

THE SONORAN CORRIDOR RAIL EXPANSION AND BYPASS

**BETTER UTILIZING INVESTMENTS TO LEVERAGE
DEVELOPMENT (BUILD) GRANT APPLICATION**

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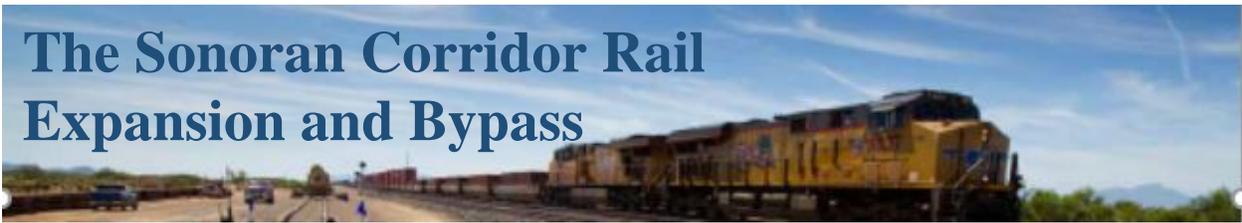


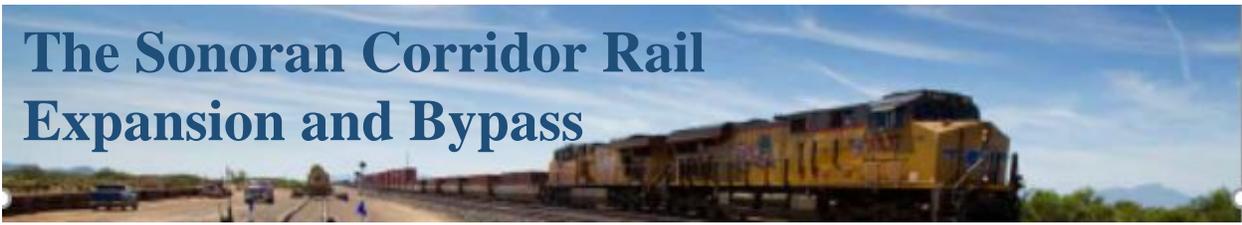
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I. Project Description

The Sonoran Corridor Rail Expansion and Bypass Project (Project) involves the realignment of the Union Pacific Railroad (UPRR), Nogales Subdivision Line (Line) out of the City of Tucson's urban center and into rural industrial areas planned for rail-served economic development. The potential realignment would reduce the number of trains currently utilizing 20 at-grade crossings, where approximately 300,000 cars cross daily, contributing to significant traffic congestion, auto related idle pollution, and safety concerns.

The Line, with trains an average of 7,000 feet in length, runs on a line that cuts through six existing low-income City of Tucson neighborhoods, three city wards, and seven zip codes, serving not only as a visual barrier, but also a physical barrier to residents and local businesses. The 20 at-grade crossings create barriers to the efficient flow of pedestrian, bicycle, and vehicular traffic. In addition, the Line often carries hazardous materials and runs directly adjacent to Borton Magnet Elementary, Van Buskirk Elementary, and Drexel Elementary schools, and in close proximity to more than a dozen other schools (A list of the crossings is available on the Project's website: <http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=437237>).

The Line would be relocated to a U.S. Census Bureau designated Rural Area, south of the Tucson metropolitan area, along Old Vail Connection Road, within both unincorporated Pima County, and partially within the incorporated limits of the City of Tucson. Nearly the entire 11-mile bypass route is undeveloped and surrounded by industrially zoned land that is planned for regional economic development.

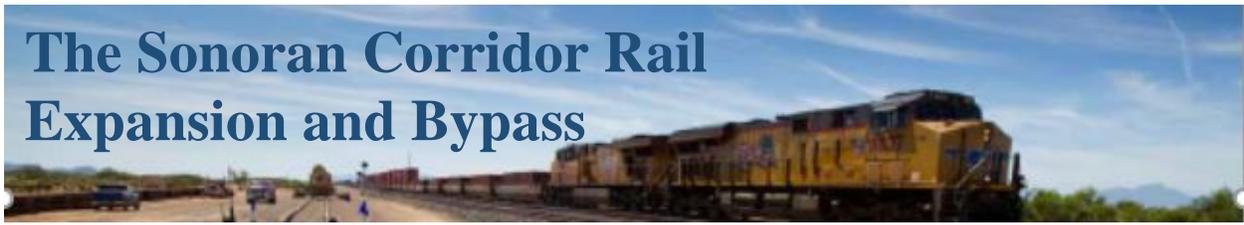
Notable Project benefits include:

- lower fuel consumption from local automotive traffic and trains
- lower regional air pollution from idling traffic
- reduced surface street congestion
- increased economic development activity
- increased safety through the elimination of at-grade crossings
- potential to redevelop the old rail corridor using other forms of mass transit, connecting large employers, the airport and other uses into the downtown Tucson area and the City of Tucson's streetcar

The Project will ensure that all future crossings will be configured to minimize future car and train interaction, with separated crossings giving priority to train traffic. The potential realignment will open up thousands of acres of vacant land for rail served development opportunities, expanding the region's international freight logistics opportunities.

The Project is part of a broader transportation program, the Sonoran Corridor, which will build a vehicular bypass route from Interstate 10 to Interstate 19 and support adjacent economic development. In 2008, Pima County began acquiring industrially zoned land to provide a buffer against planned residential development south of Raytheon's plant site. The region's largest private employer, Raytheon Missile Systems, employs 12,000 people and is headquartered in Tucson, located adjacent to the Line and the Tucson International Airport. Since 2008, the County

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has acquired nearly 600 acres of vacant industrial land in this area and, working with Raytheon, has established the Aerospace Research Campus (ARC). The ARC, located along the western end of the proposed bypass route, has attracted several aerospace related companies, including World View Enterprises, and Vector Space Systems. Within the ARC, Pima County has set aside nearly 60 acres for rail-related uses, including a wye off the Line, track sidings, and spurs. These planned rail improvements have attracted significant interest from existing and potential businesses, allowing them to expand into new sites that better suit their needs. For example, Vector Space Systems chose to locate within the ARC, which gave them direct rail access enabling them to ship their containerized, low orbit rocket systems to their launch sites around the world. The proposed realignment will parallel the new highway and bisect thousands of acres of industrial zoned property. Additional information about the ARC is available on the Project website (<http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=437237>).

The Interstate 10/Interstate 19 bypass, currently called the Sonoran Corridor (Corridor), is now in the planning and NEPA stages. The Corridor has been identified as a critical transportation piece that will support the economic development initiatives of not only Pima County, but of southern Arizona as a whole. In 2017, the Arizona Department of Transportation (ADOT) kicked off a three-year study of potential routes for the Corridor, a federally designated highway that would connect Interstate-10 with Interstate-19 in the area near this proposed new rail corridor. The Fixing America's Surface Transportation Act (FAST Act) designated the Corridor as a high-priority corridor that could potentially alleviate traffic congestion at the Interstate-10 and Interstate-19 interchange, and improve the flow of interstate commerce originating out of Mexico. The Sonoran Corridor Study is posited to “establish a multimodal corridor, with the potential to enhance the movement of people and freight, support economic development and be a corridor for trade, communications, and technology”. The goal of this request is to bring the rail design to completion at the same time as the Corridor, allowing them to be bid and built simultaneously, thus taking advantage of economies of scale and minimizing disruption to adjacent businesses. A synopsis of the Corridor study is available on the Project website (<http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=437237>).

1. Statement of Work

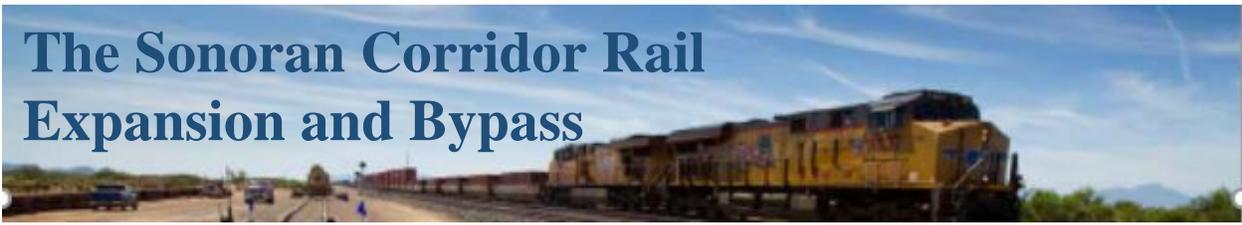
a. Background

Pima County, Arizona, in partnership with other government and private partners, is applying for a Better Utilizing Investments to Leverage Development (BUILD) Transportation Grant to plan and design a new railway bypass at Tucson, Arizona. The proposed bypass would divert most, or all, trains that use the Line onto a new route through mostly rural tracts south of the metropolitan area. The Line at present passes through economically and socially disadvantaged residential neighborhoods, is located near to more than a dozen schools, and crosses 20 city streets, many with heavy traffic loads.

The proposed study would enable Pima County, UPRR, and state and local stakeholders to:

- determine the engineering and environmental feasibility for construction of the railway bypass

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- assess environmental, economic, public, and railway operations and industrial development benefits and impacts
- estimate capital and operations and maintenance costs, and
- identify potential public (federal, state, local) and private funding sources to construct the proposed bypass

2. Objective

a) Underlying Transportation Problem

Pima County and the supporting jurisdictions contained within the Tucson Metropolitan Area have long discussed ways to alleviate train conflicts with roadways, residential neighborhoods, and adjacent elementary schools on the Line. The Line connects UPRR's transcontinental Sunset Route at Tucson with Nogales, Arizona, where it connects with Ferromex at the U.S.-Mexican Border (Ferromex extends deep into Mexico and serves the Mexican Ports of Guaymas, Tampico, and Lazaro Cardenas, as well as the City of Hermosillo and Mexico City, among other major urban areas and ports). UPRR's Sunset Route is one of four principal east-west railway routes between the Mississippi River Valley and the Pacific Coast, and the Line is the principal connection between UPRR and Ferromex's network in north-central Mexico.

Statistics compiled by the University of Arizona's Eller College indicate that in the months of January, February, and March 2018, trains using the Line, measured as northbound train crossings at Nogales, increased month over month by 32.61 percent, 16.67 percent, and 8.33 percent, respectively (<https://azmex.eller.arizona.edu/border-crossings/train-crossings>). A high growth rate is forecasted to continue with the industrialization of Mexico, and Mexico's accelerating consumption of grain, animal feed, plastic pellets, refined petroleum products, and coal that are produced in the United States and drive Mexico's industrial, agricultural, and consumer markets.

b) Work to Be Completed

Design work will develop construction plans and specifications to be used for the construction of the rail bypass. Work to be completed in this this design effort is:

- Preliminary design work, including:
 - Existing utility coordination and research
 - Field surveying
 - Geotechnical investigation and design
 - Environmental survey and evaluation
- Rail network planning, operations analysis, and operations simulation to determine impacts on the existing UPRR network in the Tucson Area, to identify mitigation measures if needed, and to identify the Rail Expansion Bypass Project's capacity and infrastructure requirements
- Complete design engineering (to the 100% Design Level)
- Environmental analysis
- Operating and maintenance cost forecasts

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- Stakeholder outreach and coordination
- Funding availability identification
- Coordination with UPRR

c) Public Benefits

The design effort will produce a number of key public benefits, including:

- **Increased safety**, including for children and pedestrians walking to and from public elementary schools, through the reduction of train traffic through at-grade highway and sidewalk rail crossings in economically disadvantaged areas of Tucson.
- **Reduced air emissions and pollution** from reduction or elimination of idling times of motor vehicles at grade crossings along the Line.
- **Reduced fuel consumption** from reduction or elimination of idling times of motor vehicles at grade crossings along the Line.
- **Reduced surface street congestion** due to reduction or elimination of grade crossing occupancy times along the Line.
- **Increased economic activity, job creation, and trade**, created by new industrial development along the proposed railway bypass
- **Increased safety** elsewhere by enabling funds earmarked for grade-separations on this route to be reallocated to eliminate at-grade highway rail crossings elsewhere in Tucson and Arizona
- **Created potential** to redevelop the old railroad corridor using other forms of mass transit, with the potential to connect the public to large employment centers, the airport, and other commercial areas in and around Downtown Tucson. There is also the potential to integrate the City of Tucson's streetcar with a new modal system on the old railroad corridor.

3. Description of Work

Section 7, below, addresses the Project Management Plan (PMP) for the Project, which informs the Project Team on how to develop the Project work plan, budget, and schedule for the tasks listed below. The PMP also provides instructions for team organization, team decision-making, roles and responsibilities, and interaction with the USDOT, as well as addressing quality assurance and quality control procedures throughout the life of the Project. The sections below describe the work to be performed throughout the Project, and lists the deliverables associated with each task.

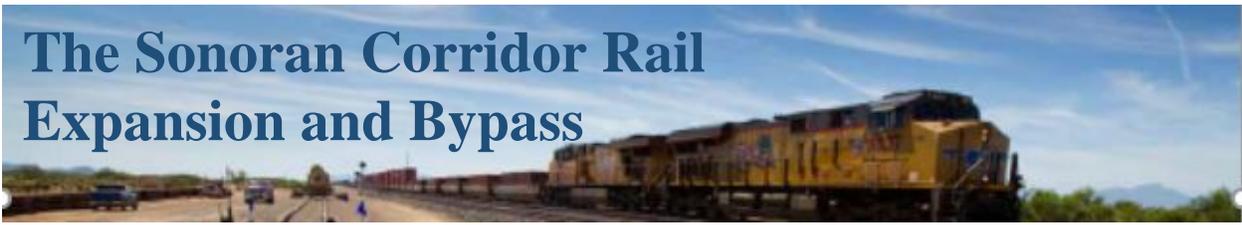
a) Task 1: Project Management During Design

Pima County acknowledges that work on subsequent tasks will not commence until the Detailed Project Work Plan, Budget, and Schedule have been completed, submitted to the USDOT, and until Pima County has received approval in writing from USDOT. Pima County understands the USDOT will not reimburse Pima County for costs incurred in contravention of this requirement.

Task 1 Deliverables:

- Detailed Project Work Plan, Budget, and Schedule
- Project Team Kick-off Meeting, with notes

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- A Project Coordination Agreement with UPRR

b) **Task 2: Existing Utilities**

In this task, existing utilities will be researched and identified to determine the locations of the utilities in the area, and identify any utilities within the proposed rail alignment. The design report will include copies of the communications conducted with the utilities, including any letters of clearance. Any utility relocations will be documented and designed as part of this task.

Task 2 Deliverables:

- Identification of utilities in the general Project area, and located within the proposed alignment
- Design and documentation of any utility relocations

c) **Task 3: Field Survey**

Pima County will conduct surveying and mapping of the proposed alignment. Surveying will be utilized to establish the horizontal and vertical control monuments. Additionally, research will be conducted to acquire property deeds and legal descriptions for use in the acquisition of property for the alignment.

Task 3 Deliverables:

- Preliminary survey and visual inspection report.
- Photographic record of the route including aerial mapping.
- Written legal descriptions and plot plans of the property required for the Project.

d) **Task 4: Geotechnical Investigation/Design**

Obtain geotechnical data on soils analysis for preparation of geotechnical reports with recommendations for shoring, bracing, excavation, backfill, compaction, and soil resistivity for the use in the design. The work will include soil borings along the proposed route to aid in the design of the rail bed and any grade separated roadway crossings.

Task 4 Deliverables:

- Soils Analysis Report

e) **Task 5: Environmental Survey and Evaluation**

A native plant clearance survey and report will be performed along the proposed route. A full biological evaluation and Environmental impact Statement (EIS) will be performed for the impact on any threatened and endangered species in compliance with the Endangered Species Act.

Task 5 Deliverables:

- Native plant survey plans
- Riparian assessment plans
- Biological evaluation report

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f) **Task 6: Wash Crossing / Flood Control Analysis**

Establish the design criteria and mitigation for any potential wash crossing, or washes that run parallel the proposed alignment. Pima County will assume jurisdictional control from the City of Tucson for flood control related items along the Project alignment.

Task 6 Deliverables:

- Analysis and report for wash crossings and paralleling criteria

g) **Task 7: Permitting Evaluation**

This task will identify the potential permits necessary to construct the railroad alignment and the creation of documents necessary to complete a permit application prior to construction. This would relate to any federal, state, or local permits necessary to design and construct a new railroad alignment. Permits include, but are not limited to: U.S. Army Corps 401 and 404 permits, flood control permits, and ADOT encroachment permits. The permits will be submitted prior to, but as part of the actual construction project, as a result, no permit submittal fees are required of this task.

Task 7 Deliverables:

- Final report identifying all of the required permits, submittal process and documents necessary for each permit, permit fees, and permitting agency point of contact.

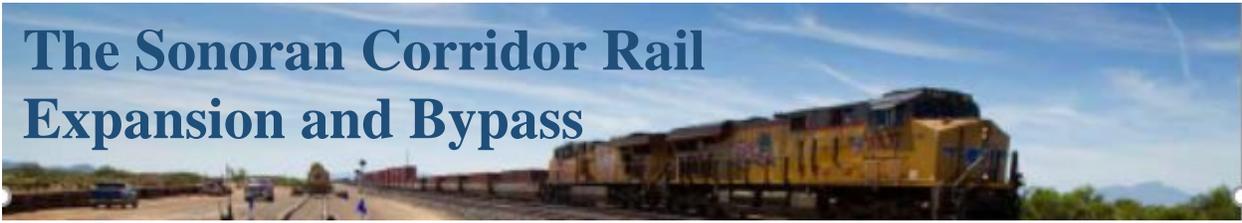
h) **Task 8: Preliminary and Final Design Report**

The preliminary design report will document how the information was developed and presents the results. The preliminary design report will include all of the calculations and documentation produced during this Project. Upon acceptance of the 60% preliminary design report, the final design report shall be prepared. The final design report will include all of the elements in the preliminary design report, and other information necessary to the successful construction of the Project. The final design report shall include a list of all agencies necessary for the review and approval of construction plans.

Task 8 Deliverables:

- 60% Preliminary Design Report, inclusive of all Project memorandums developed for the Project and include:
 - Connection to the existing track
 - Preliminary track layout and design
 - Utility conflicts
 - Track material evaluation and recommendations
 - Track design speed
 - Design alternatives or deviations from UPRR or regulatory standards
 - Required agency reviews
 - Preliminary design schedule
 - Preliminary survey and visual inspection
 - Photography documenting existing conditions
 - Assessment of real property and easement issues
 - Identification of other potential design or construction conflicts

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- Final Design Report, inclusive of all Project reports and memorandums developed for the Project, and include:
 - Executive summary
 - Introduction
 - Alignment
 - Surveying requirements
 - Soils analysis
 - Railroad design criteria and specifications
 - Appended material
 - Agency and utility coordination and review
 - Other materials necessary for the successful construction of the Project

i) Task 9: Final Design

The Final Design will be negotiated and coordinated with the requirements of UPRR in regards to the presentation of construction plans. Construction specifications will be complementary to the construction plans and will be in conformance to the information submitted in the final design report. Construction plan and specification submittals will be made at the 30%, 60%, 95% and 100% stages. Each level of submittal will require approval by both Pima County and UPRR prior to preparing the next submittal.

In addition, a Final Report, inclusive of all Project memorandums developed for the study, will be organized in preparation for the USDOT Final Performance Report.

Task 9 Deliverables:

- Final Report, inclusive of all Project memorandums developed for the study
- Final construction plans
- USDOT Final Performance Report
 - This report will be submitted within 90 days of the end of the grant's period of performance and should describe the cumulative activities of the Project, including a complete description of the City of Tucson's achievements with respect to the Project objectives and milestones.

j) Task 10: Stakeholder Outreach and Coordination

Stakeholder outreach and coordination activity is essential to the success of the Project. Pima County will solicit feedback from both the public and stakeholders in mixed groups regarding the implementation of the railroad Project, including potential constraints and funding issues.

Task 10 Deliverables:

- Stakeholder outreach and coordination are needed throughout the duration of the Project. Town hall meetings, open houses, charrettes, workshops, community meetings may be required to solicit input from the public and various stakeholder groups.

4. Project Schedule and Deliverables

The period of performance for all work will be approximately 48 months, from January 2020 to June 2024. The deliverables associated with this Grant/Cooperative Agreement are listed below. The County must complete these deliverables to the USDOT's satisfaction in order to be

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authorized for funding reimbursement and for the Project to be considered complete. A Gantt chart is attached as Appendix 1 to illustrate the Project's tasks and schedule.

<u>Task #</u>	<u>Deliverable Name</u>	<u>Related Task</u>	<u>Duration / Due Date</u>
1	Project Management, Meetings, Progress Reports and Scheduling <ul style="list-style-type: none"> Detailed Project Work Plan, Budget, and Schedule Project Team Kick-off Meeting, with notes 	N/A	<ul style="list-style-type: none"> 60 days after the obligation of USDOT funding February 28, 2020
2	Existing Utilities <ul style="list-style-type: none"> Existing Utility Coordination and Research 	After Task 1	<ul style="list-style-type: none"> 120 days / 4 months June 26, 2020
3	Field Survey <ul style="list-style-type: none"> Property Research Document Preparation 	Concurrent with Task 2	<ul style="list-style-type: none"> 120 days / 4 months June 26, 2020
4	Geotechnical Investigation and Evaluation	After Tasks 2 and 3	<ul style="list-style-type: none"> 180 days / 6 months December 29, 2020
5	Environmental Survey and Evaluation <ul style="list-style-type: none"> Native Plant Survey and Report Cultural Resources Survey and Report Biological Evaluation Report Environmental Impact Statement 	After Task 4	<ul style="list-style-type: none"> 18 months June 30, 2022
6	Wash Crossing / Flood Control Analysis <ul style="list-style-type: none"> Analysis and Report for Wash Crossings and Flood Control 	After Task 4	<ul style="list-style-type: none"> 120 days / 4 months April 30, 2022
7	Permitting Evaluation <ul style="list-style-type: none"> US Corps of Engineers: 401 and 404 Permitting Arizona Department of Transportation Encroachment Permit Local Permitting Regulations 	After Task 6	<ul style="list-style-type: none"> 180 days / 6 months October 31, 2022
8	Preliminary and Final Design Report <ul style="list-style-type: none"> 60% Draft Design Report Final Design Report 	After Task 7	<ul style="list-style-type: none"> 180 days / 6 months May 1, 2023
9	Final Design <ul style="list-style-type: none"> Design Submittal, 30% Design Submittal, 60% Design Submittal, 95% Final Design Submittal 	After Task 7	<ul style="list-style-type: none"> 26 months December 31, 2024
10	Public Outreach <ul style="list-style-type: none"> Collaborative efforts to educate and engage the community in the Project, including gathering of public input 	Entire Project	<ul style="list-style-type: none"> 48 months

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5. Project Coordination

The County shall perform all tasks required for the Project through a coordinated process, which will involve affected railroad owners, operators, and funding partners, including:

- City of Tucson
- UPRR
- Arizona Department of Transportation
- US Department of Transportation

6. Project Management

The County is responsible for facilitating the coordination of all activities necessary for implementation of the Project. Upon award of the Project, the County will monitor and evaluate the Project's progress through regular meetings scheduled throughout the period of performance. The County will:

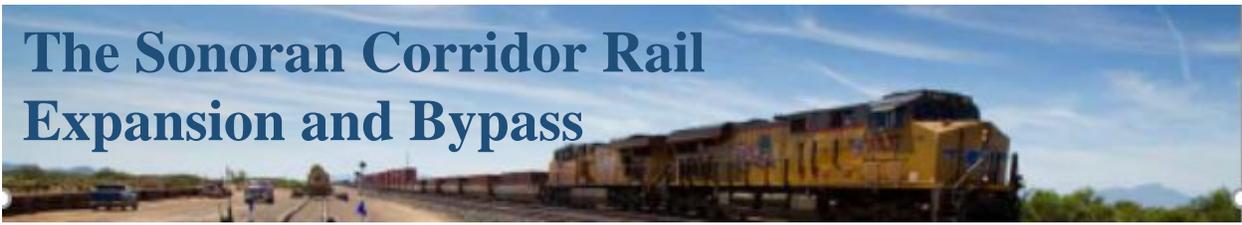
- Participate in a Project kickoff meeting with USDOT
- Complete necessary steps to hire a qualified consultant/contractor to perform required Project work
- Hold regularly scheduled Project meetings with USDOT
- Inspect and approve work as it is completed
- Review and approve invoices as appropriate for completed work
- Perform Project close-out audit to ensure contractual compliance and issue close-out report
- Submit to USDOT all required Project deliverables and documentation on-time and according to schedule, including periodic receipts and invoices
- Comply with all USDOT project reporting requirements, including, but not limited to:
 - Status of Project by task breakdown and percent complete
 - Changes and reason for change in Project's scope, schedule and/or budget
 - Description of unanticipated problems and any resolution since the immediately preceding progress report
 - Summary of work scheduled for the next progress period
 - Updated Project schedule
- Hold monthly Project team meetings, i.e., Pima County, UPRR, Consultant Team, etc.

7. Project Management Plan

Pima County will develop a Project Management Plan (PMP) for the scope of services awarded by the BUILD grant. The PMP is Pima County's overarching project implementation plan that spans the entire period of the Project. The PMP will describe Pima County's approved policies, practices, and procedures related to the management, planning and design for the BUILD grant scope of work. As the Project progresses, the initial PMP should be updated as needed to include any new or improved procedures. The PMP will include the following sections:

- A description of the scope of work for the Project

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- Adequate staff organization with well-defined reporting relationships, statements of functional responsibilities, job descriptions, and job qualifications
- Organizational structures, management skills, and staffing levels required throughout the Project
- A document control procedure and recordkeeping system
- Project Contracting – will follow state statutes and Pima County Procurement Code D29.4 for uniform and efficient contracting
- Procedures for monitoring and controlling Project costs, schedule, and scope to ensure they don't exceed or deviate from the requirements
- Risk Management Plan identifying potential risks and methods to manage those risks as well as describing procedures for monitoring, identifying and managing future risks
- A Change Order Procedure that includes a documented, systematic approach to handling Project scope, budget and scheduling changes
- Quality control and quality assurance functions, programs and responsibilities
- A documented system health and safety plan for the entire Project lifecycle
- If applicable, description of required safety certifications and processes
- Identification of required stakeholder agreements, right of way agreements, and other critical third party agreements and the process for obtaining those agreements
- Required government actions or approvals;
- Material testing policies and procedures, if applicable to the Project, and
- Internal plan implementation, communications, and reporting requirements

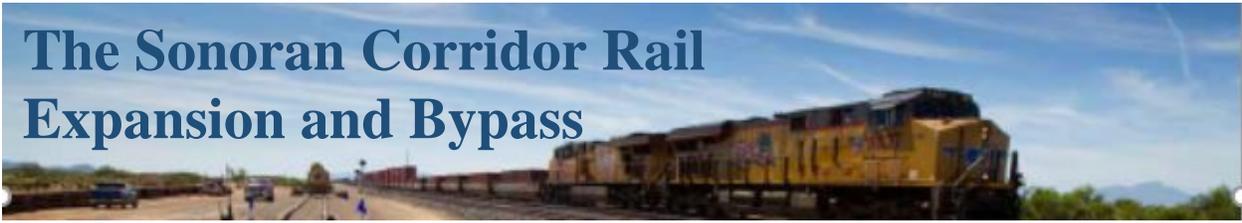
8. Background on Pima County's Project Management Plan Guidance

The Pima County Project Management Office and the Pima County Grants Management and Innovation office will provide all project management and oversight of the grant. All projects of this nature are managed according to the Pima County Project Management Manual, which includes the Gate Process. The Gate Process mandates milestone reviews to determine if a project has met all the required milestones and remains on target (scope, schedule and budget). The Pima County PMP manual and workflow schematic are available at on the Project Management website (http://webcms.pima.gov/government/project_management_office_pmo/).

In addition, the Project Management Manual addresses procurement of professional services, change-order management, and risk management, and provides an escalation ladder to direct issues needing resolution in a timely matter to the appropriate parties. The key purpose of the manual is to provide structure to keep projects on schedule, on budget, and within scope. The manual provides tools to manage and monitor the progress of this Project. These will be used will be used in the project management structure. These include a:

- **Detailed Work Plan:** Listing of individual tasks identified for the execution of each phase of the work as identified in the Statement of Work, above. The Work Plan will be monitored at-least weekly, with work progress updates provided monthly.

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- **Detailed Schedule:** A detailed Project schedule will be developed to monitor progress of individual tasks and milestones. The schedule will be submitted concurrently with the Work Plan. The schedule will also be monitored at-least weekly, with monthly updates.
- **Program Budget:** A detailed Project Budget will be developed, monitored weekly and an update will be provided monthly. Project billings and reimbursement from the USDOT will be processed monthly.
- **Quality Control Program:** A quality assurance/quality control (QA/QC) plan for the execution of this work will be provided within 30 calendar days of initiation.
- **Document Control:** Pima County will be responsible for document control and providing an information exchange/ document storage application.
- **Communications and Outreach Program:** the engineering consultant will develop an Outreach and Communications program and will be responsible for providing relevant progress information for the Project that is required as part of this study.

II. Project Location

The proposed alignment is located in a predominantly undeveloped area with portions located within the municipal limits of the City of Tucson and within unincorporated Pima County. It is in a rural area as defined by the U.S. Census Bureau: a small portion is located within, or adjacent to, the boundary of the Tucson Urban Area. Of the 11-mile alignment, four miles are in or adjacent to the Tucson Urban Area, and seven miles are completely within the rural area (36% UA, 64% rural). While the area is largely undeveloped today, the ARC is attracting a lot of development interest as a logistics center due to its proximity to several international transportation centers. Figure 1 shows the location of the proposed bypass.

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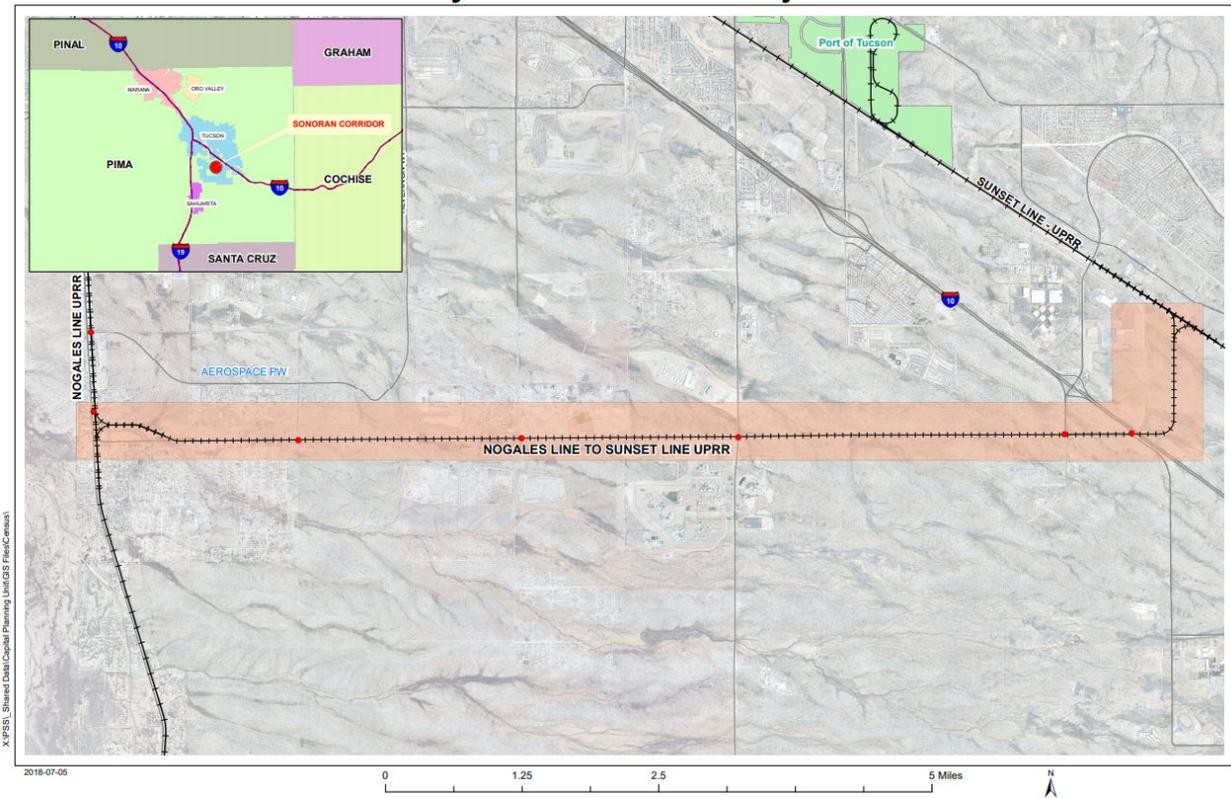


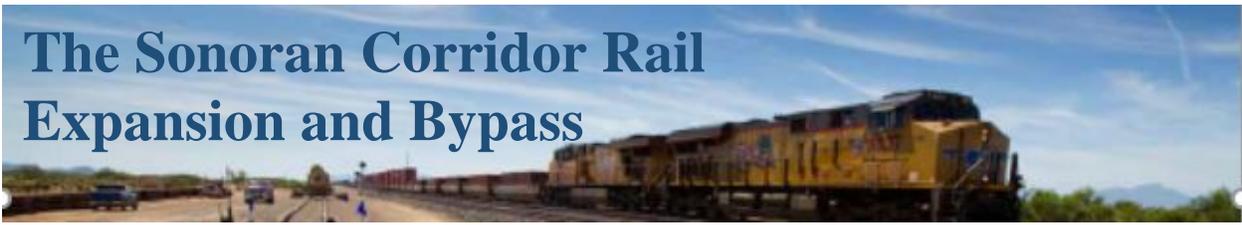
Figure 1: Location of the proposed bypass

The Project is located near the Tucson International Airport, Interstates 10 and 19, The Port of Tucson (Arizona's only inland intermodal port), and UPRR's Tucson Yard, all within an hour of the international border with Mexico. The proposed bypass route not only improves the safety of the local road network, but can potentially improve the efficiency and velocity of UPRR's operations along the Sunset Route.

At present, UPRR freight rail service operates on the Line, which originates in Tucson, Arizona, and interchanges with Ferromex at the U.S.-Mexican Border at Nogales. Running north and south, the Line currently bisects the City. The proposed bypass is expected to be relocated to a U.S. Census Bureau-designated Rural Area, just south of the Tucson Metropolitan Area. The proposed alignment will run parallel to Old Vail Connection Road, within both unincorporated Pima County and partially within the incorporated limits of the City of Tucson on the south side of the city. It is estimated that approximately 64 percent of the proposed Project and study area will be located in a Rural Area, and within both Arizona's 2nd and 3rd Congressional District (Rep. Martha McSally and Rep. Raul Grijavla, respectively) (See Figure 2).

In 2017, the Arizona Department of Transportation (ADOT) kicked off a three-year study of potential routes for the Sonoran Corridor, a federally designated highway that would connect Interstate-10 with Interstate-19 in the area near this proposed new rail corridor (Figure 1).

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Sonoran Corridor Congressional Districts

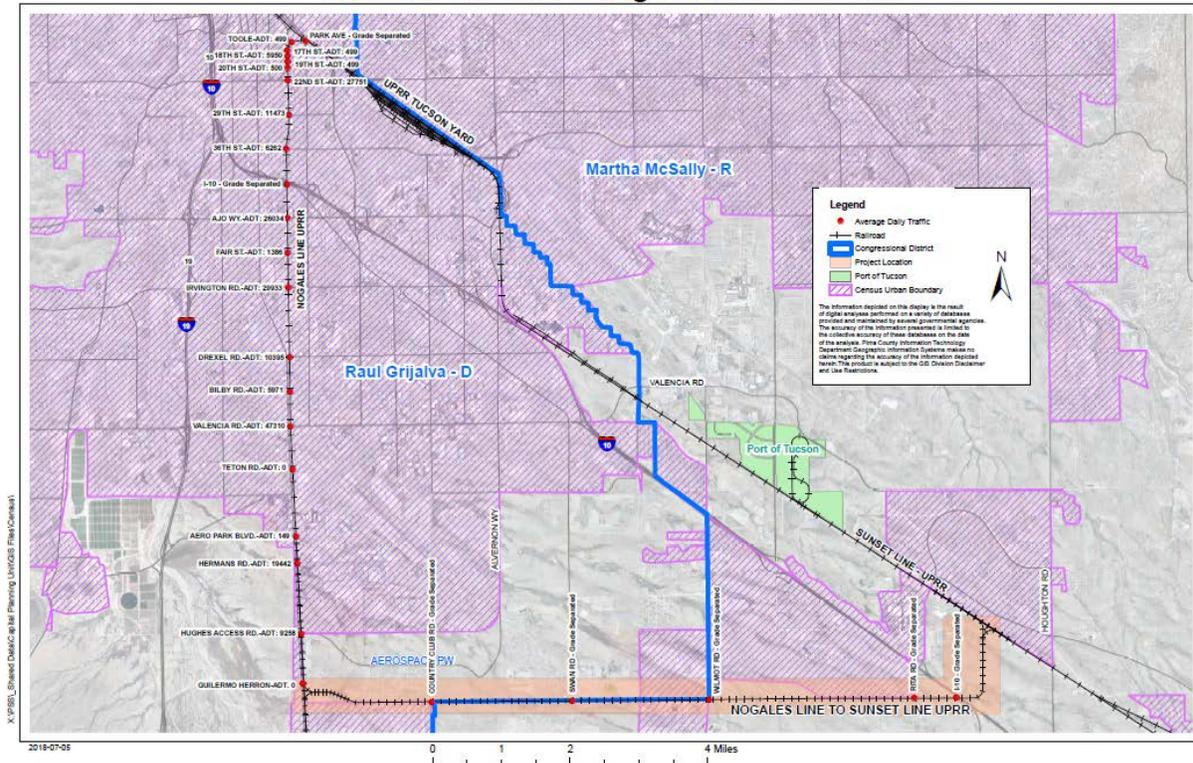


Figure 2: Sonoran Corridor Congressional Districts

Productive negotiations continue with the Tohono O’Odham Nation (Nation) regarding the inclusion of tribal lands in the planning area and location of future improvements on tribal lands. The Nation is working with their allottees in the proposed improvement area to advance potential land acquisition discussions. The Nation is supportive of the Sonoran Corridor and its reach into their southern boundary. The Nation has planned additional investment in the area to support their own economic development initiatives in anticipation of the future corridor.

The 2011 Arizona State Rail Plan identified four “Corridors of Opportunity” (Figure 3) to establish a set of rail priorities for the State to pursue. The Project is located within three of those strategic Corridors: the Arizona Spine, the Sunset, and the CANAMEX Corridors. The Arizona Spine is a north to south corridor through central Arizona, the Sunset line traverses the southern portion of the state in an east-west direction, and the CANAMEX Corridor spans from Las Vegas, Nevada, south to the international border with Mexico. The State Rail Plan predicted that nearly 75 percent of Arizona employment growth will occur in the Sun Corridor, a U.S. designated megapolitan area, with a focus on emerging industries that include a manufacturing component, which will expand the amount of goods exported from the state

(<https://www.azdot.gov/docs/planning/state-rail-plan.pdf> [pgs 63-64]).

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III. Grant Funds, Sources and Uses of all Project Funding

1. Project costs;

The total estimated cost of the Project design is \$5,050,000 for which the USDOT grant may contribute up to 80 percent of the total cost, not to exceed \$4,000,000. Any additional expense required beyond that provided in this grant to complete the Project study shall be borne by the County.

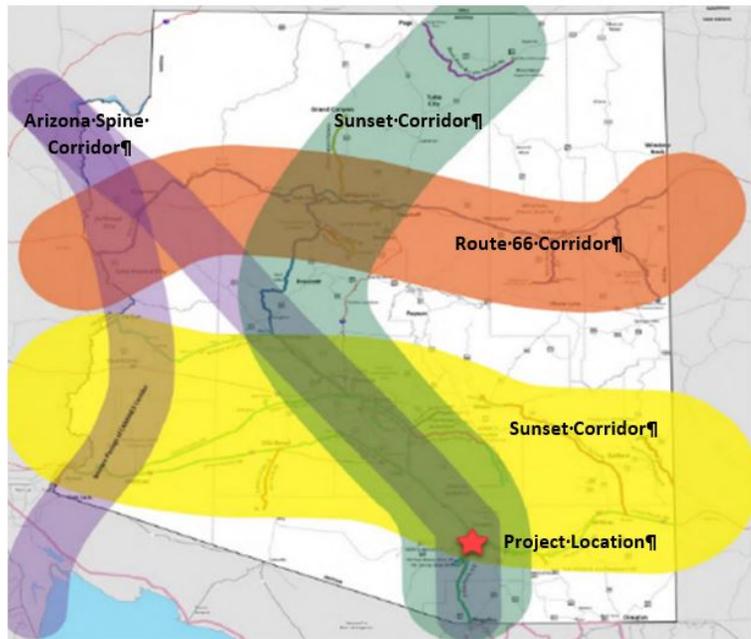


Figure 3: Corridors of Opportunity

Project Estimate by Task		
Task #	Task Name	Total Cost
1	<p>Project Management, Meetings, Progress Reports, and Scheduling</p> <ul style="list-style-type: none"> • <u>Gregg Hitt, Project Planner: \$150,000</u> <ul style="list-style-type: none"> ○ Manage consultant tasks for design and engineering tasks ○ Supervise development of Final Reports, including environmental, biological, hydrological and geotechnical ○ Ensure compliance with grant performance metrics • <u>Sandi Garrick, Utility and Railroad Liaison: \$120,000</u> <ul style="list-style-type: none"> ○ Coordinate with UPRR for development of rail network planning and operations simulations and design ○ Assist with utility identification and design efforts ○ Facilitate stakeholder and public outreach ○ Assist with development of Final Reports, including economic analysis and identification of potential partnerships • <u>Nancy Cole, Project Management Office: \$55,000</u> <ul style="list-style-type: none"> ○ Provide Project management oversight for adherence to Pima County Project Development Manual and Gate process ○ Develop and monitor Project Management Plan to ensure adherence to Project Scope, Schedule and Budget 	<p style="text-align: right;">\$325,000</p> <p>BUILD: \$325,000 / 100% Non-Federal: \$0 / 0% Other Federal: \$0 / 0%</p>
2	<p>Existing Utility</p> <ul style="list-style-type: none"> • Existing Utility Coordination and Research 	<p style="text-align: right;">\$165,000</p> <p>BUILD: \$165,000 / 100%</p>

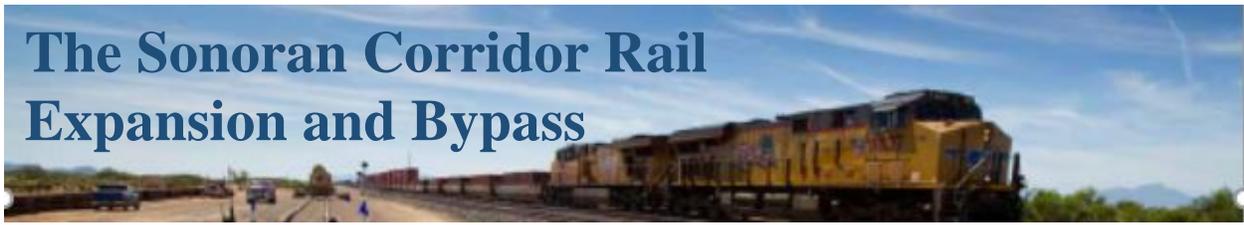
The Sonoran Corridor Rail Expansion and Bypass



		Non-Federal: \$0 / 0% Other Federal: \$0 / 0%
3	Field Survey <ul style="list-style-type: none"> Property Research Document Preparation 	\$320,000 BUILD: \$320,000 / 100% Non-Federal: \$0 / 0% Other Federal: \$0 / 0%
4	Geotechnical Investigation / Design	\$380,000 BUILD: \$380,000 / 100% Non-Federal: \$0 / 0% Other Federal: \$0 / 0%
5	Environmental Survey and Evaluation <ul style="list-style-type: none"> Native Plant Survey and Report Cultural Resources Survey and Report Biological Evaluation Report Environmental Impact Statement 	\$1,050,000 BUILD: \$40,000 / 3.8% Non-Federal: \$1,050,000 / 96.2% Other Federal: \$0 / 0%
6	Wash Crossing / Flood Control Analysis	\$310,000 BUILD: \$310,000 / 100% Non-Federal: \$0 / 0% Other Federal: \$0 / 0%
7	Permitting Evaluation <ul style="list-style-type: none"> US Corps of Engineers: 401 and 404 Permitting Arizona Department of Transportation Encroachment Permit Local Permitting Regulations 	\$250,000 BUILD: \$250,000 / 100% Non-Federal: \$0 / 0% Other Federal: \$0 / 0%
8	Preliminary and Final Design Report <ul style="list-style-type: none"> 60% Draft Design Report Final Design Report 	\$550,000 BUILD: \$550,000 / 100% Non-Federal: \$0 / 0% Other Federal: \$0 / 0%
9	Final Design <ul style="list-style-type: none"> Design Submittals at 30%, 60%, 95% Final Design Submittal 	\$1,550,000 BUILD: \$1,550,000 / 100% Other Federal: \$0 / 0% Non-Federal: \$0 / 0%
10	Public Outreach <ul style="list-style-type: none"> Consultant-led collaborative efforts to educate and engage the community in the Project, including gathering of public input 	\$150,000 BUILD: \$150,000 / 100% Other Federal: \$0 / 0% Non-Federal: \$0 / 0%
Total Project Cost		\$5,050,000

Project Estimate Contributions		
Funding Source	Project Contribution Amount	Percentage of Total Project Cost
BUILD Grant	\$4,000,000	79%
Non-Federal		
Pima County	\$1,000,000	19%
City of Tucson	\$50,000	1%
Other Federal	0	0%
Total Project Cost	\$5,050,000	100%

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IV. Merit Criteria

1. Safety

In 2015, there were approximately 2,100 railroad crossing incidents with 230 fatalities. To improve safety, the FRA has developed the *Railroad Crossing Safety & Trespass Prevention Initiative* with a 3 E Framework of **E**ducation, **E**ngineering and **E**nforcement. The potential elimination of 20 existing at-grade crossings in an urban area, supports the FRA’s mission through **E**ngineering to reduce grade crossing intersections (<https://www.fra.dot.gov/Page/P08455>). Nationwide, train fatalities due to trespassing on railroad facilities reached an all-time high in 2017, with 679 deaths and 754 non-fatal injuries.

Reducing the number of active at-grade crossings is closely aligned with the U.S. House of Representatives Committee on Appropriations fiscal year 2019 Transportation Rail goal to fund “investments to the physical rail infrastructure, to help ensure the safety of passengers and local communities”

(<https://appropriations.house.gov/news/documentsingle.aspx?DocumentID=395298>).

The existing rail alignment between Old Vail Road and the UPRR Pacific Fruit Express (PFE) Yard is located primarily within the urban city environment. The Line dissects communities, with more than 300,000 vehicles per day crossing the 20 at-grade crossings along the existing alignment through urban settings. The Line creates a significant barrier to bicycle and pedestrian traffic, as what should be a simple neighborhood trip, especially for school children to and from school each day, often becomes a circuitous route in order to find safe crossings. Barriers to pedestrian traffic presented by the line often most impact impoverished areas of the city, as these areas usually have higher concentrations of people who depend on walking, biking, and public transit to travel. The current alignment of the Line often forces residents to choose between crossing legally or shortening their route by illegally crossing the railroad tracks. Tucson summer heat is intense with typical temperatures in the 90s between the months of June and September, and more than 40 days exceeding 100 degrees annually. These extreme summer temperatures tend to enhance people’s desire to seek a shorter route across the tracks, increasing the chances an incident occurs and demonstrating the opportunity to improve public health through the bypass. Additionally, this Project would eliminate residential neighborhoods’ exposure to hazardous materials being transported along the line, including those used in mining operations. According to FRA data, there have been eighteen (18) accidents/incidents at these crossings, including four (4) injuries and one (1) fatality. A copy of the Accident/Incident Report is available on the Project website (<http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=437237>).

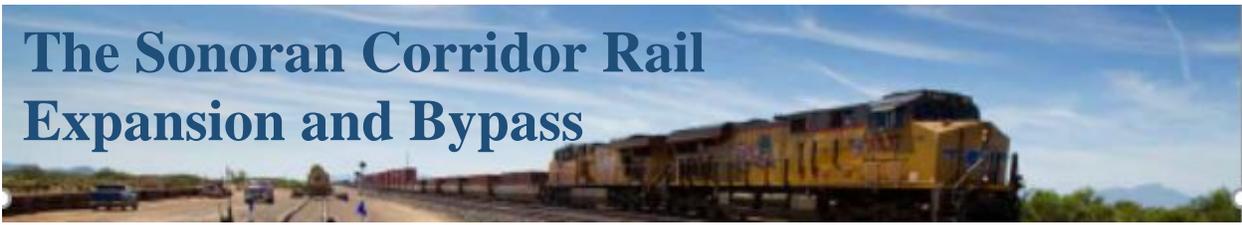
The Line’s impact on nearby communities, neighborhoods, and schools detailed in the 2013 City of Tucson UPRR Safety Study Exhibit, available on the Project website:

(<http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=437237>).

2. State of Good Repair

The existing Line was installed circa 1900 and is traversed daily by over 300,000 vehicles, including oversize and overweight trucks in the industrial area near to the Tucson Rail Yard. The

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Project proposes to replace eleven miles of this Line and replace it with a brand new bypass. While there are no known major condition issues with the existing track, maintenance and resiliency will be improved with installation of newer rail technologies. The Project would increase UPRR efficiencies and provide greater operational flexibility by being able to conduct crew changes along the proposed route, thereby providing nearly direct rail access to UPRR's operations in El Paso, Texas and Santa Teresa, New Mexico, for inbound trains from Mexico. Annual savings of maintenance cost for the 20 at-grade crossings are estimated to be \$70,000 for railroad track surface and \$188,500 for railroad signal equipment. A list of UPRR Crossings with summary of equipment and estimated maintenance cost is available on the project website (<http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=437237>). UPRR will be responsible for ongoing maintenance consistent with all applicable standards.

In December 2015, the United States Congress approved the Fixing America's Surface Transportation (FAST) Act (Public Law 114-94), to improve transportation infrastructure across the nation. Recognizing the critical need for infrastructure improvement and expansion in this specific area, Section 1416 of the FAST Act officially designated the Sonoran Corridor as a "high-priority corridor on the National Highway System" (<https://www.azdot.gov/docs/default-source/transportation-studies/p9101-sonoran-corridor-final-need-and-purpose.pdf?sfvrsn=0>, [pg 3]) (Figure 4).

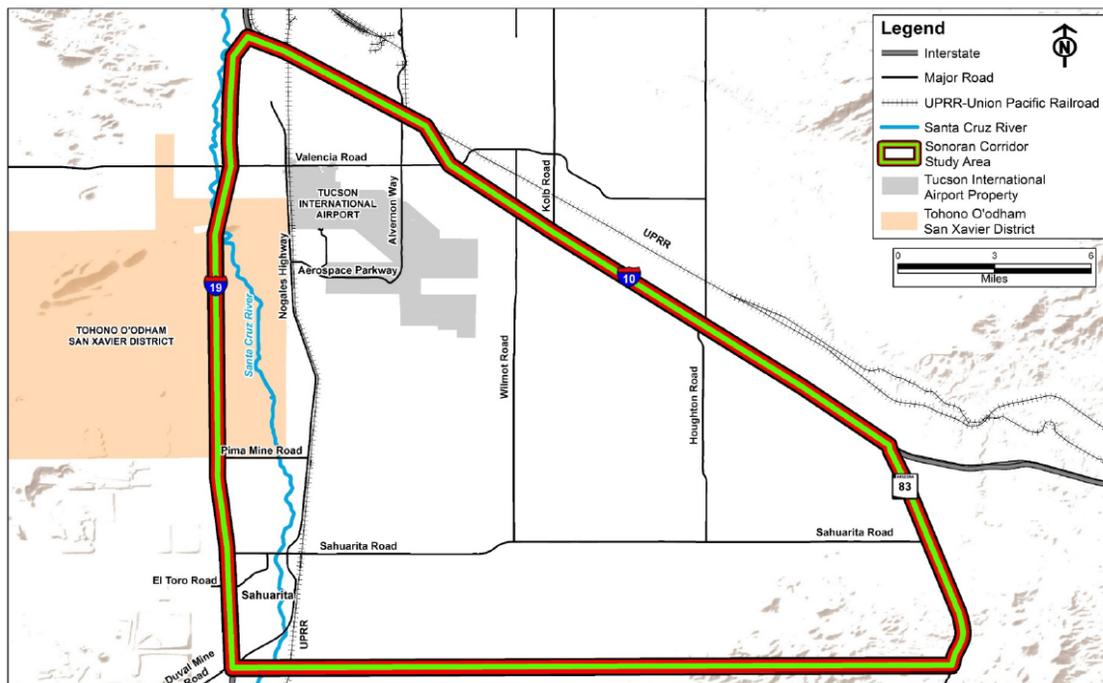


Figure 4 Sonoran Corridor Study of Area Showing Existing Roadway Network (Source: ADOT Sonoran Corridor Study page 4)

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3. Economic Competitiveness

Pima County's proposed Project will increase economic competitiveness by decreasing transportation costs; improving efficiency in the movement of goods; increasing timely access to employment centers for rural and urban residents; promoting job creation; and facilitating efficient freight movement.

UPRR operates an average of eight trains daily along the Line. These trains are limited to speeds of 10-20 MPH through the city neighborhoods, whereas UPRR could operate these trains at 50 MPH along the bypass route.

UPRR's Pacific Fruit Express (PFE) Tucson Yard was established more than 100 years ago, and while it is the largest classification yard in Arizona, expansion is restricted due to its central urban location. The 2011 Arizona State Rail Plan identified the Yard as "having reached its capacity, and as demand for deliveries in Phoenix and Tucson increase, additional yard capacity is needed for these freight movements to be completed by rail". (<https://www.azdot.gov/docs/planning/state-rail-plan.pdf> [pg 41]). The proposed alignment provides opportunity for through-trains to continue directly to their destination without having to go through the PFE Yard, thus freeing up added capacity at the Yard, or they can continue west with minimal switching required. This will allow for increased switching volumes, thereby enhancing the overall efficiency and capacity for economic growth.

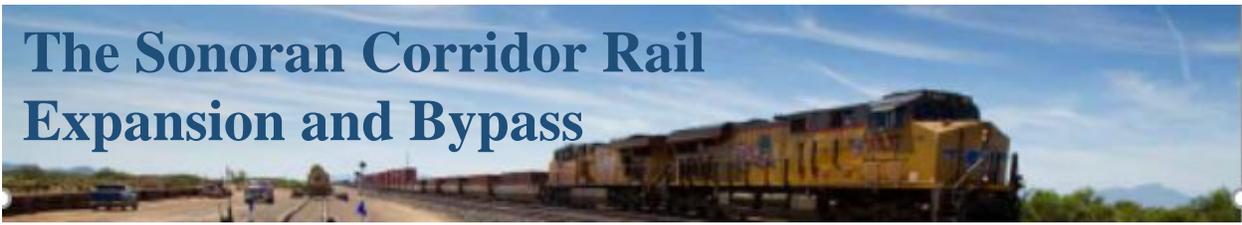
Alleviating delays for commuters at at-grade crossings in the central city is a rising priority in a region where population and employment growth are straining current capacity. The ADOT Sonoran Corridor Study determined that "much of the transportation network within the [Sonoran Corridor] study area is expected to operate at an unacceptable level of service (LOS) by 2045" (<https://www.azdot.gov/docs/default-source/transportation-studies/p9101-sonoran-corridor-final-need-and-purpose.pdf?sfvrsn=0>, [pg 1]). As such, the region is pursuing and heavily investing in improving and expanding multi-modal infrastructure. As indicated by ADOT, "population and employment growth – projected growth in the study area is predicted to increase travel demand within an area with a transportation network that needs improvement" (<https://www.azdot.gov/docs/default-source/transportation-studies/p9101-sonoran-corridor-final-need-and-purpose.pdf?sfvrsn=0>, [pg 1]).

The rerouting of the Line will provide additional opportunity to utilize the region's only inland port, the Port of Tucson, as well as enhancing US competitiveness by facilitating efficient freight movement. The Sun Corridor's Economic Blueprint for the region identifies Transportation and Logistics as an economic cluster that is targeted for retention and expansion in the region (<http://www.suncorridorinc.com/SunCorridor/media/Sun-Corridor/Documents/Economic%20Blueprint/2007-economic-blueprint.pdf?ext=.pdf> [pg 11]).

The Arizona State Rail Plan was adopted by the Arizona Department of Transportation in March of 2011. Section 4.3.2 states:

"Inland Port to support International Trade; Inland ports/logistic facilities are intermodal facilities that allow containerized freight to be shipped directly from the port terminal to an inland facility for trade processing, sorting, and other value-added services. The ability

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to develop inland port and logistic facilities in Arizona to spur economic development depends on meeting warehousing/distribution location requirements, particularly in relation to “just-in-time” product delivery needs. Inland ports/logistics facilities provide locations for value-added activities that create investment opportunities for Arizona, including freight manipulation, warehousing/distribution, and manufacturing – all of which bring jobs and improve the business climate for economic development.” (<https://www.azdot.gov/docs/planning/state-rail-plan.pdf> [pg 85]).

Development of such a logistics facility could evolve into additional inland ports and foreign trade zones (FTZ) to attract adjacent manufacturing that desires excellent intermodal transportation options. A study prepared for the Joint Planning Advisory Council (MAG, CAAG, YMPO and PAG) identified transportation logistics and associated manufacturing, as one of the key economic engines that could drive employment growth and development of the Sun Corridor over the next 40 years.

Development of intermodal and logistics centers and supporting rail infrastructure can act as a catalyst for economic development in the Sun Corridor, and establish Arizona as a major distribution center for goods. Distribution and warehousing activities are expected to grow in the region and lead to creation of jobs and a diverse economic base, as a result of these infrastructure investments.

4. Environmental Protection

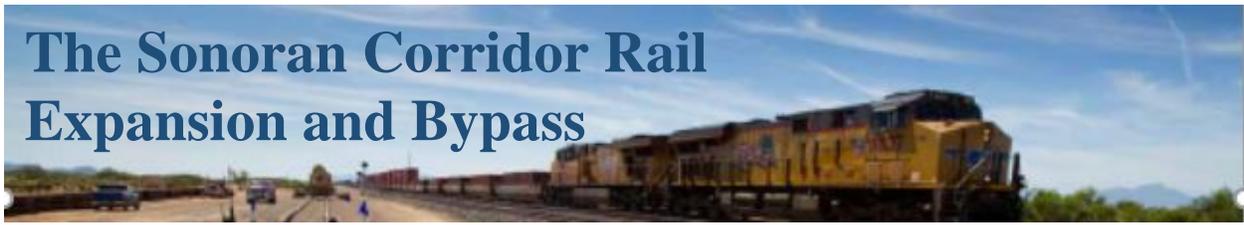
The proposed Project supports USDOT’s goal to reduce energy use and air pollution through congestion mitigation. A noted benefit of the realignment will be reduced pollution from cars idling as they wait for trains.

The BUILD grant would fund the completion of environmental analysis as part of the design for this Project. The Project area will be analyzed and documented through a robust process including environmental, geographical, socio-economic, and other factors, to avoid adverse environmental impacts.

Pima County is widely recognized for its outstanding efforts to protect and conserve its biological, cultural and natural resource heritage. One of the many innovative and successful tools developed by the County to balance environmental protection while promoting a vigorous economy is the *Sonoran Desert Conservation Plan* (SDCP). The SDCP included 200 technical reports and was developed in partnership with more than 150 contributing scientists and public input from more than 600 meetings to identify suitable areas for development, as well as lands prioritized for conservation. The Sonoran Corridor is suitable for development, according to the SDCP. (https://webcms.pima.gov/government/sustainability_and_conservation/conservation_science/the_sonoran_desert_conservation_plan/). The SDCP has received numerous international, national, regional and state awards for both its development and implementation by the County, including:

- 2001 ESRI User Conference, Best Instructional Presentation (International)
- 2017 Saving Birds thru Habitat Award of Exceptional Merit (National)
- 2006 US Fish and Wildlife Service planning grant for ecological monitoring (National)

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- 2002 American Planning Association, Outstanding Planning Ward (National)
 - 2017 Timothy Ahrens Partnering Award (Regional)
 - 2002 Ahwahnee Award of Honor, Local Government Commission Planning Award for Regional Initiative (Regional)
 - 2002 Arizona Historic Preservation Plan Award (State)
 - 2001 Arizona Planning Association, Best Plan, Multi-Agency Coordination (State)
- (<https://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=63269>)

The SDCP is merely one example of Pima County’s commitment to environmental protection as will be evidenced through the comprehensive assessments and recommendations to be completed during design.

Additionally, this Project is uniquely positioned to benefit from the Sonoran Corridor Tier 1 Environmental Impact Statement (EIS) process that was initiated by the Federal Highway Administration (FHA) and the Arizona Department of Transportation (ADOT) in May, 2017. The Sonoran Corridor Tier 1 EIS is considering “potential 2,000-foot-wide corridors between I-10 and I-19 in the vicinity south of the Tucson International Airport”, in which much of the Project would be located (Sonoran Corridor Fact Sheet,

<http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=437237>). Many of the stakeholders already engaged in the Sonoran Corridor process have participated in conceptual planning discussions for this Project and are in support of this vital improvement to rail service.

5. Quality of Life

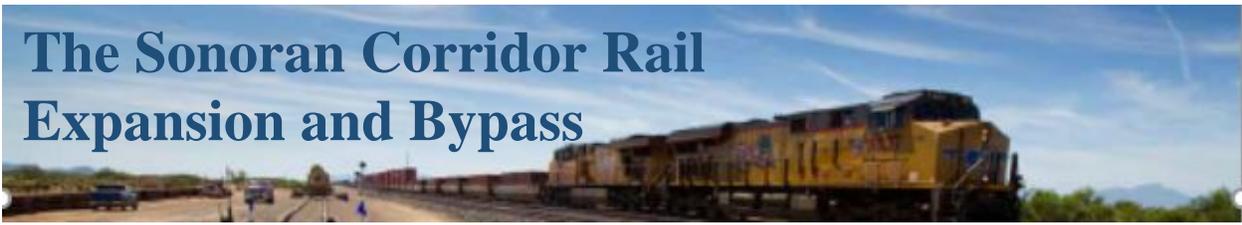
This Project is a rare and significant opportunity to promote economic opportunity, improve pedestrian and vehicle safety and mobility, expand rail development, and reduce air pollution and fuel use for the region.

The Pima Association of Governments (PAG) developed the *Regionally Significant Corridors Study* compiled from an in-depth review of previous plans studies, best practices, stakeholder surveys and workshops, in close consultation with a Technical Advisory Committee (TAC) consisting of PAG member jurisdictions and key regional stakeholders. (<http://www.pagnet.org/documents/transportation/rsc/RSC-FinalReport-2014-01-28.pdf> [pg 6]).

Additionally, a web-based survey was distributed to employers, large organizations, school districts, chambers of commerce and other community organizations throughout the PAG region. Respondents were asked to rank priorities relating to operations of the business or organization and needs of the staff or community members. The survey results showed that “most respondents thought that ‘improve mobility for cross-town travel’ was the most important for existing conditions. A very close second was ‘improve access to employment and commercial center’. ‘Increase connections with transit, air and rail’ was ranked third. It was noted by respondents that the other items on the list (e.g. reduce air pollution, minimize impacts to the environment, and reduce fuel and other vehicle costs) were not less important, but rather that they would be achieved as a result of addressing these top priorities”

(<http://www.pagnet.org/documents/transportation/rsc/RSC-FinalReport-2014-01-28.pdf> [pg 15]).

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The Project is located within one mile of the San Xavier Indian Reservation, which at 71,095 acres is the second largest land base of the Tohono O’odham Nation, a federally-recognized Indian tribe. (<http://www.tonation-nsn.gov/location/>). Elimination of these public-highway, at-grade crossings will positively impact the mobility and access for residents along the existing route.

6. Innovation

a) Innovative Technologies

The bypass route will be connected to UPRR’s state of the art intelligent transportation systems network that monitors all activities from central locations. These main circuitry hubs provide feedback via switches and signals to active trains. UPRR will be responsible for operation and maintenance of the new facilities, thus eliminating the need for public sector funds to operate and maintain this asset.

b) Innovative Project Delivery

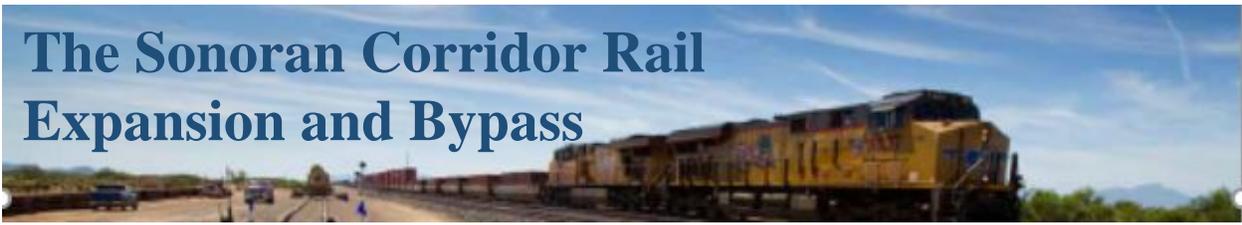
The Project will be delivered using the Pima County Project Delivery Process (http://webcms.pima.gov/government/project_management_office_pmo/). The process requires regular meetings of senior Project staff at key intervals during Project development. These meetings are called Gate meetings. The goal is to address and/or escalate any issues impacting scope, schedule, or budget, in a timely fashion. The Project Charter is used to outline the Project goals, risks, and assigns responsibility for each element of the Project. No statutory requirements are missed using this approach, since all stakeholder groups are involved from the initial charter development phase. The charter must be completed and thorough before getting approval to begin. Project risks are addressed by developing mitigation or avoidance measures early in the planning phase. And finally, Project plans are reviewed in the same fashion as the private sector plans. This approach reduces plan review to no more than five days. The current plan review timeframe is 1-1/2 days. Since implementing the Project Delivery Process, Project outcomes have improved considerably with more at or below budget completions. Project schedules are maintained or reduced.

This Project includes planning, NEPA, and design. Therefore, the FHWA’s Special Experimental Project Delivery Method #15 does not apply. Project Planning and Design will follow Arizona Revised Statutes and Pima County Code requiring selection of the best qualified proposer.

It is of note that only two rail-related projects have been funded by a TIGER (Transportation Investment Generating Economic Recovery Program) in the state of Arizona since the program began in 2009. In 2013, \$5 million was awarded to Pima County to extend a siding and install high-powered switches to facilitate operations at the Port of Tucson Container Export Facility, the state’s only inland port (Arizona State Rail Plan May 2018 Technical Memo No. 1 pg 1-21). Pima County’s innovative project management process ensured the success of the project and accolades for a job well-done.

Since the asset produced from this investment is part of a public/private partnership, UPRR is responsible for long-term asset management, including operations, maintenance, and future investment or upgrades.

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c) Innovative Financing

The Project is located in a recently designated Arizona Opportunity Zone (<https://www.azcommerce.com/arizona-opportunity-zones/>) (Figure 5). Opportunity Zones were added to the tax code by the Tax Cuts and Jobs Act on December 22, 2017. The ARC received its designation on April 9, 2018. Opportunity Zones are an economic development tool designed to spur economic development and job creation in distressed communities by providing tax benefits to investors. Opportunity Funds are created that allow investors to defer capital gains into the future. If they hold the fund for ten years or longer, they get a stepped up cost basis on the investment, thus reducing the taxes paid upon sale. The Project intends to utilize this tool in the public-private Partnership with UPRR and others to construct future improvements in this area.

AZ Commerce Authority Opportunity Zone Census Tracts – May 2018

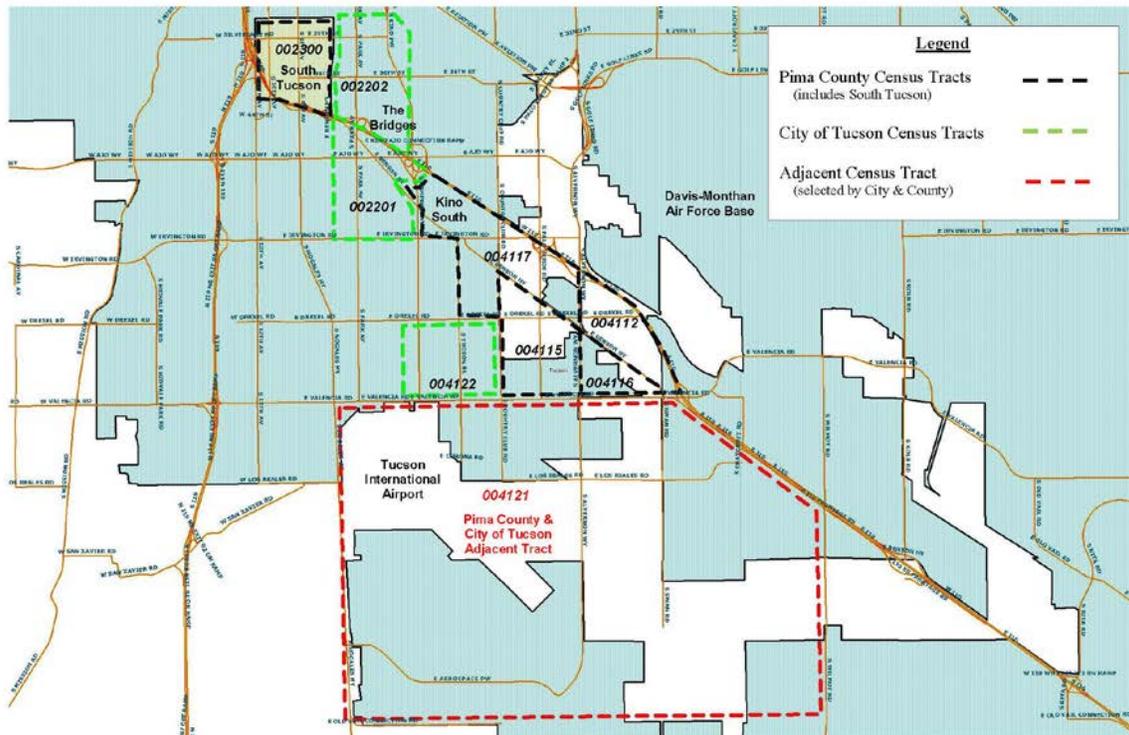
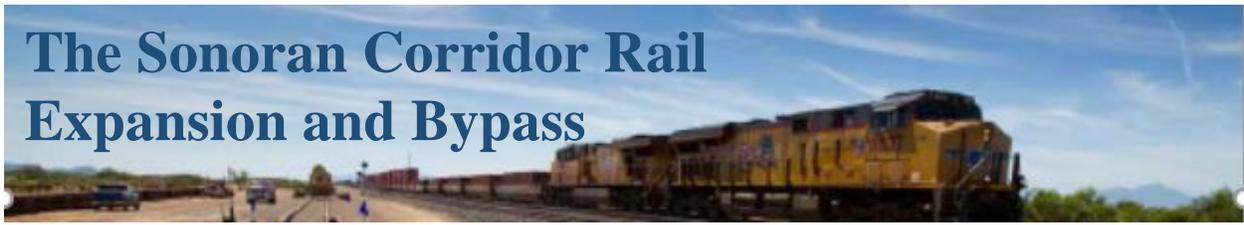


Figure 5: AZ Commerce Authority Opportunity Zone Census Tracts – May 2018

The Project is financed with the \$4 million BUILD award, a \$1 million local match from Pima County’s General Fund, and \$50,000 in regional funds from the City of Tucson/Pima Association of Governments (PAG). Once the Project is constructed, the ongoing operations, maintenance and future investment is the responsibility of the Project partner, UPRR.

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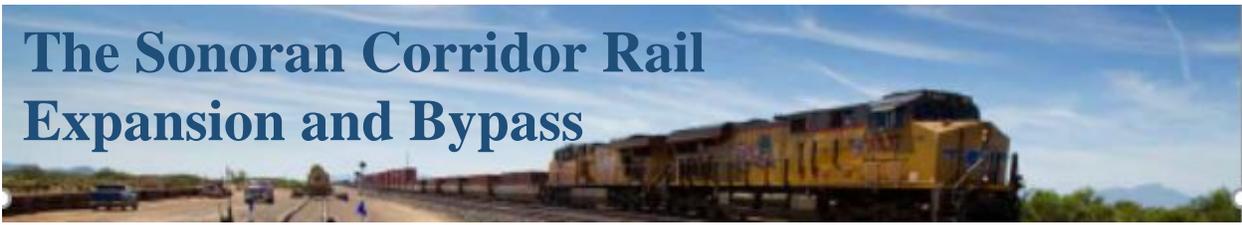


7. Partnership

The Project Partners have been involved in the development of this initiative since 2008. Together, these partners have vetted the concept and brought it to its current implementation which includes the development of the ARC, the Aerospace Parkway, the future Sonoran Corridor which includes the Project. The Partners have also worked together on Congressional Designation of the Sonoran Corridor and inclusion in the F.A.S.T. Act, attracted additional businesses to this area, and committed millions in investment dollars to the continued development of the area, either with expansion and improvement to their existing assets, or commitment to invest in future assets. Most of these partners will also be stakeholders throughout the Project and included in the PMP with assigned roles and responsibilities.

- *ADOT* is completing the Environmental impact Statement for the Sonoran Corridor (<http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=437237>). The Sonoran Corridor will provide a bypass route for large-scale freight coming to and from Mexico, and minimize congestion at the Interstate 10 and Interstate 19 interchange. The Project intends to complete design to allow the road and the rail to be constructed simultaneously to minimize cost and business interruptions in the area. ADOT and state and federal partners, as well as private sector partners, all benefit for these economies.
- *Union Pacific Rail Road* stands to benefit significantly from the bypass route, providing increased efficiencies throughout their national rail network. In addition to the safety enhancements, UPRR will be afforded operational flexibility by being able to conduct crew changes outside of UPRR's Tucson Yard (Yard), providing nearly direct rail access to UPRR's operations in El Paso, Texas and Santa Teresa, New Mexico, for inbound trains from Mexico. This direct link allows UPRR to bypass the speed restricted tracks through central Tucson, and the Yard.
- *Pima County* has started acquiring industrially zoned land to provide a buffer against planned residential development as well as providing opportunities for economic growth. With several 100 acre or larger parcels available for development along the proposed bypass route, it stands to become one of the County's primary locations for job growth and new business attraction. The proposed rail bypass will bring an active rail line to serve this job center, a critical component to ensuring its successful development.
- *Port of Tucson*, the only inland multimodal rail port located in Arizona, will be provided with direct rail access, allowing unit trains from Mexico to directly enter the Port. In addition, rail supported customers can take advantage of shovel-ready locations set aside for development within a Foreign Trade and State of Arizona Enterprise Zone (additional information regarding the Port of Tucson is available on the Project website: <http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=437237>)
- *City of Tucson* residents will benefit through increased safety for pedestrians, bicyclists, and drivers, as the proposed bypass will eliminate 20 at-grade crossings. In addition, rerouting the route will eliminate trains that often carry hazardous materials through residential areas and reduce pollution caused by vehicles idling as they wait at the crossings. It will also increase safety around three Tucson schools.

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- *Rural Arizona communities* have the potential to benefit by increasing rail efficiencies along with more direct access to the Port of Tucson, providing construction jobs and long-term employment for transloading operators and other logistics jobs.
- *Private industry* benefits by the availability of rail access to improve on-time delivery of products around the country and the world. Private Industry also benefits by attracting like businesses to the ARC, encouraging business development and partnership opportunities.
- *Tucson International Airport* will benefit from the opportunity to begin surface to air loading from the adjacent rail spurs planned for the ARC. Tucson International Airport currently owns 1,280 acres of land in the ARC.

8. Non-Federal Revenues for Transportation Infrastructure Investment

The Project is located in a recently approved Opportunity Zone (<https://www.azcommerce.com/arizona-opportunity-zones/>). It is anticipated that this Project will garner significant interest from investors wanting to take advantage of the tax advantages of investing in these types of properties. UPRR will continue to invest private capital in the operations and maintenance of these improvements, as well as invest millions in the continued expansion in the ARC and other development areas brought about by the bypass route. These include, but are not limited to sidings, maintenance facilities, and additional track to warehouses and distribution centers.

V. Project Readiness

1. Technical Feasibility

The Project includes planning and design. Technical Feasibility, while assumed, will be confirmed through the work plan funded by this grant.

2. Project Schedule

Below is the project schedule. The associated Gantt chart is attached as Appendix 1.

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PROJECT SCHEDULE	START	FINISH
Internal Administration and Oversight	Jan 2020	Dec 2024
Staff time for project management	Jan 2020	Dec 2024
Staff time for internal subject matter expert reviews	Jan 2020	Dec 2024
External Planning & Design Services	Jan 2020	Dec 2024
Task 1: Project Management, Meetings, Progress Reports & Scheduling	Jan 2020	Dec 2024
Progress meetings and reports	Jan 2020	Dec 2024
Detailed project work plan/kickoff meeting complete	Jan 2020	Feb 2020
Scheduling	Mar 2020	Dec 2024
Task 2: Existing Utility	Jan 2020	June 2020
Existing utility coordination and research	Jan 2020	June 2020
Task 3: Field Survey	Jan 2020	June 2020
Property research: easements and title research	Jan 2020	Apr 2020
Document preparation	Apr 2020	June 2020
Task 4: Geotechnical Investigation / Design	June 2020	Dec 2020
Geotechnical investigation	June 2020	Dec 2020
Task 5: Environmental Survey and Evaluation	Dec 2020	June 2022
Native plant survey and report	Dec 2020	Oct 2021
Cultural resources survey and report	Dec 2020	Oct 2021
Biological evaluation report	Dec 2020	Oct 2021
Environmental Impact Statement (EIS)	Oct 2021	June 2022
Task 6: Wash Crossing / Flood Control Analysis	Nov 2021	Apr 2022
Analysis and report for wash crossings and flood control	Nov 2021	Apr 2022
Task 7: Permitting Evaluation	Feb 2022	Oct 2022
US Corps of Engineers: 401 and 404 permitting	Feb 2022	Oct 2022
AZ Department of Transportation encroachment permit	Feb 2022	Oct 2022
Local permitting regulations	Feb 2022	Oct 2022
Task 8: Preliminary and Final Design Report	Sept 2022	May 2023
60% Draft design report	Sept 2022	Jan 2023
Final design report	Jan 2023	May 2023
Task 9: Final Design	Oct 2022	Dec 2024
Design submittal, 30%	Oct 2022	May 2023
Design submittal, 60%	May 2023	Jan 2024
Design submittal, 95%	Jan 2024	July 2024
Final design submittal, 100%	July 2024	Dec 2024
Task 10: Public Outreach	Jan 2020	Dec 2024
Public and stakeholder outreach and coordination	Jan 2020	Dec 2024

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3. Required Approvals

a) **Environmental Permits and Reviews**

Not Applicable – Planning and Design Project

b) **State and Local Approvals**

Not Applicable – Planning and Design Project

c) **Federal Transportation Requirements Affecting State and Local Planning**

The Project intends to plan and design the rail bypass route. All required approvals and coordination with State and Local agencies will be done as part of the planning NEPA and design process.

4. Assessment of Project Risks and Mitigation Strategies

The Project will follow the Pima County project delivery process, which includes a thorough analysis of risks and the strategies for dealing with them (http://webcms.pima.gov/government/project_management_office_pmo/). Since this application is requesting funds for planning and design, no significant risks have been identified for the BUILD-funded phase.

Following is the process the team will apply with regard to risk mitigation when advancing the Project. This information is included in the Project Charter, and its completion is required on each project. Senior management must review the document and agree to the action plans for each risk identified to allow the project to maintain its schedule and budget. This process occurs before, and is part of, the project initiation process, the Entry Gate.

Risk, in the context of project delivery, is an uncertain event or condition, which if it occurs may have a positive or negative effect on the project's scope, schedule, budget and/or quality. The Project Charter identifies potential risks, and evaluates the probably of it occurring, the potential level of impact, the action type the team will take, and the proposed mitigation strategy that will be part of a recovery plan. The greater the detail of the risk and its source, the more accurate the recovery action. The Project Charter requires the team identify each risk and provide the appropriate action, including:

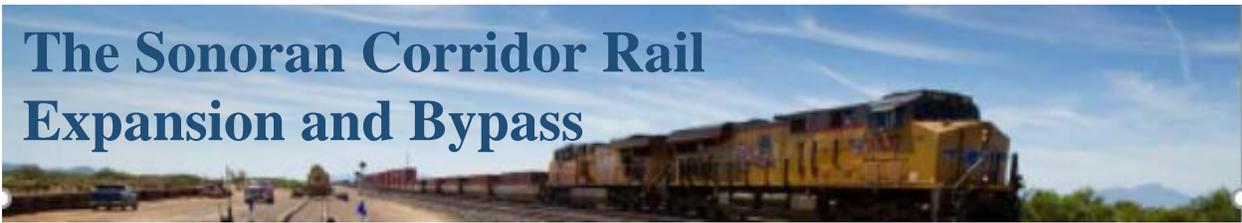
- Control: reduce the probability or impact of the risk to an acceptable level
- Absorb: project will bear the impact, generally via a cost or time contingency plan
- Avoid: eliminate the risk or relax the objective, such as adjusting the design to avoid a negative impact
- Deflect: transfer or share risk with a third party, which may involve partnering strategies or elements such as insurance/bonding

The Project Charter goes into detail on each identified risk prior to advancing the project to the next stage.

5. Benefit Cost Analysis

The Benefit Cost Analysis (BCA) was completed using the information presented throughout this narrative, including:

The Sonoran Corridor Rail Expansion and Bypass



- Improved Travel Time Reliability
- Improved Access to Future Development Potential
- Efficient Freight Rail Operations
- Improved Emergency Vehicle Access
- Elimination of the Transportation of Hazardous Materials through Residential neighborhoods

The period of analysis used in the estimation of benefits and costs is 36 years, including 6 years of construction and project development, as well as 30 years of operation. The total project costs include \$176.8 million dollars in future capital costs.

The BCA provides various summaries of the relevant data and calculations used to derive the benefits and costs of the project. Based on the analysis presented in that document, the project is expected to generate \$68.0 million in discounted benefits and \$130.5 million in discounted costs, using a 7 percent real discount rate. Therefore, the project is expected to generate a Benefit/Cost Ratio of 0.52.

An additional scenario analysis was completed based on the need for various individual crossings that require grade crossing separation, following the criteria for highway-rail grade crossing separation presented in the *Railroad-Highway Grade Crossing Handbook* created by the USDOT FHWA (https://safety.fhwa.dot.gov/hsip/xings/com_roaduser/07010/index.cfm). Following the requirements, three crossings (22nd Street, Irvington Road, and Ajo Way crossings) would require grade separation and this would generate an additional \$100.9 million in discounted benefits as the project would eliminate this need. Therefore, considering the individual at-grade separations, the project is expected to generate a Benefit/Cost Ratio of 1.29.