BCA) was performed for the project, incorporating the most recent guidance from USDOT. A more accurate calculation of off-peak travel time benefits was carried out, project costs were updated, and, following USDOT suggestions during a de-brief call on last year’s application, a new analysis was added to estimate the impacts of accidents on traffic delay.

Merit Outcomes - the following updates are included:

- Mobility Outcomes – Additional discussion of travel time reliability was added.
- Economic – Additional text was added regarding growth in employment adjacent to the project.
- Safety Outcomes – Additional discussion of collision reduction was added; safety table was updated with more recent collision data.
- Community and Environmental Outcomes – Discussion of project benefits in term of improving access to healthcare and education. Also added a discussion of the recent recognition and importance of I-40 as a national Alternative Fuel Corridor.

Project Readiness – ODOT has made significant progress in furthering engineering and environmental studies for this project and remains on track to have the project ready for construction in 2018. In addition the project was added to the MPO's Long Range Transportation Plan. The project schedule was also updated.

Assessment of Project Risks and Mitigation Strategies – A discussion of independent utility has been added to this project, to respond to the risk of a nearby project not being implemented. In addition the discussion of earthquake risks was updated.
EXECUTIVE SUMMARY

The I-40 Douglas Boulevard Interchange Reconstruction and Related Widening project ("I-40 Douglas Project") in southeastern Oklahoma County takes 5.5 miles of outdated Interstate, and brings this vital link in the national transportation system to 21st century standards. The project will address the long deferred need to reconstruct the increasingly problematic I-40/Douglas Interchange, widen the interstate from four through-lanes to six, and update bridges and other infrastructure elements along the highway.

This vintage section of the Eisenhower Interstate Highway System is critical to operations at the U.S. Air Force’s Tinker Airbase ("Tinker"), where our servicemen and women help keep our nation safe by maintaining the world’s most advanced aircraft. Moreover, Tinker is Oklahoma’s largest single-site employer, requiring thousands of daily trips on an already strained section of I-40.

The I-40 Douglas project is essential: constant high volumes of traffic approach and frequently surpass the capacity of this section of the interstate. The all too common crashes on this congested corridor result in secondary collisions, loss of life, serious injuries, and massive delays.

The bridges are approaching the end of their functional life, and in many cases have inadequate clearance for the volume of truck freight that relies on I-40. Indeed, commercial motor vehicle traffic is a high percentage of total traffic on this part of the National Highway System and National Highway Freight Network; and businesses can no longer count on this highway as a safe and reliable corridor across Oklahoma.

As I-40 struggles to handle current traffic, a turnpike project to the east will bring thousands of new trips daily starting in 2020, putting an increasing burden on I-40. Because of the pressing need for the I-40 Douglas project, the imminent harm that will come from waiting, and a project scale and scope that make federal involvement essential, the Oklahoma Department of Transportation (together with partners including Oklahoma City, Midwest City, Oklahoma County, the Association of Central Oklahoma Governments, Tinker Air Force Base, the Oklahoma Trucking Association and the Oklahoma City Chamber of Commerce) proudly submits this request for a FASTLANE grant.

The benefits of the I-40 Douglas Boulevard Interchange Reconstruction and Related Widening Project include:

- Modernizing an important but outdated part of the Interstate Highway System
- Providing improved access and mobility for freight
- Supporting a network critical to the economy and national defense
- Reducing the impact of collisions, including saving lives
- Location on an FHWA Alternative Fuel Corridor
- Benefit cost ratio of 1.05 to 1.00

The project engineering and design work is underway and can be ready for construction by summer 2018.
1. PROJECT DESCRIPTION

The I-40 Douglas Boulevard Interchange Reconstruction and Related Widening Project ("I-40 Douglas Project") will widen 5.5 miles of vintage 1960s Interstate 40 (I-40) and reconstruct the I-40 and Douglas Boulevard Interchange. This will provide access improvements to Tinker Air Force Base and the cities of Oklahoma City, Midwest City, and Del City, as well as accommodate traffic flow throughout the metropolitan area, state, and nation.

1.1. Project Request [UPDATED]

In view of the importance of the I-40 Douglas Project, the Oklahoma Department of Transportation (ODOT) is submitting this request for $73.3 million in critically needed FASTLANE funds for the $127.1 million I-40 Douglas Project. Over $4.9 million will be expended by the end of 2017, leaving $122.2 million in future eligible project costs.

1.2. Project Elements Supported by FASTLANE Funds

From Industrial Boulevard and extending east 5.5 miles to the intersection with I-240, Interstate 40 will be widened from four to six through-lanes. This project includes raising the Post Road and Westminster Boulevard bridges, which do not meet current standards for vertical clearance over I-40. Additionally, this project will reconstruct the I-40 bridges over a recently-widened Anderson Road to raise the vertical clearances and add acceleration and deceleration lanes along I-40. Lastly, the bridges on mainline I-40 over the Westbound I-240 ramps at the I-40/I-240 interchange will be widened to accommodate six through-lanes. Overall, the project will modernize this segment of I-40, correcting substandard ramp geometry and utilizing an urban interchange design at Douglas Boulevard that maintains a similar footprint, but with enhanced functionality.
1.3. Project is Regionally and Nationally Significant

**Regionally**

This project will tie into another widened (six-lane) section of I-40 that will be let for construction in early 2017. This related project starts at the I-240 interchange and extends east five miles. An important need compelling both of these widening projects is an upcoming Oklahoma Turnpike Authority project, the Eastern Oklahoma County Turnpike, which will connect two National Highway System (NHS) and National Highway Freight Network (NHFN) routes (I-40 and I-44) as a bypass of Oklahoma City. The new turnpike is scheduled to open to traffic by 2020, bringing approximately 3,400 additional vehicles per day onto I-40 through the Project area. (See Figure 7 later in the document.)

**Nationally**

The project is located on I-40, one of the nation’s most important interstate highways. I-40 runs through the south-central portion of the United States, beginning in California and ending in North Carolina. The highway travels through cities including Amarillo, TX; Albuquerque, NM; Oklahoma City, OK; and Memphis, TN. The project’s national and regional significance is illustrated in Figure 2, which shows the average daily freight traffic across the nation.

The importance of this project on both a regional and national scale is discussed further in Section 2, Project Location.

1.4. Transportation Concerns and Existing Conditions

Existing I-40 in the Project area, including the current I-40 Douglas Boulevard Interchange, was built in 1962 and is now four years beyond its 50-year design life. The interchange bridge structure is approaching structural deficiency and needs to be replaced. Other bridges are too narrow and most have minimal clearance for semi-trucks to pass safely underneath them. The I-40 bridges over Anderson Road, for example, require repairs approximately every five years due to damage from trucks with tall loads hitting the bridge as they pass underneath.

Congestion and safety are also a problem. The engineering analysis shows that the I-40 corridor has segments that operate at Level of Service (LOS) grade D (i.e., speeds below posted speed limit) or worse at peak hour.
Collision rates on the existing highway are twice the state average for a similar interstate facility, averaging two collisions per week, with 12 fatalities in the past 10 years.

I-40 carries more trucks than any other interstate in Oklahoma, moving almost 15,000 each day across the state. This includes approximately 6,640 per day through the Project segment of I-40. Maintaining interstate roadways and bridges to support heavy truck traffic without requiring trucks to reroute due to weight and height restrictions is vital to the efficiency of our national transportation system.

**Concerns**
The chief issues and concerns with I-40 in eastern Oklahoma County are its reliability, safety, and state of good repair. The current state of the highway is inadequate to the task of providing high quality transportation to the 44,000 cars and trucks that traverse it each day. By 2045, daily traffic is expected to exceed 66,000 with the new traffic from the Turnpike extension. Without improvement, LOS F conditions (i.e., traffic flow is irregular and speeds vary substantially because of congestion) will then occur along multiple segments as well as at ramps during peak hours.

Accident rates are high (see Section 6.3), and lane-blocking accidents frequently cause severe delays. As a result, the facility is unable to efficiently manage the significant amount of truck traffic on this corridor which serves Tinker Air Force Base as well as surrounding industrial facilities and suburban communities.

One of the major problems experienced by drivers on the existing facility is the lack of a reliable travel time because of the numerous accidents which often result in lane closures. When this happens at peak travel times — approximately once every three weeks — traffic will often come to a standstill, and backups can run for miles. The I-40 Douglas project will provide an additional lane in each direction and improved shoulders to ensure that traffic will keep moving even when an accident occurs.

## 2. PROJECT LOCATION

The I-40 Douglas Project is situated in the southeastern part of Oklahoma County, 10 miles east of downtown Oklahoma City. The project stretches west to east across 5.5 miles of the I-40 highway. The western boundary of the project area is positioned between Midwest City and Oklahoma City, one-half mile west of the I-40 Douglas Boulevard Interchange, and continues southeast to the I-240 and I-40 interchange. The majority of the project lies within the Oklahoma City Urbanized Area.

### 2.1. Connections to Existing Infrastructure

**Interstate 40 across the United States**
As discussed in Section 1 and illustrated in Figure 2, the project is located on I-40, one of the nation's most important interstate highways. I-40 runs through the south-central portion of the United States, beginning in California and ending in North Carolina.

**Tinker Air Force Base**
Tinker Air Force Base (Tinker) is located immediately south of I-40, roughly between Sooner Road and Douglas Boulevard, and occupies a tract approximately five square miles in area. Tinker provides repair, communication, and logistics support for the U.S. Air Force, and also provides repair and maintenance for a wide array of military aircraft.
Tinker’s largest operation is the Oklahoma City Air Logistics Complex (OC-ALC) which is the US Air Force’s largest repair complex, serving 92 Air Force Bases and 46 foreign nations.  \(^1\)

While many planes are flown to Tinker for maintenance, the base ships and receives a majority of its goods and supplies via truck.

**Oklahoma County**

The I-40 Douglas Project is important regionally, because it provides essential east-west access in the county. The I-40 Douglas Project will also be crucial to managing the traffic that the new 21-mile Turnpike extension will bring to I-40. The Eastern Oklahoma County Turnpike, identified in the Oklahoma Turnpike Authority’s *Driving Forward OK* plan\(^2\), links I-44 to I-40 about 5 miles east of the I-40 Douglas Project. This toll road project will reduce the driving times to Tulsa from the southern and eastern parts of the Oklahoma City Metro area, as well as from points south along I-35, which connects Oklahoma City to Dallas and Fort Worth.

With I-40 already struggling with current traffic levels, the existing I-40 Douglas Project area simply lacks the capacity to handle the increased traffic and congestion from a growing regional population, not to mention the new Turnpike extension. The project’s additional lanes and the reconstructed bridges will ensure that automobile and truck traffic can move safely and efficiently along this important segment of I-40.

**Surrounding Cities**

The I-40 Douglas project is bordered by Oklahoma City, Midwest City, and Del City, and a second tier of suburban cities including Choctaw, Nicoma Park, Spencer, and Forest Park.

Land use surrounding the project ranges from urban on the west, to mostly suburban areas on the east. On the west, near the Douglas Interchange, the project provides access to a densely developed residential and industrial area, anchored by Tinker and the aviation-related businesses that border it.

**Oklahoma City, the Capital City**

I-40 serves as a direct route to Oklahoma City, the state capital. Traffic on the project segment is generated by commuter traffic to the Tinker area, and travel to and from other parts of the Oklahoma City metropolitan area, including destinations such as the University of Oklahoma Medical Center, state government offices, the Oklahoma City Thunder NBA team, equestrian shows, and a convention center. In addition, Oklahoma City and the surrounding metropolitan area is home to four two-year colleges, 14 four-year colleges and universities, and 12 vocational/career technical schools. These attractions, coupled with the fact that Oklahoma City is at the crossroads of two major interstate highways, I-40 and I-35, generate substantial traffic on I-40 in the project area.

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As seen in Tables 1 and 2, population and employment are expected to grow substantially over the next 25 years\(^3\). Most notably, the population in Oklahoma City is estimated to grow by 39.4 percent (2010-2040), with employment increasing an expected 34.7 percent over the same period. Other communities along the project (mapped in Figure 1 above) are also growing in terms of both population and employment.

As an increasing number of commuters drive from eastern Oklahoma County to the growing number of jobs and other opportunities in Del City, Midwest City, and Oklahoma City, the I-40 corridor needs to be able to handle the growing demand.

**Table 1: Population Growth [NEW since FY16 FASTLANE application]**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Oklahoma City</td>
<td>506,080</td>
<td>581,688</td>
<td>631,281</td>
<td>726,556</td>
<td>810,883</td>
<td>24.9%</td>
<td>39.4%</td>
</tr>
<tr>
<td>Del City</td>
<td>22,128</td>
<td>21,332</td>
<td>22,022</td>
<td>23,905</td>
<td>23,905</td>
<td>12.1%</td>
<td>12.1%</td>
</tr>
<tr>
<td>Midwest City</td>
<td>54,088</td>
<td>54,371</td>
<td>57,249</td>
<td>65,318</td>
<td>66,411</td>
<td>20.1%</td>
<td>22.1%</td>
</tr>
<tr>
<td>Nicoma Park</td>
<td>2,415</td>
<td>2,393</td>
<td>2,469</td>
<td>2,692</td>
<td>2,692</td>
<td>12.5%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Choctaw</td>
<td>9,377</td>
<td>11,146</td>
<td>12,179</td>
<td>16,715</td>
<td>16,715</td>
<td>50.0%</td>
<td>50.0%</td>
</tr>
<tr>
<td>Oklahoma County</td>
<td>660,448</td>
<td>720,386</td>
<td>776,864</td>
<td>888,866</td>
<td>931,131</td>
<td>23.4%</td>
<td>29.3%</td>
</tr>
</tbody>
</table>

**Table 2: Employment Growth [NEW since FY16 FASTLANE application]**

<table>
<thead>
<tr>
<th></th>
<th>2010 Employment</th>
<th>2035 Employment</th>
<th>2040 Employment</th>
<th>2010-2035 % Growth</th>
<th>2010-2040 % Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oklahoma City</td>
<td>394,665</td>
<td>502,760</td>
<td>527,739</td>
<td>27.4%</td>
<td>33.7%</td>
</tr>
<tr>
<td>Del City</td>
<td>5,606</td>
<td>7,950</td>
<td>9,304</td>
<td>41.8%</td>
<td>66.0%</td>
</tr>
<tr>
<td>Midwest City</td>
<td>20,746</td>
<td>28,434</td>
<td>33,278</td>
<td>37.1%</td>
<td>60.4%</td>
</tr>
<tr>
<td>Oklahoma County</td>
<td>464,249</td>
<td>574,113</td>
<td>625,276</td>
<td>23.7%</td>
<td>34.7%</td>
</tr>
</tbody>
</table>

Unfortunately, the region’s infrastructure is not keeping up with travel demand, which can be an important factor in business location decision-making.\(^4\) The I-40 Douglas Project is necessary to maintain the economy, ensure mobility for people and freight, and strengthen communities through job creation and increased access to “Heartland City” – Oklahoma City.

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\(^3\) Source: Association of Central Oklahoma Government’s (ACOG) *Encompass 2040 Metropolitan Area Plan*, 2016.

\(^4\) [http://newsok.com/article/5490047](http://newsok.com/article/5490047)
3. PROJECT PARTIES

3.1. Project Sponsor

The Oklahoma Department of Transportation (ODOT) is the project sponsor and would be the FASTLANE grant recipient. The mission of ODOT is to provide a safe, economical, and effective transportation network for the people, commerce, and communities of Oklahoma. ODOT will sponsor, manage, and provide oversight for this project.

3.2. Key Supporting Stakeholders

The Association of Central Oklahoma Governments (ACOG) has written a letter of support for the I-40 Douglas project. As the regional metropolitan planning organization (MPO), ACOG is responsible for prioritizing the region’s critical transportation and transit needs. The MPO has developed the long range Oklahoma City area Metropolitan Transportation Plan (MTP) Encompass 2040, and the short range Transportation Improvement Plan (TIP). The I-40 Douglas Project is included in the current MTP; and ACOG has portions of the project included in the TIP. ACOG has committed to include the remainder of the project in the TIP when sufficient funds are made available (see Oklahoma DOT I-40 FASTLANE, Certification and Assurances).

Support letters for the project have been received from the following entities and can be found in the project website:

- City of Midwest City
- City of Oklahoma City
- Greater Oklahoma City
- Chamber of Commerce
- Oklahoma Trucking Association
- Oklahoma Turnpike Authority
- Tinker Air Force Base
- Oklahoma County

Tinker Air Force Base, the major employer and freight receiver along the project’s stretch of I-40, has been closely involved with ODOT during project planning for the I-40 Douglas Interchange improvements. Recognizing the importance of the improved access to and from the base, Tinker Air Force Base has provided a letter of support for this project.

Oklahoma Turnpike Authority (OTA) is the organization responsible for constructing and managing the new Eastern Oklahoma County Turnpike which will feed traffic from Tulsa onto the I-40 Douglas project. OTA supports this project, recognizing the benefits an upgraded interchange and throughway will provide to the users of their toll roads.

The Oklahoma County jurisdiction encompasses both the I-40 Douglas Project and the new Eastern Oklahoma County Turnpike projects. In addition, Oklahoma County is the sole property owner for the only necessary right of way for the I-40 Douglas Project. The County and ODOT are negotiating an access agreement to allow ODOT to perform all necessary preconstruction activities, while working to transfer the property for ODOT’s future project.
4. SOURCES/USES OF PROJECT FUNDS [UPDATED]

The total capital cost for the I-40 Douglas Project is estimated at $127,129,700 including environmental review, design, and construction.

This amount would place a heavy burden on ODOT were it to be funded without federal assistance. As of the latest Eight Year Construction Work Plan (2017-2024), the cost of this project would amount to approximately 72% of the annual budget for ODOT Division Four (which averages $160 million annually). The I-40 Douglas project’s five miles of interstate make up less than one percent of the 1,421 miles of highway that Division Four oversees.

**Future Eligible Costs**

To date, $4,809,700 has been expended on this project. The $122,220,000 in eligible future costs are shown below in Table 3, and funding sources are provided in Figure 5.

**Ongoing Operating and Maintenance Costs**

Ongoing operating and maintenance costs will be paid for entirely by the state as needed. A $5 million maintenance investment in this project is slated to be incurred in the initial 20 years after opening, and again 20 years after that. These costs are not included in this request.

**Sources of Funds**

ODOT is requesting 60 percent of future eligible project costs in the amount of $73.3 million in FASTLANE funding for the project. ODOT will also be using an additional 20 percent federal funding in the amount of $24,444,000. These funds will be matched with 20 percent state funds. A certification statement from ODOT assuring that the state has the 20 percent local match funding available can be found online at Oklahoma DOT I-40 FASTLANE, Certifications and Assurances.

**Table 3: Sources and uses of total project costs [UPDATED since FY16 FASTLANE application]**

<table>
<thead>
<tr>
<th>Uses</th>
<th>Cost Estimate</th>
<th>FASTLANE Funds</th>
<th>Other Federal</th>
<th>State Funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering, Environmental, Design</td>
<td>$4,809,700</td>
<td>Pre-incurred (not part of grant application)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROW and Utility Relocation</td>
<td>$100,000</td>
<td>Pre-incurred (not part of grant application)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Costs Already Spent</strong></td>
<td><strong>$4,909,700</strong></td>
<td><strong>Pre-incurred (not part of grant application)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reconstruct I-40 Douglas Interchange</td>
<td>$46,000,000</td>
<td>$27,600,000</td>
<td>$9,200,000</td>
<td>$9,200,000</td>
</tr>
<tr>
<td>Bridge Improvements</td>
<td>$9,400,000</td>
<td>$5,640,000</td>
<td>$1,880,000</td>
<td>$1,880,000</td>
</tr>
<tr>
<td>Widening</td>
<td>$61,000,000</td>
<td>$36,600,000</td>
<td>$12,200,000</td>
<td>$12,200,000</td>
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<tr>
<td>Contingency (5%)</td>
<td>$5,820,000</td>
<td>$3,492,000</td>
<td>$1,164,000</td>
<td>$1,164,000</td>
</tr>
<tr>
<td><strong>Total Eligible Costs</strong></td>
<td><strong>$122,220,000</strong></td>
<td><strong>$73,332,000</strong></td>
<td><strong>$24,444,000</strong></td>
<td><strong>$24,444,000</strong></td>
</tr>
</tbody>
</table>
Contingency

ODOT understands that any overrun in cost will be our responsibility, and we are fully prepared to assume that responsibility. Note that the cost estimates in Table 3, which are based on nearly-complete preliminary engineering, as well as substantial experience with similar projects, currently include a 5% contingency.

5. COST EFFECTIVENESS [UPDATED]

A formal benefit-cost analysis (BCA) was conducted for this project using best practices for BCA in transportation planning, and reflects all FASTLANE grant application guidance. It is important to note that a formal BCA is not a comprehensive measure of a project’s total economic impact, as many benefits cannot be readily quantified or occur under conditions of uncertainty. The BCA restricted its analysis to the following quantifiable benefits:

1. Savings in "No Build" operating and maintenance costs to the state of Oklahoma,
2. Travel time savings along the 5.5-mile segment of I-40 at peak hours,
3. Accident-related travel time savings resulting from having an additional lane available to carry traffic during lane-blocking accidents, and
4. Accident reduction along the 5.5-mile segment of I-40.

5.1. BCA Assumptions

Federal guidance recommends that applicants discount future benefits and costs to 2015 present values using a real discount rate of seven percent to represent the opportunity cost of money in the private sector. USDOT guidance also allows for present value analysis using a three percent discount rate when the funds currently dedicated to the project would be other public expenditures. For much of the cost of this project, the 3 percent discount rate would apply. However, the B/C ratio and individual project benefits are presented below using the more conservative seven percent discount rate to demonstrate that the project’s long term benefits clearly outweigh its costs.

The analysis of benefits was performed over a 35-year forecast period, from 2016 through 2051. The first year of benefits is expected to be 2022, which means 30 years of discounted benefits are considered in the BCA. To account for differences in the long-term maintenance and rehabilitation costs of the project compared to the existing condition (“No-Build”), the project costs are projected out to 2060. To be conservative, no salvage value of the project’s capital expenditures was modeled at 2060.

5.2. Results

Table 4 summarizes the cost and the quantifiable benefits of the project in terms of Present Value. Detailed analysis of costs and benefits, including data sources and methodology descriptions, are available on the project’s support website, in the BCA Technical Memo. As shown in Table 4, the present value of the project’s cost is $92.2 million (using the 7 percent discount rate), and the benefits have an estimated present value of $97.1 million. The resulting benefit cost ratio and net present value (NPV) are 1.05 and $4.8 million respectively. With a 3% discount rate, the benefit cost ratio and NPV are 1.80 and $89.0 million.

Most of the Project benefits are a result of the accident reduction that will result from improvements to the corridor. These include interchange upgrades with increased merging distance, lane additions, surface and marking renewals, paved inside shoulders, improved signage, and shoulder rumble strips. These safety features and related design will bring this segment of the I-40 corridor to a quality that meets or exceeds national standards. Drivers will be less prone to accidents, and accident rates are expected to decrease to the state average accident rate per 100 million VMT for interstates and major highways.
Table 4: Benefit Cost Analysis Summary ($2015) [UPDATED since FY16 FASTLANE application]

<table>
<thead>
<tr>
<th>Category</th>
<th>Present Value at 7%</th>
<th>Present Value at 3%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Capital and O&amp;M Costs</td>
<td>$ 92,225,245</td>
<td>$ 111,138,637</td>
</tr>
<tr>
<td>Saved Maintenance Costs of No Build</td>
<td>$ 11,936,568</td>
<td>$ 24,184,668</td>
</tr>
<tr>
<td>Travel Time Savings (Daily)</td>
<td>$ 4,094,654</td>
<td>$ 9,728,741</td>
</tr>
<tr>
<td>Travel Time Savings (Accident-Related)</td>
<td>$ 1,079,998</td>
<td>$ 2,404,785</td>
</tr>
<tr>
<td>Accident reduction</td>
<td>$ 79,941,531</td>
<td>$ 163,791,489</td>
</tr>
<tr>
<td><strong>Total Benefits</strong></td>
<td><strong>$ 97,052,752</strong></td>
<td><strong>$ 200,109,682</strong></td>
</tr>
<tr>
<td>Net Present Value</td>
<td>$ 4,827,507</td>
<td>$ 88,971,045</td>
</tr>
<tr>
<td><strong>Benefit Cost Ratio</strong></td>
<td>1.05</td>
<td>1.80</td>
</tr>
</tbody>
</table>

Travel time savings and improved travel time reliability also provide project benefits; and these gains result primarily from the addition of one extra lane to the 5.5-mile segment of I-40 in each direction. Travel time savings are a significant benefit to this project as substantial increases to average speed are possible with the addition of two lanes, particularly in the AM and PM peak hours where travel speeds are projected to increase by 18-21 miles per hour (above No Build speeds).

5.3. Non-Quantified Costs and Benefits

Improvements to travel time reliability are not captured in the BCA. Reliability is a real benefit for users of the facility, as planning can be done more efficiently and road users will allot less buffer time in their travels, allowing more time for other activities. The expectation of a predictable travel time provides a special benefit to trucking companies who can schedule around anticipated heavy traffic hours. Currently unexpected accidents that block a lane of traffic occur during peak hours approximately once every three weeks. With only two lanes in each direction, this frequently leads to lengthy delays.

Another benefit that was not quantified is the reduction in vehicle emissions from delay and idling vehicles related to lane-blocking accidents.

6. SELECTION CRITERIA

[Many parts of Section 6 were updated since the FY16 FASTLANE application with newer data or analysis, but there are no significant changes other than the recent recognition of I-40 in Oklahoma as an Alternative Fuel Corridor.]

6.1. Mobility Outcomes

The I-40 Douglas Project is an investment that supports economic vitality and national defense. President Eisenhower championed the formation of the Interstate Highway System to provide critical ground transport routes for military supplies and troop deployments in case of national necessity. The interstate system (shown in Figure 6) has grown immensely since its creation in 1956, and is now the world’s second longest network, with a total length of 47,856 miles.

Figure 6: Interstate Highways
The stretch of I-40 where the project is located is one of the oldest segments of the original network, dating back to the 1960s. Updating the system is crucial to accommodate population growth, safety needs, and overall satisfaction of drivers. As mentioned in Section 2, Project Location, Oklahoma City serves as a meeting point for the national highway system. As shown in Figure 7, I-35 (north-south), I-44 (northeast-southwest) and I-40 (east-west) all meet in Oklahoma County.

National Highway System (NHS) roadways are important to the United States economy, defense, and mobility; and this NHS segment handles a large volume of national and regional freight and passenger movement.

Currently, this section of I-40 experiences average daily traffic (ADT) ranging from 37,900 to 44,300, where truck movement contributes 15 percent of daily traffic (5,700-6,600 trucks per day). During the day, the project section of I-40 experiences high delay, and during evening peak hour, segments near the Douglas interchange experience a substantial decrease in speed.

A 2016 analysis of 2045 traffic without turnpike traffic indicates LOS F conditions at peak hours on some segments of I-40 in the project area, including along ramps. The addition of traffic from the turnpike extension will worsen service levels.

The I-40 Douglas Project responds to the continuing growth in commuter traffic and freight movement by expanding the facility from four lanes to six lanes. Not only will this accommodate more through traffic, but it will also build in extra room when an accident occurs. With an extra lane and improved shoulders, fewer delays are likely to occur because of the additional space for the flow of traffic to redirect.

Reliability is a major problem for mobility along this corridor. High levels of accidents cause multiple-lane shutdowns, or ramp closures, often at late night hours. During peak hours, local officials estimate that accidents that close down at least one lane of I-40 occur approximately once every three weeks.

Traffic analysis shows that with one lane closed on the existing four-lane I-40, mainline speeds between Anderson Road and Douglas Boulevard are near zero (break down conditions) when traffic exceeds 3,250 cars per hour. Current peak hour traffic is close to that level (3,035 in the morning rush and 3,140 in the evening peak). By 2045, traffic will exceed 4,000 in the two highest volume peak hours, and exceed the 3,250 threshold at other times as well.

Under the six-lane build condition, an accident that closes a lane of traffic would leave two lanes open, and traffic would still be able to travel over 40 mph even during the highest peak hour.

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5 Source: NPMRDS Congestion Data
6 This analysis is available as an appendix to the BCA Tech Memo on the Oklahoma DOT I-40 FASTLANE website.
Importance to Freight

Given the geographic location of Oklahoma, a large number of external-to-external trips travel through the state (i.e., trips that have neither an origin nor a destination in Oklahoma). The majority of truck traffic, 68 percent of all truck tonnage on I-40 in Oklahoma, is through traffic. The heaviest flows of truck volume occur in and around Oklahoma City, where the three major interstates converge. Therefore, the national freight industry is dependent on the access and mobility of I-40. The estimated freight volume growth statewide is 41.9 percent from 2015-2040 (Table 5); and for trucking it is even higher – 52.4%. As industries continue to use Oklahoma’s I-40 route to transport their goods, the traffic volume will significantly increase.

Table 5: Oklahoma Forecasted Freight Tonnage Flow, 2015-2040

<table>
<thead>
<tr>
<th>Mode</th>
<th>2015 Total Estimated</th>
<th>2040</th>
<th>2015-2040</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Inbound</td>
<td>Outbound</td>
<td>Internal</td>
</tr>
<tr>
<td>Truck</td>
<td>661.7</td>
<td>79.8</td>
<td>76.2</td>
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<tr>
<td>Rail</td>
<td>338.7</td>
<td>47.7</td>
<td>17.3</td>
</tr>
<tr>
<td>Waterway</td>
<td>6.4</td>
<td>40.0</td>
<td>4.3</td>
</tr>
<tr>
<td>Total</td>
<td>1006.8</td>
<td>131.5</td>
<td>97.8</td>
</tr>
</tbody>
</table>

In 2015, more than one billion tons of freight moved by highway, rail, and waterway in Oklahoma according to the Oklahoma Long Range Transportation Plan. Further, there are many industries that rely on the movement of goods, and they are a key component of Oklahoma’s economy. Five industry groups in Oklahoma have been identified as critical users of the freight transportation system, and several of these are among the major contributors to Oklahoma’s gross domestic product (GDP). They accounted for more than half of the state’s GDP in 2013 – Agriculture, Energy and Mining, Manufacturing, Transportation and Distribution, and Other Industry (including retail and construction). The future competitiveness of these major and emerging industries in the global marketplace requires an integrated freight transportation system that can handle bulk shipments and intermodal containers and, relevant to this project, highways that can serve distribution centers and warehouses.

The overall movement of cars and trucks will improve due to the I-40 project and its enhancements: adding an additional lane, repairing the aging roadway, widening the shoulders, and improving bridges. Oklahoma City is one of the fastest growing cities in the United States and freight traffic outpaces population growth. It is necessary to keep up with the overall growth of the surrounding cities as well as the growth of long-distance freight tonnage.

In addition, the vehicles driving on this section of I-40 experience wear and tear from the deteriorated pavement condition on this aging roadway. By reconstructing and widening this section of I-40, the state is enhancing the mobility for roadway users and improving safety for movement of people and goods.

6.2. Economic Outcomes

Greater Oklahoma City is in the geographic center of North America, equidistant from the east and west coasts and major trade partners Canada and Mexico. Oklahoma is also at the crossroads of the U.S., with three major national highways traversing through the capital city and county, bolstering the state’s importance to national and international trade flows. Oklahoma is a desirable location for businesses as it is positioned within a day’s drive of the rapidly-growing south-central region (OK, TX, AR, and LA) projected to
grow more than 44 percent during the next 25 years. Oklahoma County is the economic center of the state and is an excellent location for serving all markets in Oklahoma, Texas, Arkansas, Kansas and Missouri, linked by I-40, I-35, and I-44.

The major sources of income in central Oklahoma are oil, agriculture, manufacturing, business and government. Each industry relies on at least one, or often multiple modes for transport. The highway system provides connections not only to and from origins and destinations, but also serves as the “last and first mile” connector to users of rail, water, pipeline, and air transport.

Oklahoma is a Tier One energy state and typically receives economic shocks from oil price fluctuations. However, over the past several years Oklahoma City has also shown economic stability and diversification of its economy. Currently, the energy sector accounts for approximately 3 percent of the Oklahoma City metropolitan area’s employment. Aerospace is the second-largest industry in the state, employing over 120,000 residents across 500 companies, many located near Tinker, along Douglas Boulevard and I-40.

Improving travel speeds and travel time reliability in the I-40 Douglas project area is clearly critical to the local and regional economy because of its importance to the center of the region’s aerospace industry.

Local Economy

The Oklahoma City metropolitan area continues to attract residents with its low cost of living and job opportunities. An important component to attracting and retaining a quality workforce is tied to amenities and quality of life. Nationally, the city is recognized for its Metropolitan Area Projects (MAPS) that specifically addresses these quality-of-life issues. MAPS is the City of Oklahoma City’s visionary capital improvement program for new and upgraded sports, recreation, entertainment, cultural and convention facilities, all funded by a one-cent sales tax.

Oklahoma City’s sustained population growth through the recession and into recovery sets it apart as one of the nation’s fastest growing cities. The Oklahoma City Metropolitan Statistical Area (MSA) population grew nearly 1.6 percent per year from 2007 to 2015. Population growth has carried into the recovery and is poised to continue (See Table 1 and Table 2 above).

I-40, particularly the project’s Douglas Boulevard exit, provides the primary access to Tinker, the largest single-site employer in Oklahoma, employing more than 26,000 military and civilian personnel. The installation has an annual statewide economic impact of $3.6 billion, stimulating an estimated 33,000 secondary jobs, including at businesses such as the Boeing facility on the east side of Douglas Avenue.

Tinker was founded in the early 1940s and over the years has provided continuous repair, logistics, and communications support to the Air Force. In 1942, the Army Air Force located a huge wartime Douglas Aircraft Assembly Plant next to the depot. At the same time, in the Pacific, Major General Clarence Tinker, an Oklahoma native and part Osage Indian, gave his life while leading a group of bombers on a desperate mission against the Japanese near Wake Island. In his honor, the new military base was named Tinker Field, and later Tinker Air Force Base.

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Throughout World War II, Tinker’s 18,000 military and civilian employees repaired and modified aircraft and aircraft engines and shipped supplies around the world. Meanwhile, the Douglas Plant produced countless warplanes, and components for cargo planes. In the 1950s, Tinker continued work on aircraft engines and parts, and played an important role in supporting the Berlin Airlift.

This aerospace center continues to grow. Additional jobs are likely to result from an aircraft maintenance facility recently built at Tinker. More than 1,300 jobs are anticipated for a center that will maintain the KC 46 Pegasus aerial refueling aircraft (Figure 9).

Boeing Company is another major employer that will benefit from the I-40 Douglas project. The world's largest aerospace company, Boeing has long had a presence in Oklahoma City in the vicinity of the project, and is known for its work in support of defense, aerospace, and security. In July 2016, Boeing opened a new 300,000 square foot, $80 million Global Services and Support (GS&S) facility near Tinker, the third Boeing facility on the existing campus. The new GS&S facility (Figure 10) houses an additional 800 workers. The new labs will restore or modernize aging aircraft from Tinker.

Improving I-40 is critical to the local economy not only for supporting freight movement, but because of its importance in bringing workers throughout the region to the major aerospace employment centers in and around the project area.

6.3. Safety Outcomes

Increasing the safety of roadway users is an important priority for ODOT. The I-40 Douglas Project will introduce several roadway enhancements that will not only increase mobility, but will also improve design, construction, and maintenance of infrastructure to reduce accidents, injuries, and fatalities. Proper road maintenance and the use of safety related improvements, such as concrete barriers, widened shoulders, and rumble strips, greatly enhance safety.

Accidents along the 5.5 mile stretch of I-40 outside of the Interchange occur at a high rate, with over 1,200 collisions logged over the past ten years, which averages to more than two crashes each week. This crash rate is nearly twice the average on four-lane interstates in the state of Oklahoma.
Evidence points to high traffic volumes and congestion as a factor in the high crash rate. According to ODOT:

- The most-commonly listed cause of collisions (41%) was “No Improper Action”.
- During peak hours, the most-commonly listed cause of accidents (25%) was “following too closely” due to congestion.
- In each year 2009-2015, the top accident type is rear end collisions.
- Most accidents occur during normal conditions: dry pavement (77%), clear or cloudy weather (82%), and during daylight (68%).

Relieving bottlenecks and congestion during peak travel times by increasing capacity, and bringing I-40 and the intersection designs up to modern standards will reduce the number of such collisions.

Each accident on the four-lane Interstate currently creates increased congestion, thus increasing the dangers of accidents during peak hours. Currently, the inside shoulder width at portions of the I-40 can be as narrow as two feet, and are not paved. This project will widen and pave inside shoulders to ten feet, allowing broken down automobiles or vehicles involved in an accident to pull over and relieve congestion, decreasing the risk of secondary collisions.

At the Douglas Boulevard Interchange, merge distance will be increased for all I-40 movements. Additionally, acceleration and deceleration lanes (Figure 11) will be added to I-40 at Anderson Road to enhance safety while merging. These lanes promote a more seamless traffic flow when drivers are entering and exiting the interstate. The lanes provide drivers with the opportunity to either slow down or speed up before merging with high-speed traffic on the Interstate, or allowing them to begin exiting the interstate without interrupting the traffic pattern of the interstate users behind them.

The ability for drivers to safely position themselves to either enter or exit the Interstate greatly decreases the risk of collisions. These lanes enhance an interstate’s capacity and traffic efficiency, and also help to reduce congestion. The widened bridge over Anderson Road will allow for a dedicated turn lane that will reduce rear end accidents.

The project is expected to provide $80 million in safety benefits from bringing the existing crash rate more in line with statewide averages for Interstates.
Bridge Structure Deficiencies

The Douglas Boulevard interchange bridge is at risk of becoming structurally deficient and needs to be replaced or undergo major rehabilitation. Several of the bridges are too narrow or lack necessary height for today’s semi-trucks to pass safely underneath them. The bridges on I-40 over Anderson Road have substandard vertical clearance and they will be reconstructed at a greater height over the newly widened Anderson Road. This will eliminate the occurrence of trucks hitting the bridge, which currently happens approximately once every five years.

6.4. Community and Environmental Outcomes

The I-40 Douglas Project will improve the lives of those living in and moving through the Oklahoma City area by relieving congestion, increasing roadway safety, creating temporary construction jobs, enhancing access to permanent local and regional jobs, and promoting economic development through increased freight access. Key community and environmental outcomes are highlighted below.

Long Term Access to Employment

In the long term, this project will improve access to jobs downtown, as well as to the numerous employers served directly by this project, such as Tinker and Boeing near the Douglas interchange.

According to the 2015-2040 Oklahoma Long Range Transportation Plan (LRTP), Oklahoma workers overwhelmingly rely on private automobiles for their journey to work. The I-40 Douglas project will provide an improved transportation route for employees travelling from the east to Oklahoma City, including employees living or working in Del City, Midwest City, or at Tinker. Significantly, this project will ease congestion for the thousands of Tinker employees who live off base. ODOT’s LRTP notes that industries particularly dependent on transportation and the movement of goods are quickly emerging as some of the state’s largest industries. The I-40 Douglas project will ensure that this growth can continue without being constrained by transportation concerns.

Short Term Employment Impacts

While this project will enhance access to existing regional jobs and help secure future jobs in the shipping industry nationwide, it will also provide a valuable opportunity for local residents to partake in the three-year construction project. At the peak of construction in 2019, it is estimated that 235 people will be working on the project.
In the short term (i.e., over the 2018-2021 construction period), the project is projected to create an estimated 1,589 person-years of employment\(^8\), including direct jobs from the project as well as indirect and induced jobs that will result from the purchase of construction materials and the spending of the wages of the Project’s construction workers in the local economy.

Employment opportunities exist even for individuals currently lacking the necessary training. The public Eastern Oklahoma Technology Center (EOCTC) is an established career and education center located approximately 10 miles north of the midpoint of the corridor. The EOCTC has offered area residents an opportunity to become trained in engineering, architecture, and construction for the past 30 years.

**Access for Shippers**

Freight tonnage in Central Oklahoma and in the nation is steadily increasing. Proactively planning for the heightened presence and movement of freight trucks will be critical for the region to remain economically competitive within the state and nation. The improved route is important for freight trucking companies to maintain their current activities and increase capacity. Improving the efficiency of freight traffic in and through Oklahoma each day is one of the most important benefits this project provides.

**Environment**

One environmental benefit of the I-40 Douglas Project derives from improvements in network efficiency. By allowing more vehicles to utilize the new Turnpike Extension and avoid congested highways closer to the more densely developed parts of Oklahoma City, emissions from congested stop-and-go traffic are avoided.

In addition, as noted in the Mobility section, when accidents occur on I-40 that result in a lane closure during peak hours, there are stop and go conditions that back up for miles and can last for an hour or more. By adding a third lane in each direction on I-40, the emissions that are created during the massive delays and idling after such an accident will be reduced significantly.

Other environmental issues to be explored in the project development process include protecting adjacent institutions and neighborhoods from excessive noise, and addressing any cultural and historic resource issues.

Importantly, this project is also part of one of the nation’s newly-designated Alternative Fuel Corridors (AFC). This year, the US Federal Highway Administration (FHWA) established the first pieces in a national network of alternative fuel corridors, along which drivers are assured a consistent supply of stations providing alternative fuel. Thanks to proactive efforts by Oklahoma’s state and local governments, the entire statewide length of I-40 (along with I-35 and I-44, including parts of the Oklahoma Turnpike) is now recognized by FHWA as a CNG corridor, replete with fueling stations at regular intervals.

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By providing an alternative to gasoline and diesel, known for harmful emissions and sensitivity to global price shocks, the use of CNG vehicles helps improve energy security, economic stability, and air quality. Oklahoma was uniquely qualified for AFC recognition, with the state leading the nation in CNG fueling stations per capita. Indeed, Oklahoma recently achieved its goal of at least one natural gas fueling station for every 100 miles of interstate highway – a result of Governor Fallin’s long range vision that took years to achieve and required the cooperation of local governments, tribal governments, and private industry.

FHWA intends to support the expansion of the AFC network across the nation. Reducing congestion and improving safety along these corridors – including I-40 – is important for ensuring that alternative-fueled cars and trucks are able to travel safely and efficiently across the country. With congestion along this segment of I-40 already causing known diversions, failure to bring this 5.5 mile segment of I-40 up to modern standards threatens to undermine the value of its AFC designation. With the backbone of a well-preserved Interstate system and a CNG refueling network across the states of Texas, Oklahoma, and much of Missouri, commercial vehicles will have the option to access clean fuels for long hauls and thus make a significant contribution to emissions reductions.

**Access to Healthcare and Education**

There are two higher education institutions located along I-40 within a 5-mile radius from the I-40 Douglas project. Rose State College, a community college with over 8,000 students each year, is largely a commuter campus with only 180 on-campus housing units. Accessed directly from I-40, and less than a mile from Tinker, Rose State serves hundreds of military personnel each year. Park University, a private institution with its flagship campus located in Missouri, offers a campus center located on Tinker’s Base for undergraduate studies. Both of these institutions offer excellent, affordable education opportunities for the employees and residents of the nearby cities that will benefit from reduced congestion surrounding the I-40 exits that serve these schools.

Nestled in the Southeast corner of the Douglas Boulevard interchange is the three-story St. Anthony Healthplex East, which provides emergency and other medical services to the area. With 70 employees, reducing congestion and delay will benefit commuters to this facility, as well as patients in need of emergency care.

**Other Community Benefits**

A priority of both ODOT and ACOG is to encourage visually attractive streetscapes and highway rights of way. ODOT has already partnered with Creative Design Resolutions (CDR) to create a master design plan for the I-40 corridor, including the 5.5-mile segment of the I-40 Douglas project. The goals of this effort are to promote new development, preserve views and landscapes, and incorporate green spaces, where appropriate. Incorporating the I-40 Douglas project into this larger comprehensive design plan for the area benefits all local residents and users, and promotes additional economic and social activity.

*Figure 15: Proposed Douglas Interchange Redesign Alternatives [UPDATED since FY16 FASTLANE application]*

Available on website in full size
6.5. **Innovation and Partnership**

This project includes the raising of the slab span bridges over I-40 carrying Post Road and Westminster Road. This type of bridge rehabilitation has not previously been used in Oklahoma. The purpose of raising the bridges is to accommodate six lanes of traffic and maintain appropriate vertical clearance, without having to build entirely new structures. The slab span bridges are in good condition and structurally sound and do not otherwise need to be replaced.

Another innovative aspect of the Project will be a new design for the heavily used Douglas Boulevard Interchange. ODOT’s alternatives analysis, is currently considering three innovative design options (shown in Figure 15, and online at Oklahoma DOT I-40 FASTLANE). Each of these options improves operations compared to the current inefficient cloverleaf design.

6.6. **Cost Share**

As shown in Section 4, this project will be completed using 60 percent federal FASTLANE funds and another 20 percent from other federal funds. The remaining 20 percent of funds will be contributed by ODOT. ODOT has provided a Certification Statement (posted on Oklahoma DOT I-40 FASTLANE) that the Department has the funds available to provide the 20 percent required local match.

7. **PROJECT READINESS**

7.1. **Technical Feasibility**

ODOT has extensive experience completing projects of similar scope on time, on budget, and without incident. The project will be completed through phased construction, and traffic will proceed while construction on project segments is underway.

The I-40 Douglas project will raise the slab span bridges to increase the vertical clearances. Temporary widening on the outside of the existing lanes will occur to shift traffic to the exterior lanes while reconstruction of the median barrier, inside shoulders, and inside lanes occurs. Once completed, traffic will be shifted to the newly completed inside lanes while the outside lanes are reconstructed. ODOT will thus have two lanes of traffic open in both directions throughout construction, for a safer, more efficient construction schedule.

**ODOT has:**

- Awarded 18 similar interchange projects with a construction total of $188.1 million.
- Widened portions of I-40 from four to six lanes in Oklahoma County and the adjacent Canadian County for 12 miles with an additional eight miles scheduled in the Eight Year Construction Work Plan.
- Completed the $715 million I-40 Crosstown Relocation which increased capacity of I-40 from six lanes to ten lanes through the heart of Oklahoma City.
Two similar widening projects managed and completed by ODOT are:

- The widening of I-40 from four to six lanes from El Reno to the west side of Yukon which was completed in 80 percent of the projected time.
- The widening project from the west side of Yukon to Morgan Road was completed on budget and 30 percent ahead of schedule.

Similar bridges that have been constructed include:

- The reconstruction of the bridge on US-77 over Memorial Road in Oklahoma City was completed 8 percent ahead of schedule.
- Redecking of the I-40 bridges over the North Canadian River in Oklahoma City was completed 15 percent ahead of schedule.

Schedule [UPDATED]

ODOT’s timeline calls for a FASTLANE award for the I-40 Douglas Project to be obligated well before the September 30, 2020 deadline. With all pre-construction activities to be completed by March 2018, the project is expected to be ready for construction is the Summer of 2018.

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*Figure 17: Project Schedule [UPDATED since FY16 FASTLANE application]*

Figure 17 shows the project’s major milestones, and a detailed project schedule can be found on the application website. The I-40 Douglas Project construction will be ready to commence as early as 2018, with total project completion occurring in 2021. Environmental work is currently underway and preliminary engineering is 80% complete. Preliminary plans for the project can be found at Oklahoma DOT I-40 FASTLANE.
7.2. Approvals and Coordination

[UPDATED to describe progress in environmental and engineering since initial application]

Environmental Approvals

The environmental studies (including but not limited to topics such as: air quality, biology, cultural resources, hazardous materials, historic properties, noise, socioeconomic data, and wetlands) were initiated by ODOT in 2016, while conceptual alternative analysis for the Douglas Interchange began in 2015. For NEPA purposes, the I-40 Douglas Boulevard Interchange Project consists of two distinct projects, each with a separate NEPA document: one for the Douglas Boulevard interchange reconstruction, and a separate document for the widening of I-40. Both project components are eligible for a Documented Categorical Exclusion (CE).

The interchange replacement component is eligible for a CE because the interchange work is necessary as a part of the needed Douglas Boulevard bridge replacement, given that the environmental impacts are minimal and there is no public controversy. The project will be built entirely within publicly-held right-of-way. Most of the project will be built within ODOT right-of-way, with some areas near the Douglas Interchange requiring land from Oklahoma County. ODOT has a draft agreement with Oklahoma County (See Oklahoma DOT I-40 FASTLANE, Reports and Technical Information) for use of the land for project development, and will work with the County to receive transfer of the appropriate right of way as needed. No privately-held land is required. ODOT’s contractor is currently working on the environmental approval process for the Douglas Interchange component. Based on preliminary research and surveys, as well as ODOT’s past experience with similar projects, this project should not have any issues receiving approval for the CE document. A similar project was approved utilizing an Individual Categorical Exception was approved by the Oklahoma Division of the Federal Highway Administration. This document is in the Reports and Technical Information on the Oklahoma DOT I-40 FASTLANE website.

The road widening of I-40 from Douglas Boulevard to I-240 is the second separate component of this project, and is being designed by ODOT staff with coordination from consulting firms for bridge work. The road widening is occurring within ODOT’s existing ROW and is therefore also eligible for a documented CE as long as ODOT proves there is minimal environmental impact and public controversy. The NEPA process was already completed for a similar portion of the I-40 East project; that project also widened I-40 primarily within existing ROW with minimal access changes, and it was approved to receive a documented CE.

In April 2016, ODOT conducted a stakeholder meeting to discuss the proposed project with agencies and local governments in the area. The Department received constructive feedback and comments. Based on initial stakeholder feedback, it is not likely any public controversy will arise. Approval of the two Documented Categorical Exclusions is anticipated in June 2017.

State and Local Planning Documents

The FASTLANE project for reconstructing the I-40/Douglas Boulevard interchange and widening I-40 from four to six lanes for five and one-half mile east of the interchange is included in the recently adopted Metropolitan Transportation Plan, Encompass 2040. The project is also consistent with the 2015-2040 Oklahoma Long Range Transportation Plan (LRTP). The 2015-2040 LRTP, adopted in August 2015, is a policy document. The I-40 Douglas Interchange and related interstate widening project addresses two LRTP policies in particular: Highway/Bridge Policy #2 - Preserve and improve the condition of highways and bridges, and Highway/Bridge Policy #5- Provide for a safe, efficient, and effective National Highway System to improve commercial motor vehicle mobility and connectivity. In regards to #2, the candidate project addresses vertical clearance issues for bridges at Post, Westminster and Anderson Roads.
The #5 item is addressed through the I-40 project by improving commercial motor vehicle mobility and connectivity, and reducing collisions.

**State and Local Approvals**
Support for the project by state and local entities is indicated by the letters of support available at [Oklahoma DOT I-40 FASTLANE](#). Among others, the Greater Oklahoma City Chamber of Commerce has provided a support letter, noting the vital importance of safety, mobility and access to Tinker Air Force Base and its surrounding aerospace support. The corridor improvement is of daily importance to employment, commerce, education, and safe travel in the region, state, and nation.

Any required state and local approvals are expected to be quickly and easily obtained. Portions of the project are currently included in the Statewide Transportation Improvement Program (STIP) and the Association of Central Oklahoma Governments (ACOG) Transportation Improvement Program (TIP). ACOG, the Metropolitan Planning Organization (MPO) for the Oklahoma City metropolitan area, has committed to including the entire project in the TIP upon receipt of funding, which will then be incorporated by ODOT into the STIP.

**Coordination with FHWA**
ODOT staff has presented the project concept to the Oklahoma Division of FHWA, and communication and coordination is ongoing. The required Access Justification Report (AJR) for the I-40/Douglas interchange is scheduled for submittal in June 2017.

**Public Engagement**
ODOT has begun the stakeholder engagement process regarding the proposed design of the Interchange and the related widening. The initial public meeting for the I-40 Douglas Interchange is scheduled for January 2017, with an additional public meeting addressing the widening expected in March 2017. As the project progresses into construction, ODOT will be proactive in keeping the public informed of road closures or other changes in traffic patterns.

### 7.3. Risks and Mitigation Strategies
A description of the three possible project risks and mitigation strategies are described below.

**Earthquakes**
A 5.8-magnitude earthquake occurred on September 3, 2016 near Pawnee, Oklahoma, the largest earthquake ever recorded in the state of Oklahoma. ODOT immediately responded after the 7:02 a.m. earthquake and sent inspection teams to look at bridges within a 30-mile radius of the earthquake's epicenter, as per the state’s updated guidance (Table 7).

Considering the recent high magnitude earthquake in Pawnee earlier this year, as well as a number of smaller earthquakes occurring recently in central Oklahoma, there is risk that an earthquake could affect this project. ODOT has consulted with the California DOT in addressing appropriate bridge design, maintenance, and inspections.
According to the USGS, no earthquakes greater than a 2.6 magnitude have been recorded in the last 10 years within 3 miles of the project site. The 5.8-magnitude earthquake that hit Pawnee in September 2016 was 72 miles from this project site.

**Threat of Tinker Air Force Base Reduction**

A portion of the need for this project stems from the overwhelming activity occurring at Tinker. The Defense Base Realignment and Closure Commission (BRAC) commission was established in 2005 to provide a non-partisan and objective review and analysis of the list of military installation recommendations issued by the Department of Defense. Tinker Air Force Base has cooperated fully in previous reviews and has not experienced reductions as a result of the BRAC process.

The State, the Oklahoma City Chamber of Commerce, and the communities of Oklahoma have worked diligently with Tinker Air Force Base, and will continue to do so to make Tinker BRAC-proof. Given the history and success of this effort, as well as the investment in facilities on the recently-expanded base, it is possible, but unlikely, that the Base Realignment and Closure (BRAC) commission would decrease the mission and employment at Tinker Air Force Base.

**Eastern Oklahoma County Turnpike Construction Risks [UPDATED]**

Another important driver of the I-40 Douglas project is the expected traffic that will be added to I-40 as a result of the Turnpike Extension. It is possible, but highly unlikely, that the Eastern Oklahoma County Turnpike would experience delays or risks in construction. The turnpike project will be fully paid for by bonds and is not affected by the state budget process. The Oklahoma Turnpike Authority began their bond issuance process in September 2016.

The Oklahoma Turnpike Authority was authorized in 1947, and has been constructing, operating and maintaining turnpikes in Oklahoma for 80 years. In the 1990s, toll roads including the Chickasaw Turnpike, between Ada and Sulphur, the Cherokee Turnpike, thirty-three miles in northeast Oklahoma, and the John Kilpatrick Turnpike in Oklahoma City were built. The OTA has a “cross-pledge” turnpike system. Thus, tolls collected on all turnpikes pay the debt service, maintenance and expansion for the turnpike system, not each individual road, guaranteeing a reliable revenue source for the system.

**Independent Utility**

Even without the Turnpike Extension, the I-40 Douglas Project has independent utility. The benefit-cost analysis was run assuming no additional turnpike traffic (that is, with approximately 5% less traffic in all years), and the resulting benefit-cost ratio was 1.03 using a 7% discount rate. This is less than the 1.05 ratio with the turnpike, but still indicates that the safety and travel time benefits exceed the project costs.

**8. LARGE PROJECT REQUIREMENTS [NEW]**

The I-40 Douglas project is needed due to improve safety and reduce delay on a facility, which will continue to experience traffic growth arising from local population and employment growth, increases in local and long-distance freight movement.

While the cost of this project is substantial, ODOT is moving ahead with environmental approvals, public engagement, and engineering design work so that it can be implemented as soon as funding becomes available. Waiting to implement this project will only cause further deterioration in service, reliability, and safety on this critical piece of America’s National Highway Freight Network, National Highway System, and now a key piece of the growing network of Alternative Fuel Corridors.
Information on the I-40 Douglas Project with respect to the FASTLANE Large Project Requirements is summarized in Table 8.

**Table 8: Large Project Requirements**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Yes, see Sections 1.3, 1.4, 2 &amp; 6</th>
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<tbody>
<tr>
<td>Does the project generate national or regional economic, mobility, safety benefits</td>
<td>Yes, see Sections 1.3, 1.4, 2 &amp; 6</td>
</tr>
<tr>
<td>Is the project cost effective?</td>
<td>Yes, see Section 5 and 7.3</td>
</tr>
<tr>
<td>Does the project contribute to one or more of the Goals listed under 23 USC 150? (Safety Infrastructure condition, Congestion reduction, System reliability, Freight movement and economic vitality, Environmental sustainability, Reduced project delivery delays.)</td>
<td>Yes, see Sections 1.4, 6.1, 6.2, 6.3, 6.4, and 6.5., and Figure 2</td>
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<tr>
<td>Is the project based on the results of preliminary engineering?</td>
<td>Yes, PE is 80 % complete. (Plans are on website)</td>
</tr>
<tr>
<td>With respect to non-federal financial commitments, does the project have one or more stable and dependable funding or financing sources to construct, maintain, and operate the project?</td>
<td>Yes, see section 4</td>
</tr>
<tr>
<td>Are contingency amounts available to cover unanticipated cost increases?</td>
<td>Yes, see Section 4</td>
</tr>
<tr>
<td>Is it possible that project cannot be easily and efficiently completed without other federal funding or financial assistance available to the project?</td>
<td>Yes, see Section 4</td>
</tr>
<tr>
<td>Is the project reasonably expected to begin construction not later than 18 months after the date of the obligation of funds for the project?</td>
<td>Yes, see Section 7.1</td>
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