

A graphic featuring a stylized map of New York State in light green and yellow, set against a blue background with diagonal lines. Below the map is a green silhouette of a city skyline. The text "Energy Regional Innovation Cluster" and "Building Energy Sustainability Systems" is written in white on the blue background.

## Energy Regional Innovation Cluster Building Energy Sustainability Systems

**Ed Bogucz**

Executive Director



Presented at Advanced Energy 2010

November 9, 2010

## Energy-efficient building systems: “critical challenge... proven resistant to solution by conventional R&D...”

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*“The Secretary of Energy has identified energy-efficient building systems design as presenting one of the most critical challenges related to national energy and climate goals; ...*

*however, this challenge has proven resistant to solution by conventional R&D enterprise structures.”*

*—E-RIC Funding Opportunity Announcement, Feb. 2010*

**DoE Secretary Steven Chu, Google VP Dan Reicher, U.S. Rep. Dan Maffei**  
at SyracuseCoE HQ, Oct. 2009

# The Grand Challenge

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## ❑ Buildings represent the largest sector of energy use in US

- ◆ 40% of primary energy consumption
- ◆ 70% of electricity consumption
- ◆ 40% of greenhouse gas emissions

## ❑ Enormous complexity of interdependent issues

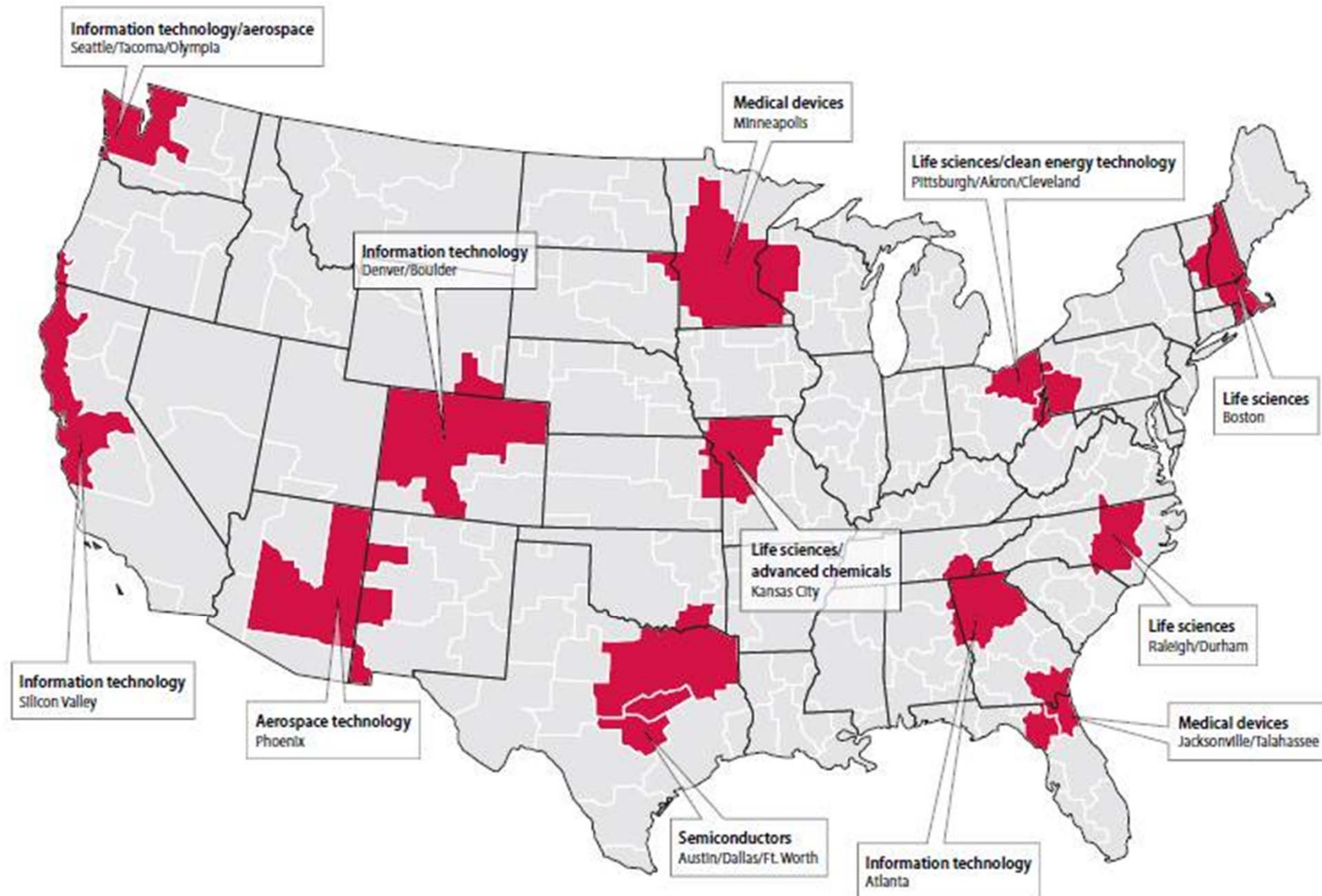
- ◆ Integrated systems of multiple technologies
- ◆ Economic, behavioral, and policy factors
- ◆ Many stakeholders, conflicting interests

## ❑ “... this challenge has proven resistant to solution by conventional R&D enterprise structures.”





## *A new approach:* Regional Innovation Cluster (RIC)



<http://www.eda.gov/AboutEDA/RIC/>

[http://www.eda.gov/PDF/RIC\\_overview\\_030410.ppt](http://www.eda.gov/PDF/RIC_overview_030410.ppt)

# The Unique Opportunity for New York State

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## □ Upstate:

- ◆ *Established Cleantech RIC*
- ◆ *World-class R&D*
- ◆ *Manufacturers*
- ◆ *Small companies*

## □ NYC:

- ◆ *Buildings!*
- ◆ *People!*
  - ❖ *Early adopters*
- ◆ *Design, construction, operation*
  - ❖ *Pioneers in green building*
- ◆ *Finance & investment*
- ◆ *Media*

## □ Leadership in policy:

- ◆ *PlaNYC 2030*
- ◆ *NYS Climate Action Plan*



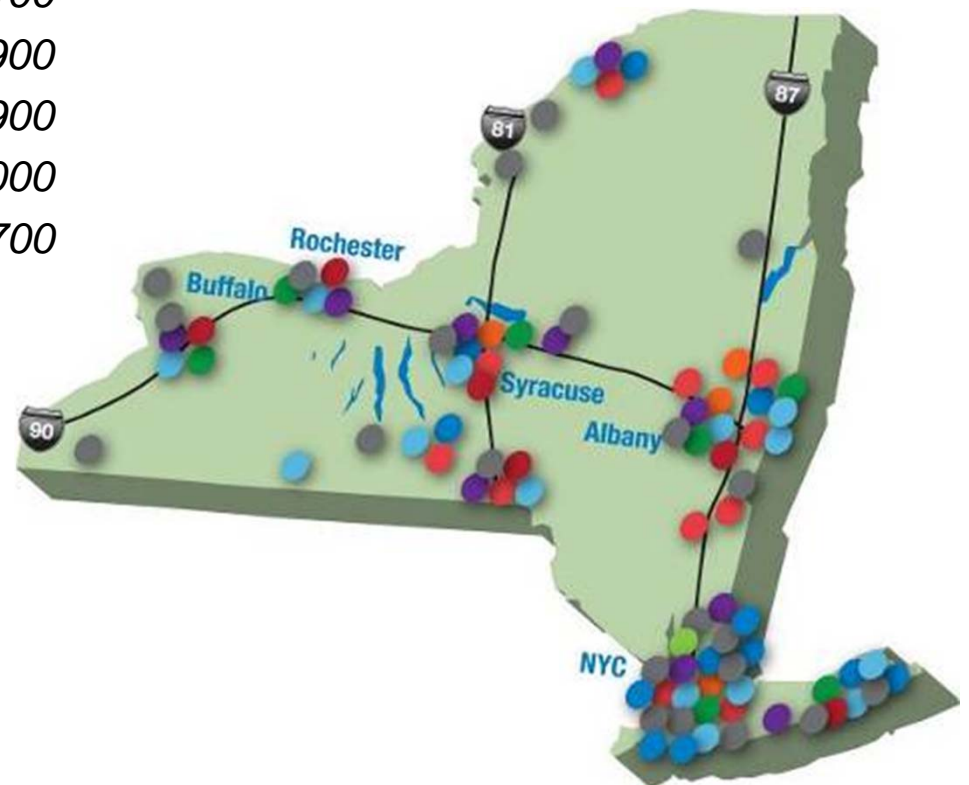
*“The cleantech industry could offer a new source of jobs and economic growth for New York by **leveraging the complementary assets of the Upstate and New York City Metro Area economies.***”

*“The Upstate region has an underutilized manufacturing base (both in expertise and sites), raw materials and research talent ... The New York City Metro Area has investment capital, a large market for cleantech products, and the propensity to be an early adopter of new technologies that conserve natural and financial resources.”*  
—New York City Investment Fund, Jan. 2007

# NYE-RIC's unmatched capabilities

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- ❑ **Pioneering R&D on innovative building energy-efficiency systems**
  - ◆ *Integrated systems of multiple technologies*
  - ◆ *Economic, behavioral, and policy systems*
- ❑ **Accelerated demonstration & deployment (D&D) of innovations**
- ❑ **Create 76,600 jobs**
  - ◆ *Component manufacturing:* 5,100
  - ◆ *Professional services:* 24,900
  - ◆ *Construction trades:* 23,900
  - ◆ *Financial services:* 16,000
  - ◆ *Building services:* 6,700





# NYE-RIC RD&D “Platforms”

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## **Residential Building** *Single-Family/Apartments*



**1 – 5 W/ft<sup>2</sup>**

**37.5% of US Electricity**

**21.5% of US Primary Energy**

## **Commercial Building**



**5 – 10 W/ft<sup>2</sup>**

**35.8% of US Electricity**

**18.1% of US Primary Energy**

## **Data Center**



**150 – 750 W/ft<sup>2</sup>**

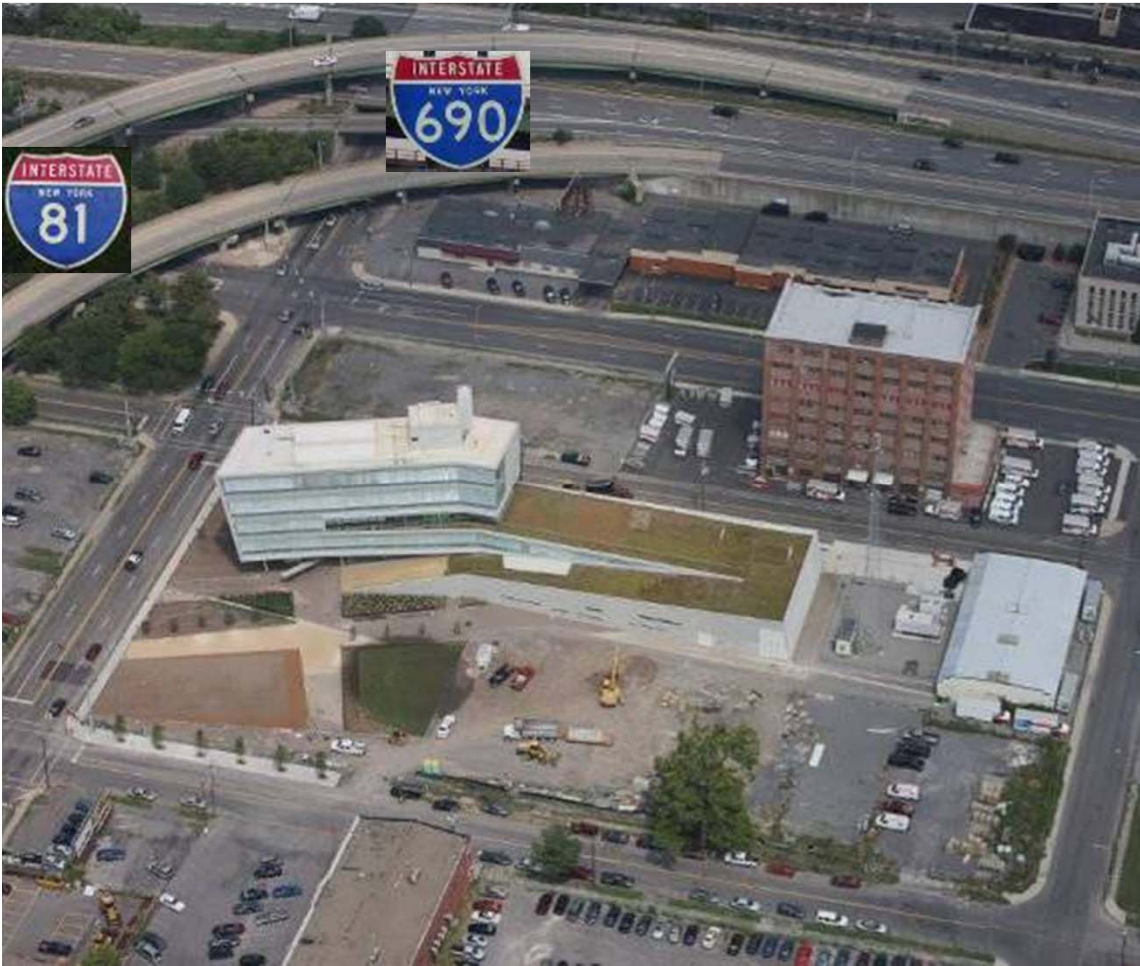
**2.5% of US Electricity**

## **District (including multiple buildings)**



# RD&D HQs

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**SyracuseCoE HQ**  
“W 690<sup>th</sup> St at 81<sup>st</sup> Ave”



**NYU Schack Institute**  
11 W 42<sup>nd</sup> St



# From R&D to D&D (Demonstration & Deployment): *RPI, SHoP Architects, HeliOptix, SU, NYC*



Midtown Retrofit Atrium and Addition, FIT, New York City



Image: SHoP Architects, HeliOptix

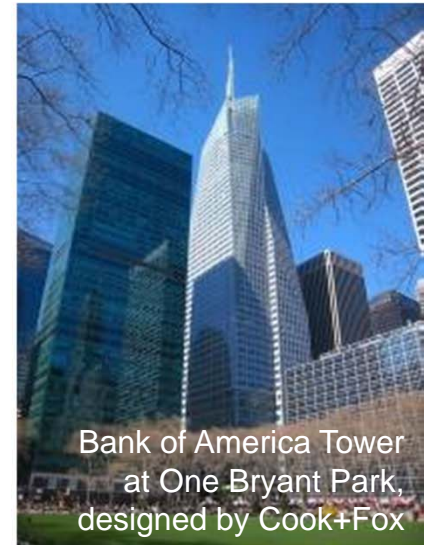


Integrated Concentrating Solar Facade at the Syracuse  
Center of Excellence in Environmental and Energy Systems  
Image: CASE / Rensselaer



## From R&D to D&D: *LiveWorkHome* by Cook+Fox *under construction in Syracuse Near Westside*

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# 130+ partners

- ☐ Architecture & Engineering
- ☐ Construction
- ☐ Finance & Insurance
- ☐ Manufacturers
- ☐ Labor
- ☐ Real Estate
- ☐ Utilities
- ☐ Media & Advertising
- ☐ Nonprofit organization
- ☐ Government partners



THE CITY OF NEW YORK  
OFFICE OF THE MAYOR  
NEW YORK, NY 10007

May 4, 2010

E-RIC Review Committee  
U.S. Department of Energy  
1000 Independence Avenue, SW  
Washington, DC 20585

Dear E-RIC Review Committee:


New York City fully supports the application of the New York State Building Energy Sustainability Systems (NYBESS) consortium for a federal grant to help fund an Energy Regional Innovation Cluster (E-RIC) in the State of New York.

New York is already an international leader among cities when it comes to sustainability. In 2007, we launched *PlaNYC*, a twenty-year sustainability plan that will secure New York's status as America's greenest large city and reduce greenhouse gas emissions 30% by 2030. Last year we enacted the *Greener, Greater Buildings Plan*, a critical piece of *PlaNYC*, by passing groundbreaking legislation that requires energy audits, retro-commissioning, and efficient-lighting upgrades for all buildings over 50,000 square feet across the City. It also directs City government to create a more stringent energy code, facilitate energy consumption benchmarking for building owners, and provide special financing for efficiency retrofits. This legislation has set the stage to make New York City buildings the best testing and deployment sites for energy efficiency innovation across the United States. The City has taken additional steps to advance energy efficiency innovation by issuing a Request for Proposals for an *Urban Technology Innovation Center* (UTIC), which will serve as a facilitator and launching pad for new market technologies that promote energy efficiency in the City and beyond. New York City will commit to apply the information and research coming out of the E-RIC Hub to these building initiatives, thereby accelerating the introduction of new energy efficiency technologies and products.

With New York as a national hub, the beta-testing and adoption of new products will take place more quickly, on a larger scale, and in a greater variety of buildings than would be possible anywhere else in the country. Similarly, we will engage the nation's leaders in finance, insurance, and real estate—most of whom are based in New York—to quickly and effectively promote local practices across the U.S. market.

New York City strongly supports this application, and looks forward to leading efforts to make the country more energy efficient and independent.

Sincerely,

  
Michael R. Bloomberg  
Mayor

***“With New York as a national hub, the beta-testing and adoption of new products will take place more quickly, and on a larger scale, and in a greater variety of buildings than would be possible anywhere else in the country. Similarly, we will engage the nation’s leaders in finance, insurance, and real estate—most of whom are based in New York—to quickly and effectively promote local practices across the U.S. market.”—Michael Bloomberg, NYC Mayor***