U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON ENERGY AND COMMERCE

March 14, 2017

TO: Members, Subcommittee on Digital Commerce and Consumer Protection

FROM: Committee Majority Staff

RE: Hearing entitled "Disrupter Series: Smart Communities"

I. INTRODUCTION

On Thursday, March 16, 2017, at 10:15 a.m. in 2123 Rayburn House Office Building, the Subcommittee on Digital Commerce and Consumer Protection will hold a hearing entitled "Disrupter Series: Smart Communities."

II. WITNESSES

- Kyle Chiseck, Director of Bureau Relations, Office of Mayor Ted Wheeler, City of Portland, Oregon;
- Dr. Jennifer Clark, Director, Center for Urban Innovation, Associate Professor, School of Public Policy, Georgia Institute of Technology;
- Jennifer Gallagher, Director, Department of Public Service, City of Columbus, Ohio;
- Alexander Pazuchanics, Policy Advisor, Office of the Mayor, City of Pittsburgh, Pennsylvania;
- Kurt J. Gruendling, Vice President of Marketing and Business Development, Waitsfield and Champlain Valley Telecom; and,
- Brenna Berman, Commissioner and Chief Information Officer, Chicago Department of Innovation and Technology.

III. BACKGROUND

It is important for local governments, whether cities, counties, townships, or parishes, to be able to accurately measure and adjust the level of services they provide to their citizens, such as infrastructure, emergency response, water and sanitation. How localities leverage new technologies for individuals in the community, from sensors on streetlights to self-driving cars, will shape how these communities operate, allocate resources, and deliver services. The potential for improved access to services for underserved communities, more efficient allocation of taxpayer funds, and increased safety for citizens are all benefits of deploying "smart" technology at the local level.

A. Department of Transportation (DOT) Smart Cities Challenge

In 2015, DOT launched the "Smart City Challenge" requesting communities develop and share ideas for creating a "smart transportation system" that uses data and technology to help people and goods move faster, cheaper, and more efficiently.[1] The objective of the challenge was to spur local innovation, identify pressing transportation problems within communities, and implement programs to address those problems with technology-based solutions. Seventy-eight cities participated in the challenge and each participant provided innovative solutions to address their transportation issues. Among the cities who applied, DOT selected the following seven finalists: Austin, Columbus, Denver, Kansas City, Pittsburgh, Portland, and San Francisco.[2]

Over a three-month period, the finalists worked with DOT and their communities to develop plans to put their Smart City visions into action.[3] DOT selected the City of Columbus, Ohio, as the winner because of its "impressive, holistic vision for how technology can help all residents move better and access opportunity."[4] In addition to the City of Columbus' approach, other innovative technology-based ideas produced by the cities through the challenge were:

- The use of a connected infrastructure to optimize the performance of carpool lanes;[5]
- The deployment of smart traffic signal technology to reduce delays at street lights;[6]
- The implementation of connected vehicle technologies to allow the signal system to detect red light-violating vehicles and adjust timing; and[7]
- The integration of shared-use mobility options which will allow users to plan efficient trips even without nearby transit access.[8]

B. Additional Federal Initiatives

The development of "smart cities" and "smart communities" is becoming a focus around the globe because over half of the world's population now resides in cities. In an effort to create a collaborative platform for the implementation of "smart city" efforts, NIST launched the Global City Teams Challenge (GCTC).[9] GCTC's long-term goal is "to establish and demonstrate replicable, callable, and sustainable models for incubation and deployment of interoperable, stand-based IoT solutions and demonstrate their measurable benefits in Smart Communities/Cities."[10] GCTC enables local governments, nonprofit organizations, academic institutions, technologists, and private industry to collaborate on the development of these

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[1] See https://www.transportation.gov/sites/dot.gov/files/docs/Smart%20City%20Challenge%20Lessons%20Learned.pdf
[2] Id.
[3] Id.
[4] Id.
[5] Id.
[6] Id.
[7] Id.
[8] Id.
[9] https://www.nist.gov/el/cyber-physical-systems/smart-americaglobal-cities
[10] See https://www.nist.gov/el/cyber-physical-systems/smart-americaglobal-cities

communities.[11] As a result of NIST's efforts, GCTC has recruited more than 160 project teams with participation from over 150 cities and 400 companies and organizations from around the world.[12] To further these efforts, GCTC will be holding an Expo this summer to feature "SuperClusters" with tangible, multi-city project deployments.[13]

C. University-Locality & Public-Private Partnerships

For decades prior to the launch of the "Smart City Challenge" the benefits of university-city partnerships were leveraged—even in the smart community context. In 2013, South Bend, Indiana, was facing recurring issues with wastewater overflowing into the St. Joseph River and flooding local's basements.[14] The city collaborated with Notre Dame University, IBM, and Emnet to reduce the projected cost of a solution from $120 million to $6 million focused on improved data collection and reporting tools through social media.[15]

The interest from over 70 localities in the DOT "Smart Cities Challenge" triggered conversations about the best way to leverage local resources toward advancing technology between localities and universities in a national collaborative effort. In September 2015, the MetroLab Network launched.[16] Each member of the MetroLab Network is a pairing of a locality and a university. The membership structure encourages research, development, and execution of "smart community" projects.

Just last week, San Diego announced it will use a system of smart streetlights to create the world's largest Internet of Things (IoT) network.[17] The effort includes partnerships with Current, powered by GE, AT&T, and Intel.[18] During the upgrade of 14,000 lights, the city will also be fitting 3,200 light poles with sensors to assist with localized issues including parking monitoring.[19]

D. International Standards Development & Collaborations

In 2012, the International Standards Organization (ISO) began development of ISO 37120:2014 to standardize how cities measure "service performance and quality of life."[20] The standard allows cities to compare their efforts to those of other cities regardless of size, location,

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[11] Id.
[12] Id.; see also https://www.us-ignite.org/apps/
[13] Id.
[14] Liz Enbysk, "How smart wastewater management saved an Indiana city millions" Smart Cities Council, May 7, 2013, available at http://smartcitiescouncil.com/article/how-smart-wastewater-management-saved-indiana-city-millions.
[15] *Id*.
[16] http://metrolab.heinz.cmu.edu/about/
[17] https://www.ge.com/digital/stories/intelligent-lighting-san-diego
[18] Kevin Ebi, "Meet San Diego's new IoT platform (and build your own)," Smart Cities Council, March 9, 2017, available at http://smartcitiescouncil.com/article/meet-san-diegos-new-iot-platform-and-build-your-own.
[19] *Id*.
[20] https://www.iso.org/news/2014/05/Ref1848.html; *See also* ISO/TR 37150:2014 "Smart community infrastructures – Review of existing activities relevant to metrics," International Organization for Standardization, available at https://www.iso.org/obp/ui/#iso:std:iso:tr:37150:ed-1:v1:en.

or amount of investment.[21] The list of areas included in ISO 37120:2014 is extensive: economy, education, energy, environment, finance, fire and emergency response, governance, health, recreation, safety, shelter, solid waste, telecommunication and innovation, transportation, urban planning, wastewater, and water and sanitation.[22] In 2015, ISO 37151 was developed to "facilitate international trade of community infrastructure products and services and disseminate information about leading-edge technologies to improve sustainability in communities by establishing harmonized product standards."[23] The following flow chart is included in ISO 37151 to show users the benefits of improved smart community metrics:[24]

In 2016, three European cities and three cities in Japan announced a two-and-a-half year joint program to share data collected from their IoT infrastructure called CPaaS.io (City Platform-as-a-Service—integrated and open).[25] Amsterdam, Murcia, and Zurich will coordinate through the Bern University of Applied Sciences to share data with Sapporo, Tokyo, and Yokosuka in Japan through the YRP Ubiquitous Networking Laboratory.[26] A key component of this initiative will be the open data platform and the first set of deliverables is expected in September 2017.[27]

IV. ISSUES

The following issues will be examined at the hearing:

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[21] *Id.*
[22] *Id.*
[23] https://www.iso.org/obp/ui/#iso:std:iso:ts:37151:ed-1:v1:en
[24] *Id.*
[25] Jonathan Andrews, "Europe and Japan collaborate on smart cities," Cities Today, August 30, 2016, available at https://cities-today.com/europe-japan-collaborate-smart-cities/; https://cpaas.bfh.ch/.
[26] Jonathan Andrews, "Europe and Japan collaborate on smart cities," Cities Today, August 30, 2016, available at https://cities-today.com/europe-japan-collaborate-smart-cities/.
[27] https://cpaas.bfh.ch/?page_id=72

- The potential benefits and risks for localities leveraging connected, or smart, technologies.

- Projected timelines for locality projects and the impact of federal grants and private-public partnerships.

- Challenges to deploying new technologies at a local level including procurement issues and data sharing agreement.

- Infrastructure developments needed to facilitate the development investment in smart community projects.

- The role of the federal and state governments.

- Privacy and security considerations for communities collecting personal information.

V. STAFF CONTACTS

If you have any questions regarding this hearing, please contact Paul Nagle or Melissa Froelich of the Committee Staff at (202) 225-2927.