



Citi2Zero

Community-Scale Integrative &
Transformative Infrastructure for Zero Energy

Change Brings Opportunity

Energy is a driver. Of Economies. Of Policy. Of Government. Of Development. And Climate Change. At the same time, communities are working to address a number of major demands and policies around climate change, sustainability and resiliency – all within an environment of existing buildings, existing infrastructure and a multitude of stakeholders. Harnessing energy as a driver, communities can develop an integrated solution to these challenges through the development of Zero Energy Districts.

How can this work?

Steep drops in the costs of renewable energy and energy storage are challenging business as usual for electricity supply and the electric grid; it is a time of great uncertainty. This uncertainty is creating a new opportunity for communities to lead and control their energy future through three key elements:

1. Leveraging the **"infrastructure imperative"**, and the need to rebuild and re-envision our energy distribution infrastructure;
1. Recognizing that a **community scale** approach is critical to scaling energy efficiency and renewable energy to meet climate goals; and,
1. Optimizing **local government's** interest, ability and need to make substantial investments to reduce carbon emissions, going beyond building energy use.

Defining Community or District-Scale

A District can be defined as a commercial business district, downtown, campus (educational or corporate), or a master planned development (residential subdivision or an urban redevelopment area). Typically, the District has a commonality that allows for ease of organization and financing, ranging from ownership of the land and buildings to a business improvement district, special tax district or redevelopment planning area.

The Citi2Zero Approach

Citi2Zero is a process to help communities plan leading-edge, district-scale projects that contribute to significant carbon reductions, provide increased resiliency and reduce consumer energy costs, and ultimately change how the electricity grid is managed.

A project would start with an existing development in the early planning stages or with an initial study to identify potential districts and opportunities. BluePoint Planning will work with key elected officials, staff and critical citizen/business interests to understand how to leverage planned development, existing assets, and infrastructure to better accommodate a series of technical measures (district renewables, storage, controls, micro-grid, efficiency, electric transportation) that can work in an integrated fashion to dramatically reduce carbon, address disruption resiliency and move towards zero energy. The Citi2Zero analysis package includes:

- a. Engage and involve the key stakeholders in understanding the project potential
- b. Review current plans and assets to determine the opportunities.
- c. Lead a strategic planning process to identify project parameters, bring partnerships together and identify critical project elements.
- d. Determine the best fit for renewable energy, storage, grid benefits, transportation and other key elements.
- e. Build a roadmap for the project.

Cities have been leading the way to a low carbon future, and now there is an unprecedented chance to both gain control of how electricity is produced, distributed, and used in communities and use that control to enhance existing communities to address climate change and resiliency goals.

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Economies of Scale

Addressing the built environment and energy at the district scale provides a more feasible, integrated and long-term solution for communities than the current building by building approach and allows for multiple benefits and a scaled solution to energy and carbon reduction.

- Integrated development addressing energy in existing and new buildings as well as surrounding community to move to a zero district
- More economically viable renewable energy at scale
- Leverage high cost infrastructure improvements, such as streets, energy, water, sewer, and transit much more effectively
- Sustainability and resiliency through smart district energy, grid operation and adaptation strategies
- Innovative financing overlays to share development costs and provide ongoing funding for operations

An Integrated Framework

Integrated infrastructure systems that involve efficiency, renewables, storage, transportation and energy controls will dramatically change the relationship between buildings and the grid. What's more, by leveraging the economics around this essential infrastructure, there is an opportunity to create a truly integrated solution that can drive deeper sustainability at the community scale. We propose a framework – Citi2Zero (Community-Scale Integrative & Transformative Infrastructure for Zero Energy) – to inform and direct the creation of projects. There are 5 major components to this framework:

- **People** –local government, the building owners, building operators, utility and the tenants who will drive the flavor of the District and have the ability to influence policy, behavior and investment;
- **Renewable Infrastructure** – A renewable power system that optimizes the grid and integrates storage, electric vehicle charging, advanced controls and distribution;
- **Buildings** – a dynamic mix of new and existing buildings that in aggregate achieve zero energy and increasingly zero carbon;

Creating a Plan to Zero



Identifying opportunities and synergies within a district.

- **District Fabric** – the back bone of the district with the integration of all the other key infrastructure systems including water/sewer, waste, transportation and landscaping informed by land planning and urban design for sustainability, and
- **Finance** – at each level, economics and financing is considered and maximized and the organization of the District enables district-wide finance tools.

Identifying Potential ZNE Districts

Key elements for a choosing a successful district and moving forward as easily as possible, include:

1. **Common Ownership Characteristics or Governance Structure:** Includes single owner campus, existing tax district, business association, homeowners association or similar structure.
2. **Opportunistic development:** Major new infrastructure planned or needed, major new building development
3. **Ratio of New and Existing Buildings,** along with potential solar access, allow for optimal mix and ultimate aggregated Zero Energy. This is malleable but a 100% existing building district would be very difficult.
4. **Locational Value to the Grid:** Enables stronger partnership and engagement with Utilities and creates higher value for the project.