



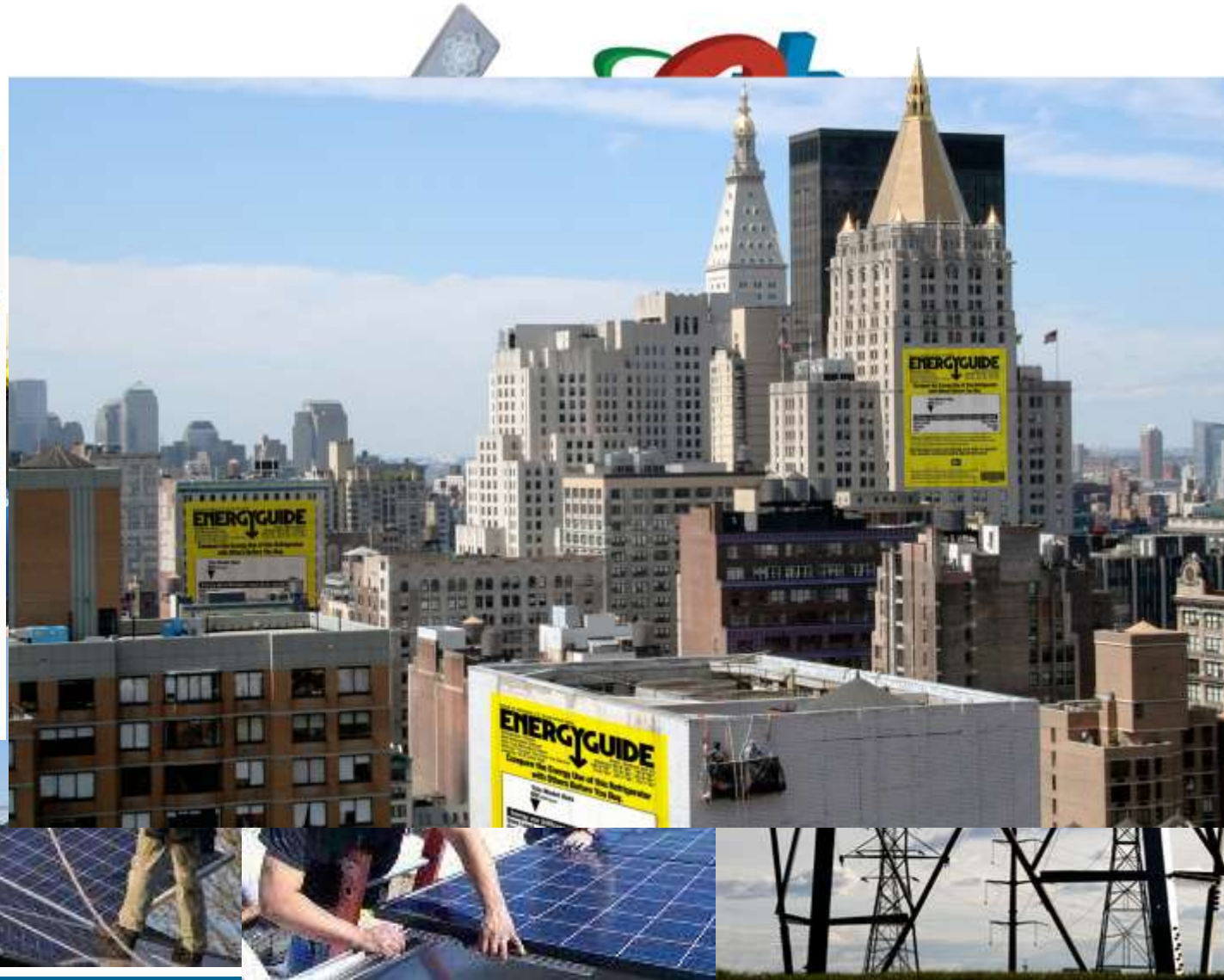
# Net Zero Energy Buildings: A Federal View

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**HOME  
PERFORMANCE  
WITH  
ENERGY STAR**



# Net Zero Energy (NZE) & Net Zero Energy Ready (NZER)

## EISA 2007, SEC. 422. ZERO NET ENERGY COMMERCIAL BUILDINGS INITIATIVE

- Goal of zero fossil fuel energy use for all new federal government buildings by 2030.
- EISA 2007 net-zero energy targets of:
  - 100% of new commercial buildings by 2030
  - 50% of existing commercial buildings by 2040
  - 100% of existing commercial buildings by 2050





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# Net Zero Energy Terms & Definitions

**Net Zero Energy (NZE)**

**Zero Fossil Fuel**

**Zero Net Energy (ZNE)**

**Net Zero Energy Ready (NZER)**

**Net Zero Energy Capable**

**Nearly Net Zero Energy**

**ZNE Efficient**

# Net Zero Energy Terms & Definitions

EISA 2007 Defines ZNE commercial building' as "...a high-performance commercial building that is designed, constructed, and operated—

- “to require a greatly reduced quantity of energy to operate;
- “to meet the balance of energy needs from sources of energy that do not produce greenhouse gases;
- “in a manner that will result in no net emissions of greenhouse gases; and
- “to be economically viable.”



# What does this mean for DOE?

- Emerging technology R&D
- New technology demonstration
- Design tools
- Design assistance
- Appliance standards
- Workforce development
- Build market infrastructure



COMMERCIAL BUILDING  
ENERGY ASSET SCORE

ing Re-tuning Training



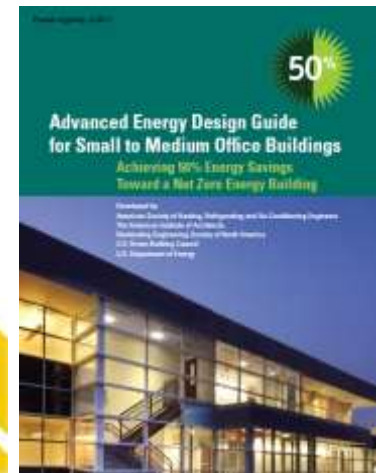
# Advanced Energy Design Guides



- Described as a ‘cookbook’ approach to building energy efficiency
- Provide design packages and strategies to help owners and designers achieve 50% site energy savings over ASHRAE 90.1–2004
- Present climate specific recommendations for prominent building types
- Offer both prescriptive and performance solutions
- Whole building approach:
  - Opaque envelope and fenestration
  - Lighting and Daylighting
  - HVAC and service hot water
  - Plug and process loads



AIA



# 2030 District Program and Small Commercial Toolkit

## Project Overview

- Create a 2030 District Program and Technical Toolkit focused on small commercial applications to enable targeted energy savings.
- Provide a suite of organizational, analysis, implementation, and verification methodologies, tools, and resources to address key barriers to energy reductions in this sector:

## Demonstrations and Deployment

- Program Toolkit Demonstrations in 4 demonstration partner cities
- Technical Toolkit Demonstrations in 25 – 40 Small Commercial Sites

## Project Partners

- Lawrence Berkeley National Lab
- Architecture 2030

## Initial Demonstration Cities

- Seattle
- Pittsburgh
- Cleveland
- San Jose

# America Saves! – Energizing Main Street Small Businesses

## Demonstrations and Deployment

- **Implement technologies** that enable cost effective and scalable data collection, analysis, and ongoing measurement of energy performance.
- **Deliver capital** to small building owners and businesses at the right time with the right terms.
- **Overcome the lack of time** on the part of small businesses to research and implement energy retrofits.
- **Implement financial and legal solutions** that fairly allocate the responsibility and rewards of energy conservation between tenants and owners.
- **Develop ongoing relationships** that encourage deeper savings built on the success of short-term wins.

## Project Partners

- National Trust for Historic Preservation, through
- National Renewable Energy Laboratory
- Energy RM
- Lend Lease
- Energy Center of Wisconsin

## Initial Demonstration Cities

- Competitively selected from over 2000 Main Street Centers

# Net Zero Energy (NZE) & Net Zero Energy Ready (NZER) definitions

The market needs clear and consistent definitions

- **Mobilize industry consensus** around what NZE and NZER means.
- Build on technical research that has been done
- “Cost-effective NZE”?
- “NZE except for our datacenter”?





What does a Net Zero Energy Design Guide look like?

- Determine appropriate sector to begin with
- Incorporate key strategies of successful buildings
- Recognize a variety of approaches

# Support state and local activity



# Thank you!

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