February 4, 2016

The Honorable Anthony Foxx, Secretary
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Secretary Foxx,

It is with much excitement and pride that the City of Orlando submits the enclosed application documents for the United States Department of Transportation’s Smart Cities Challenge.

Our team has worked diligently over the past several weeks to build out a unique program that ties together the numerous next generation transportation assets our community possesses into one, comprehensive, data driven effort to use transportation to improve the lives of Orlando’s residents and visitors.

I have no doubt that the USDOT is going to receive some tremendous applications from other cities that are packed with great ideas. Speaking as the Chief Executive of the City of Orlando and a die hard “transportation mayor” – I believe that no other city is going to be able to match what we are proposing.

Beyond the specific programmatic pieces outlined in our proposal, our City possesses two distinct advantages that will ensure our effort is one that is truly transformational on the largest scale possible.

First, we have a culture of collaboration and public private partnership that is unmatched anywhere. Our community knows how to get behind big ideas to get things done. For example, key City of Orlando partners on this application have a record of successful collaboration on revolutionary pilot programs such as the TravTek Pilot, which was the forerunner to current in-vehicle navigation systems.

Our proposal also includes programming to engage and include under-served communities as we have done with recent major multi-billion dollar community initiatives. And, it utilizes a partnership with the University of Central Florida to use its proposed Downtown Orlando campus to showcase the many great ideas, which have been included in our application.
Second, and equally important, we are America’s number one destination for visitors and business travelers. This one-of-a-kind platform will allow us to take what we are doing for our city under the Smart Cities Challenge and showcase it to more than 60 million visitors from both around America - and around the world.

Simply put, no other city possesses Orlando’s ability to use transportation to improve people’s lives... and then showcase the power of that transformational paradigm to others.

For those reasons and so many others, I am confident that our application is going to meet with a favorable response. I can’t wait to hear about how we might move forward together.

Sincerely,

Buddy Dyer
Mayor
# Table of Contents – Application Content Part 1

Section 1: Vision.............................................................................................................................. 1  
Section 2: Qualifying Characteristics .............................................................................................. 5  
Section 3: Characteristics Aligning with Smart City ........................................................................ 6  
Section 4: Annotated Preliminary Site Map..................................................................................... 8  
Section 5: US DOT Aligned Vision Elements................................................................................... 9  
Section 6: Smart City Risk Analysis .............................................................................................. 17  
Section 7: Outline Team Partners, Key Stakeholders and Governance Procedures ..................... 19  
Section 8: Overview of Existing Transportation Infrastructure and System Features ................... 21  
Section 9: Data Management and Application.............................................................................. 23  
Section 10: Emerging Technologies Standards, Architectures and Certification Processes ....... 25  
Section 11: Vision Performance Measures and Metrics ............................................................... 28  
Section 12: City Commitment and Resources .............................................................................. 30  
Section 13: Opportunities for Cost Share, In-kind donations and Partnering............................... 30  
Letters of Commitment
PART 1
SMART CITY VISION NARRATIVE

1. Orlando’s Vision

Orlando is well known throughout the world as a top family destination among the beautiful beaches and palm trees of the Sunshine State. The 1980 Growth Master Plan established the basic growth management framework necessary for The City Beautiful to become the vibrant, diverse, and innovative regional center it is today. Orlando is home to world class medical facilities; University of Central Florida (UCF), the second largest university in the country, and multiple entertainment and cultural venues. In 2014, approximately 62 million people visited our city, arrived at our international airport, and experienced our transportation system. In order for Orlando to continue to grow and thrive as a regional hub for people to live, work, and play, we must invest in a holistic, integrated approach to advancing the safety, mobility and sustainability of our transportation infrastructure.

Under the Orlando’s regional leadership and success with public-private partnerships, we have engineered one of the most remarkable downtown Urban Core resurgences anywhere in the country, anchored by the creation of world-class sports, arts, entertainment venues, and transportation enhancements for our residents and visitors. Efforts to diversify Orlando’s economy and secure key investments is a hallmark of Mayor Buddy Dyer’s administration, which includes a commitment to the arts, attraction of additional economic opportunities to our region, and collaborative efforts to execute new infrastructure improvements for our City. With the advent of our region’s SunRail commuter rail system in 2014 and the expansion of our Downtown bus rapid transit system (LYNX) in 2015 and 2016, Orlando has been recognized and joined the Energy Secure Cities Coalition (ESCC) as the 10th American City.

Orlando’s vision is to be recognized as an enduring global leader in the use of innovative technologies and strategic planning for the ensuring of a broad range of safe, sustainable, convenient, mobility options, which promote healthy lifestyles, vibrant neighborhoods, a thriving and inclusive economy, environmental preservation and the world’s premier tourist destination. Located within the Florida Mega Region, there are three distinct character areas of Orlando: the Urban Core, International Drive (I-Drive), and Medical City. Each of these character areas consist of unique attractions that draw businesses, people, and innovation to the City. The diversity of experiences and needs creates the space for implementing new ways for our city to move and connect. Section 4 depicts the Orlando Study Area and corresponding character areas.

The Urban Core
The downtown Urban Core is the historic and cultural heart of Orlando. This district supports a vast number of companies, leisure activities, public parks and spaces, and residential neighbor-
While many tourists visit the Urban Core, this is a major central business and entertainment destination for local residents. Downtown Orlando is home to venues such as the Amway Center, the Citrus Bowl, MLS soccer stadium, and the Dr. Phillips Center for the Performing Arts. The core needs regional and local mobility options for commuters, local residents, regional business patrons, and freight deliveries. Two major medical facilities, including the largest medical facility in the country dedicated to women and children, are within the Urban Core and provide a significant employment base for Orlando.

Connectivity is a challenge for the downtown core for visitors and residents alike. Many workers commute to the downtown area in vehicles or using the SunRail commuter train. The “last mile” trip connectivity within the downtown Urban Core is a vital piece of the transportation network for employees and residents. While Florida’s year round warm climate encourages pedestrian and bicycle travel throughout the downtown urban area or along the tourist areas of International Drive, it also presents a challenge in the extreme warm summer months. In addition to the many amenities the Downtown Core has to offer, it also contains several traditionally underserved communities, including neighborhoods such as Parramore, Clear Lake, and Lake Mann. These neighborhoods could benefit from more connected transportation alternatives.

I-Drive
The I-Drive Tourist District, named for International Drive along which it’s located, is Orlando’s densely populated tourist destination. An important aspect of Orlando’s character and economy, I-Drive is home to Five (5) of Orlando’s major tourist attractions: SeaWorld, Discovery Cove, Aquatica Water Park, Universal Studios, and Islands of Adventure. Leisure activities from shopping, to dining, to museum and other show attractions serve the over 5.4 million overnight annual guests. Anchored at the southern end of the corridor stands the Orange County Convention Center, hosting an average of 1 million delegates per year.

The I-Drive corridor supports an annual average daily traffic volume of 25,000 vehicles. This presents a challenge in mobility both regionally and locally, transporting visitors from the Orlando
International Airport and along the 10 mile I-Drive corridor. Over 2 million riders used the I-RIDE trolley in 2012 between local destinations, hotels, and the Convention Center. To address these challenges, initiatives such as a light rail transit system from Orlando International Airport to the I-Drive area, and an expanded circulator for the area are in the works. The existing I-RIDE trolley serves 20 miles of roadway within the district, connecting hotels, major theme park attractions, and shopping centers.

**Medical City**

Orlando is also home to the 650-acre health care and life sciences park known as Lake Nona Medical City, or simply Medical City. With continued commitment to growth and cutting edge technology, Medical City started in 2005 as a Life Sciences Campus to house the College of Medicine of UCF. In the last ten years, both Medical City and the UCF College of Medicine have grown. The 2016 class is expected to have 480 doctoral students. Similarly, Medical City has grown and become a residential, commercial, and recreation center, anchored by a focus on healthcare and medical research. Admittedly with this growth comes transportation challenges but it also provides opportunities to be innovative and forward thinking. Similar to I-Drive, Medical City needs to connect with other regional areas such as the Core and the Airport. Opportunities exist in implementing connected and automated vehicles bicycle and pedestrian infrastructure additions, and smart development.

**Vision for Orlando**

The strength of Orlando relies on the transportation system within each of these character areas. There is an opportunity to provide better connections both locally and regionally. With our diverse ability to emulate national and worldwide conditions, the City has a demonstrated track record partnering on the TravTek program advancing the GPS in-car navigation system that is seen in vehicles today. While being uniquely positioned by our national and international exposure and visibility, we as a City provide an ideal testbed for what a mid-sized city could accomplish with smart technology and policy. Orlando will advance the initiatives and challenges outlined in “Beyond Traffic 2045”. The number of annual visitors to our City provides the highly visible platform to demonstrate innovation and advanced ideas. Visitors to Orlando can leave with more than a tan and fond memories; they can leave with ideas on how to advance safety and mobility in their cities, towns, and States.

**Smart Mobility (How we move...)**

Many locations in Orlando serve a high volume of both pedestrian activity and vehicle commuters with significant recurring congestion. Orlando’s Smart City initiative will build upon the existing intelligent, sensor-based infrastructure to make real time operational adjustments, monitor performance, track assets in the field, and collect data. It would also support the goal of having an organized data sharing system available to the public for information on best routes and current status of the transportation network. To align with our goal of mobility options, the Bike Share program sponsored by the City is an excellent example of strides we’ve already made to provide alternate modes for short local trips within the downtown area. From their smartphones, users reserve a bike, get real-time data on bike availabil-
Orlando's public transit provides user-focused mobility choices by providing real-time traveler information on their handheld devices and displayed digitally at bus stops.

Orlando is undertaking efforts to extend user-focused mobility to vehicle users through providing real-time data. We are currently expanding our smart lot system to provide real-time information on the location and amount of available parking. Our goal is that every public parking location will provide data in real time. Our goal is to expand this user-focused mobility data to include electric vehicle charging stations and emerging technology such as automated vehicles. We envision the system will involve to include a smart reservation system that will balance resources and promote sustainability.

Smart Freight (How we move things...)
To manage the necessary freight movement in the downtown area and beyond, Orlando has already designated Freight Villages to organize and accommodate the large volume of freight deliveries. The Smart City initiative provides Orlando with a platform to advance integrated real-time data management and information system to drivers advancing in which route to take, locations of available loading areas, introduces incentive based programs such as off-hours freight deliveries, and support of efficient urban delivery and logistics program. Leveraging our partnerships with MetroPlan Orlando and FDOT, the City has initiated a freight plan to implement strategies to promote the increased operations of freight throughout the region (freight priority corridors, institutional organizations, operational improvements, and air quality measures).

Smart Data and Innovation (How we move better...)
There are multiple opportunities for the City to better collect and use data to serve the traveling public and assist in asset management. Data collection, organization, and sharing provides an opportunity to develop policies for analyzing and prioritizing the network based on established performance measures. The City and regional partners have collaborated on the benefits of sharing data and reducing the occurrence of data duplications to streamline processes. Providing information to the public is the first step in offering mode choice and managing the demand on the system. Many locations in Orlando serve a high volume of cars with significant recurring congestion, in addition to high pedestrian activity. Orlando’s Smart City initiative will build upon the existing intelligent, sensor-based infrastructure to make real-time operational decisions and management. The City has a strong desire to support the development of innovative technology offered by connected and autonomous vehicles.
Smart Advancement and Integration (How we adapt...)  
The City is committed to investing in technologies to build upon our currently progress in the expansion of the existing BRT route, including upgrades to the existing bus fleet to electric or CNG buses, using a smart grid to produce clean energy and reduce emissions, and implementing vehicle-to-vehicle and vehicle-to-infrastructure communications. UCF has a satellite campus located in the I-Drive District which can be connected to the Rosen School of Hospitality. BRT lines between UCF’s main campus and the Rosen School will provide the perfect opportunity to expand the City’s Electric Bus fleet. In addition, there is an opportunity to build upon the land use and development policies we currently have in place to combat climate change and promote green building. Requirements on Transit Oriented Development (TOD), energy consumption and alternative energy guidelines, in addition to incentives for developers to include electric car charging stations and alternative energy sources are among some of the initiatives that the US-DOT Smart City’s Grant could assist in advancing.

Smart Policies and Commitment (How we align decisions...)  
In addition to providing the public with traveler information, operators will provide real-time data to make operational and network decisions, using data is critical in tracking the performance of the system and the status of network assets. The Smart City grant will provide the City with the means to better collect and analyze data currently being collected to extract business intelligence for making transportation network enhancements and funding decisions. Utilizing the data in this manner will support Orlando’s goal to coordinate planning and decision making so that investments are made on a performance based priority list. This would ensure that investments in the transportation network will address critical needs. Orlando is well positioned with the leadership support from the City Council via Referendum, to provide all the necessary guidance policies and staff resource commitments throughout the duration of this project and beyond.

Smart Projects and Economic Vitality (How we build community...)  
One of Orlando’s goals for the Smart City initiative is to continue addressing environmental concerns, and ensure that adverse human health, social and/or environmental effects do not fall disproportionately upon minority or low-income populations. Our initiative is committed to increasing job creation, redevelopment of historically underserved communities and a balanced economy for all of Orlando’s citizens.

2. Qualifying Characteristics  
Orlando is diverse in population and characteristics. An exemplary figure of what defines an American mid-sized city, Orlando has major tourist attraction areas, dense urban residential areas, a thriving central business district and peaceful suburban residential communities. Our residents and visitors are proud people who support our City and create an environment conducive to innovation and creativity. According to the US Census Bureau, Orlando’s population in 2010 was 235,992 citizens, which accounts for 15.6% of the Orlando regional population. With 121,254 housing units, the City accounts for 18.53% of the Orlando region’s housing. As demonstrated above, and on the Smart City Challenge website, Orlando has the appropriate qualifying characteristics.
3. City Characteristics

Orlando is an innovative and evolving region with diverse transportation infrastructures and systems, offering 1,159 total miles of roadway, seven available transit services, seven Shared-Use Mobility Services, established Information and Communication Technology systems and Intelligent Transportation Systems (ITS) including TMCs and field equipment, and Smart Grid Infrastructure (including electric vehicle charging infrastructure). Orlando also boasts the highest tourism numbers in the U.S., with 62 million visitors in 2014 alone. Orlando has initiated, and in some cases, led the nation in several Smart City elements. Much of this is driven by the volume of tourists and the need for transportation enhancements for these visitors. Additionally, as the home to world class sports and medical facilities, the second largest university in the country, multiple cultural settings and massive entertainment venues, Orlando has a strong commitment to diversity and economic security for its residents.

Existing Public Transportation System

Orlando recognizes the many benefits of transit services in and around the city. Some of our transit options include BRT (LYMOMO), rail (SunRail), regional transit (LYNX) and Juice Bike Share. With numerous existing transit options and a detailed transit plan in place for the future, we are a unique and viable community for the implementation of next generation multi-modal improvements that could be fused with upcoming technologies such as V2I/V2V, electric or CNG buses and SmartGrid. Additionally, promising initiatives such as a light rail transit system from Orlando International Airport to the I-Drive area, and an expanded circulator for the area are in the works. With more than 105,000 riders every weekday, LYNX has been a leader in Central Florida public transportation for many decades and offers stops throughout Orange, Seminole and Osceola Counties. Believed to be the nation’s first bus rapid transit system, LYMMO helps keep up the pace of the ever changing lifestyle of downtown Orlando. Buses operate in their own right of way providing four non-congested routes downtown to major destinations, with lines running every 5–15 minutes. The SunRail passenger system recently launched in May 2014 covers 31 miles with 12 stations. Daily SunRail ridership was over 3,500 in 2015. Riders on the SunRail system use a disposable Limited Use Ticket or a Reloadable SunCard to pay fares. An expansion of SunRail is expected to be complete in 2017, adding four more stations and a new northern terminus.

The International Drive Master Transit and Improvement District was created in 1992 to provide growth management, transportation, and infrastructure development for the area with collaboration between the local governments and I-Drive businesses. One of the most critical projects presented to the organization is to create an efficient transportation system for tourists on the I-Drive strip. Orlando offers the I-RIDE trolley between local destinations, hotels, and the Convention Center, which traverses 20 miles of roadway within the district connecting hotels, major theme park attractions, and shopping centers.
Committed Leadership and Performance Capacity
Orlando is committed and involved in the advancement of the Smart City vision, but involved. For the past decade, Orlando has been a leader in pioneering technology to increase the safety, mobility and environmental stewardship of our city. From “net zero” parking garages to one of the first connected vehicle infrastructures, Orlando has shown its commitment and ability to handle the challenge that the Smart City Challenge is proposing. Our City’s leadership and community leaders understand the importance of the principles in this challenge and welcome adapting to new ideas that benefit our city and its citizens.

Environment Conducive to Demonstrating Proposed Strategies
The City’s infrastructure and systems are needed to support, not only the number of tourists, but also the natural lack of familiarity that they have with our City. These needs further extend to our robust citizenship and the downtown that supports them, as well as the numerous events (e.g. amusement parks, sports venues, and performing arts center) that the City supports. These factors result in an innate variability of transportation needs at all times of the year and with all modes of transportation. For this reason, the City is constantly been willing to innovate and evolve as illustrated by our success in implementing past initiatives. Some of these initiatives that have been tested and used in Orlando include:

1. The first connected mapping GPS system trial (Travtek in 1992)
2. A major USDOT ITS Model Deployment (iFlorida in 2003) that included security systems, arterial and freeway travel time systems, Transit Dynamic Network Communications
3. Connected Vehicles Demonstration Project in 2011
4. Dynamic Parking Demonstration Project in 2011
5. Transit Signal Priority Project Demo in 2012
6. Regional Transit Signal Priority Projects in 2015
7. Active Arterial Management Projects in 2015
8. Active Arterial Management TMC Services in 2015
9. Two ITS World Congresses (in 1996 and 2011)

Data Accessibility
The City has introduced a web-based platform where data can be accessed by its citizens and shared in an open environment. This program has made available several data sets with information about the City that is available for commercial use as well as public use. The web portal also contains powerful analysis tools allowing the public to analyze and report data without the need for data processing and mapping programs. The City will continue its commitment to open data as more data becomes available and new sensor technology is integrated into its infrastructure. Our partners utilize the data we make available to fuel their business and research. This allows them to create a user based community that can contribute back to the City with valuable input and analysis that would otherwise be unavailable. Furthermore, by creating this open platform, the City will promote collaboration with the community and a “sharing economy” approach.
5. USDOT Vision Elements

The vision for the City’s urban future is holistic and integrated, and places emphasis on creating a sustainable future through environmental stewardship, mobility and safety initiatives.

**Element 1 | Urban Automation**

Orlando has a substantial history with development and innovation in urban transportation infrastructure and a vision for its transportation future with a heavy emphasis on automation. Orlando has taken strides to improve the safety, mobility and environmental stewardship of its transportation network. Our vision for the future includes automating many of the transit lines serving our city. Several technologies such as MobileEye and other driver assistive devices are in use today. These devices significantly increase the safety for vehicles and pedestrians sharing the roadway with transit services and provide real time data to fleet management centers providing the ability to predict peak times and real time mapping for end users of transit services. The existing BRT line within the central business district is a prime candidate for automation. The vehicle uses dedicated lanes and shared roadways that provide five and ten minute headways during peak hours. An automated BRT line would add safety and efficiency to the transit line providing multiple benefits across the board.

Orlando will provide incentives to support autonomous ride share and taxi fleets, as well as privately owned autonomous vehicles. Orlando and its partners are researching the impacts of the autonomous vehicle and are currently developing practices to sustain autonomous vehicles and provide development code based on adoption rates nationwide. The I-4 corridor has been a standing test bed for connected vehicles in the State since legislation House Bill 1207 was passed on July 1, 2012 to allow test vehicles on public roadways. FDOT has utilized this corridor and two others within Orlando to test roadside communication devices and a system wide management system, known as SunGuide®. The SunGuide® provides travelers and vehicles with dedicated short range communications (DSRC) capabilities to receive traffic, weather and emergency alert information in their vehicle. Orlando hopes to expand on this connected infrastructure within the City limits to allow for vehicle-to-infrastructure (V2I) connections and access to the SunGuide® network providing information to travelers for optimal routing and mobility.

**Element 2 | Connected Vehicles**

A major component of a Smart City is communication and sharing of information. Orlando’s vision involves numerous technologies and development practices that will allow its users and infrastructure to be connected, providing mode choice information to the City, its visitors and residents.

USDOT has established test beds for hosting vendors to test their applications and devices against the infrastructure that was deployed. One of these driver clinics was conducted at Walt Disney World’s speedway following the completion of the 2011 18th World Congress (WC) intelligent transportation systems (ITS) in Orlando, Florida. As part of the USDOT initiative, approximately 3,000 vehicles, which include passenger, transit and commercial vehicles, were outfitted with connected vehicle devices to exchange data to be logged and downloaded periodically. These connected vehicle devices communicate with roadside equipment (RSE) and can obtain signal phasing and timing (SPaT) information.
As part of the WC technology showcase, FDOT enhanced its statewide advanced transportation management system (ATMS) software, SunGuide®, to exchange data with the connected vehicle infrastructure and utilize it for future applications. Currently there are 26 RSEs along Interstate 4, Orange County Convention Center and John Young Parkway. Through the Smart City initiative, Orlando will be a test-bed for Safety, Mobility, Real Time Capture, Local Hazard Warning, Basic Safety Message (BSM) and specifically SPaT which is considered one of the most imperative applications.

SPaT data can be broadcast from a RSE unit located at the traffic signal controller to a connected vehicle using the DSRC technology for two-way communication. This application can be coupled with a “ride share” concept such as Uber, where it can transform Orlando from an auto ownership oriented environment to an urban environment where vehicle ownership is no longer a necessity.

Element 3 | Intelligent, Sensor-Based Infrastructure

Orlando’s current infrastructure is host to numerous intelligent sensors already. Our current sensor network is collecting and processing information from basic utilities usage (water, electricity and gas) to advanced intersection operations and vehicle video detection systems. Leveraging the technology made available by our partners, Orlando has integrated smart meter technology to provide usage data for residential and commercial utility use. This usage provides the City with metrics used to estimate peak demands based on historical information and to know when resources can be conserved, eliminating the need for overuse of power plants and water reservoirs.

The City has replaced all parking meters with smart meters that are used to track parking trends and provide information to the public on available parking spots. This technology is also used to alert parking officials when a meter has expired but a vehicle is still present. The parking availability is accessed through a smart phone and web based application. Using this type of sensor can lead to reduced congestion from the decrease in vehicles searching for parking. In addition, Orlando is collecting real-time traveler information from the network of Bluetooth sensors and intersection monitoring cameras. This data is used for emergency response, signal retiming and analytics to ensure that the network is operating as safely and efficiently as possible.

Orlando’s vision for the future incorporates a broad use of various “smart” sensors that will allow for a highly advanced, safe and efficient infrastructure. Sensors such as air quality monitors and noise monitors will be coupled with LED street lights to measure ambient aesthetics. Pedestrians and cyclists will be accounted for by utilizing in-pavement and pole mounted radar systems coupled with Bluetooth readers. Bike and Pedestrian travel times and anonymous origin-destination information can be collected and analyzed to understand major pedestrian areas and the needs around them. Pavement condition sensors will allow the City to understand current surface conditions and respond quickly to localized flooding during major rainfall periods, dispatch maintenance crews prior to a major failure. Since Orlando has a major freight rail line through its central business district, vibration monitors can be placed on major horizontal structures and bridges as well as foundations to measure fatigue due to rail line vibrations. Utilizing and testing new sensor technology will allow the City to detect major issues not only in the transportation network, but its entire infrastructure before a major malfunction or accident occurs.
Element 4 | Urban Analytics
Orlando is actively participating in Big Data with our partners. The data we are collecting today will not only assist us in planning but allow us to create discrete analytics. Using information gathered from connected pedestrians and vehicles, the City will have the ability to analyze essential metrics. Traffic detection cameras and loop sensors in approach lanes to intersections provide information regarding volumes and lane occupancy. Information such as travel time along corridors and arterials as well as dwell times and delay at intersections are captured through the use of Bluetooth reading devices, and backend data analysis to match unique device identifiers known as MAC addresses. Traffic congestion and travel speeds at intersections are also calculated using Inrix/HERE traffic data. These types of analytics allow Orlando to calculate its network efficiency and identify areas that may need operational improvements.

The Orlando autonomous vehicle / connected vehicle (AV/CV) program will extract data from connected vehicles to the roadside devices that will be leveraged into the dynamic signal systems that control signal timings and optimize the coordination of traffic along arterials. Information from these systems will also be fed into the ITS infrastructure to display travel information on dynamic message signs to alert motorists of congestion, detours or accidents ahead. The Orlando AV/CV program would allow for full integration of these systems across the City, to produce an increase in network efficiency and a decrease in fuel consumption and emissions.

Element 5 | User-Focused Mobility Services and Choices
Orlando’s vision for a connected city starts with its residents and the users of our transportation systems. The future of transportation means better access and more options. With our partners, Orlando is committing to a sustainable and attainable future where users can take precedence on modal choices. Our infrastructure today offers multiple modal choices for travel (bus, bikeshare, commuter rail, taxi, and vehicle). The users of our transportation systems will also have the ability to access public services through smartphone applications to plan their trips ahead of time. A single payment system will also allow regional travelers to use a smartphone or a single payment card to pay for transit services. This type of user-focused service will allow for ease of travel and will simplify trip planning for everyday trips, save time and promote transit and ride share services to better our environmental stewardship. Orlando has partnered with Juice Bike Share who offers bikes that can be rented or reserved from a smartphone application or browser interface.

Element 6 | Urban Delivery and Logistics
Orlando is a major freight driven city and our partners and communities thrive on freight. Our vision focuses on increasing the efficiency of freight services within urbanized areas and offer greater access for freight in our industrial areas. While outside of the city limits of Orlando, an integral partner of the region’s freight movement is Port Canaveral. The Port is leveraging its location, growth potential, expertise and resources to expand its world-class cargo operations. It is increasing capacity, building new facilities, and improving its channel to establish the deepest, most accessible East Coast port in Central Florida by 2020. Florida East Coast Railway access is available via an intermodal terminal located just 15 minutes from Port Canaveral or via a private intermodal facility approximately 10 miles from the Port’s cargo facilities. The Port Authority is working to establish critical on-dock rail service by 2017/2018 that will link the Port to the mainline East Coast north-south rail lines and connections.
Orlando envisions a future where our technology and sensor based environments will allow logistics operators to see where freight parking is available and real time congestion is on surrounding highways to supply the best and most efficient route to their drivers. Delivery programs such as off-hours delivery or on-time programs will allow carriers to make deliveries to businesses participating outside of peak traffic hours, providing faster travel times, and safer stops in traffic prone areas. Together, with our partners, Orlando will implement an AV/EV program that will use small autonomous or electric vehicles to complete last mile deliveries into the central business district.

**Element 7 | Strategic Business Models and Partnering Opportunities**

The City understands the strategic use of partnerships and what they can bring to our community to fulfill this vision. The City will leverage the partnerships identified in Section 7. These partners have provided a commitment letter showing their support to the City. Our partners are also offering substantial in-kind donations to assist with the development and implementation of various technologies through this grant. Our partnership with UCF, a University Transportation Center (UTC) member, has been strategic in assisting the City with various components of our existing transportation technology infrastructure. Our vision includes a much larger relationship starting with the construction of the new UCF Downtown Orlando campus. Our unique relationship with MetroPlan Orlando, a Metropolitan Planning Organization (MPO), has proven crucial throughout the transportation ITS network updates. MetroPlan Orlando has supplied funds to Orlando for a network wide ITS implementation. Our partners are committed to Orlando!

**Element 8 | Smart Grid, Roadway Electrification, and Electric Vehicles**

With major investments in electric vehicle infrastructure, bus rapid transit lines, alternative fuels/renewable resources and an autonomous future, Orlando is on the forefront of transportation technology. Our commitment has established one of a leading electric vehicle programs in the nation. Drive Electric Orlando (DEO) is a first-of-its kind partnership between more than 50 of Orlando’s leading rental car agencies, hotels, and attractions to provide the region’s visitors with an extended test drive of an electric vehicle (EV) during their car rental experience. A leader in EV charging infrastructure, Orlando is an ideal location for an EV rental program, because the City can bring together the biggest names in the tourism industry while hosting the largest rental car market in the world. More than 300 charging stations are available throughout Orlando and more than 20,000 hotel rooms have charging access. DEO is on track to becoming the nation’s largest electric vehicle rental program with the recent award of $400,000 from the U.S. Department of Energy’s (DOE) Clean Cities Program and Enterprise Rent-A-Car’s recent addition of 14 Chevy Volts to its fleet. The DOE grant is a collaboration between DEO, the Florida Office of Energy and the Central Florida Clean Cities program at the UCF. Plug-in electric vehicles can help to substantially improve urban air quality because they have zero (or very limited) tailpipe emissions—emissions like CO2, carbon monoxide, sulfur dioxide, and nitrogen oxides that are produced by conventional vehicles.

The UCF Downtown Campus will encompass all the aspects of a future Smart City to showcase alternative transportation, an autonomous shuttle system, ride-sharing, Photovoltaics (PV), EV charging infrastructure, and incentives for electrification, all available to the user through smart phone apps. Electric vehicles will be utilized for most personal and public transportation with
sufficient infrastructure for parking and charging. PV will offset electric vehicle transportation fuels, and can be directly used by transportation, stored for later use, or directed back to the utility grid. This effort will begin to develop a method to determine the most cost-effective use of solar energy production. Electrified public transportation will be a significant component to enable an efficient, low-emission, and higher level automation transportation. Orlando transit authority LYNX will replace a portion of its 300 coaches with two types of market-leading electric buses.

A level of automation has already been demonstrated in the electric bus technologies with overhead charging stations using Bluetooth communication so the buses can take control of a nearby bus and automatically direct the bus to assume the charging connectivity with the charger. Similar technology will be implemented, and coupled with wireless charging to demonstrate a Level 2 automation, on a route where both overhead chargers and ground buried wireless charging pad are strategically placed. This will lay the ground for higher level automation in collaboration with this grant for both buses and consumer vehicles.

Bus-to-grid power transfer may also be capable of assisting the local grid to remain stable as an increased amount of PV is added to the system. There may be operational modes of transit agencies which parallel PV production (PV production and public transit needs are both high during daylight hours). Periods of high demand on the grid may be partially offset by using energy from the fleet of buses. However, a control algorithm may be developed which could benefit the grid as much as the transportation sector. The combination of higher power charge rates and near-term advancements in battery technology are linchpins to the accelerated EV adoption, providing significant environmental and societal benefits. Using high-power wireless and automated EV charging will allow a seamless refueling opportunity for the EV and transit driver.

**Element 9 | Connected, Involved Citizens**

Open data is an important part of a connected city. Without the ability to interact with data being collected, information becomes stifled. In an effort to make data available to its citizens, Orlando is launching an open source data platform via a web mapping portal that allows access to data for analysis and reporting. This platform is the first of its kind for the region and will also leverage other data made available from state sources such as the Florida Department of Transportation (FDOT) and the Florida Department of Environmental Protection. The data will be readily available for public use and open source data processing, allowing application developers to create web based and smartphone applications.

Enhancing our transportation infrastructure, data gathered from a connected vehicle infrastructure, transit network and roadway condition reporting sensors will be provided. This data can be used to produce real time transit and congestion maps that will be used for modal choice selection by citizens. This information can also be supplied to emergency services to provide routing options while responding to calls. Mobility and safety can be enhanced using open source data, providing information on modal choice and avoiding heavily congested or blocked areas.

**Element 10 | Architecture and Standards**

Orlando is one of 300 metropolitan areas captured in the National ITS Architecture as a part of the Central Florida (FDOT, District 5) Regional Architecture. The Central Florida Regional Architecture is jointly maintained by the MPO (MetroPlan) and FDOT, where current projects, as
well as projects identified in the work program, are captured via the Central Florida Regional Architectures/Turbo File. The majority of the proposed Smart City products within this letter are already identified within the regional architecture (Please see http://www.consystec.com/florida/d5/web/index.htm) per the Connected Vehicle Reference Implementation Architecture (CVRIA). Communication standards and interoperability are established and monitored by the ITS Regional Working Group (RWG), comprised of the local municipalities and government agencies within the Orlando Region. The RWG has adopted open communication protocols in which the City and entire region are consistent. Finally, the City’s Information Technology standards (including police and fire) are generated and maintained by the Office of Information Technology (OIT). Therefore, the City’s Transportation Office, as well as other city departments, follow the guidance set forth by OIT to ensure consistency within the City.

It is the City’s intent to utilize the CVRIA system architecture tools, existing ITS Standards, the regional, statewide and national architectures and a certification process for ITS and Connected Vehicles whenever possible. Due to the nature of this project, development of additional ITS Standards and certifications for various Smart City products may be required. We anticipate that some of these products would include: transportation information systems (data, security and communications), connected vehicles (build upon the SE Michigan pilot), and the overall regional fusion of data from various data sources and types to develop a data warehouse of relevant data for the region to facilitate more informed decisions. To accomplish this, some of the anticipated data interfaces are likely to include connections to the region’s ATMS system (SunGuide®), the Security Credential Management Software, roadside equipment, the traveler, and the data warehouse. Lessons learned will be shared with the ITS community.

**Element 11 | Low-Cost, Efficient, Secure, and Resilient Information and Communications Technology**

To manage the communication of a Smart City Orlando will leverage existing fiber assets. Industry best practices for security and resiliency will be used to ensure that connections are reliable for end users. Privacy will be ensured by obscuring personal information as close to the edge of the network as possible. Additionally, the City is ready to incorporate the secure credential management system, or SCMS, as provided by USDOT.

**Cost Effective:** Orlando has an expansive fiber network. The system has been built through the cooperation and sharing of resources with the City, County, State, and surrounding municipalities. For over a decade, these agencies have had a practice of placing higher standard count fiber than is required for individual applications at little or no additional cost. The fiber / communications is then made available to any agency that needs it for transportation purposes.

**Security:** Security of a communication system begins with restricting access. Fiber intercepting communications requires accessing a cable and reducing light levels to a device, alerting the City of an intrusion. The next point of vulnerability is at the cabinet. The City will work with the State to match the locking system currently in use on limited access facilities. It allows the restriction of user access through an electronic key and lock. The key includes a unique identifier plus updated permission information. The permission information is transmitted to the lock upon use, allowing a centrally managed system to regulate access to the individual tumbler for each key. The City’s TMC and OIT equipment is housed in rooms that similarly record and restrict
access at the user and lock level. Intrusion from the internet and other transportation networks will be restricted through the use of multiple firewalls. A demilitarized zone (DMZ) will be created for content that needs to be available on the web. Certificates will be used to ensure these exposed services are further protected.

**Resiliency:** The resiliency of the City’s network is maintained through the use of industry standard protocols and physically redundant routes. Because of the fiber sharing in the area, fiber is available will multiple physical routes back to network aggregation switches. Spanning Tree Protocol, or STP, can ensure failover occurs to the aggregation switches in the event of a fiber cut or failed switch. The aggregation switches will use open shortest path first, or OSPF, to ensure failover to the core switch/servers. Using industry standards ensure competitive acquisitions and allows for technology upgrades without being tied to a single vendor.

**Connected Vehicle:** Orlando participated in the 2011 ITS WC. As part of that effort, a Connected Vehicle pilot was established and maintained long after WC had ended. The City is aware of the network needs of connected vehicles and is ready to support them. In addition to bandwidth and IPv6 needs, the City is prepared to work with USDOT to establish a secure credential management system (SCMS). The City has the IT staff and expertise needed to fully support USDOT in the establishment of the system and the management of the system moving forward.

**Open Data:** The City is already working with Socrata to meet the White House Open Data Initiative, by making City data available via a web portal. The Socrata portal will be active by the time this proposal is submitted. The site meets industry standards for security.

**Element 12 | Smart Land Use**

Orlando has a typical development pattern for a sunbelt city, with the majority of growth occurring after 1980. There is a compact, walkable downtown, but most jobs and housing are dispersed across the region. Since 1985, the City has promoted walkable, dense, mixed use activity centers. In some locations, the market has responded well, creating notable successes such as Baldwin Park and Medical City in Lake Nona. Since 2011, Orlando has seen a boom in apartment construction in it’s downtown, a phenomenon that took 20 years of planning, economic development incentives and transportation improvements to entice development Orlando. The City can build off of these and other successes to create urban villages that are hubs of activity and walkability. Over time, suburban areas can be retrofitted into urban villages that each have their own character. The following proposed projects will assist with this process:

**Unique Projects and Phasing**

**Immediate (1 year)**
- Add electric-assist bikes to bike share program
- Update bike path and bike lane rules to allow bikes with electric motors and robot delivery
- Require EV charging stations for new development
- Create a technology element in the City’s comprehensive plan to identify and prioritize projects, provide direction on how to incorporate new technology into existing infrastructure, and create policy support for innovation
Available city garage parking spaces will be included with the available on-street parking meter spaces on the PARKME mobile application. The garage operation software coming online in FY16 will have the capability to feed into an open source data sharing site showing real-time data.

Medium Term (5 year)
- Incentives to convert parking lots to other uses in City Tourist Areas
- Reduce minimum parking requirements
- Create neighborhood-based incentives for residents to install EV charging stations
- Require preferred parking for alternative electric vehicles: NEVs, scooters, etc.
- Robot package delivery - create satellite warehouses by leveraging existing uses
- Reserve strategic locations within parking garages for autonomous vehicles
- Install Solar Panels on roofs of four of the City’s garages and one surface lot providing power to the Electric Vehicle charging stations and garage lighting (which has already been retrofitted to LED). The excess power can be sold back to OUC. The use of solar power will significantly reduce the carbon emissions in the Downtown Business District. The panels will require maintenance and replacement at the end of a typical life cycle, which will be funded by the savings.

Long Term
- Road diets to reclaim larger streetscape
- Redevelopment incentives along premium transit corridors
- Re-purpose city garages for car share
- Autonomous vehicle program for school pickup in areas not served by buses
- Underground utilities
- Smart Infrastructure Corridors - in Main Streets, solar umbrellas, charging station
- Tourist area as location for energy efficiency showcase
- Create green spaces or tiny house development in under-used parking lots or abandoned car dealerships
- Partner with Universal/Disney to adapt their crowd control tools to move people through autonomous vehicles
- Revive the 2006 downtown transportation plan idea for a freight hub, but adapt for autonomous deliveries, robots and small scale storage of freight.

The development of best practices for supporting EV through land use and transportation planning is a key element in the above projects successful adoption and deployment. The development of this methodology can be used in the planning process to determine capital, operating and maintenance costs and help meet the increasing demand for EVs. This approach can also provide important information to accelerate electric vehicle adoption. Development of these guidelines can also be extended as EV technology begins to merge with (AV/CV) technologies. Adopting an integrated planning approach that accommodates all forms of electric vehicle transportation will provide useful strategies in the development and enhancement of transportation planning, urban automation and smart roadways.
6. Smart City Risk Analysis

The City prides itself on balancing the technical and policy risk associated with becoming a Smart City with appropriate management of those risks. Our leadership, management and team members have collaborated to identify the potential impacts of the Vision Elements and risk level (high, medium and low) in order to adequately monitor, anticipate mitigating strategies and plans to mitigate the probable risks.

As a result of these discussions, the City has identified the following primary risks associated with the evolution and advancement of the Smart City program. The three predominant categories that have been identified for risk assessment include: new technology, commitment/collaboration and operations/maintenance.

<table>
<thead>
<tr>
<th>Risk Number</th>
<th>Risk Description</th>
<th>Concern</th>
<th>Risk Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>New Technology</td>
<td>Software Development</td>
<td>High</td>
</tr>
<tr>
<td>1b</td>
<td>New Technology</td>
<td>New Vendors / ITS Standards</td>
<td>High</td>
</tr>
<tr>
<td>2</td>
<td>Collaboration</td>
<td>Multiagency Coordination</td>
<td>Low</td>
</tr>
<tr>
<td>3</td>
<td>Sustainability</td>
<td>Operations &amp; Maintenance</td>
<td>Medium</td>
</tr>
<tr>
<td>4</td>
<td>Policy</td>
<td>Policy Risk Avoidance</td>
<td>Medium</td>
</tr>
<tr>
<td>5</td>
<td>Institutional</td>
<td>Institutional Practice</td>
<td>Low</td>
</tr>
</tbody>
</table>

1. New Technology

a. Software Development

Mitigation: The City is proposing to develop software that builds off of the statewide ATMS software (SunGuide®). SunGuide® has been continuously upgraded to meet project needs over the last decade by following a systems engineering process including the development of new modules. Some examples of new modules include ramp metering, express lane pricing, emergency management, and Waze. The process begins by identifying an upgrade or module’s requirements and then uses a Concept of Operations document developed with stakeholder input that is reviewed and approved by the State’s Change Management Board. Then, strictly detailed requirements developed with traceability are developed as part of detailed design and documented via the Requirements Traceability and Verification Matrix (RTVM). Once the software application has been developed, verification of the application’s effectiveness is tested at the developer’s facility using the RTVM. On-site installation and training is then provided by the developer. It is at this point that we validate the software application to confirm that it is meeting the initial software requirements.

b. New Vendors (many new to ITS) and Immature Standards

Mitigation: Building the Smart City requires the City to work with new vendors, many of whom have not been required to integrate with existing transportation infrastructure. Their technology represents an additional risk to the project. The selection of the appropriate acquisition method
that allows incremental check points can minimize the City’s exposure and allow course correction. Clear requirements generated via a systems engineering process for each component, as well as the integrated subsystem, establishes the goal for the vendor and the City.

2. Multiagency / Multidepartment Coordination
Mitigation: The Smart City will be integrated with its regional partners. As a result, multiagency coordination is critical to the success of the project. Working across jurisdictions can add complication and risk. For the Central Florida region, this risk is minimized by existing relationships and strong support for this project. The region has a history of working together on large complex projects. This history has resulted in regularly scheduled Regional Working Group Meetings (Technical Meeting) and a regional TSM&O Consortium meeting (Management Meeting). Communication between the agencies is open and active and each agency’s roles and responsibilities will be clearly defined via the Concept of Operations for this project. These roles and responsibilities will identify ownership for any particular element of the Smart City deployment. The Central Florida region is united behind the Smart City grant opportunity. Letters of support have been provided from all the involved stakeholders.

3. Operation and Maintenance after Grant (Sustainability)
Mitigation: This grant provides an opportunity to jump start a Smart City, but its funding is for capital deployment. A traditional gap in funding and budgeting is longer term operations and maintenance funding. Orlando recognizes the long-term costs that will come as a result of being selected as the Smart City. As a part of the Concept of Operations, the long term costs will be identified and funded through the budgeting process. These costs will include operations, maintenance and life cycle replacement.

4. Policy Risk Avoidance
Mitigation: Mayor Dyer, Orlando’s Chief Executive, recently re-elected and is committed to the great leap that the USDOT’s funding partnership will facilitate during his next four years in service to the citizens of Orlando. The City Council unanimously approved the resolution which endorses Orlando’s application and the larger Smart City concept. Orlando’s Comprehensive Plan includes all the elements of the Smart City Concept and will be further amended to specifically mention all 12 USDOT Smart City Challenge elements. The amendment will include measures to ensure pursuit and achievement of the Smart City principles throughout the four years of the grant opportunity and for decades to come. The City’s Land Development Code will be amended, on a continuing basis, to ensure the implementation of the tactics associated with Smart City principles, and that they are the most state of the art improvements.

5. Institutional Risks
Mitigation: Initial and continuing leadership team and partnership meetings will be mandated and include team-building techniques, challenge resolution procedures, and continued focus on the Smart City Vision. The City will ensure that there will be redundant staff coverage by appropriately trained and compensated personnel, who are required and audited to perform at the highest levels of competence. Regular reviews and audits will be performed by internal and external agents to ensure compliance with the City’s Smart City mission. Regular reporting will be provided to the City’s senior staff leadership, the City’s executive leadership, and the City Council.
7. Balancing Partnerships and Moving Forward

The City has built long-standing relationships with business partners, stakeholders and the private sector business community.

<table>
<thead>
<tr>
<th>Partners</th>
<th>Commitment to Partnership</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Orlando</td>
<td>- Lead agency</td>
</tr>
<tr>
<td></td>
<td>- Involved in all Vision Elements</td>
</tr>
<tr>
<td>Florida Department of Transportation (FDOT)</td>
<td>- System infrastructure</td>
</tr>
<tr>
<td></td>
<td>- ITS architecture and standards</td>
</tr>
<tr>
<td>Central Florida Expressway (CFX)</td>
<td>- Multi-modal transportation connection</td>
</tr>
<tr>
<td>Orange County Government</td>
<td>- Strategic business partner</td>
</tr>
<tr>
<td></td>
<td>- System infrastructure</td>
</tr>
<tr>
<td>MetroPlan Orlando – MPO for Central Florida</td>
<td>- ITS infrastructure support</td>
</tr>
<tr>
<td></td>
<td>- System architecture overview</td>
</tr>
<tr>
<td>Central Florida Transportation Authority (LYNX)</td>
<td>- BRT technology advancement</td>
</tr>
<tr>
<td></td>
<td>- Real time data producer and management</td>
</tr>
<tr>
<td>Orlando Utilities Commission (OUC)</td>
<td>- Utility infrastructure</td>
</tr>
<tr>
<td></td>
<td>- Electric charging stations</td>
</tr>
<tr>
<td>Greater Orlando Aviation Authority (GOAA)</td>
<td>- Support security and resilience of system</td>
</tr>
<tr>
<td>INRIX</td>
<td>- Data provider partner</td>
</tr>
<tr>
<td>General Motors</td>
<td>- Automated vehicle consulting partner</td>
</tr>
<tr>
<td></td>
<td>- Smart grid technology support</td>
</tr>
<tr>
<td></td>
<td>- Vehicle communication support</td>
</tr>
<tr>
<td>Lockheed Martin (LM)</td>
<td>- Support security and resilience of system</td>
</tr>
<tr>
<td></td>
<td>- Sensor and infrastructure system</td>
</tr>
<tr>
<td>University of Central Florida</td>
<td>- Data analytics</td>
</tr>
<tr>
<td></td>
<td>- Automated and connected consulting partner</td>
</tr>
</tbody>
</table>
As an awardee, Orlando will capitalize on the model of cooperation and governance that has been established by the MPO to coordinate public and private resources to accomplish the vision as presented in this application. As an awardee of this grant, Orlando will bridge relations with other public and private entities.

### Collaborating Stakeholders

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Collaborator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walt Disney World</td>
<td>Universal Studios</td>
</tr>
<tr>
<td>Orange County Public Schools</td>
<td>Enterprise Car Rental</td>
</tr>
<tr>
<td>Federal Express</td>
<td>City of Orlando Mayor Buddy Dyer</td>
</tr>
<tr>
<td>Amazon</td>
<td>Florida Automated Vehicles (FAV)</td>
</tr>
<tr>
<td>Port Canaveral Port Authority</td>
<td>I-4 Mobility Partners</td>
</tr>
<tr>
<td>VHB</td>
<td>Eco Preserve</td>
</tr>
<tr>
<td>Metric Engineering</td>
<td>General Motors</td>
</tr>
<tr>
<td>Tavistok / Lake Nona</td>
<td>Florida Atlantic University</td>
</tr>
<tr>
<td>Florida Solar Energy Center (FSEC)</td>
<td>Digi (Bluetooth)</td>
</tr>
<tr>
<td>University of Florida</td>
<td>Nokia</td>
</tr>
<tr>
<td>Siemens</td>
<td>Avis</td>
</tr>
<tr>
<td>Publix</td>
<td>Florida International University</td>
</tr>
</tbody>
</table>

![Diagram showing the flow of collaboration between various stakeholders and partners, including USDOT, State Elected Officials, City of Orlando, Primary Partners, and Quality Control Partnership Team.]
8. Existing Transportation Infrastructure

Orlando offers diverse transportation infrastructure as well as numerous other systems that are second to none in the United States. The City’s infrastructure supports a tourism industry that just set a United States record of 62 million visitors in 2014, making Orlando the most visited destination in the United States.

*The following metrics represent the result of decades of innovation and development within the City:*

| Arterial Miles | Local Roads = 1,053 Miles  
State Roads = 77 Miles  
Total Roadway Mileage (Excluding Freeways) = 1,130 Miles |
|-------|---------------------------------------------------------------|
| Freeway Miles | Freeways = 12.2 Miles  
Toll Roads = 16.5 Miles  
Total Freeway Mileage = 28.7 |
| Transit Services | LYNX – Regional Transit System  
LYMMO – Bus Rapid Transit Downtown System since 1997  
NeighborLink – Flex-service aimed to make it easier for residents living in less-populated areas to make use of both local transportation and LYNX’ local bus system.  
VanPool – Shared van given by LYNX for a group of commuters.  
SunRail – Regional Commuter Rail System  
I-Ride Trolley System – International Drive Trolley System |
| Smart Grid Infrastructure Including Electric Vehicle Charging Infrastructure | **AWARD** - CS Week and Electric Light & Power magazine with a 2014 Expanding Excellence Award for Best Infrastructure in North America – Orlando Utilities Commission (OUC)  
Smart Meters – 375,000 Locations  
- Real-Time Payments – Hundreds of Locations  
- Remotely Connect and Disconnect Services  
- Automated Meter Reading  
- Additional Consumer Information  
Power Pass Prepaid Program  
500 3rd Party Payment Locations  
Consumption Dashboard  
Self-Service Website  
Automated Phone System  
Distributed Generation at the Point of Consumption  
Electric Vehicle Charging Infrastructure  
- 140 public charging stations.  
- Electrical Vehicle Charging Stations – Administration Garage and Jefferson St. Garage  
Advanced Digital Water Meters – Automatic Detection of Leaks |
| Shared-Use Mobility Services | **Juice – Downtown Bike Share Service**  
**Zipcar – Car Rental Service**  
**Lyft – Ride Sourcing Service**  
**Uber – Ride Sourcing Service**  
**Hertz 24/7 – Round-trip Services**  
**Relay Rides – Peer to Peer Car Sharing**  
**Scooter Sharing (coming soon)** |
|-------------------------------|----------------------------------------------------------|
| **Transportation Technology Services:**  
- Medium – Primarily Fiber  
- Speed – 10 Gb Core, 1 Gb Edge, 10/100/1000 Distribution  
- Location – All Freeways/Toll Roads, All Arterials  
- Ownership – Fiber Optic Infrastructure is a Shared Resource Between the City, County and State using Regional Fiber Sharing Agreements (For Over a Decade)  
- Network Standards – Ethernet Network, Unique IP Address Assignments, Consistent Regional Network Architecture Allowing Data Sharing between City, County, and State  
- Security Standards – CJIS, Microsoft Active Directory; authentication, authorization, and accounting (AAA) with a RADIUS (Remote Authentication Dial-In User Service) or TACACS+ (Terminal Access Controller Access-Control System Plus) server |
| **City Information and Communication Technology**  
- Medium – Fiber and Copper  
- Speed – 10 Gb Core, 1 Gb Edge, 10/100/1000 Distribution  
- Ownership – Fiber Optic Infrastructure is a Shared Resource Between the City, County and State using Regional Fiber Sharing Agreements (For Over a Decade)  
- Network Standards – Ethernet Network, Unique IP Address Assignments  
- Security Standards – CJIS and HIPPA based, Microsoft Active Directory  
- GIS System – Enterprise system with 900 Layers Orlando Police and Fire Computer Aided Dispatch - a medium for reporting (crowd sourcing) - data sharing between City Police, Fire, and OCPS.  
- Analytics and predictive analysis initiative - Use of public safety (police/Fire) incident data, code enforcement, weather conditions, scheduled events, garbage pickup routes, school schedules etc.. to build dashboard and predictive analysis to assist in smart planning for safety and efficiencies  
- Open Data Website |
Intelligent Transportation Systems (ITS) Including TMCs and Field Equipment

TMCs
- City of Orlando – Staffed 24/7
- City of Orlando Event Management Center - staffed to manage high traffic volume downtown special events, coordinate with traffic control, traffic signals, police, parking, event management
- Orange County
- Florida Turnpike Enterprise (FTE)
- LYNX – Doubles as Dispatch
- FDOT – Overall Regional Traffic Management Center (RTMC), Includes CFX management – Staffed 24/7/365

TMCs share video and some data using a hub and spoke topology with the RTMC in the middle

Field Equipment
- ATMS Software – ATMS.now
- Signals – 487 with 456 interconnected
- CCTVs – 101 (Orlando), 109 (FDOT/FTE), 40 (CFX)
- DMSs – 11 (Orlando), 92 (FDOT/FTE), 12 (CFX)
- Bluetooth, AVI, MVDS – 80 (Orlando), 90 (FDOT/FTE), 54 (CFX)
- Fiber Optic Cable – 55 Miles (Orlando), 80 Miles (FDOT/FTE), 29 Miles (CFX)
- Transit Signal Priority – 68 Locations (Orlando)
- Smart Parking Meters – 1000 (Orlando)
- Red Light Running Cameras – 14 (Orlando) there is an ongoing project to expand by an additional 17 locations.
- Smart Bike Share Stations – 20 (Orlando)
- Orlando Police Body Cameras

9. Current Data Collection and Management

Real-time data accessible to the traveling public and leveraging existing social media sources will support mobility and efficiency by offering mode choice and improved reliability with live information on the availability of resources such as rail, busses, car or bike share, and roadway travel times. Real-time parking data is critical for minimizing circulating traffic to find available parking. Video information from the transit buses could provide video surveillance information for transportation throughout all of the routes using existing CCTVs. Transit, police and fire and rescue vehicles can be used as probes for travel time and delay information. Third party data, such as WAZE, will identify particular pedestrian and vehicle movements as well as any reported incidents.

Existing policies in support of these technology goals is included in the Florida House Bill 1207, which defines “autonomous vehicle” and “autonomous technology” and provide guidelines to encourage the safe development, testing and operation of autonomous vehicles on public roads.

In addition, the City’s regional partners are cooperating on future needs through the ongoing development of both a local ITS Master Plan by MetroPlan Orlando and a regional ITS Master Plan.
by FDOT. Agency partners meet regularly for the Central Florida ITS Consortium and Regional Working Groups to discuss regional issues and efforts. In addition, these partners are collaborating together on several ongoing regional projects which include:

- **Decision Support Tool and ATMS** – currently funded for implementation, and will include development of the Concept of Operations and the detailed requirements of a software platform for arterial management and a decision support system.
- **Big Data** – development of five data use cases to serve as a proof of concept for the implementation of a central data collection and processing hub.
- **Data Fusion Center** – consists of scrubbing the existing data sets for data structure issues, creation of new adaptors, and visualization of data, all hosted locally by FDOT.
- **Active Arterial Management** – Two ongoing contracts.
- **Transit Signal Priority** – Two ongoing projects.

The Following provides the various modal data and type of data being leveraged for analytics.

<table>
<thead>
<tr>
<th>Modal Group</th>
<th>Types of Data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard City Data</strong></td>
<td>Population, Miles of Roadway, Citizen Income, Demographics, Crime, Cost of Living, Education, Employment, Housing, Weather, Geographic, Age Distribution, Tourism, Taxes, Budgetary, Asset Management</td>
</tr>
<tr>
<td><strong>Connected Vehicle</strong></td>
<td>NG911 - Telematics data from vehicles to 911 Call Center; ATMS (SunGuide®) – Road Side Equipment Status, Traveler Advisory Messages, BSM1</td>
</tr>
<tr>
<td><strong>Vehicular</strong></td>
<td>Signal System (ATMS.now), ATMS (SunGuide®), High Definition Intersection Information, Probe Vehicle, Crashes Records, Red Light Cameras, Intersection Turning Movement Counts (Automated System and Manual) – Startup loss, Average Headway, Utilization by lane, Percent arrival on green, Underutilized green time percentage, Classification, Right turns on Red, Permitted Lefts, Queue length, Tolling, Park and Ride</td>
</tr>
<tr>
<td><strong>Multimodal</strong></td>
<td>Regional Transit System and Bus Rapid Transit – Routes, Schedule, AVL, and APC, Transit Signal Priority, Shared Ride Door-to-Door, Transit Flex-Service, VanPool, Automated and Manual Pedestrian Volumes, Pedestrian Crossing Speed, Ped Phase Utilization, Pedestrian Crashes, Strava – Bike travel time, O&amp;D, QOS, Orlando Airports, Commuter Rail (SunRail), Trolley System (I-Ride Trolley System)</td>
</tr>
<tr>
<td><strong>Shared-Use Mobility Services</strong></td>
<td>Downtown Bike Share Service (Juice), Car Rental Service (Zipcar), Ride Sourcing Service (Lyft/Uber), Round-trip Services (Hertz), Peer to Peer Car Sharing (Relay Rides)</td>
</tr>
</tbody>
</table>
10. Existing Architecture and ITS

Orlando has established regional structures and initiatives that are used to provide standards, architectures and a uniform certification process for many of its existing functions. It is anticipated that the City will build on this already solid foundation for the ITS and connected vehicle based technologies for documenting experience and improving Smart City products based on lessons learned. Some of these structures and initiatives are identified below.

The City’s Information Technology standards (including police and fire) are generated and maintained by the Office of Information Technology (OIT). Therefore, the City’s Transportation Office, as well as other City Departments, follow the guidance set forth by OIT to ensure consistency. In addition, the City strives to provide the most recent and relevant technology for its citizens. Examples include being an early adopter of the White House Cloud First Policy (SaaS email system, IaaS Internet and Intranet hosting and SaaS ERP in the Cloud); Strong participation in the White House Open Data Initiative as a part of the City’s transparency; and the City’s Open Data Initiative. Finally, the City is adopting a cloud-based mobile PaaS and is creating government to citizens applications as well as crowd sourcing using both City employees (mobile workers, police and fire),
local technology community and citizens. These applications all require strong existing standards and architecture to ensure success.

**Standardization and Topology**

The City has already worked towards standardization with the regional partners for: security, network and data standards. For security, the key points that have been identified include: a centrally managed user account database, such as Microsoft Active Directory; Authentication, Authorization, and Accounting (AAA) with a Remote Authentication Dial-In User Service (RADIUS) or Terminal Access Controller Access-Control System Plus (TACACS+) server. For the network, the region has deployed a project to ensure a unique IP addressing scheme in preparation for Connected Vehicles and other technology initiatives. In addition, the region is using a Hub and Spoke topology (discussed below) with each agency being allocated a unique Autonomous System Number (ASN) for use in Border Gateway Protocol (BGP) routing. Finally, Multiprotocol Label Switching (MPLS) will be used between regional partners’ routers. In addition, due to the proposed Hub and Spoke design, it is proposed that FDOT would function as the administrative entity. For data, the region’s preferred data format is JSON or XML for ease of data applications importation.

Some additional examples of standardization include existing field based technology (sensors) that subscribe to Center to Field standards, including the applicable NTCIP standards. Regionally, central management software(s) have been or are being merged to place partner agencies on common platforms where possible throughout the region. Examples of these common platforms include SunGuide® (ATMS software), Asset Maintenance (MIMS), Road Ranger Management (RRMA), Web-based Video Sharing (IVEDDS) and Preemption Management (CMS) and TSP. In addition, the City’s Traffic Signal Software will share information via Center to Center standards with the platform as determined by an ATMS/Decision Support System project by April 2016. Finally, Orlando has an ongoing Connected Vehicle pilot that provides data back to the Traffic Management Center.

After the standardization of various platforms, network, security and data sets, it is necessary to understand how regional communication will take place. The task of interconnecting numerous regional partners and data sources (including third party) is a significant undertaking. Fortunately, the Orlando region has already moved forward with a secure regional Wide-Area Network (WAN) topology. The regional WAN is proposed to be deployed in a hub and spoke physical network topology (see the above diagram) with the Regional Traffic Management Center (RTMC) designated as the aggregate location for all of the partner agencies’ connections.
Architecture

As described earlier, the connected vehicles elements are already a part of the regional architecture for Central Florida. Using a regional architecture model for over a decade has allowed the Orlando region to identify specific standards that are required for the successful integration of multi-faceted technology project(s). This experience allows us to build on this foundation when looking at the technology expansion required for the Connected Vehicles elements of the Smart City. We have already developed a preliminary architecture for this project that is consistent with the Central Florida regional architecture. This architecture will use industry standard interface types and bring them into a data fusion center. We have already begun the data fusion deployment via partnerships with VHB, UCF, and UF. Adapters already exist for normalizing HERE data and are under design for the SunGuide® (ATMS platform). Additional adapters will be developed for Smart City use cases.

Performance Reporting and Lessons Learned

Orlando recognizes that the Smart City grant serves as a transferable deployment and there is a need to document the lessons learned and transfer knowledge for future deployments. The regional architecture, preliminary connected vehicles architecture, regional standardization and regional working group standard documentation already exists and will be built upon as a part of this effort. However, the key to the success of any technology project is the use of the system engineering process, which the Orlando region has already begun. The system engineering processes will be followed from the regional architecture update through the entire deployment process. The data fusion center will document with a data dictionary all applicable field and
metadata to describe data source, extract, load, and transfer processes that have occurred to the data. This will allow for, not only verification of any particular Connected Vehicles product, but also the validation of the product over time. This information will be reported in the form of performance measure reports and dashboards, which in turn will be tied to threshold goals. With regards to coordination with specifications and standards developers, we will be continually updating the Concept of Operations and SEMP documents throughout operations. In addition, we would propose a web site with published reports, performance measurement reporting and lessons learned.

11. Performance Measures and Objectives

Orlando has developed a series of performance measures that will provide control parameters to monitor the holistic impacts associated with the integration of the Smart City Vision Elements outlined in the various sections of this application. Performance measures have been developed based on availability of data sources, performance indicators and desired overall monitoring outcomes for mobility, efficiency, safety, climate change and sustainability.

<table>
<thead>
<tr>
<th>Objectives / Issues</th>
<th>Goals</th>
<th>Measures of Success</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility</td>
<td>Provide mode choice and network connectivity</td>
<td>- Availability of Real-time Data to Travelers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Customer satisfaction (user surveys)</td>
</tr>
<tr>
<td></td>
<td>Improve mobility for vehicles</td>
<td>- Person Throughput</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Average Delay Nonrecurring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Duration of congestion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Congested lane miles (%)</td>
</tr>
<tr>
<td></td>
<td>Improve bicycle mobility</td>
<td>- Connected Infrastructure to Support Smart Movement of Bicyclists</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Bike share with ¼ mile of residents and jobs</td>
</tr>
<tr>
<td></td>
<td>Improve pedestrian mobility</td>
<td>- Sidewalks on both sides of street with marked crosswalk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Customer satisfaction (user surveys)</td>
</tr>
<tr>
<td></td>
<td>Improve transit options and performance</td>
<td>- Transit ridership</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Number of busses in operation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Number in trains in operation</td>
</tr>
<tr>
<td></td>
<td>Provide freight mobility</td>
<td>- Availability of Real-time Data to Freight Providers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Number of Off-hour Freight Deliveries</td>
</tr>
</tbody>
</table>
The mobility performance measures are intended to evaluate the overall movement to promote mobility for all modes of travel. As a destination city, Orlando has the desire to balance the overall movement of commuter traffic and the significant amount of tourists that visit our City on an annual basis. The City, along with our partners, have committed to monitor these performance measures (and more) in order to enhance the experience visiting Orlando and the Central Florida region.

<table>
<thead>
<tr>
<th>Objectives / Issues</th>
<th>Goals</th>
<th>Measures of Success</th>
</tr>
</thead>
</table>
| **Efficiency**      | Provide efficient movement of vehicles | - VMT/VHT by Character Area  
- Congested Travel Time  
- Delay  
- Travel Time Index |
|                     | Provide reliable transit | - Travel time reliability  
- Schedule adherence |
|                     | Provide reliable freight movement | - Freight delay  
- Freight VMT |
| **Safety**          | Provide effective incident management | - Incident duration  
- Percent vehicle |
|                     | Improve safety for pedestrians | - Severity of pedestrian crashes  
- Number of pedestrians injured |
|                     | Improve network safety | - Number of crashes  
- Incident severity |
|                     | Leveraging technology | - Number of crashes in CV areas  
- Incident Severity in CV Areas  
- RSE alerts issued |
| **Climate Change**  | Reduce negative impact on climate change | - Emissions  
- Incentives for electric vehicle charging stations  
- Availability of Recharging Stations  
- Alternative Fuel Availability for Transit  
- Green Land Use and Development Regulation |
| **Sustainability**  | Provide Asset Management | - Catalog of existing assets on the network |
|                     | Maintain a state of good repair on all field assets | - Maintenance records for network assets  
- Feedback from Public |
In addition to mobility, the City has committed to increase efficiency for vehicles including of freight mobility through Orlando. The City has continued to build on the Orlando MPO Freight Plan that was developed in 2002 to maximize the efficiency of freight movement from our ports, logistic centers and beyond. Orlando, though our partnerships with FDOT and MetroPlan Orlando, has continued to monitor the opportunities to improve safety conditions for all modes of transportation. Furthermore, the performance measures will build on the commitment to improve the environment in a sustainable manner. The climate change indicators provide for citywide measures of effectiveness that will leverage our regional partnerships in order to enhance the environmental conditions.

12. Project Implementation Capacity

For the past decade, Orlando has been committed to enhancing and advancing its transportation technology infrastructure. Prior to pursuit of this grant, information regarding the objective and qualifications were brought before City commissioners who issued a referendum of support for the City to pursue the Smart City Challenge grant. As shown by the commitment letters, as well as the executive and legislative staff of the City support, this opportunity will continue to provide the necessary resources to ensure the successful advancement of the Smart City initiative. The City, along with our partners, has taken on unprecedented challenges and has become a leader of innovation in transportation technology. Orlando's visionaries have led the creation of walkable communities in Parramore, an underserved area, the advancement of commuter rail and the I-Ride trolley services along International Drive as well as the state-of-the-art venues such as the Performing Arts Center. These commitments will continue to advance the vision that Orlando has initiated. As a further demonstration of the City’s commitment, Orlando has secured commitment letters from Orlando Commission and key public/private partners to ensure that sufficient resources and commitments are available throughout the duration of this contract, and beyond.

13. Leveraging Funds

Through the partnerships that have been described in this applications, we envision that human, capital and monetary resources will be available to fulfill our Smart City vision. In the Orlando Urbanized Area, there is a precedence of staff sharing between the various agencies to bring a federal project to fruition. The TravTek pilot project, a public/private partnership test of an advanced driver information system; the USDOT Beyond Traffic Forums held in several megaregions across the county; working together to host the 2011 ITS WC are illustrations of combining local resources to accomplish a project that has transformed our transportation system for the better. Orlando is also a partner for the Electric Vehicle Transportation Center (EVTC) at UCF, one of the University Transportation Centers (UTC) funded by USDOT. The EVTC is the only UTC focused on electric vehicles and supports USDOT's strategic goals of planning for near-term integration of alternative fuel vehicles as a means to build a sustainable transportation system and of enhancing the environment. The EVTC's research projects evaluate technologies, standards, planning and policies to ensure seamless integration of EVs into a complex transportation network while at the same time, seizing the opportunity these vehicles present to enhance electric grid modernization efforts. EVs provide the unique capability of being able to store energy which allows them to both use and supply energy to the nation's electric grid. The future use of “smart-grid enabled” inverters and chargers will feature real-time, two-way communications and will be critical in bridging the gap between deployment of electric vehicles and the traditional transportation system. This is a significant component of our focus for Smart City applications in Orlando.
The Honorable Anthony Foxx, Secretary  
United States Department of Transportation  
1200 New Jersey Avenue, SE  
Washington, DC 20590

February 4, 2016

Dear Secretary Foxx,

I am proud and privileged to write this letter in support of the City of Orlando’s submittal in response to your Smart Cities Challenge. Orlando has a long and proud history of engaging and including underserved communities, in fact the City’s Minority and Women Business Enterprise Program was the first of its kind in Central Florida when it began in 1983.

It has been no secret that we know how to work with our diverse community to get things done, because everybody is saying;

Orlando is…

A great place for Minority and Women Business Enterprises!

The success of the City’s M/WBE program recently gained national attention when Forbes Magazine ranked Orlando as the number one City in the country for job growth. Forbes Magazine also listed Orlando as seventh among the 52 largest metro areas that present African-Americans with the best opportunities. Most recently, the Orlando Business Journal reported that “Orlando is No. 24 for black-owned businesses”, according to a report by personal financial website NerdWallet.

Why Orlando?

The answer in a word is Leadership!

The Mayor and City Council have made the inclusion of minority and women owned businesses in all city projects a top priority for many years, and are now receiving critical acclaim and recognition for all of their efforts.

“They helped build this City”

One need only to look at the high profile projects in Central Florida over the last three decades to see the role that M/WBE’s have played in building our community. From the very first Arena to our brand new state of the art Amway Center, the City’s historically strong M/WBE program provided a solid foundation for the development of the Community Venues “BLUEPRINT” program. A visionary program designed to do more than just build structures, it was conceived to include the entire community in the design and the construction and more importantly the continuing operations of these iconic venues.

I can personally assure you that our department and program will work tirelessly to ensure this Smart City Program will be a complete success and will produce a best in class model for others to share.

Sincerely,

Kevin Walsh
MBE Official
RESOLUTION NO. 16012-5203

A RESOLUTION OF THE CITY OF ORLANDO, FLORIDA, CONFIRMING THE CITY’S COMMITMENT TO THE UNITED STATES DEPARTMENT OF TRANSPORTATION’S SMART CITY CHALLENGE INITIATIVES AND SUPPORTING THE CITY’S SUBMITAL OF AN APPLICATION FOR THE BEYOND TRAFFIC: THE SMART CITY CHALLENGE, FUNDING OPPORTUNITY AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, on December 7, 2015, the United States Department of Transportation, “USDOT”, issued a Notice of Funding Opportunity, “NOFO”, for a program entitled “Beyond Traffic: The Smart City Challenge;” and

WHEREAS, the application due date is February 4, 2016; and

WHEREAS, the NOFO offers the opportunity for a mid-sized City, such as Orlando, to receive up to fifty million dollars ($50,000,000.00) in funding to conduct a Smart City demonstration; and

WHEREAS, the vision of the Smart City Challenge is to demonstrate and evaluate the holistic, integrated approach to improving surface transportation performance within a city and integrating this approach with other Smart City domains such as public safety, public services and energy; and

WHEREAS, the award will be to one mid-sized city that can demonstrate how advanced data and intelligent transportation systems, technologies and applications can be used to reduce congestion, keep travelers safe, protect the environment, respond to climate change, connect underserved communities, and support economic vitality; and

WHEREAS, the USDOT will issue two separate solicitations to carry out this challenge. The first solicitation will result in the selection of an estimated five Smart City Challenge finalists who will then receive funding to support concept development and planning activities related to a second solicitation, which will be released in March 2016; and

WHEREAS, the City of Orlando has a long history of implementing transportation initiatives based on the newest technology and the newest concepts, including citizen participation and vehicular/infrastructure communication, and is well-positioned to compete for the Smart City Challenge.
NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Orlando, Florida, that:

SECTION ONE - The City Council hereby confirms its continued commitment to transportation initiatives, like the Smart City Challenge, and its full support for submittal of an application for the Smart City Challenge and any and all staff efforts necessary for such purposes.

SECTION TWO - This Resolution shall take effect immediately upon its adoption.


ATTEST:

By: Celeste T. Brown, City Clerk

CITY OF ORLANDO, FLORIDA, a municipal corporation, organized and existing under the laws of the State of Florida

By: Mayor / Mayor Pro Tem

Date: 1/26/16

APPROVED AS TO FORM AND LEGALITY
For the use and reliance by the City of Orlando, Florida, only.

2/2, 2016

Chief Assistant City Attorney
Orlando, Florida
February 3, 2016

The Honorable Mayor Buddy Dyer
City of Orlando
400 South Orange Avenue
Orlando, Florida 32802-4990

Subject: FDOT’s Commitment to City of Orlando’s Smart City Challenge Application
(Notice of Funding Opportunity Number DTFH6116RA00002)

Dear Mayor Dyer:

As District Five Secretary for the Florida Department of Transportation, please know of our commitment to the City of Orlando’s Smart Cities grant application. We believe the best way to ensure safety, provide avenues for the efficient movement of goods, and promoting economic vitality in a sustainable and environmentally sensitive manner, is by the partnership we have with the City of Orlando and our many regional partners.

The City of Orlando and FDOT District 5 are uniquely positioned as global leaders in smart transportation initiatives as evidenced by hosting the first connected navigation system pilot (Travtek/1992, USDOT Model Deployment (iFlorida/2003, and hosting the 1996 and 2011 ITS World Congresses. As you may recall, the 2011 World Congress included the first large scale connected vehicle demonstrations open to public participation.

The City of Orlando and FDOT District 5 continue to successfully partner on several high technology projects that work towards the vision elements of a Smart City. Below is a sample of the funded projects that currently demonstrate the regions’ commitment to a first class, high-tech, transportation system for a first class, high-tech transportation City!

Urban Automation

- Active Arterial Management Operations - $2.6M annually, 2015-2023
- Decision Support System and Advance Traveler Management System (Arterials) - $6M, 2015-2018

www.dot.state.fl.us
Connected Vehicles

- International Drive – 2011-current

Intelligent, Sensor-Based Infrastructure

- Active Arterial Management - $5M, 2014-2016
- Intersection Turning Movement Count - $250K, 2015-2016
- I-4 Ultimate Express Lanes - $2.2B, 2014-2054

Urban Analytics

- Big Data - $600K 2015-2016

User-Focused Mobility Services and Choices

- Route and Mode Choice Applications - $300K, 2016-2017

Urban Delivery and Logistics

- Florida Hospital Off-hours Delivery Study,
- Truck Parking Availability System - $1.5M, 2015-2016

Architecture and Standards

- ITS Master Plan - $400K, 2014-2016

Low-Cost, Efficient, Secure, and Resilient Information and Communications Technology (ICT)

- City of Orlando Network Upgrades - $400K, 2015/2016

Smart Land Use

- Transit Orient Development as part of SunRail – 2010-current

Today, we are preparing for 2050 and beyond, as we recognize the dramatic evolution of transportation needs for the future.
The City of Orlando and FDOT District 5 continue to work together with other regional partners to innovating in all modes and areas of transportation, including the free downtown LYMMO Bus Rapid Transit, SunRail Commuter Rail (in the near future linking the Orlando International Airport), the sharing economy (carshare, bikeshare, rideshare, etc.), Electric Vehicles (DriveElectricOrlando), and on- and off-street parking management and optimization.

Orlando is an ideal steward of the Smart City Challenge. It is my belief that no other city can offer the same national and international spotlight as the City Beautiful. With 60 million visitors annually, we can showcase and expose the Smart City concept to not only our residents, but to the world.

Sincerely,

Noranne Downs, P.E.
District Five Secretary

NDJD:JD:cb
February 3, 2016

The Honorable Buddy Dyer  
City of Orlando Mayor  
400 South Orange Avenue, Third Floor  
Orlando, Florida  32801

SUBJECT: Smart Cities Challenge Grant

Dear Mayor Dyer:

I am pleased to provide this letter as an expression of Orange County's commitment in support of the City of Orlando's efforts to secure the U.S. Department of Transportation's Smart Cities Challenge Grant. The City and Orange County have a long history of cooperation and collaboration, particularly in regard to transportation.

The City of Orlando is uniquely poised to make this program a rousing success. Orange County is one of the most popular destinations world-wide for visitors, the greatest market for rental cars in the United States and has strong, sustainability-minded leadership. Together, we have built a robust ITS network, especially in the downtown urban core and tourist corridors, and this interconnected network is poised to become the backbone of a system that will support transportation smart grids, roadway electrification, and electric fleets.

Transportation is a regional issue and must be approached from a cooperative governmental standpoint. Orange County is committed to helping Orlando become the city, and Central Florida the region, that can showcase these technologies for the world to see.

Best Regards,

Teresa Jacobs  
Orange County Mayor
February 2, 2016

Mr. Anthony Foxx  
Secretary  
United States Department of Transportation  
1200 New Jersey Avenue  
Washington, DC 20590

RE: “Beyond Traffic: The Smart City Challenge” Grant Application

Dear Secretary Foxx,

The purpose of this letter is to confirm our full commitment and endorsement for the grant application that is being submitted by the City of Orlando in response to the “Beyond Traffic: The Smart City Challenge,” Notice of Funding Opportunity (NOFO) dated December 7, 2015.

The Orlando metropolitan area is an ideal site for the “Smart City Challenge” program to demonstrate how information, communication and technology can address transportation challenges and improve the performance of our surface transportation system.

MetroPlan Orlando is the metropolitan planning organization for three counties in Central Florida. We have very close ties with the City of Orlando. The City is represented on our governing board by Mayor Buddy Dyer and Commissioner Samuel B. Ings, Jr. City staff takes an active role in our policy and technical work and is fully engaged with our advisory committees.

MetroPlan Orlando provides funding support to Intelligent Transportation Systems (ITS) deployment in the City of Orlando, coordinates with the City on innovative arterial management strategies, including policies to improve mobility options, and uses information on transportation safety and performance that is collected using ITS devices within the City. The ITS infrastructure in the City of Orlando also contributes important data to MetroPlan Orlando’s “Tracking the Trends” report that identifies trends affecting highway, transit, aviation, rail, bicycle, and pedestrian systems, as well as freight movement.

As described above, resource sharing and investments between the entities undergirds the ITS framework for a “Smart City Challenge” program and is consistent with Vision Element #3 in the NOFO: Intelligent, Sensor-Based Infrastructure. In addition, strong working relationships exist between local and state agencies with the City of Orlando that meet Vision Element #7 in the NOFO: Strategic Business Models and Partnering Opportunities.
Some of the accomplishments and efforts between the City of Orlando and other agencies that will ensure that the City will be an ideal awardee of this grant include:

- the City of Orlando has a proven track record of leading and implementing innovative ITS solutions to meet transportation challenges starting as far back as 1992 with the TravTek pilot project, a public/private partnership test of an advanced driver information system;

- the City of Orlando was host to the USDOT “Beyond Traffic Forum” for the Florida Megaregion in October 2015 which helped to lay the groundwork for innovative transportation solutions to improve transportation performance and traffic safety;

- the City of Orlando will receive $10 million of ITS investments that are programmed in MetroPlan Orlando’s Transportation Improvement Program for Fiscal Year 2015/16 - 2019/20; and

- the City of Orlando is very engaged with the Florida Automated Vehicles (FAV) program led by the Florida Department of Transportation to educate the public and private stakeholders in the region and to develop, research and pilot projects to broaden awareness of this technology.

The “Smart City Challenge” grant presents a very exciting opportunity for the City of Orlando and the Central Florida region to demonstrate what information, communication and technology can do to improve transportation and mobility. This will play a huge role in meeting the challenges that face urban areas, especially those that are growing quickly such as ours.

Thank you for your consideration of this grant application and we look forward to working closely with the City of Orlando and other partners during the next round in the competitive process.

Sincerely,

[Signature]

Harold W. Barley
Executive Director
February 2, 2016

Honorable Buddy Dyer
Mayor, City of Orlando
400 S. Orange Ave.
Orlando, FL 32802

Subject: Letter of Support for Orlando’s Smart City Challenge Application

Dear Mayor Dyer,

The purpose of this letter is to acknowledge our partnership, full commitment, and endorsement of the City of Orlando’s Smart Cities Challenge Application. Drive Electric Florida believes that by working together we can bring about fundamental change in the region’s transportation modalities while promoting sustainability, leading to safe transportation options that have a positive impact on our environment.

Drive Electric Florida is a stakeholder group organized to increase adoption of Plug-In Electric Vehicles (PEVs) in the state. Industries represented include automakers, infrastructure providers, environmentalists, local government, universities, Clean Cities Coalitions, and leadership of PEV enthusiast groups. The Vision of DEF is to advance the energy, economic and environmental security of the state of Florida by promoting the growth of electric vehicle ownership and accompanying infrastructure. Its mission is to support and accelerate the adoption of plug-in electric vehicles in Florida by engaging and educating the public, businesses and policy-makers; facilitating collaboration; and supporting PEV-friendly policy and programs.

Thank you for your leadership in continuing to advance the City of Orlando’s commitment to a sustainable future that will benefit not only Orlando but serve as an example to cities throughout the country.

Sincerely,

Colleen McCann Kettles
Program Director

www.driveelectricflorida.org
February 2, 2016

The Honorable Buddy Dyer
Mayor, City of Orlando
400 South Orange Avenue
Orlando, FL 32801

Dear Mayor Dyer:

I am pleased to commit the University of Central Florida to partner with the City of Orlando on its Smart City application. The academic assets of the nation’s second-largest university yoked with the extraordinary urban planning of the City of Orlando create a formidable partnership to further the ends of the Smart City proposal.

The history of numerous successful collaborations between UCF and the City of Orlando provides us with a proven method for successful cooperation. We also have a mutual and well-documented interest in innovative sustainability measures that will serve well this proposed partnership. For instance, UCF and the City have worked together for decades on several transportation related projects, one being the Travtek Project. With General Motors Corporation and other partners, this groundbreaking pilot project in the late 1990's served as the forerunner for in-vehicle navigation systems throughout the world.

The timing of this Smart City application is fortuitous. After more than two years of professional planning and region-wide consensus building, UCF and the City of Orlando are planning to embark on the establishment of a UCF campus in downtown Orlando that will serve more than 7,500 students and open as early as the fall of 2017. The UCF Downtown Campus will be "Green" and will include many features of the larger "Smart City" concept. The new campus is poised to be our research lab for the Smart City initiative where we may develop such promising practices as:

- the use of electric buses with autonomous operations to provide connections between campuses;
- the employment of harnessed solar power to supply electric vehicle charging stations in City of Orlando-owned parking facilities, which will serve the new UCF Downtown Campus; and
- the collection and sharing of real-time, travel-information options for all modes of travel.
UCF has rich and varied resources to commit to the Smart City initiative. Specific programs in the College of Engineering and Computer Science have much to contribute to the success of the project. The Center for Advanced Transportation Systems Simulation and the Institute for Simulation and Training are valuable sources of expertise. Adjacent to the university is one of the nation’s top research parks with more than 125 companies, many of which foster a spirit of innovation that is encouraged by the U.S. Department of Transportation.

Engaging the talent of more than 1,200 faculty members, UCF will partner with the City of Orlando to provide technical assistance to address the Smart City Challenge Elements. The university will also use its specialized expertise to develop measures of effectiveness and to perform assessments of the initiatives as outlined in the response to the Challenge.

We at the University of Central Florida are eager to further the goals of the Smart City application, and we commit our talent and resources to partner with the City of Orlando for the exciting work of this project.

Cordially yours,

John C. Hitt
President
The Honorable Buddy Dyer, Mayor, City of Orlando
400 South Orange Avenue, Orlando, Florida 32801

February 4, 2016

Dear Mr. Dyer:

It gives me pleasure to provide this letter of commitment to partner with the City of Orlando in the “Smart City” initiative. We at CATSS have had a long and respectable history of partnership with different agencies to provide applied research and education services to our stakeholders and the transportation profession. Those stakeholders include the City of Orlando, Metroplan Orlando, the Central Florida Expressway, Florida Turnpike Enterprise, the Florida Department of Transportation, and the US Department of Transportation.

Since CATSS’ inception in 1998, the center has attracted more than $25 Million and has lead one University Transportation Center and partnered with four other UTCs. During this period, CATSS affiliated faculty graduated 135 Master and Doctoral students and generated close to 450 journal publications. Graduates of this program have become leaders in academic institutions, public agencies, and engineering consulting firms around the globe. The center’s strength falls in the areas of traffic operations, traffic safety, ITS, human centered simulation, sustainability, and data analytics. The resources available to the center cover two high fidelity driving simulators, state-of-the-art laboratory for data collection, access to computer software, and link to the backbone of the real time traffic data in central Florida.

Research projects conducted under CATSS’s auspices were instrumental in addressing timely challenges faced by practitioners. Examples of these projects to include wrong way entries on toll facilities, dynamic treatments of left turn flashing yellow arrows at signalized intersections, pedestrian and bicyclist safety, low visibility impacts on traffic safety and operations, modeling of traffic flow in the downtown area of Orlando, motor carrier flows and compliance, big data analytics applied to safety and operations, and modelling and estimation of mobile source air pollution.

The knowledge and expertise developed by CATSS’ researchers will serve the smart city project very well in terms of testing new concepts related to connected and autonomous vehicles, green design, integrated and harmonious land use planning, and intermodal
transportation systems, just to name few. Our commitment to the City of Orlando will take the forms of providing faculty expertise, utilizing resources on the UCF campus to test new ideas, link bright undergraduate and graduate students to intern with the city, and leverage matching funds from UCF and the UTC projects.

Sincerely,

Essam Radwan, Ph.D., P.E., F. ASCE
CATSS Director and Professor of Engineering
February 4, 2016

City of Orlando
400 S. Orange Ave
Orlando, FL 32801

RE: City of Orlando Smart Cities Application

Dear Mayor Dyer,

The purpose of this letter is to acknowledge our strong commitment and endorsement of the City of Orlando’s Smart Cities Initiative application. The Orlando Utilities Commission (OUC—The Reliable One) believes that together with the city and its other partners, we can improve and expand safe, efficient and sustainable multi-modal transportation options in this region. Some of these include Intelligent Transportation Systems, congestion management, the harnessing, distribution and sharing of clean energy and driver assisted or autonomous electric vehicle travel. We can also assist with master planning of various electric vehicle options, in both new and pre-existing neighborhoods and activity centers, and cost management.

OUC has a proud tradition of being an environmentally conscious leader among utilities in the U.S. Examples include our policy to reduce carbon emissions at our power plants, development of a significant solar electric generating component, and the development of other efficient generation methods that have lowered environmental impacts. We also offer many programs to encourage our business and residential customers to conserve energy and to consider renewable options.

As a promoter of clean transportation, OUC has installed approximately 140 electric vehicle charging stations, including Level 2 and DC Fast Chargers, in key areas within our service territory. OUC is committed to growing its public charging station infrastructure along with promoting privately-owned commercial charging stations over the next several years.

OUC is currently working on emerging technologies such as carbon capture and utilization to grow algae from coal flue gas along with fuel cells, distributed energy resources and micro-grid infrastructure. We are prepared to bring our knowledge and expertise in these and other areas to the program.

Thank you for your work in advancing the nation’s transportation system and we ask for your favorable consideration of Orlando’s application for this grant. We are confident that it will allow the city to showcase safe, efficient, sustainable and traveler-friendly transportation options for this nation and the world.

Sincerely,

Byron Knibbs
Vice President, Sustainable Services
OUC—The Reliable One
February 3, 2016

Mayor Buddy Dyer
City of Orlando
400 South Orange Avenue
Orlando, Florida 32802-4990

Re: City of Orlando's Response to the Smart City Challenge

Dear Mayor Dyer,

I am sending this letter of commitment of the Central Florida Regional Transportation Authority (d/b/a LYNX) to work with the City of Orlando in the submittal of a response to the United States Department of Transportation's Smart City Challenge. The City of Orlando has demonstrated a proactive approach to both the demonstration and the deployment of advanced technologies to improve the information to and mobility of users.

LYNX has been pleased to work with the City of Orlando on many projects in our region. A few examples include:

- LYNX, the City of Orlando, and the Expressway Authority worked together to develop and demonstrate a regional multi-modal smart card payment system. This successful demonstration project showed that three separate agencies can work together to deploy a multi-modal payment system and served as an example for similar systems across the United States.
- The 18th World Congress on Intelligent Transportation Systems was held in Orlando in 2011 with the City of Orlando and LYNX working with public and private partners to showcase technological solutions to transportation issues, including the deployment of connected vehicle-to-vehicle and vehicle-to-infrastructure communications.
- LYNX and the City of Orlando worked together to deploy LYMMO, one of the first Bus Rapid Transit routes in the United States with service starting in 1997, using advanced technologies to provide transit signal priority, track the location of buses in the system, and provide real-time bus location information to customers. The system has been expanded three times and now offers real-time customer information available on smart phones and through a data feed on our website for use by developers.
- LYNX and the City of Orlando worked together to install conditional transit signal priority on fixed route and bus rapid transit in the City of Orlando, and this successful deployment has led to an expansion throughout our service area. The initial deployment resulted in a twelve percent reduction in transit bus travel time through the corridor.

LYNX has been active in the planning and development of the connected vehicle program. LYNX staff has actively engaged with the Federal Transit Administration serving as a Transit Connected Vehicle Stakeholder Steering Group member. The transit development and testing of a connected vehicle application to address vehicles turning right in front of a stopped transit vehicle came directly from input...
received by the LYNX group stakeholder. LYNX welcomes working with the City of Orlando in advancing connected vehicle technology from the planning stage to the deployment stage. We look forward to the opportunity to work with the City of Orlando and other regional partners to utilize this technology to improve safety and mobility for individuals using all modes of transportation, whether in vehicles, on bicycles or as pedestrians.

LYNX has almost 300 fixed route buses that travel throughout the City of Orlando and the surrounding Central Florida region 365 days a year, almost twenty-four hours a day. This fleet operates across the roadway network in a consistent, predictable, and repetitive manner every single day. Connected vehicle technology equipped buses could provide a region-wide network of basic or advanced safety messages that are consistent and reliable. This data would be available for any connected vehicles in the network and could provide a wealth of information to other vehicles and the infrastructure as auto manufactures begin to deploy equipped vehicles in the retail market.

I am pleased to offer the commitment of LYNX to working with the City of Orlando in its submittal of a response to the Smart City Challenge and the subsequent development of the project details. We look forward to working with the City of Orlando and many regional partners, both private and public, on this exciting endeavor.

Sincerely,

Susan Black
Interim Chief Executive Officer
February 2, 2016

The Honorable Buddy Dyer, Mayor
Orlando City Hall
400 S Orange Avenue
Orlando, FL 32802-4990

Subject: USDOT Smart City Challenge

Dear Mayor Dyer:

The Central Florida Expressway Authority (CFX) is passionately committed to the City of Orlando’s pursuit of the USDOT Smart City Challenge award, identified as the Federal Notice of Funding Opportunity Number DTFH6116RA00002 dated December 7, 2015.

We are excited about working with the City of Orlando to develop a clear vision to utilize existing and planned technology to enhance, expand and improve the transportation experience. The improvements will greatly improve safety, choices and reliability. CFX has identified the following elements that contribute to this strategic initiative:

• **Vision Element #3: Intelligent, Sensor Based Infrastructure.** CFX has an expansive, integrated network of intelligent transportation devices deployed in the City of Orlando limits, including data collection sensors, traffic monitoring stations, dynamic message signs, CCTV cameras and wrong way driving sensors.

• **Vision Element #4: Urban Analytics:** CFX’s data server software can be expanded to include additional travel time points within the city limits, including strategic parking garages located throughout downtown Orlando.

• **Vision Element #5: User-Focused Mobility Services and Choices.** We are working with the City of Orlando to provide E-PASS all electronic tolling services to parking garages within the city limits. This service could be expanded to mobile applications in order to provide additional smart parking services such as; travel times to each garage, number of spaces available in each garage and a streamline to traffic flow using all electronic tolling. This initiative would provide value to many of the local and visiting public who attend the 4974 ORL TOWER RD. ORLANDO, FL 32807 | PHONE: (407) 690-5000 | FAX: (407) 690-5011

WWW.CFXWAY.COM
frequent events at the Amway Center, Dr. Phillips Performing Arts Center and the Citrus Bowl.

- **Vision Element #7: Strategic Business Models and Partnering Opportunities.** CFX is partnering with PayTollo, a firm that has developed a phone application for electronic toll collection without the need for a transponder, to test and implement their product. The application could be a model for other types of smart phone applications to enhance the traveling experience.

- **Vision Element #10: Architecture and Standards.** CFX will continue to work with the City to develop regional ITS architectures that can be applied nationwide. CFX is a leader in developing Wrong Way Detection technology in the region and has coordinated with FHWA in these efforts. This experience will help the city to develop standards that can be accepted nationwide.

- **Vision Element #11: Low-Cost, Efficient, Secure, and Resilient Information and Communications Technology (ICT).** CFX is Payment Card Industry (PCI) compliant and will help the city with common security features required to protect the privacy of the public.

Our work with the City of Orlando enhances and improves the transportation experience for our residents and visitors throughout the Central Florida region. We look forward to working with you and your team as we continue to improve the economic prosperity of Orlando through the delivery of world class transportation solutions!

Thank you for your leadership and dedication to our community.

Sincerely,

Laura Kelley

cc: Tanya Wilder, City of Orlando, Transportation Planning Manager
    Charles Ramdatt, City of Orlando, Deputy Public Works Director
    Corey Quinn, CFX, Chief of Technology/Operations
February 4, 2016

SI-C4

TO: The Honorable Buddy Dyer

FROM: NASA Transportation Officer, Kennedy Space Center, Florida

SUBJECT: Endorsement of the City of Orlando’s Smart Cities Initiative application.

The purpose of this letter is to acknowledge our full support, and endorsement of the City of Orlando’s Smart Cities Initiative application.

We believe that the NASA Kennedy Space Center (KSC) can offer many opportunities together with the other project partners to evaluate and demonstrate improved transportation technologies and modalities that will result in Orlando becoming an example to many other cities in the United States.

KSC has a unique transportation testing capability, professional staff, instrumentation, processes and technical expertise to test existing autonomous vehicles and develop new sensors. The reliability and safety of autonomous vehicles will be dramatically improved by developing advanced sensor systems. We believe that this partnership may enhance the advancement of autonomous vehicles through proven space technology and test procedures established by our center.

Bruce Chesson
February 3, 2015

Honorable Anthony Foxx
Secretary of Transportation
United States Department of Transportation
1200 New Jersey Avenue SE
Washington, DC 20590

RE: City of Orlando Smart Cities Application

Dear Secretary Foxx,

As a global leader in sustainable urban infrastructure, ranging from energy-efficient buildings and smart transportation systems to reliable and efficient power grids and water systems, Siemens is herewith acknowledging its strong commitment to the City of Orlando’s Smart Cities Initiative Application.

Siemens believes that together, along with other partners, we can improve on transportation modalities, ITS, congestion, cost management and be an example to other cities in the US. Siemens’ portfolio can provide solutions pictured in many of the Vision Elements. Siemens, alongside Orlando, is committing resources to specifically address the following six Vision Elements which are strategic to our growth and investment within transportation, mobility, and building technology:

- **Building a Connected Vehicle** (CV) infrastructure in Orlando to make it the most advanced in the nation. During the ITS World Congress in 2011, Orlando was already host to a Siemens showcase for Connected Vehicles and adaptive signal control. Siemens can provide CV-ready traffic controllers and software, thereby upgrading the city to the most up-to-date technology scalable for the future.

- **Outfitting Orlando with Intelligent, Sensor-based Infrastructure**. Working to ensure Orlando’s existing controllers in the core project area can be both CV-ready and able to run adaptive control, Siemens can implement adaptive control technology on intersections, optimizing travel during normal operations but also during peak traffic and when special events cause congestion.

- **Providing Orlando tools in Urban Analytics** by better measuring the performance of the solutions Orlando is proposing for the grant. A customized Orlando City Performance Tool is a dynamic simulation tool which studies a series of more than 70 technologies from Building, Transport and Energy Technologies – at different time periods and implementation rates designed to reduce the environmental impact of everyday activities in a city.
Expanding Orlando’s **User-focused Mobility Services and Choices** by providing a Connected Vehicle application that provides an automated call from the smart phone of a visually impaired pedestrian to the traffic signal, as well as audio cues to safely navigate the crosswalk.

Supporting Orlando’s alignment with federal **Architecture and Standards**. Siemens is involved with various standards committees that contribute to a common standard for Connected Vehicles and other intelligent transportation system (ITS) technologies. This includes National Transportation Communications for ITS Protocol (NTCIP), Traffic Management Data Dictionary (TMDD) standards and our attendance in the Connected Vehicle “boot camp” to use the Federal Highway Administration approved tools. In addition, Siemens is a market leader in Building Technologies to improve building sustainability, creating a better and more resilient infrastructure in preparation for the continuing urbanization megatrend.

**Outfitting and upgrading Orlando’s Smart Grid and Electric Vehicle infrastructure.** Siemens has developed intelligent electric vehicle charging stations in conjunction with the Department of Energy, EPRI, and Duke Energy. This charging infrastructure, VersiCharge SG, is designed to provide utilities, cities, and energy aggregators with solutions that help them intelligently balance the loading of widely deployed EV infrastructure within the city. EV stations can be programmed to balance the peak charging rates in parking garages, workplaces, single and multifamily dwellings. Siemens can further partner with Orlando Utilities Commission (OUC) to develop programs that help enhance local grid reliability, provide energy awareness to consumers via phone applications, and most importantly improve EV adoption by increasing the number of available, cost effective charging points in the city.

Siemens is supporting initiatives in, among others, Intelligent Transportation Systems, Connected Vehicles, Electric Vehicle infrastructure as well as Sustainable Cities technologies globally that can also enable this innovation in Orlando. For instance, we are the controllers, software and Roadside Equipment on the Cooperative ITS Corridor from Vienna to Rotterdam, with similar functionality as the prior World Congress demonstration in Orlando.

Siemens employs approximately 46,000 people across the U.S. with 3,800 based in Metro Orlando and Central Florida. We have a long history of promoting Smart City infrastructure, whether through Intelligent Traffic Systems, Electric Vehicle infrastructure or Building Standards in Technology and have received numerous awards and recognitions including the Dow Jones Sustainability Index, which in 2014 named Siemens as the world’s most sustainable company in its industry group.
We believe Orlando is well poised to create a world-class Smart City program via this Initiative and we look forward to continuing to serve the City and its partners as they take the next step toward lower costs, reducing environmental impact and readying the infrastructure for the future.

Thank you for your work in advancing the nation’s transportation system and for your consideration of the city’s application for this grant, which will benefit not only Orlando but also the greater Central Florida region.

Sincerely,

Ivan M. Aron
General Manager, Central Florida
Siemens Industry Inc.
The Honorable Buddy Dyer  
Mayor, The City of Orlando  
400, South Orange Avenue  
Orlando, Florida 32801

Mayor Dyer,

Lockheed Martin Missiles and Fire Control (LM MFC) is pleased to support the Orlando team in responding to the U.S. Department of Transportation (US DOT) Notice of Funding Opportunity (DTFH6116RA00002). Orlando is an excellent urban area to demonstrate US DOT’s vision of a holistic, integrated transportation, and mobility system that enhances the environment and economic opportunity for all citizens efficiently, safely, and respectively. With the global demand for smart city solutions, a great breadth and depth of technical resources are required. LM MFC is committed to working with the Orlando team on this grant to implement the US DOT’s vision for smart cities and the future of transportation.

To address our Nation’s most complex challenges, LM has been in support of Government innovation and Research and Development (R&D) for over 100 years. Our proven and disciplined team is engaged in the research, design, development, manufacture, integration, and sustainment of advanced technology systems, products, and services within Orlando (~7,000 total employees), with corporate reach back (~126,000 people worldwide), as well as academic affiliations (over 100 university partners worldwide including the University of Central Florida). To collectively meet the needs and vision of the DOT smart city challenge, we look forward to supporting and working with the Orlando team to improve our great city.

The following summarizes the LM MFC expertise that we can support the Orlando team with on the Smart City Challenge:

**Sensor-based Infrastructures, Systems, and Situational Awareness:** LM will help Orlando utilize a collective intelligent infrastructure that allow sensors to collect and report real-time data to inform everyday transportation-related operations, its performance, and city-wide trends. LM MFC is a leading provider of advanced sensor systems, real-time data links, and intelligence signal processing systems that are deployed across air, ground, sea, and space environments for rapid coordination, enhanced situational awareness, and increased mission performance.

**Complex System of Systems Engineering and System/Software Architecture:** LM MFC has a deep knowledge set for affordably extending and developing new capabilities (tools, models, algorithms, data, systems, etc.), to perform rapid operational and trade space analyses that will be used to implement the Orlando team’s need/vision. Engineering, architecture, and analyses are used to develop and assess early system design methodologies, their associated architectures/interfaces, as well as visualize operational environments.
Autonomy, Interconnected Platforms, and Mobility: Transportation is critical to making a city work. LM MFC combines its systems integration experience with its 40-year legacy in ground vehicle development to lead the industry in several autonomous vehicle technologies such as integrating active protection and robotic technologies onto vehicles to create safer operations. LM MFC has developed and proven innovative autonomous ground vehicles capable of supporting military missions and commercial applications such as trucking, mining, security, firefighting, and even unmanned shuttle systems.

Secure / Resilient Systems and Communications: Within transportation and across other sectors of a smart city, information is shared and data is communicated to/from the public and industry. LM MFC uses advanced technology, critical intelligence, and skilled engineers/analysts to defend and protect businesses and governments around the world where information matters most and will utilize these capabilities to support Orlando’s smart city grant.

LM MFC is experienced in the technical disciplines required to service the challenges affecting Orlando’s transportation system.

Sincerely,

Adam T. Miller
adam.t.miller@lmco.com
(407) 356-5962
Director, New Initiatives
Lockheed Martin Missiles and Fire Control
Orlando, FL
TO: The Honorable Buddy Dyer, Mayor, The City of Orlando, 400 South Orange Avenue, Orlando, Florida 32801  
FROM: Sheldon Drobot, Sr. Analyst-Competitive Intelligence, Harris  
DATE: 28 January 2016  
SUBJECT: Harris participation in the Orlando application for the USDOT Smart Cities Challenge

Dear Mayor Dyer –

Harris Corporation is pleased to commit to partnering with the City of Orlando if the City is selected as the winner by the USDOT. Harris is a leading technology innovator, solving our customers’ toughest mission-critical challenges by providing solutions that connect, inform and protect. Harris supports customers in more than 125 countries, has approximately $8 billion in annual revenue and 22,000 employees worldwide. The company, headquartered in nearby Melbourne, FL, is organized into four business segments: Communication Systems, Space and Intelligence Systems, Electronic Systems, and Critical Networks.

One of the innovative tools Harris plans for Orlando is the Helios® Environmental Intelligence Platform (https://exelishelios.com/). Helios provides fast and accurate local ground weather intelligence to assist with real-time decision making. It instantaneously analyzes and filters content from thousands of existing public and private video cameras to detect real-time weather conditions, combined with National Weather Service warnings and other relevant weather data. Helios currently detects changes in visibility, road wetness, and snow with greater than 90% accuracy. Over the course of the project, we anticipate additional filters will be available, such as traffic density, water pooling, incident identification, and parking. With Helios, Orlando can leverage their network of over 1,000 cameras to better understand hyperlocal weather conditions and alter traffic management practices to account for weather-induced delays, such as signal phase and timing (SPAT) and ramp metering.

In addition, Harris is prototyping a mobile device that monitors atmospheric and road conditions to give even more situational awareness. Termed SensUS, it is a low-cost sensor that affixes to a vehicle and relays data via cellular. SensUS also monitors common air quality pollutants (particulate matter, ozone, carbon monoxide, nitrous oxides). With SensUS, Orlando will be able to complement the Helios system and have block-by-block information on weather and air quality.

Another innovative Smart City tool is the Harris GreenLITE™ system. The only sensor of its kind, it provides a highly accurate spatial CO₂ monitoring capability 24 hours a day, seven days a week. Partially funded by the Department of Energy (DOE) and the National Institute of Standards and Technology, GreenLITE was co-developed by Harris and Atmospheric and Environmental Research (AER) and uses a network of ground retro-reflectors and transceivers along with proprietary software to deliver two-dimensional spatial maps of greenhouse gas concentrations for areas from 1 to 30 square kilometers. Harris recently deployed the system in Paris for COP-21 and identified large daily increases (~30-40ppm) in CO₂ from rush hour traffic, residential heating and industrial sources. The system is also being adapted to measure methane. With
GreenLITE, Orlando will be able to track major Greenhouse gases and verify how green-minded traffic solutions are leading to changes in CO2.

We look forward to a successful partnership. Please contact me at sdrobot@harris.com or 303.544.4426 if you have any questions.

-- END OF MEMO --
February 3, 2016

Mayor Buddy Dyer
City of Orlando
400 S. Orange Avenue
Orlando, FL 32801

RE: Letter of Commitment for US Department of Transportation Smart City Challenge

Dear Mayor Dyer:

As the City of Orlando’s biggest private sector partner, Universal Orlando is supportive of the City’s grant proposal under the **US Department of Transportation Smart City Challenge**, and is committed to collaborate with you on several key Smart City Challenge Elements involving urban automation: intelligent sensor-based infrastructure, user-friendly mobility services, strategic business models and partnering opportunities, and resilient information and communications technologies. Universal Orlando relies heavily on technology for giving our guests the best experience the moment they interface with any of our resort, theme park, guest relations, and transportation operations. The latter will significantly benefit from a successful award of the US DOT Smart City Challenge grant to the City.

I will be your primary point of contact for coordinating Universal’s collaboration efforts should you be selected as one of the successful grant recipients. While our duties to our guests always come first, we see this as complimentary to those efforts.

Respectfully,

John L. McReynolds
SVP, External Affairs
February 3, 2016

Mr. Byron W. Brooks, AICP
Chief Administrative Officer-City of Orlando
400 South Orange Avenue
Orlando, Florida 32802-4990

RE: Letter of commitment to support the City of Orlando “Beyond Traffic: Smart City Challenge”

Dear Mr. Brooks,

On behalf of Enterprise Holdings Inc., which operates the brands of Alamo, National, and Enterprise Rent-A-Car, I offer our commitment of support for the City of Orlando’s “Beyond Traffic: The Smart City Challenge” grant application.

The Enterprise Holdings Brands combine to make up the World’s largest fleet of passenger vehicles. We are in a unique position to quickly and efficiently introduce millions of drivers each year to new fuel and enhanced vehicle technologies. We are proud of our Company’s position and the ability to lead the rental car industry with a strong Corporate Sustainability platform. This platform includes a variety of programs that span a wide spectrum of environmental awareness and includes:

- Our Company has created a Carbon Offset Program that offers our customer the choice to help offset the carbon dioxide (CO2) emissions generated by the average rental car. This funding helps supplement project costs that work to remove the CO2 from the atmosphere. The Enterprise Holdings Foundation matches the customer’s donations dollar for dollar, up to a total of $1 million dollars. To date so far 120,700 metric tons of carbon have been offset, which based on U.S. Environmental Protection Agency (EPA) standards, is equivalent to saving 13.5 million gallons of gasoline and 280,700 barrels of oil.
- In 2010, our company announced a 5 year initiative called the 20/20 vision plan. This plan called for us to reduce our energy usage and our overall energy costs by 20%
- Enterprise Holdings is currently in a 50 year partnership with the Arbor Day Foundation which will plant 50 million trees across North America, United Kingdom, and Germany.
- Although the Orlando Airport is not a bussing operation, across the country 98% of our Enterprise Holdings airport shuttle buses now run on biodiesel, synthetic diesel, compressed natural gas or are hybrid models.
- Enterprise Holdings created an Alternative Fuel research program in collaboration with the Donald Danforth Plant Science Center in St. Louis. This initiative is committed to helping scientists research and develop next generation biofuels that will reduce environmental impacts and dependency on foreign sources.

In the Orlando area, Enterprise Holdings operates a fleet of 35,000 vehicles, including an average fleet of 21,000 vehicles at the Orlando International Airport. Our fleet mix has a selection of over 60 different makes and models, including a variety of Hybrid technology vehicles (Toyota Prius and Chevy Volts). We are currently in a partnership with the Electric Coalition and the Drive Electric Orlando and we have the available fleet needed to support the Smart City Challenge goals that derive from the awarding of the grant. The need for new and advance transportation initiatives continue to be a crucial component to supporting the expected economic development of the Orlando Area. We appreciate the attention on this important matter and hope to be part of the future transportation enhancement opportunities.

Sincerely,

Marc Christensen
Vice President of Rental - Orlando Group
OUR MISSION
To transform the way buildings and communities are designed, built, and operated in Central Florida, enabling an environmentally and socially responsible, healthy, and prosperous environment that improves the quality of life.

OUR VISION
That Central Florida buildings and communities will regenerate and sustain the health and vitality of all life within a generation.

January 25th, 2016

Re: USDOT Smart City Grant

Dear City of Orlando Smart City Project Team,

On behalf of the U.S. Green Building Council Central Florida Chapter Board and regional membership body, we are delighted to announce our full commitment to the City of Orlando's Smart City application and the programs the City desires to implement. In light of our longstanding relationship and implementation of the City Energy Project, Green Works Action Plan, and the award-winning Central Florida Energy Efficiency Alliance, we look forward to helping you succeed in transforming our transportation infrastructure, lower our impact on the environment, and build economic development.

As Central Florida's main advocate for sustainable community development practices, the USGBC-CF views the proposed programs and vision as consistent with our mission and efforts to engender a more sustainable and efficient community in Metro Orlando. With our membership base consisting of many urban planners, architects, builders, engineers, and sustainable community advocates, the economic impact of the Smart City Grant would significantly boost our growth in professional trades and construction while ensuring a focus on climate change strategies and transportation system efficiency.

The USGBC-CF is committed to taking a leading role in implementing community education, engagement, and communication that support the vision of a Smart City. We will also commit to supporting the specific Smart City Challenge elements of educating and advising policy development of the proposed programs in the areas of clean energy, fleet electrification, urban planning, and community design.

Having the support of regional institutional leaders like the Orlando International Airport, Valencia College, University of Central Florida, and Seminole State College, we will focus our efforts to working with them on implementing the Smart City Challenge through electrifying their fleets and educating their customers and visitors which reflect an unprecedented amount of people. We now look forward to growing our community and action based volunteer initiatives as well as gain commitments from our developers, planning agencies, design community, and transportation partners to help us accomplish your goals.

Please contact us if you need additional support, case studies or references at chair@usgbc-cf.org

Sincerely,

Kathy Lawson
Chapter President, USGBC CFL Region

Nate Ritter
Vice President
January 25, 2016

City of Orlando, Transportation Planning
400 South Orange Avenue
Orlando, FL 32803

RE: US Department of Transportation (USDOT) Smart City Grant

Dear Smart City Project Team,

Green Destination Orlando (GDO) is excited to commit to the City of Orlando in programs to improve and transform our transportation infrastructure in Central Florida. GDO was founded to on the mission to climate change resiliency, sustainable development, and local business engagement. We feel that is a necessary part of the future sustainability of the Central Florida region.

Green Destination Orlando is a non-profit entity with 501(c)(3) status, and is a community based cohort of businesses, non-profits, and public entity professionals from around Central Florida. You will find most of the notable lodging chains, theme parks, resorts, restaurants, and supporting services/products businesses in Central Florida engaged with our organization.

We serve as representatives for Orange County, City of Orlando, Visit Orlando, and the Central Florida Hotel Lodging Association. GDO made its debut in 2013 with the first of its kind Orlando Destination Sustainability Report – highlighting sustainability efforts to appeal to visitors and residents and fuel economic development and lessen environmental impact. We have been successful in providing education and outreach for the City Energy Project and other City of Orlando Green Works programs.

GDO is honored to have been chosen to launch Orange County Mayor Teresa Jacob’s 2016 Central Florida Workplace Challenge last week in order to challenge businesses to wholly engage in environmentally responsible strategies, healthy workplaces, and community volunteerism. This is a holistic program that focuses on local businesses and also the industry that serves our over 55 million visitors per year. GDO is committed to promoting alternative transportation and public transportation through our Drive Electric Orlando program and work with our partners to further electrify the fleet of the 28 rental car agencies which make up the world’s largest rental car market.

We are committed to implementing the programs and projects listed in the Smart City grant application. We believe sustainable transportation and smart urban planning is a foundational element for transforming the market for economic development and resource efficiency in our community. The other innovative policies and programs proposed by Orlando for the Smart City grant provide a strategic approach to create a healthier and more prosperous community by improving the connectedness and ease of mobility.

We feel that the vision of the Smart City Grant will support healthier and happier employees and bring an unprecedented level of economic development and connectedness.

Sincerely,

Jeff Daniels
President

Jane Gregory
Director of Community Affairs
Mr. Charles Ramdatt  
Transportation Engineer Division Manager  
City of Orlando, Deputy Public Works Director  
400 S. Orange Ave. Orlando, FL 32803  

RE: City Transportation Grant “Smart City Challenge”  

Dear Mr. Ramdatt:  

ecoPreserve: Building Sustainability, LLC is pleased to commit to the City of Orlando and Orange County Government in the Smart City Challenge. ecoPreserve has long standing commitment in the region’s energy efficiency and conservation efforts, not only as a means to protect the environment, but also as a necessary part of the future sustainability of the Central Florida region.  

ecoPreserve is a minority owned, award winning energy and sustainability professional services firm founded and based in Orlando, FL. Our company helps clients improve operational efficiencies, reduce costs, and achieve sustainability through data driven, efficiency-focused, planning, education, and certification. Working closely with staff and leadership at the Orange County Convention Center, Orlando International Airport, Orlando Health Hospital system, University of Central Florida and others, our experience provides insight into the transportation, commuting, and infrastructure challenges they face. These challenges are not exclusive to them. This is a community wide opportunity that will impact not only our residents but our over 55 million visitors per year.  

We have been actively working with Mayor Buddy Dyer’s Inaugural Green Works Initiative since 2007. I was appointed to City of Orlando Green Works Task Force in 2013 and several of our team members served on working groups through the action planning process. Prior to that, we consulted with Orange County Mayor Richard Crotty’s Orange to Green program. Through our team’s community collaborative spirit, we have been integral to the foundation and growth of the Central Florida Energy Efficiency Alliance (CFEEA), the Kilowatt Crackdown Challenge, City Energy Project, Green Destination Orlando (GDO), the U.S. Green Building Council, and the U.S. Green Chamber of Commerce.  

We proudly commit to the implementation in the areas of education & outreach, transitioning to cleaner energy sources, as well as promoting alternative transportation through our partners at ReThinkYourCommute. As representatives of the small and large business community, we strongly feel that Orlando is a perfect fit for the Smart City Challenge. The strategic approach of the challenge will lead to a healthier and more prosperous. We look forward to working with the city and its partners to replicate the successful policies, standards, partnerships and other outcomes from this initiative throughout Orlando, Orange County, and Central Florida.  

Sustainably Yours,  

Alexa Stone, LEED AP O+M, President  
Email: alexa@ecopreserve.net  Phone: 407-276-1764
February 1st, 2016

Honorable Mayor Buddy Dyer
City of Orlando
400 S. Orange Ave
Orlando, FL 32801

RE: City of Orlando Smart Cities Application

Dear Hon. Mayor Buddy Dyer,

The purpose of this letter is to acknowledge our strong commitment, full support, and endorsement of the City of Orlando’s Smart Cities Initiative Application. Peloton Technology believes that Orlando’s tourism and technology-based economy and key location for freight transportation between Jacksonville and Miami makes it uniquely suited to benefit from freight transportation technologies that can relieve congestion and improve road safety without significant infrastructure investment.

We believe that together, along with other partners, we can improve on transportation modalities, ITS, congestion, cost management and be an example to other cities in the U.S. Peloton is a leader in the development and deployment of truck platooning systems that improve the safety, efficiency and analysis of freight transportation. Peloton-equipped vehicles are at the frontiers of truck automation, collision avoidance, V2X connectivity and cloud-based fleet management. In order to integrate these technologies for commercial deployment, we have collaborated with innovation partners including Lockheed Martin, Volvo, Denso, UPS, and Intel; state DOTs and business development agencies, government, industry and academic researchers; and major for-hire and private trucking fleets.

In line with our commitment to integrating intelligent vehicles and infrastructure in urban and intermodal environments, we would welcome the opportunity to assist the City of Orlando in formulating and implementing its response to USDOT’s Smart City Challenge. Of the 12 Vision Elements that USDOT encourages applicants to consider, Peloton’s prospective contributions fit clearly under the three “highest priority” elements of Urban Automation, Connected Vehicles, and Intelligent, Sensor-Based Infrastructure. Specific urban freight solutions that Peloton can offer to the Smart City Challenge are:

- freight signal priority with automated speed control
- automated traffic jam assist
- automated truck queuing, parking and docking
- improved intermodal coordination via cloud-based networks
- expanded data collection and analysis enabled by real-time V2X communications
- on-highway platooning of Class 8 trucks to reduce emissions and fuel use, enabled by real-time V2V communications
Peloton technology can be applied to both highway and street operations. For low speed urban operations, performance of intersections equipped with freight signal priority can be enhanced with automated speed control key to the signal timing so that delay for trucks is reduced, thus benefitting the surrounding traffic. In tight maneuvering situations such as parking and docking, automation technology can provide greater efficiency in freight operations. In areas with high densities of trucks (such as entrances to nearby ports and intermodal facilities), traffic queuing can significantly delay truckers. Automation of these movements can provide relief for drivers (increasing driver retention in today’s driver shortage climate) as well as potentially reduce emissions (a factor which can be evaluated within the project). Overall coordination of all operations can be enhanced via Peloton’s Network Operations Center supplemented by V2X communications.

With intensive truck traffic on Interstate 4 and other highways, Peloton’s platooning system can provide reduced fuel use and emissions plus improved traffic flow (reducing road space taken up by trucks). Platooning parameters can be continuously adjusted to surrounding conditions, including traffic and weather, to optimally co-exist with other road users. Even in traffic jam situations, Peloton can maintain inter-vehicle linkages to make the movement of truck pairs as efficient as possible. In particular, drayage movements from the airport and Port Orlando can benefit significantly from this range of connected automated technologies.

Each of these solutions promises to improve the safety, efficiency and mobility of transportation within the City of Orlando and surrounding areas. Collectively, they have the potential to make the City a model for automated urban freight transportation.

Peloton has previously demonstrated its truck platooning technology in Florida and continues to collaborate with the Florida Department of Transportation to ensure Florida is at the forefront of deploying intelligent freight transportation solutions. We would welcome the opportunity to deepen our collaboration with the City of Orlando to further technology solutions that address the specific challenges of the urban environment.

Thank you for your work in advancing the nation’s transportation system and for your consideration of the city’s application for this grant, which will benefit not only Orlando but also the greater Central Florida region.

Best Regards,

Steve Boyd
Co-Founder & VP External Affairs
28, January, 2016

Charles Ramdatt, P.E., P.T.O.E., AICP
Deputy Director of Public Works
City of Orlando
400 S. Orange Ave. Orlando, Florida
32801

Dear Mr. Ramdatt,

Nokia Corp. is pleased to provide this letter of commitment for the City of Orlando within its plan for participation in the US DOT Smart Cities Challenge. We look forward to participation in this project in the future. Nokia (formerly Alcatel-Lucent) participated in the 2011 ITS World Congress by deploying a trial surface street routing and travel time system for patrons who were en route to Orlando’s Amway Center.

Today, Nokia Corp. has a focus on the Smart Cities Initiative leveraging the technology, end-to-end solutions and professional services from our Business units: Mobile Networks, IP/Optical Networks, Fixed Access and Applications and Analytics. This Smart Cities Initiative will be supported through the Transportation, Energy & Public Sector group. Nokia is extremely proud of the many Government, Utility (Smart Grid) and Transportation projects we have deployed globally for major IP multimedia communications infrastructure transformation.

The Smart Cities Vision Elements that Nokia’s technology is directly applicable to are as follows.

**Technology Elements**

- Urban automation
- Intelligent, sensor based infrastructure

**Smart City Elements**

- Low cost, efficient, secure, and resilient Information and Communications Technology
Innovative Approaches to Urban Transportation Elements

- Strategic business models and partnering opportunities
- Smart grid, roadway electrification, and electric vehicles

Please feel free to contact Mr. Raymond (Ray) Pache’ at (770) 329-4769 or by email at Raymond.Pache@nokia.com for further information.

Best regards,

Raymond R. Pache’

Raymond R. Pache’
Sr. Account Director, Southeast US Region
February 2, 2016

Honorable Buddy Dyer  
Mayor, City of Orlando  
400 S. Orange Ave.  
Orlando, FL 32802

Subject: Letter of Commitment from Florida Solar Energy Center for Orlando’s Smart City Challenge Application

Dear Mayor Dyer:

The purpose of this letter is to acknowledge our partnership, full commitment, and endorsement of the City of Orlando’s Smart Cities Challenge application. The University of Central Florida’s Florida Solar Energy Center believes that by working together we can bring about fundamental change in the region’s transportation modalities while promoting sustainability and leading to safe transportation options that have a positive impact on our environment.

The Florida Solar Energy Center (FSEC) leads the Electric Vehicle Transportation Center (EVTC) at the University of Central Florida. EVTC is a University Transportation Center (UTC) funded by the U.S. Department of Transportation (USDOT) and is the only UTC focused on electric vehicles. The EVTC supports USDOT’s strategic goals of planning for near-term integration of alternative fuel vehicles as a means to build a sustainable transportation system and of enhancing the environment.

The EVTC’s research projects evaluate technologies, standards, planning and policies to ensure seamless integration of electric vehicles (EVs) into a complex transportation network while at the same time, seizing the opportunity these vehicles present to enhance electric grid modernization efforts. We are prepared to partner with the City of Orlando to bring this expertise to the Smart City Challenge. FSEC and the city of Orlando are presently working together on the U.S. DOE funded Drive Electric Orlando which is on track to becoming the nation’s largest electric vehicle rental program. FSEC has also closely worked with Orlando on the DOE Clean Cities program and on Drive Electric Florida, a statewide program prompting EV driving and workplace charging.

In addition to hosting the EVTC, FSEC serves as the energy research institute of the University of Central Florida and is the largest and most active state-supported energy research institute in the nation. Current research activities include alternative transportation fuels, batteries, hydrogen and fuel cells, energy-efficient buildings and solar water and photovoltaic systems testing, and certification.

Thank you for your leadership in continuing to advance the City of Orlando’s commitment to a sustainable future that will benefit not only Orlando but serve as an example to cities throughout the country. We look forward in working with you to expanding these efforts.

Sincerely,

James Fenton, Director  
Florida Solar Energy Center
February 3, 2016

The Honorable Buddy Dyer
Orlando City Hall
One City Commons
400 South Orange Avenue
Orlando, FL 32801

Dear Mayor Dyer:

On behalf of Tavistock Development Company, I wish to express our support for the City of Orlando’s application to the USDOT Smart City Challenge. The City of Orlando, as the regional hub for Central Florida, is an outstanding candidate for this forward-thinking and innovative program. City of Orlando’s vision for a Smart City is consistent with our primary focus—building a 21st Century healthy and sustainable community coupled with smart transportation infrastructure, which is our model for building Medical City and the surrounding developments in Lake Nona.

Through its focus on development and implementation of emerging transportation technologies, the Smart City Challenge will allow the City of Orlando to address climate change, enhance multi-modal opportunities and support sustainable land use all the while promoting prosperity and health for the residents of our community. These are all hallmarks of our development practices.

Tavistock Development Company has been a leader in redefining the architectural landscape of Central Florida and beyond. Providing broad based services including planning, design, finance, construction and development, we have built a portfolio of nationally acclaimed properties, such as the 1.2 sq.mi. Laureate Park and includes the award-winning, master-designed Lake Nona, which Fortune heralded as “the future of cities.” We successfully employ new technologies in the areas of technology, design and sustainability, in both residential and commercial development. We build the cornerstones of enduring communities and have partnered with the City of Orlando since the inception of our development.

The 650 acre health and life sciences park known as Lake Nona Medical City is a landmark for Orlando and a premier location for medical care, research and education. Carefully planned and laid out, Lake Nona Medical City represents a deliberate strategy to create a centralized focus of sophisticated medical treatment, research and education in Central Florida. Based on the proven theory that a cluster of healthcare and bioscience facilities in proximity to one another will accelerate innovation, this intellectual hub opened in a coordinated fashion with a collaborative mission.

Lake Nona Medical City has become home to some of the nation’s top hospitals, universities, research institutions and health and life science companies. Already Lake Nona Medical City’s pioneering institutions are forming networks and synergies making Orlando a global destination for health care, research and medical education while creating an economic development and job creation engine for the region. This is fertile ground for the US Department of Transportation to invest in the next generation of transportation infrastructure, focused on innovation and technology.

We look forward to working with the City, and its diverse private and public sector partners, on this exciting opportunity. If you have questions, please feel free to contact the number below.

Sincerely,

Mr. James Zborn
President

6900 Tavistock Lakes Boulevard, Suite 200, Orlando, FL 32827
Main: 407.313.8233
www.tavistockdevelopment.com