REQUEST FOR EXPRESSION OF INTEREST
TRENTON MOVES

February 11, 2022

Plenary | PARKWAY AUTONOMOUS

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February 11, 2022

Nikki Ghorbani
Administrative Analyst 3
New Jersey Department of Transportation
Ewing, New Jersey

Attention: Nikki Ghorbani, Administrative Analyst 3

RE: REQUEST FOR EXPRESSION OF INTEREST, TRENTON MOVES

Dear Ms. Ghorbani,

Plenary Americas LP ("Plenary") is pleased to present to the New Jersey Department of Transportation our response to the Request for Expression of Interest ("REOI") issued for Trenton MOVES (the "Project"). This joint response has been assembled by a team that is comprised of Plenary and Parkway Autonomous ("Parkway").

As North America's foremost leader in the development, financing and asset management of public infrastructure projects in North America, Plenary has leveraged its relationship with Parkway, a proven industry expert in autonomous transportation, for the preparation of this response. We trust the submission contained herein demonstrates the experience and ability that our collective firms can bring to the project and assists NJDOT in identifying potential and innovative solutions to deliver this project.

Should the project advance beyond the RFEI stage, Plenary and Parkway would be pleased to discuss our submission and expertise further. We hope that you find our response is both helpful and informative, and look forward to the opportunity to demonstrate, through the RFP and beyond, the value that our team can bring to this project.

Sincerely,
PLENARY AMERICAS LP

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EXECUTIVE SUMMARY

INTRODUCTION

Plenary Americas LP ("Plenary") and Parkway Autonomous ("Parkway"), together ("Partners"), are proud to partner on the following solution to NJDOT's desire to implement transportation solutions for the residents of Trenton, Mercer County, and New Jersey that safely deliver meaningful improvements in environmental, economic, racial, and transportation equity, as well as develop the capabilities and systems needed to measure, improve, and expand these benefits to wider stakeholder groups.

Plenary is a developer, investor and operator of public infrastructure, with a total project capitalization of over $17 billion across 55 projects. Plenary projects benefit from its holistic approach that integrates finance, design and construction, commercial development, asset management and operations.

Parkway is an automotive technology company that unifies patented technology in autonomous driving, Vehicle-to-Vehicle communications, smart infrastructure, battery charging and power optimization, electric fleet management, and passenger interfaces. Parkway is responsible for designing one of the first fully integrated (infrastructure > depot > fleet > vehicle > operations > software > kiosk/ app) systems to deliver the future of transportation for public-transit agencies today. and other mobility solutions such as light and heavy rail, buses, and mid-sized vans.

RELEVANT EXPERIENCE

Plenary Americas LP

Plenary is a leading public infrastructure developer, financial arranger and equity investor, having invested over $850 million across 55 projects in North America with a total project capitalization of $17 billion. This portfolio includes delivering critical civil infrastructure to anchor institutions in both the United States and Canada.

Comprised of three distinct business lines, Plenary's experienced professionals work cohesively to develop and manage each of its projects. Our Project Structuring and Investments ("PSI") team specializes in the bidding, closing, and commercial and financial structuring of our portfolio of infrastructure projects across the US and Canada. Plenary's Delivery team is responsible for overseeing the design, permitting and construction, as well as asset management and maintenance of our projects. The Accounting, Finance and Tax teams are responsible for all financial reporting, lender and legal compliance, cash flow processing, and the monitoring and analysis of financial results.

In addition to being the financial arranger, Plenary usually acts as financial advisor on similar projects and uses its deep understanding of the infrastructure space in tandem with meaningful relationships with lenders to structure debt efficiently. Plenary's in-house financial advisory team independently structures, negotiates, documents, and finalizes the financing solution for its projects, leveraging a team of over 30 PSI professionals across North America. In each case, Plenary develops a comprehensive financial model that forecasts every source and use of financing, during construction as well as over the operational life of the asset. These financial models are the single most important analytical tool used to structure the economics of a project, and are relied upon by clients, equity investors and senior lenders to demonstrate the robustness of a proposed financial structure. The financial models also guide the decisions around the optimization of design, construction, and operations cost, as led by Plenary through its role as developer.

Plenary's success is built upon its approach of not only being an equity investor, but also an active, hands-on manager of its projects across all phases of the development cycle. Comprised of individuals with backgrounds in urban planning, design, engineering, operations and project management, these individuals have tremendous experience in the design, construction and operation of civil infrastructure projects. This team accepts the long-term stewardship of these projects,

ensuring they are in a high-quality condition throughout the life of the asset.

Parkway Autonomous

Parkway is an automotive technology company that unifies patented technology in autonomous driving, Vehicle-to-Vehicle communications, smart infrastructure, battery charging and power optimization, electric fleet management, and passenger interfaces. Parkway is responsible for designing one of the first fully integrated (infrastructure > depot > fleet > vehicle > operations > software > kiosk / app) systems to deliver the future of transportation for public transit agencies today.

STATEMENT OF FINANCIAL CAPABILITY

Plenary is backed by the resources of its ultimate shareholder, the Caisse de dépôt et placement du Québec ("CDPQ"). CDPQ is the manager of a number of public and parapublic pension funds in Quebec, with a AAA credit rating and over $389.7 billion in assets under management.

In illustration of Plenary's capacity to provide financial capital, **Appendix A** summarizes its North American equity investments. Plenary has successfully delivered its equity commitments on project finance transactions in the United States and Canadian markets. In each of these projects, Plenary has satisfied the equity requirements and reached Financial Close on or before schedule, demonstrating that Plenary will have more than adequate capacity to fund the Project's development and future equity amounts.

RELEVANT / SIMILAR PROJECTS

Plenary and Parkway bring industry-leading expertise across all facets required for the successful delivery of the Project, with significant autonomous vehicle, transit, and institutional development experience. The following project examples outline relevant past closed transit / transportation transactions:


Winnipeg Southwest Rapid Transit
(Winnipeg, Alberta)


Waterloo Light Rapid Transit
(Waterloo, Ontario)


Australia Gold Coast Light Rail
(Gold Coast, Queensland)


Sydney Metro
(Sydney, New South Wales)


Metrolinx East Rail Maintenance Facility
(Toronto, Ontario)


Stoney CNG Bus Storage and Transit Facility
(Calgary, Alberta)

SECTION 1 POTENTIAL PROJECT DESCRIPTION

Q. 1.1 In no more than 1500 words, describe your solution: How does it work?

The mobility ecosystem we will deliver ("System") centers on the integration of autonomous driving technology in vehicles with smart infrastructure technology that will be built into existing Trenton infrastructure. These dynamic technologies are each implementable with different levels of maturity and investment for different sections of the proposed network. By providing TrentonMOVES with flexible options for each section of the network, and supporting the "step-up" capabilities for each section as well, the System delivers on project goals by evolving throughout its use in the contexts of community use, equity, cost, safety, and sustainability.

The mobility platform is centered on a dynamic Connected Automated Vehicle (CAV) driving platform called a CAVway™ capable of operating absent driver input (SAE J3016 Level 5) and capable of receiving driver input from both onboard and remote locations. This platform integrates V2V and V2I infrastructure, a smart depot and command center, fleet management, vehicle operation, internal software, and kiosk / app services through MoovIt.

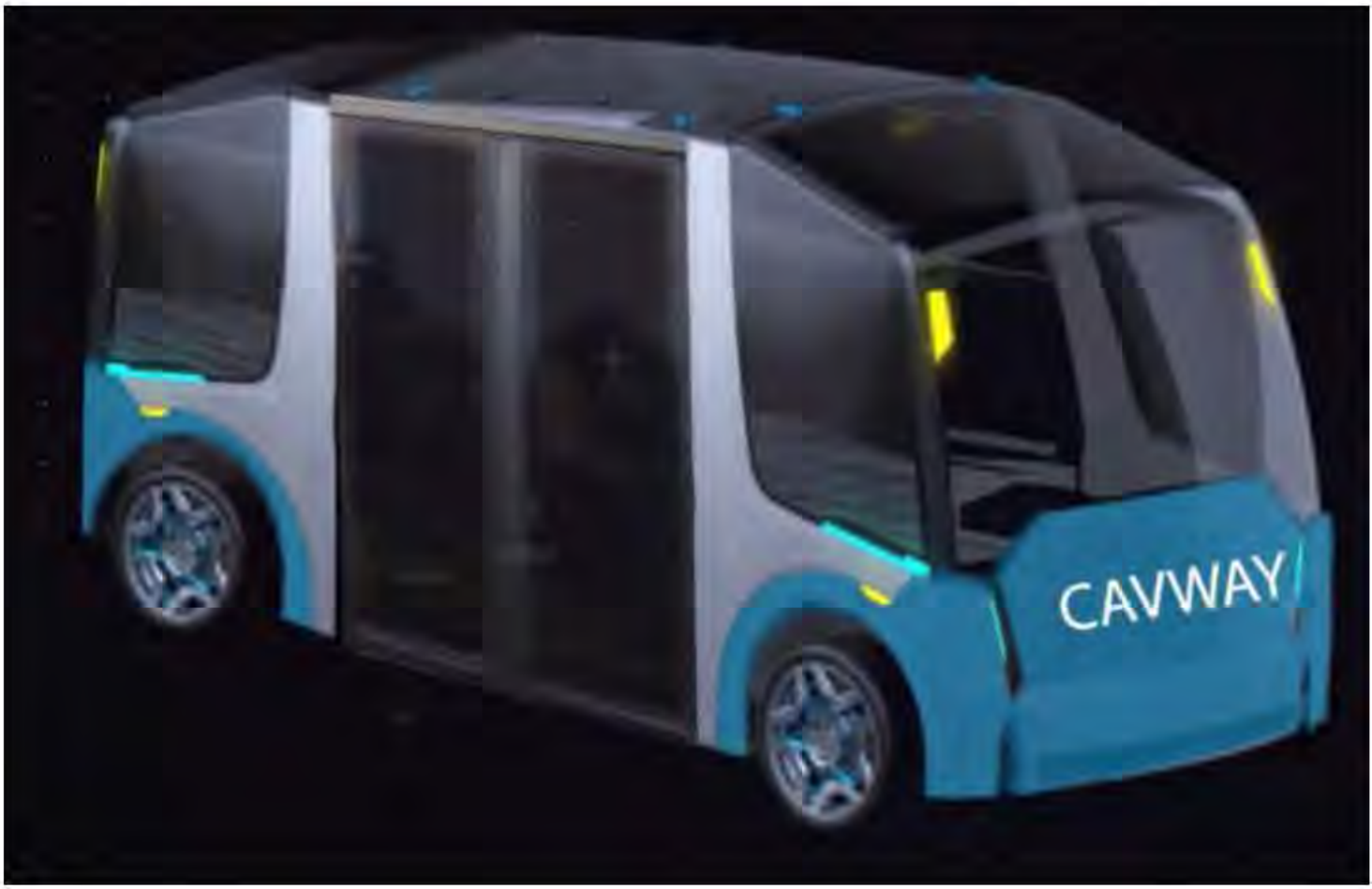
This vehicle-infrastructure platform sets new standards for nearly every component of both the vehicle and in-road technology. The platform combines patented ultra-capacitor technology for environmentally friendly rapid electric vehicle charging ultrawideband ("UWB") micro positioning that is safer than other sensor only autonomous technology, innovative approaches for battery to powertrain interaction that increase battery life by 100,000%, and an independent-function wheel design that reduces occurrence and scope of maintenance, as well as both API based and app-based software for operations management and passenger communication. Parkway's electric CAVs are an alternative to Automated People Movers ("APM") and other mobility solutions such as light and heavy rail, buses, and mid-sized vans.

The System combines technology inside CAVs with scalable deployment of technology (sensors, beacons, barriers, gates) into infrastructure along desired routes. Routes can be constructed on roadways, other right-of-ways, or along curvilinear paths within parking lots, enabling economic activation of Trenton's many surface lots while providing route flexibility. This allows TrentonMOVES to set different operational design domains ("ODD") for different sections of the network to best suit hyperlocal needs of various areas of the city and region, and to respond to variations in regulation between the different stakeholders that manage the region's right-of-ways. The flexible, modular approach also lets TrentonMOVES partners change operational design domains for individual system parts as new data is gathered about how the System is meeting its goals and how specific community goals can be improved.

Beyond responding to community needs, modularity also (1) allows continuous improvement of operation, (2) facilitates easy integration of new State, County and Municipal partners in Trenton and regionally, and (3) allows implementation of a "self-maturing" system that can operate first to build demand and then "step-up" roadway technology type, vehicle capacity, speed, stops, or other parameters without having to overbuild capacity or geographic coverage and then wait for demand to catch up.

Parkway has established relationships with leading industry partners such as Intel, Dell, NTT, Aurrigo, and Applied Autonomy (Applied Autonomy currently operates live open road autonomous vehicles), in order to expand the vehicle types it operates and maintains, and available technologies for those vehicles. This flexibility in the vehicle portfolio matches the flexibility in the self-maturing right-of-ways system to deliver the most appropriate vehicle type and right-of-way integration, which can change with system maturity. This means as the System responds to transportation data and additional local partners are added to the network, the right vehicles will deliver on residents' and stakeholders' unique "place and time" needs, including accessibility, child safety, population density, trip length, or destination type. Easily integratable right-of-ways and diverse vehicle types also provide the capability to run freight or drayage traffic in addition to transit. Regardless of route configuration, vehicle, partner, or trip type, the CAVway™ platform provides a uniform integration of the components into one system for safe and effective transport that is continually optimized.

Vehicle designs distribute control to four independent wheels, which moves traditional electric vehicle components (steering, braking, suspension, powertrain, and control) into the wheel arch. The independent wheel design provides improved maneuverability, room for batteries and passengers, maximum operational uptime due to powertrain repairs being local to each wheel, global safety standards compliance, and lower total cost of ownership. The independent wheel electronic controls integrate a proprietary modular rapid charging ultra-capacitor/ lithium-ion battery system that eliminates the need to go to the depot for charging. The ultra-capacitors in each wheel receive power from inductive chargers and recapture braking energy from electric motors, meaning the vehicle rapidly "sips" energy during short stops and shares it with the main battery while driving, which also maximizes the life of the electrical system. This makes for a system that reduces money and time costs for production and operation (by 70% for transit applications and by 43% for freight) relative to human-operated internal combustion vehicles that meet the same standards. The design also achieves the industry's lowest height platform that meets Federal Transit Administration



low floor standards for ADA Ramps, wheelchair tie-downs, and other amenities.

Beyond innovative vehicle and roadway technology, the System makes other investments in the Trenton region including (1) construction or retrofit and operation of facilities for transit operations management and for maintenance that could also host relevant job training (2) the deployment of mini-chargers throughout stops along the route network, (3) kiosks designed to be standalone in new or retrofitted infrastructure such as NJ Transit Train Stations and Bus Shelters, or integrated into non-profit and private community locations like TASK, ISLES, Trenton Artworks, Freedom Skate, NJ State Museum, and various Health Providers via Public-Private-Partnerships (P3) or Memoranda of Understanding (MOUs), and (4) if desired, a mini-factory to manufacture electric autonomous vehicles in Trenton rather than buying them from out of state.

The TrentonMOVES CAVway™ System follows a Design, Build, Finance, Operate, and Maintain (DBFOM) model over a thirty (30) year period, with ability to add new phases to the existing project, and integrate with other CAVway™ deployments. Partners are currently proposing other CAVway™ installations in Princeton, NJ Transit, and other locations that can be unified with TrentonMoves relatively easily.

Initially the project partners will engage in a design phase partnering with all stakeholders to ensure engineering specifications and construction plans are consistent with desired outcomes for the project. During this phase, the basic aspects of system technology will be applied to Trenton's unique needs.

Prioritizing things like equity and economic development requires deep engagement with the community. Without reducing this rich process to a short paragraph, the Partners' first step will be multi-dimensional study of current transit demand, deserts, and potential, environmental impact and energy use, macro-economic contours of transportation stakeholders within the Trenton region, demographics of riders, and implementation styles needed by different partners. In depth study of "Current Travel" will identify current trip demand, current mode share analysis (Walk, Bike, For-Hire-Vehicle, Transit, Bus, Car), Origin & Destination (O&D) locations/ sheds/ categories for current trips, reason share for current trip demand (Food, Medical, Work, School, Childcare, Entertainment, etc.) demographic analysis of current trips. Additionally, modeling will be applied to current trip data to calculate the number of trips that use Trenton regional bus and train stops as nodes but do not start or end in Trenton to yield a calculation of how many travelers from outside the System that do not venture into Trenton may do so if a direct connection to destinations within Trenton is linked to existing trips via TrentonMOVES. Similarly, modeling and calculation of trip demand that is unserved/ underserved due to economic, accessibility, racial, or other limiting factors will calculate the number of additional current untaken trips that can be activated by the System.

This analysis centers Equitability, Affordability, Sustainability, and Efficiency to system design and indicates exact stakeholder needs weighted across neighborhoods, economic groups, vehicle miles traveled, the potential for economic development and direct implementation and operation cost, all within the context of where regional demand sits. This design phase will also identify right-of-ways such as state, county, and local roads, D&R right-of-way (not the trail), abandoned railroads, trolley, NJ Transit assets, and parking that can be used as routes infrastructure between demand areas. Finally, partners will propose an optimized configuration of kiosk locations, project plans for installation of necessary technology, charging infrastructure, operations center, maintenance center(s) and barriers specific to the optimized nodes and available routes. This period will take six to nine months.

At this point, if relevant NJDOT, Trenton, and other stakeholders agree to proceed, Partners will provide the capital investment to implement the project from the design phase, build or install the transportation infrastructure, vehicles, kiosks, maintenance/ operations facilities, software, and other associated project components, and operate as soon as it is deployed. Because of the flexibility of infrastructure and vehicle types, small legs of the System will be operational within one year of build commencement, so the transition from build to full operation will be gradual. Partners will also operate and maintain the System over its lifecycle.

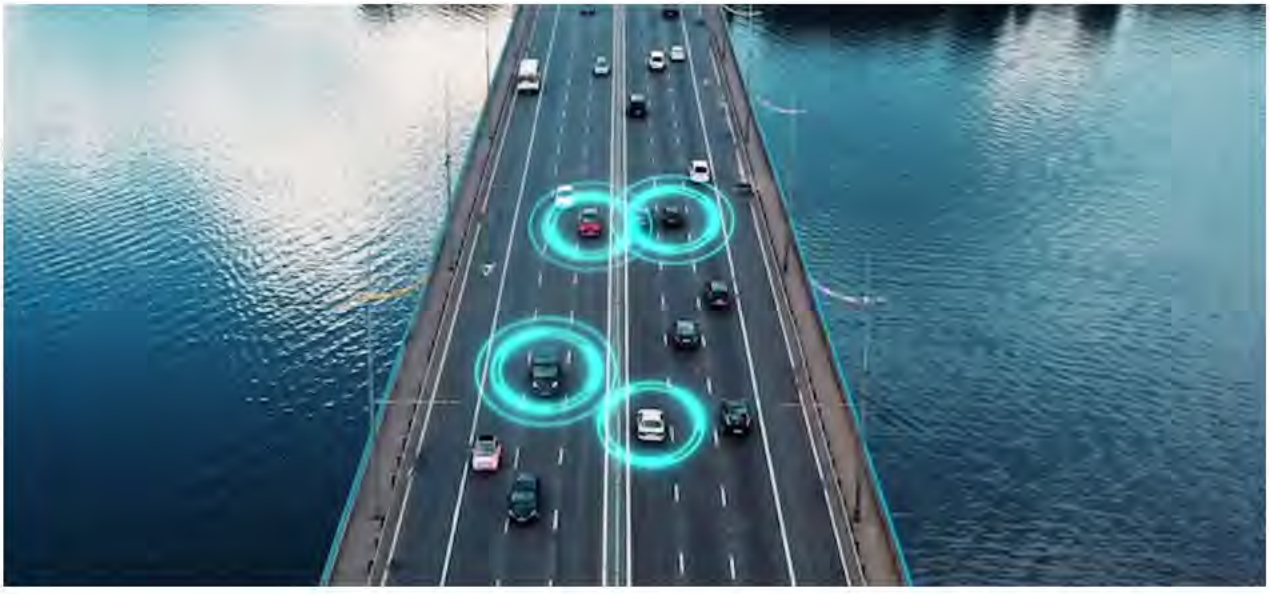
Q. 1.2 Is your potential project scalable in and beyond Trenton, NJ? If so, how?

Yes. While the System is able to operate in a self-contained configuration within the Trenton geographical area, Partners are proposing a model that is inherently and explicitly designed to scale. The vision is to create a regional system providing access to safe, reliable, accessible transportation to all passengers.

The CAVway™ vehicle technology, including Ultra-Wideband ("UWB") communications, energy charging system, and application optimized for mobile and kiosk enables seamless regional expansion, either by adding directly to the TrentonMOVES implementation, or by integration of adjacent platforms. The Partners' unique modular design helps make integration a matter of stakeholder (State, County, Municipal) coordination, not a question of technology compatibility or implementation. The combination of technologies enables the CAVway™ vehicles to effectively and safely transport passengers regardless of the type of road or right-of-way. The System can reach various locations without major infrastructure changes since the CAV can operate on public roads and mixed traffic conditions, as well as take advantage of protected exclusive lanes. Subsequently, increasing the footprint requires lower capital construction costs than rail or highway. This is a distinct characteristic that provides greater flexibility in extending existing routes, creating new routes, integrating existing systems, all of which work for facilitating increased market coverage.

A direct example of the Partners' vision for a modular, scalable, regional system is our recent response to The Princeton Transitway Study of the Princeton Junction. This response illustrates Parkway's direct intent to scale operations throughout the area. Parkway's proposed options for the Dinky shuttle between the Princeton Junction to Princeton University create a strategy to connect numerous points throughout the route with increased frequency and reliability. The proposal recommends on-demand routes to meet Princeton's changing demands for transportation. The vehicles would accommodate these differing schedules by using larger 15-30 people cars for established routes and smaller 2-8 person cars for on-demand services. Parkway's CAVway™ vehicles and charging systems would facilitate this flexible schedule and large coverage area. Because the responses to TrentonMOVES and Princeton Transitway are both based on the The CAVway™ platform, they are inherently interoperable.

Beyond simply scaling transportation operations, Parkway's modular components can be added to introduce non-transit revenue to the System, which can help offset cost and thus support scaling. A further support to scalability includes Parkway's proposed micro-factory, that can produce up to three vehicles per day, which equal roughly 1,100 vehicles per year. By keeping production output calibrated with manufacturing demand from TrentonMOVES or other regional implementations,



costs are moderated, and parts of costs are recaptured by the factory, powering economic sustainability for the System which aids in scaling. Additionally, the micro-factory inherently ties Trenton to other municipal and regional economies that may become involved in the scaling of the System. This integration can result in short lead times required to establish operations for those new systems. The first micro-factory location in Trenton can nearly eliminate shipping costs for new CAVway™ that are adjacent, because the vehicles can drive themselves to the new system via the existing one. Of course, if there are gaps between systems, costs would be incurred, but again with local economic capture from developing and hiring a local workforce. This flexibility in how we deploy our manufacturing capacity is a significant advantage in permitting us to scale operations quickly, sustainably, and equitably throughout New Jersey. The facilities also serve as a one-stop maintenance and charging station. While CAVway™ vehicles can operate 24/7 due to the interaction of the independent wheel powertrain and rapid inductive charger technology, the facility can provide additional capacity by releasing additional CAVways™ onto the system to reduce stop times if needed during peak hours. Additionally to the inductive charging for the project vehicles, the facility can provide rapid charging for passenger vehicles – creating a valuable station not just for the project but also for the community. Our vision is to leverage the micro-factory for CAV validation, testing, research, education, and workforce development. The facility can serve as a catalyst to further develop Trenton's technology and transportation industries, support regional implementation of CAVway™ systems, and be a vital economic and social touchpoint between CAVs and the community.

Additionally, as alluded to in section 1.1, vehicles can run freight and drayage traffic, which can take advantage of Railroad Yard in Hamilton, CSX Operations in Ewing, and the ever growing portfolio of warehousing and logistics centers to the north, east, and south of the city.

Parkway's end-to-end strategy is designed to scale quickly and efficiently throughout the region.

Q. 1.3 How soon will a minimally viable version of your solution be operational? How long does it take to scale to full operations (for proposed service scope, see 3.1 Operational Design Domain and Service Concept)?

The simple answer is showcase levels of operations within one year, partial operations within two years, and a complete System within roughly three years. Whether the mini-factory is included in the plan or not, the time frame for operations does not change because Partners will be able to use existing vehicles with retrofitted technology for an initial showcase operation rather than manufacturing new vehicles in Trenton with a local workforce. The specifics of which parts of the System would become active at what point is contingent upon the operational design and domain, and the wishes of TrentonMOVES.

The lifecycle of this project conceptualizes the design phase first as six to nine months, and the build phase second as taking an additional six to twenty-four months, with a total design-build process timeframe of two to three years from project start to full operations. However, due to the flexible right-of-ways and vehicle types, some sections could become operational within a year of project inception. These sections could serve as a showcase to the community with advertising along the limited legs describing the future network and timeframes for completion of various sections. These sections can also serve as demonstrations to other potential CAVway™ systems in the region, showing that the technology is real, works as described, and is being implemented within the region already. This can help eliminate the "first mover" aversion that some stakeholders may have when considering a CAVway™ of their own, and helps regional systems proliferate and integrate with each other.

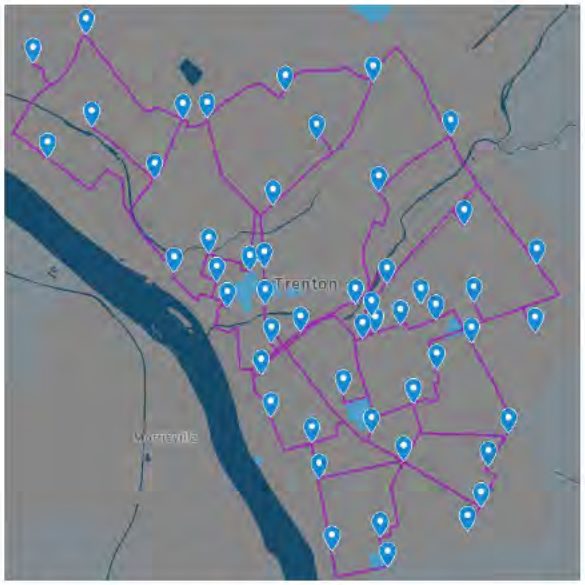
By way of detail, design and deployment of the infrastructure depends on the degree of limited access capability built into the routes to be generated. Deployment of the inductive chargers can be done in about a year. If installing limited access barriers along the route is needed it could take 2-3 years. The vehicle and infrastructure technology can be deployed in a phased approach using driver based existing electric vans retrofitted with automation technology after a year and then transitioning to the fully autonomous shuttles over the remaining time period.

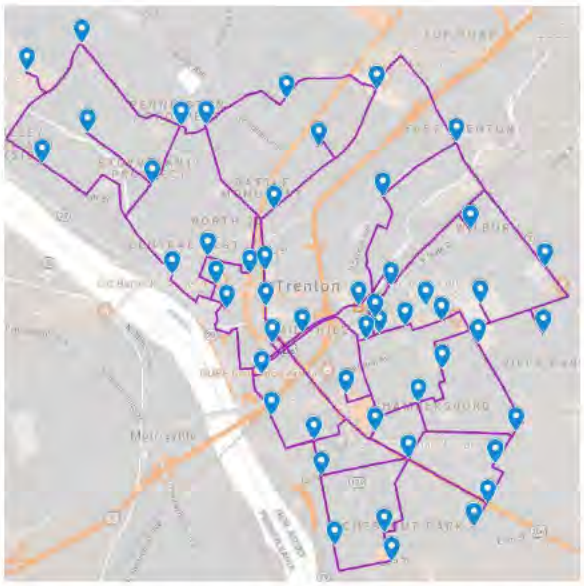
As stated, Parkway plans to operate the micro-factory in Trenton or another suitable site to nimbly and efficiently manufacture the vehicles needed to serve our customers. The manufacturing process will have a next generation approach and the business model includes a 'CAVway Campus' that houses operations and maintenance in addition to manufacturing capacity. In partnership with Plenary Americas LP ("Plenary"), Parkway will build a factory that uses limited parts for product integration, without reliance on full-line automation, battery production and bottlenecks in supply and production. While the mini-factory is an exciting asset of the project plan, and supports a number of TrentonMOVES' goals regarding equity, this component does not impact the timeframe for achieving minimal operational activities. If TrentonMOVES wants to source vehicles without partnering on construction of the factory, that is entirely possible. Stakeholders will discuss and agree on the best possible pathway during the Design phase, but again, this will not impact initial operational readiness.

Q. 1.4 Describe geographically and narratively the anticipated Operation Design Domain and additional right of way impacts of your proposed potential project.

During the Design Phase the Partners plan to use to craft the most equitable and cost subsidized system will yield the final map. However, this response contains a live map that shows sample stops and routes that communicate the types of locations that can and will be included, the types of right-of-ways and virtual right-of-ways that would be incorporated into the system, the type of neighborhood connectivity planned, and the Partners commitment to the spirit of the project goals.

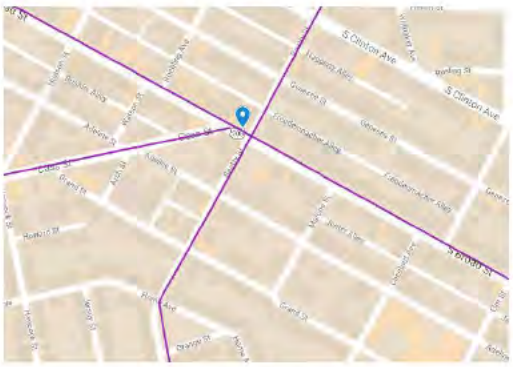
This sample maps below contains 51 stops that include Schools (Thomas Edison U., Mercer County College, Various High Schools, Middle Schools, Elementary Schools), Non-Profits and Community Centers, Transit Connections (NEC, Light Rail, Bus), Diverse Residential Complexes (Mayor Donnelly Homes, Trent Center, Circle F Lofts), Diverse Residential Neighborhoods (South Trenton, Cadwalader Heights, North Trenton, Mill Hill, Chestnut Park, Chambersburg, etc.), Commercial Districts (Franklin Park, Downtown, Capitol, etc.), Government Centers, Healthcare Complexes, Food and Supermarket Access, and Parks. These stops connect Trenton to regional travelsheds and unite Trenton's many assets. A full list of the stops is viewable in an interactive dynamic map, available here: LINK TO INTERACTIVE MAP[1].



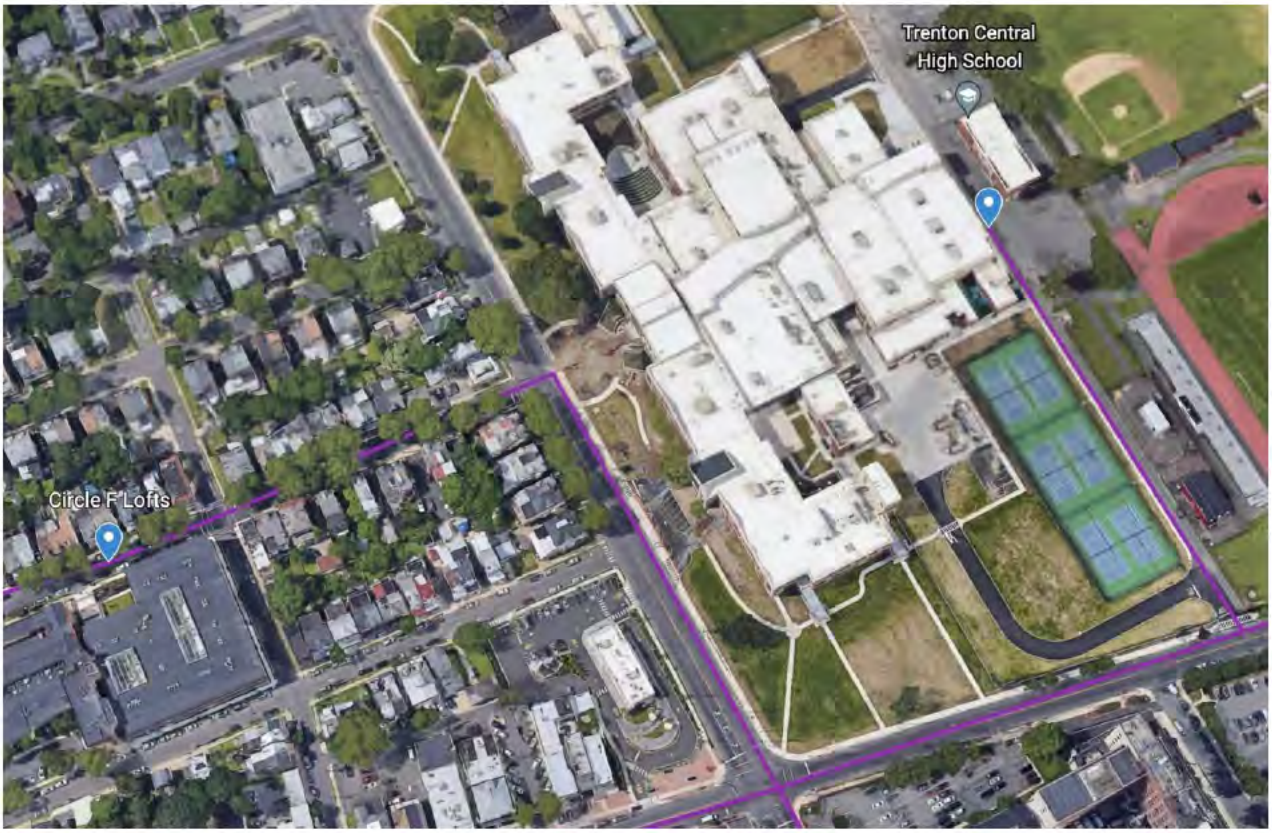


The stops and network include all of Trenton (note: Hiltonia is cut off on image above, but sits only 0.9 miles walking distance from Cadawalder Park Stop, which could be reduced to 0.4 miles walking by connecting Cadwalader Drive to Broadway via a gate).

[1] Plenary and Parkway Autonomous have hosted the map information in an easy-to-use Google Maps based experience. Interactive map viewers can zoom in, zoom out and scroll using all standard Google Maps input.



Cass Street East Stop, Linking S. Broad Street Corridor with South Trenton, Chambersburg, Franklin Park, and Chestnut Park neighborhoods and greater network.



Circle F Lofts, and Trenton Central High School Stops.

The stops are joined together by approximately 24 miles of CAVway™ route. The route makes use of protected lanes on existing roadways created by converting some lanes that currently support private vehicles, which can be converted back to open-road as regulation evolves and sensors are installed. It also makes use of abandoned right-of-ways (Reading Railroad's Trenton Line), space available within existing right-of-ways (eg. Parallel to NJ Transit NEC track a safe distance from track, but within ROW). Finally, the routes use sections of existing parking lots and driveways for large government complexes. Displayed routes are designed to showcase the different operational postures that accompany the diverse infrastructure partners can retrofit to achieve TrentonMOVES desired goals. Displayed routes also represent a relatively mature

TrentonMOVES system. During the design phase, stakeholders would collaborate to plan the optimal network, as well as timetables for implementation and activation of sections, lines, and branches of the overall system. A full list of the routes is viewable in an interactive dynamic map, available here: LINK TO INTERACTIVE MAP[2].

While the INTERACTIVE MAP[3] is the best way to examine the proposed sample network and stops, there are several elements worth noting in line:

SMART USE OF PARKING LOTS AND DRIVEWAYS:

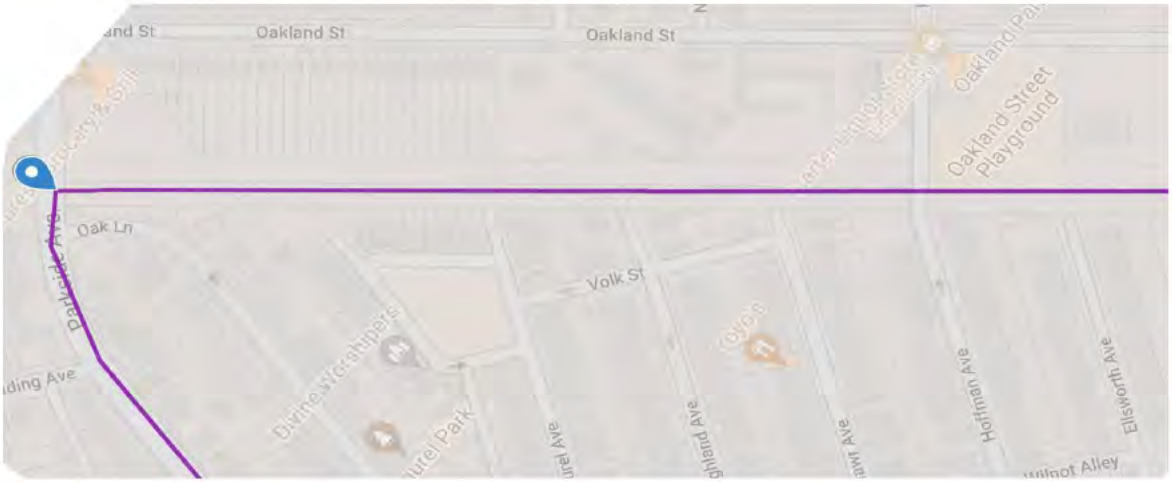
Parking lots have vast untapped potential that can let routes pass between neighborhoods that may only be connected by roadways that are circuitous. This strategy also increases the overall capacity of the Trenton Transportation System, by adding capacity for moving people in lots that currently do not move people between neighborhoods. An additional advantage, is that many lots currently have gates, fences, or other infrastructure used to restrict vehicle access, which simplifies and reduces the necessary technology to achieve operations, thus reducing cost and time to install. Finally, integrating routes into lots can help bring vehicles closer to the "front door" or interior of many "marquee institutions" in the city that control these lots. Of course, the use of these lots would require the participation of relevant stakeholders. Part of the Design phase of this project would involve separating lots into stakeholder categories and performing the outreach and coordination necessary to incorporate them into operations.

INCORPORATION OF BOTH PARKING LOTS, DRIVEWAYS, ALLEYS, AND ROADS:

Using the Parking Lot Method, and incorporating streets, alleys, creates linkage between The Statehouse, Wilkinon Park, Warren Street Plaza in an area that is sometimes difficult to get around during peak times, and bypasses key traffic chokepoints.

[2, 3] Plenary and Parkway Autonomous have hosted the map information in an easy-to-use Google Maps based experience. Interactive map viewers can zoom in, zoom out and scroll using all standard Google Maps input.

ABANDONED RIGHT-OF-WAY – READING RAILROAD:



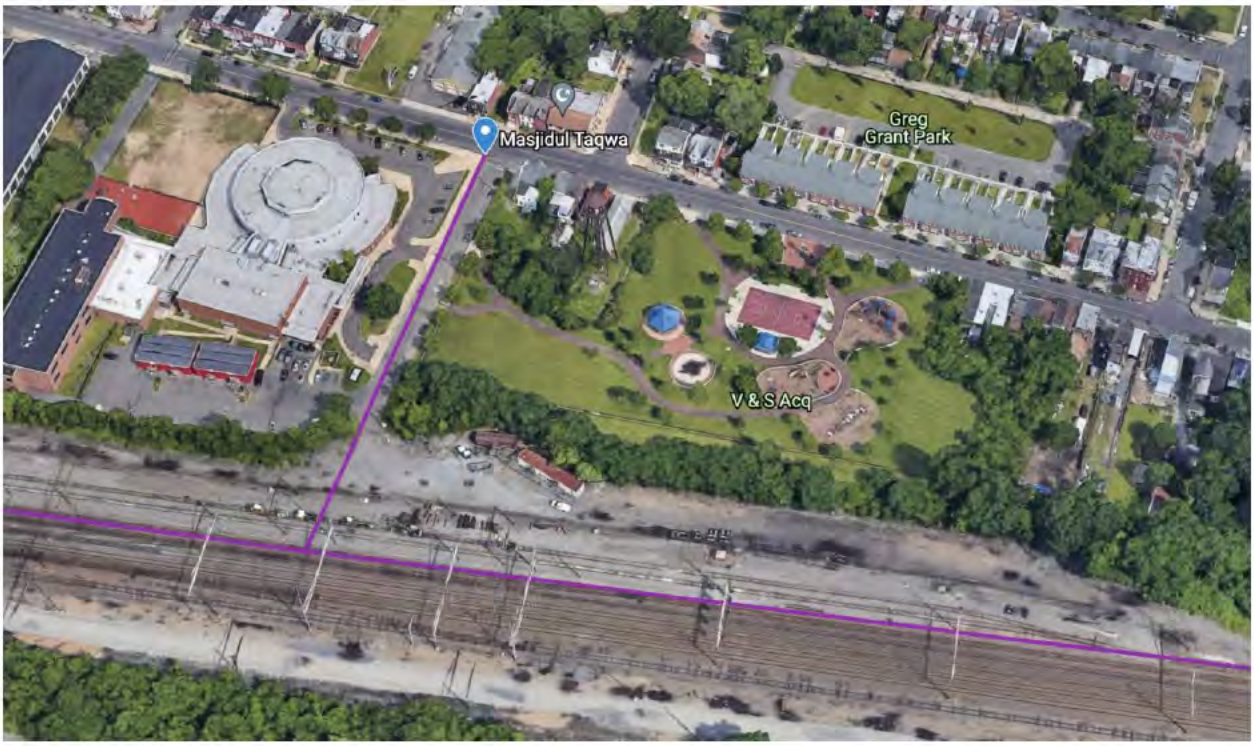
The abandoned right-of-way for the Trenton Branch (Above: Abandoned Section) of the Reading Railroad provides readymade infrastructure that a CAVway™ can use. Some of the ROW requires a gate as it intersects existing roadways (Below Left: Hoffman Ave), and some has existing bridge (Below Right: Parkside Ave), though structural integrity verification would be required. This ROW also extends to the Hamilton Station and its freight and passenger traffic, as well as the Ewing Town Center under construction, and terminates 1 mile from the Trenton-Mercer Airport.


Hoffman Ave.


Parkside Ave.

EXISTING RIGHT-OF-WAY – NJ TRANSIT:

The Northeast Corridor (NEC) ROW provides a backbone through the center of the city that can keep many CAVway™ routes off of roads while still delivering connectivity to the heart of the City. The CAVway™ can run alongside the rail at the edge of the ROW and enter adjacent neighborhoods to access community assets and relevant populations and reduce miles of CAVway™ routes on City streets which lowers costs.



V&S Park, PJ Hill Elementary, Masjidul Taqwa Mosque all connected to rest of network without building on East State Street, and while reducing miles of CAVway™.

Q. 1.5 Describe challenges regarding proposed *Potential Project Summary* and *Parameters*.

Automated driving on open roads, while technologically appropriate, is facing challenges in public acceptance. Establishing limited access fixed routes can limit these risks and address the charging infrastructure need for continuous operation, while also demonstrating the safety and convenience of automated vehicles to a public that needs to see and feel these vehicles put into practice. It is assumed that legislation or executive order will allow the automated vehicle deployment on public roads. All approaches will require funding for the deployment and continued operation. Our team is proposing to provide upfront financing with public backing of the continued operation.

NHTSA and FMVSS requirements for open road operations currently prevent fully driverless vehicles. States have opened up limited automated vehicle deployments either by legislation or executive order. New Jersey needs to approve this exception to the federal requirements in order to operate driverless vehicles. Initially, this will be overcome by restricting driverless operations to protected roadways, complete with safety infrastructure and V2I technology. However, as regulation evolves to account for the growing acceptance of proven driverless technology, these capabilities will be ready to deploy.

SECTION 2 PROJECT CAPABILITIES AND LIMITATIONS

Q. 2.1 Describe the testing and safety research conducted for your AV(s).

Parkway and its partner firm, Perrone Robotics Inc. ("PRI"), have partnered for this project to deliver cutting-edge autonomous vehicles. PRI., has created the TONY ("TO Navigate You") solution converting any vehicle to operate with a High Degree of Automation (L4).

The solution starts with a fully functional and approved transit vehicle which is compliant with FMVSS standards and has passed Altoona testing (if appropriate for vehicle). The TONY autonomous solution does not alter any safety features or disable the vehicle in any way from its original function. It combines a full-stack AV software engine (MAX™) with sensors and PRI-designed retrofit kit of electro-mechanical controls for steering, acceleration, brake, and transmission. PRI has tested this technology in partnership with other vehicle manufacturers to confirm the system's flexibility to work with any type of traditional vehicle.

PRI has followed a traditional testing and verification approach. Starting with component tests that demonstrate each of the composite components work as required and then progressing to system tests to verify that the system as a whole works as intended on the test bed. Following these test bed type tests, PRI tested this technology in partnership with other vehicle manufacturers to confirm the system's flexibility to work with any type of traditional vehicle. The ultimate test for the TONY stack solution is that it has been deployed in 30 different vehicle types and driven 36,000+ miles autonomously in the US and UK. Of those miles, approximately 50% of the total miles have been on public roads in various forms of traffic (auto, truck, bus, cyclists, pedestrians). The system has proven to be reliable and to perform as designed. Parkway incorporates the proven PRI technology into its CAVway™ vehicles.

PRI prioritizes safety at every stage of the process from system design to deployment. PRI's TONY solution has numerous built-in safety features, which enable the CAV to safely maneuver around obstacles and amongst pedestrians, cyclists, and other motorists. The TONY solution includes sensors, cameras, and braking systems, which work together to detect obstacles in the vehicle path and prevent collisions. The series of tests described above included a determination that obstacles were reliably detected, and the appropriate actions taken as a result.

We are working with PRI to add the connected vehicle technology with Ultrawideband micro positioning to be able to augment the safety of the system with closed loop control. This will make the system work better in all weather and road conditions that challenge sensors alone.

PRI conducts extensive testing at the proposed service route before launching operations. The testing approach builds layers of functionality with testing at each stage to ensure each new layer of complexity is built on a solid foundation while maintaining safety through an attendant during testing.

PRI's experience in making over 30 different vehicle types autonomous for widely varied ODDs gives them expertise on each stage of the process.

Q. 2.2 Describe your safety technology, such as but not limited to, system technology, sensor technology, navigation, obstacle detection, and traffic signal interface, etc.

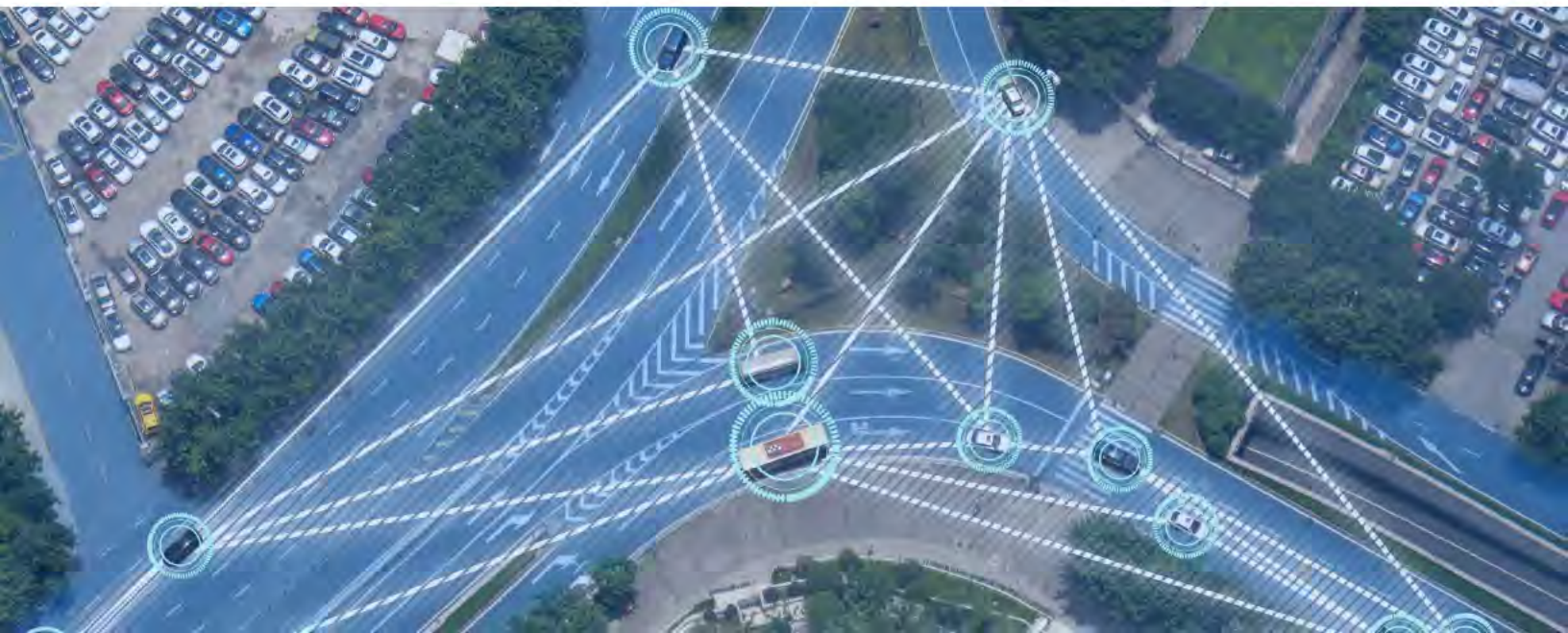
The CAVway™ system combines lateral and longitudinal vehicle control with a proprietary algorithm that optimizes the spacing of vehicles to maintain maximum safety. The system uses UWB/5G cellular combination to ensure constant communications and connectivity required for operating in all conditions. Each vehicle, object, and lane line exerts a detection and response field on all the

automated vehicles allowing traveling vehicles to dynamically adjust driving behavior based on their relative spacing, relative speed, relative vehicle dynamics, with every other vehicle, and every other roadway sensor. A manually driven vehicle will have higher uncertainty which causes surrounding automated vehicles to maintain a high degree of spacing between their vehicles to keep safe operations. Parkway's vehicles and their UWB / 5G fields increase resolution of machine detection of objects and increases the redundancy with each additional vehicle and smart sensor in roadway, and thus do not cause other autonomous vehicles to maintain the same large spacing that those without this technology must maintain. This ultra-redundant super low latency technology lets CAVs operate with the uncertainty associated with various stationary and moving objects such as pedestrians, bicycles, cars, and other CAVs.

Parkway's CAV's integrate various partner technologies (i.e. PRI and MobileEye) to interact with the roadway infrastructure, pedestrians, and/or other vulnerable road users safely. Our combined technologies result permitting very tight vehicle control superior to sensors alone. These integrated technologies branded as our SafeGap solution and UltraWide Band communications permit each vehicle to make real-time control decisions based upon all the information it is receiving from the sensors onboard, its communication with other vehicles and its communications with the central system. Therefore, CAV's can respond in a fraction of a second to the information it is receiving from all these sources. Subsequently, allowing the vehicles to interact with the roadway infrastructure and beyond the view of sensors alone.

The corridor's design will impact the technology and safety parameters defined for the implementation plan. An open road vs. a closed loop corridor would significantly alter the safety and operations requirements. An open road design would result in Level 4 automation. This would require an Operations Attendant on-board full-time as well as additional sensors, to detect and manage obstacles. A closed loop dedicated roadway would enable Trenton to fully capitalize on CAV technology since it would allow for Level 5 automation.

The closed loop would eliminate or limit any variability providing for greater control of the operational environment. Vehicle-to-vehicle communications provide a very tight vehicle closed loop control capability that is superior to sensors alone at controlling and coordinating vehicle activities. Vehicles can communicate their intentions as well as their current speed and position. In a dedicated guideway the vehicles are not as dependent on their onboard sensors since they usually will not have non-cooperating objects in the right-of-way. However, the sensors are useful in detecting an occasional obstacle that may not be communicating. They information sharing between vehicles related to the current and intended path minimizes any risks and increases transportation safety Parkway solves the problem of infrastructure reliance and introduces a path to deployment by introducing CAVs initially on dedicated guideways, on-demand, and in-route to improve performance, save money, improve service, and bring the latest technology to the public.



Q. 2.3 Does your AV(s) use Vehicle-to-Infrastructure (V2I). If yes, please describe its impact on safety and the extent to which V2I systems are required.

Yes. The below image represents the various pieces of technology present in the V2V and V2I systems that integrate in the redundant operational posture of the Partners' proposed TrentonMOVES System.

Parkway's UWB allows for V2V and V2I communication, allowing vehicles to "talk" with one another in near-real-time, but also with sensors installed in streets and traffic lights, sharing information on roadways and weather conditions, and alerting drivers on the same stretch of highway to potential hazards. The safety warning system is crucial since the warnings and notifications decrease the number of incidents among vehicle operators with in-vehicle CV technology installed.

In circumstances where TrentonMOVES vehicles are being piloted by an onboard or control center-based operator, the below listed USDOT Vehicle-to-Infrastructure (V2I) safety enhancements are available. This scenario is only likely to occur during the opening phases of operation while human operators are still present, and will be phased out progressively as System maturity increases:

1. Red Light Violation Warning (RLVW) - An application that broadcasts SPaT and other data to the in-vehicle device, allowing warnings for impending red-light violations.
2. Curve Speed Warning (CSW) - An application where alerts are provided to the driver who is approaching a curve at a speed that may be too high for safe travel through that curve.
3. Stop Sign Gap Assist (SSGA) - An application that utilizes traffic information broadcasting from RSE to warn drivers of potential collisions at stop sign intersections.
4. Spot Weather Impact Warning (SWIW) - An application that warns drivers of local hazardous weather conditions by relaying management center and other weather data to RSE, which then re-broadcasts to nearby vehicles.
5. Reduced Speed/Work Zone Warning (RSWZ) - An application that utilizes RSE to broadcast alerts to drivers warning them to reduce speed, change lanes, or come to a stop within work zones.
6. Pedestrian in Signalized Crosswalk Warning (PCWALK) - An application that warns transit bus operators when pedestrians, within the crosswalk of a signalized intersection, are in the intended path of the bus.

Q. 2.4 Describe any physical infrastructural requirements for the successful operations of your service.

Parkway limits the reliance on physical infrastructure requirements by deploying the CAVs initially on dedicated guideways for on-demand corridors. The dedicated corridors improve performance, save money, and provide service. A closed loop approach permits the use of Level 5 automation; thereby minimizing variability and increasing operational control. In addition, it maximizes Parkway's technology, creating a vehicle designed for 24/7 operations.

Parkway's key differentiator is the CAVway vehicle and their energy storage system. The design uses lithium-ion batteries for long range operation and energy storage systems for fast charging and greater power torque. Energy storage systems extend battery life from 1500 charge cycles to 1.5 million charge cycles. This extends battery life so that, in most cases, they outlive the vehicles. Energy storage systems will be retrofitted on existing EV mass transit mid-sized, large buses and trucks. Once installed, we can convert existing vehicles to extend utilization, creating significant savings by leveraging investment in current vehicle fleets. The only infrastructure needed to support this unique energy storage system is the installation of ultra-capacitors throughout the network.

The charging system, located near the bus plaza and kiosks, is a modular design, consisting of 4 charging pads connected in parallel to the vehicle, with each charging pad capable of delivering 350kW of power to the energy storage systems. These energy storage systems will charge in under a minute, allowing them to then feed longer-term charge to the lithium-ion batteries. Energy storage systems provide very rapid charging and can take millions of cycles as compared to lithium-ion batteries that charge slowly and have reduced performance after only a few thousand charges.

The electronic control system will optimize the battery life by taking advantage of an optimal charging strategy between the energy storage systems and the lithium-ion battery. This includes observing operational charging principles including:

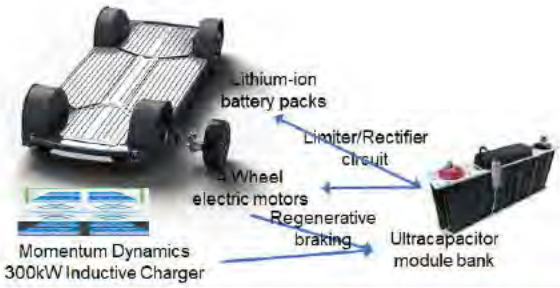


Fig. 1 Ultra capacitors achieve rapid charging at stops, and during braking. After vehicle departs, the capacitors slowly distribute their charge to the batteries, preserving the life of the independent Li-Ion batteries that power each wheel by enabling them to charge slowly while driving, rather than rapidly which would shorten the life of the batteries.

Fig. 2 Image of exact precision alignment between ultra-capacitor and induction charge (350 kw), using UWB micro positioning accurate within 5 millimeters. Image also shows inductive charging interface with capacitor and further interface with main Li-Ion battery.

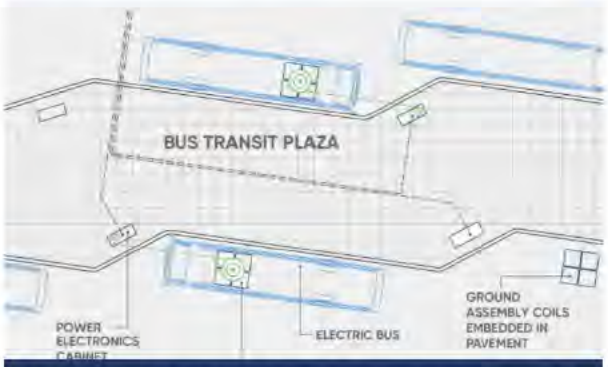


Fig. 3 Image of vehicles stopping at passenger pick up and drop off zone, achieving charging through momentary interaction with UWB micro positioned inductive chargers.

Minimize time spent at 100 percent state of charge – The paired battery and inductive capacitor system keeps the Lithium-Ion battery operating below 70% which is far better for the battery than always using the top 30 percent.

Minimize time spent at 0 percent state of charge - Battery management systems typically shut an EV off well before reaching 0 percent. The bigger danger is leaving a vehicle unplugged for so long that it self-discharges to zero and stays there for a prolonged period. The same inductive charger battery system pairing that keeps the charge below 70% also keeps it above 30% and ensures that it never reaches close to 0%.

Avoid using fast charging - Automakers know that one of the keys to mass EV adoption is the ability to charge as quickly as filling a gas tank, so they're timid about warning against high-voltage DC charging. And indeed, it's fine for recharging during infrequent long trips—or for when a surprise appointment depletes your strategic 70-percent overnight charge. The inductive capacitors slowly distribute charge to the battery, keeping charging rates smooth and efficient.

The full infrastructure requirements are minimal for a Parkway design. These include:

- WiFi Communications antennas
- High-power wireless charging systems offer reduced cost and increased efficiency charging CAVway's AV / EV vehicles.
- Charging Systems – power stations located near the bus plaza and kiosks
- Bollards or other Physical Barriers – establish limited capacity lanes along existing roadways
- Kiosks and supporting utilities
- Plaza area for level boarding
- Parking area for out of service vehicles
- Utilities for charging stations

Q. 2.5 Describe the process by which improvements to the vehicle / sensors / automated driver would be made.

Initially, Parkway would rely on the existing R&D and product improvement roadmaps it has from its technology partners like Intel, Dell, NTT, Perrone, and Applied Autonomy. As those companies continue to improve their components and the software that operates them, Parkway's integrated vehicle platform will be enhanced alongside them. Additionally, as Operational Design and Domain needs change or increase with project maturity, Parkway will be able to deploy additional vehicle types and models that will be improvements on the old ODD.

Beyond immediate improvements, Parkway has close ties with Rutgers and Princeton Universities, and has been working with both University's transportation experts in their research efforts related to the industry's emerging technology. Parkway expects to continue this collaboration focusing on vehicle and technology design as well as building a pipeline for vehicle upgrades. Our relationships with these Universities are an important component to our on-going R&D innovation and subsequently, improvements to the vehicles/sensors/automated driver.

As Parkway supports research with our academic partners, Parkway's broad spectrum of enterprise scale vehicle technology partners mean that our collaboration with New Jersey's academic and innovation communities can move promising technologies from the lab towards the products and be integrated into partner vehicle platforms, not just for TrentonMOVES, but for global customers.

Q. 2.6 Describe how your solution achieves the following potential project goals:

2.6.1 *Safety*

Current autonomous vehicles rely solely on sensors to detect their surroundings and do not behave well with poorly maintained roadways, on special work zones, and in adverse weather conditions. The current market solutions do not meet the needs for the future of public transportation. Parkway has designed one of the first vehicles built from the ground up to deliver the future of transportation for public-transit agencies.
Parkway's vehicles allow for connected close loop control by cooperatively interacting with the roadway infrastructure and vulnerable road users beyond the view of sensors alone. Our SafeGap™ solution allows manual and automated vehicle interaction by optimizing vehicle spacing based on uncertainties to the surrounding

objects. Our vehicles use UWB/5G connected communication and micro positioning for superior closed-loop control architecture. The technology allows digital precision lane keeping without requiring well-maintained physical infrastructure like magnetic nails and painted lane lines. UWB provides an all-weather way to get the accuracies needed for automation with poor visibility. UWB provides the seamless high accuracy that will be needed for connected automated vehicles. Parkway's patented technology in rapid electric-vehicle charging, UWB micro positioning, and connected automated vehicle control and architecture, can navigate fully automated and bidirectionally at high speeds, transporting passengers efficiently and safely to all destinations.

2.6.2 *Equity*

The proposed solution presents a holistic, multi-faceted approach that appreciates how deeply transportation decisions impact social and economic equity, the legacy of past policy mistakes made at a national level, and how the landscape today affects populations. The CAVway™ System incorporates equity into the center of the plan in key ways:

HISTORICALLY MARGINALIZED POPULATIONS AND UNTAKEN TRIPS:

As described in Section 1.1, our design process not only accounts for existing transit demand, it uses demographic data arrayed against trip demand modeling to calculate underserved trip types, areas, and impacted populations. It is not an accident that this is the very first step in the proposed scope. It is simply not possible to make a commitment to Equity without having this modeling as the first step in the planning process.

ECONOMIC DEVELOPMENT FOR TRENTON:

The TrentonMOVES System proposed does not source vehicles from far off factories, taking scarce dollars from Trenton (or State agencies willing to subsidize the project initiation) and sending them somewhere else. Instead, the project recommends the development of a micro-factory in Trenton that provides local jobs to produce the vehicles and demonstrates their viability to the world by deploying them in Trenton. The slogan from Trenton's famous sign "Trenton Makes, The World Takes", would be made real by exporting these locally manufactured CAVs to Princeton, the Jersey Shore, New Brunswick, and beyond. Plenary and Parkway Autonomous are currently in conversation with other transit systems throughout America to support their operations with CAVway™ solutions. As these systems are implemented, there will be a greater demand for Trenton Made CAVs. When Trenton buys or leases Transit vehicles, they will be investing in Trenton's manufacturing base creating jobs and tax revenues with the micro-factory directing its first output to Trenton itself. Then as other CAVway™ systems are deployed the manufacturing capacity will be used to bring dollars from around New Jersey and the United States directly to Trenton and its residents.

INTEGRATION OF COMMUNITY ASSETS:

Prior to the deep research necessary to design a truly equitable system described in Section 1.1, the project Partners have sketched a map (Section 1.4) that demonstrates the Team's understanding of the Trenton region, the large, medium, and small-scale community assets that impact outcomes in ecological, economic, employment, housing, health, educational, safety, recreation, artistic, faith, and government domains. The sample stops include schools, dense residential neighborhoods, centers of employment, trusted Trenton non-profits, entertainment venues, county and state resources, parks, and connections to existing transit modes. While subject to change from research during the Design phase, a focus on locations that center on partners that are already serving Trenton's diverse communities, matched with corresponding residential areas, delivers on a vision for truly connected and integrated social ecosystem.

INCLUSION OF TRADITIONALLY SEPARATED ECONOMIC GROUPS:

Partners' specific and articulated plans to build a CAVway™ System serving the Princeton community, and to integrate this System with the TrentonMOVES project delivers on a dream long held but not yet realized of Inclusion between Princeton and Trenton. These two communities, that are respectively among the most elite and most marginalized in the United States are separated by less than 10 miles from their edges and 12 miles from their centers have very little organic exchange aside from commuting. By explicitly putting inclusion of these two populations in each other's contexts as a core goal, a longstanding separation of neighbors can be overcome. Additionally, the integration of various communities **within** Trenton itself also speak to the team's commitment to bringing together neighbors that have remained separate until now.

ACCESSIBILITY:

The unique wheel-well housing of independent drivetrain, power, and control functions for each wheel provide accessibility options for travelers with mobility challenges. Parkway Autonomous' vehicles provide the lowest ground clearance of all CAVs on the market, making ADA ramps shorter. Other ADA features, such as wheelchair tiedowns, are also included. The independent wheel operation provides sufficient maneuverability to allow TrentonMOVES vehicles to move perpendicularly towards waiting passengers to prepare for boarding, virtually eliminating gaps between many platforms, sidewalks, or transit shelters and the waiting vehicle.

In short, the plan has been developed to meet historic needs and changing demand in the transportation sector. The program provides reliable mobility and expanded accessibility options for all end-users. The goal is to provide underserved communities with on-demand options within reach.

2.6.3 *Affordability*

Parkway can save transportation agencies millions of dollars for each project with lightweight modular infrastructure not possible with rail deployments. Cost savings will be achieved through the following:

BATTERY LIFE:

The CAVway™ System batteries, rapid inductive charging, and power sharing between wheels dramatically reduce cost because the rapid charge energy storage systems "sip" power during passenger drop-off and boarding and then feeds longer-term charge to the lithium-ion batteries during driving. This preserves vehicle batteries, letting them last literally thousands of times as long as traditional EV batteries, dramatically reducing cost.

SELF-SUBSIDY:

- Enabling other traffic on the System such as freight and drayage provides income that can be used to subsidize passenger trip cost.
- Building the micro-factory can provide similar economic support for transportation operations. Providing rapid charging services for private electric vehicles for a fee yields additional income and represents a transfer from private drivers to the public system.
- Integrating solar panels on the factory, operations center, and as a canopy above some stops saves annual electricity costs, the exact scope of which will be precisely calculated during the design process.

GUIDEWAYS:

Parkway's design uses existing infrastructure to create dedicated guideways. Parkway solves the problem of infrastructure reliance and introduces a path to deployment by introducing CAVs initially on dedicated guideways, on-demand, and in-route to reduce complexity, and percentage of the route shared with traditional traffic, reducing risk and insurance premiums and claims as a result of superior safety.

Modularity: Being able to provide different levels of infrastructure investment for different rights-of-way and operating pressures, as well as being able to easily expand the System as needed, means that the System will not have to "overbuild" capacity, coverage, technology, or other traditional cost drivers of public transportation while the operators wait for usage to "catch-up". Instead, right sized networks, density, and investments can be made.

Autonomy: The largest cost for public transportation operations is personnel. CAVs operate independently of direct human control most of the time, and the cost savings can be passed on to the customers.

2.6.4 *Sustainability*

Electric vehicles have lower Greenhouse Gas (GhG) emissions than traditional combustion locomotion. New Jersey already generates over 30% of its electricity from renewable sources, and NJBPU's recent announcements of massive offshore wind installations means this number will continue to climb. New Jersey also has the sixth highest installed solar capacity of any state in America, despite being the fifth smallest state. All these factors mean the electricity used for the TrentonMOVES System will be cleaner than the traditional transit and private vehicle energy mix profiles. Each trip taken on the TrentonMOVES System that eliminates a car trip reduces GhG emissions, not only for that car, but also for others still on the road by reducing idling associated with congestion.

The design phase of the implementation, complete with its community research will be able to provide exact numbers on the systems:

- Reduced GhG Emissions
- Reduced Carbon Monoxide, Benzene, and Sulphur Dioxide Emissions
- Eliminated Car Trips
- Eliminated Congestion (Idle Vehicle Hours)
- Eliminated Oil leakage onto pavement and associated runoff
- Reduced microplastic introduction to environment from wheel degradation
- Increased average vehicle occupancy on Trenton roadways

2.6.5 *Efficiency*

Efficiency is central to the competitiveness of the CAVway™ platform and proposed TrentonMOVES system. Unique approaches in the vehicle technology, right-of-way infrastructure design, power use optimization, and maintenance schedule deliver net efficiencies in safety, financial cost, and time use for measurable transportation outcomes.

These innovations have been discussed throughout the response, but a few are worth noting again:

- Independent Wheel Design reduces maintenance occurrence and scope because damage to an individual wheel component, be it power storage, charging capacitor, drive control, or mechanical elements do not require work to be done on the entire system in question, but rather to that part only.

- Ultra Capacitor – Central Battery Integration: The worst thing a fleet manager can do for general battery life of an electric fleet is charge them quickly, charge them above 80%, discharge them quickly, or let them drop below 20%. Each wheel has four ultra capacitors linked to a central battery. When the capacitors rest over inductive chargers for the minutes taken at any stop, they "sip" a high intensity bit of power. After the vehicle has departed the stop while it is driving, the capacitors slowly send energy to the battery. The result is a battery that wears down 100,000% slower. Traditional power management method results in a battery with 1,500 charge cycles, whereas Parkway Autonomous' has 1,500,000 cycles.

- Point-to-Point Rides: CAVs are relatively narrow, which lets them maneuver past other CAVs at a stop without building two rows of track, line, or infrastructure. This is in contrast to trains, subways, and busses. The result is a single stop ride between any of the boarding and drop-off locations, without stopping at other intermediate locations for passengers to embark and disembark. This effect is very powerful, with a recent industry example of the NY MTA increasing on-time performance from a low in 2017 of 58% to 80%+ by reducing dwell times at stops[1]. Eliminating stops entirely delivers massive trip time efficiency.

2.6.6 *Desired Features*

Parkway brings together cutting-edge patented technologies to create a vehicle system that revolutionizes public transportation. The end-to-end System delivers the future of transportation for public-transit agencies. It addresses safety, sustainability, efficiency requirements in an affordable suite of products and services

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[1]Liebson, R. (2020, January 24). *Why Andy Byford, N.Y.C. Subway Leader Left.* The New York Times. https://www.nytimes.com/2020/01/24/nyregion/andy-byford-mta.html.
MTA. (n.d.) Subway Performance Dashboard. MTA. http://dashboard.mta.info/.

Parkway is the only automated vehicle company that can truly meet the operational needs of the public-transportation market with the CAVway™ family of high-speed, right-sized, 24/7 operational transit vehicles.

The CAVway™ vehicle and infrastructure platform delivers project goals as written by NJDOT and responded to directly:

AUTONOMY

SAE J3016 Level 4 (Driverless) Capability

✓ Platform achieves SAE J3016 Level 5 Capability

All weather capable, except for conditions when driving is deemed unsafe

✓ As safe as regular vehicle, but the closed-loop design combined with large sections of protected lane designated during design phase means vehicles will not be at risk for crashes with other traffic due to their sequestered operational posture.

SAFETY AND COMMUNICATION

Emergency Stop Button

✓ Present, can be custom placed on various vehicle types

Emergency Evacuation Capability

✓ Wheel design creates low height from ground platform (170 mm), making evacuation as simple as stepping out of vehicle. Both physical lever and software-based door open override are present. Displays and voiced instructions provide guidance to passengers to support evacuation. All emergency services providers within the operational domain will be provided training by Partners on vehicle emergency response procedures.

GPS Feed into Police and Fire Department and 911 Dispatch Center

✓Triple redundant Cellular, UWB, and Wi Fi networks give positioning to within 5 millimeters, vehicle condition data every 1/100th of a second, and high data capacity low latency two-way video and audio feed, and real time operational control.

Internal Live Camera with Recording Capability

✓ Cameras integrated with Cellular, UWB, and Wi Fi networks, which is ultimately fed to the operations center, where it is securely stored.

Camera Monitoring from a Centralized Operations Center

✓ Ops. center integrated with Cellular, UWB, Wi Fi, and fiber networks. Can override and operate vehicles directly from center if need be.

Two-Way, Low-Latency Communication with Centralized Operations Center

✓ Network technology described above.

Smoke/Fire Detectors

✓ Present, with auto-notify

Dedicated Vehicles with Child Safety Seats

✓ Design phase will determine percentage of vehicles with this capability but can provide easily.

RIDER EXPERIENCE

4-8 passenger capacity with seat belts

✓ Present. 16 and 30 person vehicles available as well to integrate between systems if Princeton, or other local CAVways™ are built, or for other desired reasons.

Heat/Air Conditioned

✓ Present

Fully Handicapped Accessible

✓ Present, additionally supported by platform height and resulting shortest ramp with lowest incline.

Wheelchair Accommodation

✓ Present, with tie-downs and other amenities. Stops will be curb height.

Audio Announcements in English and Spanish

✓ English, Spanish audio announcements. App and kiosks can be set to use other languages too, including French, Mandarin, Hindi, Arabic. If user selects that language within app/ kiosk, all announcements in vehicle can be presented natively.

External Passenger Display in English and Spanish

✓ Present

Multiple Payment Options (credit card, transit pass, ride vouchers, etc.)

✓ Present.

Smart Phone App for Ride Hailing

✓ MoovIT integration, but API lets other apps integrate too. Easy to expand to Google Maps, with huge userbase, also to expand to NJ Transit app.

Option to Schedule Rides without Smartphones

✓ Kiosk can host same apps as mobile devices. Specific Kiosks can host custom software if housed inside partner locations that are offering special or subsidized trips (hospitals, courts, schools, TASK, etc.) to deliver a custom user experience.

SECTION 3 DRIVERLESS OPERATIONS

Q. 3.1 Can your AV drive fully autonomously without any human input or on-board customer hosts? Please describe the extent of autonomy and its ODD.

Parkway has developed a dynamic driving system capable of operating absent or independent of driver input, but in some modes, also capable of receiving and responding to driver input either onboard or remote of the vehicle. The operation (ODD) is determined by the type of access roadway being used. For example, if the roadway is open road, a CSA is required whereas in arterial or limited access roads, the vehicles can operate fully automated. Irrespective of the type of road, the CAV platform provides a uniform integration of the components into a single platform required for a safe and effective transport of passengers without elevated risk.

Q. 3.2 If driverless operation has been achieved, describe its extent and limitations.

Parkway works with several partners that can achieve various levels of automation and has demonstrated fully automated operations. As we have said before, driverless operations on public roads have been demonstrated by our partners in many major cities around the world. All of them anticipate several years of driver involvement before vehicles can operate with the person onboard on public roads. However, limited access roadways or dedicated roadways is more conducive to driverless operations today.

Q. 3.3 Describe the process by which decision to remove the on-board customer host would be made.

Parkway Autonomous' driving system can operate absent or independent of driver input and is also capable of receiving and responding to driver input either onboard or remote of the vehicle. Parkway Autonomous is set up to operate in all modes. The company has established a framework for its Customer Service Attendants (CSAs) to ensure they have the capabilities to address and work under all modules. In other words, the technology is strong enough to operate autonomously currently. Thus, the only thing necessary to remove the CSAs is change in legislation on state and federal levels. This project can be a showcase on pushing that change forward but will operate with CSAs if vehicle routes coincide with public access roadways. For the sections of the network that are operating in protected lanes, because legislation currently allows this, the decision would rest with NJ DOT to allow full autonomous operation in this domain.

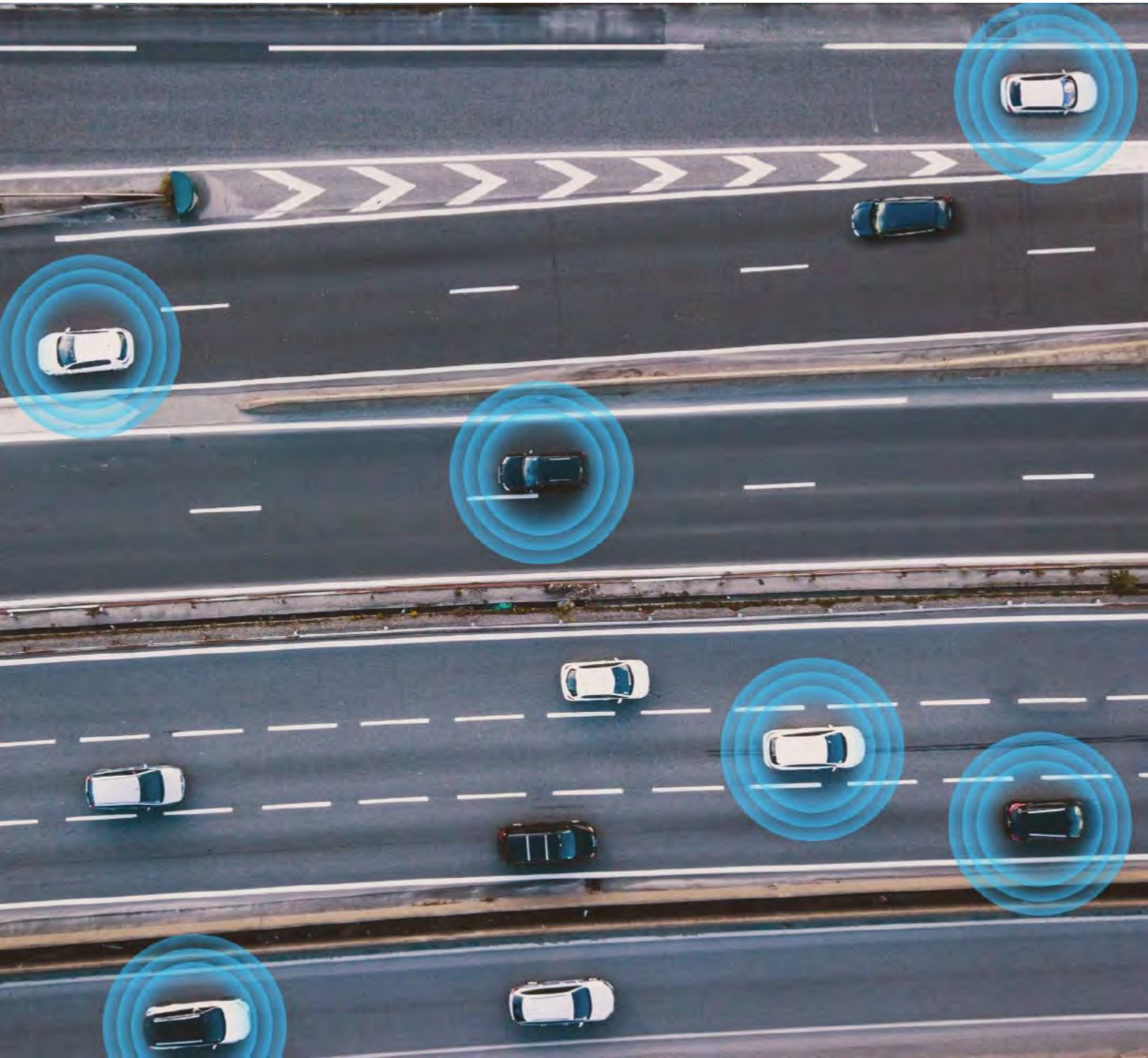
After initial launch of the Trenton MOVES program, Partners will establish Key Performance Indicators ("KPIs") associated with ridership experience. The KPIs will capture the vehicle performance, travel experience and public perception and acceptance of autonomous vehicles. The data captured will help manage the deployment as well as determine the appropriate measures required to transition to a fully automated vehicle without the CSA. Moreover, we will be incorporating these insights into our engagement plan throughout the Pilot Phase.

Our engagement plan will allow for a diverse audience to voice concerns and expectations, leverage findings and knowledge across other pilots, and more importantly, allowing the community to experience the technology. The team's goals are:

- Collaborate with all stakeholders & audiences about the technology
- Promote knowledge, awareness and understanding
- Help align the pilot program with local needs and increase local stakeholder/community confidence, trust and buy-in
- Inform potential users about how to ride/use the shuttle
- Inform potential users how to provide feedback about their experiences

Engagement will be through an attention-getting and creative design concept branding the pilot program. It will include clear and consistent messaging to inform, educate and build trust about the technology; the value and benefits of the technology; how to interact with the technology as passengers or in sharing the road with the autonomous vehicles on the pilot program; why the pilot program is taking place in the community; safety, cybersecurity, and privacy considerations; the community's involvement; and how results will be shared.

The engagement plan will help manage the concerns and facilitate a smooth transition to a fully driverless vehicle.



SECTION 4 PRIOR EXPERIENCE

Q. 4.1 Please provide no more than three (3) examples of existing customers using your proposed solution or a similar solution.

We would be pleased to share examples of existing customers upon receipt of RFQ / RFP documents and once proper confidentiality agreements are in place.

Q. 4.2 If applicable, please provide details of any other transportation agencies or governmental entities who are customers.

Plenary and Parkway have extensive experience closing, managing, and investing in infrastructure projects on behalf of transportation agencies and governmental entities across the United States and Canada. Plenary strives to establish long-term partnerships with each of its government clients to develop the highest quality solutions for public infrastructure. Our proven team-based approach to civil infrastructure development will provide NJDOT with an innovative and efficient technical solution, accompanied by a robust and competitive financing structure which maximizes value for money.

A partial list of existing or previous customers is provided below. We would be pleased to share additional examples of existing customers with further detail upon receipt of an RFQ / RFP. The following list represents the transportation agencies and governmental entities we currently work with:

- Amtrak (William H. Gray III 30th Street Station)
- Pennsylvania Department of Transportation (Pennsylvania Rapid Bridge Replacement Project)
- Louisiana Department of Transportation and Development (Belle Chasse Bridge and Tunnel Replacement Project)
- Texas Department of Transportation (SH 183 Managed Lanes)
- Colorado High Performance Transportation Enterprise (US 36 Express Lanes)
- Metrolinx (Metrolinx East Rail Maintenance Facility)
- The City of Winnipeg (Winnipeg Southwest Rapid Transitway)
- Rutgers, The State University of New Jersey Center for Advanced Infrastructure & Transportation (Simulation-based Proof-of-Concept Operational Feasibility Analysis of Using Automated Vehicle Fleet for Next Generation Transit Service)
- The North Carolina Department of Transportation (Assessment of field-deployment of automation capability by implementing an end-to-end freight automation system)
- Port Authority of New York / New Jersey (Evaluation of a Connected Automated Vehicles (CAV) Solution as an Alternative to an Automated People Mover (APM) at LaGuardia Airport)
- New Jersey Department of Transportation) Concept of Operations (ConOps) for Statewide Connectivity)

Q. 4.3 Please provide details of any previous, ongoing, or scheduled sales discussions that you are having with NJDOT (if any).

Parkway team members helped NJDOT develop their Statewide Connected Vehicle Concept of Operation and other engineering documents for connected vehicle projects.

Plenary does not have any previous, ongoing, or scheduled sales discussions with NJDOT.

Q 4.4 Please provide details of any previous, ongoing, or scheduled sales discussions that you are having with NJDOT contractors (if any).

Parkway discussed consulting arrangements with the ITS group at NJDOT.

Plenary does not have any previous, ongoing, or scheduled sales discussions with NJDOT contractors.

SECTION 5 COMPANY INFORMATION

Q. 5.1 Is your company Disadvantaged Business Enterprise (DBE) or Small Business Enterprise (SBE) certified?

While our firms are not DBE or SBE certified, we continually identify opportunities for qualified Disadvantaged Business Enterprises and / or Small Business Enterprises to participate in the projects we deliver.

Q. 5.2 Is your company registered to do business in the State of New Jersey?

Parkway Autonomous is a Wyoming corporation (Parkway Autonomous Inc.) and is registered to do business in the State of New Jersey.

Should the project move beyond the RFEI stage, Plenary would look to register its firm to do business in the State of New Jersey.

Q. 5.3 What is your Business Incorporation Number, Tax Identification Number or Employer Identification Number?

Plenary

Registered Name:	Plenary Americas USA Ltd.
Employer Identification Number:	[redacted]
Business Incorporation Number:	[redacted]

PARKWAY AUTONOMOUS

Registered Name:	Parkway Autonomous Inc.
Employer Identification Number:	[redacted]
Business Incorporation Number:	[redacted]

SECTION 6 PARTNERSHIP INFORMATION

Q. 6.1 Please list requirements your firm would have of State of New Jersey and City of Trenton as a partner on this potential project.

The following is a list of items that we would expect a partnership with the State of New Jersey and the City of Trenton to provide:

- The State of New Jersey to support stakeholder coordination with NJDOT, the City of Trenton, and institutions of higher education;
- A list of prior community engagements / commitments along possible service network, including efforts to explain the procurement and delivery model, in preparation for an eventual project;
- A well-defined service network, with all rights-of-way secured by the City of Trenton (if required);
- A fully committed funding plan identified for the project;
- Environmental documentation completed and other permit approvals in progress;
- A strong preference communicated to the bidding teams as to what technology is expected;
- Clear political support and a champion driving this project beyond the current election cycle;
- Strong advisory team, including consultants for each of the three major elements of the project: technical, legal, and financial;
- An understandable, transparent, and fair procurement process, including the utilization of industry best practices, bid documents with a focus on outcomes rather than prescriptive requirements, and a clear delineation of risk elements and how risk sharing/transfer is anticipated on the project;
- Identified and achievable path to final approval of the contract and financial close at the end of the procurement;
- Opportunity for confidential Alternative Technical Concepts to be accepted during the procurement process; and,
- Stipend offered at the RFP stage to compensate for any work product and to ensure the State of New Jersey and City of Trenton's commitment to the process.

Q. 6.2 What is your proposed commercial model and / or proposed approach to financing?

Plenary Americas LP ("Plenary"), North America's leading specialized developer and investor in public infrastructure assets, has teamed with Parkway Autonomous on this project. This partnership is caveated on the specific project requirements if the project moves forward.

Plenary expects that financing for the investment in the Trenton MOVES project will come from three primary sources: 1) its own equity, 2) long-term debt raised via taxable private placement(s), and 3) potential mezzanine or holding company debt. Should the team become a qualified respondent, its Trenton MOVES bid will be fully committed and unconditional at the time the ultimate proposals would be delivered to the New Jersey Department of Transportation. The equity portion would be 100% subscribed by Plenary Americas LP or an affiliate. Plenary has successfully delivered its equity commitments on P3 transactions in the United States and Canadian markets. Between 2005 and 2021, Plenary has delivered financing solutions for 55 North American P3 projects requiring over $9.5 billion of funding, with nearly $850 million of equity provided.

Plenary benefits from the financial backing, following the 2020 acquisition of the business of Plenary Group (Canada) Ltd. and its subsidiaries (Plenary Canada), by CDPQ, an AAA-rated institutional investor that manages funds for 41 Québec-based public and parapublic organizations, mainly pension and insurance plans. CDPQ is within the 15 largest pension fund managers in the world, with assets under management of $389.7 billion (CAD) as of June 30th, 2021. All the former management and employees of Plenary Canada and its U.S. subsidiaries became employees of Plenary Americas LP and its affiliates.

Plenary has established itself as the market leader in financing and investing in the delivery of major projects on behalf of governments in Canada and across North America, developing a stable of relationships in the P3 finance community along the way. Plenary has

demonstrated these strong relationships by successfully reaching Financial Close on every project it has been awarded since inception.

Once shortlisted, Plenary creates a shortlist of preferred lenders based not only on cost but also on the lenders' experience and proven track record in the P3 market to ensure a smooth transition towards Financial Close. Plenary integrates these trusted partners into a robust and competitive financing structure that not only drives efficiency but maximizes certainty of execution.

US 36 (Colorado)

Q. 6.3 Please list your proposed core team members and their roles, as well as any sub-contractors.

Plenary

Plenary Americas LP

It is anticipated that Brian Middleton will act as the Plenary team lead for this project. Brian has significant transit development experience in the United States and has been involved in all phases of such projects (procurement, design / construction, and operations).

As the project is developed, Plenary will look to add Project Structuring and Investments resources in the form of Project Executives, responsible for the development, financial structuring, and commercial aspects of the entire project.

BRIAN MIDDLETON | SENIOR VICE PRESIDENT

Brian has over 40 years of experience in all forms of transit and has served in leadership roles for both private contractors and public agencies. Brian has worked in all phases of project development, from early planning and conceptual design, through procurement of contractors on behalf of public agencies and subcontractors as the developer. Brian has completed and overseen final design and construction, as well as actual operations and maintenance in both private and public capacities. Brian served 7 years as a project manager on the RiverLine project, acting as a consultant to NJ Transit and assisted with a study considering PRT in the City in 2007. Both of these opportunities have provided Brian with a good understanding of the Trenton area.

PARKWAY AUTONOMOUS

Parkway Autonomous

Parkway's team is led by Alexander Stefman, President, and Robert James, CTO.

ALEXANDER STEFMAN | PRESIDENT

Alexander is a seasoned entrepreneur, excited by innovation in technologies and with a knack for building long-term relationships with corporations and government entities, who has more than 25 years of experience in transportation services including transportation management, connected automated vehicles, shared mobility, electric vehicles, and smart cities.

ROBERT JAMES | CTO

Robert, an innovation leader, is a visionary, results-oriented senior executive both in government and in the private sector; patent holder in connected automated vehicles and was awarded an MTA Genius Grant for innovations in implementing ultra-wideband technology to the New York City subway system.

Additional Team Members

Should the project proceed beyond the RFEI stage, the following team members have been identified and will be assembled upon receipt of further details from NJDOT. REE (Electric Sled, 4 corners bidirectional w / steering, Modular Lithium-Ion Battery Pack, Vehicle control processor), Momentum Dynamics (Inductive Charging solutions), Centum (Custom Energy storage systems), Perrone Robotics (CAV Suite, Sensors), W8less (Micropositioning), Mobileye (an Intel Company - Autonomous Control Suite and Fleet Management platform for on-road driving of fleets of vehicles), Moovit (an Intel Company - Mobility platform and services for Transit-on-Demand), NTT / NTT Docomo (Multi Orchestrated Smart City Platform).

SECTION 7 COMPETITION INFORMATION

Q. 7.1 Please list any existing non-compete arrangements or intellectual property agreements that overlap with the potential project.

Both Plenary and Parkway acknowledge that it does not have any existing non-compete arrangements or intellectual property agreements that would overlap with the potential project.

Q. 7.2 How did you hear about the program?

We received public and media announcements surrounding the release of the RFEI.

Q. 7.3 Please share any additional links or comments related to this application.

N/A

APPENDIX A

PLENARY'S NORTH AMERICA PROJECT PORTFOLIO

Plenary's North America Project Portfolio

#	PROJECT	PROVINCE/ STATE	COUNTRY	SECTOR	PROCURER	CAPEX ($M)[1]	TOTAL EQUITY ($M)[1]	EQUITY SHARE	FINANCIAL CLOSE	STATUS
1	William H. Gray III 30th Street Station Redevelopment	Pennsylvania	USA	Transport	Amtrak	$399	$26.29	100%	31-Aug-21	Operational
2	University of Idaho Utility System	Idaho	USA	Utility	University of Idaho	$107	$12.76	50%	22-Dec-20	Operational
3	NCDOT I-95/US 70/US 74 Broadband Infrastructure Project	North Carolina	USA	Fiber Optic	North Carolina Department of Transportation	Confidential	Confidential	Confidential	Commercial Close: 14-Oct-21	Operational
4	Pennsylvania Turnpike Broadband	Pennsylvania	USA	Fiber Optic	Pennsylvania Turnpike Commission	N/A	Confidential	100%	Commercial Close: 25-Jan-2021	Under Construction
5	Okanagan Correctional Centre	British Columbia	Canada	Justice	Partnerships BC	$166	$12.02	100%	21-Mar-14	Operational
6	Thunder Bay Consolidated Courthouse	Ontario	Canada	Justice	Infrastructure Ontario	$142.04	$17.56	100%	19-Nov-10	Operational
7	Long Beach Civic Center Redevelopment	California	USA	Accommodation	City of Long Beach, Port of Long Beach	$514.91	$27.85	100%	20-Apr-16	Operational
8	Miami-Dade Courthouse	Florida	USA	Justice	Miami-Dade County	$345.93	$37.71	100%	24-Jan-20	Under Construction
9	Abbotsford Law Courts	British Columbia	Canada	Justice	Ministry of Citizens' Services	$112.62	$8.76	80%	30-May-18	Operational
10	Library and Archives Canada's New Preservation Facility	Quebec	Canada	Accommodation	Public Services and Procurement Canada	$140.89	$11.71	80%	26-Apr-19	Under Construction
11	New Adult Mental Health & Addictions Facility	Newfoundland	Canada	Health	Gov't of NFLD and Labrador, Eastern Health	$211	$9.45	100%	2-Oct-20	Under Construction
12	Belle Chasse Bridge and Tunnel Replacement Project	Louisiana	USA	Transport	Louisiana Department of Transportation and Development	$239.47	$39.08	100%	12-Dec-19	Under Construction
13	Corner Brook Acute Care Hospital	Newfoundland	Canada	Health	Gov't of NFLD and Labrador, Western Regional Health Authority	$543	$28.31	80%	09-Aug-19	Under Construction

[1] Unless specifically noted otherwise, all values included within this response are stated in Canadian Dollars. Where such stated values include amounts in U.S. dollars, these amounts have been converted to Canadian Dollars using a rate of 1.3165 as at close October 19, 2020 per Bank of Canada.

Plenary's North America Project Portfolio

#	PROJECT	PROVINCE/ STATE	COUNTRY	SECTOR	PROCURER	CAPEX ($M)[1]	TOTAL EQUITY ($M)[1]	EQUITY SHARE	FINANCIAL CLOSE	STATUS
14	Purdue University Student Housing Facilities	Indiana	USA	Education	The Trustees of Purdue University	$135.53	$7.79	100%	15-Dec-17	Operational
15	Corner Brook Long-Term Care Project	Newfoundland	Canada	Health	Gov't of NFLD and Labrador, Western Regional Health Authority	$65.5	$5.92	100%	15-Dec-17	Operational
16	Centre for Addiction and Mental Health (Phase 1C)	Ontario	Canada	Health	Infrastructure Ontario	$340.2	$17.89	100%	3-Mar-17	Operational
17	Stoney CNG Bus Storage and Transit Facility	Alberta	Canada	Transport	City of Calgary	$145.09	$8.73	80%	16-Sep-16	Operational
18	UC Merced 2020 Project	California	USA	Education	Regents of the University of California	$1,535.87	$73.76	100%	12-Aug-16	Operational
19	Cortellucci Vaughan Hospital	Ontario	Canada	Health	Infrastructure Ontario	$674.12	$32.90	100%	21-Oct-16	Operational
20	Winnipeg Southwest Rapid Transitway	Manitoba	Canada	Transport	City of Winnipeg	$280.90	$17.06	80%	24-Jun-16	Operational
21	State Street Redevelopment	Indiana	USA	Transport	City of West Lafayette and Purdue University	$63.03	$6.5	Lead	15-Mar-16	Operational
22	Metrolinx East Rail Maintenance Facility	Ontario	Canada	Transport	Infrastructure Ontario	$431.93	$23.01	80%	27-Mar-15	Operational
23	Milton District Hospital	Ontario	Canada	Health	Infrastructure Ontario	$223.79	$12.9	80%	27-Mar-15	Operational
24	Pennsylvania Rapid Bridges Replacement Project	Pennsylvania	USA	Transport	Pennsylvania Department of Transportation	$1,183.53	$77.03	80%	19-Mar-15	Operational
25	Swift Current Long Term Care Centre	Saskatchewan	Canada	Health	SaskBuilds	$81.91	$8.49	100%	10-Sep-14	Operational
26	SH 183 Managed Lanes	Texas	USA	Transport	Texas Department of Transportation	$1,053.2	0	N/A	20-Nov-14	Operational
27	Peel Memorial Centre for Integrated Health and Wellness	Ontario	Canada	Health	Infrastructure Ontario	$219.8	$12.42	100%	28-May-14	Operational

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Plenary's North America Project Portfolio

#	PROJECT	PROVINCE/ STATE	COUNTRY	SECTOR	PROCURER	CAPEX ($M)[1]	TOTAL EQUITY ($M)[1]	EQUITY SHARE	FINANCIAL CLOSE	STATUS
28	Waterloo Light Rapid Transit	Ontario	Canada	Transport	Infrastructure Ontario; Region of Waterloo	$485.15	$27.62	35%	9-May-14	Operational
29	US 36 Express Lanes	Colorado	USA	Transport	Colorado High Performance Transportation Enterprise	$159.88	$27.05	100%	28-Feb-14	Operational
30	Ontario Driver Examination Services	Ontario	Canada	Transport	Infrastructure Ontario; Ministry of Transportation Ontario	NA	$16.50	100%	28-Jun-13	Operational
31	Interior Heart and Surgical Centre	British Columbia	Canada	Health	Partnerships BC	$59.95	$7.65	100%	25-Jun-12	Operational
32	Humber River Hospital	Ontario	Canada	Health	Infrastructure Ontario	$974.78	$80.36	50%	23-Sep-11	Operational
33	Communications Security Establishment Canada	Ontario	Canada	Defense	Defense Construction Canada	Confidential	Confidential	100%	25-Jan-11	Operational
34	St. Joseph's Healthcare Hamilton	Ontario	Canada	Health	Infrastructure Ontario	$364.84	$35.58	50%	3-Dec-10	Operational
35	Disraeli Bridges	Manitoba	Canada	Transport	City of Winnipeg	$136.81	$15.75	100%	26-Mar-10	Operational
36	BC Cancer Agency Centre for the North	British Columbia	Canada	Health	Partnerships BC	$50.15	$13.61	100%	18-Jan-10	Operational
37	Bridgepoint Hospital	Ontario	Canada	Health	Infrastructure Ontario	$385.95	$33.81	25%	11-Aug-09	Operational
38	NHS Healthcare Complex and Walker Family Cancer Centre	Ontario	Canada	Health	Infrastructure Ontario	$536.69	$20	50%	27-Mar-09	Operational
39	Ministry of Government Services New Data Centre	Ontario	Canada	Accommodation	Infrastructure Ontario	$194.73	$6.91	100%	18-Apr-08	Operational
40	Archives of Ontario	Ontario	Canada	Accommodation	Infrastructure Ontario	$39.26	$3.18	100%	1-May-07	Operational
41	North Bay Regional Health Centre	Ontario	Canada	Health	Infrastructure Ontario	$343.10	$7.34	100%	19-May-09	Operational
42-55	Portfolio of 14 Healthcare (Hospital and Long-Term Care Facility) DBFM Assets	Ontario	Canada	Health	OMERS Infrastructure	$1,400	$187.3	Variable	6-April-20	Operational

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