

2019 BUILD GRANT

RAIL CROSSING  
AHEAD  
ROAD

# Rural Opportunity to Advance Development (ROAD) Project

*U.S. Congressional District OK-01*

Safety

integrity

people

vision

coordination

# Implementation



U.S. Department of Transportation  
**FY2019 Better Utilizing Investments to Leverage Development (BUILD) Application**

BUILD Funds Requested: **\$10,316,455**

Submitted by:



<b>Project Name</b>	Rural Opportunity to Advance Development (ROAD) Project
<b>Applicant</b>	City of Wagoner
<b>Project Partners</b>	City of Wagoner Wagoner Public Works Authority (WPWA) Indian Nations Council of Governments (INCOG) Oklahoma Department of Transportation (ODOT)
<b>Contact Information</b>	Mr. Albert R. Jones, Mayor City of Wagoner 231 Church Street, Wagoner, OK 74467 (918) 485-2554 mayor@wagonerok.org
<b>Location</b>	City of Wagoner, Wagoner County Oklahoma Congressional District 1
<b>Project Type</b>	Rural, Road – Repair/Rehabilitation
<b>Project Description</b>	The City of Wagoner, WPWA, INCOG, and ODOT are partnering to enhance safety and to improve mobility and access for the diverse population of multimodal travelers along the three-quarter mile stretch of the Cherokee Street / Oklahoma State Highway 51 corridor. The project will: <ul style="list-style-type: none"> <li>— Enhance corridor with roadway resurfacing and stormwater management measures</li> <li>— Enhance experience for multimodal users by constructing sidewalks, crosswalks, Americans with Disabilities Act (ADA)-compliant ramps, off-street paths for bicyclists, and two pedestrian bridges connecting the South Trail to the roadway corridor</li> <li>— Improve major intersections by adding sidewalks, crosswalks, signage, ADA-compliant ramps, and a turning lane</li> <li>— Improve safety at railroad at-grade crossings by installing ADA safety crossing improvements</li> <li>— Construct a trail to enable pedestrians to safely and more efficiently access the only grocery store in the area</li> <li>— Install fiber optic and relocate sub-surface public utilities</li> </ul>
<b>Project Cost</b>	\$13,923,420
<b>BUILD Funds Requested</b>	\$10,316,455 (74%)
<b>Local Match Source(s) &amp; Amounts</b>	\$1,407,695– City of Wagoner (General Fund) \$1,154,000– City of Wagoner, Public Works \$1,045,000 – Oklahoma Department of Transportation (ODOT) Total: \$3,606,695 (26%)
<b>Project Schedule / Status</b>	National Environmental Policy Act Categorical Exclusion (NEPA process) for the corridor is expected to be complete in August 2021. Construction will begin in April 2022 and the project is expected to be complete in July 2023.
<b>Project Benefits</b>	Once completed, this Project will: <ul style="list-style-type: none"> <li>— Increase economic competitiveness due to improved access to economic centers and services and improve quality of life due to improved access to health care services and safe active transportation alternatives</li> <li>— Improve environmental sustainability due to stormwater management measures and increased active transportation options</li> <li>— Improve safety and mobility for pedestrians, bicyclists, autos and trucks</li> <li>— Improve state of good repair due to stormwater management measures and roadway resurfacing</li> </ul>
<b>Benefit-Cost Analysis Results</b>	Benefit-cost ratio: 1.55 (7% discount rate)
<b>Project Website</b>	<a href="http://www.incog.org/Transportation/BUILDFY19_Wagoner.html">http://www.incog.org/Transportation/BUILDFY19_Wagoner.html</a>

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OFFICE of the MAYOR

July 15, 2019

The Honorable Elaine L. Chao  
Office of the Secretary  
U.S. Department of Transportation  
1200 New Jersey Ave SE  
Washington, DC 20590

Dear Secretary Chao,

The City of Wagoner is pleased to submit this application for the Rural Opportunity to Advance Development (ROAD) (Project) under the Better Utilizing Investments to Leverage Development (BUILD) program. The request is for \$10.3 million in Federal BUILD grant funds for the Project, which is matched by \$3.6 million in state and local investment. The City of Wagoner will be the lead coordinating agency, implementing the relocation of city-managed sub-surface public utilities. In coordination with the City of Wagoner, the Oklahoma Department of Transportation (ODOT), who owns, operates, and maintains the state highway routes, will be the lead implementing agency, implementing the roadway resurfacing, construction of sidewalks, crosswalks, ADA accessible ramps, and off-street side path. Any cost overruns above the allocated amounts for the Project will be covered by the City of Wagoner, from other local sources of funding to improve the Cherokee Street corridor.

The project consists of a full renovation of the Cherokee Street/Oklahoma State Highway 51 Corridor, which is the main thoroughfare, and only designated truck route, into downtown Wagoner and provides access to key economic centers and community social services for this rural town. The improvements will provide a safe multimodal environment, reducing average annual crashes by 3.4 percent, particularly creating a safer environment for pedestrian travel. The improvements will also reduce flood hazards on the corridor and provide a more efficient and safer means to access the only grocery store in the city. Successfully delivering this project is necessary for improving the safety, quality of life, economic competitiveness and state of good repair for the City of Wagoner. This project is the essence of what the BUILD program is intended for—to build infrastructure for the next century to meet the demands for safe transportation with flexible, scalable upgrades to specific corridors.

Realizing the project is essential to the wellbeing of the local rural residents in the City of Wagoner. The composition of Wagoner residents living within the project area is diverse and residents earn a lower median household income than households in surrounding areas. Additionally, many households in the project area are transit-dependent, meaning that they do not own a vehicle. The high-quality infrastructure built through the Rural Opportunity to Advance development (ROAD) will serve to facilitate multi-modal and safe mobility options for residents to access places of employment and essential services and will facilitate the movement of goods and services to improve economic prosperity in the city. We believe the Project is a strong candidate for BUILD funding with construction anticipated to begin in June 2021.

This project is vital for the City of Wagoner to ensure a safe, accessible, and economically competitive future.

We greatly appreciate the United States Department of Transportation's consideration of the requested investment in this Project as it is a critical corridor for the City of Wagoner, and of significance for the County of Wagoner and the region.

Please contact Taylor Tannehill, City Planner, at 918-485-2554 if you have any further questions regarding this project.

Sincerely Mayor Albert R Jones III

A handwritten signature in red ink, appearing to read 'A. Jones', is written over a horizontal line.

P.O. Box 406 • Wagoner, Oklahoma • 918 485-2554

## 1. PROJECT DESCRIPTION

The City of Wagoner, Oklahoma is requesting \$10.3 million in Better Utilizing Infrastructure to Leverage Development (BUILD) funds for a \$13.9 million rural roadway transportation improvement project, the Rural Opportunity to Advance Development (ROAD) Project, that will enhance safety, mobility, and access for multimodal travelers—particularly travelers with physical disabilities—along the Cherokee Street/Oklahoma State Highway 51 corridor in Wagoner, Oklahoma (OK) (**Figure 1**).

The Project was conceived as a roadway improvement project but has evolved into a multi-modal corridor enhancement for the main thoroughfare in the rural City of Wagoner. The improvements will create a safe multi-modal travel environment, which will facilitate access to employment, healthcare services, emergency services, the city's library, cultural destinations, commercial stores, and the only grocery store. Additionally, the improvements will make alternate forms of transportation available to and safe for travelers and residents of Wagoner, such as biking and walking, serving to improve community health. The project will greatly improve the quality of life of the residents of Wagoner, the county seat of Wagoner County, nestled in a rural area in Northeastern Oklahoma.

*Figure 1. Overview*



As shown in **Figure 2**, the project would improve an approximately three-quarter mile stretch of the corridor and includes:

- Roadway resurfacing,
- Construction of sidewalks,
- Construction of crosswalks,
- Construction of Americans with Disabilities Act (ADA)-compliant ramps,
- Construction of off-street side paths for bicyclists,
- Intersection modifications (sidewalks, large crosswalks ADA, signage, turning lane),
- Construction of South Trail,
- Construction of two pedestrian bridges to connect the South Trail to the roadway corridor,
- ADA safety crossing improvements to railroad at-grade crossings,
- Fiber installation, and
- Relocation of sub-surface public utilities, including water, sewer and electric.

The BUILD request of \$10.3 million would be matched with \$1.41 million from the City of Wagoner storm drainage improvements, funded by the municipally-owned utility company, \$1.15 million from the City of

Wagoner Department of Public Works for utility relocation costs and water/sewer relocation, and a \$1.05 million contribution from the Oklahoma Department of Transportation (ODOT), for a total of 26 percent in non-federal match.

The project is scheduled to complete the National Environmental Policy Act (NEPA) phase and design by 2021. Project construction is scheduled to begin in 2022 and complete in 2023, with the corridor being fully usable to all users in July 2023.

## 1.1. Project Elements

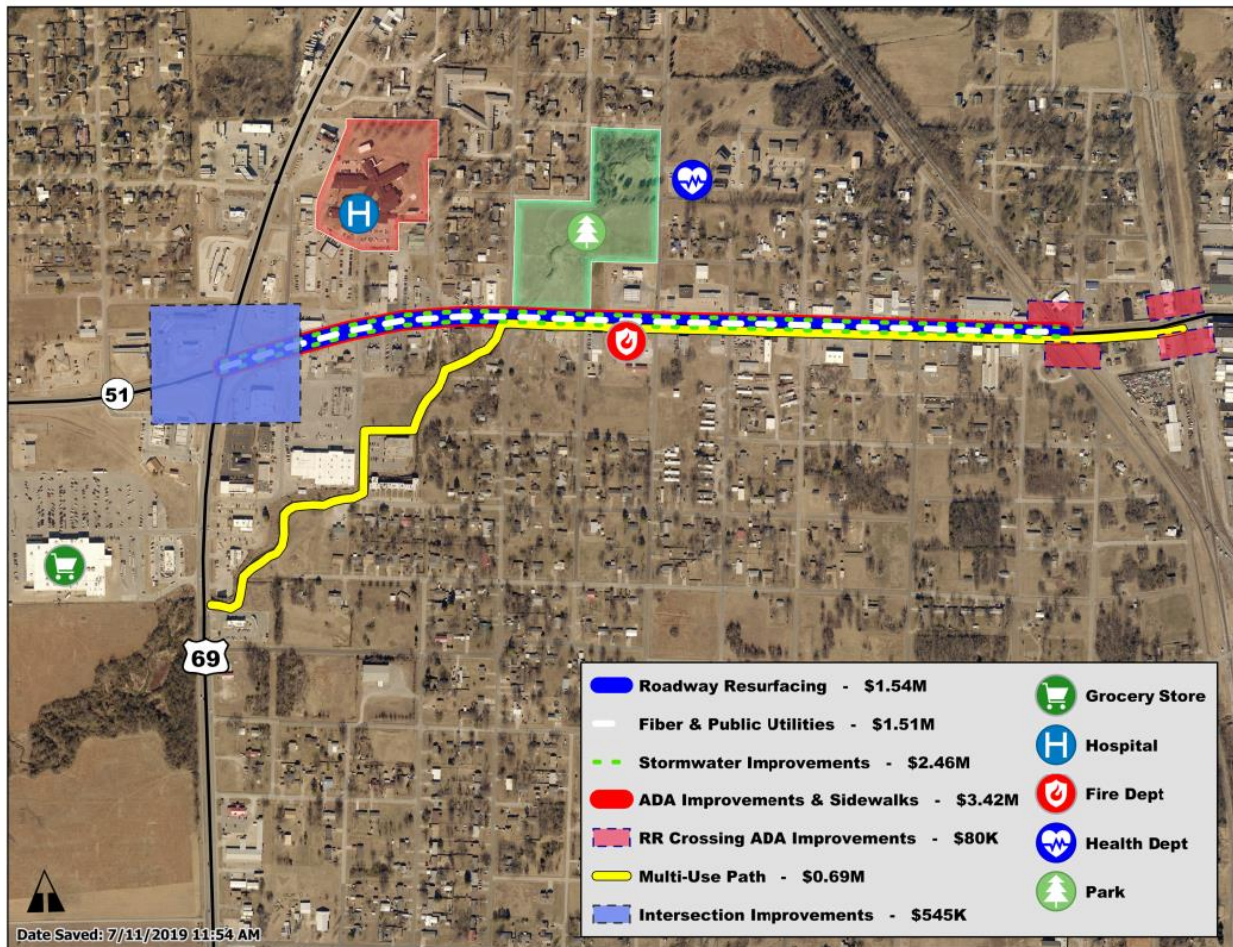
There are eight key elements to the Project scope, as summarized in **Table 1**.

*Table 1. Project Elements*

Project Element	Description	Implementing Agency	Benefit to Corridor
<b>Roadway Resurfacing</b>	Improve the state of good repair of the right of way by resurfacing with a new asphalt layer and reducing the number of curb cuts to manage ingress and egress	ODOT	Improve safety for vehicular traffic by reducing accidents. Improve reliability of Emergency Response Service vehicle response times along corridor. Improve reliability of travel times for freight and commercial traffic
<b>Sidewalks, Crosswalks, ADA-compliant ramps</b>	Install sidewalks, crosswalks, ADA-compliant ramps along corridor, and install two pedestrian bridges connecting the South Trail to the roadway corridor	City of Wagoner	Enhance mobility and safety for pedestrians and bicyclists
<b>Off-Street side paths for bicyclists</b>	Construct paths for bicyclists along the length of the 3/4 <sup>th</sup> mile corridor	City of Wagoner	Reduce bicyclist accidents and provide safe active modes of transportation
<b>Railroad crossing improvements</b>	Install pedestrian and vehicular ADA-compliant safety measures at railroad crossings	ODOT (design), City of Wagoner (construction)	Provide safe crossings for traffic, pedestrians, and bicyclists at the rail crossing
<b>Intersection Modifications</b>	Add turning lane, ADA-compliant facilities and sidewalks, enhance landscaping and pedestrian islands	ODOT	Provide safe crossing environment for pedestrians and bicyclists, while reducing traffic crashes at intersections
<b>Fiber Installation and Public Utilities Relocation</b>	Install fiber corridor-wide. Relocate water/sewer and electric sub-surface infrastructure	City of Wagoner	Improve utility service and enhance connection to broadband for rural residents living on the corridor
<b>South Trail</b>	Construct a path that extends from the corridor to the only grocery store in the city	City of Wagoner	Provide safe alternative for pedestrians and bicyclists, while reducing travel time to grocery store
<b>Stormwater drainage improvements</b>	Install new culvert to improve drainage of stormwater off roadway	City of Wagoner	Improve safety for drivers in wet conditions



Figure 2. Project Improvement Locations



## 1.2. Addressing Transportation Challenges

The project aims to address **five core challenges** facing residents in the project area:

- ADA non-compliance
- State of good repair
- Vehicle ingress/egress
- Barriers to employment and essential services
- Severe flooding

The following paragraphs describe these challenges, and how the project will address them.



A central challenge this project seeks to address is **ADA non-compliance** throughout the corridor.

Existing conditions create barriers to mobility for pedestrians and residents, particularly those who are physically challenged. ADA non-compliance, compounded by other socio-economic and environmental barriers restricts Wagoner residents' safe access to jobs, medical care, healthy food, and other quality of life factors. The impacts of these barriers are well documented by local media outlets, due to the severity of issues. The project scope—as described above—includes upgrading all ramps and installing sidewalks along the entire corridor to meet ADA regulatory requirements and to facilitate mobility of residents with disabilities.

*Figure 3. Pedestrian utilizing the roadway rather than a sidewalk*



Additionally, ADA non-compliance also restricts the amount of assistance the City of Wagoner receives from the Oklahoma Department of Transportation to maintain SH-51. Given that the corridor infrastructure is currently ADA non-compliant, ODOT is not eligible to receive federal funds to make the rehabilitation improvements needed along the corridor. As a result, ODOT will not complete the roadway resurfacing improvements unless the sidewalks, ramps, and crossings are constructed and meet ADA-compliance standards. Achieving ADA compliance will enable ODOT to fulfill their commitment to make and maintain further improvements to the corridor. Bringing the corridor into ADA compliance, through this BUILD Project, will alleviate an otherwise insurmountable challenge for the City of Wagoner.



Given that the corridor is not ADA compliant, ODOT has not been able to maintain the corridor at a **state of good repair**. The corridor has received minor maintenance over the past few years that include pot hole filling, crack sealing, and striping, and to extend the roadway life. However, the road has reached a point to where major improvements are necessary. The Project includes resurfacing the roadway, which will be performed by ODOT. These updates will have short-term benefits for drivers along the corridor and also sustain lasting benefits for the state of good repair for the asset into the future. These essential investments enable ODOT and the City of Wagoner to better maintain the corridor infrastructure in a state of good repair through standard maintenance.



The corridor has numerous accessibility challenges, including the absence of sidewalks and extensive ill-defined **ingress/egress** vehicular access points. The lack of infrastructure and poorly defined infrastructure, creates a challenging transportation and mobility environment for both motorized and non-motorized travelers. The project will reduce the number and lengths of curb cuts throughout the corridor, which will facilitate safer turning-movements for vehicular traffic, improve site views, and better protect pedestrians to reduce the number of traffic collisions. Transportation safety professionals with INCOG have identified that unsafe, undefined, and unprotected ingress/egress access points to major roadways causes unpredictable driving behavior, resulting

in motorist confusion and subsequent collisions. Creating safe ingress/egress vehicle access is in accordance with safety priorities of the long-range, regional transportation plan- *Connected 2045*.



Project improvements to intersections in the corridor will clearly define the area for pedestrians and bicyclists to cross the busy highway which is the main thoroughfare to the central business district and employment and health centers in Wagoner. The current state of the infrastructure along the corridor is a **barrier to employment and essential**

**services.** The lack of sidewalks coupled with the fact that 9.1% of households in the project area do not own a vehicle,<sup>1</sup> means that pedestrians are unable to safely access places of employment and healthcare services. Furthermore, U.S. Highway 69 (US-69), which runs north-south and intersects with SH-51, acts as a barrier to employment as there are no defined crossings along the highway from one side to the other. Additionally, there is limited access to fresh foods and produce in Wagoner. Currently, Wal-Mart, located west of US-69, is the only location to purchase such goods.

Figure 4. Pedestrian trying to cross highway



The corridor is in need of an updated storm sewer system and stormwater maintenance facilities to mitigate the impacts of **severe flooding**, which has been a major challenge for the Northeast Oklahoma region during the spring of 2019. During periods of moderate to heavy rainfall the outside lanes of SH-51 become inundated with water, effectively making the corridor a two-lane highway. This phenomenon increases the likelihood of congestion and traffic collisions. Additionally, flooding exacerbates maintenance challenges throughout the corridor. The flooding issues are a result of inadequate and undersized storm drains. The BUILD Project addresses these issues through proposed upgrades to the storm sewer system.

<sup>1</sup> American Community Survey 2016, 5-year estimate

### 1.3. Project Benefits

The City of Wagoner has prioritized the Project, since it is a valuable regional investment, which will realize the benefits outlined in Table 2. These benefits are described in more detail in Section 4 of the application.

*Table 2. Project Benefits*

Merit Criteria	Project Benefits
<b>Safety</b>	The project is estimated to reduce all average annual traffic collisions by 17%, pedestrian collisions by 52%, and will install necessary, corridor-wide ADA-compliant features for travelers with disabilities.
<b>State of Good Repair</b>	The project will ensure that ODOT routinely maintains the state of good repair of the project area and stormwater mitigation measures will improve the state of good repair of the assets.
<b>Economic Competitiveness</b>	The project will improve reliability of the corridor for vehicular, pedestrian, and bike travelers, increasing connectivity along a major regional thoroughfare.
<b>Environmental Sustainability</b>	The roadway storm drainage improvements will reduce the peak rate of runoff, alleviate flooding, reduce the exposure of flood waters to roadway contaminants, and improve water quality. Additionally, the project elements will increase the amount of vegetation along the corridor.
<b>Quality of Life</b>	The project facilitates access to essential services and the only grocery store in the city, and installs infrastructure for active modes of transportation.

## 2. PROJECT LOCATION

**Project Coordinates:** Latitude 35.9595° N, 95.3694° W

The BUILD Project is located within Oklahoma's First Congressional District in the City of Wagoner, the county seat of Wagoner County, Oklahoma. Most of the project elements are located on the city's main transportation corridor, Cherokee Street (SH-51), while the trail is located in the southwest area of the City of Wagoner as illustrated above in **Figure 2**. The project area intersects United States Highway 69 (US-69) to the west, which is National Highway System route that provides connectivity throughout Northeastern Oklahoma.

- The West **Cherokee Street Corridor** from the US-69 and SH-51 intersection to Main Street (3/4s mile in length), is the most critical east-west arterial street in the rural town of Wagoner and connects neighborhoods, employment centers, commercial areas, cultural destinations, and health/safety services.
- The **South Trail**, a diagonal route, from South Dewey Avenue/US-69 to South Lincoln Avenue, is essential to connecting citizens to the neighborhood centers, the only grocery store in town, and allows for two points of access to cross US-69.

The Cherokee Street Corridor is rich with services, community and cultural centers, and places of employment. By way of the arterial corridor, residents can access the Wagoner City Public Library, a physical therapy center, various doctors offices and physician clinics, a day care facility, pharmacies, and the Wagoner Community Hospital—all of which provide essential services to city residents. Directly on the corridor are several places of worship and government offices, including the Wagoner County Health Department.

**Table 3** summarizes the population within a mile of the corridor. The average resident living within the project area is more economically challenged than the average Wagoner resident and the average resident living within the Tulsa Metropolitan Statistical Area. The project area is considered a Federal Opportunity Zone, Priority Enterprise Zone, and EB-5 Tract.<sup>2</sup> According to the 2017 Census estimates, Wagoner

*Table 3. Corridor Profile*

	Project Corridor (within one mile)	City of Wagoner
<b>Population</b>	3,133	8,181
<b>Total Employed</b>	1,286	3,487
<b>Total Unemployed</b>	8.4%	7.0%
<b>Median Household Income</b>	\$31,993	\$38,756
<b>Per Capita Income</b>	\$17,507	\$19,475
<b>% of Population in Poverty</b>	23.4%	23.4%
<b>% Zero-Car Households</b>	9.1%	8.0%

*Source: American Community Survey 2012-16 (2018 Estimates); American Community Survey 2013-2017*

residents living within the project area have a median household income of roughly \$32,000. That is 83% of the median household income for the City of Wagoner (\$39,000) and only 61% of the median household income for the Tulsa Metropolitan Statistical Area (\$51,000). The project area also has a higher percentage of minority populations living within the boundaries (41.2%) than both the City of Wagoner (39.4%) and the Tulsa Metropolitan Statistical Area (30.6%). Additionally, 9.1% of project area households do not have access to a vehicle. Further, the corridor is in desperate need of pedestrian access improvements, especially due to the high elderly population in the area: 25% are over 65 years old. A safe, inclusive, and accessible

<sup>2</sup> Oklahoma, Department of Commerce. <<https://okcommerce.gov/data/maps/>>

transportation environment along the Cherokee Street Corridor—which the project will facilitate—is essential to improve the quality of life of residents, and for the long-term economic vitality and competitiveness of the region. Below, **Figure 5** illustrates the current challenges in the corridor.

*Figure 5. Cherokee Street Corridor Challenges*



By connecting rural areas with robust services such as a grocery store, educational institutions, and healthcare with those that have fewer resources, the Project provides mobility, access and opportunity for the corridor residents and particularly those with limited mobility options who have had to manage unsafe travel conditions to access basic services.

## **2.1. Major Activity Centers**

The Project corridor provides transportation connections to key activity centers and neighborhoods in the rural areas of Wagoner while strengthening the regional network and improving access to government services, education, health care and safety, and employment opportunities. Improving the infrastructure within the Project area will improve access to the immediate major services and activity centers, including the only grocery store in the area, the public library, elderly care centers, doctors offices, a day care, a physical therapy center, and City of Wagoner facilities.

As a major thoroughfare, the corridor also facilitates access for residents to key employers in the city, recreational facilities, and schools. Other major employers accessible along the corridor, include Unarco Industries, situated south of the corridor, Wagoner County offices, and the Wagoner school facilities. Access to schools and their recreational facilities is also important for youth and families in the area, outside of the employment benefits.

### 3. GRANT FUNDS AND SOURCES/USES OF PROJECT FUNDS

The City of Wagoner is requesting \$10.3 million of the Project's total costs from USDOT's BUILD program, to leverage funding sources from the City of Wagoner and ODOT. The Project's funding plan is presented below.

#### 3.1. Capital Sources of Funds and Local Match Description

**Non-federal Funds:** a total of \$3.61 million from local and state sources will supplement the total project cost:

- **City of Wagoner (General Fund):** \$1.41 million of the local match will be funded by the City of Wagoner through the General Fund
- **City of Wagoner (Public Works):** \$1.15 million of local match will be funded by the City of Wagoner's Department of Public Works
- **Oklahoma Department of Transportation (ODOT) (8-Year Work Plan):** \$1.05 million of the state match will be funded by ODOT as listed in the 8-Year Construction Work Plan

The City of Wagoner owns and operates its own utility authority for electric, water, and sewer—**Wagoner Public Utilities Authority**. The City of Wagoner's local match is a result of the city using all local funds to complete and construct the utility relocation (labor and materials) necessary for the Project. This utility relocation work is a critical element of the Project.

**Federal Funds:** a total of \$10.3 million in federal funds will go towards this project

- **BUILD Funds:** \$10.3 million in federal discretionary funds

Appendix B and the Project website contains letters of financial commitment from the City of Wagoner and ODOT.

Table 4 shows the project capital budget by funding sources (federal and non-federal funds) totals and by percent of total.

*Table 4. Project Capital Budget Summary by Source (2019\$ Millions)*

	Funding Source	Total Funding Amount (\$ Millions)	Percent of Total
<b>Non-federal Funds</b>	ODOT (8-Year Work Plan)	\$1.05	7.6%
	City of Wagoner (General Fund)	\$1.41	18.4%
	City of Wagoner (Public Works)	\$1.15	
	<b>Total Non-federal Funds</b>	<b>\$3.61</b>	<b>25.9%</b>
<b>Federal Funds</b>	BUILD Grant Funds	\$10.32	74.1%
	<b>Total Federal Funds</b>	<b>\$10.32</b>	
<b>Total Project Cost</b>		<b>\$13.92</b>	



### 3.2. Capital Uses of Funds

As described above in Section 3.1, the federal and non-federal funds will cover the total Project costs as listed in **Table 5** in 2019 dollars. The total cost of the Project is \$13.92 million in 2019 dollars.

*Table 5. Project Capital Budget Summary by Use and year of expenditure (2019\$ Millions)*

Funding Use	FY 2020	FY 2021	FY 2022	FY 2023	Total
<b>Construction</b>					
Corridor	-	\$4.48	\$2.40	\$1.17	<b>\$8.04</b>
Utility	-	\$1.51	-	-	<b>\$1.51</b>
South Trail	-	-	\$0.69		<b>\$0.69</b>
Contingency	-	\$1.20	\$0.62	\$0.23	<b>\$2.05</b>
<b>Construction Total</b>	<b>-</b>	<b>\$7.19</b>	<b>\$3.71</b>	<b>\$1.40</b>	<b>\$12.29</b>
Topographic Survey	\$0.03	-	-	-	<b>\$0.03</b>
<b>Design Fee (8%)</b>	<b>\$0.98</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>\$0.98</b>
<b>Contract Administration Fee (5%)</b>	<b>-</b>	<b>\$0.36</b>	<b>\$0.19</b>	<b>\$0.07</b>	<b>\$0.61</b>
<b>Total Project Funding Uses</b>	<b>\$1.01</b>	<b>\$7.55</b>	<b>\$3.89</b>	<b>\$1.47</b>	<b>\$13.92</b>

### 3.3. Summary of Operating Sources and Uses

After Project construction is complete, the annual operations and maintenance (O&M) costs of the Project are estimated to be \$10,000 annually. The O&M cost includes the costs for the City of Wagoner maintain the asphalt, sidewalks, crosswalks, intersections, ADA-compliant ramps, the railroad crossings, and the trail. The City of Wagoner will absorb these costs within its annual maintenance budget.

## 4. SELECTION CRITERIA

### 4.1. Primary Selection Criteria

In accordance with the United States Department of Transportation's (USDOT) BUILD Notice of Funding Opportunity (NOFO), a description of the Project's quantitative and qualitative primary selection benefits is included below.

#### 4.1.1. Safety

The Cherokee Street corridor has a number of safety concerns for motorized and non-motorized traffic, which the Project will address by reducing average annual traffic collisions by 17%, reducing average annual wet-condition collisions by 50%, and reducing average annual pedestrian collisions by 52%, which are valued at \$15.4 million dollars over the thirty-year benefits analysis.

From 2013-2017, there have been a total of 331 reported traffic collisions within the Project area (**Table 6**). This includes multiple reported pedestrian collisions, including one pedestrian fatality. Further crash analysis conducted by the Indian Nations Council of Governments (INCOG) determined that the contributing causes leading to these fatality collisions were direct issues that this project seeks to address: a lack of safe and accessible roadway infrastructure and crossings for the pedestrians, inadequate pavement condition, and unsafe roadway design and access management. Further, pavement surface condition can include multiple traffic safety variables: friction (i.e., skid resistance), roughness (i.e., ride quality), and rutting. Each of these factors can improve or hinder a motorist's ability to cause or safely respond to the actions of another roadway user; creating or preventing a collision. Maintaining pavement conditions at acceptable levels is part of the City of Wagoner's pavement management activities to provide a safe and economically viable transportation system.

**Table 6.** Cherokee Street Collision Data 2013-2017

Collision Type	Number of Collisions	Average Annual Crashes
Property Damage	195	39.60
Traffic Injury	133	26.6
Traffic <b>Fatality</b>	0	0
Pedestrian Injury	2	0.4
Pedestrian Fatality	1	0.2
<b>All Collisions</b>	<b>331</b>	<b>66.2</b>

Evidence supports the notion that weather and flooding play a significant role in collisions on Cherokee Street, as indicated in **Table 6**. When INCOG studied all 331 project area crashes, 7.2% reported "wet" or "flooding" roadway conditions, while over 16% of all crashes occurred during non-clear weather conditions (rain, snow, etc.). Additionally, it was found that roadway flood conditions resulted in at least one single-car, injury collision in which the vehicle left the roadway and struck a utility pole. Given the role that weather, pavement condition, and curbing play in a motorist's ability to safely maintain control of their vehicle, it is reasonable to assume that improving the roadway surface conditions (pavement, flood mitigation, curbing, etc.) will reduce the number of collisions occurring under abnormal weather conditions. Collisions under wet road conditions are listed in **Table 7**.

**Table 7. Cherokee Street Wet Conditions Collision Data 2013-2017**

<b>Collisions Under Wet Road Conditions</b>	<b>Number of Collisions</b>	<b>Average Annual Crashes</b>
Property Damage	30	6.0
Traffic Injury	6	1.2
<b>All Collisions</b>	<b>36</b>	<b>7.2</b>

Primary goals of this Project are to achieve zero fatalities along the corridor and to reduce the total number of all traffic collisions by 21% within the Project area, reducing the average annual number of collisions by roughly 14 accidents. These goals will be achieved by:

- Reducing the number and length of curb cuts
- Construction of ADA-compliant sidewalks, ramps, and off-street bike paths
- Pavement resurfacing
- Installation of a defined crosswalk at the intersection of US-69 and SH-51
- Installation of crosswalks at appropriate intersections along the Project area
- Installation of the South Trail
- Two pedestrian bridges to provide access from the South Trail to the roadway corridor
- Stormwater mitigation measures

These improvements will create a safe corridor for all transportation users. Reducing and limiting ingress/egress points will minimize the uncertainty for vehicular traffic making turns while also providing pedestrians shorter distances to cross the ingress/egress access points. Crosswalks at intersections will reduce the number of mid-block crossings by providing clearly defined locations to safely cross the street and improve visibility for motorists. Off-street bike paths create multi-modal options that separate cyclists from vehicular and pedestrian traffic, improving safety for all modes of traffic. Installation of the South Trail will remove pedestrians from the roadway entirely, reducing the risk of collision. ADA compliance ensures that the corridor will allow individuals with disabilities the ability to safely maneuver the thoroughfare. ADA compliance will also bring the corridor up to the standard required by ODOT to guarantee improved pavement conditions. Stormwater mitigation measures will reduce the risk of collision in wet and rainy conditions.

#### **4.1.2. State of Good Repair**

The City of Wagoner has experienced challenges maintaining the Cherokee Street corridor in a state of good repair. The current pavement and surfaces in the corridor need major improvements. Minor maintenance and temporary repairs have been routinely conducted to extend to service life of the roadway. This approach has been of limited value and it is no longer cost effective moving forward. In addition to this, the corridor has numerous sidewalk gaps with few ADA-compliant sidewalks, no sidewalk curb ramps, eroding curbs, and decaying and undefined driveway access points. Though the city has recently updated municipal codes to require sidewalks and more defined access in new development, much of the existing development along Cherokee Street stems from legacy issues, predating these code changes.

The decayed state of the corridor's infrastructure is exacerbated by frequent, corridor-wide flooding. As shown in the flood map below, much of the Project area falls within the FEMA 100- Year Flood Zone. Cherokee Street experiences a significant level of flooding, even during mild rain storms. This results from decaying and undersized drainage infrastructure prevalent throughout the corridor. These conditions have culminated in the recurring degradation of not only the roadway surface and the few existing sidewalks, but also the roadway base, subgrade, and existing drainage ditch.

**Figure 6.** *Flooding on Cherokee Street, Spring 2019*



Stormwater improvements are essential to mitigate roadway flooding and in turn maintaining a long-term status of state of good repair. Stormwater improvements help to lengthen the roadway's anticipated lifecycle. This is vital to achieving and maintaining a long-term status of State of Good Repair. A long-term solution is needed, both in the improvement of the roadway and of drainage along the corridor to mitigate flood waters from deteriorating the existing and future infrastructure. Any corridor improvements that fail to address the persisting flood hazards will not result in a sustained State of Good Repair.

The Project answers this call for stormwater mitigation measures, and provides sustainable solutions by delivering needed improvements that reduce future costs associated with maintenance. The Project will result in the installation of adequate storm sewer systems that can tolerate moderate to heavy rain events. Improving this alone will help move water off the road surface, preventing deterioration of infrastructure. The Project also provides ADA-compliant sidewalks which allow for the City of Wagoner to partner with ODOT to install news curbs and resurface the roadway.

#### **4.1.3. Economic Competitiveness**

Cherokee Street is the main entry way into the City of Wagoner's central business district (CBD) and the US-69 corridor is a major freight corridor and a part of the National Highway System. The current conditions of the infrastructure along the corridor contribute to traffic collisions and congestion, create an unsafe environment for pedestrians and bicyclists, and reduces access to goods and services within the CBD. The Project will improve congestion, decrease collisions, and improve connectivity for travelers to propagate economic vitality and growth. The Project will improve access to jobs and services along the corridor, including several major employers such as Unarco Industries and the Wagoner school facilities.

##### *Travel Time Savings*

In current conditions, pedestrians must walk along the roadway to access the grocery store. The Project, which will implement the South Trail that provides access to the grocery store, will improve pedestrian travel times. The South Trail will reduce round trip travel times to and from the grocery store by six minutes for each traveler. The passenger hours traveled time savings are valued at roughly \$40,000 over the thirty years of the benefits analysis.

### *Flood Mitigation & Reliability*

The mobility of freight, automobile travel, and pedestrians along the corridor are compromised as a result of flooding rain events that force the four-lane thoroughfare down to two lanes (one lane in either direction) thereby increasing congestion, hindering travel time, diminishing safety, and impairing mobility for all users. Reducing congestion and flood conditions on the SH-51 freight corridor, Wagoner's designated truck route, is key to the long-term economic competitiveness of the City of Wagoner. The Project improvements address the causes of flooding and reduce the likelihood of congestion, not only improving freight movement through the city and improving traffic flow for all commuters, but also improving travel time reliability, which is especially important to freight traffic. The Project improvements specifically address the types of collisions the City of Wagoner and transportation safety professionals at INCOG desire to improve, as well as the environments which facilitate this unsafe motorist behavior: unpredictable turning movements when exiting commercial driveways, flooded roadway collisions, and non-existent infrastructure to facilitate a safe, multi-modal transportation environment.

#### **4.1.4. Environmental Sustainability**

Flood mitigation is a key element to the environmental protection aspect of this Project. The roadway storm drainage improvements will reduce the peak rate of runoff, alleviate flooding and reduce the exposure of flood waters to roadway contaminants, and improve water quality. In addition to controlling storm water flow and improving water quality, this Project will increase the presence of vegetation along the corridor by installing street trees and landscaping. This attribute will improve stormwater runoff management.

Furthermore, with the mobility and connectivity improvements achieved by sidewalk and multi-use path construction, it is expected that some Wagoner residents will choose to walk and bike to perform daily tasks, rather than use their vehicle. This would result in a reduction in energy consumption, pollution, and greenhouse gases. Though no studies have been completed yet to measure local interest in choosing to walk or bike, according to the American Community Survey 2016 5-year estimates approximately 9.1% of Wagoner households in the Project corridor do not have access to a vehicle and 4% of Wagoner residents over the age of 15 "walk" as their means of transportation to work. In fact, walking has seen a significant increase over the past six years, as less than 1% of ACS respondents walked to work in 2010. This provides some insight into the potential usage of these facilities and the present need.

#### **4.1.5. Quality of Life**

This Project elements serve to improve the quality of life for all citizens and individuals living in, coming to, and passing through Wagoner by increasing transportation choices and improving connectivity for residents to jobs, health care, and the only grocery store in the area.

### *Increased Transportation Choices*

The Project increases transportation choices to meet the needs of the community and ensures the safe movement of people, including those with disabilities. The roadway resurfacing and stormwater improvements will improve the usability of the roadway, making it easier for travelers to utilize the Cherokee Street corridor. The trail head and multi-use path coupled with the dedicated pedestrian and bike trail will provided infrastructure to facilitate active modes of transportation, providing residents various modal options for how to access jobs, essential services, and the grocery store. An added benefit of the active transportation infrastructure is that it will provide additional opportunities for outdoor fitness.

### *Improved Connectivity*

The Project also improves connectivity and eliminates service gaps along the corridor. The improved connectivity increases opportunities for employment as well as makes businesses along the corridor and west of US-69 more accessible. The quality of life for Wagoner will be benefited further by improving connectivity and access to healthcare services, like the Wagoner Care Center, parks, like the Wagoner Water Parks and Soccer Fields, community centers, like the Wagoner City Public Library.

The Project improves connectivity by improving safety for pedestrian travelers. As noted above, the Project will reduce average annual pedestrian collisions by 30%. Congestion along the Cherokee Street Corridor is exacerbated by a lack of pedestrian and bike infrastructure, automobile collisions, and flooding. An example of this was recently highlighted by a local news agency where a wheelchair-bound pedestrian is regularly forced to operate his motorized wheelchair in the roadway when crossing the Lincoln Avenue bridge/culvert, thus forced to violate the law or prevented from traveling beyond this point. The Lincoln Avenue bridge is a pinch point in the roadway where wheelchair-bound pedestrians are required to enter the roadway due to non-existing or inaccessible sidewalks and ramps.

It is important to emphasize that access to fresh foods and having safe and viable transportation options are central elements to one's quality of life. Health statistics from the Oklahoma State Department of Health show a high level of obesity among adults. Diseases associated with inactivity and obesity such as diabetes and heart disease are a leading cause of death for the state and region. The Project will improve health outcomes in the Project area, by providing the community with access to the only source of fresh food and produce in Wagoner by installing crosswalks at the intersection of US-69 and SH-51.

### *Other Planning Efforts in the Project Area*

The City of Wagoner is currently implementing a Transportation Alternatives Program (TAP) grant to improve sidewalks and streetscaping within in the Wagoner central business district (CBD); bordering the BUILD project area to the east. This BUILD project will extend sidewalks and improve the pedestrian and bicycle connections from the CBD to the emerging commercial corridor at the intersection of SH-51 and US-69. Additionally, two Union Pacific railroads cross the Cherokee Street Corridor within the project area— the Van Buren Subdivision (railroad) and the Wagoner Subdivision.

## **4.2. Secondary Criteria**

In accordance with the USDOT BUILD NOFO, a description of the Project's quantitative and qualitative secondary selection benefits is included below.

### **4.2.1. Innovation**

#### **Innovative Project Delivery**

A central component of the Project is the relocation of sub-surface utilities. The City of Wagoner is unique in that it owns the Wagoner Public Works Authority, which operates the electric distribution system for the City of Wagoner, rather than a private utility company. This allows the City to leverage local labor and resources to complete the relocation of public utilities for the Project, providing in-kind support for project execution. The City will utilize its own equipment and manpower to relocate necessary utilities. This strategy will also improve the efficiencies of the Project bidding procedures and contractor identification will not be required for this portion of the Project.

## Innovative Financing

In addition to the innovative project delivery method, the City of Wagoner is supporting the Project through innovative financing methods. To finance the public utility relocation components of the Project, the City will utilize project utility relocation costs as local match funds for the BUILD federal grant. This portion of the project will provide a local in-kind match in the amount of \$1.0 million (7.2% of total project costs).

ODOT has agreed to be a financing partner for the Project. It has committed a total of \$1.05 million for two Project elements. The first are the upgrades to the US-69 and SH-51 intersection that includes safe crossings for pedestrians and traffic safety improvements. This Project is currently in ODOT's 8-Year Plan. The second ODOT component is an additional commitment to resurface the Cherokee Street corridor once the pedestrian facilities are upgraded to meet ADA requirements. As it stands today, ODOT is unable to complete this improvement without the ADA sidewalk and sidewalk ramps issues prevalent throughout the corridor, as it is forced to wait for the City of Wagoner to perform corridor-wide ADA improvements.

However, with federal assistance through the BUILD grant, the City of Wagoner will be able to leverage its own funds, partner with ODOT to accomplish their goal of improving the safety, state of good repair, and economic competitiveness of the Cherokee Street corridor, all while enhancing the quality of life of its residents.

It is these innovative funding strategies that make this Project so competitive, though dependent on a successful BUILD grant award. Being a BUILD grant recipient is essential to the overall success of the Project. Though the ODOT project at SH-51 and US-69 intersection improvements will still occur, as will the Health Department trailhead construction and detention pond, these projects alone will not improve the corridor-wide safety concerns for pedestrians and access management, nor will they adequately alleviate the flooding and drainage that cause excess congestion and economic disadvantages to all residents and businesses and the city at-large.

### 4.2.2. Partnership

The Project demonstrates strong collaboration among multiple partners and stakeholders in implementing and funding the project. As it stands today, this corridor is of high importance to all project partners in terms of economic vitality, safety, quality of life, and state of good repair. Despite this, the corridors conditions are rapidly diminishing, resulting from limited local resources on part of the City of Wagoner and ADA compliancy restraints for ODOT. The City of Wagoner has partnered with ODOT to secure \$1.05 million towards the development of this project. This partnership allows each entity to accomplish its own individual, short-term goals while furthering the larger, long-term mission of each entity.

As evidenced by the community partner's letters of support, which are included in Appendix B and on the Project website, the collaboration demonstrated here will transform the greater Wagoner region. The partnerships of this Project are key to ensure timely development and the security of resources; the goals of this project will not be accomplished without the participation of each member.

However, through the aid and partnership of the BUILD grant program, these barriers can be overcome, empowering the other project partners to better utilize their own resources and expediently deliver a project for City of Wagoner residents, bringing new life to rural America. The following statements illustrate how the broader region is aligned with the Project goals:

- *"The mission of the Oklahoma Department of Transportation is to provide a safe, economical and effective transportation network for the people, commerce and communities of Oklahoma." - Oklahoma Department of Transportation, Mission Statement*
- *"Wagoner has so much to offer to its retail business owners and citizens. We want to make sure we are giving our city every opportunity that we can to thrive and to grow. I believe the corridor improvements accomplish this objective." – Albert Jones, City of Wagoner Mayor (speaking on Cherokee Street safety and flood hazard concerns)*

The City of Wagoner has partnered with several public agencies to deliver past projects. Public agencies related to this project are listed below:

- **Oklahoma Department of Transportation (ODOT):** The Oklahoma Department of Transportation (ODOT) is the agency of the government of Oklahoma responsible for the construction and maintenance of the state’s transportation infrastructure. ODOT partners with all jurisdictions that use federal money to fund projects, as the State’s NEPA delegation authority.
- **INCOG:** City of Wagoner is an INCOG member agency. The Indian Nations Council of Governments (INCOG) is a voluntary association of local and tribal governments in the Tulsa metropolitan area in northeast Oklahoma. Established in 1967, INCOG is one of 11 Councils of Governments in the State of Oklahoma, and one of several hundred regional planning organizations across the country. INCOG provides planning and coordination services to assist in creating solutions to local and regional challenges in such areas as land use, transportation, community and economic development, environmental quality, public safety, and services for older adults.
- **Wagoner County:** Wagoner County is a county in Oklahoma. City of Wagoner is the county seat of Wagoner County.

The commitments and roles of each of the partners are outlined in **Table 8**.

*Table 8. Partnership Support*

Entity	Form of Support
<b>City of Wagoner</b>	<ul style="list-style-type: none"> <li>— Local match Funding of \$2.56 million (\$1.41 from the City’s general fund and \$1.15 from the Department of Public Works) though city owned utility relocation</li> <li>— Project planning and management and grant recipient</li> </ul>
<b>ODOT</b>	<ul style="list-style-type: none"> <li>— Local Match Funding for SH-51 and US-69 Intersection improvements (\$545,000)</li> <li>— Local Match Funding for Intersection Modification (\$500,000)</li> <li>— Design for ADA compliant railroad crossings</li> </ul>
<b>INCOG</b>	<ul style="list-style-type: none"> <li>— Assistance with GIS, mapping, public meetings, analysis, etc.</li> </ul>



## 5. PROJECT READINESS

The project planning process has laid a strong foundation for project implementation.

Project design is well underway with 90 percent design scheduled to be achieved in six months. The NEPA process will be completed in one year from the award. Due to the nature of the roadway ownership under the Oklahoma Department of Transportation and adjacent land, and structures, ODOT will be responsible for completing the NEPA work and securing all necessary permits and approvals. It is assumed that this project will be a categorical exclusion (CE), thus expediting the start of the project.

The City of Wagoner will be acting as lead agency to execute the project, and will be providing labor from the public utility authority to relocate sub-surface utility infrastructure. The City of Wagoner will manage the bid process, design, and construction of sidewalks, ramps, storm drainage, including all utility relocation. The City of Wagoner is presently finalizing a study to guide the best approach to managing the locally owned broadband services resulting from the BUILD project. Once these improvements are complete, ODOT will proceed with the resurfacing of Cherokee Street, as evidenced by the attached ODOT support letter. The intersection of US-69 and SH-51 is scheduled to be completed in 2023 according to the ODOT 8-Year Plan. ODOT will also complete the design work for the ADA improvements at both railroad crossings.

### 5.1. Technical Feasibility

The following **planning and design activities** have been completed to date:

- **Engineering Design:** To date, the engineer's estimates for construction and design have been completed.
- **Right-of-way (ROW) acquisition:** No additional ROW acquisition is required for this project.

**Cost Estimate Reliability:** Cost estimates were developed with coordination between R.L. Shears (ASLA, CLARB) owner and president of the landscape architecture firm RLShearsco, Bill Smith (PE) owner of the engineering firm HISINC, LLC, and Steve Powell (PE) partner at the civil engineering firm Infrastructure Solutions Group, LLC.

**Experience delivering federally funded projects:** The City of Wagoner has utilized national primary entitlement fund the Non-Primary Entitlement Fund through the Federal Aviation Administration (FAA) for improvements to Wagoner's municipal airport. Completed projects include access road and parking lot construction, runway lighting upgrades and installation, and runway maintenance. The City of Wagoner has also utilized CDBG grant funds for various projects including repaving of Southeast 15th street and the construction of wastewater lift stations.

### 5.2. Project Schedule

The City of Wagoner and ODOT are partnered to complete the construction and improvements for this Project. ODOT, working with the City of Wagoner, will be responsible for the roadway resurfacing, while the City of Wagoner will be responsible for the majority of the remaining project elements. All elements of the Project will be complete in July 2023. The Project Schedule is illustrated below in

**Table 9.**

Table 9. Project Schedule

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
<b>Pre-Construction</b>					
NEPA Documentation	→				
Design Completion	→				
Permits		→			
<b>Public Involvement</b>					
Public Meetings		→			
<b>Construction Work</b>					
Stormwater / Drainage Improvements			→		
Utility Relocation			→		
Intersection Improvements				→	
Roadway Resurface				→	
Landscape Architecture for Corridor					→
Construction Complete					★

Table 10. Detailed Project Schedule

Project Milestone	Anticipated Completion
Anticipated BUILD Grant Awarded	December 2019
Categorical Exclusion NEPA Process (PA&ED Milestone)	August 2021
Final Design (PS&E Milestone)	August 2021
Construction Begins (Contract Award Milestone)	April 2022
Construction Ends (Construction Contract Acceptance Milestone)	July 2023

Any cost overruns above the allocated amounts for the Project will be covered by the City of Wagoner, from other local sources of funding to improve the Cherokee Street corridor.

### 5.3. Required Approvals

**Environmental Approvals:** ODOT will be responsible for completing the NEPA process for this Project. It is expected that this project will be a categorical exclusion (CE) and ODOT will secure any necessary permits and approvals.

**Legislative Approvals:** The Project has received significant support from both state and local officials. Appendix B and the Project website include letters of support from INCOG, ODOT, and other partners.

**State and Local Planning:** Many elements of the Project are included in the City of Wagoner’s Comprehensive Plan’s goals and objectives, including walkability, limiting access points to major streets, improved bike infrastructure, signage, and more.

One of the project elements is listed included in the financial commitments of ODOT's 8-Year Construction Workplan (located on the Project website).

#### 5.4. Assessment of Risks and Mitigation Strategies

There are relatively minor risks associated with implementation of the project. The risks are mitigated in large part because of the multiple sponsors committed to the project. The roadway section is owned and operated by ODOT, which is an agency with a history of responsiveness to the needs of local communities, including rural communities such as the City of Wagoner. The City of Wagoner is a member of the Regional Council of Governments, INCOG, with committed leadership which is drawing resources to coordinate and help with know-how of the project implementation.

The following **Table 11** represents the top three risks associated with the project and the mitigation plan for each.

*Table 11. Risks and Mitigation Strategies*

Project Risk Item	Risk	Mitigation Plan
1	Utility Relocation	The City of Wagoner has committed funds and labor to this project to ensure utility relocation is successful for this project. The City of Wagoner as well as the Wagoner Public Works Authority has experience with utility relocation and installation projects, as utility relocation is the type of work that each entity does on a regular basis. Additionally, there will be no right-of-way acquisition needed for utility relocation, helping ensure the construction process with go smoothly.
2	Cost Overruns	All funding project partners are equipped to adapt to essential cost overruns, to complete their respective grant commitments. All funding partners are also experienced within their areas of commitment, diminishing much risk for significant cost overruns. ODOT is committing to fund both the roadway resurfacing and the intersection improvements. If these costs exceed ODOT estimates, they are still committed to the project and would cover costs differences. Additionally, City of Wagoner is committing existing local labor and resources, rather than cash. The City is capable of accommodating cost overruns as their local labor and resources necessary to cover these costs already exist and are presently available to be allocated to changes, if needed.
3	Schedule	The project schedule includes flexibility and assumes conservative timeframes to build in extra time as needed. Additionally, the City of Wagoner has established monthly coordination meetings to ensure all project elements are on track to minimizing any delays.

Both the past experience of working with federal agencies and the experts who helped develop the project elements make the City of Wagoner and its project partners confident that the project will be completed on time and within budget.

## 6. BCA RESULTS

An economic benefit-cost analysis (BCA) was conducted for the Project using a model developed by WSP that follows USDOT's 2019 Benefit-Cost Analysis Guidance for Discretionary Grant Programs. The analysis found that the Project will generate an estimated \$14.45 million in present-value benefits (in 2017 dollars, discounted at 7 percent), resulting in a benefit cost ratio of 1.45. As such, the Project is expected to generate economic benefits that outweigh its costs. **Figure 7** shows the overall results of the BCA for the Project.

The BCA Technical Memorandum is included in Appendix A and can be found at:

[http://www.incog.org/Transportation/BUILDFY19\\_Wagoner.html](http://www.incog.org/Transportation/BUILDFY19_Wagoner.html).

*Figure 7. Benefit-Cost Analysis Results, Millions of 2017 Dollars*

BCA Metric	Project Lifecycle	
	Undiscounted	Discounted (7%)
Total Benefits	\$49.9	\$15.4
Total Costs	\$12.6	\$10.0
Net Present Value (NPV)	\$37.3	\$5.4
Benefit Cost Ratio (BCR)	4.0	1.5
Internal Rate of Return (IRR)	12%	N/A
Payback Period (Years)	16.40	16.65

### Costs

The costs reflected in the Project's BCA are the capital costs of construction and the operating and maintenance costs to support state of good repair after project completion. The total capital costs of the Project amount to \$10.0 million (2017 dollars, discounted at 7 percent) and \$13.92 million (2017 dollars). In FY2020 the Project team will conduct a topographic survey (\$0.02 million 2017 dollars) and complete the Project design (\$0.96 million 2017 dollars). The construction is scheduled to begin in FY 2020 and scheduled to be completed in FY 2023. The capital costs of construction include corridor improvements (\$7.9 million 2017 dollars), utility relocation (\$1.5 million 2017 dollars), South Trail installation (\$0.7 million 2017 dollars), contingency (\$2.0 million 2017 dollars), and contract administration (\$0.6 million 2017 dollars).

### Benefits

The key benefits of the Project include the following: safety benefits and travel time savings for pedestrians.

#### *Safety*

The safety benefits are realized as a result of the roadway resurfacing, pedestrian safety crossings, and stormwater mitigation measures. With respect to vehicular traffic safety benefits, two crash modification factors (CMFs) were selected to reflect the benefits of roadway resurfacing ("Resurface Pavement," 0.95) and the installation of left turn lanes ("Install Left Turn Lane," 0.88). The two CMFs were factored together to

realize a cumulative CMF of 0.83, which was applied to annual traffic conditions in non-rainy conditions. The application resulted in a 17% reduction in annual average traffic accidents.

With respect to pedestrian safety elements, two key safety factors were considered: installation of crosswalks at intersections and the installation of the South Trail. To account for the benefits realized by the installation of crosswalks an average of two CMFs was taken to identify the reduction in pedestrian collisions. The reason for averaging the two CMFs was selected as a method in order to remain conservative in the rate of reduction in pedestrian crashes given that the applicable CMFs (“Install high-visibility crosswalk, 4123,” 0.6 and “Install high-visibility crosswalk, 4124,” 0.81) address the intersection improvements in the Project, but are situated in urban settings. The resulting CMF was 0.7. To determine the benefits associated with the installation of the South Trail, it was assumed that pedestrian collisions would reduce by a CMF of 0.25 given that the trail will enable the average pedestrian to travel 75% of the distance to the grocery store away from traffic and out of harm of any traffic collisions. The two CMFs, identified through research and basic assumptions, were averaged together to yield a CMF of 0.48. A key assumption adopted in averaging the two CMFs is the assumption that pedestrian collisions are equally likely to occur when individuals are crossing the roadway as they are when individuals are walking alongside (or in) the roadway. The results of this portion of the safety benefits analysis resulted in a 52% reduction in pedestrian collisions.

With respect to safety improvements in wet and rainy conditions, the analysis assumed that there will be a 50% reduction in traffic collisions in wet and rainy conditions as a result of the stormwater mitigation measures. A 50% reduction was assumed given the fact that a robust body of research, including national weather-related crash statistics,<sup>3</sup> indicate that wet and rainy conditions greatly contribute to the prevalence of traffic crashes across the US. It was reasonable to assume, particularly given the recent prevalence of inundation in the City of Wagoner, that stormwater improvements will greatly improve driving conditions for travelers on the West Cherokee Street corridor.

Cumulatively, the Project will realize a 21% reduction in in total collisions (traffic, wet conditions, and pedestrian) and yield \$15.4 million (2017 dollars, discounted at seven percent) in safety benefits.

### *Travel Time Savings*

Travel savings benefits apply to pedestrians, who will experience a reduction in passenger hours traveled along the corridor as a result of the South Trail installation. The existing conditions require that pedestrians utilize the roadway to access goods and services along the corridor, particularly to access any establishments located along US-69, west of the Project area. The trail will reduce the distance pedestrians have to travel to access these establishments by 0.3 miles round trip, resulting in 0.1 hours saved round trip per pedestrian. Accounting for the percent of households within the Project area and surrounding census block groups who do not have a vehicle, and the projected population growth, the analysis concluded that the Project will yield \$37,351 (2017 dollars, discounted at 7 percent) in travel time saving benefits over the course of the Project lifecycle.

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<sup>3</sup> “How do Weather Events Impact Roads?” US DOT <[https://ops.fhwa.dot.gov/weather/q1\\_roadimpact.htm](https://ops.fhwa.dot.gov/weather/q1_roadimpact.htm)>

## APPENDICES

All appendices are hosted on the Project website:

<http://www.incoq.org/Transportation/BUILD FY19 Wagoner.html>

- **Appendix A:**
  - Benefit-Cost Analysis Technical Memo
  - Benefit-Cost Analysis spreadsheet model
- **Appendix B:**
  - Part 1: Letters of Support
  - Part 2: Letters of Financial Commitment
- **Appendix C:**
  - Cost Estimate for Project