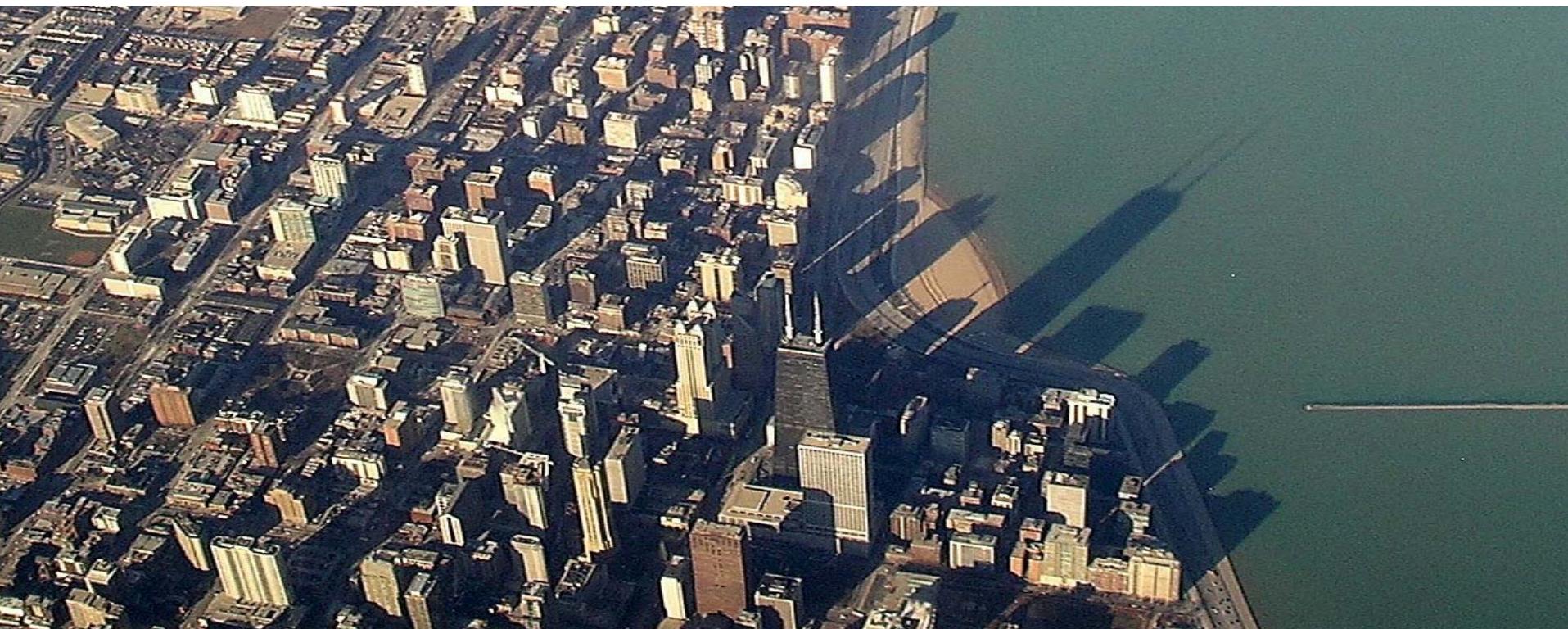


# **City Models, Metrics, and Future Scenarios: Basis for an *Urban Genome Project*?**



*Jonathan Fink, Director  
Global Institute of Sustainability  
Arizona State University*

*National Academy of Sciences  
Forum on Urban Sustainability*

## Models, Metrics, and Future Scenarios

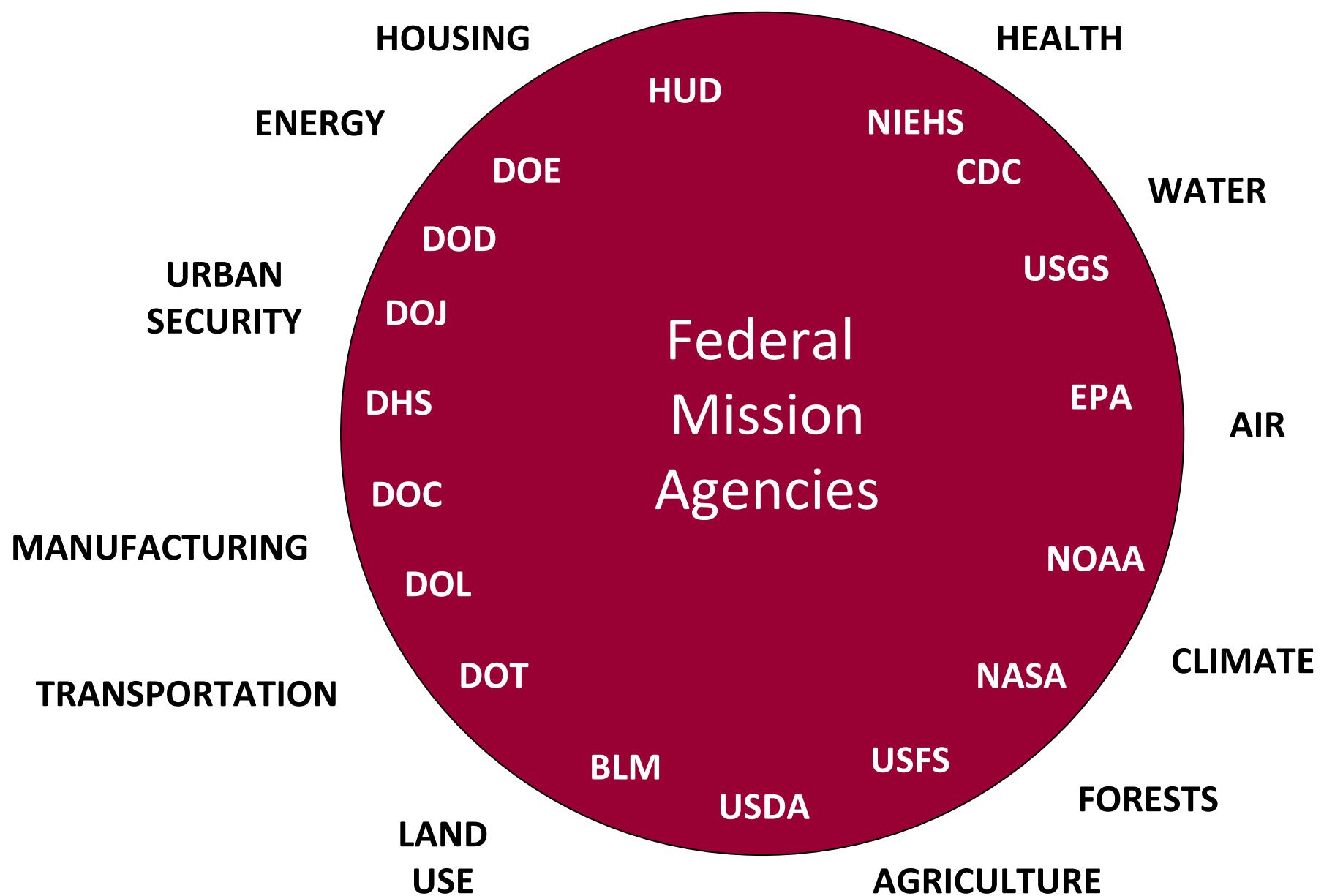
- 1) Cities are at an ideal scale to address global sustainability
- 2) Goal of urban measurements is to improve sustainability
- 3) Metrics -> models -> scenarios -> decisions -> actions
- 4) Urban *systems* research is Balkanized in Federal government
- 5) Most academic urban studies only focus on one or two cities
- 6) A general urban framework could speed sustainable outcomes
- 7) New confluence of urban advances warrants large investment
- 8) Is a coordinated synthesis like *Human Genome Project* needed?



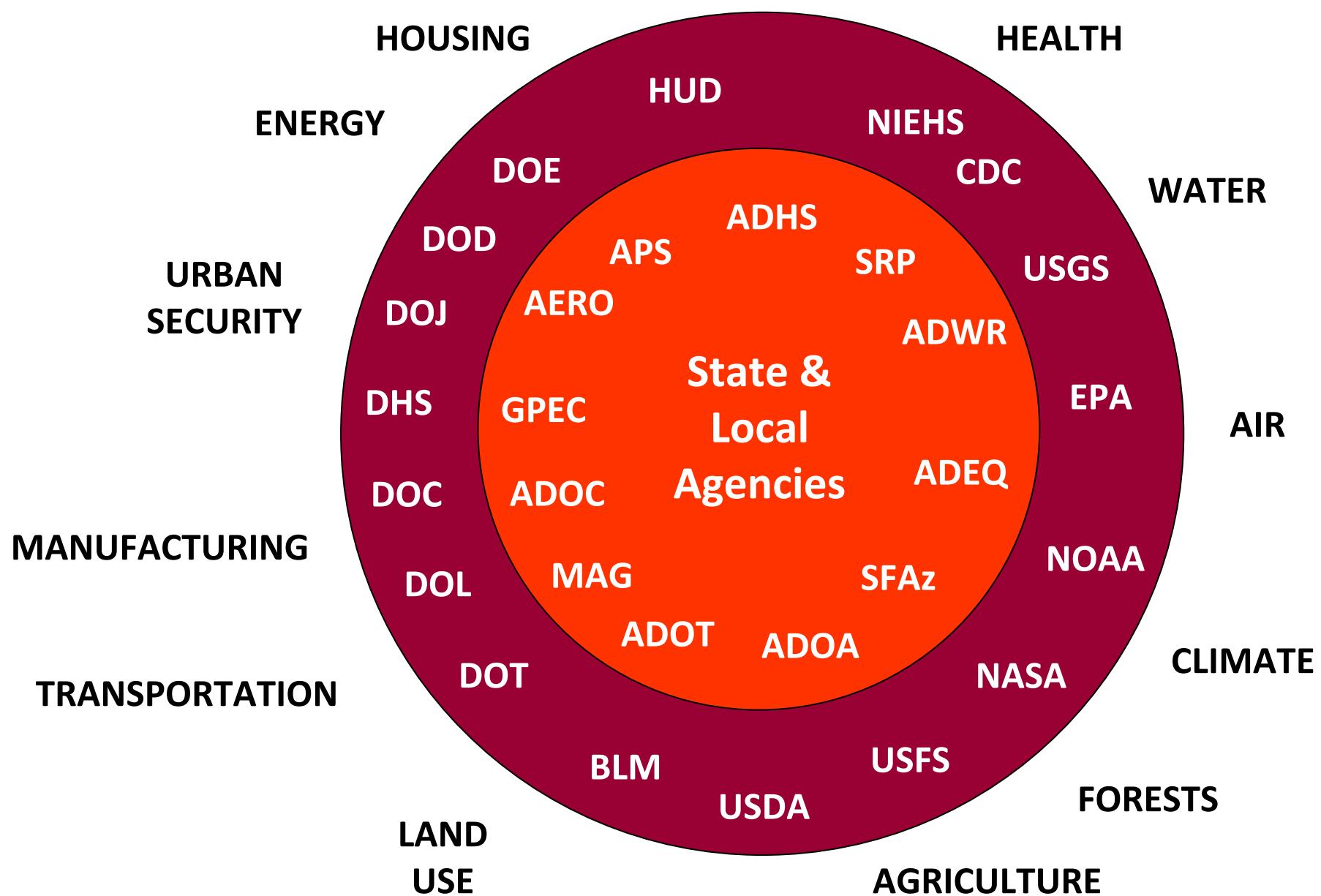
The background image is an aerial photograph of a dense urban area, likely New York City, showing a grid of streets and numerous skyscrapers. To the right of the city, a large body of water, possibly the Hudson River, is visible, with the long shadows of the buildings cast onto its surface.

*How can the study of  
urban systems be  
better coordinated?*

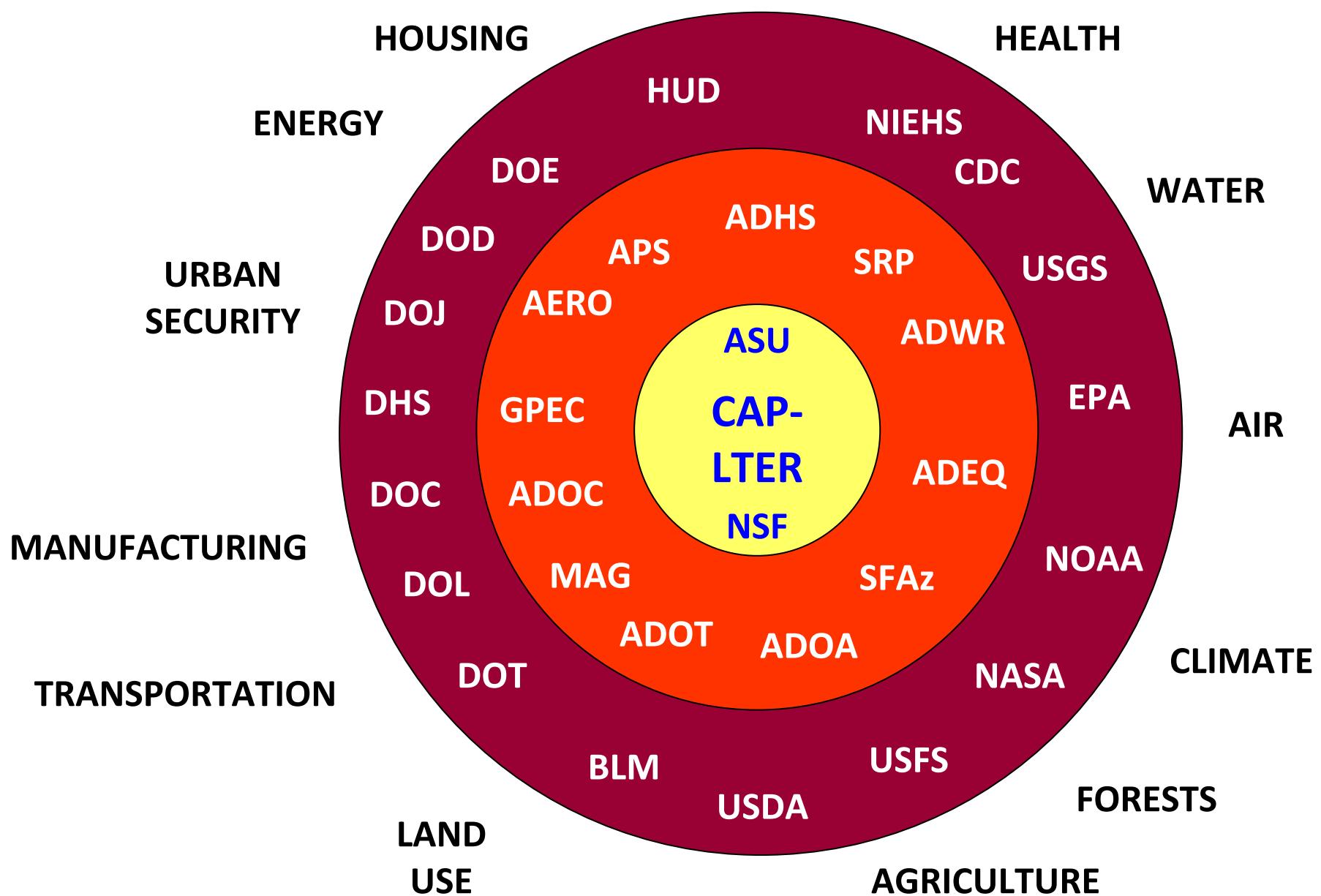
# Federal approach to urban systems is Balkanized



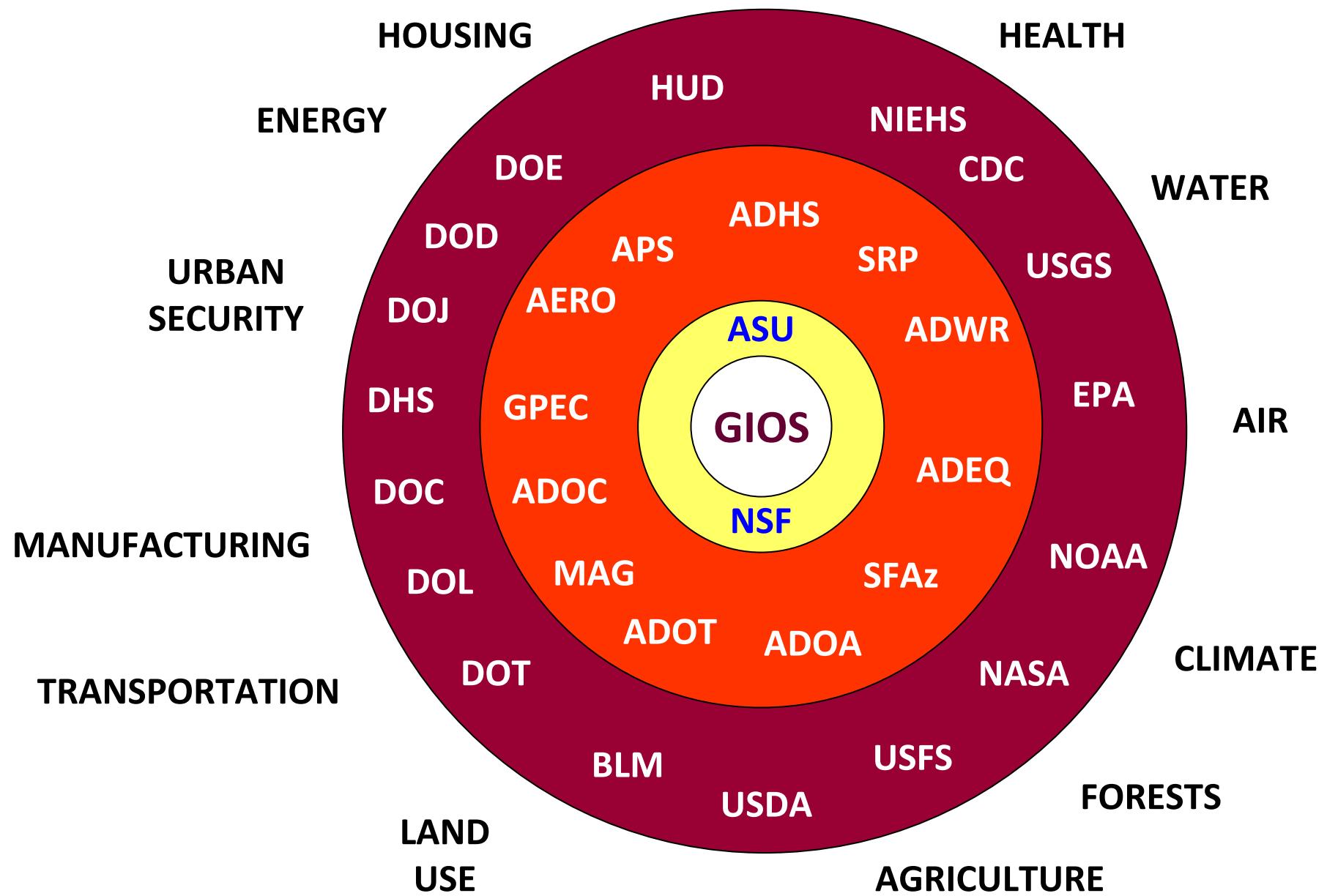
# State and local agencies have same problem



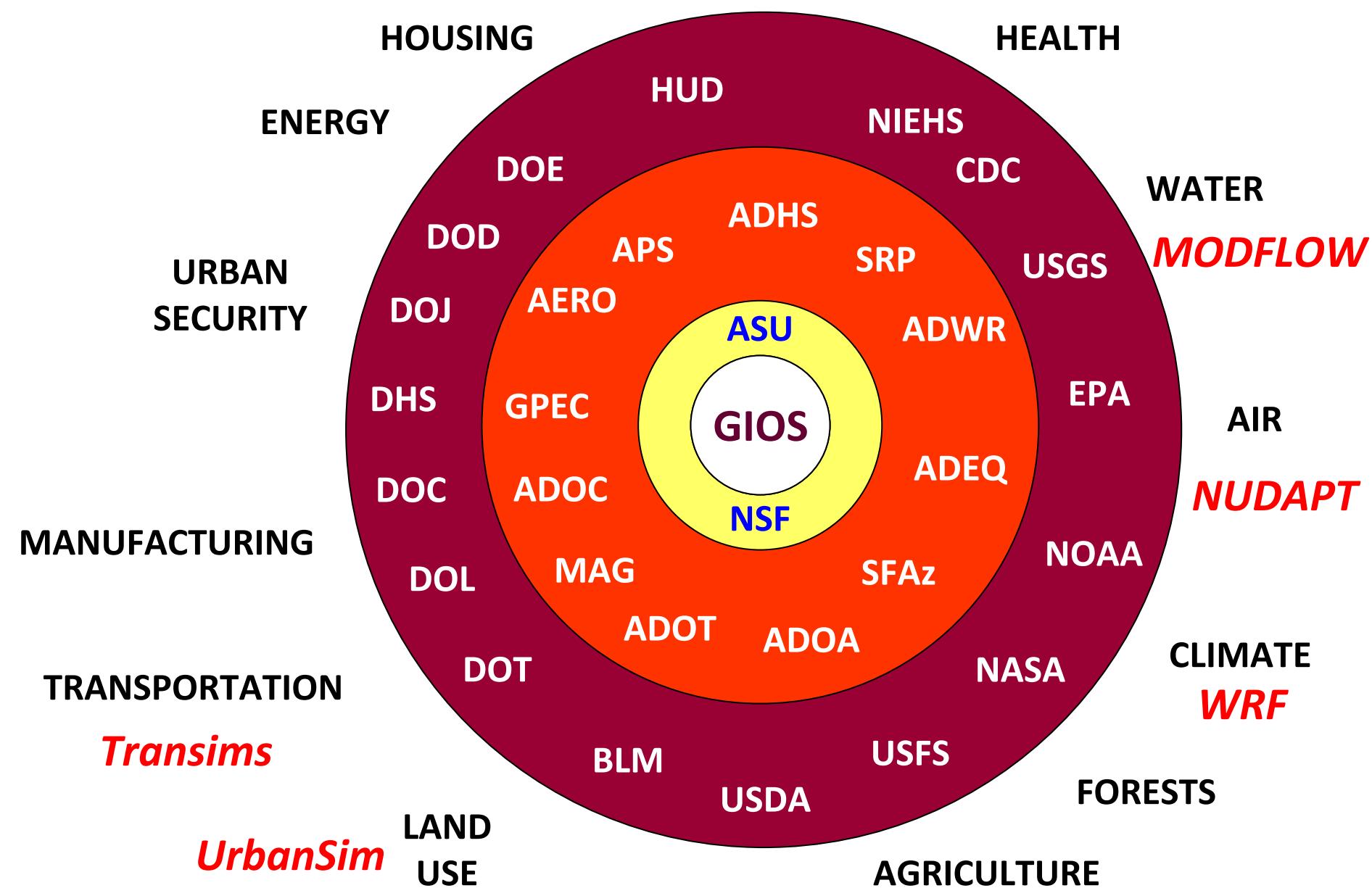
# ASU used CAP LTER to connect pieces for Phoenix



Global Institute of Sustainability (GIOS) formalized the university's synthesizing role



## Different models for different urban components



## What measurements are needed?

- Urban complexity requires examination at many scales
- Some data sets should help link models across sectors
- What is measured depends on who pays for it, and why
- LTERs provide temporal, spatial, and biological coverage
- Novel measurement approaches can use social networking
- Remote sensing provides unique synoptic views of cities
- IT companies have expertise on data collection, dissemination



## Emerging Urban Opportunities

- World Bank sponsored Global Cities Indicators Facility
- A network of Urban Long Term Ecological Research sites
- NASA urban remote sensing missions
- USFS ULTRA initiative
- EPA/DOT/HUD smart growth initiative
- IT corporations' urban initiatives (Cisco, IBM, Google)
- IPCC assessment to expand focus on cities
- National Academies' leadership (this forum)

## **Urban Genome Project?**

- Human Genome Project sought to cure human diseases
- Urban Genome Project seeks to cure planetary diseases
- Each person has unique characteristics embedded in DNA
- Each city's unique characteristics are reflected in its "DNA"
- HGP required multiagency and private sector funding
- Urban Genome Project needs multi-sector support
- But who will oversee it? WB? UN? NAS? OSTP? NASA?

