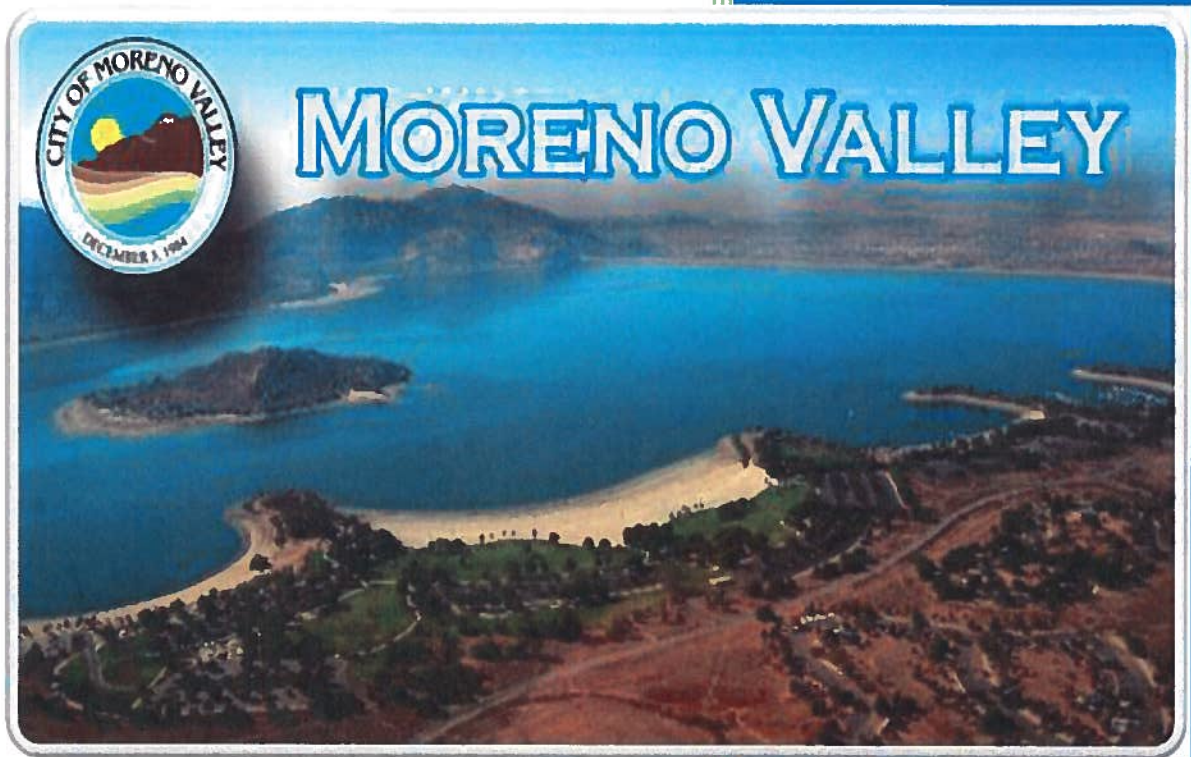


The City of Moreno Valley
VISION NARRATIVE

2016

Beyond Transportation:
The Smart City Challenge



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City of Moreno Valley

VISION NARRATIVE

For

US DOT Grant Ref #DTFH6116RA00002 Beyond Traffic: The Smart City Challenge

1. Current Challenges for The City of Moreno Valley:

Moreno Valley's vision for a Smart City was born out of the City Slogan: *"People. Pride. Progress"* and the city Tagline: *"Where Dreams Soar"*.

The city's current leadership recognized trends, changes and challenges taking place in the city as well as globally. The City of Moreno Valley leadership has realized we must be proactive in our approach to addressing this series of trends, changes and challenges as they affect the future viability and sustainability of our city. These burgeoning trends, changes and challenges include but are not limited to changes in our climate; shifts in the economy; increased traffic congestion; public information dissemination and feedback; the lateral expansiveness of the Internet resulting in a move to online/mobile retail & entertainment; ageing populations; population growth and migration; public safety; and pressures on public finances.

The City of Moreno Valley is devoted to devising an integrated and holistic strategy for transitioning to a 'smart city'. To achieve this vision, the City of Moreno valley is actively engaged in fostering relationships with innovative technology companies, academia and the private sector to generate investment in ICT services for the purpose of improving public service and quality of life for its citizens. The leadership of Moreno Valley realizes by implementing information and communication technologies (ICT) Moreno Valley will achieve more intelligent and efficient use of resources, resulting in cost and energy savings; improved service delivery & quality of life; and a reduced environmental carbon footprint. By implementing its vision for a Smart City, Moreno Valley ensures the future growth and sustainability of the city. Moreno Valley's Smart City vision will enhance quality, performance and interactivity of urban services, reduce costs and resource consumption and improve interactive contact between Moreno Valley and its residents & businesses. The Smart City vision for Moreno valley will

directly impact government services; transport & traffic management and energy; making these services interactive (two-way or bi-directional) with the goal of improving the management of urban flows and allowing for real time responses to challenges. As a smart city MorenoValley will be more prepared to respond to trends, changes and challenges versus being a city with a simple 'transactional' relationship with its citizens.

2. Moreno Valley's Vision for A Smart City:

VISION STATEMENT: Moreno Valley, the sustainable city where enterprise and social collaboration thrive to help citizens live, grow and work better through the use of innovative technology.

MISSION STATEMENT: To create a Net-Zero clean, safe, healthy and beautiful sustainable city environment that will enable citizens and businesses to thrive, grow and prosper in an open and collaborative way; by implementing enhanced interactive city governance and platforms which integrate and leverage intelligence across the city.

The City of Moreno Valley's vision for a Smart City is based on a collaborative environment that focuses on tracking, evaluating, testing and implementing emerging technologies and trends in Energy and Transport while exploring all viable means of financing such deployments. Our Smart City Vision for Moreno Valley represents the single biggest period of change in the city since we incorporated in 1984. Our Smart City vision is all about ensuring sustainable economic growth and prosperity. It presents a new frontier for innovation and enterprise where virtual and physical communities will thrive on collaboration, be supported to create and experiment; deliver new services in better, exciting and previously unimaginable new ways. Ultrafast secure digital M2M and IoT wireless connectivity will open up The City of Moreno Valley to a brave new world and transform the ways in which we do business and deliver services. Moreno Valley is already experiencing an influx of new corporate headquarters; divisional offices; regional logistics and distribution centers and our Smart City project will help to make us an even more attractive place to work and relocate. The City of Moreno Valley Smart City vision will spur new job creators and increase employment opportunities. Once completed The City of Moreno Valley's Smart City project and associated services will be recognized as a preferred and premier test bed to try new technologies and services.

The City of Moreno Valley's vision for a Smart City is about enriching the lives of its citizens. Various technologies will be seamlessly integrated into the fabric of everyday life within Moreno valley to provide better information, more choices, more convenience and less waste for our citizens, businesses, communities and public services.

The City of Moreno Valley envisions smart auto parking; smart parking garages; electrified roads with road pavement sensors; intelligent LED streetlamps, intelligent traffic lights sequencing and signage that will adjust in real-time to make the city safer; easier to traverse and connect; real time traffic alerts and pedestrian public transportation updates to plan when and how citizens travel helping to avoid delays, save money as well as reduce congestion and collisions. Our collaborative approach to increase intelligence across all sectors including but not limited to energy, transportation and waste will provide more personal services, enable more efficiencies, identify emerging problems and enable more targeted

interventions to improve lifestyle and well-being in Moreno Valley. A networked public camera, webcam and audio system to increase safety; collision and incident reporting. Smart Meters and a Smart Grid for Moreno Valley's private utility will provide lowered costs for consumers, help deliver a low carbon economy and secure our energy supplies in the future. Businesses, entrepreneurs and social enterprises will have the opportunity to capitalize on the growth of unleashed data sets producing new consumer offerings that will impact positively on people's lives.

Moreno Valley is a young city and smaller than its neighboring major metropolis' making it easier and uniquely qualified to transition to a complete Net-Zero Smart City within the timeframe and parameters outlined by the US DOT for the Smart City Challenge. Over the last 3 years many developments have taken shape to form the key foundations for Moreno Valley's Smart City vision, namely, our ability to attract large corporate businesses moving into Moreno Valley:

- http://www.moreno-valley.ca.us/community/news/news_16/012516-rusd.html
- http://www.moreno-valley.ca.us/community/news/news_15/102915aldi.html
- http://www.moreno-valley.ca.us/community/news/news_15/093015-karma.html
- http://www.moreno-valley.ca.us/community/news/news_15/092115-deckers.html
- http://www.moreno-valley.ca.us/community/news/news_15/092515-amazon.html
- http://www.moreno-valley.ca.us/community/news/news_15/050715serta.html

Building on this core economic foundation, Moreno Valley now aims to become one of the preeminent Smart Cities in the State of California; the United States and Globally. Our Smart City vision will transform Moreno Valley into an agile city, that is able to work effectively in a resource constrained world with increasing population and move towards a collaboration future with a strong economy that ensures sustainable growth, well-being and prosperity. By implementing our vision for a Smart City Moreno Valley will transition from a city that reacts and responds to trends, challenges and changes to one which uses data and predictive analytics and actionable insights to systematically be able to anticipate and tackle trends, challenges and changes in an agile, low cost and sustainable way. The leadership of the City of Moreno Valley has started this journey by providing a vision and leadership that is defining the strategic and technology roadmaps to determine how best to invest in and use digital technologies across the city's entire ecosystem in a collaborative effort with our city partners. Moreno Valley is committed to a vision for a Smart City that will continually find new ways to make the best use of our resources and data in an effort to deliver better services and a better way of life, in an open, collaborative and inclusive way.

GOALS OF THE SMART CITY PROJECT:

- Achieve a complete Net-Zero Smart City (buildings and transportation)
- Achieve Net-Zero public transportation fleet (electric bus)
- Advanced road charging infrastructure/road electrification via wireless power transfer (WPT)
- Smart parking garages with automated charging infrastructure
- On-demand zero-emission transportation system.
- Automated zero-emission enabled taxis.

- A “public” UBER model: a fleet of vehicles that satisfy on-demand transportation needs (different vehicles categories) available 24/7.
- Autonomous connected vehicle fleet traveling to three (3) predetermined destination routes from centrally located smart parking garage.
- City Public Transportation Social Network with accompanying mobile apps
- City transportation cloud and apps (supporting parking, rerouting, multi-modal)
- Open API: citizens recruit application developers to design “city transportation apps”, where citizens share in the friction and are paid from the revenue made from apps. The apps can then be shared with other cities to increase revenue to the city and the citizens.
- Citizen and users providing data feedback to improve the quality of their transportation options knowing sharing data is not a negative while safety and security are guaranteed IT operators.

THE LOOK AND FEEL OF THE VISION:

- Attract people to the most desirable place to relocate, start and grow a business (young people as well as people that want to retire, people that have families)
- People-centric focus: interesting jobs; decreased cost of living; clean, safe, healthy and beautiful environment.
- A city that offers its citizen the latest technology.
- A city that is mindful of energy, water resources as well as air quality management.
- A city that is business friendly.
- Increased coexistence of working and living.
- A public transportation system that is effortless and fun to use. Every citizen has access to city transportation app/portal.
- Centrally located and easily connected to opportunities, spaces, places and markets
- Out of the box, safety first, collaborative and experimental in our city thinking
- A friendly, entertainment rich and attractive place to come together
- A clean, safe and environmentally friendly city known for its great collaborative environment
- Better informed citizens, more choices for citizens, more convenience for citizens and less waste of resources
- A great place to grow up, live, work and retire

3. Moreno Valley’s Approach for Implementing and Operating the Demonstration Project:

The City of Moreno Valley takes a “Don’t Upset the Apple Cart” approach toward addressing the trends, changes and challenges that spawned its Smart City project. Deploying a Smart City project that is sustainable and scalable doesn’t mean we have to overhaul the entire city. Our approach to the Smart City focuses on seamless improvements to resource management by integrating connectivity and intelligence within the existing infrastructure versus a complete revamp. This seamless integration is focused around four (4) key factors:

Safety - The City of Moreno Valley has attracted the attention of the world class CypherLXS security platform which is backed by 40 patents; 400+ allowable claims and extensively vetted by 3rd parties. The CypherLXS security technology renders our Smart City project 100% completely impervious to any threats. There is no shortage of security just about anything can be encrypted and decrypted but the most important factor in digital security is Real Time Key Management which is the crux of the CypherLXS patent suite.

Interoperability – when data is allowed to flow freely across various technologies within the city; routine functionality such as lighting, transportation and infrastructure achieve true efficiency which in turn enables intelligent communication.

Endpoint Processing – The CypherLXS security system would allow the City of Moreno Valley to securely process data within its Smart City project outside of the cloud with impunity. Processing large amounts of data through the cloud is unsafe and not practical. That's why we're putting more security, processing power and intelligence where data is sent and received enabling information to be more fluid and intuitive.

Ability to Scale - The solutions employed by the City of Moreno Valley are inherently designed with the ability to scale. This is very important for a city like Moreno Valley whose population is increasing rapidly based upon such an attractive business climate. Scalability ensures The City of Moreno Valley will remain seamlessly connected no matter our needs today, or in the future.

4. Program Management Approach:

The City of Moreno Valley understands the difference between “project management” and “program management”. Program management is more philosophical in nature whereas project management is more nuts and bolts. The City of Moreno Valley has a thorough holistic approach to Program Management for its Smart City project. The City of Moreno Valley has to bring an entire ecosystem together in order to truly create a smart and sustainable city. For this reason, the City of Moreno Valley takes a holistic program management approach. The City of Moreno Valley Smart City project must capture the cities entire ecosystem from inception. This allows Moreno Valley to integrate new technologies at all levels and ensures all end-users enjoy the benefits of a smart city seamlessly. This will be achieved with the city employing its fundamental Program Management philosophy:

- Governance - Defining roles and responsibilities, and providing oversight
- Management - Planning and administering both projects and the overall program
- Financial - Implementation of specific fiscal practices and controls
- Infrastructure - The program office, technology, and other factors in the work environment supporting the program effort
- Planning - Activities that take place at multiple levels, with different goals.

Moreno Valley was incorporated as a General Law City on December 3, 1984, merging the communities of Moreno, Sunnymead, and Edgemont. City jurisdiction covers approximately 51.5 square miles, located in the western portion of Riverside County, surrounded by Riverside, Perris, March Air Reserve Base, Lake Perris, and the Badlands. The city's current population is 198,129 and is projected to grow to 216,450 by 2018. Approximately 8.7% of the total population of Riverside County is within the City of Moreno Valley. The age groups 5-20, 21-34, and 35-54 years old represent the highest population share with 28%, 24%, and 26% respectively. Moreno Valley has 53,863 households, 58,040 housing units, and 3,059 existing businesses.

A five-member elected City Council governs the City. Officers are selected annually among themselves. Current Officers: Mayor Dr. Yxstian A. Gutierrez (District 4), Mayor Pro Tem Jeffrey J. Giba (District 2), Council Members: Jesse L. Molina (District 1), George E. Price (District 3), and D. LaDonna Jempson (District 5). Among California's growing cities, Moreno Valley is the second most populous in Riverside County. Growth can be attributed to a range of quality housing options including high-end executive homes, affordable single-family homes, and condominiums; a family-friendly lifestyle; good schools, impressive quality-of-life amenities and growing job centers.

Moreno Valley's amenities include: more than 38 parks and/or joint-use facilities (531 maintained acres) and 8,000 acres of open space at Lake Perris; recreational facilities, major medical, and educational facilities; quality housing at affordable prices, open spaces, abundant retail centers, industrial developments, social and cultural activities.

Moreno Valley has two public school districts: Moreno Valley Unified School District has 23 Elementary Schools, 6 Middle Schools, 4 Comprehensive High Schools, 1 Charter School, 1 Adult School, 1 Continuation School, 1 Community Day School, 1 Pre-School Head-Start and 1 Academic Center; 35,068 students enrolled. Val Verde Unified School District (includes Perris, Mead Valley and Moreno Valley) has 1 Preschool, 13 Elementary Schools, 4 Middle Schools, 3 High Schools, 1 Continuation High School, with a total of 20,500 students enrolled. Moreno Valley College has approximately 10,000 students enrolled.

6. Moreno Valley City Characteristics and Alignment with 12 Vision Elements:

The City of Moreno valley currently has the optimum scenario for public transportation enhancement and transformation. Moreno Valley has an idea to collaborate with its partner agency the Riverside Transit Agency to explore integrating electric bus systems into their fleet. The city public transportation bus system is currently provided by RTA. While Moreno Valley explores the idea of electric bus fleet with their partner RTA, they are currently working RTA to deploy Express Routes with minimal stops to speed along traffic flow and enhance ridership value.

The City of Moreno Valley has the perfect environment that is conducive to demonstrating our proposed strategies. The city has experienced a recent boom in corporate giants relocating headquarters, logistics

centers and manufacturing plants. One shining example of one such company is KARMA Automotive. The hybrid electric vehicle maker will be opening a manufacturing plant in our beautiful city. Moreno Valley will explore the possibility of KARMA playing a role in our Smart City project as a potential manufacturing and R&D partner with the city.

The leadership of The City of Moreno valley has a consistent track record of supporting and approving sustainable commercial real estate development projects that are 'green' and eco-friendly. Moreno Valley is home to the largest LEEDS certified development in the United States and the developer Highland Fairview is headquartered right here in the city as well. Highland Fairview could also potentially play a role in supporting the City of Moreno valley Smart City project by lending their commercial design and development expertise to make the Moreno Valley Smart City project second to none. The company could potentially be instrumental in the construction of Smart Parking Garages and Electrified Roadways as part of the Smart City project proposed for the City of Moreno valley. Through this partnership The City of Moreno valley has a demonstrated capacity to design, develop and manage our proposed Smart City project throughout the period of performance.

The City of Moreno valley has a strong commitment to the Sharing Economy and as a part of The City of Moreno Valley Smart City project the city will develop an API for citizens and businesses to write applications to enhance sharing data, information and opportunities for citizens of Moreno Valley. The City of Moreno Valley believes the new technologies yield positive outcomes that will empower its citizens; boost the local economy; increase efficiency and even lower the city's carbon footprint.

The City of Moreno Valley is forward looking in its development of its Smart City project. A city is only as strong as its weakest citizens and businesses. By providing smart connectivity as a foundation, the applications and use cases for the City of Moreno Valley Smart City project become limitless. A myriad of applications can be developed including but not limited to tracking, wearables, security, transportation, industrial automation, smart metering (electric, water, grid), medical & health and point of sale (POS) systems. In order to tap into its most valuable resource which is human capital the city knows it must provide access via open standards for a collaborative and accessible data network with endpoints that use open standards that make data and information easily accessible; machine-readable, discoverable and usable by the public to fuel entrepreneurship and innovation. The City of Moreno Valley calls this open and accessible data 'Actionable Insights' for the community. The citizens of Moreno Valley will foster open access to information and data empowering informed decisions; increasing safety and spurring entrepreneurship and innovation.

7. Moreno Valley Preliminary Site Maps:

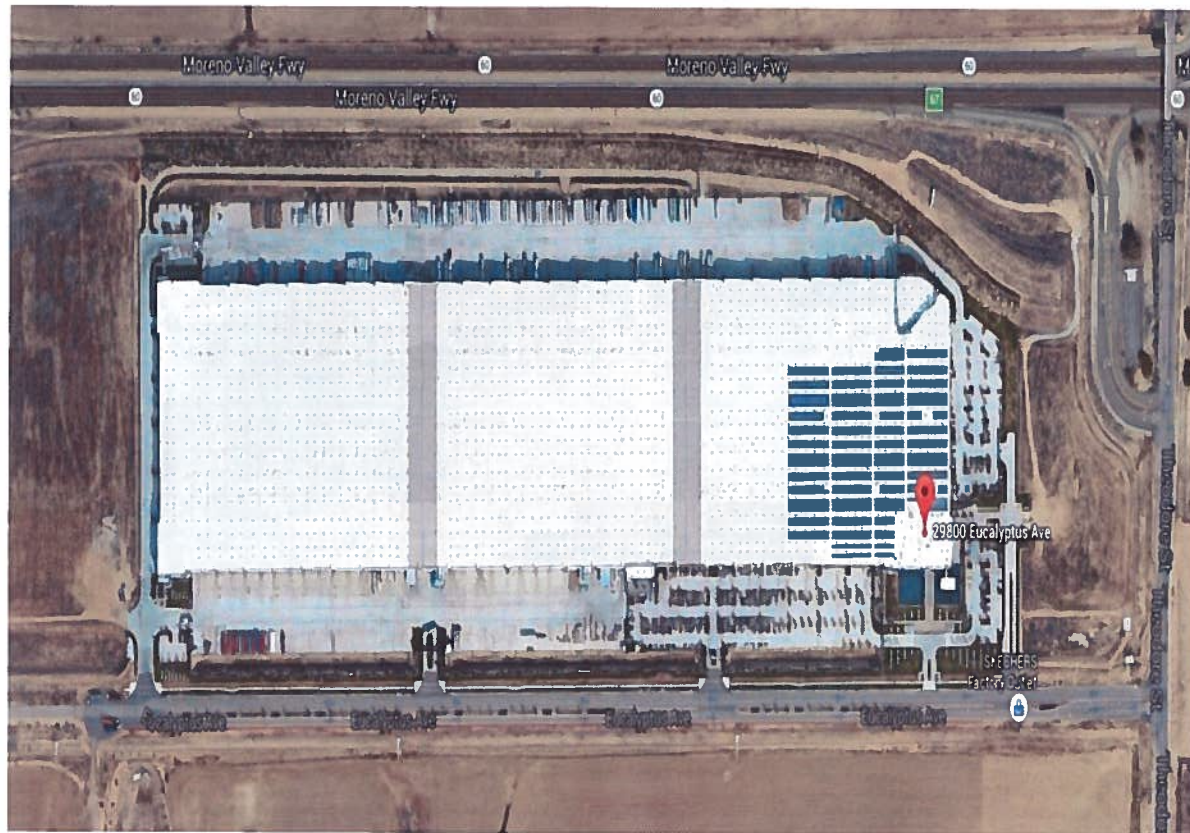
The following maps show the specific geographic locations being proposed for The City of Moreno Valley Smart City Challenge demonstration project. The maps are indicating locations related to key issues, proposed roadside technology locations, connected automated vehicle operations, and other explanatory features to support The City of Moreno Valley Smart City strategies that align with the USDOT vision elements.

Figure 1 - Intersection of US ROUTE 60 and US Interstate 215: Location 1 of 4



This is the proposed general location where a centrally located Smart Parking garage with Automated/Autonomous Connected Vehicles and Automated Charging Infrastructure EVSE (electric vehicle supply equipment) will be erected. As designated citizen participants in the project; persons employed within the project limits will utilize the City of Moreno valley Smart Transportation cloud portal and mobile apps to schedule and drive public ("Uber" model) Net-Zero emission electric vehicles from their residences to this smart parking garage and transfer to autonomous connected vehicles that will transport them along one of three predetermined routes to one of three predetermined destinations. Locations 2, 3 and 4.

Figure 2 - Eastern most end of the city Logistics Center: Location 2 of 4



This location, World Logistics Center, represents the first of three predetermined routes and destinations that designated citizen participants of the Smart City project employed within the project limits will be transported to via public ("Uber" model) Net-Zero emission electric vehicles having driven from their residences to the Location 1 smart parking garage and been transferred to autonomous connected vehicles after using the City of Moreno valley cloud portal and/or mobile apps to schedule said transportation that will transport them along one of three predetermined routes to one of three predetermined destinations. Locations 2, 3 and 4. The Net-Zero emission electric vehicles have the potential to be wirelessly charged using next generation intelligent Futurity™© EVSE 2.0 charging network provided by REACCT Corp. while patrons are at work. The cloud portal and mobile apps will allow citizens to interact with EVSE infrastructure remotely receiving alerts when vehicles are fully charged and more. Additionally, the next generation charging infrastructure uses a proprietary photovoltaic nanoparticle to generate electricity and does rely upon the city incumbent electric grid to charge vehicles. Moreover, this next generation EVSE charging infrastructure has inherent storage mechanism and has bi-directional power flow so the batteries of the city electric fleet can be used as mobile batteries to feed power back into the City of Moreno Valley electric grid during peak use hours and support on-demand generation. Finally, this EVSE infrastructure would be ultra-secure protecting patron data and city data from all forms of cyberattack.

Figure 3 - Southernmost end of city Industrial and Business Campus: Location 3 of 4



This location, Industrial and Business Campus, represents the second of three predetermined routes and destinations that designated citizen participants of the Smart City project employed within the project limits will be transported to via public ("Uber" model) Net-Zero emission electric vehicles having driven from their residences to the Location 1 smart parking garage and been transferred to autonomous connected vehicles after using the City of Moreno valley cloud portal and/or mobile apps to schedule said transportation that will transport them along one of three predetermined routes to one of three predetermined destinations. Locations 2, 3 and 4. The Net-Zero emission electric vehicles have the potential to be automatically be wirelessly charged using next generation intelligent Futurity™© EVSE 2.0 charging network provided by REACCT Corp. while patrons are at work. The cloud portal and mobile apps will allow citizens to interact with EVSE infrastructure remotely receiving alerts when vehicles are fully charged and more. Additionally, the next generation charging infrastructure uses a proprietary photovoltaic nanoparticle to generate electricity and does rely upon the city incumbent electric grid to charge vehicles. Moreover, this next generation EVSE charging infrastructure has inherent storage mechanism and has bi-directional power flow so the batteries of the city electric fleet can be used as mobile batteries to feed power back into The City of Moreno Valley electric grid during peak use hours and super on-demand generation. Finally, this EVSE infrastructure would be ultra-secure protecting patron data and city data from all forms of cyberattack.

Figure 4 - March Airforce base: Location 4 of 4



This location March Air Reserve Base represents the third of three predetermined routes and destinations that designated citizen participants of the Smart City project employed within the project limits will be transported to via public ("Uber' model) Net-Zero emission electric vehicles having driven from their residences to the Location 1 smart parking garage and been transferred to autonomous connected vehicles after using the City of Moreno valley cloud portal and/or mobile apps to schedule said transportation that will transport them along one of three predetermined routes to one of three predetermined destinations. Locations 2, 3 and 4. The Net-Zero emission electric vehicles could potentially be automatically wirelessly charged using next generation intelligent Futurity™© EVSE 2.0 charging network provided by REACCT Corp. while patrons are at work. The cloud portal and mobile apps will allow citizens to interact with EVSE infrastructure remotely receiving alerts when vehicles are fully charged and more. Additionally, the next generation charging infrastructure uses a proprietary photovoltaic nanoparticle to generate electricity and does rely upon the city incumbent electric grid to charge vehicles. Moreover, this next generation EVSE charging infrastructure has inherent storage mechanism and has bi-directional power flow so the batteries of the city electric fleet can be used as mobile batteries to feed power back into The City of Moreno Valley electric grid during peak use hours and super on-demand generation. Finally, this EVSE infrastructure would be ultra-secure protecting patron data and city data from all forms of cyberattack.

8. Addressing the City's Challenges: 12 Vision Elements:

The City of Moreno Valley's holistic, integrated approach to our Smart City project aligns with the twelve USDOT vision elements. Our proposed technology solutions synergistically combine to create measurable impact while reducing costs associated with both deployment and operations.

The City of Moreno Valley Smart City plan consists of a total of four (4) tightly integrated project locations to support the its Smart City vision. These four project locations will be funded from the US DOT \$50M grant. The City of Moreno Valley will also seek to enlist private sector and academia partners to subsidize and support US DOT funding.

Location 1: Centrally located smart parking garage at the intersection of US Interstate 91, CA Highway 215 and US HWY 60 to be equipped with autonomous connected vehicle fleet; automated charging infrastructure and accompanying mobile application (supporting parking, rerouting, multi-modal). The centrally located Smart Parking garage with Automated/Autonomous Connected Vehicles and Automated Charging Infrastructure EVSE (electric vehicle supply equipment) will be erected. As designated citizen participants in the project; persons employed within the project limits will utilize the City of Moreno valley Smart Transportation cloud portal and mobile apps to schedule and drive public ("Uber" model) Net-Zero emission electric vehicles from their residences to this smart parking garage and transfer to autonomous connected vehicles that will transport them along one of three predetermined routes to one of three predetermined destinations. Locations 2, 3 and 4. The Net-Zero emission electric vehicles could potentially be automatically wirelessly charged using next generation intelligent Futurity™© EVSE 2.0 charging network provided by REACCT Corp while patrons are at work. The cloud portal and mobile apps will allow citizens to interact with EVSE infrastructure remotely receiving alerts when vehicles are fully charged and more. Additionally, the next generation charging infrastructure uses a proprietary photovoltaic nanoparticle to generate electricity and does rely upon the city incumbent electric grid to charge vehicles. Moreover, this next generation EVSE charging infrastructure has inherent storage mechanism and has bi-directional power flow so the batteries of the city electric fleet can be used as mobile batteries to feed power back into The City of Moreno Valley electric grid during peak use hours and super on-demand generation. Finally, this EVSE infrastructure would be ultra-secure protecting patron data and city data from all forms of cyberattack.

Location 2: The World Logistics Center is a world-class business park for Moreno Valley that is specifically designed to attract American and international companies who demand high-tech logistics, distribution and fulfillment facilities that employ thousands of workers.

Here, the world's leading companies will find the best that Moreno Valley has to offer: a state-of-the-art logistics business park, offering an ideal location and a strong local workforce. The 2,600-acre campus is one of the most sustainable developments of its kind. The project's innovative environmental design, water conservation strategies as well as its utilization of the cleanest diesel technology available, will ensure the utmost in environmental compatibility. The project will encompass over 40 million square feet of buildings and will be constructed over a 15-year period, generating thousands of construction jobs.

Location 3: Southern-most end of city Industrial and Business Park is home to several job-generating projects approved in the past year including logistics centers from Amazon, Aldi Foods, Procter & Gamble, Deckers' Outdoor Corp. and Harbor Freight Tools.

Location 4: March Air Reserve Base is located in north west Riverside County which, along with San Bernardino County, is called the "Inland Empire" region of Southern California. Team March is a multi-faceted team with numerous and varying missions.

March ARB serves a large diverse population. Reservists (both ARTs and TRs), Guardsmen, and active duty from all branches of the military have a presence on March ARB.

In addition to designated citizen participants employed on March Air Reserve potentially using the proposed Moreno Valley public "Uber" model to get to and from work; the runways at March ARB could potentially be used to test road electrification and autonomous vehicles testing as well as R&D.

THE PROJECT IN ACTION:

→ The City of Moreno Valley along with partners from the private sector and academia will work in a collaborative effort to employ ICT and various technologies to transition Moreno Valley to a Smart City and develop open and closed testbeds.

→ The testbeds will be offered to outside companies and cities to be utilized for R&D purposes at a fee which will generate revenue for the city. This creates a revenue share for testbed operation (if using city operated assets).

→ This pay for use R&D offering will transition technology from R&D mode to citizens in early stage of deployment giving citizens access to increased technology and options for their use.

→ This early adoption by citizens will afford companies the generation of customer data and feedback for companies performing R&D creating a win-win-win scenario for The City of Moreno Valley; it's citizens and participating R&D entities.



Vision Element #1 **Urban Automation**

VISION ELEMENT #1:

The City of Moreno envisions developing an autonomous automated electric taxi fleet in a public UBER model. The e-taxi can be charged in public parking garages – the charging can be done fully automated (using wireless charging) combining the charging with automated parking. designated citizen participants in the project; persons employed within the project limits will utilize the City of Moreno

valley Smart Transportation cloud portal and mobile apps to schedule and drive public (“Uber’ model) Net-Zero emission electric vehicles from their residences to this smart parking garage and transfer to autonomous connected vehicles that will transport them along one of three predetermined routes to one of three predetermined destinations. Locations 2, 3 and 4. The Net-Zero emission electric vehicles will automatically be wirelessly charged using next generation intelligent Futurity™© EVSE 2.0 charging network provided by REACCT Corp. while patrons are at work. The cloud portal and mobile apps will allow citizens to interact with EVSE infrastructure remotely receiving alerts when vehicles are fully charged and more. Additionally, the next generation charging infrastructure uses a proprietary photovoltaic nanoparticle to generate electricity and does rely upon the city incumbent electric grid to charge vehicles. Moreover, this next generation EVSE charging infrastructure has inherent storage mechanism and has bi-directional power flow so the batteries of the city electric fleet can be used as mobile batteries to feed power back into The City of Moreno Valley electric grid during peak use hours and super on-demand generation. Finally, this EVSE infrastructure is ultra-secure protecting patron data and city data from all forms of cyberattack via CypherLXS security platform backed by 40 patents provided by Sikyoority Corp.



Vision Element #2

Connected Vehicles

VISION ELEMENT #2:

A centrally located (Location Map 1) Smart Parking garage with Automated/Autonomous Connected Vehicles and Automated Charging Infrastructure EVSE (electric vehicle supply equipment) will be erected. As designated citizen participants in the project; persons employed within the project limits will utilize the City of Moreno valley Smart Transportation cloud portal and mobile apps to schedule and drive public (“Uber’ model) Net-Zero emission electric vehicles from their residences to this smart parking garage and transfer to autonomous connected vehicles that will transport them along one of three predetermined routes to one of three predetermined destinations. Locations 2, 3 and 4.

The city is will be fully equipped with a 5G wireless city network which allows inch-precision navigation and the support of vehicle automation where the vehicle is fully aware of its environment. The network infrastructure could potentially be provided by REACCT Corp. Intelligent Wireless Infrastructure or iWI©™. iWI©™ is an Ultra-secure Next Generation municipal network architecture deployed in three phases: EVSE 2.0, Smart Grid and Smart City. iWI©™ is a sensor-rich Third Industrial Revolution (TIR) and Internet of Things (IoT) network architecture that meets 5G wireless standards. iWI©™ - Intelligent Wireless Infrastructure is the NETWORK for Networks.



Vision Element #3

Intelligent, Sensor-Based Infrastructure

VISION ELEMENT #3:

5GPLC®™ is a breakthrough product set of low-cost, ultra-secure, miniaturized integrated circuitry combining high performance programmable logic controllers and 5th generation (5G) wireless broadband transceivers on a single 3" x 3" board. This technology allows for unique service and product sets like retrofitting existing Parking Meters and Street Lights into EV Charging Stations with high-speed wireless broadband connectivity or Street Light LED retro-fit with automation, motion sensing, monitoring and more. 5GPLC®™ will provide a turnkey offering for The City of Moreno Valley by designing around retrofitting existing infrastructure (i.e. EV Charging Stations, traffic lights, street lights) each becoming a *SmartNode™* creating a wireless broadband network. REACCT Corp provides the 5GPLC®™ seamlessly integrates proprietary and off-the-shelf hardware and software into unique and powerful intelligent wireless sensor infrastructure solutions.

The city will also be using sensors to monitor traffic and other actionable insights and interacting vehicles which will also serve as sensors. The sensor data is being brought into the city traffic cloud which serves as a central data source for all devices that are participating in the IoT transportation network. The use of fixed installed sensors is minimized (as vehicles are being used as sensors). This drone application will be backed up by Intelligent Wireless Infrastructure or iWI®™. iWI®™ is an Ultra-secure Next Generation municipal network architecture deployed in three phases: EVSE 2.0, Smart Grid and Smart City. iWI®™ is a sensor-rich Third Industrial Revolution (TIR) and Internet of Things (IoT) network architecture that meets 5G wireless standards. iWI®™ - Intelligent Wireless Infrastructure is the NETWORK for Networks.



Vision Element #4

User-Focused Mobility Services and Choices

VISION ELEMENT #4:

Citizens will utilize the City of Moreno valley Smart Transportation cloud portal and mobile apps to schedule and drive public ("Uber" model) Net-Zero emission electric vehicles.

The city envisions collaborating with its partner agency RTA to integrate a fleet of EV buses that could potentially be charged using the City of Moreno valley solar arrays. The EV bus fleet should be attractive for major groups of the citizens. The City of Moreno Valley will drastically reduce surface parking in business parks and logistics centers by reorganizing and implementing centralized parking into parking towers which could also be automated much the centrally located smart parking structure located on

Map 1. The city will potentially use micro-shuttle services in business parks and logistics centers; automated e-taxis as well as e-bicycles for intra-building shuttling as well as to shuttle from smart garage parking to office and back.



Vision Element #5

Urban Analytics

VISION ELEMENT #5:

Actionable Insights will be gathered through the use of the City of Moreno valley transportation apps and transportation data cloud to generate all data needed to determine data-driven analyses of economic activity, urban perception, human behavior, mobility patterns, resource consumption demand/response situations, parking, vehicle capacity and more to inform the city leaders and citizens of what's happening in the city.

Targeted interventions will be generated in an evidence-based fashion, influenced by the findings of The City of Moreno Valley Smart City project. The project will yield actionable data germane to energy, mobility, water, food, and waste.



Vision Element #6

Urban Delivery and Logistics

VISION ELEMENT #6:

The city of Moreno Valley could potentially work with its large base of logistics and distribution companies based in the city to incorporate a delivery and logistics portal and mobile app whereby residents and businesses can track the full route of the packages within the city.



Vision Element #7

Strategic Business Models & Partnering

VISION ELEMENT #7:

The City of Moreno Valley is actively seeking more public private partnerships to implement demonstration pilots. The City of Moreno Valley along with its partners from the private sector and academia will work in a collaborative effort to employ ICT and various technologies to transition Moreno Valley to a Smart City and develop open and closed testbeds.

The testbeds will be offered to outside companies and cities to be utilized for R&D purposes at a fee which will generate revenue for the city. This creates a revenue share for testbed operation (if using city operated assets).

This pay for use R&D offering will transition technology from R&D mode to citizens in early stage of deployment giving citizens access to increased technology and options for their use. This early adoption by citizens will afford companies the generation of customer data and feedback for companies performing R&D creating a win-win-win scenario for The City of Moreno Valley; it's citizens and participating R&D entities.



Vision Element #8

Smart Grid, Roadway Electrification, & EVs

VISION ELEMENT #8:

The City of Moreno Valley envisions building out a complete smart grid solution that incorporate roadway electrification via WPT (wireless power transfer) for its potential electrified bus system in collaboration with the city's partner agency RTA. Additionally, the city envisions designing a system where commuters that work in Moreno Valley use EV's (electric vehicles) to drive from their residence to a smart parking garage. Once in the smart parking garage their EV's would be automatically wirelessly charged. The commuters would then transfer to autonomous connected vehicles that would travel along predetermined routes to 3 distinct locations where volumes of employees work to maximize efficiency. These autonomous vehicles would be available on demand to move employees back and forth to the smart parking garage where their fully charged EV is waiting to be driven by them back home or to their next destination. This could all potentially be accomplished through a collaborative effort with ITIC International Transportation Innovation Center www.itic-sc.com. (see attached support letter)



Vision Element #9

Connected, Involved Citizens

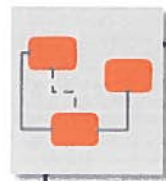
VISION ELEMENT #9:

This City of Moreno Valley pay for use R&D offering will transition technology from R&D mode to citizens in early stage of deployment giving citizens access to increased technology and options for their use.

This will result in early adoption by citizens will afford companies the generation of customer data and

feedback for companies performing R&D creating a win-win-win scenario for The City of Moreno Valley; it's citizens and participating R&D entities.

The City of Moreno Valley will organize outreach events for citizens to explain technology, have city app developers meet its customers (workshops), show data to citizens to explain which apps work and which don't, and which conclusions the city and its partners draw from the data.



Vision Element #10

Architecture and Standards

VISION ELEMENT #10:

The City of Moreno Valley will employ existing interoperable software development standards to be used by The City of Moreno Valley for all portal/cloud and mobile apps; Intelligent Wireless Infrastructure (5G); and wireless power transfer for electrified vehicles. The City of Moreno Valley Smart City project will maintain an agnostic and open standards approach model to include the interoperability of systems and data sharing between agencies. The Moreno Valley Smart City project will be developed around existing standards from the public sector, aimed at providing the basis of interoperability at all levels. This will establish an interoperability framework for the Moreno Valley Smart City project in which information can be shared and understood between organizations and people at any level. The Moreno valley Smart City project will possess the ability to normalize and classify information from many source so that data sets can be discovered and combined to gain actionable insights and gain a better understanding of the needs and behaviors of Moreno Valley's citizens (residents and businesses).



Vision Element #11

Low-Cost, Efficient, Secure, & Resilient ICT

VISION ELEMENT #11:

The City of Moreno has the high level ideal of potentially deploying and managing its own NOC (network operations center) to host and manage the City cloud. A remotely located but connected redundant mirror site datacenter will be located in a neighboring state or city to serve as an instantaneous fail-over back up system in the case of natural disaster. Safety and security for the citizens (data use) could potentially be provided by CypherLXS security system. The City of Moreno Valley envisions potentially deploying Intelligent Wireless Infrastructure or iWI©™. iWI©™ is an Ultra-secure Next Generation

municipal network architecture deployed in three phases: EVSE 2.0, Smart Grid and Smart City. iWI©™ is a sensor-rich Third Industrial Revolution (TIR) and Internet of Things (IoT) network architecture that meets 5G wireless standards. iWI©™ - Intelligent Wireless Infrastructure is the NETWORK for Networks.



VISION ELEMENT #12:

Designing a smart city that copes with the reduction of CO₂ and Smart Land Use has become a task for the City of Moreno valley. The city's approach is to combine appropriate land use (compact city with energy efficient buildings and photovoltaic panels (PVs)), transportation (electric vehicles (EVs) and public transportation system) and energy systems (smart grid systems), because of the interaction between these elements. First the city envisions constructed a spatially explicit land use model (urban economic model) for the study area. The model potentially will then be calibrated using existing statistical data. Second, possible future compact/dispersion city scenarios could be created using the model. Third, the dynamics (hourly) of electricity demand and supply from existing residential solar installations in the study area could be simulated. The goal would be to determine how "compact" urban form could contribute to the reduction of electricity demand from the residential sector. Because Moreno Valley is a smaller area the city would focus on the effective use of vacant areas, which may be used for PV array installations. These solar arrays could potentially generate power for the approach toward a Net-Zero city and fuel the potential public transportation Net-Zero electric bus fleet in collaboration with the city's partner agency RTA. Additionally, the City of Moreno Valley could potentially drastically reduce surface parking in business parks and logistics centers and implement centralized parking in parking towers which could also be automated much like the potential centrally located smart parking structure located on Map 1. The city envisions potentially using micro-shuttle services in business parks and logistics centers and utilizing open spaces as potential solar array generation points.

9. Technology, Policy and Institutional Risks Associated with Moreno Valley Smart City Project:

The technological risks associated with The City of Moreno Valley Smart City project include Hardware/Software failure; Malware/Viruses; Spam/Phishing and Human Error. The technology risks are rated minimal at best and have been mitigated by proven technology implementation methodology. The City of Moreno Valley could potentially utilize the world class CypherLXS security platform. This technology would greatly reduce all technological risks. Moreover, in the instances of technology failure we employ redundant/mirror back-up datacenter and NOC's network operation centers to mitigate the risks of failure due to human error and natural disaster.

The policy risks associated with The City of Moreno Valley Smart City project include high potential for loss absorption and being too aggressive in our proposed rate of return on measurable improvement data and metrics. These risks are rated as minimum and will be mitigated through careful and meticulous planning germane to loss absorption and a focus on a steady but moderate rate of return on measurable improvement data and metrics.

The institutional risks associated with the deployment vision for The City of Moreno Valley Smart City project include but may not be limited to Population Growth; Climate Change; Security/Safety; Political/Social; Financial/Economical; Conflicts and Resources. Additionally, because The City of Moreno Valley has attracted a host of large corporations to move their headquarters, manufacturing and major logistics here we are expecting a huge increase in residents and subsequent businesses over the next 10 years. This will lead to increased traffic, pollution etc. This is where most of the risks lie for The City of Moreno Valley Smart City project and why it is so vital. These risks are rated as moderate to high. The good news is these are risks are not unique to The City of Moreno Valley. In fact, these are global risks that every city and community must face. The City of Moreno Valley Smart City project is both timely and relevant in this regard. Having a successful deployment of a scalable and sustainable Smart City project will go a long way in mitigating these institutional risks.

10. Team Partners, Key Stakeholders, and Demonstration Governance Processes:

The City of Moreno valley boast very strong potential Team Partners. Moreno Valley has identified four ideal leading candidates they are the UCLA Smart Grid Energy Research Center; ITIC-International Transportation Innovation Center; Proterra and The Veloz Group. (see attached letters of support)



The UCLA Smart Grid Energy Research Center www.smartgrid.ucla.edu (or SMERC) performs research, creates innovations, and, demonstrates advanced wireless/communications, Internet and sense-and-control technologies to enable the development of the next generation of the electric utility grid - The

Smart Grid.

SMERC also provides thought leadership via partnerships between utilities, government, policy makers, technology providers, electric vehicle and electric appliance manufacturers, Department of Energy research labs and universities, so as to collectively work on envisioning, planning, and executing the smart grid of the future.



The International Transportation Innovation Center (ITIC) www.itic-sc.com is a leading-edge automotive research infrastructure and a recognized leader in the innovation of sustainable transportation and networked vehicle systems.

ITIC is very experienced and accomplished having completed closed and open test beds on Asphalt Surface Straightaway; Concrete Surface Straightaway; Urban Testing Grid and Interstate Test Track.



Proterra www.proterra.com. The company's mission is to deliver clean, quiet transportation to all, by replacing heavy-duty, fossil-fueled transit buses with zero-emission, electric vehicles that reduce greenhouse gas and diesel particulate matter emissions without sacrificing vehicle, performance or uptime.

Proterra's EcoRide BE35 was the first 30 ft (9 m) or larger all-battery electric bus to complete federally mandated Altoona testing. It was also the first full-size, fast charge transit bus to enter revenue service in the U.S. and meet California's Zero-Emission Bus Rules.

The company's second-generation bus, the Proterra Catalyst is available in two vehicle sizes, 35 ft and 40 ft, and is made of lightweight and durable carbon fiber and advanced composite materials. The 40 ft model has a total capacity of 77 passengers (40 seated/37 standing).

As of September 2015, its buses have a single-charge range of up to 258 miles (415 km).



The Veloz Group www.thevelozgroup.com. The Veloz Group helps organizations utilize technology in creative ways to resolve pain points and capitalize on new opportunities. Leveraging our experience developing custom technology to optimize our own businesses, we craft innovative technology solutions for clients across a wide variety of industries and technology verticals. We possess deep experience and expertise in a number of technology verticals. Between our internal team of highly-accomplished technologists and our strategic partners who are best-in-class in their respective areas of expertise, we are able to staff engagements with PhD-level computer scientists who are expert in the technology discipline(s) pertinent to the project.

The City of Moreno Valley also envisions other potential public and private partnerships. These include but are not limited to: Qualcomm; eMTRD; Cyclotron Road; Billions in Change, REACCT Corp.; Sikyoority Corp.; Highland Fairview; QDSC, KARMA Automotive, Loraxian, Parallel 6, Particle Industries and Rapid Ventures.

The City of Moreno Valley demonstration governance processes not only focus on the structural features of demonstration governance but is also rooted in organizational decision-making, and overall design and effectiveness of The City of Moreno Valley Smart City project governance processes from both rational and social perspectives. The City of Moreno Valley has taken into account it will experience some level of environmental dynamism and turbulence and as such Moreno Valley Smart City demonstration governance processes are characterized by both methodological comprehensiveness and social interventions, involving strategic integration of business and IT decisions, and building collaborative relationships and shared understanding among our aforementioned team partners and key stakeholders.

11. Moreno Valley Existing Transportation Infrastructure and System Features in your city:

a. Arterial miles – The City has a robust Arterial Network, with over 132 centerline miles currently constructed, representing a capital investment of more than \$300 million. Along the various arterial

corridors there are 190 traffic signals maintained by the City, representing an approximate ratio of one traffic signal per thousand residents.

b. Freeway miles – The City of Moreno Valley is served by two major freeways. Interstate 215 is generally aligned north-south and borders the western edge of the City. State Route 60 is generally aligned east-west and bisects the City. Total freeway mileage for I-215 is approximately six miles, which includes five full interchanges. Total freeway mileage for SR-60 is approximately ten miles and includes 10 full interchanges and 1 overpass.

c. Transit Services - The City of Moreno Valley is served by one major transit provider, Riverside Transit Agency. The entire transit network within Riverside County encompasses more than 2500 square miles, among the largest in the nation. RTA consists of 35 fixed routes, eight commuter routes, and senior and disabled Dial-A-Ride service. Eight fixed routes provide service directly to Moreno Valley. RTA has more than 2500 stops, of which, more than 25% are located within Moreno Valley. In Fiscal Year 2015, RTA experienced over 9.6 million boardings, with an average weekday total exceeding 32,000.

d. Shared-use mobility services - The City of Moreno Valley is aggressively marketing local retail opportunities to attract new shops, restaurants, and services for local residents. The City's newest business attraction tool – the Destination MoVal Retail iMap – utilizes the City's Geographic Information System (GIS) to showcase several prominent Moreno Valley shopping centers and offers prospective retailers, restaurateurs, and site selection experts easy online access to information about where to locate their new commercial retail businesses.

The Destination MoVal Retail iMap provides key demographic data, site information and direct contact to the property listing agent for each of the shopping centers.

e. Intelligent Transportation Systems (ITS) including transportation Management centers and field equipment – The City has developed an ITS Master Plan to meet the increasing demands made on local arterials and maximize efficiency of existing infrastructure. The Master Plan outlines a long-term ITS deployment plan for the City and surrounding partnering agencies. The multi-jurisdictional effort involves California Department of Transportation, the County of Riverside, the City of Riverside, City of Perris, and the March Joint Powers Authority (MJPA). One goal of the City's deployment of ITS strategies is to deploy a high-bandwidth communications network, capable of transmitting both data and streaming video. To date, the City has deployed eight miles of optical fiber network and has programmed an additional fourteen miles using a Congestion Mitigation and Air Quality (CMAQ) grant. The High-bandwidth Ethernet is currently available at 23 intersections surrounding the City's western core, including City Hall. Within one year, the network will be extended to encompass 80 intersections through certain funded projects. Each intersection has Ethernet switching equipment allowing for system expansion. In addition, in 2015, the City constructed a manned and fully functional Transportation Management Center (TMC) within City Hall. There is a complementary satellite TMC at our Corporate Yard. Both TMC's have central control capabilities and are used to actively manage all major corridors through the use of the City's existing Arterial Traffic Management System, CCTV camera monitoring platform (over 200 cameras), and AWAM (Bluetooth readers).

f. Smart Grid Infrastructure including electric vehicle (EV) charging infrastructure Electrical service is provided by Southern California Edison Company (SCE) and the city owned Moreno Valley Utility (MVU). MVU is in the initial stages of deploying a network of EV charging stations with five demonstration installations. Both serving utility companies are deploying smart meter technology. Additionally, all new major development is evaluated for the opportunity to install EV charging stations as a means of mitigating project impacts and further the Goals and Objectives of the City's Climate Action Strategy.

12. The City of Moreno Valley Data Collection and Use:

Moreno Valley is currently deploying an in-house-developed Anonymous Wireless Address Matching (AWAM) data collection system based on Bluetooth. Readers ("field nodes") are placed at key intersections. The hardware addresses of passing Bluetooth devices are anonymized, timestamped, and logged. Observations are matched to determine travel times between field nodes. Historical information is available for investigation of trends. The data are also useful for determining how vehicles route themselves through the network as well as for origin/destination studies, which allows for better planning of both land use and infrastructure. The data are also available for dissemination to the public via Web and to the transit provider.

Upon standards approval, and as funding allows, Moreno Valley intends to implement USDOT V2I equipment to provide Signal Phase and Timing (SPaT) data to equipped vehicles, and to read the Basic Safety Message broadcasts. In the long run, this is likely to replace the AWAM system because as the vehicle fleet turns over and supports V2V and V2I, more data will be available from the V2I system.

It is likely that Moreno Valley will acquire the ability to collect real-time turning movement counts at most of the City's major intersections through a funded Highway Safety Improvement Program. See Section 16 for further details on this project.

Data collection will also be done by vehicle sensors, 5G modem in vehicle, data being transmitted into data center that is contracted by the city to manage city transportation data.

Data collection by mobile devices and wearables from citizen using 5G network; the data will also move into city transportation cloud.

13. Standards, Architectures and Certification for ITS and Connected Vehicle:

Moreno Valley deploys ITS in compliance with the Regional ITS Architecture. Open standards are followed to the maximum feasible extent; for instance, all field data communication is Ethernet-based, which is highly interoperable. Interagency data sharing is accomplished at the center-to-center level, both for ease of integration as well as for security.

The City of Moreno Valley envisions potentially using automated E-taxis that comply with SAE/NHTSA automation level (highest automation level) with Cybersecurity assessment and reporting of incidents.

14. Goals and Objectives for The Moreno Valley Smart City Project:

GOALS OF THE SMART CITY PROJECT:

- Achieve a complete Net-Zero Smart City (buildings and transportation)
- Achieve Net-Zero public transportation bus fleet (electric bus)
- Advanced road charging infrastructure (road electrification via WPT)
- Smart parking garages with automated charging infrastructure
- On-demand zero-emission transportation system.
- Automated zero-emission enabled taxis.
- A “public” UBER model – a fleet vehicles used by citizens that satisfy on-demand transportation needs (different vehicles categories) available 24/7.
- Autonomous connected vehicle fleet traveling to three (3) predetermined destination routes from centrally located smart parking garage.
- City Public Transportation Social Network with accompanying mobile apps
- City transportation cloud and apps (supporting parking, rerouting, multi-modal)
- Open API: citizens recruit application developers to design “city transportation apps”, where citizens share in the friction and are paid from the revenue made from apps. The apps can then be shared with other cities to increase revenue to the city and the citizens.
- Citizen and users providing data feedback to improve the quality of their transportation options knowing sharing data is not a negative while safety and security are guaranteed IT operators.

OBJECTIVES OF THE SMART CITY PROJECT:

- Attract people to the most desirable place to relocate, start and grow a business (young people as well as people that want to retire, people that have families)
- People-centric focus: interesting jobs; decreased cost of living; clean, safe, healthy and beautiful environment.
- A city that offers its citizen the latest technology.
- A city that is mindful of energy, water resources as well as quality of air.
- A city that is business friendly.
- Increased coexistence of working and living.
- A public transportation system that is effortless and fun to use. Every citizen has access to city transportation app/portal.
- Centrally located and easily connected to opportunities, spaces, places and markets
- Out of the box, safety first, collaborative and experimental in our city thinking
- A friendly, entertainment rich and attractive place to come together
- A clean, safe and environmentally friendly city known for its great collaborative environment
- Better informed citizens, more choices for citizens, more convenience for citizens and less waste of resources

- A great place to grow up, live, work and retire

15. The City of Moreno Valley Statement of Qualifications:

Moreno Valley is fortunate to have retained highly skilled personnel with significant experience and leadership in all areas relevant to this application. Traffic signal maintenance is conducted in-house by a team of four, two of whom have been at the agency for more than 30 years. Engineering, Information Technology, and maintenance staff work together to deploy many ITS functions in-house, including installation of fiber optic plant, fiber optic Ethernet switches, ITS cabinets, CCTV cameras, and AWAM (Bluetooth) readers. All system integration is performed in-house. Staff are also committed to sharing lessons learned through publication of papers at conferences for traffic engineering and ITS practitioners. Key staff are committed to this project both by availability and by commitment to remain with the organization.

Current staff have a record of accomplishment of delivering projects for USDOT while at Moreno Valley. In addition to millions in successfully completed construction projects, our staff successfully completed a research contract with the FHWA for preparation and use of a TRANSIMS regional traffic model. This multi-year project consisted of conversion of the region's standard four-step travel-demand model for use with TRANSIMS, model calibration and validation, peer review, and detailed analysis of certain research questions. The project was delivered entirely with in-house resources. The model, as well as the key staff involved in its preparation, continue to be available for use in analyzing problems out of reach of classic models; and could be applied to this project as well if selected.

16. Opportunities to leverage Federal Resources:

A substantial portion of Moreno Valley's ITS deployment is federally funded, including:

- Deployment of ITS cabinets, fiber optic plant, Ethernet communication equipment, next-generation traffic signal controllers, and CCTV cameras along five major corridors. Upon completion, all of the City's major corridors will be actively managed, including the entirety of Perris Boulevard (the City's longest corridor). This project is CMAQ-funded and is currently in the environmental clearance stage.
- Deployment of Advanced Dilemma Zone Detection Systems (ADZDS) at 65 major intersections. Virtually all intersections covered by this project will also be actively managed, meaning Ethernet communication will be available in the cabinet. This in turn allows for collection of real-time turning-movement data if the selected ADZDS supports it. This project is HSIP-funded and is currently starting the project development phase.