Better Buildings®
U.S. DEPARTMENT OF ENERGY

Fact Sheet

ZERO ENERGY DISTRICTS ACCELERATOR

The **Better Buildings Initiative** is a national leadership initiative calling on state and local officials, corporate chief executive officers, university presidents, utilities, and other leaders to make commitments to improve the energy efficiency of their buildings and plants, save money, and increase competitiveness. The U.S. Department of Energy (DOE) has expanded this Initiative to engage leaders in a set of Better Buildings Accelerators designed to demonstrate specific innovative approaches, which, upon successful demonstration, will accelerate investment in energy efficiency and clean energy.

Zero energy districts provide an opportunity to optimize energy efficiency in new construction because of the integration aspects that lead to increased cost savings and environmental and economic benefits. DOE's multifaceted Zero Energy Building initiative is designed to engage and move the market to buildings and districts that reach zero net energy use. Specifically, Zero energy districts are designed and built to maximize energy efficiency and use renewable energy at a district scale. Zero energy districts aggregate renewable energy sources, within the district, so that the combined on-site renewable energy could offset the combined building energy from the buildings in the district .

The Zero Energy Districts Accelerator is an effort by the U.S. Department of Energy (DOE) to encourage the expansion of zero energy districts by partnering with district developers, planners, owners, and key additional stakeholders to develop the business case and energy master planning documents needed for replication of zero energy districts.[1]

DOE will support zero energy district leaders to demonstrate the practicality of taking action to cost effectively meet zero energy goals and commitments. To successfully reach these aggressive energy goals, these leaders will need to complete a detailed energy master plan, governance and business case model, and development pathway for a zero energy district. The accelerator partners will use best practice approaches for considering well-defined energy performance goals and incentives for the entire building and district lifecycle, including planning, design, construction, and operation. These successful strategies will be documented and made available to promote replication in other cities.

1. DOE (U.S. Department of Energy). 2015. "A Common Definition for Zero Energy Buildings." Report No. DOE/EE-1247. http://energy.gov/eere/buildings/downloads/common-definition-zero-energy-buildings

Goals of the Zero Energy Districts Accelerator:

- **Support** early adopters in the development of zero energy districts with energy planning and modeling tools and best practice guidance to address optimal district configurations and layout, building efficiency, renewable integration, utility partnerships, and district energy systems necessary to reach zero energy at a district scale.
- **Develop** case studies, best practices, pilot examples of applying life cycle evaluation toolsets, and energy master planning guidance documents to support the replication of zero energy districts.
- **Develop** business cases and governance models exploring different financing and ownership models to enable significant deployments of technologies such as aggressive building efficiency, solar, geothermal, and micro-grids.
- **Document** development and financing approaches so that other cities, developers, and master planners can develop similar districts.
- **Develop** recommendations for post-Accelerator next steps for continued replication of zero energy districts.

Why are zero energy districts important to new construction?

Cities consume over 70% of global energy, with opportunities for energy reduction in building stock, transportation, and industry. This is recognized as an important issue for American cities, as indicated by over 1,000 mayors who have signed the Mayors' Climate Protection Agreement (U.S. Conference of Mayors). Zero energy districts is an emerging approach that can provide flexibility and options for cost effectively achieving deep energy savings at a larger scale than an individual building approach.

An area approximately equal to 60% of the world's total building stock square footage is expected to be built or rebuilt worldwide by 2030. Proper building and urban design can minimize the impact caused by this rapid urbanization. Based on these growing trends, the need for large-scale, urban zero energy districts is clear. However, to accelerate these concepts, developers, cities and master planners need support to achieve and replicate zero energy districts, especially in the early planning stages of these projects. In addition, the energy master planning tools necessary to evaluate cost competitive zero energy districts strategies are emerging, but efforts are needed improve the uptake and use of these powerful, important resources.

Benefits to Partners:

- **Plan** for cost effective large scale zero energy districts: City and district developers will gain access to a collection of documented cost-effective processes and technical resources for achieving zero energy and meeting environmental goals. These partners can also leverage DOE tools and resources to scale up broader zero energy efforts.
- **Receive** technical assistance from DOE and national labs: Partners will gain support for applying tools, analyses, and resources to implement zero energy district strategies. Partners will also receive support for developing solutions to challenges faced during implementation.
- **Receive** national recognition: DOE will recognize partners for their leadership, innovation, and commitment to advancing zero energy approaches and technologies.
- **Exchange** lessons learned and accelerate development of successful strategies: Partners will be able to leverage the experience from peers involved in zero energy district planning and implementation, and learn about the technologies, policies, governance models, and business case solutions that have worked for these peers.

Accelerator Partner Agrees to:

- **Appoint** an Accelerator point of contact
- **Demonstrate** zero energy district project viability
- **Partner** with key district stakeholders, such as local government, utilities, non-profits, and developers through a joint partnership agreement
- **Complete** within 2 years
  - A detailed energy master plan for a zero energy district
  - A business case for developing the district
  - A planned governance model for zero energy operations
- **Progress** in moving forward in implementing plans for their zero energy district within 3 years, recognizing ultimate build-out of full districts can often develop over 10 years.
- **Engage** with other Accelerator Partners to outline and refine best practice approaches for achieving zero energy adoption.
- **Report** progress annually on developing the master planning, business case, and governance models.

The U.S. Department of Energy Agrees to:

- **Support** partners in developing zero energy district master plans, business cases, and governance models
- **Develop** resources necessary to achieve zero energy operations, including a library of zero energy district energy master plans and development pathways
- **Provide** technical leadership in implementing resources for cost-effective zero energy districts
  - DOE ZEB definition application
  - Optimal density for district energy systems
  - Optimal district energy system selection
  - District scale renewable energy system planning, including micro-grids and energy storage
  - Building energy efficiency targets for zero energy district planning
  - Procurement models for incorporating energy use intensity goals into building projects
- **Provide** access to relevant precedent case studies for zero energy buildings and districts, including documentation of key steps for successful post-accelerator deployment and guidance for future zero energy districts
- **Recognize** partners for their leadership

For More Information:

- Better Buildings Accelerators
  betterbuildingsinitiative.energy.gov/accelerators
- DOE Zero Energy Buildings Initiative
  energy.gov/eere/buildings/zero-energy-buildings

Interested in participating?

Contact Solome Girma at solome.girma@ee.doe.gov to learn more about this transformative Initiative.