

# Global Smart Cities & Connected Communities

2020 Annual Report  
and Summit Highlights

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For more information regarding the Think Tank, see <https://www.dentons.com/en/issues-and-opportunities/smart-cities-communities-initiative-and-think-tank>

## 2020 Report to Think Tank Members

**We begin the fourth year of the Dentons Smart Cities & Connected Communities Think Tank in the midst of one of the most turbulent eras in recent memory.**

We are facing a convergence of COVID, climate change and cyber security challenges along with economic and social strife everywhere from Minneapolis to Hong Kong. We are at a critical moment in the nation's and the world's history. In the US, national leadership has been ineffective in dealing with these crises, placing the burden fully on states, counties, cities and communities. Cities and communities especially are seeking resilience and sustainability in infrastructure; recovery of human, economic, environmental and social health; and importantly, leadership – all on an integrated basis.

In light of the health and social justice pandemics that are sweeping the globe, **this spring we added two new, important pillars** to our Smart Cities & Connected Communities Think Tank. The first will address **pandemic and crisis preparedness and response**. With repeated global health emergencies, major cyber intrusion, and extreme weather patterns all coming to a head, we must have infrastructure that expects a crisis rather than being surprised by it.

The other pillar is focused on **social inclusion, equity, systemic injustices and human rights**. Social infrastructure is every bit as essential as physical and digital infrastructure – and perhaps more so. One of the critical keys of any successful smart cities and connected communities initiative is recognition that as inhabitants of a community and as human beings, we are all in it together. Without commitment to modernization of outdated and harmful social structures and long-standing systemic injustices that plague our society, all the great work that is being done

and the benefits of modernized and interconnecting physical and digital systems will not be fully realized.

With the addition of these pillars, the Think Tank is now organized into sixteen pillars for thought leadership and is moving full speed ahead. Membership surpassed 500 this year, with thought leaders from businesses, regional and municipal governments, academia and NGOs, and we continue to expand in the US and around the world. Guests at our events come from a wide variety of sectors and industries, all levels of government, universities, associations, community grassroots organizations, and many more. We have held three multi-day summits, hosted over 25 roundtable and panel discussions, participated as guest speakers at conferences across the US and beyond, and published dozens of thought leadership articles in our own collection and in many other media outlets.

**In the coming year, we will be working to expand and energize the Think Tank globally.** We look forward to even more high quality events, discussions, articles and connections from the leaders and members of each of the sixteen pillars. We are eager to learn from our colleagues around the world and to share ideas and best practices with one another. With Dentons as home for the Think Tank, we not only have access to communities in over 180 locations in virtually every region of the world, but we also have the resources of the largest law firm in the world, with over 18,000 employees and their extensive networks within these regions, all striving to make a difference in the communities where they live and work.

We must inject a whole new sense of urgency to the development of smart cities and connected communities. Any surviving illusion that we all simply will return to “normal” once a COVID vaccine is widely available was convincingly dispelled during Dentons

recent global summit. We are entering a “new normal” with a dramatically increased number of crises.

In addition to post-COVID economic disruption and disparity, we are dealing with turbulent weather and sea level rise due to climate change, polluted and over-fished oceans, depleted forests, severe food security problems, potable water deficiency, exponential population increase and massive urban migration; ever-increasing cyber intrusion, aging physical infrastructure and inadequate social infrastructure.

To address this extraordinary confluence of threats and imminent crises, **we need an entirely new paradigm** than the one provided in the current world order. Coordinated globalism has been devolving into extreme nationalism and political divides are intensifying rather than diminishing. While the world needs the leadership equivalence of Marshall Plans and Green New Deals, we must face up to the incompetent and divisive national level leadership and incredibly divisive partisanship that has left a vast leadership vacuum at the national level. This has placed a disproportionate burden on leadership at the subnational level where cities and communities are on the front line with respect to these issues, but are underfunded and frequently preempted by federal and state misdirected dominance.

We need to find new financing mechanisms that can be effective at the city and community level and we need to build broad, inclusive coalitions to address the issues at hand. This is where the work of the Think Tank is so valuable. The task before us is not small, but we look forward to the year ahead where we can bring our collective resources together to help cities and communities build these coalitions and leverage them to succeed in the ever-accelerating pace of change.

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# **The Dentons Global Smart Cities & Connected Communities Think Tank:**

## **Mission and Pillars**



## Developing Solutions for Sustainable, Equitable and Prosperous 21st Century Cities and Communities<sup>1</sup>

Cities and communities around the world are focused on how to become more connected, resilient, secure, equitable and environmentally conscious through modernization of digital, physical and social infrastructure. This is the good news. The bad news is that most cities and communities around the world are not moving fast enough to adequately prepare for the extraordinary scale of urban migration that is currently underway. In cities and communities everywhere, physical and social infrastructure lag woefully behind digital advancement, and without strong leadership and broad integration, the gap will continue to widen.

In terms of improved livability, bike lanes and street lights are positive developments, but the scale of modernization that is required is far broader and more immediate. Some cities are anticipating 40-50% increase in population in the next decades without adequate infrastructure. Even those not undergoing population increases are facing significant problems. Cities and communities are grappling with shrinking budgets, economic turmoil, traffic congestion and mobility challenges, rapidly-deteriorating

electricity, natural gas and water systems, and a widening equality gap in opportunity, and in delivery of and access to services. Additionally, they are susceptible to cyber attacks, and they are being ravaged by forces of nature, including turbulent weather, fire and public health crises. We must declare a global emergency and pick up the pace exponentially in order to meet the needs and challenges faced by communities across the planet.

### What is a “smart” and “connected” city or community?

Approaches to the urgent mandates facing 21<sup>st</sup> century communities are frequently discussed under the rubric of “smart cities,” although just what constitutes a “smart” city or a “connected” community is elusive. Some rebuff smart cities as a technology-for-technology’s sake play – a sales pitch by tech companies peddling solutions in search of problems to fix. Others view it as a diversion of scarce resources away from priorities high on the agendas of most city leaders and residents such as public spaces, parks, education and opportunity. However, a “smart city” approach, done well, can further not only these priorities but so many more, for the betterment of the lives of all of the community’s inhabitants.

Simply stated, a smart and connected community is one where advances in technology are leveraged to modernize physical, digital and social

infrastructure in an integrated manner in order to make delivery of essential services more efficient, sustainable, cost-effective, interconnected, secure and equitable. Forward-looking municipal leaders around the globe recognize that embracing advanced technology to implement smart growth and operations strategies will improve livability in their communities, while giving them a competitive advantage.

There are two simultaneous starting points for any smart and connected community. One is physical: the grid. The electrical system powering advanced telecommunications technologies is the nerve center for all other infrastructure. The grid interconnects with and both supports and is supported by a host of sensors and devices that amass and analyze data in real time. Through predictive analytics, machine learning, clean technology and multidirectional communications, the grid optimizes city operations, connects citizens, fosters sustainability and improves quality of life. As advanced telecommunications, transportation and other critical infrastructure is layered into the modernization process, it is vital that development is integrated and highly coordinated.

The other starting point is social. Just as a smart city is more than a technology play, infrastructure modernization goes far beyond the grid. A successful smart strategy will be a holistic

approach encompassing people, institutions, structures and operations across the connected ecosystem that makes up the city or community. As numerous recent events have demonstrated so graphically, the social fabric that weaves a community together is every bit as essential as the physical and digital assets of that community. A “smart” approach breaks down organizational and administrative silos that inhibit connectivity and modernization. So, too, must systemic injustice and lack of inclusion be addressed as primary mandates in a smart and connected strategy in order for community leaders and innovators to earn the social license necessary to implement beneficial modernization initiatives across platforms.

## Dentons Smart Cities and Connected Communities Think Tank

Modernizing and coordinating digital, physical and social infrastructure can make delivery and use of public, private and hybrid services more efficient, cost effective and equitable. Dentons’ Global Smart Cities and Connected Communities Initiative and Think Tank aims to help cities and communities leverage existing and emerging technological developments to enable the integration of essential services for the betterment of the lives of their citizens.

The Think Tank is now in its fourth year of operation. We have over 500 thought leaders from around the globe participating in our initiative. We just completed our third Annual Global Smart Cities and Connected Communities Summit. We have hosted a wide variety of panel and round table discussions and participated in numerous outside events organized by our Think Tank members and friends. We have facilitated hundreds of connections in the smart cities and communities space, and we have put out dozens of articles and interviews on topics of critical interest to communities. Importantly, we continue to evolve and grow, bringing together the resources of the world’s largest law firm with leaders of municipal government, businesses, academia, innovators and stakeholders to help communities craft dynamic legal, economic and policy solutions to society’s most pressing challenges in an era of accelerating technological change.

### Key Pillars of a Successful Smart and Connected Communities Strategy

A successful smart cities program will focus simultaneously and in an integrated manner on a number of key pillars:



### GOVERNMENT LEADERSHIP & PUBLIC POLICY

Building smart communities requires public officials at all levels of government to evaluate and implement best solutions for their constituents’ most pressing problems. This is challenging at present. Whether by default or design, there is a lack of comprehensive decision-making. Because development of a smart city requires breaking down bureaucratic silos and cooperation across city and community institutions, strong leadership and creative thinking are needed to implement engagement strategies, build consensus and set a plan in motion. Policy structures must also be established to enable and nurture the evolution of smart city programs. Importantly, leaders must also be courageous. As city and community needs change and technologies advance, there must be room for experimentation, change, and even failure and learning.



### REGULATION

Regulatory structures at all levels must be assessed and adapted to accommodate deployment and adoption of new technologies and systems, while ensuring the trust and security of the people impacted. This ranges from creating incentives for businesses of all sizes to invest in advanced technologies to efficiently designing regulations that lower development costs and speed deployment.

It also entails regulatory attention to privacy and cybersecurity risks. This all requires a degree of futureproofing to ensure that the community can continue to leverage the benefits of ever-evolving technological advancements.



### TECHNOLOGY & INNOVATION

Technology is the rapidly accelerating driver of smart cities and communities. Not an end in itself, technology, properly harnessed, facilitates modernization, but also can allow cities to improve the enjoyment of all of the things that the community values. Leveraging advanced technologies does not mean that everything is new. Advanced analytics enables integration and improvements to existing systems. For example, by identifying data that is already collected for other purposes and using it to drive decisions and operations and to provide new services in an efficient, innovative and cost-effective manner, constrained budgets can be optimized.



### TELECOMMUNICATIONS

Devices, people, businesses and government must all be able to connect quickly and securely to share data to improve daily activities. A meaningful smart and connected community strategy must contemplate how to pave the way for advanced telecommunications networks, including advocating policies to promote deployment of

wireless connectivity infrastructure, and facilitate development of compatible firmware and hardware to support today's needs while looking forward to enable the digital and information technologies of tomorrow.



### CYBER AND PHYSICAL SECURITY & PRIVACY

Interconnectivity creates risk. Many existing brick, mortar and hard-wired systems were intentionally developed to be isolated in order to reduce risk of intrusion. The digital economy, however, depends on connected interoperability. Cities and communities must craft approaches that simultaneously mitigate risk and maximize interconnectivity in order to realize benefits on a widespread scale. This involves engaging with researchers, technologists, policy-makers and stakeholders to create systems that are physically secure, and that protect privacy while allowing for data-gathering and sharing to devise solutions to perennial and novel challenges faced by society.



### FINANCE, INVESTMENT & ECONOMIC DEVELOPMENT

The elephant in the room in nearly every smart cities discussion is the question: who will pay for it? Because of the varied benefits that flow from smart infrastructure modernization, many initiatives do not fit neatly within traditional

municipal budgets or financing models. Creativity is required, involving reaching across sectors. Government, industry, philanthropy and community-based organizations all have an interest in making the smart approach work for inhabitants and may be poised to invest. There is no single solution. Some innovative public-private partnerships are beginning to emerge, as well as use of traditional funding mechanisms such as rate base for electrical and water utility improvements. Optimum funding strategies may be identified from existing and untapped sources of capital, and new revenue streams.



### TRANSPORTATION & MOBILITY

Reliable, efficient transportation and mobility infrastructure connects people with goods, services, employment, opportunities and one another. When transportation infrastructure is powered by advanced technology, countless benefits are realized: reduced emissions and congestion from widespread use of electric car shares and automated vehicles; enhanced public safety from smart monitoring, reporting and routing of responders; economic development as underserved communities are connected with employment and development opportunities through data-driven mass-transit. It is fundamental to a modern, thriving economy.



## ENERGY

Smart cities are electrified cities. Energy management is an essential component of any smart city strategy for purposes of reliability, efficiency and affordability. Far beyond replacing lightbulbs, efficiency involves dynamic technology-based measures that allow a utility to control use or automate conservation. It incorporates a multi-directional grid and advanced technology solutions that include a broad array of distributed energy resource and demand response, together with cost-effective means of ensuring reliability of service.



## WATER, WASTEWATER & WASTE

Changing patterns in hydrology and higher expectations of reliability and quality of municipal water supplies require cities to critically examine water resources and delivery infrastructure from source to end users. Smart technologies can be used to monitor and manage delivery systems, enhance storage, treatment and recycling, and educate the public on conservation. With increasing population density, cities are also melding policy requirements, sustainability goals and technology to manage wastewater and solid waste. Approaches to issues from recycling to long term waste management, reduction and processing, to externalities such as fleet emissions and human behavior all represent opportunities for innovative, data-driven solutions.



## CITY AND GREEN SPACE PLANNING & BUILDINGS

The physical spaces in which residents live, work and play are critical. Smart buildings that encourage productivity and efficiency are becoming foundational blocks for cleaner, healthier cities and communities. Urban green spaces have become an essential component of sustainability and livability, bringing far more than aesthetics to city environments -- for example, green roofs help with energy, temperature and water management; vertical farming contributes to food access; from pollution abatement to pest control to soil conditions to physical and mental well-being, these spaces should be an integral part of city planning.



## ENVIRONMENT, HEALTH & SAFETY

Sustainability, public safety and health are primary policy concerns for community leaders and residents that should be woven into every aspect of city development, operations and services. The proven correlation between cities' environmental performance and prosperity supports pursuit of initiatives for rapid acceleration toward cleaner, healthier, more viable growth through greening of urban infrastructure investments in efficiency and renewable energy technologies, and corresponding regulatory reform. In terms of health and safety, smart technologies offer myriad possibilities from sensor technologies monitoring street and neighborhood conditions to mobility

and remote healthcare services that reduce dependence on hospitals or nursing homes and improve quality of life for aging populations.



## CONSUMER ENGAGEMENT & COMMUNITY SOCIAL INFRASTRUCTURE

Building broad community support for smart cities programs is a complex process that requires significant outreach and collaboration with community anchor institutions, social service agencies, residents, businesses, and other stakeholders. A community can only thrive if its members are interacting with and leveraging the resources and available services in a comprehensive, efficient, cost effective and equitable manner. The development of the smart strategy should involve public participation by those who will benefit or be impacted by it. If a plan does not address the problems and issues that they are most concerned about, it becomes all that much more difficult to implement.



## INCLUSION, EQUITY AND JUSTICE

Smart and connected communities are first and foremost about the people who inhabit them. The goal of leveraging technological developments to enhance physical infrastructure and improve delivery of services is to better the lives of all of the community's inhabitants. Digital, physical and social infrastructure are inextricably intertwined.



In recent times, it has become glaringly evident that social infrastructure must be given far more attention. The benefits of modernized infrastructure cannot be fully achieved without addressing systemic inequities that have long plagued our society. Earning the confidence and social license necessary to implement the projects and policies that will benefit the whole community requires not only an inclusive approach to stakeholder engagement, but sweeping changes to ensure that equity, inclusion, social justice and basic human rights are protected and advanced in step with the technological changes that are deployed.



### CRISIS AND PANDEMIC RESPONSE

In the realm of crisis preparedness and response, whether related to weather or other natural disasters, pandemics, terrorism or other threats, it is imperative that community leaders be proactive, adaptive and reflective. Resiliency planning, risk management, mega-event security and infrastructure protection are essential, requiring leadership at the local, regional and federal government levels, cross-sector and stakeholder engagement, and crisis communications relationships. A smart cities and connected communities approach allows interdependent sector and stakeholder engagement to serve the citizens and economy holistically and optimally in times of crisis or uncertainty, bringing together critical infrastructure cross-sector partners such

as utilities, telecommunications, first responders and health care workers, media and government agencies, educators and social workers, and many others to share best practices and devise collective responses.



### NGOS & UNIVERSITIES

While developing smart infrastructure plans, local governments should engage with universities and NGOs to provide intellectual firepower and nurture public trust. Many of these institutions already serve as incubators for pilot projects. They have long-standing success rates in collaboration, entrepreneurship and interdisciplinary approaches to projects. They also enjoy license to experiment and even fail, which leads to learning and development of better outcomes.



### GLOBAL BEST PRACTICES

Importantly, every city and community has its own history, culture, and set of priorities. Nevertheless, cities and communities all over the planet are wrestling with similar issues of how to meet the needs of inhabitants in a sustainable and cost-effective manner. Exploding populations and massive trends of urban migration, particularly in the global south, mean that many innovative solutions will be brought to scale in those locations. At the same time, many cities and communities ACROSS THE GLOBE are working on

transformative technologies with broad application for smart cities and communities. Communities everywhere can learn and benefit from what has been tested and applied in other cities, and adapt these solutions to meet their individual priorities.

The challenges facing cities and communities throughout the world require urgent attention and much greater integration of physical, digital and social infrastructure modernization as the pace of urbanization coupled with growing economic, health and social crises are outstripping planning and financing in most regions save a few stand-out cities and communities. A worldwide call to action is needed on this vital issue.

# 2019-2020 Roundtable Recap



Think Tank members are invited to contribute thought pieces or suggest topics for discussion.

Email [smart.cities@dentons.com](mailto:smart.cities@dentons.com)

**Think Tank Roundtables bring together guest speakers and members of the various Think Tank Pillars for open discussions on a variety of themes and issues related to the challenges and opportunities arising in our rapidly changing cities and communities. Recent roundtables and panels featuring Think Tank leaders have covered the following topics:**

- Addressing Social Injustice and Systemic Racism in 21st Century Cities and Communities
- Climate Change Policy (conversation with Phil Sharp)
- Future of Privacy Concerns
- COVID-19 series, including discussions on COVID Recovery and Resuming Operations Around the World; Financial and Regulatory Implications of COVID-19 for Utilities; Utility Crisis Response to COVID-19; COVID-19: States and Cities Take Charge; and other COVID-19 related topics
- Spectrum for utilities and critical infrastructure
- Cybersecurity issues for connected communities
- Electrification
- Water issues in cities and communities
- Introducing the NIST Global Cities Team Challenge / SCCC Technology & Innovation Pillar fireside chat: Smart Innovation in Pittsburgh - Metro 21 and the Scott Institute
- Utility crisis response to COVID 19
- Smart efficiency
- A path forward for grid modernization
- The role of smart health care technologies and innovations in smart and sustainable communities
- Bringing smart mobility and transportation options to our cities and communities
- Open data - now we have it, how can we secure it, use it and share it?
- 5G and smarter telecommunications infrastructure
- Water, wastewater and climate issues facing cities and communities
- Formulating a smart master plan



Recordings of Think Tank summits, roundtable discussions, and access to Think Tank Thought Leadership collections are available at: <https://www.dentons.com/en/issues-and-opportunities/smart-cities-communities-initiative-and-think-tank>

# Think Tank Publications and Thought Leadership

As our cities and communities around the world adapt to the ever-accelerating changes taking place in the New Dynamic, and as equity, inclusion, security and interconnectedness are of fundamental importance, the Dentons Global Smart Cities & Connected Communities Think Tank continues to produce insights into the issues – and opportunities – that matter to our Think Tank members and clients. These relate to modernization of our digital, physical and community social infrastructure as we navigate the pivotal intersection of disruption, innovation and opportunity.

In our latest volume, we examine the urgent need to modernizing community social infrastructure, particularly as our cities and communities adapt to the changes wrought by COVID-19. We also explore groundbreaking regulatory developments that enable deployment of technologies that can deliver solutions to some of society's greatest challenges, and discuss what is needed to ensure secure, affordable infrastructure.



**Thought Leadership articles produced by the Think Tank have included discussions of:**

- In a post-COVID world there will be no “new normal”
- Five strategies to create age-friendly smart cities
- Focal points for smart city and community development
- A plain English primer on cybersecurity for critical infrastructure
- Pandemics - a new piece of the city planning puzzle
- Will innovation be the silver lining of 2020?
- FCC action offers utilities a once-in-a-generation opportunity to accelerate modernization of critical operations
- Privacy issues in smart cities: lessons learned from Waterfront Toronto
- Confronting power, place and change: can cities in the information age create more equity in an unjust world?
- Economic recovery post-COVID
- Implementing artificial intelligence - lessons from the trenches
- Artificial intelligence in smart and connected communities: a roadmap for developing best practices
- Healthcare cybersecurity
- Tackling the COVID-19 pandemic with equal parts collaboration, participation and transparency
- Inclusion and diversity accelerate innovation
- P3, change management and data driven opportunities
- The FCC, spectrum and autonomous vehicles
- Key considerations for planning new smart and sustainable cities
- Equity and the promise of smart city technologies
- Infrastructure modernization facilitated by technology in an era of rapid urbanization
- The future of the 5.9GHz spectrum
- Youngstown, Ohio: smart revitalization in an era of deindustrialization
- Exploring smart city opportunities in Ghana
- Needed: smart governance
- New cities, new opportunities
- Water challenges in smart cities
- Community buy-in: approaches for community engagement in smart city initiatives
- Public-private partnerships driving the integration of renewables into microgrids
- Grid modernization as the essential platform for integration of exciting smart cities technologies
- 5G beyond the hype: so much more than speed
- Securing data in a hyper-connected eco-system
- Opportunities and challenges for city planners
- Community engagement in smart city planning
- Blockchain applications in smart cities
- A smarter future for city transit
- Tailoring technologies to their local and global needs
- Smart cities: a roadmap for local governments



# Highlights from the 2020 Summit

## July 20, 2020

Adjusting to disruptions, crises, accelerating trends and new dynamics



A recording of the discussions from July 20, 2020  
is available at: [https://www.youtube.com/  
watch?v=NvbegyQv4Cw&feature=youtu.be](https://www.youtube.com/watch?v=NvbegyQv4Cw&feature=youtu.be)

Summit Opening Keynote Address:  
Joe Andrew (Global Chairman, Dentons)

## A New Dynamic

A year ago, we spoke about the on-going fourth industrial revolution and we noted that even as technology advanced and offered exciting opportunities, there was a general reluctance to address issues at the scale needed to resolve them. This need for solutions at scale has become more acute in the past year as the global pandemic and economic crisis have disrupted our concept of what is “normal”.

Amidst the disruption, cities across the world have stood up and demonstrated that they are the smart governing structures that work. Federal, and in many instances, state governments, have failed to step up. Cities are the ones that are face to face with real issues: climate, the global pandemic, the economic crisis and income inequality, civil rights and the march towards justice. Smart cities are able to step up because they don't focus on blame. They focus on making connections. Connections are the nature of human beings.

With this in mind, we need to adjust our expectations about what the world will look like going forward. We need to think differently about the maps we work on. National borders matter little. Connected metropolitan clusters are taking precedence. Coming out of the global pandemic and economic crisis, there are no reasonable expectation of a return to the way things were. We are entering a New Dynamic, an era of connections, but also of constant change and constant acceleration of change. The challenge we face is that human adaptability does not always move at the same pace as the change around us - it needs an accelerant. The COVID pandemic has been functioning as that accelerant, for technological change, for human adaptability, and for responses to the issues and crises that cities cannot ignore. What this means is that the crisis we are at the beginning of will accelerate trends that were already happening in cities and communities across the planet. What this crisis will change the most are those things that were already changing. While we cannot predict what will happen next, we now know that the challenge of our times is how we adapt to what happens next.



For more on the concept of the New Dynamic and tools for navigating it, please visit <https://www.dentons.com/en/issues-and-opportunities/covid-19-the-new-dynamic>

Fireside Chat with:  
Paula Gold-Williams (President and CEO, CPS Energy)

## **Flying While Rebuilding the Plane**

Clint Vince and Paula Gold-Williams discussed the spotlight that COVID has shone on our national character and the changes it has necessitated in critical infrastructure operations. COVID has brought character of the nation into focus in so many ways. Among other things, it has highlighted that while systemic racism doesn't always manifest in "headlines," it exists. It also has revealed the imbalance between our technical ability to bring about change and our emotional capacity to do so.

In terms of utility response to the pandemic, utilities have found themselves 'rebuilding the plane while flying'. Utilities are perhaps the most critical infrastructure, as almost everything else depends on them keeping the lights on. Utility workers are essential workers, but were not necessarily recognized as such initially. Utility companies must keep everything going even while experiencing the pandemic. Utility workers need emotional and procedural support to carry out everyday tasks, which requires finding a connection between what needs to happen and what is happening.

As for the future, we must be both optimistic and cautious – we know that 'this too shall pass', but we must prepare for future crises. We should consider the collective learning from this experience and use it to build a network of solutions for frontline workers. Things have to be done differently, but the workforce needs to be reminded that they are valued. While the pandemic has prompted an increase in efficiency, it has been at the expense of connections with people.

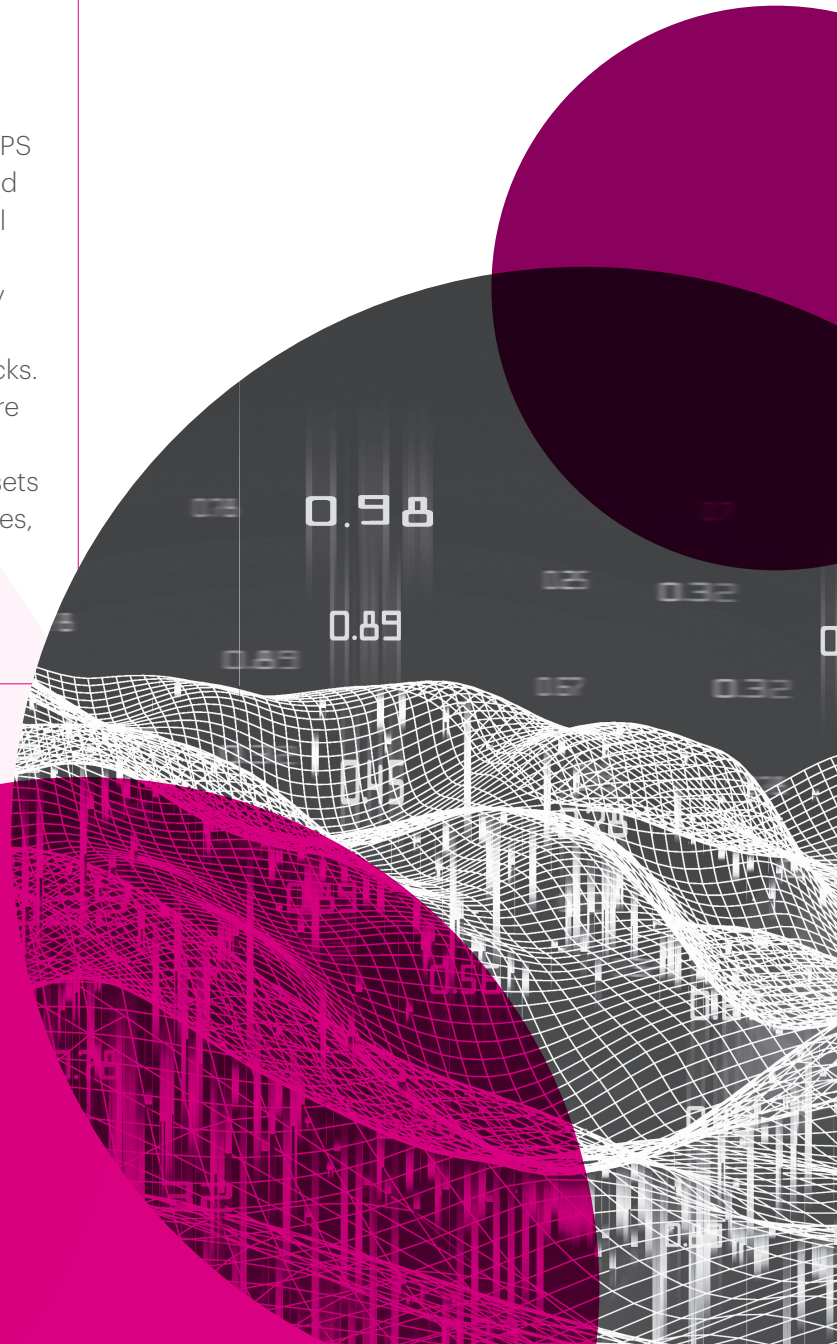


## Dynamic Projects and Innovative Approaches

### CPS Energy: a leader in enabling deployment of smart technologies

CPS Energy, the largest public power electric utility in the US, has long been at the forefront of smart innovation, taking pride in its role as a smart city enabler in San Antonio and beyond. The company is partnering with entities throughout its 300-year-old community to leverage the strengths, technologies, solutions and awareness that become available when a broad, inclusive group of stakeholders come together to forge a flexible path towards achieving the community's smart cities goals. Among other things, **CPS works to facilitate growth in distributed resources, foster connectivity, and promote sustainability and equal access to technologies and services.**

Recent projects have included working with a local landfill to build a filtration facility that will convert landfill gas emissions into pipeline quality gas to be injected into the CPS system, and a local partnership to design and implement a renewable energy credit model for transportation efficiency. Also high on the company's present priorities are security aspects of data sharing and protection of its system against compromising physical attacks. Cyber-attacks on the grid and substations are constant. Development of regional security operations centers is essential to control assets remotely in case of unforeseen circumstances, as is creation of funding mechanisms to modernize and secure utility assets.



## Panel Discussion: **Trendsetting National Leaders and Policy Makers**

Moderator: Clinton A. Vince (Chair of US Energy Practice and Co-Chair of Global Energy Sector, Dentons);

Panelists: Rodney Ellis (Commissioner, Harris County-Houston, Texas and Senior Advisor, Dentons); Duane Highley (CEO, Tri-State Generation and Transmission Association); Jason Williams (President, New Orleans City Council); Eric Tanenblatt (Global Chair of Public Policy and Regulation, Dentons), Anna Siefken, (Executive Director, Wilton E. Scott Institute for Energy Innovation at Carnegie Mellon University; Adjunct Faculty Member, Heinz College)

The panel discussed a wide range of topics related to implementing smart and connected communities initiatives. Common themes of disruption, social change, justice and relationships within the community were woven throughout the panelists' remarks. We learned that in Harris County, Texas, leaders are moving forward with initiatives despite the pandemic, and with no idea how long the current moment will last. Social vulnerability analyses are needed and will help with implementing substantive changes, not just cosmetic changes. In New Orleans, the pandemic has reset perspectives and the city has learned much about planning, preparedness and interagency cooperation. Meanwhile, digital connectivity has allowed the country to view injustice first hand. There is room for exponential growth to rebuild trust and ignite passion in the dejected and disconnected citizen. Data can be used to correct the ills of society, from COVID spread to the criminal justice system and racial equity. Out west, Tri-State is grappling with disruptive changes to coal-dependent

communities as it moves toward a greener, more reliable and affordable electric system with tremendous opportunities and challenges -- indoor agriculture, electric vehicle charging, the need for widespread broadband deployment in rural communities, to name a few. We also learned that the technology acceleration that is impacting so many aspects of our lives is particularly affecting transportation. Personal car ownership is declining at the same time that there is a decline in costs of electrification of vehicles and an increase in the distances they can travel. Autonomous vehicles are the next step, but to get there, we need to bridge relationships among the public and private sector and academia. Carnegie Mellon University's Scott Institute is an example. They are focused, among other things, on accelerating the clean energy transition — responsible power, carbon emission reduction and electrification, atmospheric carbon removal, rapid decarbonization strategies, and environmental and energy justice. But first, in these trying times, they are focused on bringing students and faculty back together safely.



## Dynamic Projects and Innovative Approaches

### City Council of New Orleans: The Smart & Sustainable Cities Initiative

The 300 year-old City of New Orleans is working to modernize infrastructure and improve services while preserving its vibrant, diverse and resilient history.

The **City Council has created a standing Smart & Sustainable Cities Committee** (SSCC) to examine existing infrastructure and operations and to integrate technological and social changes to make delivery of those services more innovative, secure, accessible, equitable, and exciting for residents and visitors alike.

Even prior to creating the SSCC, the Council had worked tirelessly to modernize utility services in the community by securing a robust portfolio of reliable energy resources, accelerating deployment of advanced metering, establishing an award-winning energy efficiency program, and ensuring that city telecommunications infrastructure incorporates emerging technologies to ready it for the future. New Orleans is a leader in emissions-reductions. Its electrical infrastructure has emissions that are more than 50% below the national average (less than 2%

of the generation portfolio is coal) while rates are roughly 20% below the national average - a result once held to be unachievable.

The SSCC views the Smart & Sustainable Cities Initiative as a generational commitment, not a short-term project. It is particularly important because of the city's significant economic divide and its large proportion of low-income residents. The SSCC, in coordination with City Administration and numerous stakeholders, is crafting a Smart Master Plan to implement programs in a manner that is scalable, transparent, creative and inclusive, so that smart infrastructure will not only improve the quality of life of residents and businesses, but also will make the city more resilient and will serve as a model for data-driven leadership for other communities.



## Smart Connections

### **Tri-State Generation and Transmission Association, Inc.: Connecting and decarbonizing rural communities**

Tri-State is a not-for-profit rural cooperative power supplier serving 45 members serving more than 1 million electricity customers across 200,000 square miles throughout Colorado, New Mexico, Western Nebraska and Wyoming. Each of the member cooperatives have different energy outlooks, and the various states in which they operate have different views on how green their power supply should be. **Tri-State has undertaken a green economic movement within the company, reversing former critics and employing new means of energy generation.** Tri-State has accelerated the closure of its coal fired power plants and with increases in wind and solar on its system, the company projects that it will be providing 50% renewable energy to all of its members by 2024 and will achieve 70% decarbonization across its footprint by 2030.

Tri-State recognizes that changes in power generation trends are disruptive to coal-dependent communities - both to rural mining companies and coal plant workers. Coal jobs are critical for many of the communities served by Tri-State. As a member-owned cooperative, Tri-State reinvests in rural communities served by its members by supporting displaced employees, providing grants for affected communities and funding new green energy projects that provide property tax benefits for impacted areas. Collaborations in research and development with the Electric Power Research Institute are in the works to develop beneficial rural electrification projects such as indoor agriculture, electric vehicle infrastructure and broadband to ensure no community is left behind.



## Smart Connections

### **The Carnegie Mellon University Wilton E. Scott Institute for Energy Innovation: Addressing the world's most important energy-related challenges through entrepreneurial collaboration, outreach and education**

Carnegie Mellon University (CMU) is internationally recognized for astrophysics, artificial intelligence, machine learning, autonomous vehicles and as the birthplace of computer science. **From that rich history of innovation, the Wilton E. Scott Institute for Energy Innovation at CMU addresses the most pertinent problems in the energy industry** by enabling collaborative research, strategic partnerships, policy entrepreneurship and education. The Institute seeks "... to optimize energy resources, reduce the environmental impact of energy production and use and develop breakthrough energy solutions that can have meaningful global impact, accelerating the transition to a sustainable, low carbon energy future".

CMU sees its role in the energy space as empowering students through research and educating the next generation of employees and critical thinkers for future energy solutions. Accelerating the adoption of new renewable energy projects as well as increasing state, local and corporate responsibility in decarbonization is critical in order to reach aggressive climate goals. Recently, CMU has focused on five critical areas: (1) benign, dispatchable power with batteries and storage, (2) carbon, conflict free and electrified transportation fuels (3) atmospheric carbon removal (4) rapid decarbonization strategies (5) environmental and energy justice. The Scott institute strives to innovate on these topics, driving university research and dedicated entrepreneurship with energy startups and national labs to solve energy related challenges.



For more information,  
visit <https://www.cmu.edu/energy/>

# Highlights from the 2020 Summit

## July 21, 2020

Coalitions, climate, and critical infrastructure security



A recording of the discussions from July 21, 2020  
is available at: <https://www.youtube.com/watch?v=pNO1dUIHU-E&feature=youtu.be>

## Keynote Address:

Dr. Ernest Moniz (Former US Secretary of Energy; President and CEO, EJM Associates, LLC and President and CEO, Energy Futures Initiative)

## Net-zero Emissions: Imperative and Achievable with a Coordinated Strategy

*The major issues facing us, such as a major shift to net zero, pandemic response, future crisis response, 'smart' shift, social justice and more societal ills, are all connected and therefore require a coordinated coalition-based response.*

The United States is at a critical crossroads of social justice, climate, economic, and global alliance crises. In terms of climate, cities and communities must be ready to pivot on climate policy direction towards protecting their inhabitants against the harmful effects of rapidly increasing temperatures. Smart city capabilities must be ready to achieve a better outcome than the Paris Climate Agreement goal of limiting global temperature increase to 2 degrees centigrade. Net zero emissions is a standard that is imperative to mitigating future damage, and it is achievable with urgent and flexible pathways that can and should be part of smart city development.

A period of supercharged innovation in technology, policy and business innovation is crucial in addressing systemic issues and reaching net zero emissions in the electricity sector by 2040 as a baseline for the rest of the economy's decarbonization. Any climate action plan must be pragmatic and touch all aspects of the innovation agenda, from research and development, to breakthrough technologies to politics and business models. It must also provide a toolkit for enabling regional net zero solutions and include advanced renewables, carbon sequestration and capture technologies and electricity storage solutions.

The COVID-19 pandemic has taught a painful lesson in the consequences of ignoring the scientific warning signs for disasters. It also has fundamentally altered historical societal behaviors and provided an opportunity to pivot to new, aggressive solutions in community restructuring. A goal of net zero by mid-century is achievable, but only with broad coalition formation. City governments and private sector interests must come together to realize smart city advancements and create a substantial amount of jobs in the wake of the COVID-19 related economic downturn. A commitment to net zero should be the main goal, with smart cities serving as an integral pathway to achievement. New net zero buildings are important, but exploitable efficiencies in the form of building decarbonization, micro-mobility and low carbon fuels have an urgent role to play in smart cities' contributions towards bringing emissions closer to net zero. Through coalition building towards a net zero policy, smart cities can advance, eyes open, on how to support current crises and prepare for future disasters, while also addressing physical and economic disadvantages as well as social justice reforms.



For more about Dr. Moniz and the work of the Energy Futures Initiative, visit: <https://energyfuturesinitiative.org/>

## Keynote Address:

Melanie Kenderdine (Former Director of the Office of Energy Policy and Systems Analysis; Principal, EJM Associates, Energy Future Initiatives)

## Demand Response as a Tool for Achieving Deep Decarbonization

*A quantitative and economic approach demonstrates why achieving carbon net zero requires a more aggressive shift than what was agreed in the Paris Climate Accords.*

There is a growing consensus that to avoid the loss of ecosystems and risks of extreme heat, global temperature rise must be limited to 1.5 degrees Celsius (as opposed to 2 degrees Celsius). Energy Futures Initiative clean energy and climate data expert Melanie Kenderdine walked the Summit audience through what this means. To meet this ambitious goal, deep decarbonization is required. Carbon dioxide reductions are necessary at the “gigaton scale,” meaning that near complete emissions reductions must be championed by both developed economies and the rest of the world by 2030.

Even though the developed world has decreased its carbon footprint since 1990, the developing world’s carbon footprint has increased, leading to overall global emissions increases. There must be regional, and ultimately local, responses. The future of sustainable development will require adoption of a range of mature and developing technologies, paired with innovation on existing technologies to exploit efficiencies. A variety of smart energy technologies, such as voltage and communications optimization, advanced metering, energy efficiency, and data management and analytics tools can contribute to climate solutions,

dynamically exploiting current efficiencies. Additionally, demand response incentives and services have emerged as key solutions.

Peak demand savings resulting from demand response alone far outpace savings resulting from energy efficiency programs, underscoring the importance of demand incentives in battling carbon dioxide emissions. Enhanced demand response has the potential to decrease unmet demand, storage requirements and coal burned, while simultaneously increasing the amount of solar power utilized. Immense decreases in carbon dioxide emissions are possible by continuing to deploy smart demand response technology across the nation’s electrical grid, enabling a smoother transition to more renewable energy production. As policy makers, businesses and residents examine the expansion of smart technologies in cities and communities, demand response must fill a pivotal gap in creating a sustainable future.



For more information, and to access EFI’s excellent series of reports on climate change and deep decarbonization, visit <https://energyfuturesinitiative.org/>



## Panel Discussion: **Groundbreaking Development for Smart Cities & Connected Communities**

Moderated by Clint Vince;

Panelists: Fred Bonewell (Chief Security, Safety & Gas Operations Officer, CPS Energy); Morgan O'Brien (Executive Chairman, Anterix, Inc.); Justin Driscoll (Executive Vice President and General Counsel, New York Power Authority); Chantal Bernier (Chair of Canadian Privacy and Cybersecurity practice, Dentons); Lisa Brown (National Senior Director, Local Government & Municipal Infrastructure, Johnson Controls); Gregory Kats (Founder and CEO, Smart Surfaces Coalition)

This discussion covered exciting and important developments, smart infrastructure modernization, ranging from critical infrastructure security and reliability exigencies to smarter approaches to the built environment to accountability with the people impacted by projects.

Critical infrastructure systems need secure and reliable communications systems on a scale far beyond what is currently offered by incumbent telecommunications carriers. For utilities, one option is the use of private LTE communications systems to create efficiencies while further insulating themselves from the internet and increasing cybersecurity advantages and resiliency. Another, related, tool is a system to manage digital asset performance utilizing sensors and a connected communication backbone so that a utility may better monitor and protect its grid. This is especially essential for operators of critical infrastructure as they bolster preparedness for disasters, crises or cyber or physical attacks.

The panel also explored how coalitions and city partnerships can help advance sustainable infrastructure to increase resiliency, connectivity,

efficiency and, now in a world dealing with COVID, safety in physical buildings and spaces. The collective experience and creativity of such an approach can lead to innovations to address real problems and enhance efforts to address crucial issues such as decarbonization, air purification, and remote access technologies to benefit future construction projects. Smart approaches to surfaces throughout the urban environment can solve multiple problems simultaneously. Effective management of city surfaces will result in lowering temperatures, benefiting low income areas, and reducing pandemic risk. A collaborative approach also helps overcome "inertia" in changing long-entrenched policies and reorganizing inefficient and outdated administrative structures that impede positive developments. Coalitions and partnerships will also go a long way toward gaining public trust and social license to make changes, foster new connections and implement smart projects. Digital innovation, indeed all innovation, must be balanced with the public good to maintain legitimacy and accountability in the public eye.

## Dynamic Projects and Innovative Approaches

### Anterix: Transformative opportunities for more secure, resilient and responsive critical infrastructure operations

In May of this year, Anterix Incorporated was given the green light from the U.S. Federal Communications Commission to provide exclusive 900MHz spectrum for broadband services to the utility industry and other critical infrastructure entities. Using its nationwide stake in 900MHz spectrum, Anterix plans to roll out LTE service for private and industrial use to drive industry innovation. **Private LTE networks have huge cybersecurity advantages;** they can air gap utilities from the internet better than any alternative methods that rely on internet interconnection. Grid efficiency and resiliency are also positively affected due to plug and play capability. As distributive generation becomes more prevalent across the national grid, two way communication is becoming increasingly necessary for utility operations. The LTE service is also advantageous for last mile connections as well as data collection and analysis.

A pertinent application of 900MHz spectrum is in California based Pacific Gas and Electric Company's wildfire mitigation strategies. Using private LTE, utility workers would be able to safely and securely send photos of potential hazards back to headquarters; **and broken power lines that may cause brush fires can be detected instantaneously and disabled before they even hit the ground.** Emerging private LTE technology has been often compared to Apple Incorporated's iPhone upon its first release: its applications are sweeping, and potential is only limited by current technology. As LTE chipset costs have been driven down, it has become economically practical to deploy the technology for a wide swath of industry to spur communication based innovation.



For more information about Anterix and its mission, visit <https://anterix.com/>



## Smart Connections

### **The Smart Surfaces Coalition: Addressing climate through the built environment**

The Smart Surfaces Coalition aims to promote the rapid, cost-effective global adoption of smart surfaces to enable cities to thrive despite climate threats, save cities billions of dollars, decrease heat, reduce flood risk, slow global warming, and improve city livability, health, equity and jobs.

**The Smart Surfaces Coalition loosely defines smart surfaces as an interconnected combination of “...reflective (cool) roofs and pavements, porous pavements, green roofs, solar PV, trees...” and more.** Major emphasis on management for all surfaces must be undertaken through coalition creation to involve all stakeholders. Cost effective solutions are available for all city surfaces including roofs, pavements, solar, bioswales, rain gardens and various walls. For example, reduction of city temperatures can be achieved by creating light surfaces that reflect light and heat, reducing pollution and also creating savings on energy costs.

In the next 12 months, the Smart Surfaces Coalition plans to roll out sustainable, green infrastructure in urban areas. Smart surfaces have the potential for an outsized benefit to low income areas. Underinvestment in trees and green technology in urban low income areas has resulted in worse air quality, leading to more severe health problems and higher energy bills. Municipal investment in smart surfaces must work for all members in the community, overcoming the challenges of ‘inertia’ inherent in changing existing historical community planning. Addressing city surfaces through a macro lens can help policy makers to exploit inherent efficiencies already present in urban environments, creating smarter cities.



Visit  
<https://smartsurfacescoalition.org/> to learn more.



## Dynamic Projects and Innovative Approaches

### Johnson Controls and The World Resources Institute: partnering on building efficiency

As urban populations continue to increase, the need for safe, healthy and beneficial urban living and work spaces has become more important than ever. Clean air, lower energy bills and improved comfort are all paramount for supporting a global shift towards stable urban environments. With this in mind, **Johnson Controls, in partnership with the World Resource Institute, has created the Building Efficiency Initiative aimed at creating more sustainable, equitable, and prosperous cities.** Increasing the efficiency of buildings and energy systems in the urban environments is an under-discussed topic. As populations migrate to urban areas in developing countries, and as these areas grow, national, regional and city leaders must ensure that infrastructure enables the attainment of ambitious climate and energy goals. Avoiding high-carbon-emitting infrastructure, reducing costs and lowering greenhouse gas emissions are just a few of the potential benefits of the Building Efficiency Initiative

Energy efficiency historically has been subject to political boom and bust, but now it is a trend that is here to stay and will continue to accelerate. The trends of decarbonization, electrification and digitalization are all connected and codependent. Companies like Johnson Controls have a tremendous stake in these megatrends, have seized the opportunity they represent by incorporating them directly into the essence of their business plans. By divesting from its automotive holdings, the company is now focused heavily on sustainable buildings technology. Changes in domestic and international energy policy, such as bans of natural gas connections, have only served accelerate trends toward electrification and smart technology, and buildings have been thrust into the spotlight like never before. Physical efficiency advancements have been enabled by systems-level digital sensor monitoring. As the current pandemic forces society to reimagine and reinvent all types of infrastructure, the Building Efficiency Initiative can serve as a model for rejuvenating the brick and mortar urban environment from dead weight on a balance sheet into a vibrant, flexible, intelligent, socially connected grid reliability asset.



For more information on this, visit <https://www.wri.org/our-work/project/buildings-initiative> and <https://www.johnsoncontrols.com/>



An aerial photograph of a city, likely New York City, with a network of white lines and nodes overlaid on the image, suggesting a digital or infrastructure theme. A large purple circle is partially visible on the left side of the image.

## Dynamic Projects and Innovative Approaches

### The New York Power Authority: A digital strategy for smarter, more cost-effective operations

The New York Power Authority (NYPA) accounts for a third of New York State's power infrastructure backbone and has served as a model for utilities across the country since its creation by then Governor Franklin D. Roosevelt in 1931. Utilizing three families of asset classes - fossil, hydro generation and the transmission system - NYPA has increased its renewable generation to a remarkable 83%. As a recognized and awarded innovation and digitization leader, it should be no surprise **NYPA has strived to address the future of connectivity by becoming an end to end digital utility** "leveraging connectivity, big data and analytics to drive actionable business insight [to] better serve our customers, employees and other key stakeholders."

Digital asset performance management relies on four key concepts: an integrated smart operations center, widespread sensor deployment, a resilient communications backbone and ISO 55001 asset management system certification (NYPA is

the first utility in North America to receive such certification). Data collected from sensors installed at more than 18,000 governmental buildings, as well as from 16 plus power stations, is fed into the integrated smart operations center where it is analyzed and utilized to monitor abnormal energy use and emerging power issues. In its first year alone, NYPA's digital strategy saved over five million dollars in fewer outages and spotting maintenance, underscoring the potential for outage avoidance and improved reliability and efficiency.

Cybersecurity relating to data transfer, transparency and databases is a critical issue for NYPA. Better platforms and longer range decisions are still in the works as the utility moves to meet aggressive clean energy goals set by New York Governor Andrew Cuomo. New sources of generation and the retirement of expired sources of generation also remain a key focus in which NYPA can implement its digital expertise to facilitate a more efficiently connected digital smart grid.



For more about NYPA's strategic vision and innovation, see <https://www.nypa.gov/innovation/initiatives/strategic-vision>

# Highlights from the 2020 Summit

## July 22, 2020

Collaboration, governance and smart solutions



A recording of the discussions from July 22, 2020  
is available at: <https://www.youtube.com/watch?v=jh26xfSFkDo&feature=youtu.be>

## Keynote Address:

Governor Martin O'Malley (Former Governor of Maryland; Former Mayor of Baltimore; Smart Governance Advisor, Grant Thornton)

## Collaboration and Transparency are the Keys to Smarter Governance

*Advocating collaboration, technology and measurable goals, Former Governor of Maryland and Former Mayor of Baltimore Martin O'Malley has rejected long traditions of "keeping information close to the vest... embracing sharing, openness and transparency".*

We are facing a crisis of western democracy: can a government of, by and for the people still deliver the things that make a republic worth having? Trust in our national government is at an all-time low, while trust in local government is higher than it was 20 years ago. Trust is at the heart of smart cities. Openness and transparency are the keys to this trust -- the ability to show whether what we are doing is working or not.

What is a smart city? It is not a noun. It is a verb. Smart cities take action to make themselves more sustainable and resilient, more educated and skilled, more connected, more mobile, more secure, more inclusive and healthier. All of this requires that cities are "smarter governed".

An inclusive, collaborative style of governance is now more important than ever. Two technologies, when used together, have given us the ability to transform governance: Geographical Information Systems (GIS) and the Internet of Things (IoT) -- the ability to map, model and measure the dynamic changing human and natural systems in real time in ways that everyone can see. The proper deployment and wider use and practice of these technologies in democracy can restore the trust needed to overcome the big challenges we face as a people. It can usher in a whole new,

entrepreneurial way of governing -- governance that asks "what works?", that is performance-measured, interactive, and collaborative.

Technology has enabled a connected discourse among stakeholders, highlighting a host of inefficiencies that have long inhibited optimal solutions to some of the most pressing issues facing cities and communities. The importance of readiness in moments of crisis, such as we are facing today, cannot be understated. We are at a moment in history when we need tech-savvy executives and leaders who are able to blend leadership with emerging trends while accepting input from stakeholders, often all at the same time and at a moment's notice. This calls for data-driven management and leadership strategies, paired with transparency and accountability. Real time public dashboards, such as the CitiStat system that O'Malley championed when he was Mayor of Baltimore are invaluable tools to monitor critical infrastructure and relentlessly follow up on stated goals to ensure that they are achieved.

An abstract graphic featuring two large, overlapping circles. The left circle is dark grey/black and contains a white network diagram of interconnected nodes and lines. The right circle is a vibrant magenta color. The background is a light pink gradient.

## Smart Connections

**Grant Thornton's Smart Governance Advisor brings smart, data-driven decision-making into focus**

**Grant Thornton** is an organization with a deep understanding of the extent and dynamic nature of ongoing and imminent disruptions of established business models. New players are entering markets with maturing technologies that exploit efficiencies to add value for businesses and consumers alike. With change, comes uncertainty in policy, pricing, trends and more. Grant Thornton has aligned itself to take advantage of emerging trends and develop conversations that drive efficiencies for its clients, translating to real world results. Analysis ranging from supporting COVID-19 and cybersecurity, diversity in business, global business pulse and global trade are but a few examples of the issues they are dealing with on a daily basis.

As part of these ongoing dialogues, the company is collaborating with its **Smart Governance Advisor, Former Governor of Maryland and Former Mayor of Baltimore, Martin O'Malley**, whose reputation for implementing data-driven, transparent methods of governance is well-known.



For an excellent guide on data based management strategies, utilizing all available resources to ensure optimal and inclusive governance, see Smarter Government: How to Govern for Results in the Information Age by Martin O'Malley (Esri Press 2019) <https://www.smartergovernment.com/>



## Panel Discussion: **Public Utilities Fortnightly Announces the 2020 Winners of the Fortnightly Utilities Projects Award**

Moderator: Steven Mitnick (Editor-in-Chief, Public Utilities Fortnightly);

Panelists: Gui Maia (Manager of Digital Innovation and Senior Data Scientist, Ameren), Kevin Schwain (Director of Transportation Electrification, Xcel Energy), Tracy West (Director of End Use Power Delivery, Fleet and Gas R&D, Southern Company)

### ***Ameren: 2020 Winner of the Fortnightly Smartest Utilities Projects Award: Smartest Digitization Project***

Combining a score based legacy model with artificial intelligence, the Ameren Innovation Center has created a novel system for analyzing, identifying and visualizing the most critical and complex factors relating to infrastructure management. Interns from the University of Illinois brought a unique new perspective and immense enthusiasm to the project, driving engagement and strong open relationships to provide immediate feedback to the data engineering process.

By applying machine learning to huge data sets with over 100,000 risk areas, representative models can be created to allocate resources based on calculated probabilities, greatly increasing efficiency through analysis digitization. A breakthrough moment occurred in the project while the team was working to create 'explainable artificial intelligence' - simple visuals such as graphs and models to assist key decision makers. Identifying high vs low risk areas to infrastructure, the team was able to put trust first and create a tool that will assist engineers, employees and customers alike. Risk aspects of the grid that would previously have to be tracked manually are simplified into a digital model, putting safety first to prevent gas leaks, utility inefficiencies and environmental side effects all to better serve communities.

***Southern Company: 2020 Winner of the  
Fortnightly Smartest Utilities Projects Award:  
Microgrid Project***

Southern Company constructed a rate based funded microgrid at the joint research facility at Georgia Tech. The main purpose of the University's microgrid is to test plug and play distribution systems in a high tech computing and mixed commercial use environment. The project also included fuel cell applications and research in the microgrid. After receiving critical electricity safety training, engineering students were exposed to the microgrid in an educational environment. By letting students' creativity flow, Southern hopes to create a knowledge center in providing clean, safe and affordable energy, enabling students to apply their training in a secure environment with the guiding hand of educators. Exposing students early to microgrids can help to realize new advancements in plug and play grid technologies that are seen as a win-win for both customers and utilities alike. The acquisition of PowerSecure Incorporated, the largest microgrid company, by Southern Company in 2015, aligns with goals of providing advanced grid resiliency, reliability and cost savings for its customers.

***Xcel Energy: 2020 Winner of the Fortnightly  
Smartest Utilities Projects Award:  
Transportation Electrification***

Xcel Energy has developed an inventive subscription model for electric vehicles. The model presently operates solely in Minneapolis, Minnesota. For a low monthly price, customers can have a charger installed in their garage and access to an electric vehicle, empowering further permeation of electric vehicle technology into the general public. Examining other industries revenue models, Xcel Energy worked with auto dealers to advance their integration into sales channels to understand and solve existing industry issues. Barriers to electric vehicle adoption, such as early adopters' difficulties in articulating cost savings as well as a knowledge gap between auto dealers and customers, were analyzed and incorporated into the overall business model. Xcel hopes that by educating customers and auto dealers alike on the carbon advantages, cost savings and utility benefits of electricity powered vehicles, the company will create a more informed public and simultaneously generate learning opportunities to refine its electric vehicle subscription model.



For more details on these innovative projects, see *Public Utilities Fortnightly's* September 2020 edition or visit <https://www.fortnightly.com/>



# Highlights from the 2020 Summit

## July 23, 2020

Trust, community and connectivity across the globe



A recording of the discussions from July 23, 2020  
is available at: <https://www.youtube.com/watch?v=KAqhh9e2IWY&feature=youtu.be>



Keynote Address:

Lawrence Jones (Vice President, International Programs, Edison Electric Institute)

## **Trust is the Essential Measure for Community Success**

There is a growing trust deficit in communities across the US. Trust is one of the most important elements of any community social infrastructure, and the essential measure for community success. It is the DNA for a successful community. We are at a point in time where the questions we need to ask in order to redesign our communities must include: “What’s wrong?” and “What’s missing?” Benjamin Franklin advocated polymathic leadership – i.e., the need for leaders with broad knowledge covering many areas – and the need for our leaders to foster unity and consensus. This is as true today as it was 200 years ago. Novel shared visions of the future must be present in the design of institutions, both in urban and rural communities, in order for us to rebound sustainably from the current crises.

When discussing megatrends, people are quick to identify issues such as climate change, urbanization, and technological advancement. But it is critical to recognize the trust deficit as a megatrend in order to have a complete picture of our options and to be able develop a shared vision at the community level in order for our communities to be successful. We need new thinking about what comes next. Policy makers, city leaders, business and investors and other stakeholders need to look at infrastructure in a much more holistic way, and to re-think how success will be measured. This includes building trust. If we do not have trust, we cannot have an efficient global community. Lack of trust will mean further breakdown in global supply chains, it will mean increased regionalism, and it will be that much harder to resolve the urgent issues of our times – the COVID pandemic, social injustice, climate change. As the new dynamic emerges, norms, values and all societal assumptions are on the table to be rethought in a way that increases human security and resilience for all.

## Keynote Address:

Aniruddha “Ani” Dasgupta (Global Director, World Resources Institute Ross Center for Sustainable Cities)

### **As COVID Widens the Income Inequality Gap, a Global Thought Shift about Resilience of City Systems is Critical**

The world is currently overwhelmed with information about the impact of COVID-19 on all aspects of our cities and communities. The pandemic is clearly highlighting where there is the most urgent need for a smarter approaches to address the challenges of urbanization, however a macro view is necessary to understand precisely what we are learning. For example, although COVID-19 did not start among the poor, low income workers bear a vastly disproportionate share of virus-related economic pain. We also have learned that when low-income workers (who make up the majority of the “essential workforce” in most cities) are out of the workforce, the city ceases to be a city. The interconnection between social and physical infrastructure and the economy has been exposed like never before, necessitating a shift in thought about resilience of city systems.

Currently, cities are seeing a significant drop in income, causing ballooning budget gaps. The good news, however, is that right now there is real space for new political invention, driven by collective response, to do things differently to

help those most impacted. And do something, we must. The \$10-20 trillion dollars already committed worldwide by governments and international agencies must focus on both big and small communities. As city populations increase, so will poverty. Estimates suggest 70-100 million people could be pushed into extreme poverty worldwide as a result of the pandemic, erasing all gains made in poverty reduction for the past 3 years.

Cities with access to opportunity will be the great indicator of urban success. Access to transport options (mostly used by poor and minority residents) is integral to enabling social mobility and multiplying employment opportunities. Public transportation safety has been decimated by COVID-19. New ideas in physical mobility infrastructure, such as increased bike lanes, must be imagined by cities and national governments alike not only to enable an economic recovery post-pandemic, but also to become more inclusive and reduce overall carbon emissions. Money already pledged for global fiscal pandemic support should take advantage of sustainable

development, climate and resilient opportunities. Coming out of the pandemic, there is a \$24 trillion opportunity in smart cities. Bold vision and broad collaboration are necessary to kick start a positive climate trajectory that empowers resiliency, inclusiveness and a novel world view.

## Panel Discussion: **Dynamic New Projects and Developments Around the World**

Moderator: Song K. Jung (Global Chair of Dentons Intellectual Property and Technology Group);

Panelists: Shihoko Goto (Deputy Director for Geo-economics and Senior Associate for Northeast Asia, Asia Program, Wilson Center); Robert Boylan (Chief Commercial Officer, Solidia); Dr. Amitabha Ghosh, (Chair, Science Operations Working Group, Mission Operations, NASA Mars Exploration Rover Mission); Wendela Raas (Netherlands Managing Partner, Dentons); José Manuel Larraín (Santiago Managing Partner, Dentons); Igor Ostrowski (Co-Chair, Global Technology, Media and Telecommunications Sector, Dentons)

This panel discussion began as a global macro approach to smart cities and focused very quickly on innovative approaches to significant issues such as carbon emissions, aging populations, connectivity and access to technology and city and community services. Panelists took the audience on a journey to cities around the world, to global forums, and to the living laboratories of NASA and space exploration companies where development of habitats for extreme conditions and other innovations frequently result in solutions for problems on our own planet.

The new state of the space race is one in which both governments and private industry have taken advantage of significantly lowered costs and emerging technologies to strive to create smart cities that are out of this world - literally. Two important aspects of these developments are internet connectivity and human security. Security, connectivity, and now COVID free environments have quickly become human rights necessary for everyday activity.

More and more cities are realizing that the “smart cities” paradigm will be necessary for their very survival. Japan is an early adopter of this view and may serve as a model, where solutions for meeting needs of an aging population and the need for exports converge around smart technologies. Adapting industry to new carbon guidelines, enhancing mobility, enhancing access to health services, and creating connectivity through high speed broadband deployment, among many other issues, must be approached as a means to promote the common good if they are to succeed. Social values must be rethought to prioritize societal happiness, simultaneously advancing countries to be smarter.

The panel devoted some time to discussion of the built environment and the importance of innovation in the materials we use. For example, concrete, the 2nd most ubiquitous material on earth behind water, can be used as a carbon sink. The cement industry is one of the heaviest emitters, but is learning that by altering the



For more on Dr. Ghosh's views on Mars exploration at the intersection of humanity and technology, see <https://indianexpress.com/article/explained/an-expert-explains-destination-mars-nasa-perseverance-rover-6529898/>

chemistry of the product, emissions can be greatly reduced in production. The combination of new production technologies with the ability to use the product as a carbon sink is a breakthrough given the anticipated construction of megacities in the near future. More education is necessary for carbon emitters to understand the changes that must be made, including micro supply and distributive models of carbon prevention.

We learned that Amsterdam, in working to become an emerging economic hub of Europe, has attracted talent by making its urban areas smarter. Initiatives include electric self-driving cars, personal mobility, green spaces, elevators with automated temperature sensors and more. In Chile, it is hoped that smart infrastructure investment will boost the economy back to pre-COVID levels, and it is expected that challenge of drawing investment from government and political groups may be overcome by demonstrating private sector interest in participating in these projects.

With smart advancements, however, comes the need to balance privacy and societal benefits. Also, as national borders become less relevant for purposes of interconnection and smart technologies, there is a risk of incompatible regulatory regimes. The United Nations Internet Governance Forum is working with advocates of a global, 'no borders', approach to infrastructure. The UNIGF serves as a means to unite government, business, academia, NGOs and the public to push for sustainable and inclusive goals. Connectivity has become more and more important, highlighting the necessity to deploy smart infrastructure to communities wherever they may be.



For more insights on issues, trends and policies in Asia, visit the Wilson Center archive at: <https://www.wilsoncenter.org/person/shihoko-goto>. For other analyses on important current topics including governance, emerging technologies, human rights, urban issues, and so forth, see <https://www.wilsoncenter.org/topics>



## Dynamic Projects and Innovative Approaches

### The built environment as a carbon sink

Concrete, the essential component of the built environment, has been in use since Neolithic times, and is the second most ubiquitous substance on Earth after water. With the massive urban migration trends and construction of mega-cities around the globe, the demand for this building material will continue to increase. The production method, unchanged for over 150 years, is responsible for 5-7% of total global carbon emissions and up to half of industrial energy use in emerging nations, and uses three trillion liters of fresh water every year. A company called **Solidia has developed and is implementing two groundbreaking technologies create sustainable building materials and significantly reduce the carbon footprint** associated with its production. By altering the chemistry of the cement used in concrete, the product can be produced in traditional cement kilns but with a method that reduces energy consumption and reduces greenhouse gas emissions by 30-40%. Then, by curing the concrete with CO<sub>2</sub> rather than water, the concrete becomes a carbon sink (i.e., it safely stores CO<sub>2</sub>) and saves trillions of liters of fresh water each year.



For more information,  
visit <https://www.solidiatech.com/>



## Dynamic Projects and Innovative Approaches

### Plastic, plastic everywhere...

Approximately 280 million tonnes of plastic are produced globally each year, 220 million tonnes of which end up in landfills, and another 20 million tonnes of which end up in the world's oceans. The remaining 40 million tonnes either remains in use or is recycled. Plastic is one of the most useful substances invented in the past century, but it also is a growing problem.

A New Zealand company, **Enviroplaz International Ltd.**, has developed a **technology to reuse nearly all of the world's waste plastic by incorporating it into the built environment**. The company manufactures a lightweight aggregate, Plazrok™, that is made entirely from waste plastic and other waste product derived from landfills, without the need to sort or separate the components. The product is designed as an additive or a replacement for conventional aggregates for a range of concrete applications, with some significant cost and structural benefits. Concrete made with Plazrok™ can be manufactured between 10 –

40% lighter than concrete made with traditional stone aggregate, which means that shipping costs are significantly reduced, but also means that the environmental impact of shipping is lessened. Concrete made with Plazrok™ achieves compressive strengths comparable to conventional concrete, which means that buildings can be taller without putting additional stress on foundations. The concrete is able to compress and flex without breaking or cracking to a greater degree than concrete made with traditional stone aggregate, making it an ideal material for construction in areas that are prone to earthquakes or other seismic phenomena. It also is more heat resistant than traditional concrete, making it more stable in the event of fire.

With a projected continued increase in global demand for both plastics and construction aggregates, this technology has the potential to be a ground-breaking solution for vexing problems.



## Smart Connections

### The United Nations Internet Governance Forum

Each year since 2006, the UN Secretary-General has convened a global multi-stakeholder meeting, inviting not only national government officials, but a variety of stakeholder groups (including national, regional and sub-regional governing entities; businesses, including the tech community; academia and NGOs; and youth organizations) to participate in an open and transparent policy dialogue. The internet Governance Forum (IGF) is intended to be a neutral laboratory of ideas where issues are discussed without the concern that a decision might be made against the interests of the entities whom the participants represent. IGF delegates exchange information and share best practices with the aim of facilitating a common understanding of how to maximize Internet opportunities and address associated risks and challenges. The IGF does not adopt resolutions or create binding treaties, although they may examine the impact of treaties or standards adopted within the international internet governance ecosystem.

**The IGF's mandate**, among other things, is to:

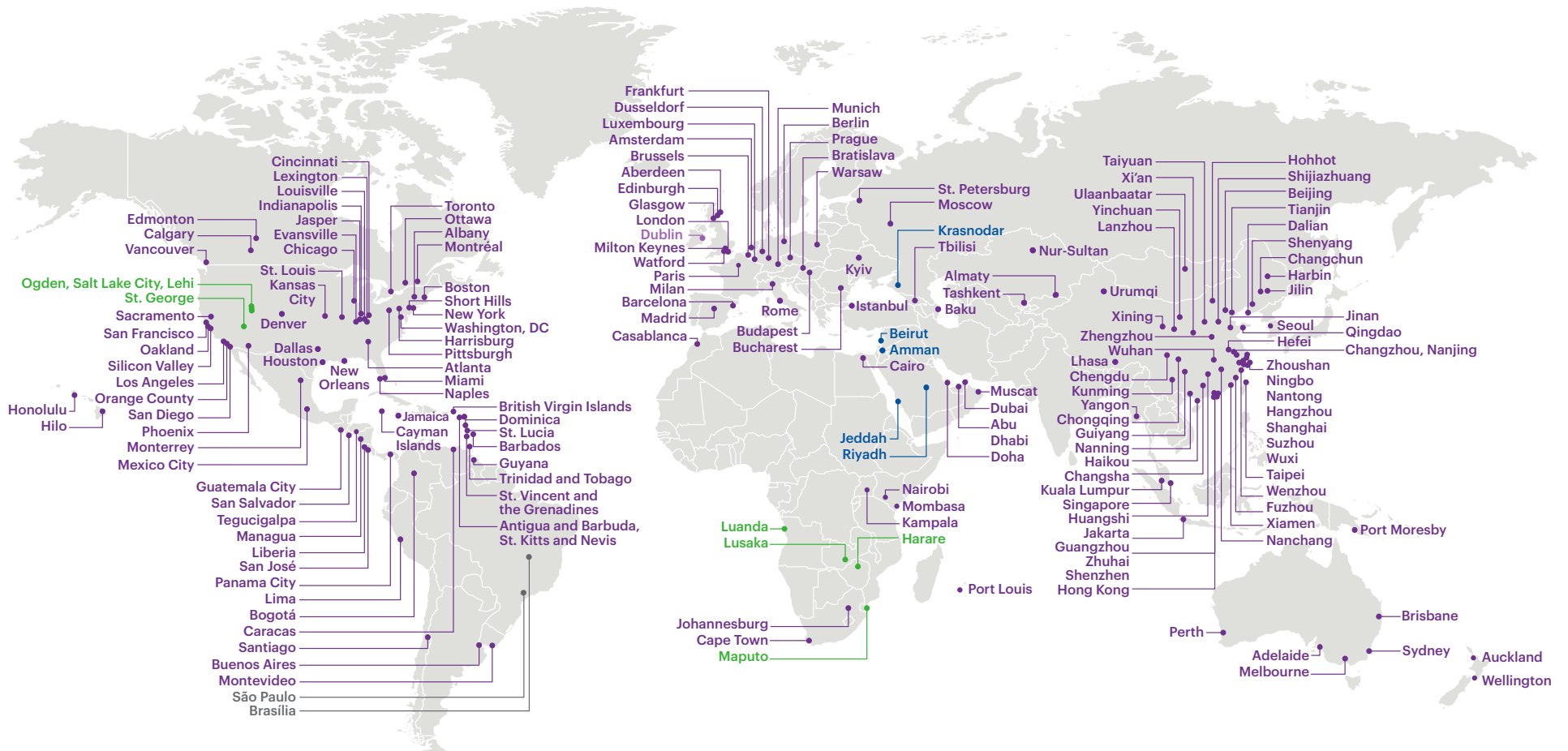
- Discuss public policy issues related to key elements of Internet governance in order to foster the sustainability, robustness, security, stability and development of the Internet;
- Facilitate discourse between bodies dealing with different cross-cutting international public policies regarding the Internet and discuss issues that do not fall within the scope of any existing regulatory or standards body;
- Facilitate the exchange of information and best practices, and in this regard make full use of the expertise of the academic, scientific and technical communities;
- Advise all stakeholders in proposing ways and means to accelerate the availability and affordability of the Internet in the developing world; and
- Identify emerging issues, bring them to the attention of the relevant bodies and the general public, and, where appropriate, make recommendations;

This November, for the first time, the IGF will be inviting mayors and leaders of the world's largest cities to participate in the forum discussions.



For more information, visit: <https://www.intgovforum.org/multilingual/tags/about>





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Locations in green represent proposed combinations that have not yet been formalized.

Locations in gray represent Brazil Strategic Alliance.





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