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When It Comes to Financing Smart Cities, What Counts as Smart?

The Broadcast Will Begin at 2:00 PM Eastern

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Hello! Welcome to the webcast.



Ariel Miller

Manager, Research and Technical Assistance
Council of Development Finance Agencies
Columbus, OH

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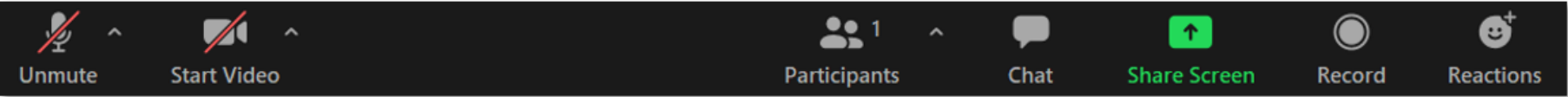
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When It Comes to Financing Smart Cities, What Counts as Smart?

Panelists

Seth Crone, *Moderator*

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Jennifer Clark

Section Head, City and Regional Planning
The Ohio State University

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The City is Not the Customer: Confronting Uneven Innovation

Jennifer Clark
Professor and Head
City and Regional Planning
The Ohio State University

November 16, 2021

Reflecting on Decade of Smart Cities

After 10+ years of pilot projects and flashy demonstrations:

- It is still not clear whether smart city technologies can actually solve or even mitigate the challenges cities face.
- Progress on our most pressing urban issues—such as ICT access, affordable housing, public health or public transport—come from better policies and more funding. Technology is part of that but not a substitute for it.



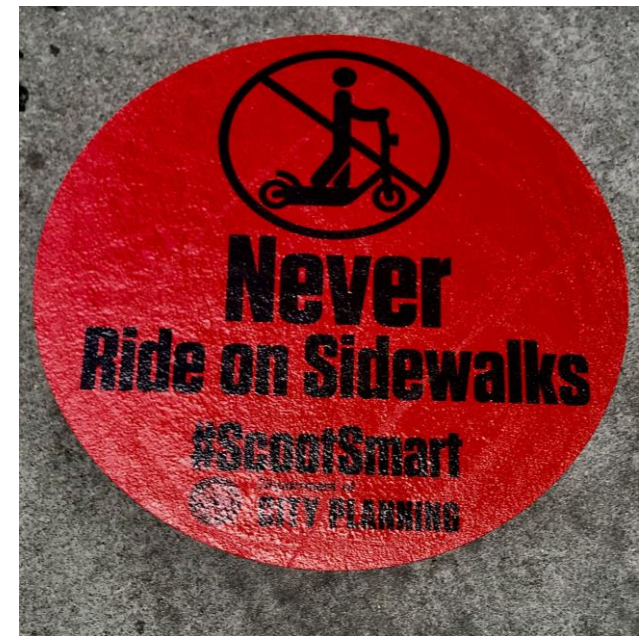
The City is Not the Customer

The city is no longer the primary consumer for smart city firms.

Rather, it functions primarily as an innovation sandbox that the tech sector uses to prototype products and distribute services.

For the tech industry, cities are the organizing geography of its production process





Shift in the Smart Cities Revenue Model

"Lighter" interventions in the built environment (objects and operations) rather than "hard" infrastructure investments (systems level)



Covid-19 Exposed Smart Cities

The pandemic proved that systems—like the US public health system—can fail anywhere, and even everywhere at once.

And it has shown that a decade's worth of smart city projects weren't primarily about upgrading existing urban infrastructure. They were more about developing a market for technology gear and services and the data that they generate.



Learning from Crisis?

- Most visible “smart city” success stories of the last decade were software-based shared services like ride hailing, car sharing, home sharing, and coworking. Those services have been little used during the pandemic.
- Meanwhile, the shared services that people everywhere need most are still clean water, emergency communications, reliable heat and electricity, flexible transportation, and responsive public health systems.

Confronting the Challenges Now and Those Ahead

Realizing that future will demand three things:

- First, creators of smart city technology must draw on specialized knowledge of the local context.
- Second, we need a framework for data governance: agreements on how data is collected, shared, and used.
- And finally, public participation is essential.

Simply put, the way forward is to respond to the needs of communities.





The Local is not the Enemy:
Seeing Urban Innovation as Supporting Participation, Variation, and
Change

When It Comes to Financing Smart Cities, What Counts as Smart?



Christopher L. Miller

Partner
Ice Miller LLP

What are you reading?

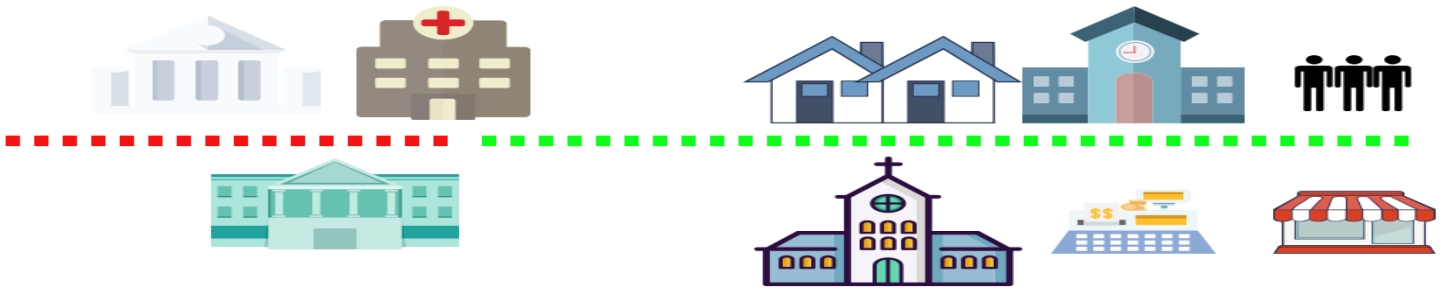
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“Broadband”

is not a single technology, but a term that describes a range of technologies that provide high-speed internet access.



Agribusiness



Energy & Natural Gas



Transportation & Logistics



Manufacturing

The Need for Connectivity

Private Industry

- ➔ GPS soil mapping; seed & fertilizer counts; irrigation & grain-bin monitoring; precision-farming apps.
- ➔ Faster communication between operations centers & production sites; remote generation monitoring; energy savings sensors.
- ➔ Just-in-time supply chain management; autonomous vehicles & transit; monitoring of traffic patterns and traffic data collection; product sensor-tags.
- ➔ 3D printing; design simulation; agile scheduling; real-time inventory management; optimal material handling; training (e-learning); sales management; social media product-marketing.



Healthcare



Education



Entrepreneurship & Entertainment



Food & Retail

The Need for Connectivity

Community

- ➔ Access to healthcare and telehealth services.
- ➔ Equitable educational opportunities provide a more skilled workforce and better employee pool.
- ➔ Connectivity allows for more entrepreneurial opportunities; increased access to home-learning; and bandwidth to utilize multiple devices.
- ➔ Access to food and grocers; access to retail and increased retail & e-retail activity.

The Need for Connectivity

COVID-19



- The COVID-19 pandemic has highlighted more than ever the need for, and in many locations persisting lack of, broadband access and digital inclusion to support remote work, telehealth, distance learning, e-government, entertainment, and more.
- We anticipate that all levels of government (federal, state, and local) will start, or enhance, investing in intelligent network infrastructure like never before.

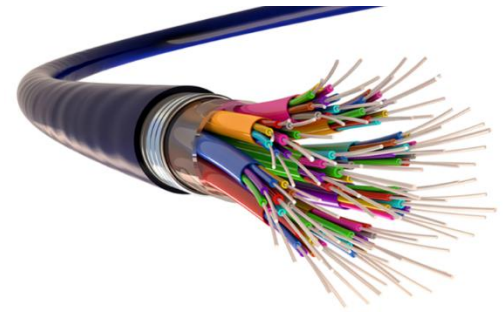
Fiber Optics/ Optical Fiber

➔ “Future-Proof”

- ➔ Bandwidth can be increased without having to change infrastructure (unlike other broadband delivery mediums, such as digital subscriber line [DSL])

➔ Fiber-optic reaching capabilities

- ➔ Single employer
- ➔ Major development
- ➔ Fiber ring that circles an entire city
- ➔ Bandwidth to carry enormous amounts of data



Cellular, Microwave, and Wi-Fi

➔ 5G Mobile/ Cellular Wireless

- ➔ The next wireless telecommunications standard
- ➔ Are low-, mid-, and mmWave high-band deployments
- ➔ High-band deployments will require numerous small towers and antennas (“small cells”)

➔ Fixed Wireless

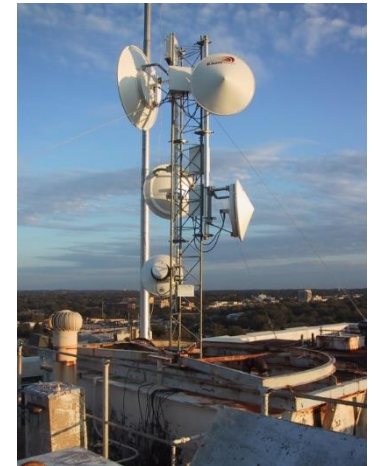
- ➔ Point-to-point and point-to-multipoint
 - ➔ i.e., between a tower and roof mount on building(s)
- ➔ Is also mmWave 5G *fixed* wireless access
- ➔ More cost-effective than wired broadband deployments

➔ Wi-Fi Connectivity

- ➔ Fiber optics → facility wireless internet connectivity



Fixed and Mobile Wireless Infrastructure



Tall Sites - Lattice Towers, Monopoles, Roof Mounts, Steeples, Bell Towers, Water Towers

Fixed and Mobile Wireless Infrastructure



Medium Sites - Monopoles, Roof Mounts, Stadium Lighting, Flag Poles, and other types of Infill Sites

Fixed and Mobile Wireless Infrastructure



Small Sites – Street Light Poles, Building Mounts, Utility Poles, Mast Antennas, Roof Mounts, Flag Poles, and other Unique Sites (Micro Cells, Nano Cells, DAS, etc.)

Steps to Access

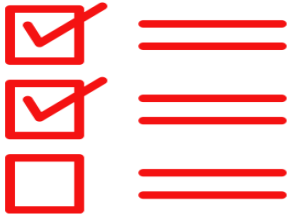


- Create an Asset and Gaps Inventory

- Conduct a Cost-Benefit Analysis



- Determine Network Ownership



Create an Asset and Gaps Inventory

Gaps

- ✓ Residential Service Gaps
- ✓ Commercial Service Gaps
- ✓ Community Anchor Institution Gaps (schools, libraries, healthcare, etc.)

Assets

- ✓ Existing Publicly/ Privately Owned Fiber
- ✓ Publicly/ Privately Owned Vertical Real Estate
- ✓ Right-of-Way Provisions & Policies
- ✓ Municipal/ Community-owned Buildings
- ✓ Federal, State & Local Zones/ Incentive Designations



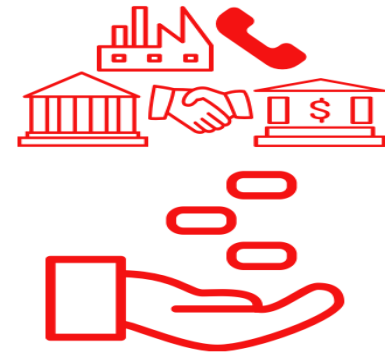
Conduct a Cost-Benefit Analysis



- Understand current spend on telecommunications services
- Understand how current spend will augment over coming years



- Determine the cost, public sector and private sector benefit of the broadband project



- Understand available financing, partnerships and contributions from the private, public and not-for-profit sector
- Understand federal, state and local incentive programs



Determine Network Ownership

- Infrastructure
 - Middle Mile
 - Last Mile
 - Combination
- Locally owned, municipal network;
 - Public Service Only Provider
 - Open Access Provider
 - Infrastructure Provider
 - Retail Provider
 - Business Only
 - Residential (FTTH)
 - Both with Data Center



Determine Network Ownership Cont'd

- ➔ Work with private telecommunications providers;
 - ➔ Numerous hybrid models
- ➔ Use a combination public-private partnership (“P3”);
 - ➔ Design Build Finance Operate and Maintain (“DBFOM”)
 - ➔ Design Build Finance (“DBF”)

Funding Is Key in Broadband Deployment

Many cities are excited to get to work smart city and on broadband initiatives, but few are prepared to fund their projects.



Questions?



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SMART CITIES

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**Development Finance Webcast Series
(November 16, 2021)**

Financing Smart Cities

David A. Rogers
Member, Frost Brown Todd LLC
President, FBT Project Finance
Advisors LLC

Financing Options

- **Grants** -- state, federal and local [e.g., ARPA funds, Federal Infrastructure funds; or targeted grants like the Columbus, Ohio “Smart City Challenge” Transportation and Mobility \$50 Million Grant from USDOT]
- **Traditional/Economic Development Bonds** – General Fund \$\$, GO bonds, LTGO bonds, sales tax bonds, PACE bonds, TIF bonds and special assessment or development financing/economic development bonds [e.g., initiatives funded by traditional resources, or by the “spin-off” of new revenues from value created by smart city technology]
- **Creative financing state-by-state** – reexamine and then use or reuse all additional tools in toolbox [e.g., partial (not 100%) PILOT payments on TIFs, supplemented by additional payments up to 100% -- voluntary payments like Cincinnati used for street cars to Over the Rhine neighborhood]
- **New Cities like Utopia in AZ** – self-sustaining communities with lots of alternatives [e.g., green technology, block chain, sustainable agriculture, arts and education, etc.]
- **P3 by any name** - with new revenues or availability payments – bolstered by ancillary revenues like lease payments from WIFI, cell or data companies [e.g., smart street lighting programs]

P3's FOR SMART CITIES

One way to finance *Smart Cities is with a Smart P3*. In a Smart City you will employ various forms of technology to reduce energy consumption and pollution, improve the quality of life; while increasing efficiency to improve the quality of government services. Stakeholders, legal counsel and advisors must examine the complex regulatory intersection of infrastructure, technology and financing sources and guide public agencies as they find an optimal solution.

SMART CITIES P3 CONCEPT

- In recent years, P3 projects have typically focused on one industry area, such as transportation or energy. However, as **P3 projects increase in complexity and scope**, new Smart City “joint venture” models encompassing a more comprehensive approach have developed, integrating the following types of projects:
- Public Buildings and Infrastructure
- Broadband
- Transportation and Multi-Modal Transit
- Housing
- Education
- Energy
- Stadia/Arena
- Community Facilities



SMART CITIES P3: MULTIPLE PROJECTS

Specifically, the *Smart Cities P3* project contains two or more of the P3 elements mentioned above. Instead of addressing each independent component individually, the *Smart P3* considers all components and/or applications to ensure that the project as a whole is delivered on time, within budget, and that the programming meets all of the parties' objectives. For example, a mixed-use project may contain multiple elements like technology, transit and transportation elements, parking, housing, and public buildings, all of which could be separately delivered via various financing and delivery models; including P3. Viewing the project as a whole, comprehensive funding and financing strategies can be developed and tailored to the entire project, considering each specific component.

SMART CITIES P3: HYBRID MODELS

The *Smart Cities P3* also can require private equity investors to propose “joint venture” solutions where there may be a modified concession or hybrid P3 Agreement. See the recent University of Maryland Nextgen Energy Program P3 RFP, which lists 3 structures: a conduit issuer structure, an availability concession, or a hybrid structure. Smart P3s require specialized financial advisors, leaders and legal counsel proficient in various modes of funding and financing alternatives for each element.



SMART CITY USE CASES



SMART
PARKING



WEATHER
SENSORS



DIGITAL
SIGNAGE



ACOUSTIC
SENSORS



WATER & GAS
METERING



TRAFFIC
LIGHTS &
CONTROLS



ELECTRIC
VEHICLE
CHARGING



SOLAR
INVERTERS



SECURITY AND
SURVEILLANCE



WASTE
MANAGEMENT



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Finance WebCourse**

December 8-9, 2021
12:00 – 5:00 PM Eastern

**CDFA Federal Financing Webinar Series:
Preserving Local Food Systems with Federal Financing**

December 14, 2021
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Fundamentals of Economic Development Finance Course

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