

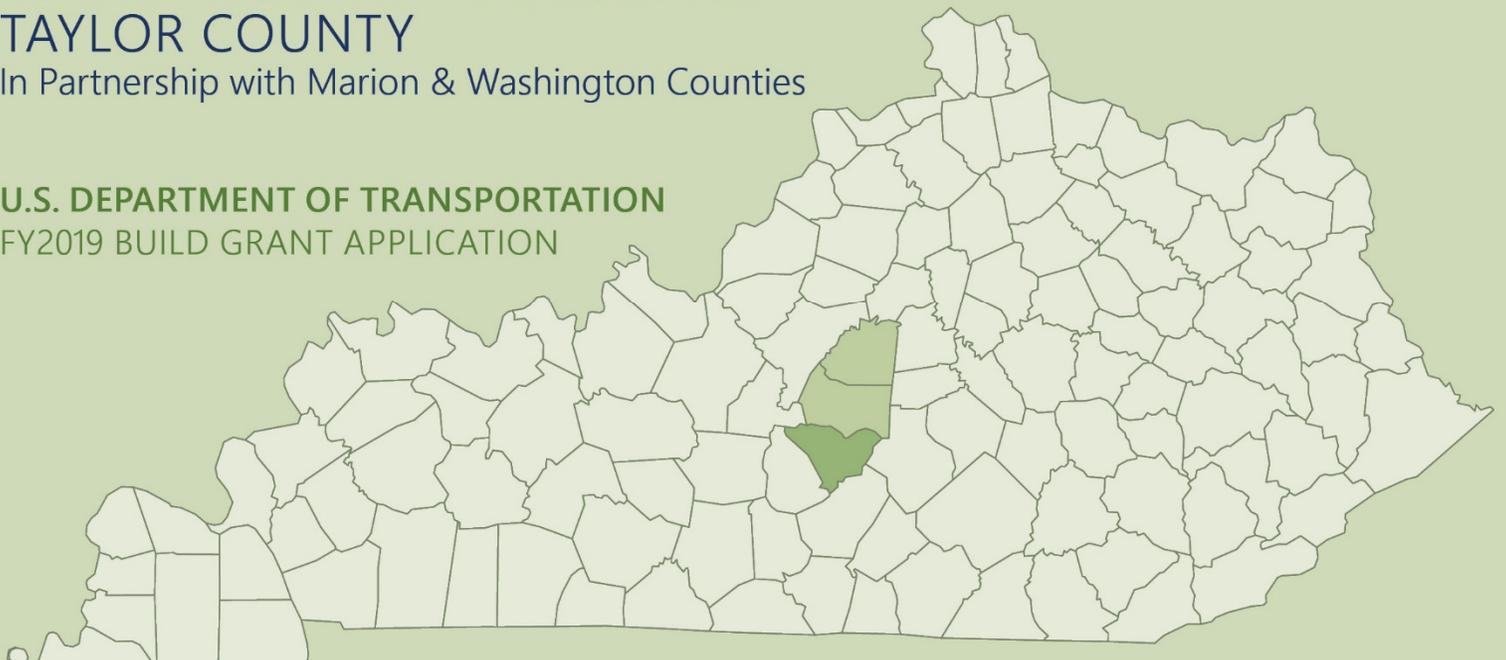


HEARTLAND PARKWAY

TAYLOR COUNTY

In Partnership with Marion & Washington Counties

U.S. DEPARTMENT OF TRANSPORTATION
FY2019 BUILD GRANT APPLICATION





Executive Summary

Taylor County, in partnership with Marion and Washington Counties in Kentucky, is requesting USDOT 2019 BUILD grant support for the construction of the Heartland Parkway. Located in central Kentucky, this corridor is a principal arterial and main north-south roadway that connects the Cumberland Parkway in the south to the Bluegrass Parkway in the north; passing through the towns of Columbia, Campbellsville, Lebanon, and Springfield. The two-lane geometry of the existing corridor lacks adequate passing opportunities on the current roadway. As traffic volumes increase in the future, average speeds will decrease, leading to an increase in travel time. Additionally, the current corridor traverses through the heart of downtown Campbellsville which significantly contributes to congestion and safety concerns within the city.



The Heartland Parkway project began in 2000 with an original design that included a four-lane facility. In recent the years the project has been redesigned using a “2+1” typical section which is an innovative design that reconstructs the roadway within existing right-of-way, creating a center lane that will operate as an alternating passing lane. This right-sized approach is proven to be cost-effective and efficient to deliver to construction, but also extremely effective in increasing capacity, improving traveling speeds, and improving safety. This project also looks to complete the Campbellsville bypass, which will allow vehicles travelling through the corridor to bypass the downtown area, alleviating congestion and improving safety within the city.

This corridor is critical to the heart of Kentucky, not only for residents in the area, but also for surrounding counties. This project will support continued economic growth and improved mobility of freight within the region, and will also provide access to essential services such as jobs, education and healthcare for communities within the region.

Safety 15% reduction of crashes through corridor.

State of Good Repair Preserves segments of the National Highway System, National Truck Network and Kentucky Freight Network.

Economic Competitiveness Supports the regional economy by having a direct impact on an Opportunity Zone.

Environmental Sustainability Minimizes environmental impacts by working within existing right-of-way.

Quality of Life Improves access to essential services including healthcare, education and jobs.

Innovation Applies progressive design by implementing 2+1 typical section.

Partnership Long-standing project support from cities, counties, agencies and industries across the region for over 20 years.

Benefit-Cost Analysis Result 1.78





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1. Project Description

A. Project Overview

Located in central Kentucky, the Heartland Parkway is a principal arterial and a main north-south roadway— see Figure 1-1. It is a combination of roadways, namely KY 55, KY 555 and US 68, which connects the Cumberland Parkway in the south to the Bluegrass Parkway in the north and pass through the towns of Columbia, Campbellsville, Lebanon, and Springfield. The current facility is a typical two-lane section— see Figure 1-2. This existing roadway section is not equipped to safely carry the volume of traffic traveling through this rural region in part due to lack of adequate passing opportunities. It is also anticipated that the facility will not function adequately for future traffic needs.

The Heartland Parkway project included in this 2019 BUILD grant application seeks to improve the corridor by adjusting a large portion of the Heartland Parkway from a two-lane design into a 2+1 design— see Figure 1-3. This design approach is also often considered a “shared 4-lane” and is a typical section that creates alternating passing lanes, which will increase average traveling speeds, reduce travel time for motorists, and improve highway safety. In addition, the project will also complete the Campbellsville Bypass, which will divert vehicle traffic from downtown Campbellsville and alleviating congestion and improving roadway safety within the city. This project is comprised of four separate roadway segments, all of which are part of the proposed

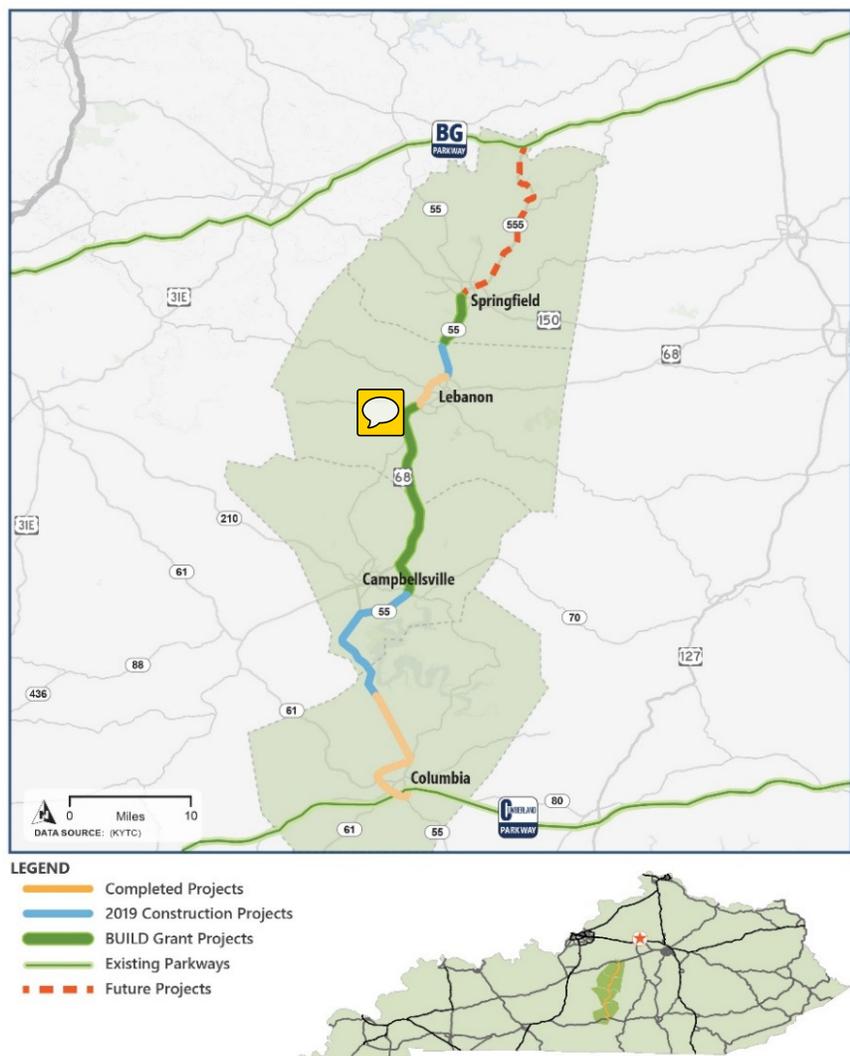


Figure 1-1: Project Overview





Heartland Parkway, first envisioned in the early 2000s. To date, KYTC has spent invested over \$112 million (that has either already been expended or has been authorized), on projects that touch the entire length of the Heartland Parkway, including approximately \$7 million on the four segments that make up this BUILD grant request.

B. Transportation Challenges

Geometry

The current network of roadways was re-constructed in the late 1970s and early 1980s. The two-lane unimproved roadway portions consist of narrow twelve-foot lanes, 10 to 12-foot shoulders, and in some cases minimal shoulders. This existing configuration is not sufficient to safely carry the volume of traffic in this rural community due to a lack of adequate passing opportunities—see Figure 1-2. Additionally, KY 55 currently runs through the heart of the city of Campbellsville.



Figure 1-2: Existing KY 55 Typical Section

This will be improved with the proposed Campbellsville bypass around the southeast portion of the City and will alleviate congestion and improve safety. The reconstructed corridor will provide vastly improved geometry compared to the 2-lane facility.

Safety

A historic crash analysis was completed for the corridor— and also for downtown Campbellsville, since the bypass will remove traffic from the downtown area. Over the past 5 years, there have been 4 fatal accidents and 11 serious injury crashes. The crash analysis also revealed that the crash types have included head-on, rear-end and angle. Many of these types of crashes can be prevented by providing additional areas for

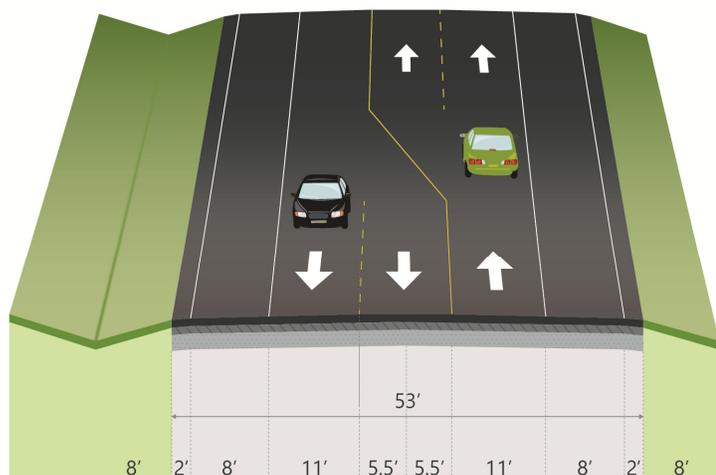


Figure 1-3: 2+1 Reconstructed Typical Section





passing, similar to what the proposed 2+1 will section will provide. Through downtown Campbellsville, the crash rate exceeds the statewide average for similar types of facilities. The proposed project is expected to reduce the number of crashes by 20%.

Travel Time, Efficiency and Reliability

Travel time and efficiency challenges are crucial concerns for regional rural two-lane road operation, due to delays caused by slower



Figure 1-4: Amazon Fulfillment Center in Campbellsville

moving vehicles on narrow roads with limited passing areas. The existing 2-lane section offers little system redundancy; consequently, even a small incident can cause lengthy delays. By slowing travel times, the lack of passing opportunities can reduce average speeds. To many of the industries within the region, reliability is critical. For example, Murakami, which manufactures side mirrors for Toyota, is located in Campbellsville. Their products are transported to Toyota’s facility in Georgetown, Kentucky, any delay in delivery can disrupt assembly at the Georgetown facility. Delays in transport can be costly not only to manufacturers within the project area, but also to manufacturers around the state.

This project will vastly improve the function of the corridor by upgrading the facility to a 2+1 configuration. It has been found that 2+1 roads improve traffic operation by reducing the amount of time motorists are stuck behind slower moving vehicles, increasing speeds, and enhancing driving experiences. This new facility will provide enhanced performance with a superior level of service (LOS) compared to a conventional two-lane highway serving the same traffic volume.

Freight Mobility

The Heartland Parkway is designated as part of the National Highway System (NHS), the National Truck

“This project cannot happen quickly enough for INFAC North America to make us more appealing in Campbellsville to other automotive manufacturers as well as, Toyota and Ford in Kentucky.”

Brian Bland

INFAC General Manager



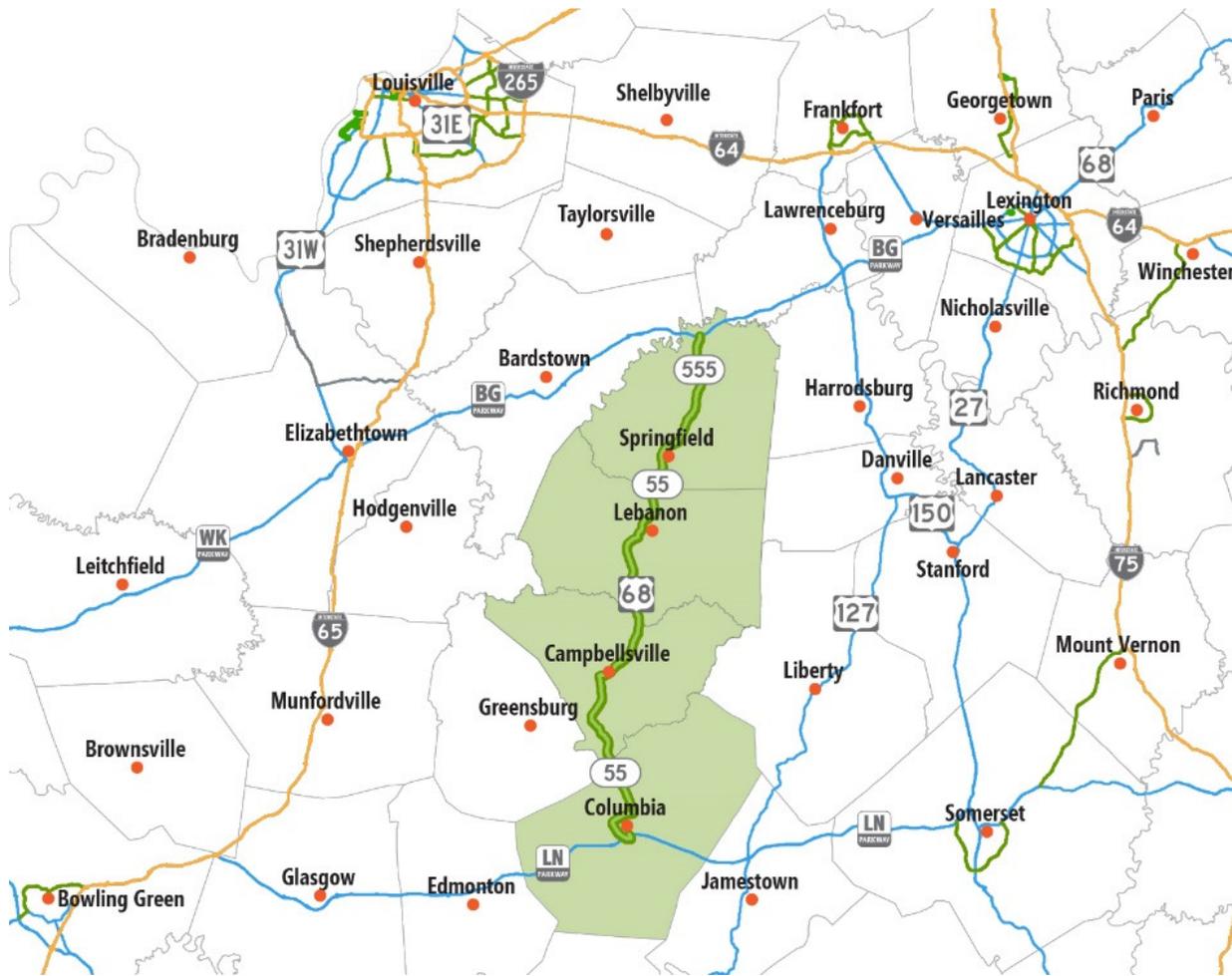


Figure 1-5: National Truck Network (NTN)

Network (NTN) and the Kentucky Freight Network (KFN), see Figure 1-5. On the KFN, this corridor is considered a Tier 3, meaning this route provides more than local access—it provides critical north-south freight connectivity for central Kentucky.

Freight mobility is critical not only for communities, but also the livelihood of the country's economy. This corridor is located in the middle of the United States, with nearly 50% of the US Population located within 600 miles. Online retailers such as Amazon, and air cargo transporters such as UPS, have strategically located their hubs within this region specifically because of its proximity to customers across the country. With easy access to approximately half of the country's population, personal income and manufacturing employment, this region offers a cost-effective location to reach market centers throughout the country. Industries continue to invest within the region due to the regional freight network. The reconstructed Heartland Parkway will not only improve mobility for residents in the area, but will also have a direct impact on freight mobility within the region.



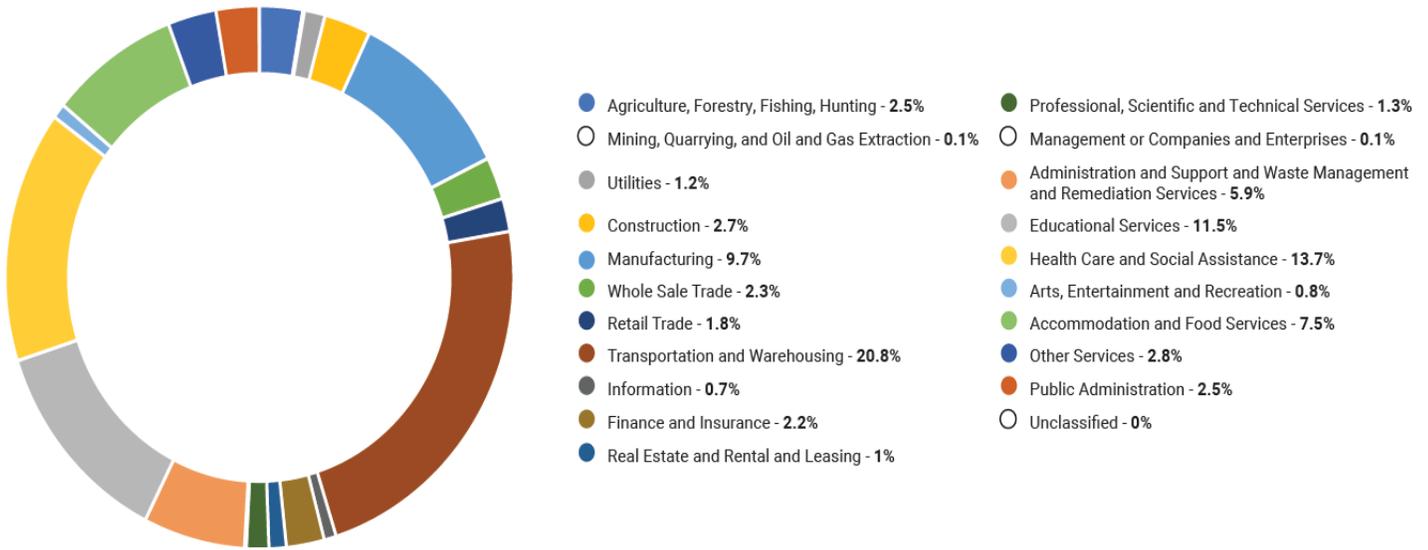


Figure 1-6: Taylor County Employer Data

Regional Connectivity and Economic Development

From manufacturing and distribution to healthcare, textiles and custom wood products production, the region’s diverse industry base is the critical force driving the economic recovery of the area. The Amazon facility is the largest employer in Campbellsville, providing jobs for over 1,350 people in the region. Improvements to the corridor will be critical for the continued growth of the region, since accessibility is often the driving factor for industries evaluating potential sites. The existing infrastructure currently serves as a major barrier in attracting new industries and also inhibits the growth of existing industries.

The region also includes numerous Bourbon distilleries, many of which are located on Kentucky’s Bourbon Trail. This industry has seen tremendous growth within the past 10 years, and this unique tourism is central to the economy in Kentucky. Green River State Park also provides a tourism related boost to the area and offers residents and visitors with excellent recreational experiences. Throughout the summer, travelers along Heartland Parkway routes will notice a dramatic increase in recreational vehicles going to and from state parks including Barren River Lake and Lake Cumberland. Providing reliable infrastructure will be key to supporting tourism within the region.

The Heartland Parkway has long been viewed as a key component of the long-term strategy for the ongoing renewal of the economy of the heartland

“Over the past 10 years, 95% of our prospective industries have eliminated sites in our area due to a lack of adequate infrastructure.”

Ron McMahan
 Team Taylor County





region of Kentucky. The progression of the highway projects along the corridor continues to be a critical element in this continued recovery, providing safer access and improved mobility for the industrial, tourism, educational, and agricultural traffic that is dependent on the corridor.

C. Project History

Regional Project History Context

The Heartland Parkway began as a vision of U.S. Representative Ron Lewis and a group of interested individuals meeting at Campbellsville University in December of 2000. The region had experienced a severe economic dislocation in the late 1990s. In Campbellsville, the closure of the Fruit-of-the-Loom and Batesville Casket factories resulted in the loss of approximately 4,000 jobs. Changes in the tobacco industry also affected to the local job market, and coupled with several textile plant closures in other counties of south-central Kentucky, the region entered a period of unprecedented economic distress. To respond to the economic downturn, a number of initiatives were undertaken by local leaders in the area to help avoid population loss and long-term economic depression. State and federal officials and agencies engaged in a comprehensive and aggressive effort to recruit new industries, expand and improve infrastructure, and make available an array of workforce development programs.

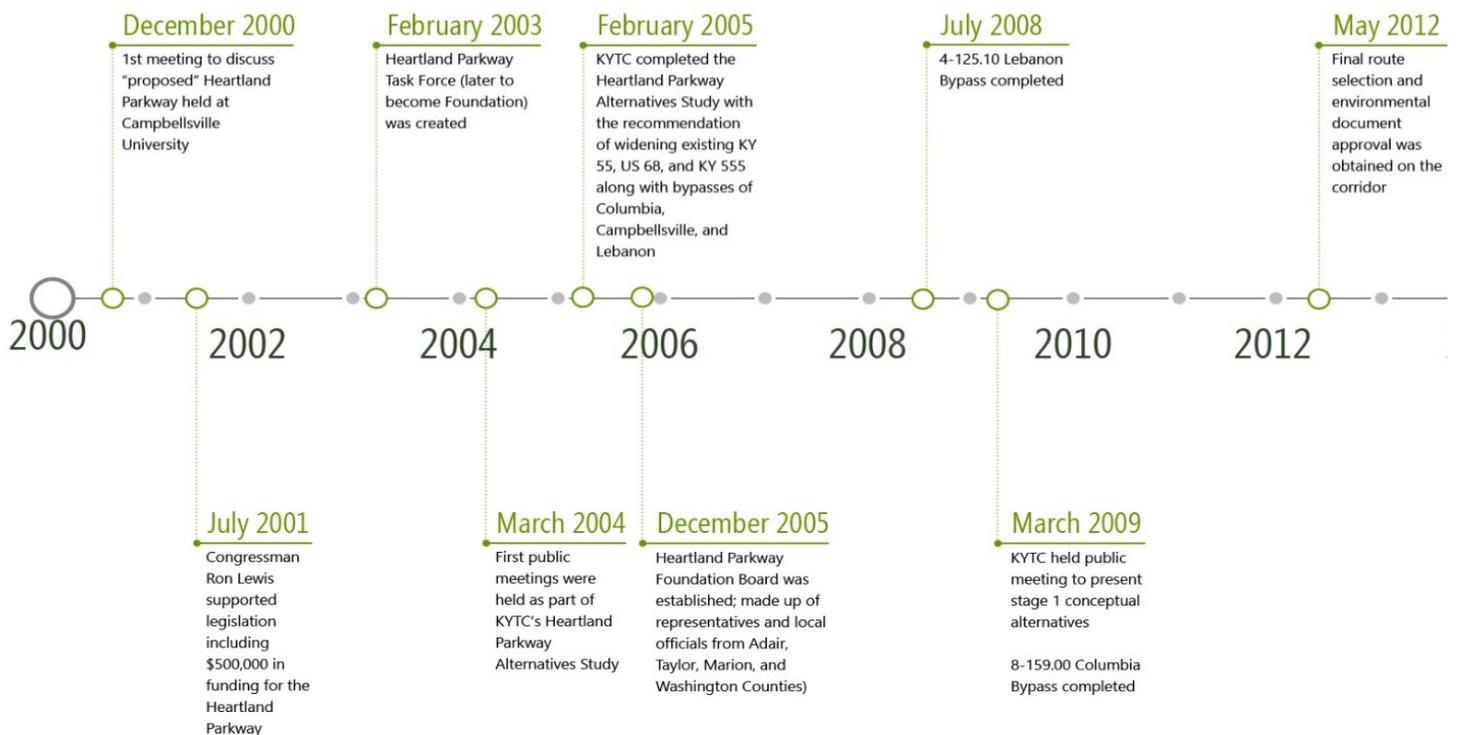


Figure 1-7: Heartland Parkway Timeline (1 of 2)





Transportation access within the area, was a major shortfall of the region in the late 1990s, and remains so in 2019. In view of that need, then U.S. Representative Ron Lewis and Campbellsville University Vice President John Chowning assembled a meeting in December 2000 to discuss the feasibility of what became known as the proposed Heartland Parkway project. The project was envisioned as an upgrade of the existing US 68, KY 55, KY 555 corridor connecting the Cumberland Parkway at Columbia with the Bluegrass Parkway north of Springfield – an approximately 60-mile corridor that included bypasses for Columbia, Campbellsville, and Lebanon. Adair, Taylor, Marion, and Washington Counties, and the cities of Columbia, Campbellsville, Lebanon, and Springfield, along with the economic development directors of each community and the higher education institutions in the region joined together as a task force to work with state and federal officials to promote the feasibility of the project. U.S. Representative Lewis secured several federal earmarks to fund an initial scoping study of the entire project and later a detailed

“The Heartland Parkway Foundation is grateful for the individual projects that have been constructed thus far along the corridor. However, we remain committed to obtaining the remaining funds needed to complete the improvement.”

John Thomas, Lebanon City Administrator & Heartland Parkway Foundation Chair University



Figure 1-8: Heartland Parkway Timeline (2 of 2)





study of the Adair and Taylor portions. As the project study and advocacy advanced, Mr. Chowning, in his capacity as the chair of the task force, led an effort to form the Heartland Parkway Foundation, Inc., a

Heartland Parkway



Bringing People & Goods
 In and Out of Central Kentucky

Figure 1-9: Heartland Parkway Foundation

nonprofit 501(c)(3) IRS tax exempt corporation, that included representatives of the four counties. The Foundation became a permanent and sustaining organization to work with state and federal officials in providing educational and informational resources and assistance to help move the project forward. The Board consisted, in part, of the Mayors of the respective county seats, and County Judge Executives from each of the four counties along with the economic development directors of each county and various at-large members from different sectors. The Foundation has served as a coordinating organization in facilitating the project's forward movement and working to assist the applicant communities in this application process.

Progression of Projects

In March of 2004, the first public meetings for the Heartland Parkway project were conducted. With public input, the recommendation of widening along the existing KY 55, US 68, and KY 555 routes, along with bypasses of Columbia, Campbellsville, and Lebanon were announced. By the end of 2009, the bypasses of Columbia and Lebanon were funded, through sponsorship of local legislators, and construction was completed. Also, KYTC had divided the corridor into eleven separate highway projects to address funding and constructability challenges.

As work on the collective projects proceeded under the direction of KYTC, the final route and environmental approval was obtained in 2012. However, all available funding had been exhausted and the projects were halted until additional money could be made available for final design, right-of-way acquisition, and utility relocations. In order to determine a way to move the project forward,





Figure 1-10: Adair County 2+1 Section

a 2+1 option was identified that would provide the addition of a third lane along the corridor, to allow traffic to move more smoothly and safely, while saving dramatically on right-of-way, utility, and construction costs. This progressive approach mirrors FHWA’s recent adoption of “Performance Based Practical Design” for project development. Immediately upon presentation, the Heartland Parkway Foundation voted unanimously to support the “right-sized” option, recognizing it as the best option available to meet the needs of the region in the timeliest manner.

Momentum was gained through pragmatic decision-making, and the first 2+1 project was completed in 2016 on a section of KY 55 in Adair County, see Figure 1-10. This momentum continues today with three projects under construction in 2019. Ongoing work continues on the various phases of the remaining five projects, but funding continues to be an obstacle that hinders the completion of these vital corridor improvements.

2. Project Location

Geographical Description

The Heartland Parkway is located within central Kentucky and comprised of a north-south corridor halfway between Louisville and Lexington that includes segments of several state routes; KY 55, KY 68 and KY 555. The entire corridor travels through four counties, starting at the Cumberland Parkway in Adair County at the south, traveling through Taylor and Marion Counties, and ending at the Bluegrass Parkway in Washington County to the north, see Figure 2-1. The portion of the parkway included in this 2019 BUILD grant application travels through





the three counties of Taylor, Washington and Marion. The Heartland Parkway crosses through two of Kentucky's physiographic regions; the Bluegrass and the Pennyryle, both of which include features commonly associated with Kentucky. The Bluegrass Region rests on a geological base that features several types of rock including limestone. This special rock foundation forms the basis for the unique soil conditions that have created the rolling pastures known to the region. The Pennyryle Region consists of vast farmlands with rolling hills and also includes cave features and karst topography.



Figure 2-1: Project Location

Connections to Existing Transportation Infrastructure

While the Heartland Parkway is a direct north-south connection between the Cumberland and Bluegrass Parkways, it is also a vital link to the interstate system throughout Kentucky. Residents and industries depend on this corridor to gain access to I-75 to the east, I-65 to the west, and I-64 to the north to move people and goods.

County and City Demographics

- The 284 square miles of Taylor County were established as the 100th county in Kentucky by the State legislature in 1848. The county was named for United States President Zachary Taylor. The County is home to Campbellsville University and Taylor Regional Hospital, and Green River State Park. These special entities are critical not only to the quality of life for local residents, but also for residents in surrounding counties. The population includes over 25,000 residents.
- Marion County was formed in 1834 and includes an area of 347 square miles and is located within the geographic center of the state. It is home to several Bourbon distilleries, including one of the most well-known, Maker's Mark, which is located in





Loretto, Kentucky. This signature bourbon is recognizable from its unique bottle design which includes a red wax-dipped seal. The population includes over 19,000 residents.

- Washington County was established in 1792 and was named for United States President George Washington. It was the first county created by the Commonwealth of Kentucky after the Commonwealth separated from Virginia. The county includes 301 square miles and is home to approximately 12,000 residents.

Rural Project

This project meets the rural definition as defined in the Notice of Funding Opportunity (NOFO), as it is not located inside a Census defined Urban Area (UA).

3. Grant Funds, Sources and Uses of Project Funds

The estimated cost of the proposed Heartland Parkway projects in Taylor, Marion, and Washington Counties is \$39.4 million. Table 3-1 shows the breakdown of the project costs by major project elements. The majority of the project budget is for construction, with the largest part of that going to the new roadway and pavement items.

Table 3-1: Project Budget

Task	Amount	%
Design	\$620,000	1.6%
ROW Acquisition	\$160,000	0.4%
Utility Relocation	\$1,580,000	4.0%
Subtotal (Design, ROW, Utilities)	\$2,360,000	6.0%
Permitting Fees	\$2,030,000	5.2%
Roadway	\$24,490,000	62.2%
Pavement	\$9,340,000	23.7%
Drainage	\$1,160,000	2.9%
Subtotal Construction	\$37,020,000	94.0%
Total Project Estimate	\$39,380,000	100.0%

Source: Kentucky Transportation Cabinet and HDR Engineering
 Note that costs have been inflated by 2.5%/year for year of expenditure

None of these amounts include funds that have been already spent or obligated, though funds have been spent for planning, partial design, and environmental processes. All three counties, in conjunction with the Cities of Campbellsville, Lebanon, and Springfield, local





industry, KYTC and other Federal (non-BUILD) contributions, have assembled funding for 36% of that amount.

Table 3-2 shows the breakdown of project funding by partner. To date, KYTC has dedicated \$7.3 million in state dollars for the planning, design, right-of-way, and utility portions of these four separate projects. In addition, KYTC has spent an additional \$105.1 million in state funds for planning, design, right-of-way, and utility relocation and construction for other projects that comprise the entire Heartland Parkway system. As shown, all three counties are contributing a total of \$770,000 toward construction of these four projects. The Cities of Campbellsville, Lebanon, and Springfield are also putting a total of \$770,000 toward these projects. The County and City resolutions dedicating these funds are provided in Appendix B. In addition, local industry has committed to \$60,000 toward these projects as well. In total, the local and state funding will cover 36% of the project costs. Taylor County and its partners are requesting \$25 million in BUILD grant funding (64%) to complete these projects. Table 3-3 provides the details on how the various sources would be used to cover the different project elements.

Table 3-2: Project Budget by Partner

Founding Partner	Funding	Funding %
Taylor County	\$375,000	0.95%
Marion County	\$375,000	0.95%
Washington County	\$20,000	0.05%
City of Campbellsville	\$375,000	0.95%
City of Lebanon	\$375,000	0.95%
City of Springfield	\$20,000	0.05%
Haydon Materials	\$30,000	0.08%
SWEDA	\$30,000	0.08%
Kentucky Transportation Cabinet	\$6,390,000	16.23%
Other Federal (non-BUILD)	\$6,390,000	16.23%
BUILD 2019 Grant Request	\$25,000,000	63.48%
Total Project Estimate	\$39,380,000	100.00%

Source: Kentucky Transportation Cabinet and HDR Engineering

Table 3-3: Project Sources and Uses





Project Phase	Total Future Project Cost \$M	Non Federal										
		BUILD Grant Amount		Other Federal Funding			State Match		Local Match 1, 2		Private Match 3	
		%	\$M	%	\$M	%	\$M	%	\$M	%	\$M	
Design	\$0.6	0.0%	\$0.0	80.6%	\$0.50	19.4%	\$0.12	0.0%	\$0.0	0.0%	\$0.0	
ROW Acquisition	\$0.2	0.0%	\$0.0	75.0%	\$0.12	25.0%	\$0.04	0.0%	\$0.0	0.0%	\$0.0	
Utility Relocation	\$1.6	0.0%	\$0.0	79.7%	\$1.26	20.3%	\$0.32	0.0%	\$0.0	0.0%	\$0.0	
Permitting Fees	\$2.0	0.0%	\$0.0	28.6%	\$0.58	71.4%	\$1.45	0.0%	\$0.0	0.0%	\$0.0	
Roadway	\$24.5	71.4%	\$17.5	10.2%	\$2.49	11.8%	\$2.90	4.1%	\$1.0	2.4%	\$0.6	
Pavement	\$9.3	71.4%	\$6.7	14.8%	\$1.38	13.8%	\$1.28	0.0%	\$0.0	0.0%	\$0.0	
Drainage	\$1.2	71.4%	\$0.8	14.3%	\$0.17	14.3%	\$0.17	0.0%	\$0.0	0.0%	\$0.0	
Total	\$39.4	63.5%	\$25.0	16.5%	\$6.50	15.9%	\$6.28	2.5%	\$1.0	1.5%	\$0.6	

1 Taylor County (\$0.375M); Marion County (\$0.375M); Washington County (\$0.02M)
 2 City of Campbellsville (\$0.375M); City of Lebanon (\$0.375M); City of Springfield (\$0.02M)
 3 Haydon Materials (\$0.03M); SWEDA (\$0.03M)
 Source: Kentucky Transportation Cabinet
 Note: Costs inflated by 2.5%/year for year of expenditure

4. Selection Criteria

A. Safety

Analysis Methodology

Safety analysis was conducted to forecast the projected number of crashes expected to take place in the No-Build and Build scenarios in 2024 and 2043. Specifically in the No-Build scenario, traffic would continue to pass through downtown Campbellsville, while in the Build scenario the traffic would bypass the town on its outskirts. The projected difference in crashes for both of these analyses was then monetized through a weighted average cost of crashes where the weights were based on the KABCO Injury Classification Scale. Crash maps showing severity and density are shown in Figure 4-1.

Analysis Results

The existing Heartland Parkway facility has experienced 4 fatal crashes and 11 serious injury collisions in the last five years (2014-2018). Over this same time period, the corridor has experienced over 400 total crashes, approximately 85 per year.



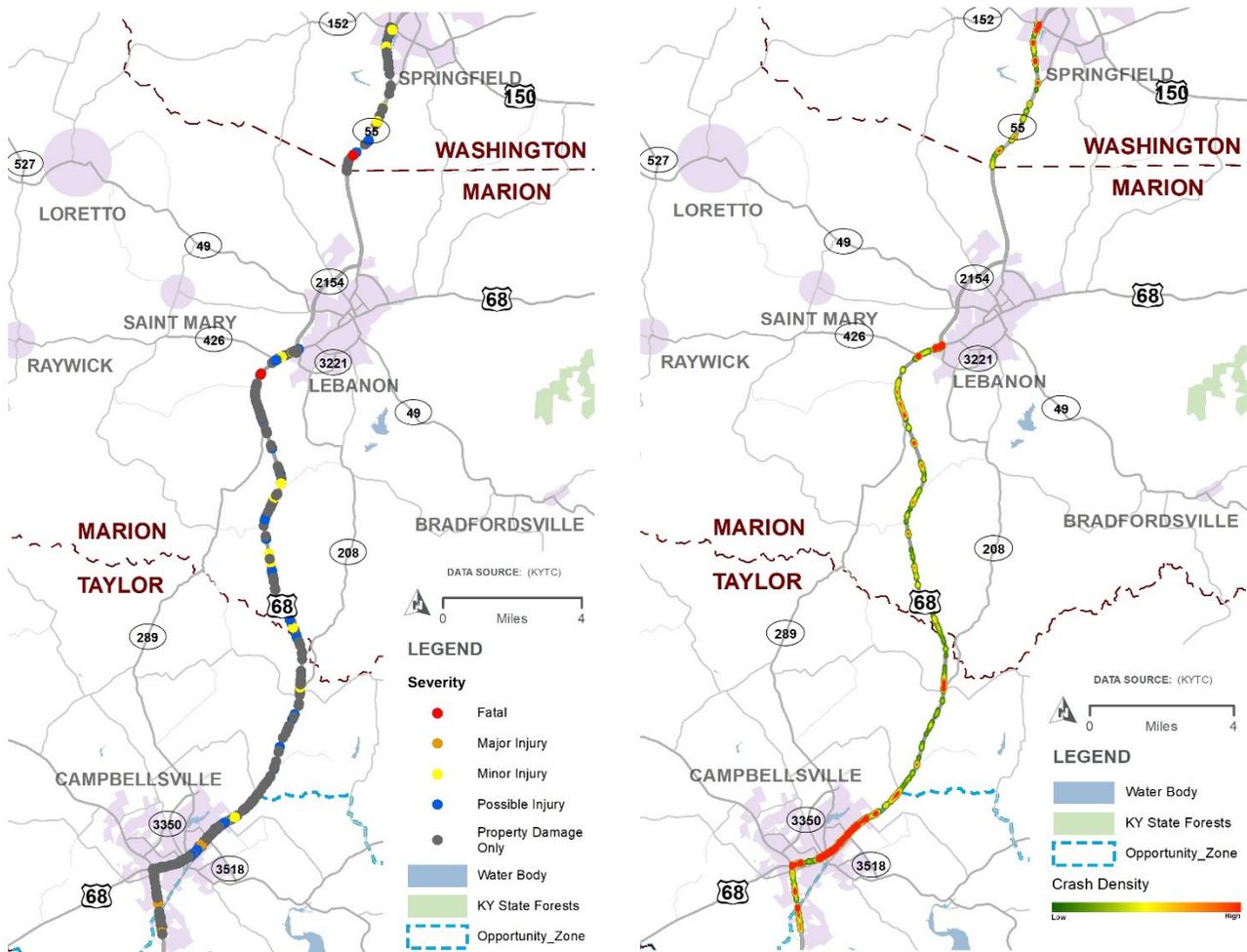


Figure 4-1: Crashes by Severity and Crash Density

The crash statistics described above are relative to the study sections of the Heartland Parkway corridor north of Campbellsville; this project also includes the completion of a US 68 bypass around the southeast of downtown Campbellsville. The existing downtown section of Campbellsville along US 68 experiences the highest crash rates across the study corridor, which are 28% higher than the statewide average. Based on the historic crash trends, the downtown Campbellsville US 68 section is anticipated to incur approximately 160 crashes per year.

The Heartland Parkway project is anticipated to reduce the future crashes and crash severities along the corridor, as well as alleviate some of the present crash issues along US 68 through Campbellsville through the completion of the Campbellsville bypass. Along the corridor, several geometric enhancements will be implemented to improve safety including turn lanes, two-way-left-turn lanes, and passing lanes. These improvements are predicated to result in a net overall reduction of 30% of crashes through the improved 2+1 corridor, and a 15% reduction due to the Campbellsville bypass.



Figure 4-2: Safety Comparison between Build and No-Build

B. State of Good Repair

Viability of Network

The project will significantly upgrade this portion of the National Highway System (NHS), National Truck Network (NTN) and Kentucky Freight Network (KFN) which is only a two lane facility. Improvements to this route are vital to the safety, quality of life and economic opportunities for the people that live in central Kentucky. The safety history of the highway and the fact that the majority is a two-lane roadway with limited passing opportunities, and its frequent traversal of small towns, all limit growth and development on the corridor as well as the passage of goods and people throughout the corridor. If the current Heartland Parkway corridor is not upgraded with the proposed project, it will threaten future transportation network efficiency, mobility and accessibility of goods and people, and economic growth.

Reducing Truck Traffic thru Downtown Campbellsville

This project would remove “through” truck traffic from downtown Campbellsville, would reduce the amount of wear and tear on the downtown streets (which is as much as 11% truck traffic presently, and is expected to grow as more of the Heartland Parkway is constructed). This will extend the life of US 68 through the City of Campbellsville and delay the need for additional roadway maintenance for this portion of the corridor.





Future Maintenance

With the BUILD grant, the project will have sufficient capital funds, as outlined elsewhere in this application, to construct the new corridor. The facility will be constructed to maximize its operating life and reduce future operating costs. KYTC also uses modern asset management techniques to track, inspect, and maintain its facilities and will construct, operate, and maintain the new highway in an efficient manner. In addition, KYTC has a sustainable source of revenue dedicated to operations. Additionally, KYTC has a statewide and local plan for maintaining the transportation infrastructure in a state of good repair.

This project is consistent with USDOT’s goals of prioritizing projects that ensure good condition of transportation infrastructure, including rural transportation infrastructure that supports commerce and economic growth. This project will improve upon the existing road network by repurposing, widening, and overlaying the existing roadway surface, which will prolong its life for approximately 15 years.

C. Economic Competitiveness

Opportunity Zone

This project is located within and adjacent to an Opportunity Zone, see Figure 4-2, which is a unique designation that was created by Federal Legislation in 2017 and allows for specialized tax incentives to promote development. Improving this corridor will have a direct impact on attracting future industries to the area.

Improved Accessibility for Industries

This area of central Kentucky faced an economic downturn in the 1990s and has been continuing to experience economic recovery. Construction of this project will be a critical part of ensuring that improvement continues. For rural communities, accessibility can often be the deciding factor when a site is being considered for new business development and expansions. This project will address existing industry’s need for improved logistical flow for products coming in and out, and also provide better access for existing and future employees.

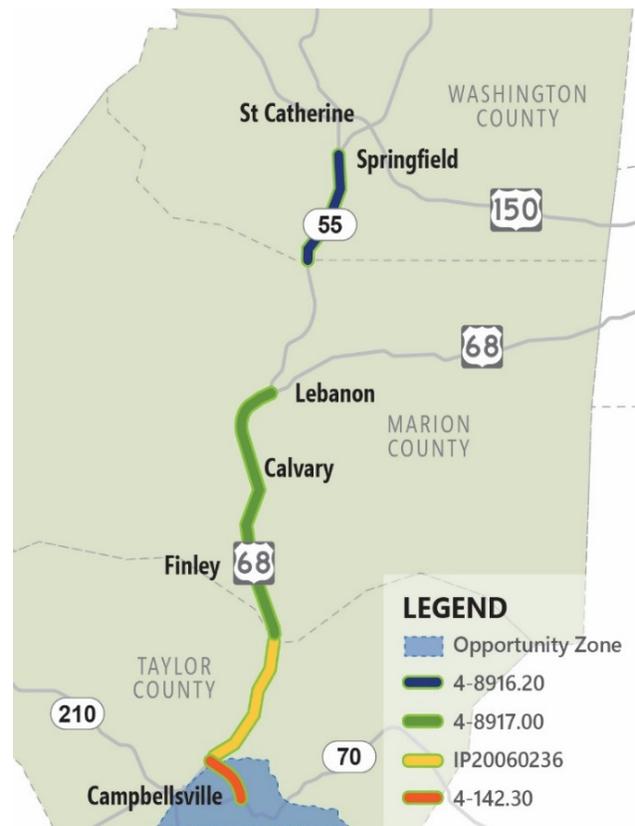


Figure 4-3: Opportunity Zone





Improved Travel Time and Speed

A travel time analysis was completed to compare the Build with No-Build conditions. The analysis included a review of both the new 2+1 segments and also the Campbellsville bypass. The new bypass will divert traffic from the downtown area of Campbellsville and be constructed connecting the intersection of Palestine Road at KY 55 and the intersection near Commonwealth Drive at KY 55, which is a length of approximately 6.2 miles. Current speeds are approximately 33 mph through downtown Campbellsville, with a travel time of 11.3 minutes to complete the trip. By constructing the new bypass, the analysis conservatively estimated that the speed would be increased to 45 mph and the total time traveling would be decreased to 8.3 minutes for those using the new roads. This is about 26.3% time savings with the Build alternative. Table 4-1 shows the travel time saving for the No-Build and Build scenarios in the year 2024 and 2043.

Table 4-1: Travel Time Savings for Campbellsville Bypass

Year	Volume on Bypass		Travel Time Savings		Daily Saving (min)		Annual Saving (hours)	
	2023	2043	2023	2043	2023	2043	2023	2043
No-Build (w/partial bypass)	1,976	2,881	0.15	0.15	299	436	1,820	2,654
Build	3,952	5,762	2.98	2.98	11,784	17,181	71,684	104,516

A total length of 11.7 miles of new 2+1 roads will be built in three counties. The existing speed for these segments is around 58.7 mph, according to a Highway Capacity Software (HCS version 7.8) model. Based on research and real-world implementations, the speed will increase by 3% to 6% when a two-lane road is converted to 2+1 roads. The National Cooperative Highway Research Program (NCHRP) also provides models to estimate the changes in speed performance between a 2+1 configuration and a comparable two-lane highway with no passing lanes.

Table 4-2 and Table 4-3 shows the travel time saving and speed improvements for the project segments that are being converted to 2+1. In general, the average speed witnesses a 5.53% growth, with an average increase of approximately 3.25 mph. Although each trip only saves about 1 minute (from 17.97 min to 16.98 min), the volume multiplied indicates a significant annual travel time saving.





Table 4-2: Annual Travel Time Savings for 2+1 Segments

County	Route	Seg_ID	No Build Speed	Build Speed	2024 Annual Saving (hours)	2043 Annual Saving (hours)
Washington	KY 55	55_1	58.2	61.5	10,023	11,786
Marion	US 68	68_2	58.9	61.5	5,243	6,174
Marion	US 68	68_1	58.4	62.4	22,120	26,011
Taylor	US 68	68_6	58.8	62.0	4,437	5,217
Taylor	US 68	68_5	59.2	62.5	7,489	8,819
Taylor	US 68	68_4	58.8	61.8	7,408	8,723

Table 4-3: Speed Improvement for 2+1 Segments

County	Route	Seg_ID	Highest Flow Rate	FFS	Heavy Vehicle	Passing Length	Speed Increase
Washington	KY 55	55_1	1,030	60	14.7%	1.7	5.72%
Marion	US 68	68_2	1,040	60	9.9%	0.69	4.47%
Marion	US 68	68_1	880	60	10.7%	4.37	6.85%
Taylor	US 68	68_6	880	60	10.7%	1.27	5.49%
Taylor	US 68	68_5	1,080	60	9.8%	1.92	5.52%
Taylor	US 68	68_4	1,230	60	9.2%	1.76	5.15%

D. Environmental Sustainability

Reducing Vehicle Emissions

Reducing congestion-related emissions is a significant environmental improvement offered by the Heartland Parkway project. As traffic moves more efficiently through the corridor, and as vehicle-miles travelled and travel times are lessened and traffic is no longer idling or in a stop-and-go situation, vehicle emissions will decrease.

Minimizing Environmental Impacts

The considerable reduction in scale and complexity of the proposed project building a 2+1 configuration instead of a four-lane facility has all but eliminated the expected environmental impacts. Except for the Campbellsville Bypass, this reduction has occurred by staying within the right-of-way limits of the current roadway and avoiding the previously planned relocation of the corridor, thus significantly minimizing effects on the environment. Much of the existing right-of-way has been previously disturbed by the development of the current roadways, so natural environmental resources are limited. In particular, based on a review of readily available data





sources in relation to the study area, impacts to streams and wetlands can be avoided or minimized by staying within the existing roadway right-of-way and by utilizing existing drainage structures.

The Heartland Parkway corridor lies within the drainage basin of the Green River, a critical stream corridor harboring several endangered species and rare habitats in the basin. These habitats have been thoroughly surveyed and have obtained all the necessary approvals by federal and state resource agencies for the Heartland Parkway project. Runoff from this project will eventually make its way to the Green River. However, all federal, KYTC, and Kentucky Division of Water erosion control and permitting procedures will be in place during construction of the project to protect all downstream receiving waters, including the Green River.

E. Quality of Life

Improves Access to Jobs

This corridor not only improves safety and mobility for residents within the cities along the corridor such as Campbellsville and Lebanon, but it also improves accessibility to this central area for surrounding rural communities. Much of the workforce employed by industries is coming from outside of the area:

- 39.4% of Taylor County’s labor market are from outside of Taylor County
- 25% of Taylor County residents travel outside Taylor County for employment
- 35.6% of Taylor County’s labor market live and work in the Taylor County

Improves Access to Health Care

In addition to accessing jobs, this corridor also provides critical access to healthcare which is especially important in rural areas. Many rural communities across the country lack adequate access to healthcare facilities. This project will improve and enhance access both patient access and employee access to Taylor Regional Hospital which is a critical facility in the region:

- 46% of admissions at Taylor Regional Hospital are from outside of Taylor County
- 42% of Taylor Regional Hospital’s employees are from outside of Taylor County

“From its inception, the Heartland Parkway was a dream of regionalism to focus on transportation, tourism, economic development, education, and agriculture. The completion of the remaining segments would bring this dream to reality.”

John Chowning

Executive Assistant to the President,
 Campbellsville University





The reconstructed corridor will also reduce travel time for emergency vehicles transporting patients to more advanced medical facilities within the region or to other facilities outside the region. In addition, this project is also expected to potentially reduce the travel time and response time for law enforcement and firefighters.



Expands Access to Education

Figure 4-4: The University of Campbellsville

In addition to improving access for vehicular traffic, this project will also provide better access to higher education both within and outside the area. Statistics indicate that Americans living within rural areas often lack access to higher education centers and this project will improve access to several educational institutions in south central Kentucky. Among them, the University of Campbellsville has been a long-standing supporter of the Heartland Parkway project. The University provides critical access to education in central Kentucky, with over 95% of enrollment is from people who live outside of Taylor County.

F. Innovation

Innovative Project Delivery

The original vision for the Heartland Parkway was a four-lane roadway with a prohibitive cost of around \$400 million. This project estimate was from around 2005 and would be drastically larger in 2019 dollars. While the original project concept was for a four-lane upgrade, the modified 2+1 reduces the proposed cost to around \$65-\$70 million which is a drastic decrease from the original concept. This an innovative typical section will enhancing existing roadways and making the Heartland Parkway a realistic, attainable project.

G. Partnership

Partnership is the cornerstone for successfully delivering transportation projects. The Heartland Parkway was a vision that began in 2000 and has well-established community support from local governments, community partners and local industries. Although Taylor County is the primary grant sponsor, there is strong support from the KYTC, the City of Campbellsville, Marion County, the City of Lebanon, Washington County and the City of Springfield. There is also significant support from surrounding communities including the City of Columbia, Adair County and also the City of Greensburg, Green County.





Taylor County *in partnership with* Marion & Washington County Cities of Campbellsville, Lebanon, Springfield Kentucky Transportation Cabinet



Figure 4-5: Project Partners





5. Project Readiness

A. Technical Feasibility

KYTC has already constructed the Adair County portion of the Heartland Parkway, and the 2+1 typical section was utilized to connect KY 55 from the Columbia Bypass to the Taylor County line. It has been functioning very well, proving the feasibility of the 2+1 solution for the rest of the parkway. The remaining portions of the Heartland Parkway yet to be upgraded to the new 2+1 typical are part of the main north-south roadway in the central KY counties of Taylor, Marion, and Washington Counties and constitutes one of their most important thoroughfares, see Figure 5-1.

The early vision for the Heartland Parkway was a four-lane divided highway. However, the cost proved to be an obstacle to getting the project built in a realistic time frame. So an innovative strategy was employed to reduce the cost and overall impacts of the project by switching the typical section to the 2+1 roadway. The advantage to this typical section is that it provides many of the benefits of four-lane roadway, but in most cases can be built within the existing rights-of-way, significantly reducing environmental, right-of-way, utility, and construction cost impacts.

The projects that make up this BUILD grant request have been thoroughly vetted. The planning document for the entire Heartland Parkway network was completed in 2005. In December of 2013, a decision was made to go to the 2+1 typical section for the segments outside of the bypasses, as described in the Project History portion of this document.

Segment 1

The first segment of the proposed BUILD grant project, is the northern portion of the Campbellville Bypass around the southeastern part of Campbellville. This project will tie into the southern portion of the bypass, which is scheduled for construction letting in July 2019. This project an approved environmental clearance

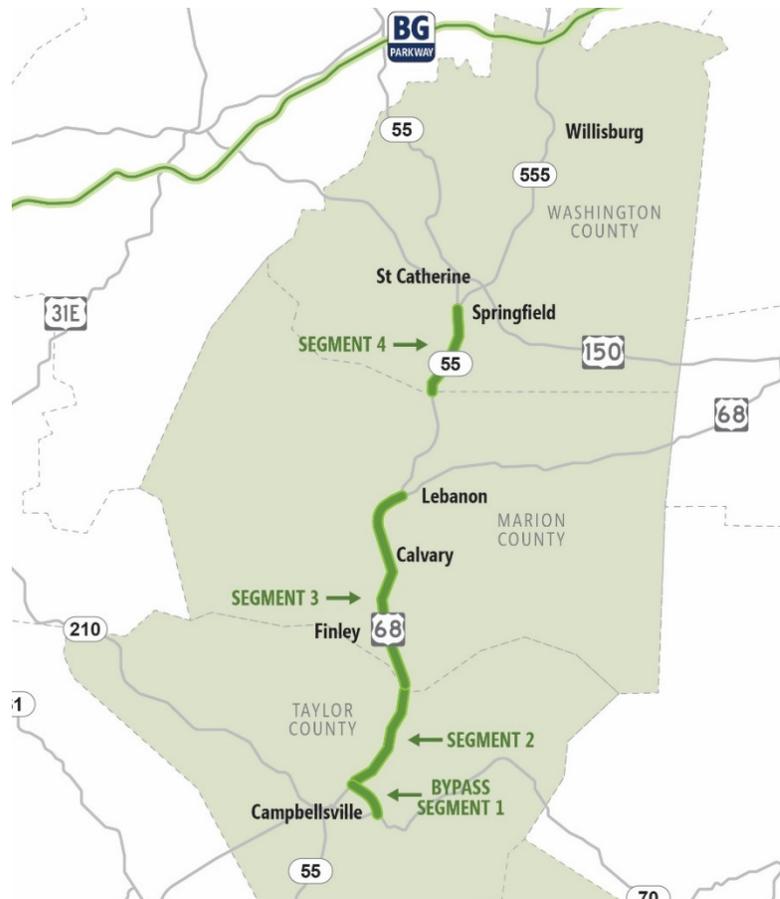
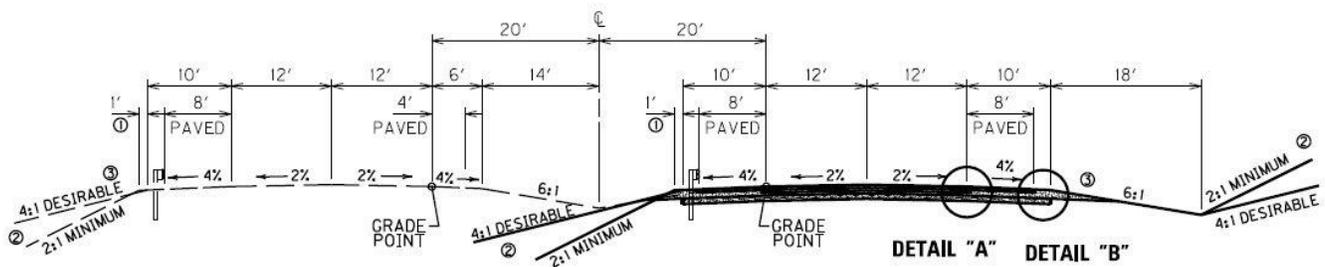


Figure 5-1: BUILD Grant Project Segments





document (Environmental Assessment – Finding of No Significant Impact) and design work is complete. Utilities are expected to begin relocating in 2019 and the right-of-way acquisition is to be complete by the end of 2019 as well. It will be ready to let in early 2020. A two-year construction window is expected for the northern section of the bypass. The bypass will be initially built as a two-lane roadway but has been planned with adequate right-of-way for an ultimate 4-lane divided highway. Figure 5-2 shows the initial build to the right with the future builds to the left.



**CAMPBELLSVILLE BYPASS
NORMAL SECTION
STA. 240 + 00 TO STA. 392 + 00 (INITIAL CONSTRUCTION)**

Figure 5-2: Campbellsville Bypass Typical Section

Segment 2

The second segment of the proposed BUILD grant project is located just north of Segment 1, the Campbellsville Bypass, and would utilize the existing US 68 corridor as it continues north to the Taylor/Marion county line. This segment would be constructed using the aforementioned 2+1 typical section, reconstructing the existing roadway and is expected to be able to fit inside the existing right-of-way. The new roadway will consist of 11-foot lanes and 10-foot shoulders (8-foot paved) and will meet all AASHTO and KYTC design criteria. Survey is currently underway for this section of the roadway. No right-of-way is anticipated on this segment and nominal utility relocations are expected. Therefore, this project can be ready for a construction letting by early to mid-2021. The projected cost for this segment includes design, environmental, utilities, right-of-way, and construction.

Segment 3

The third segment of the proposed BUILD grant project is located just north of Segment 2 and would utilize the existing US 68 corridor, running from the Taylor/Marion county line to the already constructed Lebanon Bypass, just south of the City of Lebanon. This segment would also be constructed with the 2+1 typical section. Design is already underway for this segment and no right-of-way is anticipated. The design will meet all AASHTO and KYTC design criteria. Nominal utility relocations are expected as well. Therefore, this project can be ready for a construction letting by mid-2020. The projected cost for this segment include utilities, right-of-way, and construction. The design and environmental fees have already been authorized by the KYTC.





Segment 4

The fourth and final segment of the proposed BUILD grant project is located in Washington County and runs from the Marion County line north to the city of Springfield. It will tie into a segment in northern Marion County along KY 55 that was completed in June of 2019. This segment will also be constructed with the 2+1 typical section. Design is nearly complete, and no right-of-way is required. The design meets all AASHTO and KYTC design criteria. Nominal utility relocations will be required. Therefore, this project can be ready for a construction letting by early to mid-2020. The projected cost for this segment include utilities, right-of-way, and construction. The design and environmental costs have already been encumbered by the KYTC.

Cost Estimates

Construction phase cost estimates for all the segments are based on the major components of roadway items (including earthwork), permitting fees (in-lieu fees), pavement, and drainage items. The KYTC cost-estimating tool, based on a database of actual construction costs, with regression tools to adjust for smaller or larger quantities as compared with the “average” quantities, was utilized to estimate all the projects. Standard contingencies were used as appropriate for each segment, depending on how far along the design was for that segment, to account for all miscellaneous costs not specifically accounted for yet.

Constructability

From a roadway engineering standpoint, the construction of this project is fairly straightforward. For the Campbellsville Bypass, the constructability is simple due to the fact that it can be constructed without any need to maintain traffic during its construction. The exceptions are the tie-in locations at local roads, which can be constructed either under traffic or with very short overnight closures. The 2+1 segments represent a typical widening project that has been done across the state of Kentucky for many years. With the existing wide shoulders, traffic can be moved to one side while the other side is widened. Then the traffic can be put on the newly widened section while the other side is constructed.

B. Project Schedule

The proposed project can be constructed by the USDOT BUILD grant deadline of the end of 2024. The schedule for design phase and construction for each segment is shown in Figure 5-3. All segments will be ready for letting by early 2021, making it possible to obligate the funds from the USDOT BUILD grant by the September 2021 deadline for fund obligation. Table 5-1 shows additional details on the status of design phases for each segment of the project. As demonstrated, KYTC and its partners have made a commitment to this project and are currently in various stages of design; in the case of the bypass segment, design is already complete.





Construction is expected to take one year for each 2+1 segment and they will be completed concurrently. The bypass will take two years. It is anticipated that all will be let by early 2021 and should be completed by early 2023.

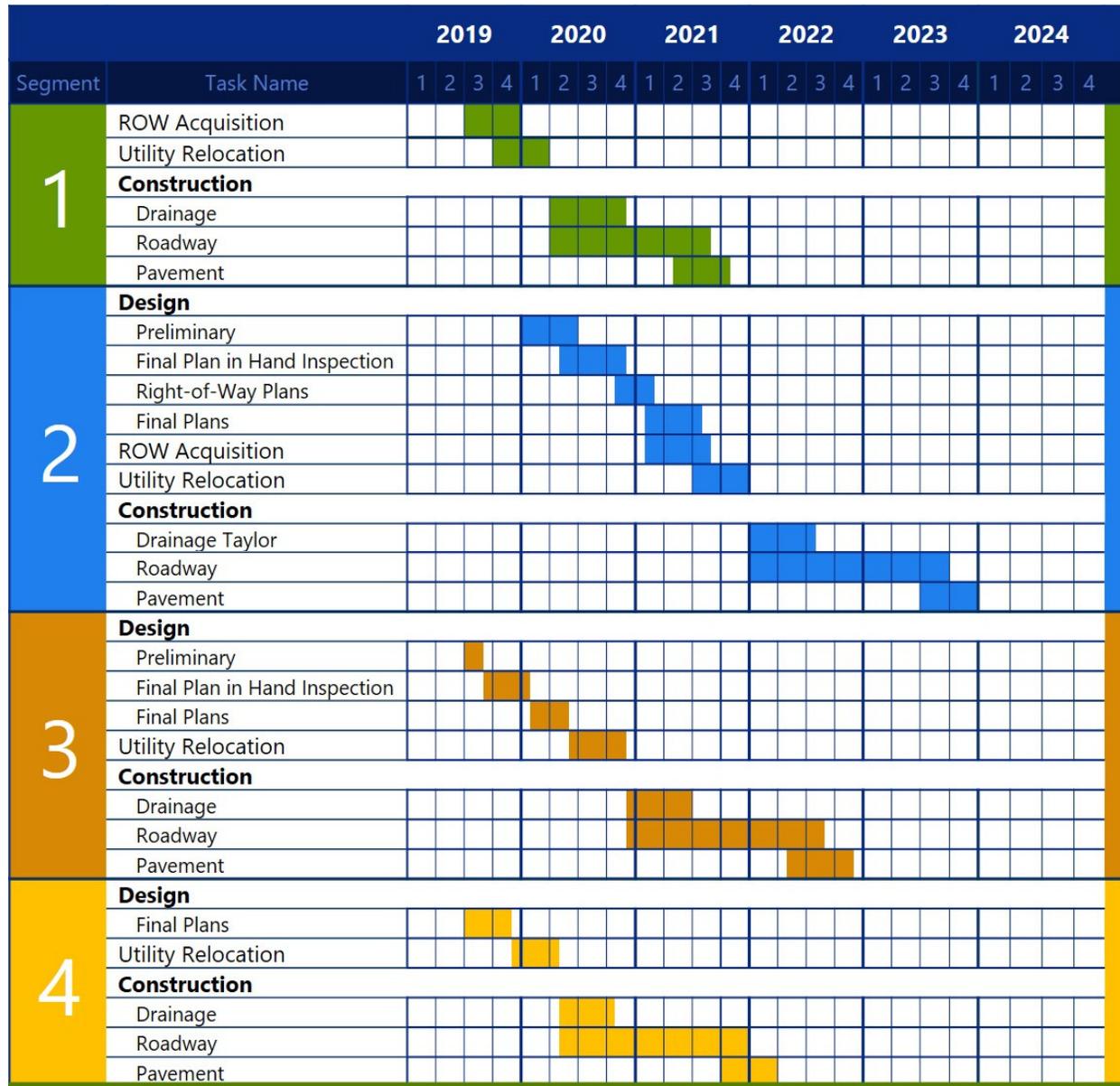


Figure 5-3: Project Schedule





Table 5-1: Project Segment Major Components and Dates

Project Segment	Design	Environmental Documentation	Right-of-Way	Utilities
1 – Campbellsville Bypass	Complete	Complete	Complete end 2019	Complete 2020
2 – Taylor County 2+1	Survey Under	Begin 2020 Complete by late 2020	None Anticipated	Complete by late 2020
3 – Marion County 2+1	Underway	Underway Complete by early 2020	None Anticipated	Complete by late 2020
4 – Washington County 2+1	Nearing Completion	Underway Complete by end 2019	None Required	Complete by early 2020

C. Required Approvals

Environmental Permits & Reviews

The four segments of the BUILD project are each at different stages of the environmental process. The environmental document development will be administered by the KYTC District 4 Environmental Coordinator with oversight by the Division of Environmental Analysis in Frankfort. This office will ensure compliance with the National Environmental Policy Act (NEPA) and other applicable Federal environmental reviews and approvals.

The first segment, the Campbellsville Bypass, has a completed and approved environmental document that was signed on May 1, 2019. It is also in the process of obtaining the Section 404/401 permitting from the Army Corps of Engineers and KY Division of Water. This segment has nearly \$2 million in in-lieu fees associated with impacts to waters/wetlands as a result of the construction of this project.

For the other three segments, the environmental documentation is expected to begin in either 2019. It is anticipated that a Categorical Exclusion (CE) Level 1 will be needed which is one of several programmatic agreements established between KYTC and FHWA Kentucky Division to streamline environmental clearance while still fully complying with NEPA requirements. A CE Level 1 is one of the quickest and simplest NEPA documents to attain recognizing an appropriate level of environmental stewardship by the applicant. It is anticipated that a CE Level 1 could be completed for these segment within 4 to 6 months. The 404/401 permitting for these sections should be a simple Nationwide Permit 14 with no mitigation required.

State and Local Approvals and Federal Transportation Requirements Affecting State and Local Planning

The project is currently listed in the KYTC 2018-2024 Recommended Highway Plan.





The document can be found at this address: <https://transportation.ky.gov/Program-Management/Pages/2018-Recommended-Highway-Plan.aspx>

For local approvals, no Metropolitan Planning Organization (MPO) or similar agency exists in this part of the state.

D. Assessment of Project Risks and Mitigation Strategies

The project risks fall into three categories: schedule, funding, and project implementation. Taylor County, as the project applicant, has coordinated with KYTC to assess and mitigate each of these risks.



Figure 5-4: Assessment of Project Risks and Mitigation Strategies

6. Benefit-Cost Analysis

Tables 6-1 and 6-2 summarize the Benefit-Cost Analysis (BCA) findings. Annual costs and benefits are computed over the project lifecycle of 25 years. Benefits accrue during the full operation of the project. A BCA of the Heartland Parkway project was conducted in conformance with Federal guidance regarding evaluation methods and monetization values recommended by the USDOT in the December 2018 BCA Guidance for Discretionary Grant Programs.





A summary of the relevant data and calculations used to derive the benefits and costs of the project is shown in the BCA model (in dollars of 2017). As shown in Table 6-1, the project is expected to generate \$68.6 million in discounted benefits and \$38.5 million in discounted costs, using a 7% real discount rate. Therefore, the project is expected to generate a Net Present Value of \$30.2 million and a Benefit/Cost Ratio of 1.78. Table 6-2 summarizes the changes expected from the project (and the associated benefits).

Table 6-1: Overall Results of the Benefit Cost Analysis

Project Evaluation Metric	7% Discount Rate	3% Discount Rate
Total Discounted Benefits	\$68.6M	\$111.4M
Total Discounted Costs	\$38.5M	\$41.1M
Net Present Value	\$30.2M	\$70.3M
Benefit / Cost Ratio	1.78	2.71
Discounted Payback Period (years)	9.79	7.91
Internal Rate of Return (%)	13.9%	

* Dollars are in 2017 unless specified otherwise

Table 6-2: Summary of Infrastructure Improvements and Associated Benefits

Types of Impact	Population Affected by Impacts	Economic Benefits	Summary of Results (2017\$, Discounted at 7%)
Improving safety and reducing accidents through the addition of passing lanes.	Local residents and motorists within the State	Parkway Accident Reduction	\$35.2M
Improving safety and reducing accidents by completing the Campbellsville bypass.	Campbellsville residents and motorists within the State	Accident Reduction from Bypass	\$3.5M
Improving travel speeds within the Heartland Parkway will improve decreasing travel times for existing users.	Local residents and motorists within the State	Travel Time Savings for Existing Users	\$13.3M
The completion of the Heartland Parkway will divert traffic from other roads due to the increased speeds and thus reducing travel time for diverted motorists	Local residents and motorists within the State	Travel Time Savings for Diverted Vehicles	\$0.6M
By completing the Campbellsville Bypass, users can reduce their travel time by avoid downtown Campbellsville	Local residents and motorists within the State	Bypass Travel Time Savings	\$15.4M
Residual value of capital assets	Project sponsors	Residual Value	\$0.7M





Non Monetized Benefits

In addition to the monetized benefits, the project would generate other benefits that are still very relevant but difficult to quantify. A brief description of those unquantified benefits is provided below:

- Improving roadway safety and reducing accidents by re-construction of roadway shoulders to eliminate drop-offs at the edge of the driving lanes and improving sight distances at various stretches.
- Reduced truck traffic through downtown Campbellsville by diverting truck traffic from downtown Campbellsville reduces the wear and tear on downtown streets.
- Improved regional access/connectivity for industries and individuals with a more reliable and safe roadway.
- Improved emergency response times due to passing lanes which are expected to reduce the travel times for emergency response vehicles.

7.0 Attachments

Supporting documents for the Taylor County Heartland Parkway project FY 2019 BUILD grant request are located at: <https://www.heartlandparkway.com/secured>

These documents include:

- Appendix A: Letters of Support from Project Partners
- Appendix B: County Funding Resolutions
- Appendix C: Detailed Safety and Traffic Analysis
- Appendix D: Design Plans & Cost Estimate Sheets
- Appendix E: Detailed Benefit Cost Analysis
- Appendix F: Federal Wage Rate Certification

