# Technology and the Future of Cities

President's Council of Advisors on Science and Technology

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# Key PCAST Members and Domain Experts

## PCAST Members

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- Seasonal Interns, PCAST

## Invited Experts

- Adrian Aoun, Google / Alphabet
- Luis Bettencourt, Santa Fe Institute
- Charlie Catlett, U. Chicago and Argonne National Laboratory
- Ryan Chin, MIT Media Lab
- Daniel Doctoroff, Sidewalk Labs
- Steve Koonin, NYU CUSP
- Hans Larsen, Former City of San Jose
- Richard Luthy, Stanford University
- Peter Marx , City of Los Angeles
- Joseph Stagner, Stanford University
- Nancy Sutley, LA D of Water / Power

# Mission Statement

How can the Federal government best support science and technology opportunities to improve America's cities – in terms of quality of life, social services, infrastructure and sustainability – for all its residents?

What's needed to support them?

What are the opportunity costs of inaction?

How can we guarantee being more inclusive?

# Observations

Threshold of historic change in US Cities

## Many new infrastructure technologies

- Sensors
- Transportation
- Energy
- Water
- Other Infrastructure

## Changing norms of behavior

- Shared ownership and new designs for housing / commercial buildings
- New/clean urban manufacturing
- Urban farming using new technologies

## Confluence of growing challenges & potential benefits

- Environmental
- Health
- Equity
- Cost

## Many stakeholders

- Private sector
- Local and federal governments
- City residents

# Technology Opportunity

Integrated Cities Platform

- Many stakeholders and applications involved, like Internet

- Beyond centrally controlled "smart cities" approach

- Open Data

- Technology and Data Exchange with APIs

- Data analytics for prediction and optimization

- Integrated modeling for decision support and scenario evaluation

- An open "Internet of Cities" to facilitate innovation and reuse

- A growing set of technology-savvy stakeholders who do or can grasp how to use data

# Implementation Opportunity

Threshold of historic change in US Cities

### Cities and Innovation: Practical Challenges and Benefits

- Innovation challenges, demographic groups thriving together

- Need to create inclusive cities – economic and age diversity

### Urban Development Districts: Building Blocks

- Small enough to experiment, big enough to matter

- Context of being part of larger metropolitan area

- Integrated Modeling for "Green," "Fluid," and "Enabling" Districts

### How can best practices be judged and learned by other districts

- Internet of Cities

- Open data and APIs

- Metrics and analytics

### Resulting Long-Term Visions

- non-gentrified

- non-sprawled

- resilient,

- low emissions

- all-electric

# Federal Government Opportunity

**Agency Activity w/o "Department of Cities"**

- Leveraging Place-Based programs

- Need for HUD empowerment

- Need to involve other agencies (esp. DOT, DOE, EPA), many paths, e.g.:
    - District Level Certification
    - Support for Urban Mobility
    - Granular energy consumption data
    - Design studies aimed at improving urban energy systems
    - Policies that allow for water resiliency
    - Influence on relevant zoning and building-code parameters

- Need to create incentives, including competitions

- Need to engage private sector investment initiatives (e.g., Build America)

**Urban Science and Technology Initiative to coordinate and advance cross-disciplinary, cross-agency R&D**

- RDDD—from basic to translational to deployment
    - Natural and social sciences
    - Data and modeling, attending to privacy and security
    - Pilot tests and their evaluation
    - Enable development of Integrated City Platform
    - Start with an inventory

- Solicit and propose grand challenges

**Support for data access and sharing**

- Private + public data

- Universities + national labs roles

**Extend open data to city level**

- Support "Internet of Cities"

- APIs

# Thank You!

For More Information about PCAST: www.whitehouse.gov/ostp/pcast