Scaling Impact through Zero Energy Districts:

From Goal Setting to Implementation

Sarah Zaleski, U.S. DOE

2019 Getting to Zero Forum

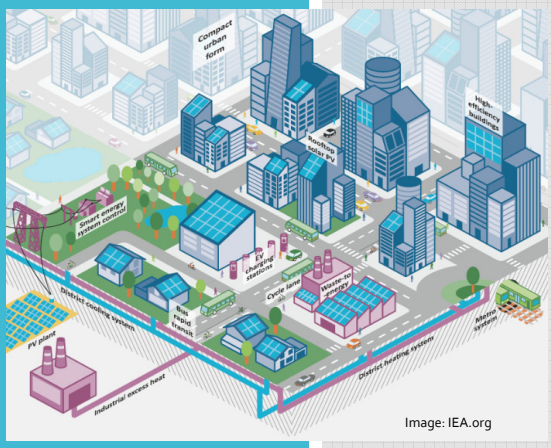

Image: IEA.org

Districts are Key to Achieving Zero Energy

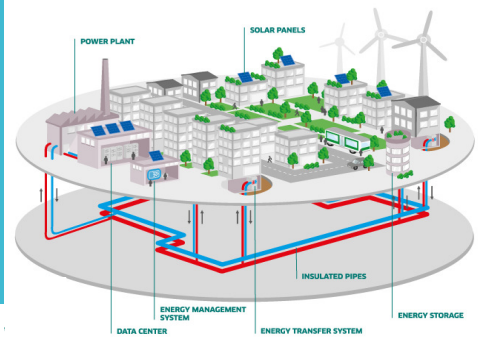

Image: Engie.com

- Economies of scale
- Shared infrastructure
- Balance across buildings
- Opportunity for enhanced "code"
- Community of learning and accountability
- Large collective impact

DOE's Zero Energy Districts Accelerator

District Partners

- Sun Valley EcoDistrict (CO)
- Erie County Industrial Redevelopment (NY)
- St. Paul Ford Site Redevelopment (MN)
- National Western Center (CO)
- Huntington Beach Advanced Energy Community (CA)
- Catalyst Spokane (WA)

National Partners

Commit to provide resources and support to districts

EcoDistricts

U.S. Green Building Council

Xcel

Rocky Mountain Institute

Zero Energy Master Planning

- **Stakeholder and utility engagement**
- Analysis approaches – climate, EUI target, renewables, heating and cooling loads, energy balance, etc.
- Striking energy balance in development program
- Solar and district energy systems planning
- Planning for grid interactivity
- Financial and business planning

Utility Engagement

STRATEGY 1.
Identify and engage relevant utilities early and often during the energy master planning process

STRATEGY 2.
Assess how project goals might align/-conflict with utility goals, objectives, and business models

STRATEGY 3.
Understand utility rate and metering options

STRATEGY 4.
Identify relevant utility efficiency and demand response incentive programs

STRATEGY 5.
Identify relevant renewable energy and distributed energy resource programs and interconnection agreements/limits

STRATEGY 6.
Explore the potential for piloting new technologies, programs, and business models

STRATEGY 7.
Engage utility capacity planning engineers as the design evolves

Zero Energy Master Planning

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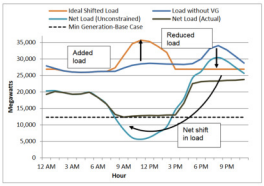
Zero Energy District Design Principles



1. Building Efficiency

2. Thermal and Heat Recovery

3. Solar Potential

4. Demand Flexibility

Zero Energy Master Planning

- Stakeholder and utility engagement
- Analysis approaches – climate, EUI target, renewables, heating and cooling loads, energy balance, etc.
- **Striking energy balance in development program**
- **Solar and district energy systems planning**
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Balancing loads and planning for solar and district systems

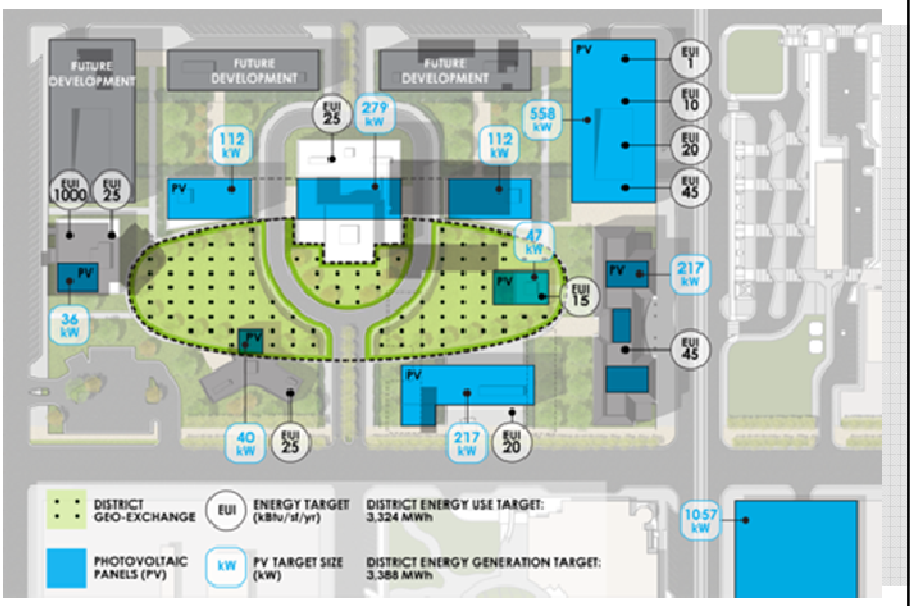
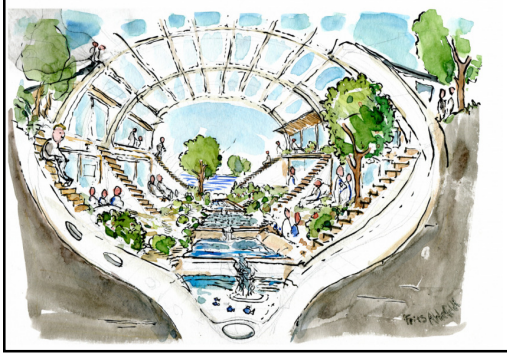


Image: RNL Design now Stantec and Integral Group

Challenges

- Accountability for Ongoing Performance
- Financing, Ownership and Governance Models
- Calibrating Energy Goals
- Difficulty Quantifying Benefits
- Utility Engagement
- Advanced Analysis Needs

Promising Practices



Guide for Zero Energy Districts

- Focus on Zero Energy principles that support high performance district projects
- Document promising practices from Zero Energy District Accelerator and other advanced energy community projects
- Suggest what analysis is most valuable at what stage
- Leverage, reference, and build on existing resources (NBI, IDEA resources, RMI, etc.)
- In development – due January 2020

Third Draft: August 2019

Communicating, Planning, and Implementing Zero Energy Districts

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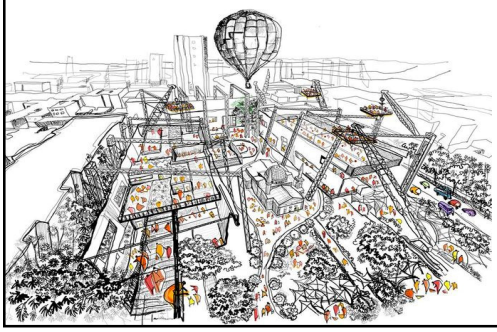
Looking Forward



- Opportunities at former industrial sites, shopping malls, Amazon bid sites
- Integration of smart community technologies
- Third party structures for district systems
- Electrification – buildings, vehicles, infrastructure
- Design guidelines as performance based energy code
- Investments in district modeling tools

Thank you!

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