

Beyond Traffic: The Smart Cities Challenge

City of Lubbock

City Transit Management, Inc. d.b.a. Citibus

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The City of Lubbock and City Transit Management, Inc. have a vision for the future of the city to be one that has all available technology incorporated into its transportation system that creates one that is viable, sustainable, efficient, safe and reliable. According to the 2010 Census data, Lubbock has a population of 225,972 which is 95% of the urbanized area. The population of Lubbock is growing at a rate of 2% per year. Texas Tech University is located in Lubbock and it has an approximate enrolment of 35,000 students with a goal of being 40,000 by 2020. The city is growing at a very steady pace and more and more vehicles are being put on the roads. With the increase in population in Lubbock and at Texas Tech, the transportation system as a whole is struggling to keep pace with lack of funding to build roads and invest in new transit buses and operations. Incorporating various technological advancements to the transportation system could eliminate the need for more funding to continue to keep up with the transportation infrastructure.

Technology such as GPS tracking on all transit vehicles, smart bus shelters and bus stop signs, care and bike sharing stations, electrical grids for charging electric cars, bikes and buses, vehicle to vehicles communication systems, traffic management systems that give emergency vehicles and transit vehicles priority at all stop lights, road sensors to alert when roads are damaged and in need of repair or need to be shut down due to a weather related event and any other technology to advance the transportation network into futuristic capabilities.

Lubbock has a current transit system operated as Citibus. Citibus provides fixed route service, ADA complimentary paratransit service, non-emergency medical transportation, university service, charter service, safe ride service for university students and other miscellaneous services. Citibus has been operating in Lubbock for about 40 years. Lubbock's transportation network (roads and buses) is essentially a clean slate when it comes to technology. The opportunity to become a Smart City from the bottom up is highly achievable. The minimum transportation network qualifications to become a Smart City is there and the citizens of Lubbock, businesses, higher education entities, council members are all committed to making Lubbock an example of what a city could be with top of the line, cutting edge technology. Any data gathered from the Smart City technology would be shared with the public to be used in a way that advances entrepreneurship, economic development and the growth of all businesses in and around Lubbock.

As stated previously, Lubbock has a "clean slate" when it comes to technology that creates a safer, more reliable, efficient and sustainable transportation network. There is an abundance of open space in the right-of-ways and some empty lots throughout the city that could be utilized for technology locations, connected automated vehicle operations, electrical grids, bike and car sharing spaces and many other technological opportunities. South Loop 289, Marsha Sharp Freeway and Slide Road are the major highways/streets that have to most congestion and are major points for access around the city. These thoroughfares are ideal corridors to implement road sensors that would generate data for potential reroutes, additional lanes or increased public transit to provide an alternative to vehicles on the roads. The City of Lubbock is

committed to purposing areas throughout the city for use to make a sustainable, vibrant Smart City.

The approach that has been discussed would meet as many of the vision elements possible as set out but the United States Department of Transportation including Urban Automation, Connected Vehicles, Intelligent, Sensor-Based Infrastructure, Urban Analytics, User-Focused Mobility Services and Choices, Urban Delivery and Logistics, Strategic Business Models and Partnering Opportunities, Smart Grid, Roadway Electrification and Electric Vehicles, Connected, Involved Citizens, Architecture and Standards, Low-Cost, Efficient, Secure and Resilient Information and Communications Technology and Smart Land Use. Every opportunity and effort will be made to incorporate all twelve of these vision elements when creating and implementing all technologies possible in an effort to truly become a Smart City. Once given the opportunity and funding to create and develop a specific site map and plan for implementing smart technology, all of these elements will be at the forefront to optimize the greatest result possible. The deployment of technology in Lubbock will help reduce overhead costs for the City of Lubbock which will create an opportunity to repurpose some funding to areas of the city that are disadvantaged or in areas that are primarily persons of low socioeconomic classes. With the availability to do this, the end result will be to bring the down trodden areas up to promote a higher quality of living for the individuals in these areas and create opportunities among them that will in effect, increase the economic output for the city and hopefully decrease crime in the trouble areas.

As with any opportunity, there are inherent risks associated with developing a Smart City. The risks could be objection from the citizens of Lubbock to incorporate technology, refusal to share collected information, failure of property owners to accept public interest initiatives as well as many other risks. The most important thing to do to mitigate risks is to get the public, businesses, city staff, council members, transit board members, transit staff, etc. as informed as possible about what a Smart City is and how the technology will benefit everyone that lives, works or plays in Lubbock. The more educated everyone can be about the project, the less inherent risks there are. Outside of educating all players involved, providing demonstrations of successes from other cities that have smart technology as well as failures. Most often, it is easier to learn from failures than successes.

Key partners involved in the Smart City initiative are the City of Lubbock staff and Council Members, the Lubbock Metropolitan Planning Organization, Texas Tech University, Citibus staff, Transit Advisory Board, citizens of Lubbock and the businesses of Lubbock. All of the parties will be heavily involved in creating a Smart City and how all of the technology is implemented and utilized. Texas Tech University was recently named a Tier One Research University so they have ample resources for research and development especially when it comes to cutting edge technology. Texas Tech University could be utilized to develop the most efficient strategy possible to carry out the Smart City initiatives.

Lubbock's existing transportation infrastructure consists mostly of streets but does have a north-south interstate (Interstate 27) that dissects the city, a loop (Loop 289) that circles a large portion of the city and an east-west freeway (Marsha Sharp Freeway) that allows direct access through the city connecting smaller communities outside of Lubbock city limits. The city's streets are set up on a grid system that has a major intersection every one mile traveled in any direction traveled. This allows for easy commuting throughout the city. Lubbock has a current transit system operated as Citibus. Citibus provides fixed route service, ADA complimentary paratransit service, non-emergency medical transportation, university service, charter service, safe ride service for university students and other miscellaneous services. Citibus has been operating in Lubbock for about 40 years. Currently, there is no Smart Grid infrastructure. All city vehicles are gas vehicles and Citibus has a combination of diesel and gas vehicles with 8 hybrid-electric diesel buses. There is a desire to convert all transit buses that operate on the Texas Tech University campus to electric to reduce the carbon foot print and promote green energy. Converting all transit buses to electric or compressed natural gas is desirable. However, the cost to do so is too steep at this point but given funding to pursue a Smart City could help that desire come to fruition. Lubbock, being a "clean-slate" when it comes to transportation technology, does not have any shared-use mobility services. The City of Lubbock is currently undergoing a downtown redevelopment project to revitalize downtown. As people and businesses begin to move downtown, shared-use mobility services will become highly desirable. The current transportation network downtown cannot accommodate masses of vehicles. Therefore, park and rides, transit services, and shared-mobility services will be in demand.

All data collected as a result of Smart City technology will be shared as necessary to promote economic growth, business development, to reduce congestion, mitigate unnecessary travel patterns, create a better flow of traffic, promote pedestrian activity including biking and walking and increase safety among all modes of travel. However, this data will be stored and shared using the most security possible. Data security is a hot topic today and is of great importance especially with all of the data breaches that have gone on in recent memory.

The smart technology that will be implemented as a result of this grant opportunity will be monitored for efficiency, sustainability, safety and mobility. The opportunity to have a Smart City is one that does not need to be missed and one that can provide great things for the city and the citizens of Lubbock. With the award to refine the Smart City plans, we plan to expand in great detail where the technology will be implemented and how it will create a better community to live in. Citibus has been a direct recipient of federal funding from the Federal Transit Administration for many years and has never had any issue with the capacity to carry out and fulfill the grant funding. Citibus and the City of Lubbock look forward to the opportunity to work with the Department of Transportation to create a Smart City in Lubbock, Texas.