



ARC Rail Expansion

Federal Railroad Administration CRISI Grant

i. Cover Page

Project Title:	The ARC Rail Expansion
Lead Applicant:	Pima County
Co-Applicants:	None
Project Track:	1 – Planning; 2 – PE/NEPA; 3 – Final Design
Will this project contribute to the Restoration or Initiation of Intercity Passenger Rail Service?	No
Was a Federal grant application previously submitted for this project?	Yes; applications were submitted for FRA-CRISI (FR-CRS-18-001) and BUILD 2018-DOT (DTOS59-18-RA-BUILD1)
If applicable, what stage of NEPA is the project in (e.g., EA, Tier 1 NEPA, Tier 2 NEPA, or CE)?	Not Applicable
Is this a Rural Project? What percentage of the project cost is based in a Rural Area?	Yes; 91%
City(ies), State(s) where the project is located:	Tucson (Pima County), Arizona
Urbanized Area where the project is located:	Tucson (Pima County), Arizona
Population of Urbanized Area:	City of Tucson: 530,706 Pima County: 1,016,206
Is the project currently programmed in the: State rail plan, State Freight Plan, TIP, STIP, MPO Long Range Transportation Plan, State Long Range Transportation Plan?	The project supports three out of four “Corridors of Opportunity” identified by the State Rail Plan



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ii. Project Summary

Pima County intends to engage in the planning, environmental study, and final design process to support the potential realignment of the Union Pacific Railroad (UPRR) Nogales Line (Line), out of the City of Tucson’s urban center and into industrial areas planned for rail-served economic development. This potential realignment, known as the Aerospace Research Campus (ARC) Rail Expansion (the Project), will reduce, and/or eliminate, 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 Project will ensure that future configurations of crossings will minimize future car and train interaction with separated crossings giving priority to train traffic. The Project will open up thousands of acres of vacant land for rail served development opportunities, expanding the region’s international freight logistics opportunities.

iii. Project Funding

Project Estimate by Task			
Task No.	Task Name/Project Component	Cost	Percentage of Total Cost
1	<p>Project Management, Meetings, Progress Reports, Final Report, and Scheduling</p> <ul style="list-style-type: none"> • <u>Greg Hitt, Project Planner: \$184,678</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: \$156,880</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: \$44,809</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 • <u>Sandra Rosewell, Special Staff Assistant Sr.: \$32,867</u> 	\$478,799	CRISI: \$0 / 0% Non-Federal: \$0 / 0% Other Federal: \$0 / 0% In-Kind: \$478,799 / 8%



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	<ul style="list-style-type: none"> ○ Provide coordination and support for above activities • <u>Molly Hilber, Grants Coordinator: \$9,411</u> <ul style="list-style-type: none"> ○ Coordinate grant agreement processing ○ Track reporting and deliverables • <u>Principal Accountant, Grants: \$25,785</u> <ul style="list-style-type: none"> ○ Oversee grant fiscal tracking and compliance • <u>Principal Analysts: \$24,369</u> <ul style="list-style-type: none"> ○ Track and approve expenditures ○ Process reimbursement to vendors/contractors ○ Draw funds and prepare/submit financial reports 		
2	Existing Utility <ul style="list-style-type: none"> • Existing Utility Coordination and Research 	\$165,000	CRISI: \$165,000 / 3% Non-Federal: \$0 / 0% Other Federal: \$0 / 0% In-Kind: \$0 / 0%
3	Field Survey <ul style="list-style-type: none"> • Property Research • Document Preparation 	\$320,000	CRISI: \$320,000 / 5% Non-Federal: \$0 / 0% Other Federal: \$0 / 0% In-Kind: \$0 / 0%
4	Geotechnical Investigation / Design	\$380,000	CRISI: \$380,000 / 7% Non-Federal: \$0 / 0% Other Federal: \$0 / 0% In-Kind: \$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 	\$1,090,000	CRISI: \$40,000 / 1% Non-Federal: \$1,050,000 / 19% Other Federal: \$0 / 0% In-Kind: \$0 / 0%
6	Wash Crossing / Flood Control Analysis	\$310,000	CRISI: \$310,000 / 7% Non-Federal: \$0 / 0% Other Federal: \$0 / 0% In-Kind: \$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	CRISI: \$250,000 / 5% Non-Federal: \$0 / 0% Other Federal: \$0 / 0% In-Kind: \$0 / 0%
8	Preliminary and Final Design Report <ul style="list-style-type: none"> • 60% Draft Design Report • Final Design Report 	\$550,000	CRISI: \$550,000 / 10% Non-Federal: \$0 / 0% Other Federal: \$0 / 0% In-Kind: \$0 / 0%
9	Final Design <ul style="list-style-type: none"> • Design Submittals at 30%, 60%, 95% • Final Design Submittal 	\$1,550,000	CRISI: \$1,550,000 / 28% Other Federal: \$0 / 0% Non-Federal: \$0 / 0% In-Kind: \$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	CRISI: \$150,000 / 2% Other Federal: \$0 / 0% Non-Federal: \$0 / 0% In-Kind: \$0 / 0%
11	Land Acquisition <ul style="list-style-type: none"> • Purchase of 14.78 acres • Set aside for the UP alignment and includes double track and two sidings. 	\$205,000	CRISI: \$0 / 0% Other Federal: \$0 / 0% Non-Federal: \$0 / 0% In-Kind: \$0 / 5%



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Total Project Cost	\$5,448,799	100%
Federal Funds Received from Previous Grant	\$0	0%
CRISI Federal Funding Request	\$3,715,000	68%
Non-Federal Funding/Match		
Pima County	Cash: \$1,000,000	
	In-Kind: \$683,799	
Pima Association of Governments/Regional Transportation Authority	Cash: \$50,000	32%
Portion of Non-Federal Funding from the Private Sector	\$0	0%
Portion of Total Project Costs Spent in a Rural Area	\$4,958,407	91%

Non-Federal Funding Sources

Matching funds include \$50,000 regional funds from City of Tucson through Pima Association of Governments, \$1,000,000 from Pima County Public Works Administration, and \$478,799 in-kind services and \$205,000 in in-kind land.

Specific Project Components with Partial Project Funding

Not applicable.

Funding Commitment Letters

The entities that have committed funding for this project are:

- Pima Association of Governments/Regional Transportation Authority
- Pima County

The letters of funding commitment are available on the Project website at <http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=442062>.

Rural Area(s) and percentage of Project Costs

All but one mile of this eleven-mile Project is in a U.S. Census Bureau-designed Rural Area (See Figure 3). Project costs for this rural area will account for 91% of the total Project costs.

Previously incurred costs, other sources of Federal funds, pending Federal requests:

Pima County has submitted the following requests, which are pending:

- **FRA-CRISI (FR-CRS-18-001):** \$880,000 - Planning only
- **BUILD 2018-DOT (DTOS59-18-RA-BUILD1):** \$4,000,000

If Pima County receives notification of award, Pima County will decline any awards made related to the above previously submitted applications in favor of the FRA-CRISI II funding applied for in this proposal.

Type and estimated value of in-kind contributions and how they meet 2 CFR 200.306 requirements

In-kind contributions consist of land Pima County has acquired along the new alignment and staff salaries for project planning and management, utility coordination, stakeholder and public

outreach, report preparation, and financial and administrative support. The estimated value of these contributions is \$683,799. They meet 2 CFR 200.306 requirements in that:

- The costs will be tracked and verified through the County's financial management system.
- If this CRISI grant is awarded to the County, the County will decline the CRISI and BUILD grants for which it previously applied, if awarded.
- The costs are for project management activities and land that are necessary to accomplish the project.
- None of the costs identified as in-kind contributions are paid by the Federal government under another Federal award, or used to match another Federal award.
- Costs will be included in the approved budget when required by the awarding agency.
- The costs are allowable under Subpart E.

iv. Applicant Eligibility

The Project is located fully within the boundaries of Pima County as per Arizona Revised Statutes Title 11. Counties § 11-112. As such, **Pima County is an eligible applicant under Section C(1)e** – A political subdivision of the State of Arizona.

Pima County pursues the CRISI grant as a sole applicant with the support of various local, regional, and state agencies, and Union Pacific Railroad (UPRR), as attested to with Letters of Support from the City of Tucson, Pima Association of Governments, the City of South Tucson, Sun Corridor (Regional Economic Development Agency), Arizona's Congressional Delegation, and UPRR. The letters are available for review on the Project website: <http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=442062>.

Pima County has the technical capability to implement a successful project, if awarded. This is due to Pima County's history of accomplishing similar grant-funded projects, particularly the federally funded TIGER 2013 Discretionary Grant for the Port of Tucson Export Rail Facility. In addition to surpassing benchmarks and facilitating timely drawdowns of monies, Pima County earned recognition from FRA staff for its exemplary performance on this project.

v. Project Eligibility

Pima County, in partnership with other government and private partners throughout the region and state, recognizes the need to promote vital economic growth in southern Arizona through the improvement of transportation corridors. Expansion and enhancement of railroad infrastructure is a critical component of this vision.

The Project will develop a Rail Plan, technical reports, environmental analysis, NEPA approvals, and complete design to realign a segment of the existing UPRR Nogales Line with 20 urban at-grade crossings, to provide new freight services along a high-priority economic corridor. This project will alleviate congestion and reduce or eliminate rail and vehicular service interruptions. As such, the Project is **eligible under Subsection C(3) vi. - Rail Line and Relocation Improvement Project under Track 1 – Planning, Track 2 – PE/NEPA, and Track 3 – Final Design.**

The 2011 Arizona State Rail Plan identified four “Corridors of Opportunity” (Figure 1) to establish a set of rail priorities for the State to pursue. This 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 Corridor 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 designated Megapolitan area, with a focus on

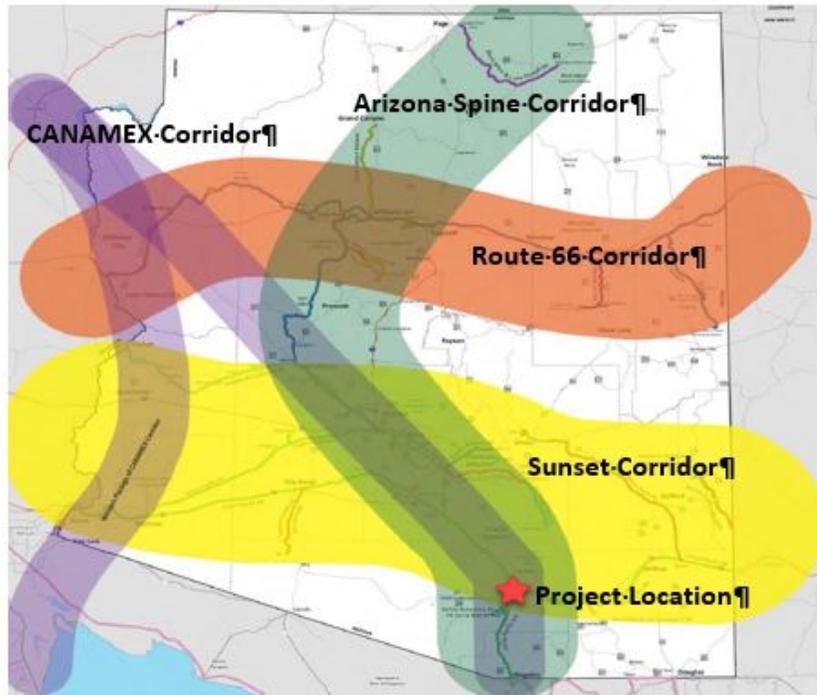


Figure 1: Arizona State Rail Plan Corridors of Opportunity

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> [pg 44]).

vi. Detailed Project Description

Background on the challenges the project aims to address

Pima County and surrounding jurisdictions have long discussed ways of alleviating train conflicts with other forms of transportation within the region. UPRR operates two major rail lines in southern Arizona - the historic Sunset Line, which crosses several Southwestern states and connects with major rail facilities in the Midwest and beyond; and the Nogales Line (Line), originating in Tucson, Arizona, and extending deep into Mexico, serving the Mexican Ports of Guaymas, Tempico, and Lazaro Cardenas, and the City of Hermosillo and Mexico City, among others. Opening in 1882, the Nogales Port is the oldest rail crossing of any border port of entry along the U.S.-Mexico border. Statistics compiled by the University of Arizona’s Eller College of Management indicate that in the months of January, February, and March 2018, north-bound train crossings at the Nogales Port increased 32.61%, 16.67%, and 8.33%, respectively (<https://azmex.eller.arizona.edu/border-crossings/border-crossings-nogales-district-az-bpoe-total>). Approximately 130 million tons of commodities are currently transported via rail in Arizona, with total freight rail tonnage projected to triple in volume by 2050 (State Rail Plan, <https://www.azdot.gov/docs/planning/state-rail-plan.pdf> [pg 39]).

The Line, with trains averaging 7,000 feet in length, cuts through six existing City of Tucson neighborhoods, three City wards, and seven zip codes, imposing not only 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 runs adjacent to three elementary schools – Borton Magnet, Van Buskirk, and Drexel – and in close proximity to more than a dozen other schools, creating safety concerns for young children.

The Project is part of a broader transportation program, the Sonoran Corridor (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 Missile Systems' plant site. The region's largest private employer, Raytheon, headquartered in Tucson, employs 12,000 people and is located adjacent to the Line and the Tucson International Airport. Since 2008, the County 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 land for rail-related uses, including a wye off the Line, track sidings, and spurs, connecting and servicing properties throughout the ARC and westward. These planned rail improvements have attracted significant interest from existing and potential businesses, as it would allow them to expand into new sites better suited to their needs. For example, Vector Space Systems chose to locate within the ARC, because it 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 bypass route and bisect thousands of acres of industrial-zoned property. Additional information about the ARC is available on the Project website at <http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=442062>.

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. The Corridor is now in the planning and NEPA stages as the Arizona Department of Transportation (ADOT) kicked off a three-year study of potential routes for the Corridor in 2017. The Federal Railroad Administration is a participating agency in the development of the Sonoran Corridor Tier 1 EIS.

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=442062>.

Pima County projects total project costs at \$5,448,799 and is applying for \$3,715,000 (with a 32% match, 19% of which is cash match) in Consolidated Rail Infrastructure and Safety Improvements (CRISI) Track 1 – Planning, Track 2 – PE / NEPA, and Track 3 – Full Design Grant funding for the development of a project that will include technical and environmental reports to analyze construction of a new railway bypass and provide recommendations, inclusive of the existing UPRR Nogales Subdivision.

The potential scope of the Project was developed by Pima County through consultation with UPRR and in consideration of federal guidance promulgated in the Federal Railroad Administration's Notice of Funding Opportunity for Consolidated Rail Infrastructure and Safety Improvements (contained in Federal Register, Vol. 83, No. 139; July 19, 2018). The proposed scope will enable Pima County, UPRR, and state and local stakeholders to:

- Identify and evaluate alternatives,
- Conduct market analysis,
- Complete railroad system design (including horizontal and vertical alignment),
- Assess environmental, economic, public, and railway operations and industrial development benefits and impacts,
- Estimate capital and operations and maintenance costs,
- Identify potential public (federal, state, local) and private funding sources to construct the proposed bypass,
- Complete a full design of the bypass route.

The Line would be relocated to a U.S. Census Bureau designated Rural Area, south of the Tucson metropolitan area, along Old Vail Road, within both unincorporated Pima County, and partially within the incorporated limits of the City of Tucson. Nearly all the land surrounding the 11-mile bypass route is undeveloped and surrounded by industrially zoned land 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 area and the City of Tucson's streetcar.

Users and beneficiaries of the project

The proposed realignment benefits many users, including:

- *Union Pacific Rail Road* stands to benefit significantly from the bypass route, with increased efficiencies to be realized throughout their rail network. In addition to safety enhancements, UPRR will be afforded operational flexibility by being able to conduct crew changes outside of their Tucson Yard, providing nearly direct rail access to UPRR operations in El Paso, Texas and Santa Teresa, New Mexico, for inbound trains from Mexico. This direct link allows UPRR to bypass existing speed restricted tracks.
- *Pima County* continues to acquire industrially zoned land in this area to provide a buffer against planned residential development and 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 enter the Port directly. In addition, rail supported customers can take advantage of shovel-ready locations set aside for development.
- *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 two Tucson schools.
- *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 trans-loading operators and other logistics jobs.

Specific components and elements of the project

The Project aims to increase rail system efficiency and safety by reducing freight transportation cost and travel time, minimizing vehicular traffic congestion, and supporting quality economic growth. This effort will develop preliminary level construction plans and specifications to be used for the construction of the rail bypass. Work to be completed in this design effort includes:

- 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, to identify mitigation measures if needed, and to identify the Project's capacity and infrastructure requirements,
- Complete design engineering (to the 100% Design Level) for 11 miles of new rail,
- Environmental analysis,
- Operating and maintenance cost forecasts,
- Stakeholder outreach and coordination,
- Construction funding identification,
- Coordination with UPRR.

Benefit to Rural Communities

This Project is located in an area that is 91% rural. Nearby rural communities include low-income *colonias* (unincorporated neighborhoods with substandard housing conditions as designated by the U.S. Department of Housing and Urban Development) and the Tohono O'odham Nation's San Xavier District. These 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 trans-loading operators and other logistics jobs.

Arizona Opportunity Zone

Six miles of the proposed alignment fall within the recently designated Opportunity Zone within Pima County. As part of the Tax Cuts and Jobs Act signed in December 2017, a provision included the creation of the Opportunity Zones. The goal of these zones is to attract long-term investment to disadvantaged areas by deferring or even potentially eliminating the taxes on capital gains

invested in these areas. The Opportunity Zone that falls within our proposed alignment includes significant amounts of industrially zoned vacant land that is ready for development.

Proposed Performance Measures

The success of the proposed design phase will be measured by the timely accomplishment of the milestones in the Project Detailed Work Plan, including completion of geotechnical investigation and evaluation (SOW Task 4) and completing the Final Design Report (SOW Task 8). Staff will submit quarterly progress reports, including Federal Financial Reports (SF-425) and a Final Report as required by the FRA pursuant to 2 C.F.R. 200.301 and 49 U.S.C. 24407(f).

This Project is the crucial first step of the region’s effort to improve safety and efficiency for rail, vehicle, freight, and pedestrian users while supporting critical economic development. Long-term success will be measured against FRA’s mission to reduce at-grade crossing intersections. 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 **Education, Engineering** and **Enforcement**. The potential elimination of 20 existing at-grade crossings in an urban area supports the FRA’s mission through **Engineering** to reduce grade crossing intersections.

(A) Grade crossing information

Table 1: Grade Crossings on Current Alignment

Infrastructure Owner	Primary Railroad Operator	DOT Crossing Inventory Number	Roadway	Crossing Position
Union Pacific	Union Pacific	741-135B	Park Avenue	RR Over
Union Pacific	Union Pacific	742-045F	Toole Ave	At Grade
Union Pacific	Union Pacific	742-047U	17th St	At Grade
Union Pacific	Union Pacific	742-049H	18th St	At Grade
Union Pacific	Union Pacific	742-100D	19th St	At Grade
Union Pacific	Union Pacific	742-103Y	20th St	At Grade
Union Pacific	Union Pacific	742-104F	22nd St	At Grade
Union Pacific	Union Pacific	742-106U	29th St	At Grade
Union Pacific	Union Pacific	742-107B	36th Ave	At Grade
Union Pacific	Union Pacific	742-108H	I-10 Overpass	RR Under
Union Pacific	Union Pacific	742-109P	Ajo Way	At Grade
Union Pacific	Union Pacific	742-110J	Fair St / Michigan Ave	At Grade
Union Pacific	Union Pacific	742-112X	Irvington Rd	At Grade
Union Pacific	Union Pacific	742-113E	Fletcher Rd	At Grade
Union Pacific	Union Pacific	742-114L	Drexel Rd	At Grade
Union Pacific	Union Pacific	742-115T	Bilby Rd	At Grade
Union Pacific	Union Pacific	742-116A	Valencia Rd	At Grade
Union Pacific	Union Pacific	742-117G	Teton Rd	At Grade
Union Pacific	Union Pacific	748-710G	Vamori Rd / Aero Park Blvd	At Grade
Union Pacific	Union Pacific	742-119V	Herman Rd	At Grade
Union Pacific	Union Pacific	742-120P	Hughes Access Rd/Aerospace Pkwy	At Grade
Private	Union Pacific	742-121W	Guillermo Herron	At Grade

Table 2: Proposed Realignment Grade Crossings

Infrastructure Owner	Primary Railroad Operator	DOT Crossing Inventory Number	Roadway	Crossing Position
Union Pacific	Union Pacific		Country Club Rd	RR Over
Union Pacific	Union Pacific		Swan Rd	RR Over
Union Pacific	Union Pacific		Wilmot Rd	RR Over
Union Pacific	Union Pacific		Rita Road	RR Over
Union Pacific	Union Pacific		I-10	RR Over

(B) Heavily traveled rail corridor information, if applicable. Not applicable

(C) PTC information, if applicable. Not applicable

vii. Project Location

The planned relocation is south of the Tucson Metropolitan area, along the Old Vail Connection Road (Figure 2). It bisects Arizona’s 2nd and 3rd Congressional Districts and is in the Sonoran Corridor Study Area. All but one mile is in a U.S. Census Bureau designed Rural Area (Figure 3).

The project is located near vital community and economic drivers, including the Tucson International Airport, the Port of Tucson, Aerospace Research Campus, Raytheon Missile Systems, World View Enterprises, and Interstates-10 and -19. As such, providing rail service

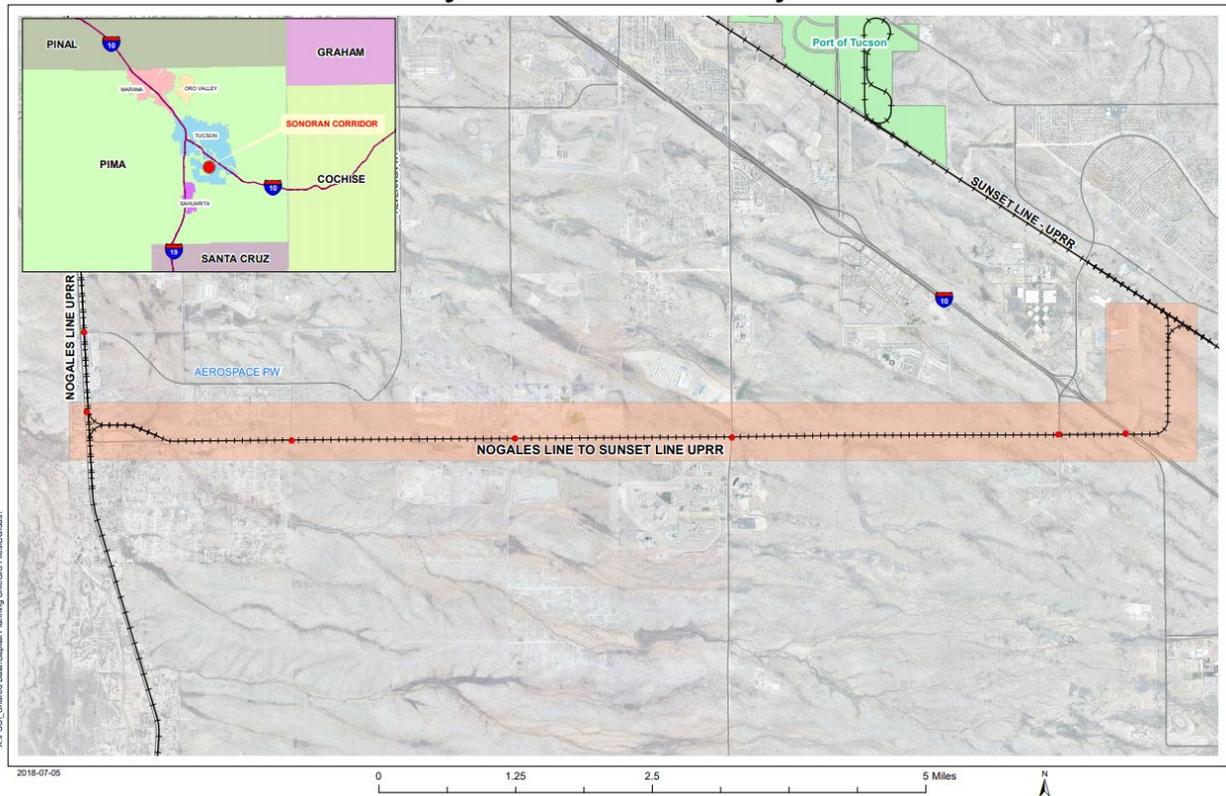


Figure 2: Location of the proposed bypass

along the area of the proposed auxiliary interstate connection of the Sonoran Corridor will enable dynamic economic growth and new business development in the region.

Sonoran Corridor Congressional Districts

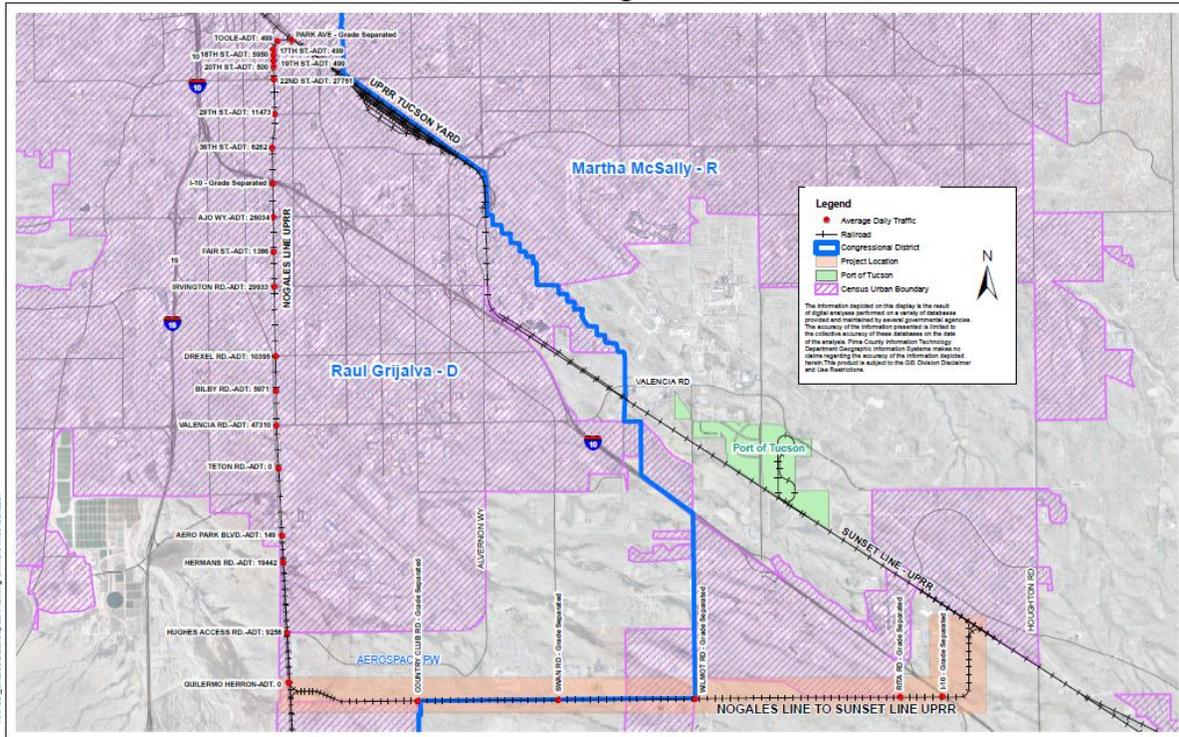


Figure 3: Sonoran Corridor Congressional Districts

viii. Evaluation and Selection Criteria

Evaluation Criteria

Project Benefits: It is not often that communities have the opportunity to reduce the number of trains using 20 at-grade railroad crossings, thereby improving safety and quality of life, while simultaneously expanding a large area for critical economic development and significantly improving rail operations and efficiencies. See the attached Benefit-Cost Analysis.

A. Effects on system and service performance

Increased Speed

UPRR operates an average of eight trains a day along the Nogales Line. Trains from Mexico typically transport automobiles and other manufactured goods, while trains returning to Mexico often carry scrap metals and hazardous chemicals used in mining operations. While navigating the City center, the trains are limited to speeds of 10-20 miles per hour. A bypass route would reduce the number of trains through these neighborhoods and allow UPRR to operate the trains at speeds as high as 50 miles per hour along the bypass.

Increased Switching Volumes

UPRR's Tucson Yard was established at the turn of the century and, while it is the largest classification yard in Arizona, it is limited in its ability to expand due to longstanding geographic



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constraints. 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.” While the efforts considered as part of this grant application will not include a new classification yard, it demonstrates the need to expand the operations of the existing Tucson classification yard and region. The proposed realignment will likely include the ability to refuel and conduct crew changes along the new route, which will allow trains to continue to the Santa Teresa, New Mexico, or El Paso, Texas, yards without having to go through the Yard, thus freeing up added capacity at the Yard. Alternatively, as trains move west, they can continue through the Yard with minimal switching required to pass through. This will allow for increased switching volumes, thereby enhancing the overall efficiency and capacity for anticipated growth (<https://www.azdot.gov/docs/planning/state-rail-plan.pdf> [pg. 41]).

Increased Efficiencies

The bypass route will provide increased efficiencies to both the regional and national rail network of UPRR by affording greater operational flexibility to conduct crew changes outside of the Tucson Yard, providing nearly direct rail access to UPRR’s operations in Texas, New Mexico, and Mexico. This direct link allows UPRR to bypass the existing speed restrictions of 10-20 MPH through congested City neighborhoods.

Reduced Maintenance Cost of At-Grade Crossings

Annual maintenance cost savings 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 a summary of equipment and estimated maintenance cost is available on the Project website (<http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=442062>).

B. Effects on safety, competitiveness, reliability, trip or transit time, and resilience

Bicycle and Pedestrian Traffic

Eight trains per day, averaging 7,000 feet in length, run on the Line that dissects City of Tucson neighborhoods. Currently the Line creates a visual barrier as well as a physical barrier to residents and local businesses, creating a significant impact to bike and pedestrian traffic, as what should be a simple trip often ends up a circuitous route to find safe crossings. Pedestrian traffic includes schoolchildren walking to and from public elementary schools.

Barriers to pedestrian traffic presented by the Line often impact impoverished areas of the City the most, as these areas usually have higher concentrations of people who depend on walking or biking for travel. The current route often forces residents to choose between crossing legally, often lengthening their trip, or shortening their route by illegally crossing the railroad tracks. Tucson summer heat is intense, with typical temperatures resting firmly 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 exacerbate people’s desire to seek out a shorter route across the tracks, increasing the chances an incident occurs and demonstrating the opportunity to improve public health through the bypass.

Automobile and Bus Traffic

Relocating this segment of the Line out of the central City area will reduce or eliminate rail traffic at 20 existing at-grade crossings and the resulting impact on local traffic. Approximately



ARC Rail Expansion

Federal Railroad Administration CRISI Grant

300,000 automobiles cross the existing crossings daily, causing significant traffic delays. Several of these streets are major east-west thoroughfares, including 22nd Street and Valencia Road, which serves as the western entry point into Tucson International Airport. While Interstates -10 and -19 cross the region, in the absence of a regional freeway network, the Tucson area relies heavily on the local road network to move traffic across town.

SunTran, Tucson's public transit authority, has six major bus routes that cross railroad tracks at multiple points. These bus routes serve the Tucson International Airport, and large regional employers such as Bombardier and Raytheon, in addition to local route service. Ridership data is available on the project website:

<http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=442062>).

C. Efficiencies from improved integration with other modes

Tucson International Airport

Rerouting the Line would open up undeveloped land for new rail-served uses. The bypass would re-route 11 miles of rail service through largely undeveloped, industrially zoned land. The route would bring rail close to Tucson International Airport's existing airfreight operations, and Interstates-10 and -19, solidifying the area as an international advanced logistics hub.

Port of Tucson

The Port of Tucson (Port), the only inland multimodal rail port located in Arizona, is a federally designated Foreign Trade Zone and a State of Arizona Enterprise Zone, providing duty and tax benefits to users of the Port. The Port is located on over 700 acres of land in southeast Tucson and currently has over 1.7 million square feet of manufacturing, warehousing, and distribution space, and over 50,000 feet of working rail track. The bypass will provide direct access to the Port, where rail-supported customers can take advantage of several ready locations set aside for future development and receive the tax benefits of locating in a Foreign Trade (FTZ) and Opportunity Zone. This pairing of an inland Port with a FTZ "provides the opportunity for spinoff economic development" and continues to "attract certain industries – creating an industrial agglomeration", as described the Arizona State Rail Plan (<https://www.azdot.gov/docs/planning/state-rail-plan.pdf> [pg. 46]). In addition, it would allow unit trains from Mexico to enter the Port directly, avoiding the Yard and increasing the speed and efficiency of the local rail operations. Information on the Port of Tucson is available on the Project website (<http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=442062>).

Sonoran Corridor

In December 2015, the United States Congress approved the Fixing America's Surface Transportation (FAST) Act. A component of the FAST Act formally designated the Sonoran Corridor as Arizona State Route 410, a high priority multimodal transportation corridor that connects Interstate-10 with Interstate-19. The Sonoran Corridor area experiences a high percentage of truck and rail freight movements between the US and Mexico, with the Nogales port facilitating the highest number of truck crossings in Arizona, and sixth largest in the country (<https://azmex.eller.arizona.edu/border-crossings/truck-crossings>). Truck-based container crossings are expected to double over the next 40 years, highlighting the importance of rail to help alleviate congestion.

D. Ability to meet existing or anticipated demand

According to the Arizona Commerce Authority’s report on *Arizona’s Aerospace and Defense Industry*, “Arizona manufactures more guided missiles and space vehicles than any other state”, with Arizona’s workforce being “employed in this industry at a rate more than 11 times that of the national average”

(https://d35uq38u77mscr.cloudfront.net/media/1065189/ACA_AD_IndustryOverview2015.pdf?pdf=Aerospace-Defense-Industry-Overview [pg. 8]).

As identified in the September 2014 Southwest Multistate Rail Planning Study, the Arizona Sun Corridor contains some of the “highest growth areas in the U.S., as Nevada and Arizona were the two fastest-growing states in the country between 2000 and 2010, with population growth rates of 35 to 25 percent, respectively” (<https://www.fra.dot.gov/eLib/Details/L16012> [pg. 5]).

The Arizona State Rail Plan (<https://www.azdot.gov/planning/transportation-programs/state-rail-plan>) identified the area where this project is located to be a state corridor specifically targeting “improved freight service to the Phoenix metropolitan area, and improved north-south freight movements within the State” and connecting with global trade with Mexico. With inbound, outbound, and through rail freight tonnage expected to triple in volume by 2050, eliminating urban at-grade crossings will support this increased demand for freight rail traffic (Figure 4).

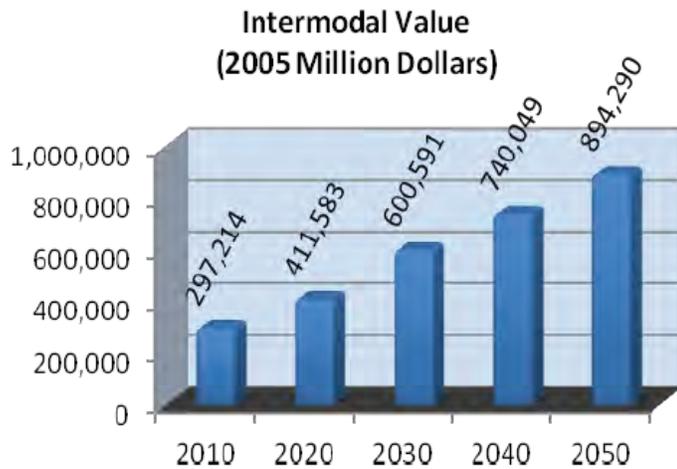


Figure 4: Economic Analysis of Rail Demand Forecasts (2011 State Rail Plan)

Aerospace Research Campus (ARC)

The region’s largest private employer, Raytheon Missile Systems, employs 12,000 people. Raytheon is headquartered in Tucson adjacent to the Nogales line and the Tucson International Airport. Beginning in 2008, Pima County started acquiring industrially zoned land to provide a buffer against planned residential development south of Raytheon’s plant site. Since 2008, the County has acquired nearly 600 acres of vacant industrial land in this area and, working with Raytheon, has established the Aerospace Research Campus (ARC) (Figure 5). ARC, located along the western end of the proposed bypass route, has attracted the interest of several aerospace related companies, including World View Enterprises, and Vector Space Systems. Information on the ARC is available on the project website (<http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=442062>).

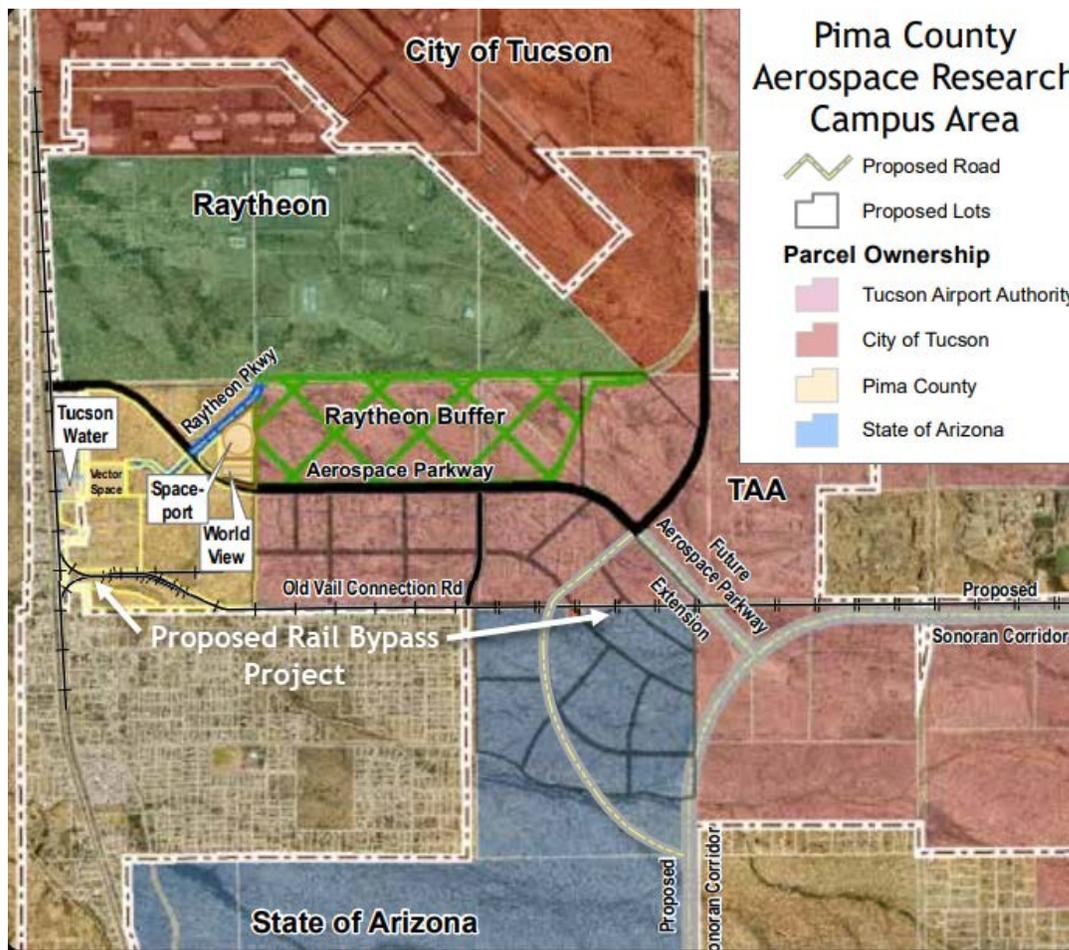


Figure 5: Aerospace Research Campus with Project Location

Pima County’s focus on the aerospace industry, as shown by its investment in the Aerospace Research Campus, aligns with Arizona’s statewide economic strategic visioning project known as ASPED (Arizona Strategic Partnership for Economic Development). This strategic plan identified aerospace (together with microelectronics) as one of Arizona’s eleven key industry clusters in which Arizona had “either a concentration or a growth rate higher than the national average”. (*Arizona and Mexico: The Aerospace Manufacturing Connection*, <https://azmex.eller.arizona.edu/news-article/20feb2018/arizona-and-mexico-aerospace-manufacturing-connection>).

Tucson International Airport Master Plan

As identified in the 2014 Tucson International Airport Master Plan, the Tucson Airport Authority’s reserve land area comprises approximately 5,700 acres of the total 14,000 acres available for future development south of the City of Tucson (Figure 6). This area is largely undeveloped, creating the potential for development at a significant scale. Industrial/logistics and large-scale industrial development are recognized to be a primary focus for future land use, including the “continuing development of Tucson’s aerospace and defense manufacturing, research and development, technology and biosciences employment cluster” (<https://www.flytucson.com/about-tus/master-plans/> [pg. 7]).

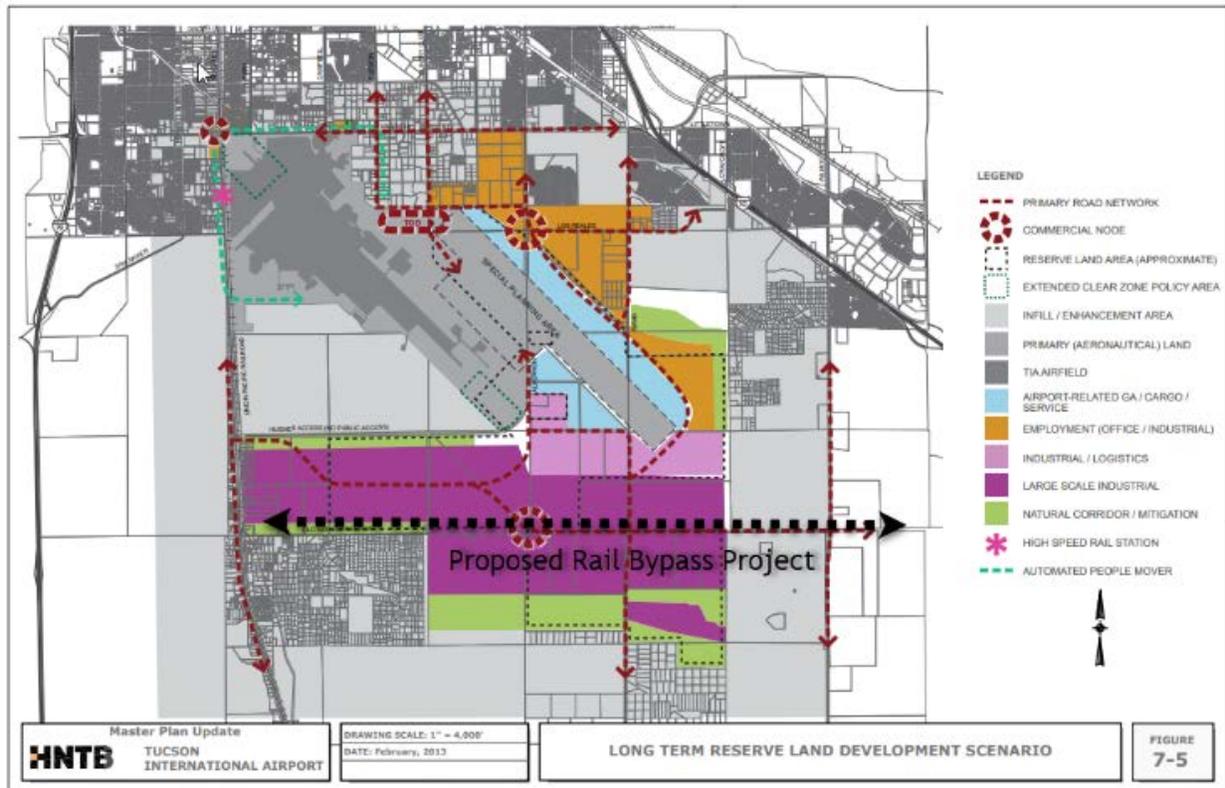


Figure 6: Long term Tucson International Airport Land Development with Project Location

Southwest Employment and Logistics Center (SELC)

Much of the existing rail-served properties in the Tucson area are comprised of small sites, located within City limits and lacking suitable building square-footage or the road networks necessary to accommodate the expanding high-tech aerospace and rail-served businesses. Meanwhile, much of the 11-mile bypass route is undeveloped and surrounded by industrially zoned land planned for regional economic development. In 2017, Pima County took steps to rezone over 1,800 acres of Pima County-owned land for industrial uses along the eastern limits of the bypass route. The County hired a land-use consulting firm to develop a master plan for the area, called the Southwest Employment and Logistics Center (SELC), which would provide large-scale sites for a manufacturing job center. With several 100 acre or larger parcels available for development in this area, 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 the serve this job center, a critical component to ensuring its successful development. Additional information about the SELC is available on the project website (<http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=442062>).

Arizona Sun Corridor

The proposed rail network is located within the Arizona Sun Corridor Megapolitan region, one of only 20 U.S. Megapolitans. The Sun Corridor is equivalent to both the size and population of the state of Indiana, with a projected growth rate of 118 percent by the year 2050, and generating 2 percent of the US Gross Domestic Product. (http://www.america2050.org/arizona_sun_corridor.html).

As identified in the September 2014 Southwest Multi-State Rail Planning Study Summary Report, the Arizona Sun Corridor (Figure 7) contains some of the “highest growth areas in the U.S., as Nevada and Arizona were the two fastest-growing states in the country between 2000 and 2010, with population growth rates of 35 and 25 percent, respectively” (<https://www.fra.dot.gov/eLib/Details/L16012> [pg. 5]).

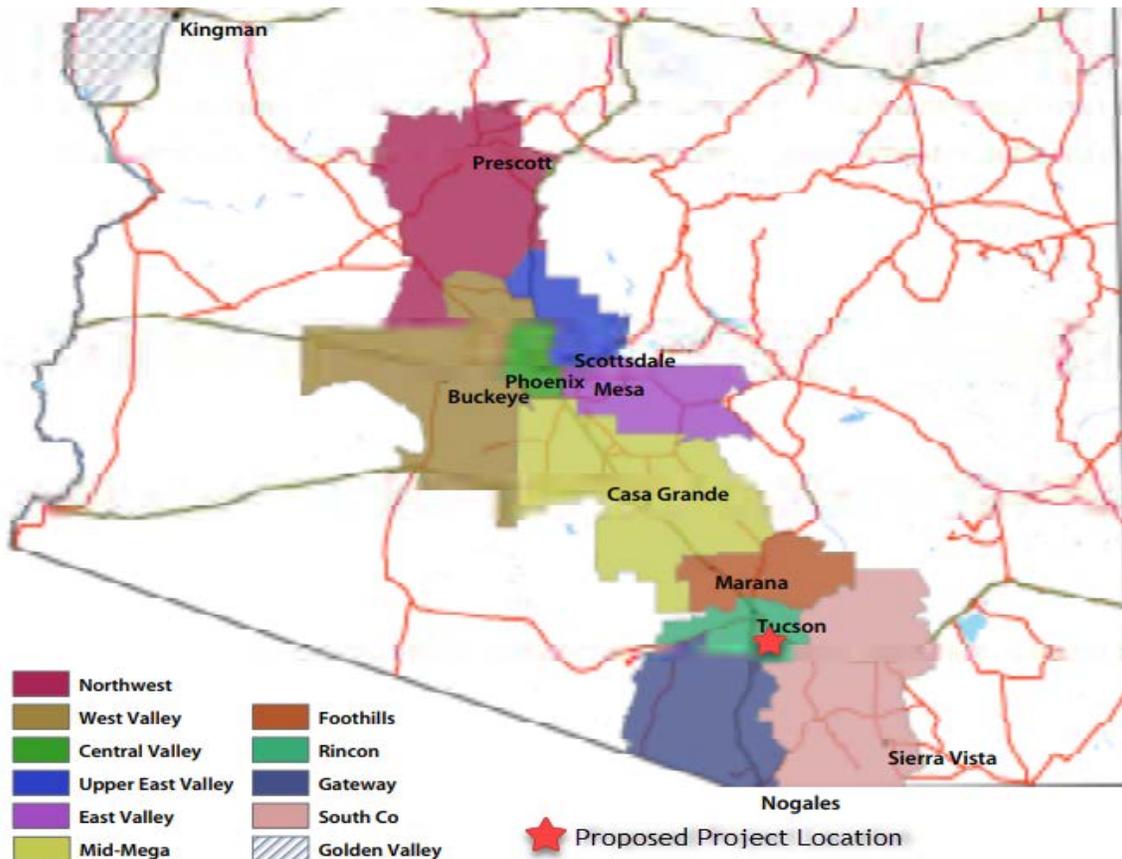


Figure 7: Location of Project within Arizona Sun Corridor

Sonoran Corridor

In 2017, 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 8). The Sonoran 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. The Fixing America’s Surface Transportation Act (FAST Act) designated the Corridor as a high-priority corridor, which 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”. A synopsis of the study is available on the project website: <http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=442062>.

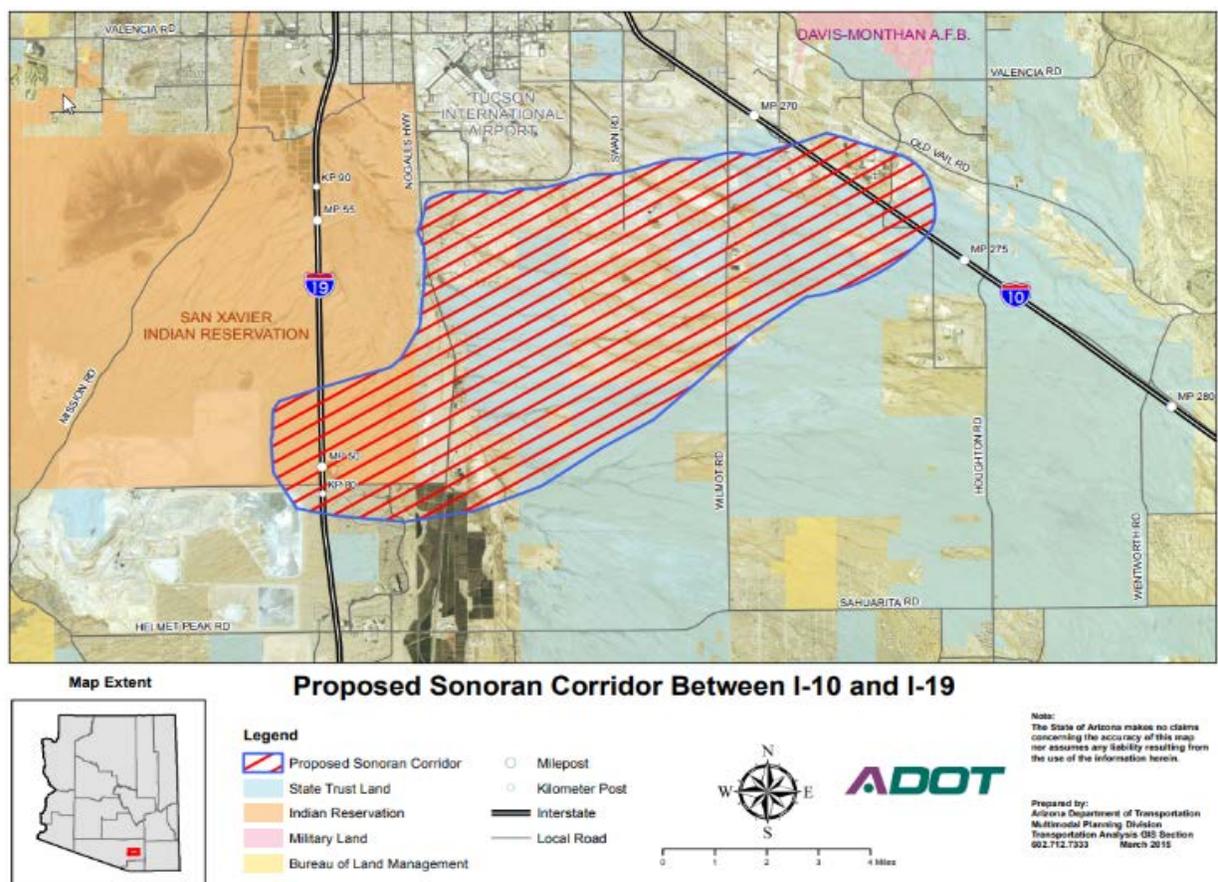


Figure 8: Proposed Sonoran Corridor within Pima County

Figure 9 shows the location of the proposed bypass within the Sonoran Corridor and the limits of the EIS.

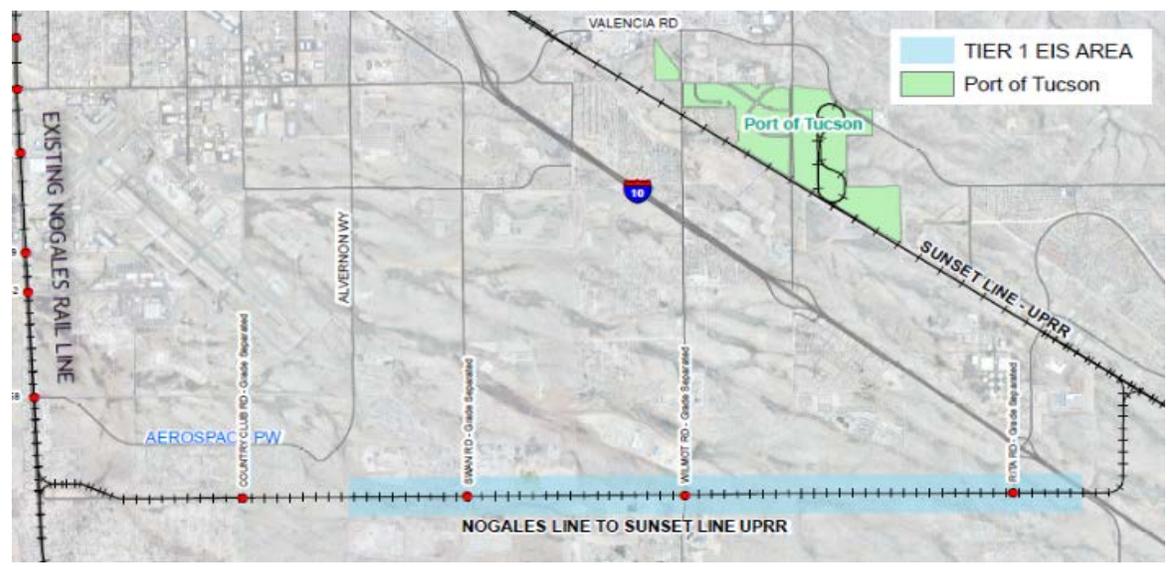


Figure 9: Proposed Rail Bypass Line Primarily within Sonoran Corridor Limits

Tohono O’Odham Nation

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 has voiced their support of the Sonoran Corridor and its reach into its southern boundary, and has planned additional investment in the area to support its own economic development initiatives.

Amazon Fulfillment Center

Amazon recently announced plans to construct an 850,000 square foot fulfillment center on 94 acres with direct access to the privately operated track within the Port of Tucson (<http://phx.corporate-ir.net/phoenix.zhtml?c=176060&p=irol-newsArticle&ID=2349454>). The new fulfillment center will employ approximately 1,500 people and provide Amazon with its largest regional fulfillment center in the southwest, serving Southern Arizona, New Mexico, and Texas with same-day and next-day delivery services. The site will accommodate over 400 semi-trucks and intermodal containers, with room to expand capacity as the facility grows.

Technical Merit:

A. Scope of Work is Appropriate to Achieve Outcome

The Project scope is to research, analyze, and develop a viable rail plan and design that would reduce or eliminate 20 at-grade urban crossings, while simultaneously expanding new rail service into developing rural areas to support critical development in key economic sectors.

Essential tasks for the project include:

- 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 to the existing UPRR network, to identify mitigation measures if needed, and to identify capacity and infrastructure requirements in partnership with UPRR,
- Complete full design engineering (100% Design),
- Environmental analysis,
- Operating and maintenance cost forecasts,
- Stakeholder outreach and coordination,
- Construction funding identification,
- Coordination with UPRR.

B. Project Readiness for Designated Project Tracks

This Project concept has been evaluated for several years with various public and private entities, including UPRR, Pima Association of Governments, Port of Tucson, City of Tucson, Arizona Department of Transportation and the Sun Corridor Economic Development Organization. Pima County is fully committed to beginning comprehensive planning efforts and analyses as soon as grant negotiations are completed. The County’s goal is to proceed into design efforts as soon as possible, according to the findings and recommendations of the planning efforts this CRISI grant would fund.

C. Technical Qualifications and Experience of Key Personnel and the Qualifications of Primary and Supporting Organizations

Greg Hitt is a Project Manager within Pima County's Public Works Administration. Mr. Hitt is an urban planner with 18 years of experience in the development industry and has been with Pima County for 15 years. He has experience as the project manager for several utility alignment studies and design projects for the County. Mr. Hitt has also successfully implemented two projects that required working with UPRR to locate and construct regional sewer lines paralleling the tracks within UPRR's right-of-way. He has also worked with other regional utilities to site infrastructure designed to meet the demands of the growing Tucson region. Additionally, Mr. Hitt has worked with local economic development agencies to plan large areas of vacant land for future economic development opportunities with an emphasis on getting sites into a project readiness status.

Nancy Cole leads the Pima County Project Management Office. Ms. Cole is a registered architect with 25 years of experience in the construction industry, the last 15 years with Pima County. She has experience with several different types of federal funding, including the Federal Rail Administration TIGER grant award for the Port of Tucson Export Rail Facility, as well as grants from the Federal Highway Administration and smaller Community Block Development Grants. Projects delivered for Pima County include six transportation projects with upgrades or changes to existing UPRR crossings. Ms. Cole's project management expertise with the County includes development of the project management process, as well as oversight of project delivery for the capital improvement program.

Sandi Garrick is the Utility and Railroad Liaison for Pima County. As such, she has successfully collaborated with UPRR and the Arizona Corporation Commission on numerous projects, including pre-planning, design, permitting, construction, and safety/public outreach. During the past 17 years working in the field of design and construction, Ms. Garrick has managed projects with the Arizona Department of Transportation Aeronautics Division, the Federal Highway Administration, the Federal Aviation Authority, the Arizona Department of Transportation, the South Eastern Arizona Governmental Association, Pima County, the City of Tucson, and many other public agencies and commercial clients. Her background in estimating, utility coordination, and Project Controls for a \$900 million capital budget program will be beneficial to the Project.

Pima County has successfully administered over \$40 million in federal dollars during fiscal year 2017 alone, with \$3,325,621 of those dollars awarded by the Department of Transportation. An additional \$6,197,137 (includes state, local, tribal, and foundation grants) were successfully administered in 2017. In 2014, Pima County implemented the federally funded TIGER 2013 Discretionary Grant for the Port of Tucson Export Rail Facility. The County received numerous accolades for its on-time/on-budget performance, demonstrating above-average ability to effectively execute an award granted by the Federal Railroad Administration.

D. Potential Private Sector Participation in the Financing, Construction, or Operation

Pima County will follow best-practice methods during the planning stage to discern viable opportunities for public-private funding partnerships. The National Cooperative Rail Research Program (NCRRP) Report 1: *Alternative Funding and Finance Mechanisms for Passenger*

and Freight Rail Projects identified three general types of funding mechanisms that will be considered: Service or Asset-Related Revenue, Public Revenue, and Financing Mechanisms (Transportation Research Board, 2015).

Collaborating partners in developing this Project will continue to be UPRR, the Pima Association of Governments, the Arizona Department of Transportation, the City of Tucson, and other agencies and businesses as identified through stakeholder outreach.

E. Legal, Financial, and Technical Capacity

Fiscal management of this federally funded project will fall under the purview of the Pima County's Grants Management & Innovation Department. Using a centralized management system, Advantage Management Solutions (AMS), actual costs are regularly compared to budgeted values to ensure benchmarks are being met timely. All departments are subject to internal audits conducted by the Finance and Risk Management department per Pima County Board of Supervisors Policy C2.6

(http://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Clerk%20of%20the%20Board/Policies/C2-6.pdf).

Invoices and Delivery Orders are tracked with the centralized AMS system as well, allowing copies of these documents to be made available to the public upon request. The Grants Management & Innovation Department (GMI) works closely with the program manager to ensure costs are aligned with program implementation, and maintains records for state, federal, and internal audits.

All contracts and grant-in-aid agreements are required per Pima County Administrative Procedure 3-5 to undergo review by the Pima County Attorney's Office to ensure compliance with local, state, and Federal law before formal approval by the Board of Supervisors per Administrative Procedure 22-4

(<http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=27096>). The Administration Division of the Pima County Attorney's Office provides continuing support for all other divisions within the County Attorney's Office. Under the direction of the County Attorney, it develops and implements operating policies and procedures and is primarily responsible for budget and finance, personnel, purchasing, and facilities management.

F. Project Consistency with Planning Guidance and Documents

The Project goals closely align with the Arizona State Rail Plan, 2014 Southwest Multi-State Rail Planning Study (<https://www.fra.dot.gov/eLib/Details/L16012>), and other local, state and regional planning documents as referenced. The scope of work and performance metrics are established and will be closely monitored in compliance with DOT and FRA requirements.

Selection Criteria

A. Proposed Cost Share

The total match provided by both Pima County Public Works Administration (PWA) and Pima County Grants Management & Innovation (GMI) Department is \$1,753,799.

B. Sources of Proposed non-Federal Cost Share and In-Kind

Of the Pima County match, \$1 million is a cash match contribution. Along with the cash match commitment of \$50,000 (in City of Tucson funding) by the Pima Association of

Governments/Regional Transportation Authority (PAG/RTA), the total cash match of the Pima County CRISI Grant Proposal for the ARC Rail Expansion is \$1,050,000 (\$1 million + \$50,000). Please see the Letters of Commitment from Pima County and PAG/RTA on the Project’s website for documentation of match commitments (<http://webcms.pima.gov/cms/One.aspx?portalId=169&pageId=442062>). Pima County is also committing \$683,799 of in-kind services and land towards development of this Project.

C. Net Benefits of the Grant Funds and Anticipated Private and Public Benefits

Full range of benefits, both public and private, will be identified as part of the Scope of this planning project. A summary of anticipated benefits are featured in the figure below, and will be expanded and quantified for detailed description in the final planning study report.

Table 3: Expected Effects on Benefit Categories

Impact Categories	Description	Monetized	Qualitative
Reduced Travel Time Costs	Reduced travel time costs from vehicle idling and delay at 20 at-grade crossings.	Yes	-
Improved Safety and Avoided Accident Costs	Improved safety and avoided accident costs from bypassing the Nogales Line and the 19 road grade crossings.	Yes	-
Avoided Emissions Costs	Avoided emission costs from vehicle idling and delay along the existing Nogales Line	Yes	-
Reduced Vehicle Operating Costs	Reduced vehicle operating costs from vehicle idling and delay along the existing Nogales Line.	Yes	-
O&M Cost Savings	Bypassing the grade crossing would reduce the amount spent maintaining the 19 at-grade crossings.	Yes	-
Improved Travel Time Reliability	Bypassing the road grade crossings will improve travel time reliability, as there will be significantly lower probability for drivers to be delayed.	-	Yes
Improved Access to Future Development Potential	The new rail alignment will open up thousands of acres of vacant land currently zoned for industrial use serviceable by freight rail.	-	Yes
Efficient Rail Operations	Reducing rail congestion by allowing higher speeds along new alignment will increase switching volumes and improve the current operational efficiency and capacity for economic growth.	-	Yes
Improved Emergency Vehicle Access	Fewer rail-crossing blockages will improve travel time and reliability for emergency responders that may otherwise be delayed or be forced to take a longer route.	-	Yes
Eliminate Transportation of Hazardous Materials through Residential Neighborhoods	Reducing the number of trains travelling through Tucson limits potential hazardous cargo from passing through various neighborhoods, including two adjacent elementary schools.	-	Yes

Key Departmental Objectives:

A. Supporting Economic Vitality at the National and Regional Level

The Project is links closely with State and Regional efforts to support increasing freight and rail transport needs, especially as the project is located within the CANAMEX, Arizona Spine, and Sunset Corridors. The proximity to the U.S.-Mexico border and direct access to the state’s only multimodal rail port will serve to facilitate increased cross-border collaboration and trade,

further supporting Arizona's mission to act as a gateway for international trade and investment (<http://www.azcommerce.com/media/1541864/aca-business-plan.pdf> [pg. 17]). With existing freight tonnage expected to triple in volume by the year 2050, it is imperative to plan strategically so that these vital rail corridors are equipped to meet those increasing needs. (<https://www.azdot.gov/planning/transportation-programs/state-rail-plan> [pg. 96]). The economies of Arizona, California, and Nevada, with a combined gross domestic product of \$2.3 trillion, represent approximately 15 percent of the total U.S. economy (<https://www.fra.dot.gov/eLib/Details/L16012> [pg. 5]). With Arizona having some of the highest growth areas in the country, the Project is vital to ensuring that these international trade corridors operate at potential, that targeted industry sectors are able to expand along the rail line, and that local communities are afforded the opportunity to benefit from higher-wage job markets and improved multi-modal transportation infrastructure.

Public and private commitments are in place to expand land development adjacent to the Project, with an emphasis on aerospace and heavy-industrial market sectors. Data collected by the Arizona Commerce Authority, Arizona Strategic Partnership for Economic Development, and the Arizona State University Morrison Institute for Public Policy identifies the aerospace industry as a key sector opportunity for State and Regional economic growth (<https://www.azcommerce.com/about-us/business-plan> [pg. 26], (<https://azmex.eller.arizona.edu/news-article/20feb2018/arizona-and-mexico-aerospace-manufacturing-connection>), (<https://morrisoninstitute.asu.edu/sites/default/files/content/projects/EDP%20Executive%20Summary.pdf> [pg. 4]).

The Port of Tucson, Arizona Department of Transportation, Tucson International Airport, and private businesses remain committed to expanding development of this region as a hub for aerospace and other heavy-industrial sectors, for which a comprehensive analysis and forecast for rail and multi-modal transit, is an integral planning component.

B. Leveraging Federal funding to Attract Other, non-Federal Sources of Infrastructure Investment

In support of this project, the County is receiving \$50,000 from the City of Tucson/Pima Association of Governments, \$1,000,000 from the Pima County general fund, with an additional \$478,799 contributed as in-kind services and \$205,000 as in-kind land acquisition.

Grant funds will allow the County to plan and design the new bypass route for UPRR. This new bypass will open up thousands of acres of industrially zoned land for future development. The County has entered into preliminary discussions with regional developers and utility providers to consider the potential development of these areas along the alignment in large-scale, campus-style developments. Private developers have stated an interest in working with the County contingent upon the development of transportation-related infrastructure in the area, and look favorably on current plans for the Sonoran Corridor and future rail-related infrastructure. If awarded funds by the FRA, the County can actively pursue partnerships with private developers to jointly plan and develop lands adjacent to the proposed rail alignment for the benefit of the entire region.

C. Preparing for Future Operations and Maintenance Costs Demonstrated by a Plan to Maintain Assets without Future Federal Funding

Pima County and UPRR have considered the long-term future operational costs of the proposed bypass route. Both entities have the capability to fund the operations and maintenance costs in perpetuity. UPRR will maintain permanent control and operation of the bypass route, and estimates the operations and maintenance costs for this new line at \$7000 per track mile. Pima County's annual Capital Improvement Plan budget for the most recent fiscal year of 2018-2019 is \$219 million, while UPRR's annual operations and maintenance budget for year 2017 is \$3.1 billion. These figures demonstrate each entities' significant ability to fund the operations and maintenance of this route without having to rely upon additional Federal funds.

The existing Nogales Line running through the City is expected to see a sharp reduction in the use of the existing route once the new bypass route is completed. The County's long-term goal is to acquire the use of the alignment from UPRR.

D. Using Innovative Approaches to Improve Safety and Expedite Project Delivery

Pima County routinely awards contracts using alternative project delivery methods including Job Order Contracting, Construction Manager At-Risk, and Design/Build. In addition, project planning and design have been streamlined to allow the majority of projects to utilize the same format as private sector developers when submitting plans for review and approval. These plans are routed through the Pima County Development Services Department (DSD) for review, and are typically returned by DSD within one and a half days. In addition, projects are required to follow the Project Management Process, which includes the gate process. (http://webcms.pima.gov/government/project_management_office_pmo/). The gate process involves an interdisciplinary team of reviewers that meet at key project intervals. During these meetings, the project is reviewed for adherence to scope, schedule, and budget. These processes are applied throughout the entire project from planning through construction. This approach has allowed the County to improve project delivery metrics by 30-50% over projects done prior to implementing this approach. Pima County's Project Delivery manual and GATE process have been lauded, and ultimately applied, by jurisdictions throughout Arizona. The process has been studied and taught at Arizona State University's Alliance for Construction Excellence.

Improved safety is a primary concern throughout the County. All meetings, even those that are not construction specific, begin with a safety share — an exercise in which safety tips are discussed as a group. These tips vary from specific industry guidelines such as OSHA, to simple "common sense" tips specific to the region, such as wearing sunscreen and hydrating throughout the workday to keep everyone safe in the hot, desert climate.

E. Holding Grant Recipients Accountable for Their Performance and Achieving Specific, Measurable Outcomes

Pima County requires strict adherence to the County-approved Project Development Manual. All projects receive continuous oversight and regular senior-level reviews (GATE Process). This has resulted in significant improvement to project outcomes: scope, schedule, and budget. Information on Pima County's Project Management and Gate Process is available on

Pima County’s Project Management Office website
[\(http://webcms.pima.gov/government/project_management_office_pmo/\)](http://webcms.pima.gov/government/project_management_office_pmo/).

ix. Project Implementation and Management

Arrangements for Project Contracting, Contract Oversight, Change-Order Management, Risk Management, and Conformance to Federal Requirements for Progress Reporting

Development of the contract for this work is in conformance with Pima County Procurement Code (<http://intranet.pima.gov/procurement/procurementmanual.html>) and Arizona State Revised Statutes. This same approach was used when delivering the Port of Tucson Grant from TIGER V. The Port of Tucson Container Rail Facility met all FRA requirements and was completed in line with the Project Management Plan developed for that project. The Port of Tucson Container Rail Facility received significant praise from the agency for the team’s effectiveness in meeting the grant’s requirements.

The Grants Management & Innovation Department, in conjunction with Pima County’s award-winning Procurement Department, will provide contract oversight and change-order management, in addition to conducting programmatic and financial audits to ensure Federal Requirements for progress reporting are being met. Reports will be developed by subject matter experts in Public Works, and will be submitted according to the following FRA schedule unless otherwise directed by Grant Officers:

<i>FRA Quarterly Progress Report Due Dates</i>				
Reporting Period	Apr 1 - Jun 30	Jul 1 – Sept 30	Oct 1 – Dec 31	Jan 1 - Mar 31
Report Due Date	Jul 30	Oct 30	Jan 30	Apr 30
<i>Federal Financial Report (FFR) SF-425</i>				
Reporting Period	Apr 1 – Jun 30	Jul 1 – Sept 30	Oct 1 – Dec 31	Jan 1 - Mar 31
Report Due Date	Jul 30	Oct 30	Jan 30	Apr 30

x. Planning Readiness for Tracks 2 and 3 (PE/NEPA and FD/Construction)

Beginning in 2013, Pima County began exploring the options for developing the land surrounding the proposed bypass route for large scale, industrial properties for economic development purposes. This effort led to the award of a FAST Act project (the Sonoran Corridor Study) through ADOT to study this area as a possible multimodal transportation corridor. The Sonoran Corridor program is currently finalizing the Tier I EIS. If awarded, this CRISI grant will provide the County with the resources necessary to bring the rail design to completion at the same time as the Sonoran Corridor study efforts, allowing them to be bid and built simultaneously. The combination of these projects will create a true multimodal corridor.

xi. Environmental Readiness for Track 3 FD/Construction Projects

Not applicable.