THE CITY OF LINCOLN, NEBRASKA BEYOND TRAFFIC
The Smart City Challenge
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February 1, 2016

U.S. Department of Transportation (USDOT)
Federal Highway Administration (FHWA)
Office of Acquisition and Grants Management
1200 New Jersey Avenue, SE
Washington DC 20590

RE: “Beyond Traffic: The Smart City Challenge”

Dear Ms. Tarpgaard and Selection Committee Members:

Never has there been a more amazing time in our history to implement emerging technologies that will forever change how we move about communities. The Smart City Challenge is a pivotal step in this change and the City of Lincoln is eager to share with you our vision. Our project will provide increased connectivity to underserved populations, provide transportation education opportunities, and spark new trends in our many high tech private sector startup companies.

Lincoln is poised to accept the Smart City challenge and is in a perfect position to leverage two of our technology projects already underway. Our recently announced fiber-to-the-home public/private partnership will bring high speed broadband to every citizen, and Gigabit connections to every traffic signal and public building facility. Our “Green Light Lincoln” project will modernize our entire traffic system, implementing the newest software, hardware, and management center in America this year. These two projects provide a foundation on which we plan to build our Smart City project, and will allow us to start work immediately.

The City of Lincoln has a bold and innovative management team and we are fully committed to the successful, on time completion of this project. And, we take this challenge very seriously as we understand that this is more than a demonstration project – it is opportunity for our city to change thinking, improve our climate, and enhance quality of life.

Thank you again for this unique funding opportunity. We look forward to sharing more of our ideas with you during the next round of solicitation.

Sincerely,

Chris Beutler
Mayor of Lincoln
Imagine a city offering the greatest quality of life. A capital city with a strong economy, a vibrant downtown, and top notch schools at all levels. Imagine a city full of people with optimism, and a spirit of innovation and discovery. People of multiple ethnic and economic backgrounds – caring, volunteering, and fostering a sense of community pride.

Imagine a city in the middle of the U.S., with growing mobility challenges, yet a clear directive on urban growth policy. A city with a renewed focus on transportation and technology that is facing the challenges of growth head on. A city with a large student population, feeding the technology startups that are expanding the “silicon prairie” to help address this growth.

Imagine a city on the cusp of beltway construction around its perimeter, bringing additional commerce to the largest freight corridor in America. A city that has so far dodged the need for such freeways bisecting its community center and displacing people. A community where neighborhoods tie to other neighborhoods that tie to mixed use development. This is Lincoln. This is a great City.

We know that a strong transportation network integrated across all modes that serves everyone is a vital key to maintaining our desirable community. Through the years, we maintain our roads and bridges, and we’ve built new roads and bridges. We are now at a point where we must prioritize technology to improve mobility. We must implement and operate the next generation of our system to be consistent with the reality of funding and the desires of the end user. We have work to do. We are ready.

To address the continued transportation challenges of the future and better manage existing mobility, the City of Lincoln has proposed bold yet attainable components of a demonstration project. We will leverage our current and on-going transportation technology assets to accomplish the following vision elements ahead of schedule:

- **Implement a fully autonomous, electric vehicle transit enhancement to our current system that will result in a 20% reduction of vehicle trips city wide.**
- **Deploy additional city wide non-intrusive sensors and communications hardware to facilitate connected vehicle applications and proactive traffic management.**
• Collection, analysis, and documentation of data across the traffic management system to allow for performance measurement and application development by the private sector in coordination with our many partners and stakeholders.
• Robust public education regarding these smart transportation initiatives, including a primary focus within our after school programs serving under-represented populations and transportation technology programs at our career academies.

These items will be rolled into the delivery of an unprecedented demonstration project that can be documented and later applied to other mid-sized cities across the United States. Our current environment in Lincoln (as described in later sections) will make this a reality. The results of this effort will be more than just a demonstration project for the City of Lincoln. This initiative will produce citizen and industry buy-in, and will change the transportation landscape in Lincoln, and elsewhere, forever. This project will address ALL three of the high-level anticipated outcomes as identified in the solicitation:

VISION CHALLENGES
The challenges are real. Whether nationally or locally in Lincoln, these primary outcomes must be addressed as we build and manage our future city.

The City of Lincoln transportation network is impacted by approximately 7,500 crashes annually, resulting in a socioeconomic loss to the community of nearly $300,000,000 each year. In addition, the amount of bicycle related crashes has been on a steep increase in recent history, indicating the improved mode share of bicycle activity has outpaced our implementation of safe improvements.

The current City of Lincoln transit system struggles to provide “off hour” operations including abbreviated Saturday service and no Sunday service. In addition, the fixed route nature of the system can leave those with limited mobility at a disadvantage to reach certain stops. Lincoln has increasing poverty levels within neighborhoods adjacent to the Central Business District, furthering the need for enhanced transportation services that are affordable and efficient.

Continued greenhouse gas emissions due to idling and inefficient vehicle travel continues to result in a real monetary loss and also impacts the climate in aggregate. Achieving low-carbon cities will require giving people incentives to make different choices about how they live, work and travel. There is a need to partner with key stakeholders to reinvent how services are delivered, save energy, and build the next generation of sustainable transit and traffic management systems.
Improving the transportation network to produce solutions that mitigate these challenges and provide the desired outcomes can be achieved. It can be demonstrated to the public. It will result in a game changer for the citizens of Lincoln and the USDOT.

**VISION APPROACH**

The City of Lincoln vision for the Smart City Challenge will be focused into attainable project components that leverage our current and continued focus on the use of technology for major transformation of our system. It will educate and build consensus, boost transportation research and development, and level the playing field amongst all citizens in regards to transportation accessibility. The project vision elements are illustrated in Figure 1, and are further described on the following pages.

1. **LINC**

Our Smart City Lincoln vision will implement a robust enhancement to our existing transit system. In fact – it will become the majority carrier of our ridership. We will deploy and integrate LINC (Lincoln Independent Navigational Carriers) in a phased implementation city wide with a bold but reachable goal of reducing 20% of existing vehicle trips and parking needs.
The LINC system will include two vehicle types – 1) a shuttle seating 8 passengers that will provide service to the immediate Central Business District, and 2) standard passenger cars for city wide service. These vehicles will have the following characteristics:

- **Autonomous (driver-less)**
- **Electrically Powered (battery)**
- **Connected (to each other, and the traffic signal system)**

The LINC system will work based upon user requested information via typical smart device applications. Efficiencies in route designation will be provided based upon fastest path data, and nearby user requests (ride-sharing).

The LINC system will provide for exponential growth in ridership amongst all citizens. As more users become comfortable with the ease of use and economic value of the system, in addition to wide ranging education and marketing of its benefits, the results will be dramatic and far reaching. This demonstration project and its documented value in enhancing safety, mobility, and climate change will lead to an even larger scale deployment. More detailed project initiatives for the LINC system include:

- **Allowing existing transit service to focus solely on fixed route, high ridership corridors between major trip generators, and additional special use service.**
- **Connectivity of the vehicles to one another, and the traffic signal system, will allow for incredible efficiencies, safety, and vehicle management.**
• Transit signal priority will be deployed city wide on both LINC and the thirty (30) compressed natural gas (CNG) buses that remain on the existing system fleet.

• **Mail and package delivery demonstration** will be included for a number of test vehicles at defined private carrier parcel stops and the downtown U.S. Postal Service facility.

• **In vehicle, looping video and interactive education materials** will be presented and displayed so that the riders are able to learn even more about the LINC system, their personal contributions to benefits of the program, and other USDOT transportation technology initiatives.

• **Major safety enhancements for moving downtown pedestrians during special events such as at the Pinnacle Bank Arena, and during UNL home football game days which bring over 100,000 spectators interacting with traffic crossing two major arterials in a 6-block area.**

In addition to just this sample list of obvious and impactful components of the LINC system, a major focus will be on the change in vehicle power. Implementation of additional electric vehicle charging stations will be completed throughout Lincoln at multiple, strategic locations that are public property operated by City of Lincoln. In partnership with our own Lincoln Electric System (LES), dozens of these aggregated sites will be constructed to provide ample bandwidth for the 600-plus autonomous, connected vehicles.
With a current focus already on alternative fuels and clean energy through our existing CNG powered bus fleet, this will be yet another community enhancement that can be documented with stakeholders. These sites will be used to recharge the new fleet of vehicles during non-peak electric usage periods. In addition, adjacent use recharging infrastructure will be completed by the City to allow for private citizen charging access at relevant locations.

2. SENSORS

To complement the LINC project component, and deliver additional Smart City capabilities, a major deployment of non-intrusive sensors and dynamic short range communications (DSRC) equipment will be made at every signalized intersection. For this component of our project vision, the City of Lincoln will leverage its already robust network of camera detection and Bluetooth/Wi-Fi sensors to obtain additional vehicle data and travel characteristics. The sensors will be tied to existing signal infrastructure and routed to the cabinet equipment. Data will be brought back to the Operations Center over the expansive Gigabit fiber connections at field cabinet locations.

Supplemental data collection systems via sensors will gather not only traffic data, but also other system data impacting mobility. An example of one major ancillary system is the many at-grade railroad crossings that impact the City of Lincoln transportation network. The busiest railway corridor in the world makes its way through the state of Nebraska. Both the BNSF and Union Pacific Railroads have facilities that traverse through Lincoln. Thus, the need for smart railroad crossings and sensors that can provide valuable information for impending train delays and alternate routing are critical.
A robust system of DSRC units will also be installed at signal locations to provide valuable Vehicle-to-Infrastructure (V2I) communications capabilities. The V2I setup will allow the signal system to communicate with all LINC system vehicles and other private vehicles with capable on-board equipment. The infrastructure will inform riders and drivers of traffic conditions, work zones, weather, and potholes. Enhanced signal timing and operational efficiencies can also be better managed.

In addition to vehicle applications, Lincoln will also implement test equipment for new bicycle facilities. The “N Street Cycle Track” has just opened and was recently awarded a #4 ranking of America’s 10 Best New Bike Lanes 2015! In addition to the existing wireless magnetic bicycle sensors along the track, what a great time to implement new bicycle-to-vehicle communications for the LINC vehicles (among others) to gather more data and improve safety.
3. DATA

So what to do with all this data? The third project component will be focused on massive data aggregation, data sharing, analytics, reporting, and detailed performance measurement. There will no doubt be a wealth of data. And with all this data and connectivity comes possibility. Raw data sets will be summarized and funneled through the city’s new advanced traffic management software (ATMS), further enriching the capability to improve and automate signal coordination plans, transit signal priority for the LINC system, and active traffic management of problem areas on the network.

Open source data for the sharing economy can only help to spur entrepreneurial solutions and new applications for further improving mobility for all users. Creating an environment of safe, open data sharing will provide additional educational and economic opportunities. Next generation transportation industry startups will focus additional energy to develop applications for mobility on demand. A connection to real-time data from the traffic management system will allow our partner stakeholders, private industry, and the public at large to benefit from improved research and development capabilities. In addition, as part of the large scale data gathering and analyses, relevant reporting and performance measurement will be documented for the LINC system impacts, and many other traffic operational, safety, and environmental benefits.

Through the course of the Lincoln demonstration project this compelling data can be utilized to further market the improved quality of life benefits realized through better mobility for all users and the reduction of inefficient vehicle trips.

4. EDUCATION

The final project component identified for the Lincoln Vision is what really helps the future happen today. It is the focused and widespread education of these Smart City transportation technologies and concepts to the end users. It is vital to educate users of all ages and backgrounds on the importance of getting beyond traffic, and getting there soon. If we are to make fundamental changes in living habits and how we use transportation, education and consensus amongst our coworkers, neighbors, friends, and children is key. Without motivation, there is no change.
It has been identified that much of the future employment opportunities in the transportation field will be “operations focused.” The transportation industry needs talented operators and individuals who are excited to take smart transportation technologies to the next level. Proper training and career path development in many of the transportation sector employment opportunities will be crucial to advance modern mobility.

Through our partnerships with local education leaders and research faculty, a swift, yet formal program will be rolled out into our local schools – with initial focus on those schools serving under-represented populations. In addition, the University of Nebraska-Lincoln Nebraska Transportation Center will support the Smart City Challenge through continued education in the “After School Program.” This program is for age K-12 students and is uniquely geared towards building a diverse base of transportation professionals to ensure sustainable transportation infrastructure for future generations. And finally, the Career Academy - a joint venture between Lincoln Public Schools and Southeast Community College (SCC) - will be utilized to further the knowledge base of transportation technologies amongst those wishing to pursue a career in the industry.
The City of Lincoln is an ideal match for the Smart City Challenge. Our population demographics and other characteristics as defined in the USDOT solicitation favor Lincoln as great testbed in the middle of America. See Table 1 below for a description of how we compare:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>COMPARISON</th>
<th>CHARACTERISTIC</th>
<th>FULFILLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IDEAL CITY</td>
<td>Population between 200,000 and 850,000 people within city limits</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>LINCOLN</td>
<td>Lincoln’s population is 257,924</td>
<td>✓</td>
</tr>
<tr>
<td>2</td>
<td>IDEAL CITY</td>
<td>Dense urban population typical for mid-sized American city</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>LINCOLN</td>
<td>Lincoln has larger than average density amongst peer cities of 2,899 people per square mile</td>
<td>✓</td>
</tr>
<tr>
<td>3</td>
<td>IDEAL CITY</td>
<td>Represents a significant portion (more than 15%) of the overall population of its urbanized area</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>LINCOLN</td>
<td>Lincoln represents 100% of the overall population of our urbanized area</td>
<td>✓</td>
</tr>
<tr>
<td>4</td>
<td>IDEAL CITY</td>
<td>An existing public transportation system</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>LINCOLN</td>
<td>Lincoln has a progressive public transportation system (StarTran) with CNG Fuel Sources</td>
<td>✓</td>
</tr>
<tr>
<td>5</td>
<td>IDEAL CITY</td>
<td>Environment conducive to demonstrating proposed strategies</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>LINCOLN</td>
<td>Lincoln has a public sector management structure geared towards new innovative strategies and private sector partnerships that continue to push cutting edge project components</td>
<td>✓</td>
</tr>
<tr>
<td>6</td>
<td>IDEAL CITY</td>
<td>Continuity of committed leadership and capacity to carry out the demonstration through period of performance</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>LINCOLN</td>
<td>Lincoln has a newly re-elected third term mayor and a wealth of innovative department leaders and staff with proven “big project” experience and technology expertise</td>
<td>✓</td>
</tr>
<tr>
<td>7</td>
<td>IDEAL CITY</td>
<td>Commitment to integrating with the sharing economy</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>LINCOLN</td>
<td>Lincoln is already integrating data with partner agencies, and startups, with plans to do more as part of the Traffic Management Master Plan implementation and Fiber to the Home build out</td>
<td>✓</td>
</tr>
<tr>
<td>8</td>
<td>IDEAL CITY</td>
<td>Commitment to making open, machine-readable data accessible, discoverable, and usable by the public to fuel entrepreneurship and innovation</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>LINCOLN</td>
<td>Lincoln has existing open GIS, ITS, and traffic data sources for consumption by the public, other agency stakeholders, and research partners</td>
<td>✓</td>
</tr>
</tbody>
</table>
As illustrated on the previous page, Lincoln satisfies ALL criteria. In addition, our environment in the Midwest makes us a perfect demonstration location. Lincoln has weather patterns ranging from some of the hottest to some of the coldest in the nation. If a project can work here, it can work anywhere! This is a key factor when testing new technologies such as electrical charging stations, roadway sensors, and communications equipment. Whether or not products are properly outdoor rated (NEMA TS2 etc.) we can put them through the paces by simply letting Mother Nature work.

Lincoln also has similar and possibly more unique characteristics than our peer cities when evaluating information provided in the USDOT report Beyond Traffic 2045, Trends and Choices. As illustrated in the growth map that was included in the report, Lincoln and Lancaster County Nebraska is one of the highest growth areas in the entire Midwest.

Lincoln is “One Community.” This moniker is the main aspect of the long term vision for the community in its Comprehensive Plan as both a current reality and as a future aspiration. Over 90% of Lancaster County’s population and growth occurs within the city limits of Lincoln, and consistent goals and policies are shared throughout the community. There are no competing suburbs to divide the benefits of this growing city.
Instead, Lincoln prospers by having single, top performing public school district that serves all the residents of the city. Longstanding policies of phasing urban growth and appropriately timed public infrastructure improvements help Lincoln provide urban services and utilities efficiently. This not only allows Lincoln to prosper, but it also helps maintain an “edge” between urban and rural land uses in Lancaster County. Lincoln is committed to remain a unified community through these policies and thus is positioned to move forward as a leading 21st Century city.

As One Community, the City of Lincoln has grown in a more compact and contiguous manner than peer cities in the region. Lincoln’s population density of 2,899 persons per square mile benefits from an increase in infill development in the Downtown area over the past several years. Over a quarter of all new residential development has occurred in the Downtown area during the past six years. Such recent trends lead to expectations that population density in the older core areas of Lincoln will increase steadily. Similarly, employment densities are also trending upwards with major expansions and increased concentrations in the Downtown area. All of this points to a more efficient and productive future for Lincoln. Continued emphasis on policies that support a more efficient city are in place to achieve such a future.

The City of Lincoln is also somewhat unique in the transportation challenges we face due to being in the confluence of the large-scale and impactful freight corridors that travel through our community. With Interstate 80 (I-80) traversing the north side of our community, U.S. Hwy 77 on the west, a new South Beltway being readied for construction, and NE Hwy 2 providing connectivity to I-29 and Kansas City to the south, we lie along one of the largest trucking corridors in America. In addition, due to the presence of a major confluence of BNSF and Union Pacific Railroad lines in this end of our state, we also fight mobility issues with the busiest rail lines in the world.

A map on the following page depicts the freight flows in America for 2010.
Lincoln faces unique transportation challenges due to large-scale trucking and rail corridors that move through our city and the state.

These factors, along with the following list of “Quick Facts” for Lincoln, uniquely qualify our city for the Smart City Challenge.

**Quick Facts:**
- Lincoln’s total population grew more than 15% over the last decade. By 2045 our population will jump to over 415,000 bringing with it larger metro mobility issues.
- We control our own destiny – ideas and technologies implemented are not influenced by any suburbs or jurisdictional lines – just Lincoln!
- When compared to other peer cities, we fall right in the middle for all three categories of: population, land size, and density (one of only 6 cities able to make this claim)
- Our population, land area, and lack of other jurisdictions makes us able to more easily stretch and utilize dollars for city-wide logistics.
- For the average Lincoln citizen, transportation is the second largest expense in regards to our cost of living.
- By this coming Fall, we will have the nation’s newest traffic management center, newest system software, and newest signal controllers – offering state of the art flexibility for integration of new technology.
• We are presently constructing Fiber-to-the-Home on a city-wide basis and leveraging over $120M in the project that will bring high speed (Gigabit) connection to every signal cabinet and every public building in the city. Communication to all city facilities will be provided by this Gigabit network, and therefore no grant funding will be spent on communications - only on advanced technologies.
• Lincoln has recently completed our first “Cycle Track” in downtown Lincoln, complete with wireless sensors.
• We are already moving forward with a brand new 15 station Bike Share program.
• Our community is full of Millennials and new technology startup companies.
• Google named Lincoln the top eCity in Nebraska for 2015.
• Our current Public Transit system, StarTran, has been awarded the National Community Transit Award.

These are just a few of the factors that make the City of Lincoln a great candidate for the Smart City Challenge. **We share the vision of the USDOT** in prioritizing the next generation of transportation technology to improve safety, enhance mobility, and address climate change. We have a successful track record on deploying technology projects, and know we need to stay ahead of the transportation growth curve. We are excited to implement a demonstration project that will result in achieving these goals, and one that can be duplicated many other cities across the U.S. A preliminary project site map of Lincoln is illustrated on the following page.

**Forbes Magazine says:**

“City of Lincoln is the #3 city for young entrepreneurs.”
The Lincoln Vision Project components fulfill the USDOT Vision Elements. Table 2 below provides additional detail.

### Table 2: USDOT Vision Elements - Lincoln, Nebraska

<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>DESCRIPTION</th>
<th>FULFILLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Urban Automation</td>
<td>Urban automation will be realized through the Lincoln Independent Navigation Carriers (LINC) project components. Full autonomous, electric, connected shuttle and small car transit service will be operated through user friendly application interface and enhance/replace current transit offerings.</td>
<td>✓</td>
</tr>
<tr>
<td>2 Connected Vehicles</td>
<td>The LINC transit system project component will provide 600-plus connected vehicles, also integrated with sensors and DSRC units at traffic signal locations. This network is connected with existing robust communications systems. Private vehicles (if equipped) will be able to communicate with the infrastructure as well.</td>
<td>✓</td>
</tr>
<tr>
<td>3 Intelligent, Sensor-Based Infrastructure</td>
<td>System-wide non-intrusive sensors will be deployed at traffic signal locations to collect additional data beyond existing camera detector and Wi-Fi systems. A wealth of vehicle count, class, speed, and arrival data will be aggregated at the state of the art traffic management center.</td>
<td>✓</td>
</tr>
<tr>
<td>4 Urban Analytics</td>
<td>Data analysis and open data sharing will be provided via the City of Lincoln ATMS software system and open portal concept at the traffic management center. Research facilities, companion agencies, private sector, and public will have access to relevant data streams for use in product and application development/support.</td>
<td>✓</td>
</tr>
<tr>
<td>5 User-Focused Mobility</td>
<td>The combination of the LINC system and open source data will provide for immediate user choice of mobility options, and also future application enhancements (example - additional rideshare capabilities or delivery options) as further applications are evaluated and developed, LINC will level the playing field.</td>
<td>✓</td>
</tr>
<tr>
<td>6 Urban Delivery &amp; Logistics</td>
<td>Package delivery and defined parcel stops will be included on a set number of demonstration project vehicles. Lincoln will work with local parcel service logistics personnel and the U.S. postal service to define synergies that can be demonstrated as part of the LINC system. Partnerships with private logistics planning consultants could provide additional modeling of reduction in business to retail trips.</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Strategic Business Models &amp; Partnership</td>
<td>City of Lincoln has partner stakeholders in both the public sector and private sector including local legislative representatives, State Dept. of Roads, universities and Educational centers, and private entities that are already providing and sharing data - both traffic data and GIS/asset management data. Education programs are defined and will benefit greatly from these partnerships.</td>
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<tr>
<td>8</td>
<td>Smart Grid, Roadway Electrification, &amp; Evs</td>
<td>As part of the LINC system deployment, multiple sites around the City will be constructed with charging bays and additional stations for charging of the fleet during off-peak electrical loads. In addition, excess units will be provided for private vehicles that begin to convert over, and the City Fleet Vehicles.</td>
</tr>
<tr>
<td>9</td>
<td>Connected, Involved Citizens</td>
<td>Broad access of data will be provided as described in project components 2 and 3. However, a large need in this portion as well is a focused training and education plan that will guide the desire and interest of citizens to stay involved throughout the pilot, offering useful feedback.</td>
</tr>
<tr>
<td>10</td>
<td>Architecture &amp; Standards</td>
<td>National ITS Architecture standards will be followed for implementation of the demonstration project. City of Lincoln is currently updating the Regional ITS Architecture to latest web-based format. In addition, all appropriate systems engineering deliverables will be submitted to local FHWA and JPO for review.</td>
</tr>
<tr>
<td>11</td>
<td>Low-Cost, Efficient, Secure, and Resilient Information &amp; Communications Technology</td>
<td>As part of the project elements for DSRC implementation, it is envisioned the City will work with USDOT to formalize any recommendations based upon the prior RDE open source application development portal and the operational data exchange.</td>
</tr>
<tr>
<td>12</td>
<td>Smart Land Use</td>
<td>The analysis of massive data sets under previous tasks could be used to improve “model” development that has been conducted by teaming partner Quetica. Preliminary descriptions of this modeling effort suggest land use could be more advantageously laid out to result in fewer overall trips for commercial activities.</td>
</tr>
</tbody>
</table>

Through implementation of the four major project components included in the Lincoln vision: – LINC System, Sensors/DSRC deployment, Data Analytics and Performance Measurement, and broad based Public Education, there are cross cutting activities that fulfill all of the 12 USDOT Vision Elements. This indeed creates synergy amongst the four components – providing demonstration and research opportunities for a large portion of the overall vision, while more easily implementing these projects with a single, unified Smart City Challenge applicant. In addition, Lincoln is also leveraging our own investment in the following items:
- High speed broadband network city wide at all signals, all ITS devices, and up to 150 public building facilities.
- 15 virtual local area network (VLAN’s) at each location for use by the City.
- Newest ATMS software, controllers, and Traffic Management Center in the nation at project kickoff.

The Smart City grant dollars will be fully put to work on the mission at hand – implementing and testing a full array of technology to improve mobility for all.

**THE RISKS**

As with any major project of this scale there are risks involved. The City of Lincoln is prepared however, to make this demonstration a success for the USDOT. We take the responsibility seriously, and have full commitment of leadership to be successful.

<table>
<thead>
<tr>
<th>TYPICAL TECHNICAL RISKS:</th>
<th>MITIGATION STRATEGIES ARE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- New technologies</td>
<td>- Use as much field-tested equipment as possible</td>
</tr>
<tr>
<td>- Size and experience of immediate project team</td>
<td>- Ensure primary point of contact, and technical expertise is available</td>
</tr>
<tr>
<td>- Availability of components</td>
<td>- Check reality of project component inventories before finalizing scope</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TYPICAL POLICY RISKS:</th>
<th>MITIGATION STRATEGIES ARE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Potential for municipal code conflicts</td>
<td>- Review any conflicts with City/State Code</td>
</tr>
<tr>
<td>- IT Governance</td>
<td>- Include IT staff early and often</td>
</tr>
<tr>
<td>- Legislation / Legal</td>
<td>- Coordinate with legislators early in the process</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>TYPICAL INSTITUTIONAL RISKS:</th>
<th>MITIGATION STRATEGIES ARE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Lack of agreed upon final project objectives</td>
<td>- Appoint a project champion</td>
</tr>
<tr>
<td>- Lack of agreement on final criteria for project success</td>
<td>- Plan very detailed project criteria and scope with stakeholders</td>
</tr>
<tr>
<td>- Inadequate project scope detail</td>
<td>- Ensure single organization is responsible for program management</td>
</tr>
<tr>
<td>- Changes to project priorities</td>
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Through all of the activities, communications and strong project management is the key to successful final project delivery to USDOT.
The Smart City Challenge has created unprecedented inquiry and widespread information sharing not only in Lincoln, but across the nation. Locally, it has led to numerous discussions with partner stakeholders and community and industry leaders. Lincoln is in an advantageous position – we are a Capital city, and our state Legislature meets 4 blocks away from our own City Hall and Public Works Department. The Nebraska Department of Roads is headquartered a short drive away. When and if discussions need to be had and decisions made, we are here in close proximity and can coordinate easily.

In addition, many of our “Silicon Prairie” tech startups continue to grow here in Lincoln. With support from our own University of Nebraska partners, Innovation Campus, Lincoln Electric System, and key private entities, the time is ripe for Lincoln. An initial listing of those partner stakeholders is included below, and their letters of commitment and support are attached to the end of this submittal.

Deb Fischer  
United States Senator  
State of Nebraska

Kyle Schneweis, PE  
Director  
Nebraska Department of Roads

Marc J. Shkolnick  
Manager, Energy Services  
Lincoln Electric System

Val Lefler  
President and CEO  
Integrated Global Dimensions LLC

L.R. Rilett, Ph.D, PE  
Director, Nebraska Transportation Center  
Distinguished Professor of Civil Engineering  
University of Nebraska-Lincoln

Daniel J. Duncan  
Executive Director  
Nebraska Innovation Campus

Paul Illich  
President  
Southeast Community College

Wendy Birdsall, CCE  
President  
Lincoln Chamber of Commerce

Mike Boyle  
Vice President/Plant Manager  
Kawasaki Motors Manufacturing Corp., U.S.A.

Doug Durham  
Principal and CTO  
Nebraska Global Investment Company

Bradley A. Moline  
President  
Allo Communications
The City of Lincoln transportation infrastructure includes the major 6-lane, I-80 freeway corridor on the north, and US-Hwy 77 by-pass to the west. The majority of the major arterial street system is a grid network (mile line roadways), with multiple other minor arterials and collectors. Lincoln has a total of 23 centerline miles of freeway, and 160 centerline miles of arterial roadways. Lincoln has not had to bisect the community with other north/south or east/west freeway facilities to date. In order to maintain desirable travel times and operations, efficiencies will need to be gained through technology and improved mode share.

Lincoln’s current and only mass transit system is StarTran. The system operates a total of 67 full-size coaches and 13 Handi-Vans. StarTran is acknowledged nationally as a leader within the transit industry in the utilization and promotion of alternative fuels. The fleet uses compressed natural gas (CNG) – nearly 30 buses by the end of 2016, and biodiesel – the remainder of the fleet. All StarTran vehicles provide accessible service, and automated vehicle location (AVL) infrastructure. The program offers senior center promotion services and low income bus passes. StarTran also plays a major role in the University of Nebraska operations between City Campus and East Campus. A transit development plan has just recently been completed to evaluate changes in routes and bus stops and proposed modifications.

The City of Lincoln has a robust and redundant communications network for public building infrastructure and the signal system. Additional copper communications lines are still present at few select locations. Managed Ethernet switch equipment has been phased in upgrades over recent years as the City prepares this season for new signal system infrastructure. Earlier this year, the Mayor announced a major communications game changer within the City as part of a public/private partnership. Fiber-to-the-home is being deployed to every residence in a massive overbuild. As part of the contract, the city is receiving high-speed Gigabit fiber connections and IP switch gear at all traffic signal and ITS cabinets. In addition, all public buildings are receiving 10Gig connections as well. This has taken the communications infrastructure for the traffic management system quickly into the next generation. The City will also be provided 15 VLAN’s at each point on the network for future use.
In addition to the great news regarding communications upgrades, the City just recently announced “Green Light Lincoln”, a major prioritization to update all 430 traffic signal controllers, new central software, and a traffic management center. The project has already begun and the TMC is under construction with a video wall and new camera management software to be complete this Spring.

The remaining system upgrades will be complete by the end of this season with plans to do corridor wide signal retiming upon implementation. Lincoln is also upgrading several cabinets to state of the art infrastructure and has been programming detection replacement at dozens of intersections with modern camera systems. The impetus for much of this work was the development of a Traffic Management Master Plan near the end of 2015.

In the City of Lincoln, the Traffic Engineering team within the Public Works Department is responsible for the planning, design, operation, and maintenance of the City’s over 430 traffic signals. In addition, a network of over 70 CCTV cameras, 50 portable and permanent dynamic message signs, and over 150 miles of signal/communications conduit infrastructure is operated on a daily basis.

In terms of electrification enhancements to the transportation system, LES collaborated with the City Public Works Department over a year ago to install the first electric vehicle charging stations within the West Haymarket parking garages. In addition, efficient power for signals and roadway lighting is being provided in the Arena project area by way of a District Energy Corporation which operates two centralized thermal energy generating plants that serve a wide reach of buildings and facilities. The city has also partnered with LES to install combination wind/solar generators at traffic signals on the fringe of the community to provide full battery back-up and supplemental power.
The City of Lincoln currently collects traffic volume data for eight peak hours out of the day at every signalized intersection and other major intersection locations (roundabouts, intersections on threshold of satisfying signal warrants etc.). The city has begun a practice of solely collecting counts via the signal system or with non-intrusive machine vision cameras. As such, the operation has become efficient and we have counted every desired intersection within a 2 year period. The city also collects bicycle count data at designated trail locations via loops in the pavement and piezometer. Wireless magnetic pucks have also been installed on the N Street cycle track and at select locations throughout the City. Finally, Lincoln has also deployed a number of Bluetooth/Wi-Fi detectors at intersections to gain additional data on travel runs for corridor evaluation.

Currently, the City of Lincoln shares and coordinates data locally with the Lancaster County Engineering Department, the Nebraska Department of Roads (NDOR), the University of Nebraska Transportation Center (NTC), and other private traffic engineering consultants. Data is now stored in database files that are automated from the camera counts, and are available upon request. With the installation of the new software platform, additional travel data and signal timing information will be more easily shared with these stakeholders as needed. The City has created a web portal site for easy access to all system information and asset management. A migration plan to upload count data and recent three-year crash data to this portal for open consumption is being developed. An illustration of the web portal is shown below:
Standards and architecture for intelligent transportation systems (ITS) will conform to the National ITS Architecture and will be checked throughout the project. The team is very familiar with the Systems Engineering process and national ITS architecture standards. The City of Lincoln is presently beginning an update to its prior architecture, which will result in the latest version, and updated files in a web-based format.

This is being conducted in concert with SE process for a new Adaptive Signal Control Technology (ASCT) project along a major corridor in North Lincoln. As part of that effort, and in concert with the Model Systems Engineering Documents for Adaptive Signal Control Technology, several deliverables have been standardized and are included for local FHWA review on any ITS project:

- Project Plan
- Systems Engineering Management Plan (SEMP)
- Concept of Operations (ConOps)
- Requirements
- Verification Plan
- Validation Plan
- Procurement Plan

In addition, the City of Lincoln has familiarized itself with portions of the newer Connected Vehicle Reference Implementation Architecture and the on-line tools.
Specific goals, objectives and quantifiable results will be developed and documented in much more detail upon final design of the systems. The four project components have been identified with a draft list of designated performance measures that can be quantified and documented. There are a number of additional performance measures that can be developed for each objective and additional goals. These performance measures, shown below in Table 3, will be included in the systems engineering documents and provide positive reinforcement for the benefits of the Lincoln vision. Online database tools for operational manuals will be housed in the traffic management center for timely reporting by the staff operators and Traffic Engineering Division.

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<th>TABLE 3: DRAFT PERFORMANCE MEASURES</th>
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<td>PROJECT COMPONENT</td>
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<td>SENSOR/DSRC INSTALL</td>
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<td>EDUCATION</td>
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As Mayor Beutler stated in our opening cover letter – “we are fully committed to the successful, on time completion of this project....this is more than a demonstration project – it is opportunity for our city to change thinking, improve our climate, and enhance quality of life -” there is no lack of enthusiasm here in the Midwest. We have the team, leadership, and support from the top down in all City Departments. This project will be led by the Traffic Engineering Division with primary support from leadership within our own StarTran, and Technology Services Divisions. All three disciplines are located with the Public Works Department and work together daily. There will no doubt be additional private consulting assistance, and we have a wealth of local and regional ITS consultant expertise familiar with all Systems Engineering and design requirements. We have programmed additional engineering horsepower within the next two year budget cycle being finalized now, to move forward with many new initiatives in proactive traffic management. Our infrastructure is ready and being improved upon every day.

LEVERAGING FEDERAL RESOURCES

As mentioned in prior sections, the City of Lincoln has recently launched fully into major technology initiatives that will boost its transportation (and other) capabilities dramatically. The city has partnered with Allo Communications to bring direct, high speed fiber optic connections to every property in the City. As part of the on-going design and installations, the City is receiving robust connectivity to every device in the field including VLAN’s. In addition, the City’s recent “Green Light Lincoln” initiative is bringing new state of the art signal system equipment on-line that will change the landscape of traffic management in Lincoln. These efforts alone are resulting in over $120M of investment in Lincoln to facilitate technology projects and the sharing economy moving forward.
As mentioned in section 5, there is widespread support and excitement from numerous local stakeholders and community leaders regarding the use of technology to enhance the mobility of our community. We have included 11 letters of commitment in this document that exemplify the level of commitment we have received, to date.

Letters of Commitment from these individuals are included on the following pages:

Deb Fischer  
United States Senator  
State of Nebraska

Daniel J. Duncan  
Executive Director  
Nebraska Innovation Campus

Kyle Schneweis, PE  
Director  
Nebraska Department of Roads

Paul Illich  
President  
Southeast Community College

Marc J. Shkolnick  
Manager, Energy Services  
Lincoln Electric System

Wendy Birdsall, CCE  
President  
Lincoln Chamber of Commerce

Val Lefler  
President and CEO  
Integrated Global Dimensions LLC

Mike Boyle  
Vice President/Plant Manager  
Kawasaki Motors Manufacturing Corp., U.S.A.

L.R. Rilett, Ph.D, PE  
Director, Nebraska Transportation Center  
Distinguished Professor of Civil Engineering  
University of Nebraska-Lincoln

Doug Durham  
Principal and CTO  
Nebraska Global Investment Company

Bradley A. Moline  
President  
Allo Communications
January 21, 2015

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

Dear Secretary Foxx:

I write to request your full consideration of the application provided by the City of Lincoln for the U.S. Department of Transportation Federal Highway Administration Smart City Challenge grant.

The City of Lincoln has shown a commitment to innovation through its thriving culture of entrepreneurship. This creative environment will be critically important as Lincoln continues to provide solutions to transportation and infrastructure challenges in Nebraska’s rapidly developing capital city. If awarded the Smart City Challenge grant, the City of Lincoln has stated that it intends to use these funds to continue implementing its many forward-thinking initiatives.

For instance, Lincoln has recently begun implementation of a city-wide Fiber to Home initiative, which also provides high-speed fiber optic connection to traffic signal systems. In addition, it is moving forward with a new traffic signal system software and hardware deployment, among the most advanced in our country. These are just two examples of how the City of Lincoln is using bold and innovative ideas to improve safety, enhance mobility, and address climate change.

Thank you for your consideration of this application.

Sincerely,

Deb Fischer  
United States Senator
January 27, 2016

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

RE: Smart City Challenge

Dear Secretary Foxx:

On behalf of the State of Nebraska Department of Roads (NDOR), I would like to lend my support to the City of Lincoln, Nebraska’s proposal for your recently initiated Smart City Challenge. As a mid-sized city with a population of close to 300,000, the City of Lincoln is on the move and an ideal candidate for this challenge.

As the Capital City of Nebraska, Lincoln hosts the State Legislature, Lancaster County Board, as well as the City Council. Because of its rich history and commitment to public engagement and transparency, the City enjoys the support of its private and public sector industry partners, including NDOR. In addition, the City is uniquely poised to succeed in implementation since it has an established public transit system housed within the same department as its transportation/roads division. Most importantly, Lincoln has been an innovative, solution-oriented and reliable partner through the years, demonstrating leadership commitment, agency expertise, and operational capacity to effectively deliver critical and complex projects that serve our nation’s transportation network.

We appreciate your consideration of this application.

Sincerely,

Kyle Schneweis, P.E.  
Director

KS/ME
January 19, 2016

Mr. Lonnie Burklund
City of Lincoln Public Works and Utilities
949 Bond St, Ste. 200
Lincoln, NE 68521

Dear Lonnie,

On behalf of Lincoln Electric System I am pleased to provide this letter of support for the city’s Department of Transportation Smart Cities Challenge grant application. Should the city be fortunate enough to receive funding, LES would be delighted to collaborate with you and your colleagues in exploring advanced solutions to urban transportation challenges.

Just over a year ago, LES collaborated with the city to install the community’s first electric vehicle charging stations. Prominently located in one of the West Haymarket parking garages, the stations have been used more than 200 times to charge hybrid and all electric vehicles.

This project is just one of many that have resulted from joint planning over the years. The city and LES jointly developed the District Energy Corporation to plan, finance and operate two centralized thermal energy generating plants that efficiently serve the city-county building as well as the Pinnacle Bank Arena and other West Haymarket businesses and residential buildings.

From installing a combination wind/solar generator as a test for serving traffic signals to relamping the community’s street lights to highly efficient LED’s over the next several years, LES and the city are partnering to ensure the community is meeting the progressive expectations of our citizens. Projects funded by this grant would provide new opportunities to leverage our collective expertise and future-oriented vision.

Please call upon me if I can be of any further assistance in this very worthy endeavor.

Sincerely,

[Signature]

Marc J. Shkolnick
Manager, Energy Services

Cc: Kevin Wailes, Administrator and CEO
Lisa Hale, Vice President, Customer Services
Trish Owen, Vice President, Customer Operations
Lonnie Burklund, PE, PTOE
Traffic Engineer, City of Lincoln
Public Works and Utilities
Traffic Engineering
949 W. Bond Street, Suite 200
Lincoln, NE 68521

Dear Mr. Burklund,

Integrated Global Dimensions (IGD) is honored to partner with the City of Lincoln for the US Department of Transportation Smart Cities Challenge. There are three major focus areas of support we look forward to providing as a private sector partner:

1) **Transportation Tech**: IGD has been selected as the recipient for the FHWA Small Business Innovation Research grant to create educational partnerships and training content for ITS Technicians. Working with the City of Lincoln, IGD will assist in bringing the skills learned and new technology to technicians across the country. As ITS equipment is installed in the City of Lincoln, we are committed to working with their staff to create new training courses and learning modules to help additional cities use, install, and troubleshoot this new environment and assist cities across the United States.

2) **CV-BLADE**: In the connected vehicle environment, IGD is also dedicated to bringing bikes onto the DSRC network. As part of the 16.1 FHWA Small Business Innovation Research Program, IGD proposed the development of the CV-BLADE: Connected Vehicle - Bicycle Location Articulation Device. We are committed to working with the City of Lincoln to utilize the CV-BLADE technology on bike share programs and also for local purchase and distribution.

3) **Tech Transfer**: IGD is dedicated to working with the City of Lincoln to help promote the advances in technology and societal benefits garnered as the nation’s first Smart City. Through video, interactive web design, and webinars, we can distribute the outcomes to the over 13,000 professionals in our Transportation Professional email database.

Integrated Global Dimensions is a woman-owned business and is excited to join this partnership with the City of Lincoln as a national leader addressing our transportation challenges.

Best Regards,

[Signature]

President & CEO
Integrated Global Dimensions LLC
February 2, 2016

Lonnie Burklund, PE, PTOE
Traffic Engineer, City of Lincoln
Public Works and Utilities, Traffic Engineering
949 W. Bond Street, Suite 200
Lincoln, NE 68521

Dear Mr. Burklund,

It is with a great pleasure that I offer the support of the Nebraska Transportation Center for the proposal to select the City of Lincoln as the host city of the US Department of Transportation Smart City Challenge.

The Nebraska Transportation Center (NTC) is the umbrella organization for all transportation-related research and education activities of the University of Nebraska system. We currently have over sixty affiliated faculty, over fifty graduate students and over fifty undergraduate students working in our center. Our current research contracts are over $20 million and we have average annual expenditures well in excess of $6 million per year. We are home to the US DOT Mid-America Transportation Center which is the US DOT Region 7 University Transportation Center (1995-1999, 2006-2017) and are partners on US DOT Tier 1 UTC for Railway Safety (2013-2018).

We are committed to working with the city on our successful after school program “Roads, Rails and Race Cars” that we have been running for the past six years with the Lincoln Public Schools. This program is geared towards encouraging middle-school students, with a particular emphasis on students from underrepresented groups, to continue taking Science, Technology, Engineering and Mathematics related courses in high school. I see a great deal of benefit of incorporating the Smart City Challenge concepts in this program.

In addition, we have a long history of collaboration with the City of Lincoln including sharing, in real-time, all City of Lincoln traffic data. I see the benefit of including the data from the Smart City Challenge into our research and education activities at the University of Nebraska. The NTC faculty, staff, and students looks forward to participating in this exciting opportunity.

Sincerely,

L.R. Rilett, Ph.D., P.E.
Director, Nebraska Transportation Center
Distinguished Professor of Civil Engineering
January 27, 2016

Lonnie Burklund, PE, PTOE
Traffic Engineer, City of Lincoln
Engineering Services
949 W. Bond Street, Suite 200
Lincoln, NE 68521

Lonnie,

I am writing to offer support for the city of Lincoln’s application for the USDOT Smart City Challenge. As you are aware Nebraska Innovation Campus provides a place for public/private partnerships involving the University of Nebraska – Lincoln, the private sector, and other federal, state and local governments. We were thrilled to previously partner with the city to reuse waste water from the water treatment facility to heat and cool our campus. At NIC we are excited about the possibility of working with the city on these new smart city technologies.

NIC is committed to helping bring private and UNL partners together with the city and others to make the demonstration project implementation successful. We can also be particularly helpful in providing access to numerous students to assist in the work.

Additionally UNL has tremendous capability in analyzing large data sets into meaningful information. It appears this project will generate terabytes of data that will need to be put into formats that allow entrepreneurs and others to add value to process.

Please let me know if I can be of future assistance as this process unfolds.

Sincerely,

Daniel J. Duncan
Executive Director, NIC
February 3, 2016

The Honorable Anthony Foxx  
Secretary  
U.S. Department of Transportation  
1200 New Jersey Avenue, SE  
Washington, DC 20590

RE: Smart City Challenge

Dear Secretary Foxx:

As the President of Southeast Community College (SCC), I am honored to express my strong support for Lincoln Nebraska’s proposal in response to DOT’s Smart City Challenge. SCC has three campuses and over 50 career/technical and academic transfer programs. The College serves over 9,000 students each fall quarter with more than 7,000 students attending its Lincoln campus. SCC would embrace the collaborative environment that would result from Lincoln’s proposal. SCC’s has a number of career/technical programs that could directly support the proposal by providing a qualified workforce to promote these new and developing fields in transportation. The College’s transportation division includes a number of automotive technology partnership programs with MOPAR, Ford, General Motors, and John Deere. The College’s agricultural program includes a precision technology tract that focuses on similar GIS and predictive analytic technologies that will be leveraged in Lincoln’s Smart City proposal. The College also has other unique programs that could directly support the Lincoln’s proposed strategies. SCC’s Nondestructive Testing Technology, Manufacturing Engineering Technology, and Precision Machining and Automation Technology provide students with high quality training on a number of advanced technologies. SCC would modify its existing programs and/or add additional programs to ensure Lincoln has the workforce to implement and continually advance the proposed smart transportation strategies.

Lincoln is a city that has a long history of innovative and collaborative city-wide partnerships. Southeast Community College and Lincoln Public Schools (LPS) recently partnered to create a Career Academy that allows juniors and seniors to earn up to one year of college credit in 16 different career/technical tracts such as welding, engineering, precision machining, health sciences, and programming. The Career Academy, one of the first of its kind in the nation, opened in a new $25 million facility in 2015 with over 350 Lincoln Public School District students enrolled in the various career/technical pathways. SCC and LPS operate the Career Academy as equal partners with each entity splitting the cost of building and operating the facility and the associated programs. Lincoln’s Smart City Proposal would provide a tremendous opportunity for Career Academy students as well as graduates of the academy. Industry representatives currently serve pathway support teams to ensure the curriculum within Career Academy pathways vertically align with the dynamic industry needs. The Career Academy would be uniquely positioned to directly support and benefit from Lincoln’s Smart City proposal.
In addition to the overlap in SCC’s mission and goals to Lincoln’s proposed Smart City strategies, the students and the communities the College serve would tremendously benefit from Lincoln’s proposal. SCC’s Lincoln campus was originally focused on career/technical programs until the Nebraska Legislature changed the Statute to allow SCC to offer academic transfer programs in 1995. This program grew rapidly and now has over 5,000 students and represents the College’s largest division. Academic Transfer students continue their education at a number of 4-year institutions with the University of Nebraska, Lincoln (UNL) representing the primary transfer institution. With over 24,000 students attending UNL, there is much more demand for SCC’s Academic Transfer program than it can currently address. SCC’s Lincoln campus is located on the Eastern edge of Lincoln while UNL is located in the heart of downtown Lincoln. SCC does have a small location downtown but it is landlocked and cannot be expanded appropriately. SCC is in the process of finalizing a facilities master plan that includes a recommendation to build a new academic transfer campus located downtown between Lincoln High School and UNL. The new campus, which would be designed for more than 7,000 students, would require innovative transportation strategies such as those outlined in Lincoln’s Smart City proposal. One of the most attractive features about the campus is that it would be located adjacent to a comprehensive bike trail system that connects almost all of Lincoln. The new campus would directly address one of the most important issues facing the nation, affordable access to higher education. Lincoln’s Smart City strategies could directly support the new campus and the students and communities throughout Lincoln.

Southeast Community College is deeply supportive of Lincoln’s proposal and is committed to its success with every possible means. Lincoln is an incredible city and has the collaborative and innovative spirit that would be ideally suited for the Smart City Challenge.

Sincerely,

Paul Illich
President, Southeast Community College
February 1st, 2016

U.S. Department of Transportation (USDOT)
Federal Highway Administration (FHWA)
Office of Acquisition and Grants Management
1200 New Jersey Avenue, SE
Washington DC 20590

RE: “Beyond Traffic: The Smart City Challenge”

Dear Ms. Tarpgaard and Selection Committee Members:

On behalf of Lincoln business leaders, I urge you to support Lincoln’s quest to become a “Smart City” in regards to moving people, goods, and services more efficiently.

Our community took an extraordinary step forward in its efforts to remain globally competitive for jobs and talent when a public/private partnership was announced between a private communications company and the City of Lincoln. The partnership will ultimately result in 1-Gigabit fiber connections to every home and business in Lincoln. Leveraging this public/private partnership and investment into a larger project that grows connectivity and eases some of our transportation issues will go a long way toward improving the overall quality of Lincoln’s transportation network. Our business community believes the “Smart City Challenge” grant is right tool to accomplish this task.

Lincoln has achieved much national attention in past few years for our growing economy, unfazed by the national recession, thriving with entrepreneurs and private sector investment. With your help in obtaining this grant, Lincoln can be a shining example for the entire world to see when it comes to transportation technology at work.

Sincerely,

Wendy Birdsall, CCE
President, Lincoln Chamber of Commerce
Mr. Lonnie Burklund  
Manager, City of Lincoln Traffic Engineering  
949 West Bond, Suite 200  
Lincoln, NE 68521  

January 19, 2016

Dear Mr. Burklund,

This letter states our strong support for the City of Lincoln, Nebraska’s “Smart City Challenge” initiative. Our belief is the City’s concept of autonomous vehicles provided for public use will provide a much needed social benefit while substantially reducing infrastructure costs and will dramatically change the design of the City’s landscape.

There are many citizens that do not own or cannot drive a car. These individuals are at the mercy of public transportation, taxi or ride share services, or other personal transportation, such as bicycles. While these modes of transportation provide some benefit they don’t fully provide reliable, low cost, timely transportation to and from work or other daily appointments. For business, this results in employee attendance problems that affect business productivity and employee turnover. The proposed autonomous vehicle program will greatly reduce these problems.

In our case, as a manufacturer located on the outer edge of the city, we must maintain large parking lots for over one thousand employee vehicles. These lots must be maintained and periodically resurfaced. An autonomous vehicle program could potentially reduce the number of vehicles parked in our lots by offering lower cost ride sharing opportunities. This would change the layout of our business campus, reducing lot sizes to provide green space for expansion or employee use. It would also reduce rain water runoff, improving the environment.

A reliable, cost effective autonomous vehicle program could reduce the need for family car ownership. Many of our homes are designed with a garage that is similar in size to the living quarters. Many of our streets are congested with parked cars. It is easy to image the positive change in the design of our city from a reduction of individually owned cars.

Lastly, an autonomous vehicle program could greatly impact the rush hour commute. From programming algorithms that control vehicle density to cost effective ride share programs, the number of vehicles on the road could significantly be reduced. This reduction would lower commute times and the associated costs. It would also lower road maintenance costs and delay, reduce, or eliminate the need for road expansion. Commuter parking would be greatly impacted, changing parking places from high rent city work centers to remote autonomous vehicle parking lots in lower rent locations, improving city design.

Autonomous vehicles are currently in use, the technology has become very robust and price competitive. It is time to take the next step in the evolution of our cities. The program outlined by the City of Lincoln will do that.

Sincerely,

Mike Boyle  
Vice President/Plant Manager  
Kawasaki Motors Manufacturing Corp., U.S.A.
January 28, 2016

Mr. Lonnie Burklund
Traffic Engineer, City of Lincoln
Public Works and Utilities
Traffic Engineering
949 West Bond, Suite 200
Lincoln, NE 68521

Dear Mr. Burklund,

I am happy to provide this letter of support for the City of Lincoln’s submittal of the USDOT Smart City Challenge grant application. Nebraska Global is excited to partner with the city to solve the software and integration challenges within such a bold proposal. I am very confident that the combination of your vision and our software design and engineering experience will result in a system that is both successful and cost-effective.

Our experience working with the city’s Public Works Department to provide tools to efficiently manage Lincoln’s infrastructure provides a shining example of our mutual ability and passion to make Lincoln a model for innovation. Combine that with our diverse skills spanning enterprise software development, mobile applications, usability, scalable Internet-of-Things platforms, computer vision, and applied mathematics and we will make a potent team to tackle this problem together.

At its core, Nebraska Global is a software product development company that builds software technologies that tackle some of the most difficult problems facing our society, from small city infrastructure management to preventing patient falls in hospitals. Part of our mission is to create opportunities for young people to work at, and help build, software technology startups here in Lincoln and across Nebraska. Opportunities like your Smarty City proposal are the type of initiatives and challenges that resonate with everyone at Nebraska Global. I am certain this project will significantly contribute to creating the energy and enthusiasm that will keep our best and brightest graduates and young entrepreneurs in the Lincoln community.

I am looking forward to the opportunity we will have to partner with you to solve a real, tangible problem that many of us personally experience. Please don’t be afraid to ask if you think there is anything we can do to help. We are ready and able to roll up our sleeves and help you get this program launched and successful!

Sincerely,

Doug Durham
Principal & CTO
Nebraska Global Investment Company
February 1, 2015

Lonnie Burklund  
City of Lincoln  
949 W. Bond Street, Suite 200  
Lincoln, NE 68521  

Dear Mr. Burklund:

ALLO, a Nelnet company, is excited to support the City of Lincoln, Nebraska’s “Smart City Challenge” grant application. As a city on the move, accessible and reliable transportation options are essential in Lincoln.

ALLO has been building complete fiber optic communities with blazing-fast internet speeds for more than a decade, and are excited to be partnering with the City of Lincoln to bring fiber to the premise throughout the city within four years. In addition to connecting all premises, our fiber network will connect with the city’s traffic system and signals, providing the infrastructure to transform how we move across our community. We have seen first-hand the transformational power that superior broadband has had in the communities we serve.

Our parent company, Nelnet, is headquartered in Lincoln with more than 2,000 associates working downtown. As a large employer, providing multiple, efficient, environmentally-friendly transportation options is important for recruiting the best and brightest to Nelnet and our community, as well as retaining this talent long term. Leveraging data and technology, including electrification of transportation options and an autonomous transit system, is an exciting priority that we believe has the potential to reduce congestion, keep travelers safe, protect the environment, respond to climate change, and support economic vitality.

Lincoln is a city on the move; we are growing and thriving, and frequently ranked by independent studies as one of the best communities to live, raise a family, and build a career. We boast a well-educated community and a Big 10-leading research institution, as well as a flourishing creative and start-up ecosystem. In addition, our community is built on strong public-private partnerships, passionate community and business leaders, and citizens who embrace innovation and transformational initiatives. We believe Lincoln is uniquely positioned to develop the transportation system of the next generation today.

Thank you for your consideration of Lincoln.

Sincerely,

Bradley A. Moline  
President