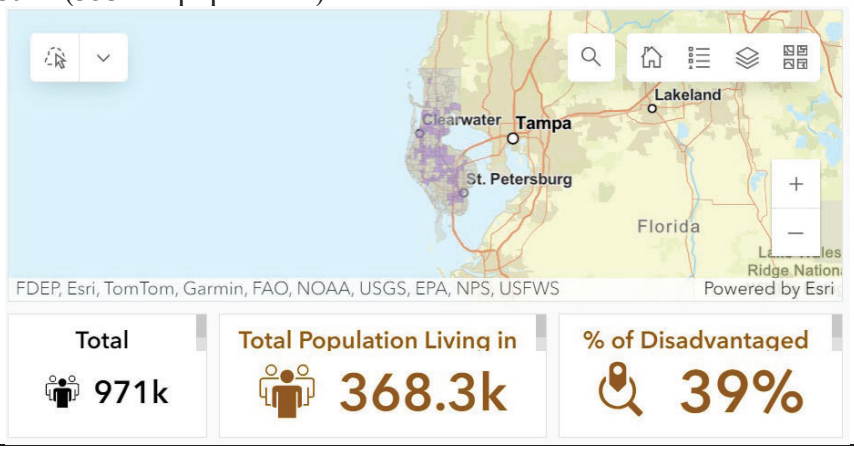
Pinellas Advanced Technology for Traveler Information (PATTI)

U.S. Department of Transportation (DOT)
Federal Highway Administration (FHWA)
Re: Safe Streets and Roads for All (SS4A)

Key Information Questions

Lead Applicant Name	Pinellas County
Lead Applicant Unique Entity Identifier (UEI)	R37RMC63XKG1
Eligible Entity Type	(2) a political subdivision of a State or territory;
Total Applicant Jurisdiction Population	959,107 (US Census Population as of April 1, 2020)
Total Count Motor Vehicle-Involved Roadway Fatalities that includes the last five years of data made available in the Fatality Analysis Reporting System (FARS) during the NOFO period	596 (from 2017-2021)
Total Average Annual Fatality Rate (per 100,000 population)	12.43
Total Percent of Population in Underserved Communities Census Tract(s)	39% (353.4K population) 
Project Title	Pinellas Advanced Technology for Traveler Information (PATTI)
Application Type (select all that apply)	• Demonstration Activities to inform the development of a Safety Action Plan • Conduct Supplemental Planning to update an Action Plan
Description of Supplemental Planning and Demonstration Activities (if relevant)	The existing *Safe Streets Pinellas Action Plan* (2021, updated February 2023), produced by Forward Pinellas, the Pinellas County MPO, will be updated per the results of the PATTI project's supplemental planning and demonstration activities which includes the engineering and non-engineering treatments outlined in this application.
Total Federal Funding Request	$10,000,000 (80%)
Total Non-Federal Share	$2,500,000 (20%)

Total SS4A Funds Requested	$10,000,000 (80%)
Total Other Federal Funds Used	$0
Total Project Cost	$12,500,000
Coordination	Pinellas County Department of Public Works (DPW) will coordinate with the Florida Department of Transportation, City of St. Petersburg, Clearwater, Pinellas County Sheriff's Office, Pinellas Suncoast Transit Authority, Community Traffic Safety Team, Pinellas Park, and the Metropolitan Planning Organization, Forward Pinellas, to build upon the existing Action Plan. Pinellas County will also be coordinating with several other municipalities in the county, including Tarpon Springs, Oldsmar, Safety Harbor, Dunedin and Largo.

Road Safety Issues

In Smart Growth America's *Dangerous by Design,* 2024 edition, the Pinellas County metropolitan region is ranked 8th in the nation for pedestrian and bicycle fatalities. The region has seen a drastic increase in transportation fatalities rising from 500 deaths (2013-2017) to 598 (2018-2022)[1]. Pinellas County's transportation network is recording 12.43 fatalities per 100,000 people and has experienced nearly 600 fatalities over a 5-year period.

The increasing density and attraction of Pinellas County has created stressors along the transportation network resulting in degradation in mobility and safety, with considerable increases in vehicular crashes, travel times and delays, and pedestrian and bicycle incidents. A countywide assessment of the transportation network yielded the following findings:

- There are approximately 22,320,234 daily vehicle miles traveled.
- Overcapacity road segments have increased since 2020 from 14% to 21%.
- 16% of the monitored network performs poorly at Level of Service E or F.
- Transit ridership totals 10.4 million annually; 33,158 person-trips per average weekday.
- 39%, or 368.3k persons, reside within the Disadvantaged Census Tracts in Pinellas County

The *Safe Streets Pinellas Action Plan* (2021 and updated February 2023), developed by the Pinellas County MPO, Forward Pinellas, states, "Every day, two people are killed or seriously injured in traffic collisions in Pinellas County." In developing the Action Plan, Forward Pinellas worked with citizens, the public health community, the business community, law enforcement, emergency management, public transportation, local governments and the Florida Department of Transportation (FDOT) to incorporate input from a wide range of stakeholders impacted by this serious travel safety problem in the community. The Action Plan puts forth a Safe Systems Approach in tackling the Vision Zero goal. Presently, safety crashes are evaluated using the state's Signal 4 crash database for network screening, diagnosing the issues, and selecting countermeasures. Crashes are reported based on law enforcement notes and interviewing parties involved in the crash, which has limitations in the crash analysis.

Scope of Services

Pinellas County's proposed Pinellas Advanced Technology for Traveler Information (PATTI) will use Intelligent Transportation System (ITS) technologies to improve the network screening, diagnosis, and countermeasure selection process. The approach applies the Haddon Matrix to examine pre-crash, crash, and post-crash periods evaluating human, vehicle/equipment, physical environment, and social-economic factors that contribute to the cause of a crash.

Supplemental Planning Activities

- **Plan, Design, and Permit**: Develop plans, designs, and coordinate with FHWA to attain NEPA Type I Categorical Exclusion.

[1] https://smartgrowthamerica.org/dangerous-by-design/

- **Evaluate Pre, During, and Post Crash**: Leverage the demonstration locations to monitor, detect, and evaluate road conditions for pre-crash, crash, and post-crash scenarios. Road conditions will evaluate the following scenarios:

Number of Lanes	Median	Speed Limit	Additional Factors
• 2 lanes • 4 lanes • 6+ lanes	• Divided corridor • Undivided corridor	• <25 mph • 30 – 40 mph • 45+ mph	• Transit Route • Bike/Ped Facilities • Emergency route

- **Select and Implement Countermeasures**: Based on the evaluation, select and implement countermeasures that will improve human behavior, vehicle/equipment, physical environment, and other social-economic factors.
- **Measure Project Benefits** (by each location and aggregate)**:**
    - Emergency response times (mean, median, maximum, minimum, etc.).
    - Near misses (number within a defined distance).
    - Fatalities and serious injury crashes (number by type and degree of injury).
    - Transit related crashes (number by type and degree of injury).
    - Pedestrian/Bicycle crashes (number by type and degree of injury)
    - Compare Florida Signal Four Pinellas County crash reports vs. PATTI recorded crashes (correlation between Signal Four and PATTI crash data)
- **Policies and Planning**: Engage with local stakeholders and decision makers to recommend policies and planning based on verifiable benefits of project evaluation.
- **Update the Vision Zero Action Plan**: Update the existing and *Safe Streets Pinellas Action Plan* and *Vision Zero Action Plan* with verified project benefits and recommended policy changes. Present findings to County Commissioners and host a series

Demonstration Activities

ITS technology deployment will be implemented through several corridors in the County to evaluate pre-, during-, and post-crash conditions. The corridors selected vary in condition to provide a comprehensive assessment of various conditions through the county. Subsequently, these technologies can be used to predict collisions, improve emergency response times, and provide an improved travel experience in addressing the county's greatest transportation safety needs. The Demonstration activities include deploying detection hardware to analyze the crash conditions and additional technologies to improve emergency response time, condition warning alerts, signal retiming optimization, and more. The technology demonstration includes:

- AI-based Vehicle, Pedestrian and Bicycle Detection
- Signal timing optimization using AI timing plan optimization software
- Traffic and Safety-Responsive Signal Operation
- Safety and Traffic Insights
- Transit Signal Priority (TSP)
- Emergency Vehicle Preemption (EVP)
- Blank-out Sign Activation
- Adaptive Streetlight Brightness
- Connected Vehicle to Everything (C-V2X) Messages and Alerts
- IoT Data Exchange

Response to Selection Criteria

Safety Impacts

The Action Plan addresses the area's safety issues and offers a toolbox of countermeasures. This SS4A project will observe the interactions pre, during, and post crashes along Pinellas County's High Injury Network. The technology study will observe changes to the conflict points at intersections, the severity of collisions, vehicle speeds, roadway visibility, incident detection and emergency response time. The impacts of the new AI and ITS technologies to identify incidents and improve human response will then be better understood and applied. Budgetary resources can then be used more effectively. The project will include measurement and evaluation of safety benefits through data collection in small-scale tests in finite trial periods to focus Action Plan technology use more effectively.

Equity, Engagement, and Collaboration

More killed or seriously injured (KSI) collisions occur in and around parts of the County that are classified as Communities of Concern, with high numbers of people of color and low-income populations. 73 percent of the High-Injury Network is either within or runs through a Community of Concern even though these areas make up only 32 percent of Pinellas County's geographic area. About 37% of Pinellas County's population resides within underserved areas. Approximately 76% of the demonstration activities are located within USDOT's defined Disadvantaged Communities layer. See Project Location Map. The demonstrations will employ countermeasures at the locations that are most heavily concentrated with fatal and serious injury crashes to evaluate their effectiveness.

The county has ongoing engagement and collaboration with the community through the various agencies and organizations involved with transportation services. The County will share the updated Plan's demonstrated findings and use them to further benefit the Communities of Concern.

Project Schedule

Task Name	Start	Finish	2026	2027	2028	2029	2030
Anticipated NTP	Jan-26	Jan-26					
Supplemental Planning							
Plan, Design, and Permit	Feb-26	Jan-27					
Evaluate Pre Crash, Crash, and Post Crash	Feb-27	Jun-27					
Select and Implement Countermeasures	May-27	Oct-27					
Measure Project Benefits	Sep-27	Oct-28					
Policies and Planning	Nov-28	Oct-29					
Update the Vision Zero Action Plan	Nov-29	Jun-30					
Demonstration Activities	Feb-27	Jun-30					

MAP

Pinellas Advanced Technology for Traveler Information (PATTI)

Budget

The Pinellas Advanced Technology for Traveler Information (PATTI) project application is comprised of two main components: Supplemental Safety Action Plan and Demonstration. The budget assumes a high-level cost overview of each of the project activities and does not include any previously incurred expenses, or costs to be incurred before the time of award. The following table describes the estimated budget and tasks associated with each component.

Table 1: Detailed Budget Table

Activities	Quantity	Unit Cost	Unit	Project Cost	County Share
Itemized Estimated Costs to Carry Out Demonstration Activities					
Equipment & Materials					
AXIS 12MP 360° Outdoor Panoramic Network Camera with Night Vision	78	$925	EA	$100,000	
AXIS Pendant Kit	78	$75	EA	$10,000	
Bent Metal Works 48" Offset Aluminum Camera Mount	78	$175	EA	$15,000	
Astro-Brac Stellar Clamp Kit 120" Cable Mnt w/Stainless Cable & Hardware, Alum	78	$175	EA	$15,000	
Citel Outdoor PoE (Power-over-Ethernet) Surge Protector in Metal Enclosure	78	$150	EA	$15,000	
Citel Pole Mount for CRMJ8-POE-C6	78	$60	EA	$5,000	
Citel Power Over Ethernet (POE) Mode-A Surge Protector, 10/100/1000Base- TX Shielded RJ45 Ports, 48 VDC Powered, DIN-Rail Mountable	78	$100	EA	$10,000	
Derq Edge Unit Package	78	$10,500	EA	$900,000	
Derq Sense - AI Detection (Edge Detection for Pedestrian Safety & Traffic Control)	1	$57,750	EA	$60,000	
Derq Sense - CAV (Edge Off-board Perception for CAVs)	1	$84,000	EA	$100,000	
Axilion X Way Implementation	1	$210,000	LS	$250,000	
Roadside Units (Kapsch 31 + 5 spares)	36	$3,675	EA	$150,000	
Construction					

Labor and Install - Configuration and Integration	1	$525,000	LS	$600,000	
Detection - Intersection and Mid-Block	38	$42,000	EA	$1,600,000	
Mobilization	1	$106,050		$110,000	
Maintenance of Traffic	1	$106,050		$110,000	
Construction Engineering and Inspection	1	$350,000	LS	$350,000	
Licensing (3 years)					
Transit Signal Priority	78	$9,500	EA	$750,000	
Emergency Vehicle Preemption	78	$3,392	EA	$300,000	
Derq Traffic and Safety Insight Modules	1	$178,500	LS	$200,000	
Axilion - X Way AI	3	$341,250	Per Year	$1,100,000	
Operations & Maintenance					
IoT Exchange	1	$157,500	LS	$200,000	
Technical Assistance, Workforce Development, and Training/ Education	1	$525,000		$600,000	
Subtotal Budget to Carry Out Demonstration Activities				**$7,550,000**	**$0.00**
Itemized Estimated Costs to Conduct Supplemental Planning					
Project Planning					
Planning, System Engineering, and Design	1	$1,500,000	LS	$2,000,000	$2,000,000.00
Grant Management	1	$500,000	LS	$500,000	$500,000.00
NEPA Evaluation	1	$200,000	LS	$200,000	
Project Evaluation and Action Plan					
Evaluate Pre Crash, Crash, and Post Crash	1	$500,000	LS	$500,000	
Select and Implement Countermeasures	1	$200,000	LS	$200,000	
Measure Project Benefits	1	$1,000,000	LS	$1,000,000	
Policies and Planning	1	$350,000	LS	$350,000	
Update the Vision Zero Action Plan	1	$200,000	LS	$200,000	
Subtotal Budget to Conduct Supplemental Planning				**$4,950,000**	**$2,500,000**
Total Project Cost				**$12,500,000**	**$2,500,000.00**

The demonstration projects will use technology detection and monitoring systems to evaluate multiple scenarios throughout the county. All project locations have been identified on the County's High Injury Network and will evaluate various road geometries from 2, 4, and 6+ lanes to varying speed limits. The table below highlights the corridors for the demonstration project.

Table 2: Summary of Corridors and Characteristics

On Street	From Street	To Street	Number of Lanes	Median	Speed	Number of Signals
East Lake Road	Lansbrook Parkway	Trinity Blvd	4	Y	50	6
Curlew Road (SR 586)	US 19 (Bayshore Blvd)	County Road 1	2	N	40	2
Curlew Road (SR 586)	County Road 1	US 19	4	Y	45	2
Curlew Road (SR 586)	US 19	Tampa Rd	6	Y	45	6
SR 580	Keene Road	Countryside Blvd	6	N	45	8
US 19	102nd Ave	4th Ave NW	6	Y	45	8
US 19	4th Ave NW	Belleair Road	6	Y	40	4
49th St (CR 611)	30th Ave N	38th Ave N	4	N	35	3
49th St (CR 611)	38th Ave N	46th Ave N	6	Y	35	1
49th St (CR 611)	46th Ave N	US 19	6	Y	40	8
US 19	54th Ave N	80th Ave	6	Y	45	7
US 19	80th Ave	Mainlands Blvd W	6	Y	55	1
Park Blvd N	49th St (CR 611)	40th St	6	Y	40	2
Park Blvd N	40th St	US 19	4	Y	40	1
Park Blvd N	US 19	Grand Ave	6	Y	50	2
Park Blvd N	Grand Ave	I-275	6	Y	55	1
Alt US 19 (Pinellas Avenue)	Cypress St	Anclote Blvd	2	N	30	2
Alt US 19 (Pinellas Avenue)	Lime St	Cypress St	2	N	25	4
Alt US 19 (Pinellas Avenue)	E Klosterman Road	Lime St	2	N	35	3
102nd Ave (CR 296)	Alt US 19	97th Street	4	Y	40	3
102nd Ave (CR 296)	97th Street	Starkey Rd	6	Y	40	2
Bryan Dairy Rd (CR 296)	Starkey Rd	West of SCL Railroad	6	Y	40	2
4th St N	54th Ave N	Gandy Blvd	6	Y	45	12

The total project cost is estimated to cost $12.5 milliion with Pinellas County contributing $2.5 million, totaling a 20% non-federal match. Approximately **72%** of demonstration projects are located within USDOT's Disadvantaged Communities.

Local Match Source

Pinellas County's local match will be provided through the Traffic Safety Improvements fund source. The local match will be funded as part of this annual program at $1.25 million for year one

and year two of the program to provide the local match requirement of $2.5M. The program is funded through the latest Penny for Pinellas fund source that started in 2020. The program offers flexibility to invest in the project locations that will be determined as part of the Action Plan efforts to identify the conditions that are more predominant in pedestrian and bicycle fatalities.