Portland Urban Innovation

Lew Bowers, Portland Development Commission

Urban Sustainability and Personal Energy Management

January 18, 2011

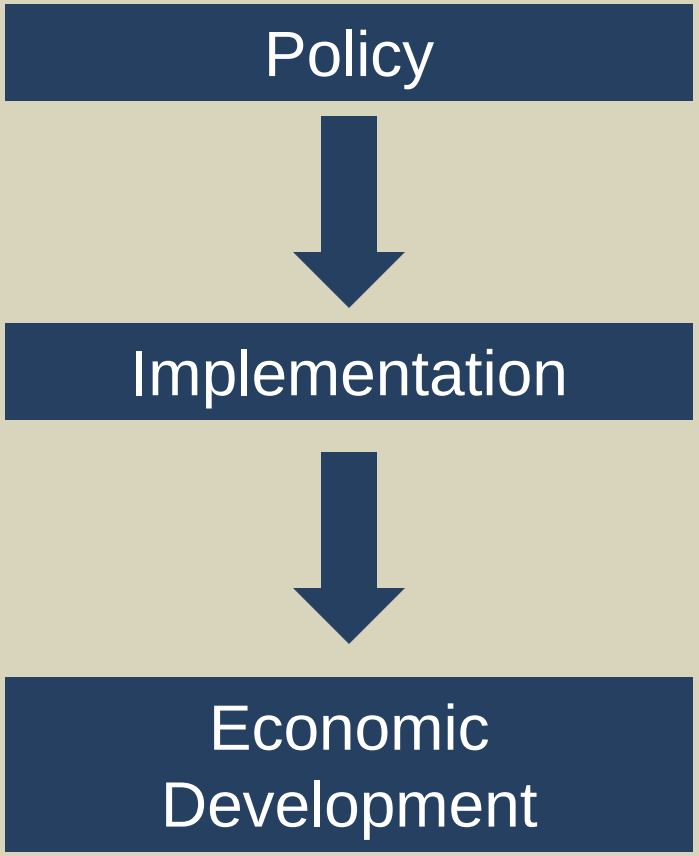
Investing in Portland's Future

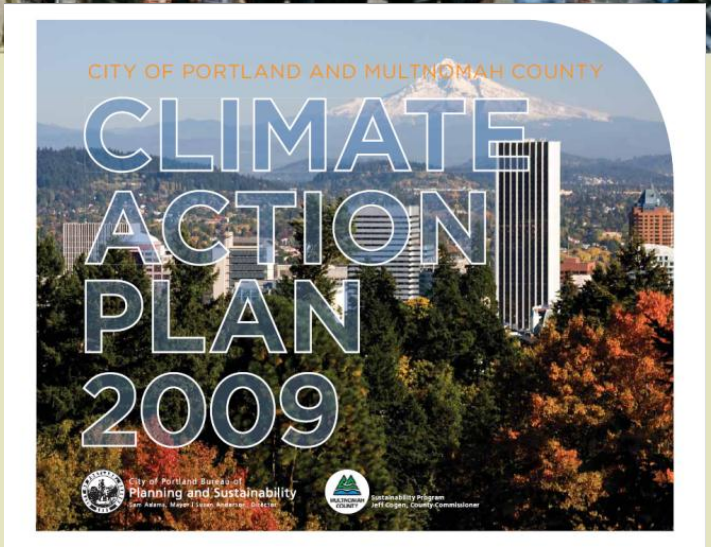
PDC

PORTLAND DEVELOPMENT COMMISSION

Presentation Outline

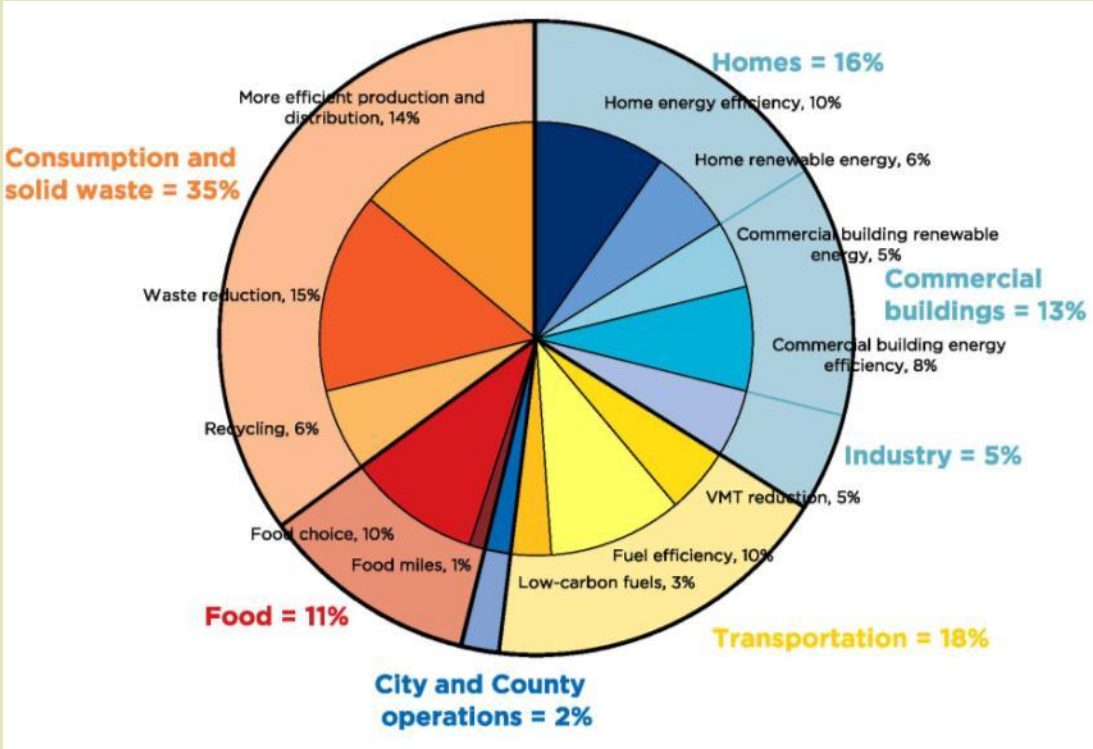
- Context
  - Climate
  - Land Use
  - Economic Development Strategy
- Projects
  - New Construction
  - EcoDistricts
  - Energy Retrofits
- Cluster Industry Growth
  - Clean Energy
  - High Performance Buildings
  - Smart, Shared Infrastructure





Goal: Reduce local carbon emissions 80% by 2050, including through reductions in:

- Buildings and Energy (~ 30%)
- Urban Form and Mobility (~ 10%)
- Consumption and Solid Waste (~ 20%)



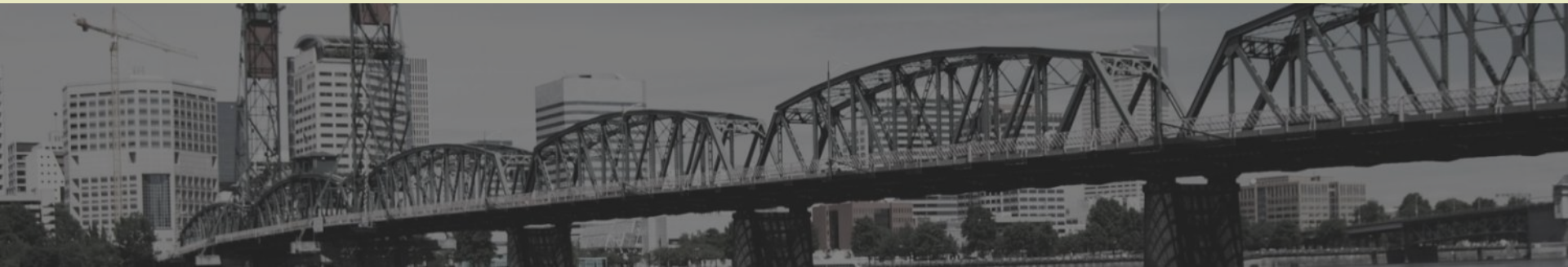
THE PORTLAND PLAN

Goal: imagine the future we want 25 years down the road

- Heritage of urban density, transit, green building (light rail, streetcar, LEED)
- Citywide effort
  - Community led
  - Market driven
- 20 Minute Neighborhood
  - Walkable Urbanism
  - Green Dividend (www.ceosforcities.org/files/PGD%20FINAL.pdf)

Goal: Build the most sustainable economy for the Portland region

- Create 10,000 jobs by 2014
- Cluster Strategy
  - Clean Tech Industry Cluster
  - Urban Innovation
    - Oregon Sustainability Center
    - EcoDdistricts



Clean Tech Target Industry Cluster: 46,000 existing jobs

23% greater concentration than national average

Green Building products & services

- 117 Certified LEED Buildings
- Smart grid and energy demand management

Clean Energy

- Wind and solar developers, manufacturers, and supply chain

Electric Vehicles

- ReVolt recruitment
- Launch site for Nissan Leaf and large infrastructure investments

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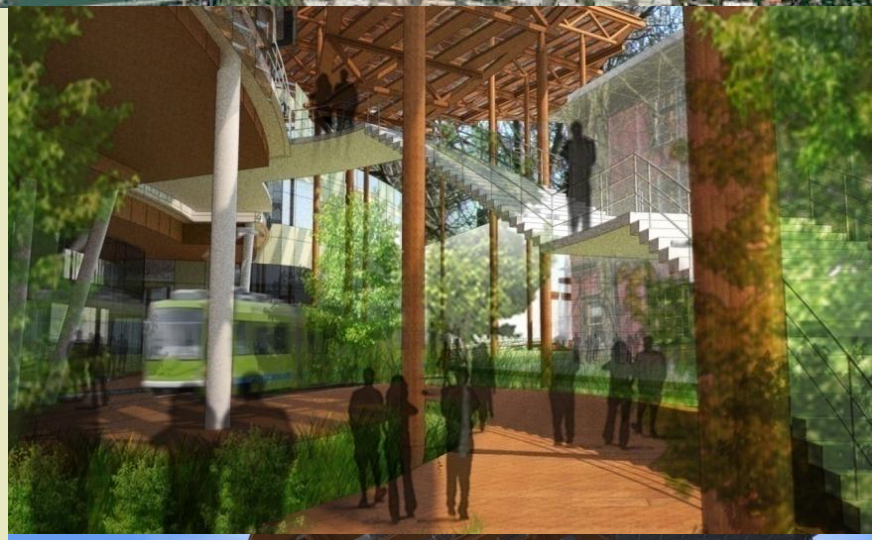

Goal: Build the first high density, mixed use triple net zero building

- Net-zero energy through on-site renewables
- Net-zero water
- Net-zero wastewater
- Materials “red-list” materials
- Materials radius: locally-sourced building materials

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Smart design to reduce energy loads

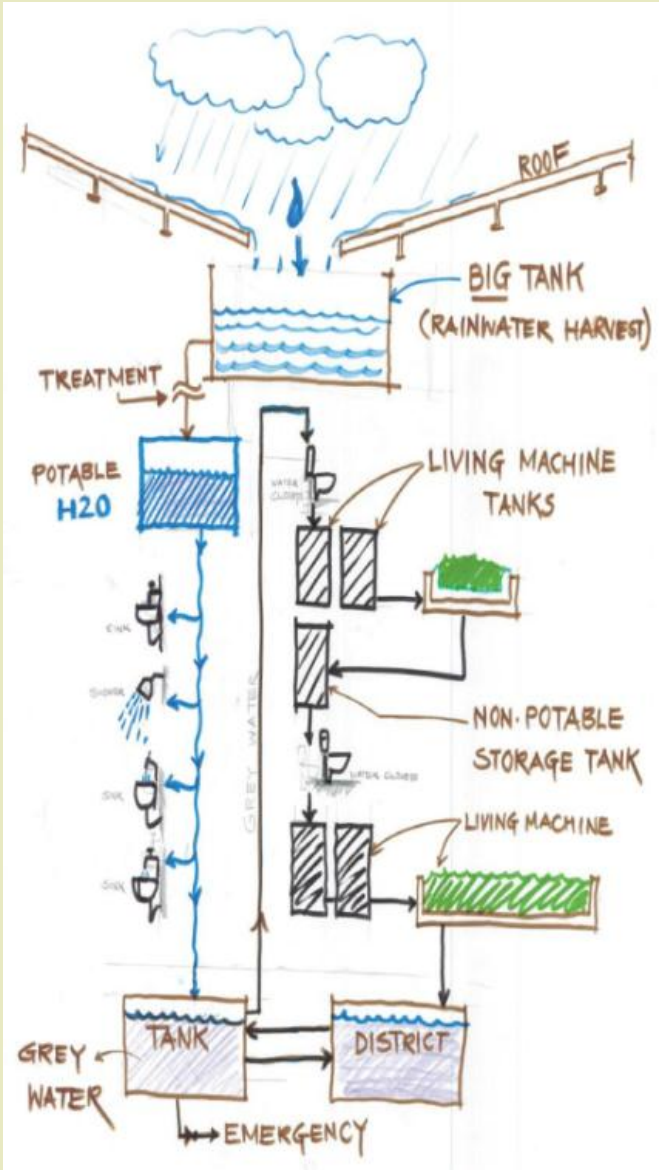
- heat recovery ventilators
- highly efficient electrical and lighting equipment
- local and intuitive controls for thermal, light and fresh air

Optimize energy use

- passive energy systems
- solar orientation
- informed tenant behavior

Water and wastewater recovery and reuse

- 200 gallon water storage tank
- Biological wastewater treatment system



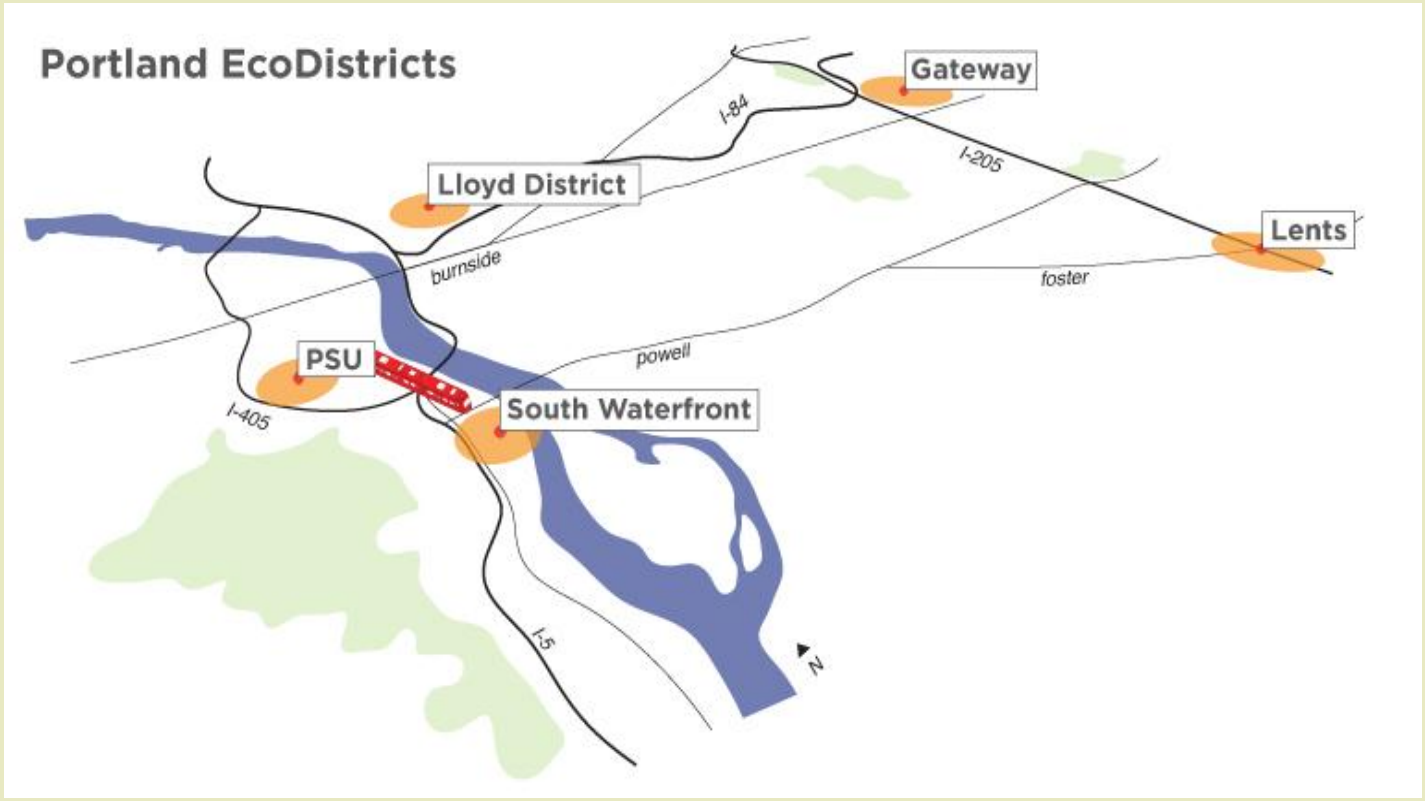

The Oregon Sustainability Center
PUBLIC MEETING
REVIEW SCHEMATIC DESIGN ALTERNATIVES
Tuesday January 18, 2011 5:30 – 7:30 pm
PSU Smith Memorial Student Union Ballroom, 3rd Floor, Room 355
1825 SW Broadway
Oregon Sustainability Center

ECODISTRICTS

Promote neighborhood scale sustainable development with integrated buildings, infrastructure, and community behavior.

ECODISTRICTS

pilot districts



baseline conditions

ECODISTRICTS

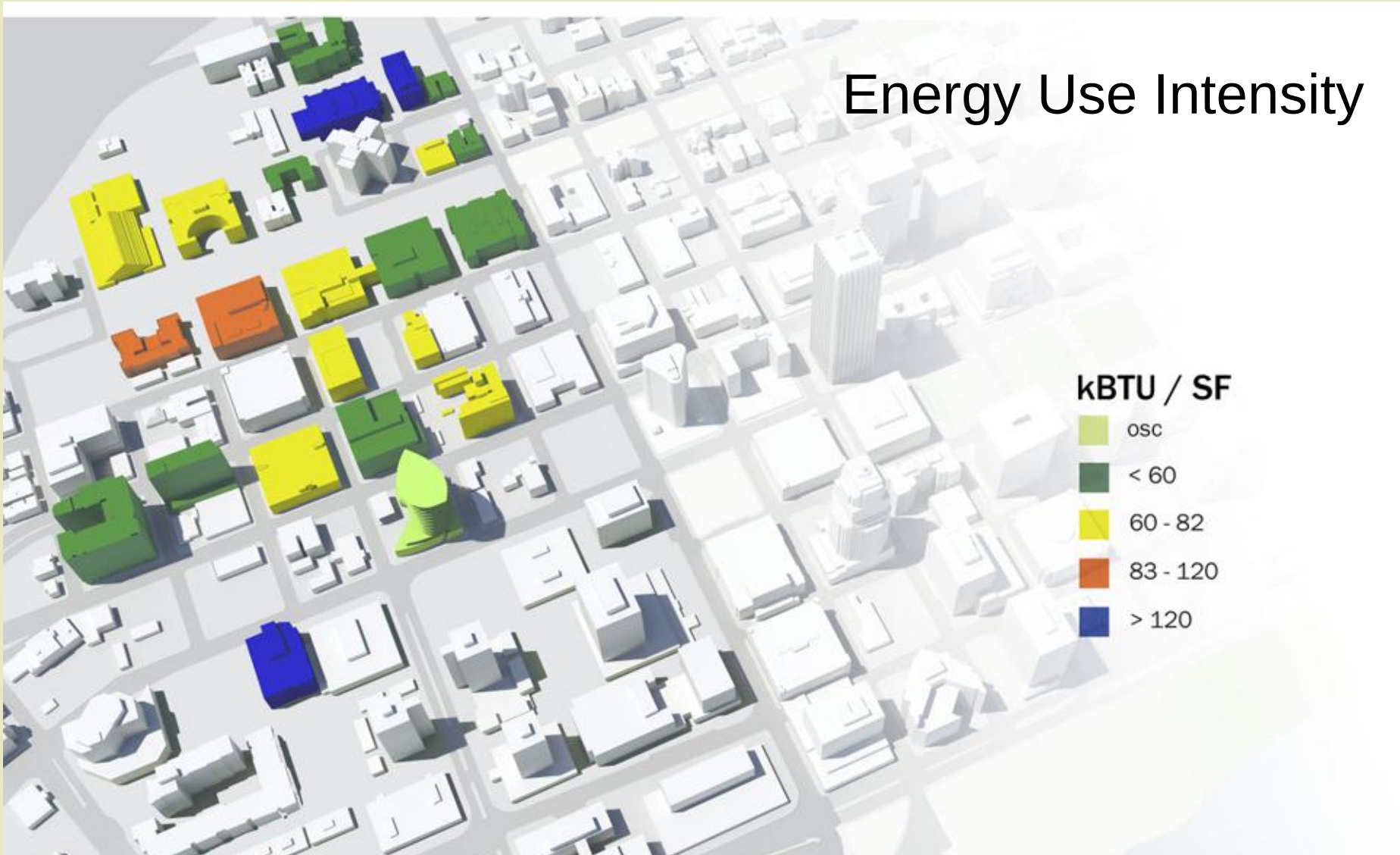
20–Minute Neighborhood

Walkable and well-connected

- SUPERMARKET
- CONVENIENCE STORE
- PHARMACY
- RESTAURANT
- LAUNDROMAT
- DAY CARE
- HAIR SALON
- BANK
- MEDICAL / DENTAL
- FITNESS CENTER
- CHURCH
- POST OFFICE
- LIBRARY
- FIRE STATION
- THEATER
- PARK

baseline conditions

ECODISTRICTS

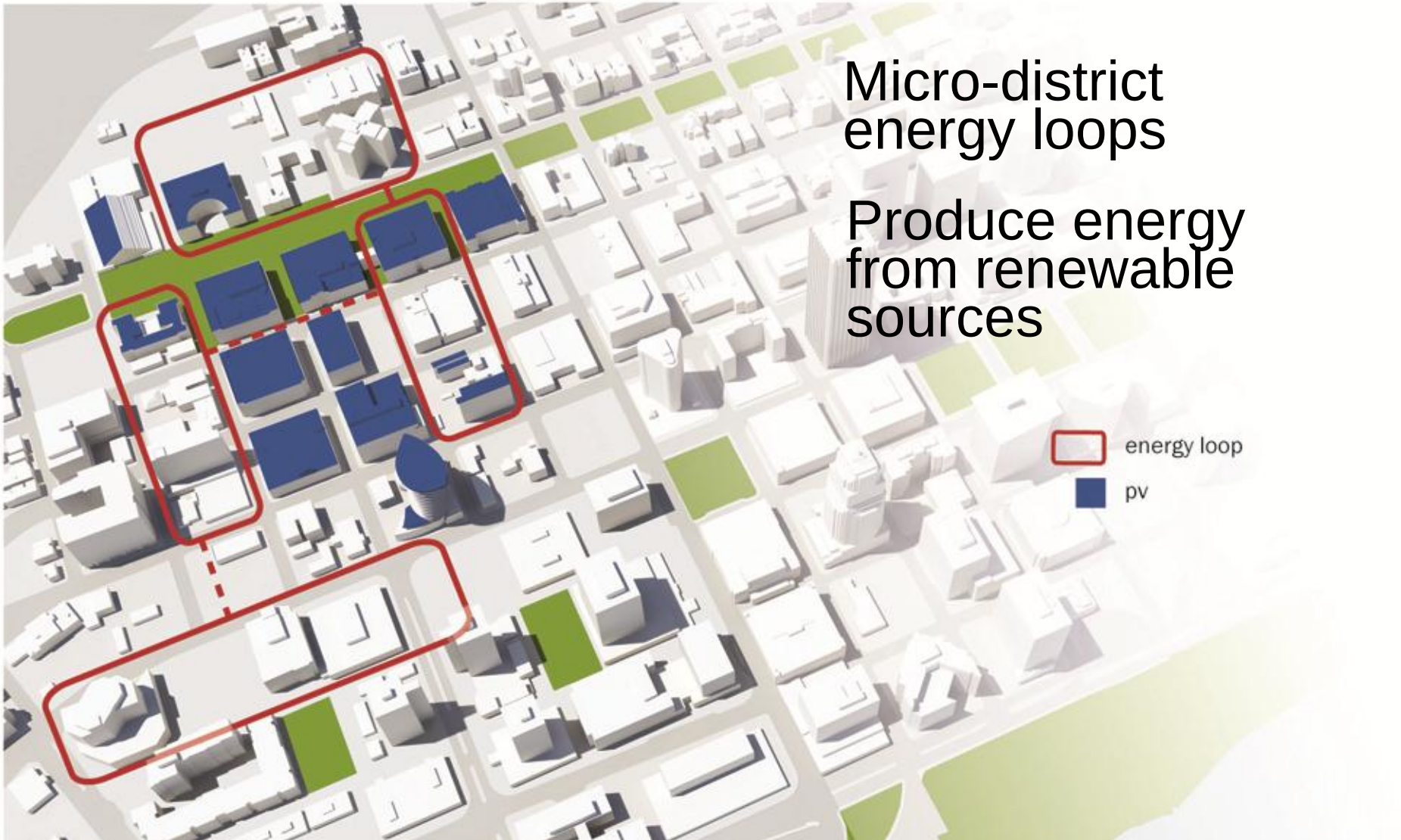


baseline conditions

ECODISTRICTS

district energy

ECODISTRICTS



Micro-district energy loops

Produce energy from renewable sources

water balance

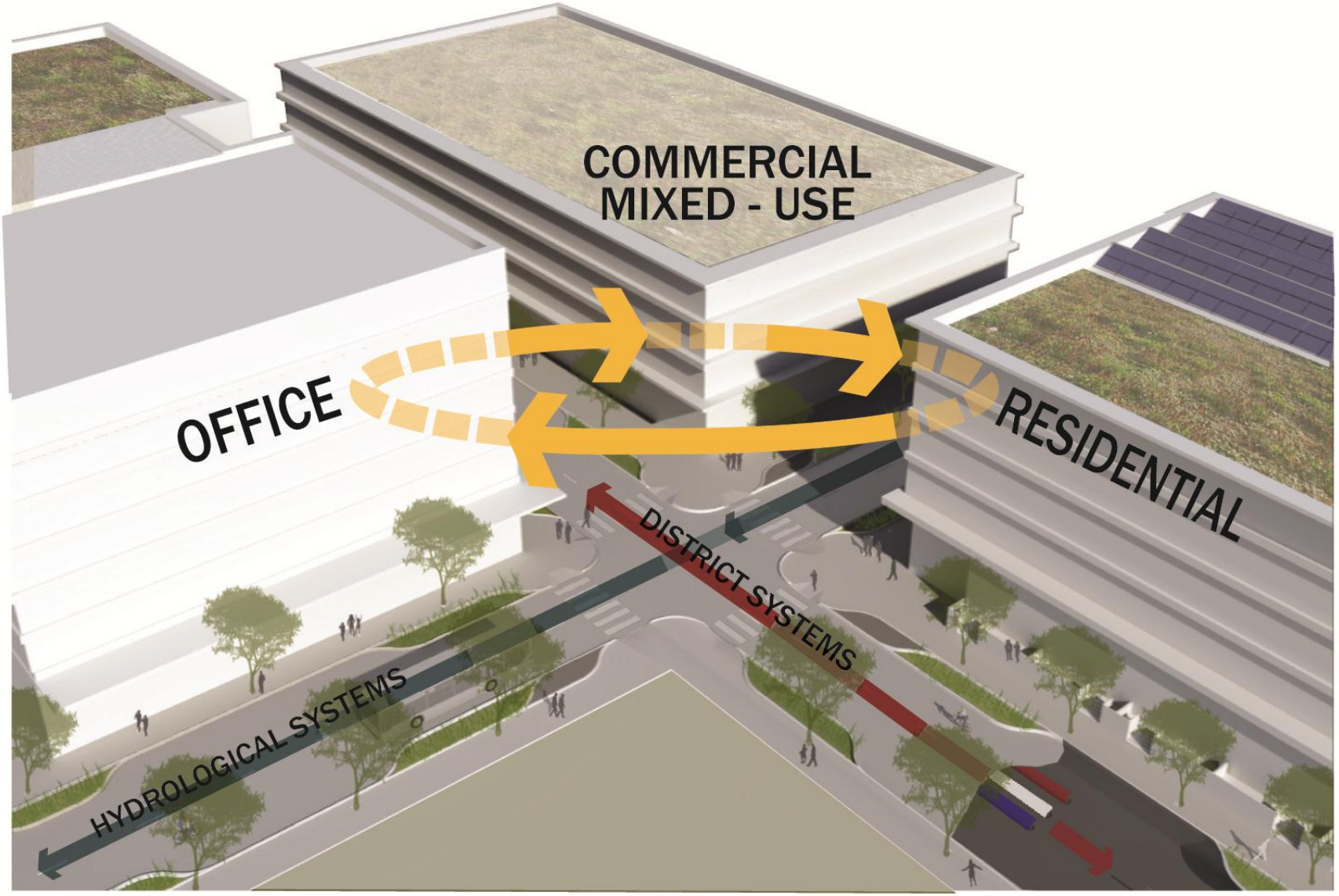
ECODISTRICTS

Manage stormwater where it falls

Capture, treat and reuse grey and blackwater

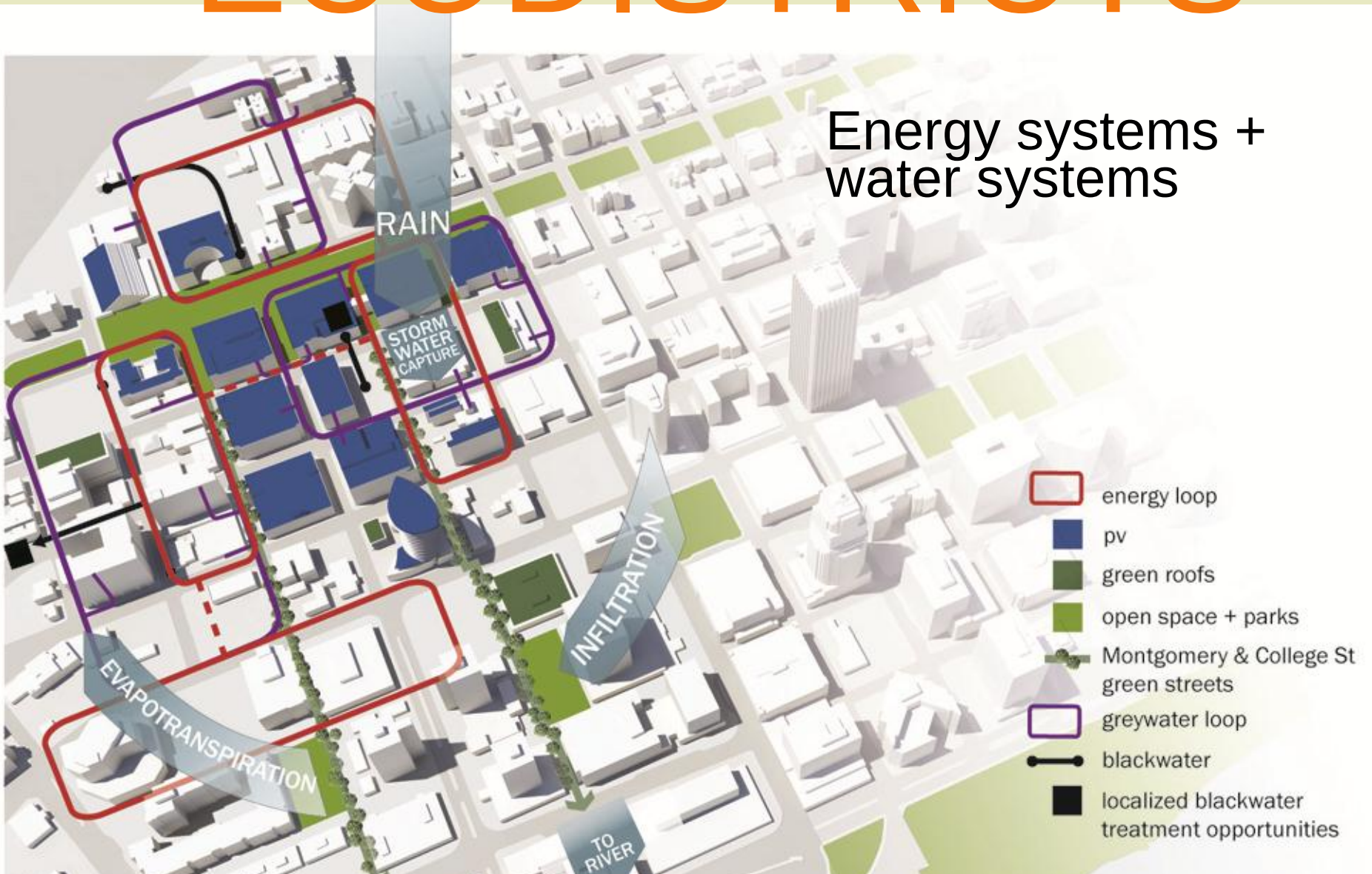
beneficial relationships

ECODISTRICTS



composite systems

ECODISTRICTS



composite systems

ECODISTRICTS

ECODISTRICTS

Opportunities

- District efficiencies of scale (business case, energy/resource consumption)
- Public/private partnership model
- Economic development opportunities
- Getting & staying ahead of regulation
- “Crawl, walk, run”

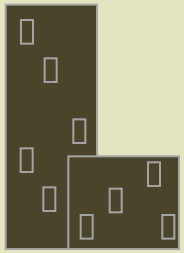
Challenges

- Multiple ownership
- Existing infrastructure
- Lack of assessment tools, policy support & finance mechanisms

Energy Retrofits

Residential (Clean Energy Works)

- Appliances
- Building envelope
- HVAC
- Energy monitoring



Commercial (Developing Model)

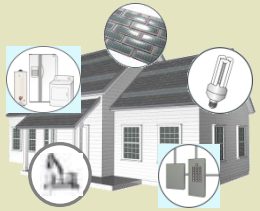
- HVAC
- Lighting & controls
- Sub-metering and sensors
- Energy monitoring dashboards
- Enhanced portfolio management.

Benefits

- Grouped audits & implementation
- Bulk purchasing
- Testing/commercialization opportunities
- Reduced cost of capital
- Establishment of standards for grid interoperability
- Increased community engagement

Lower utility bills & operating costs

Increased awareness & new technology availability



Revitalized landscape & building performance

Energy Retrofits

Permitting

Coordination

Incentives

Partners

Design

Technology

Expertise

Capital

Workforce

Property owners

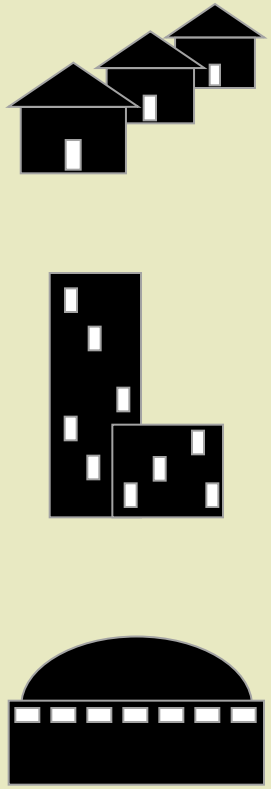
1. Perform audits
- Executed in batches

2. Define desired measures
- Establish goals

3. Source up front capital
- Bundle loans across segments

4. Install solutions
- Bulk purchasing; testing new products

5. Capital and information flow



Cluster Growth: Clean Energy

Cluster Growth: High Performance Green Building

Jobs and Job Training: skill development in high tech, design, engineering, and high performance construction

- Creating a **well trained workforce** with first-hand experience in innovative prototype building

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Business Growth: clean tech and sustainable industries

- **Showcase products** and services to gain access to markets outside Oregon
- Determine best fit technologies and innovations for the Center with **valuable R&D** opportunities

Cluster Growth: High Performance Green Building

Research Agenda: world class universities, faculty and students

- Help design, research and monitor the efficiency of the building's mechanical systems with private partners
- Find hands-on experience for students with the technologies and real-world case studies onsite

Brand Portland: the leader in sustainability

- Symbolic & tangible center of sustainable leadership
- A destination for thousands of visitors to learn about sustainability

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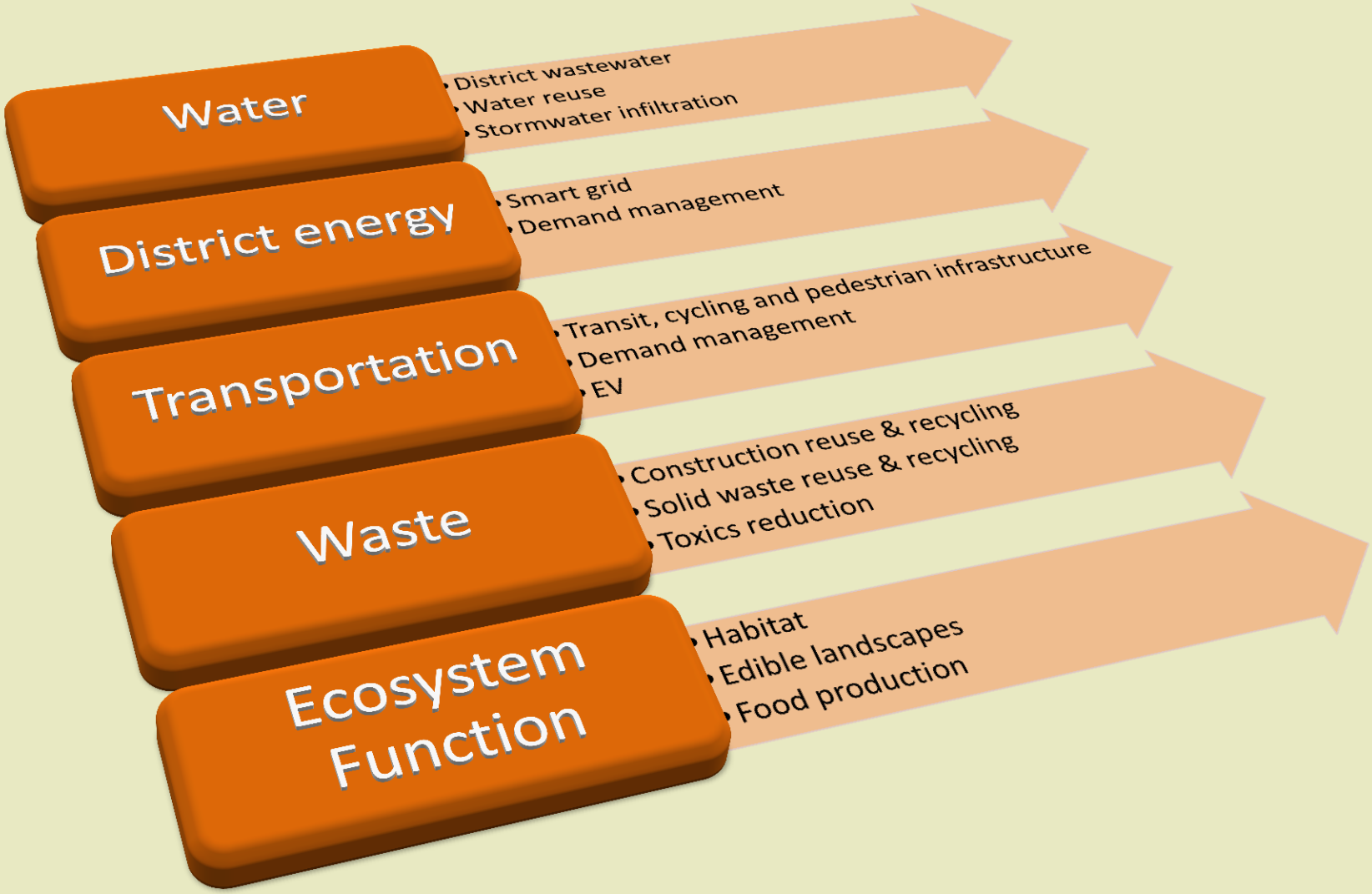
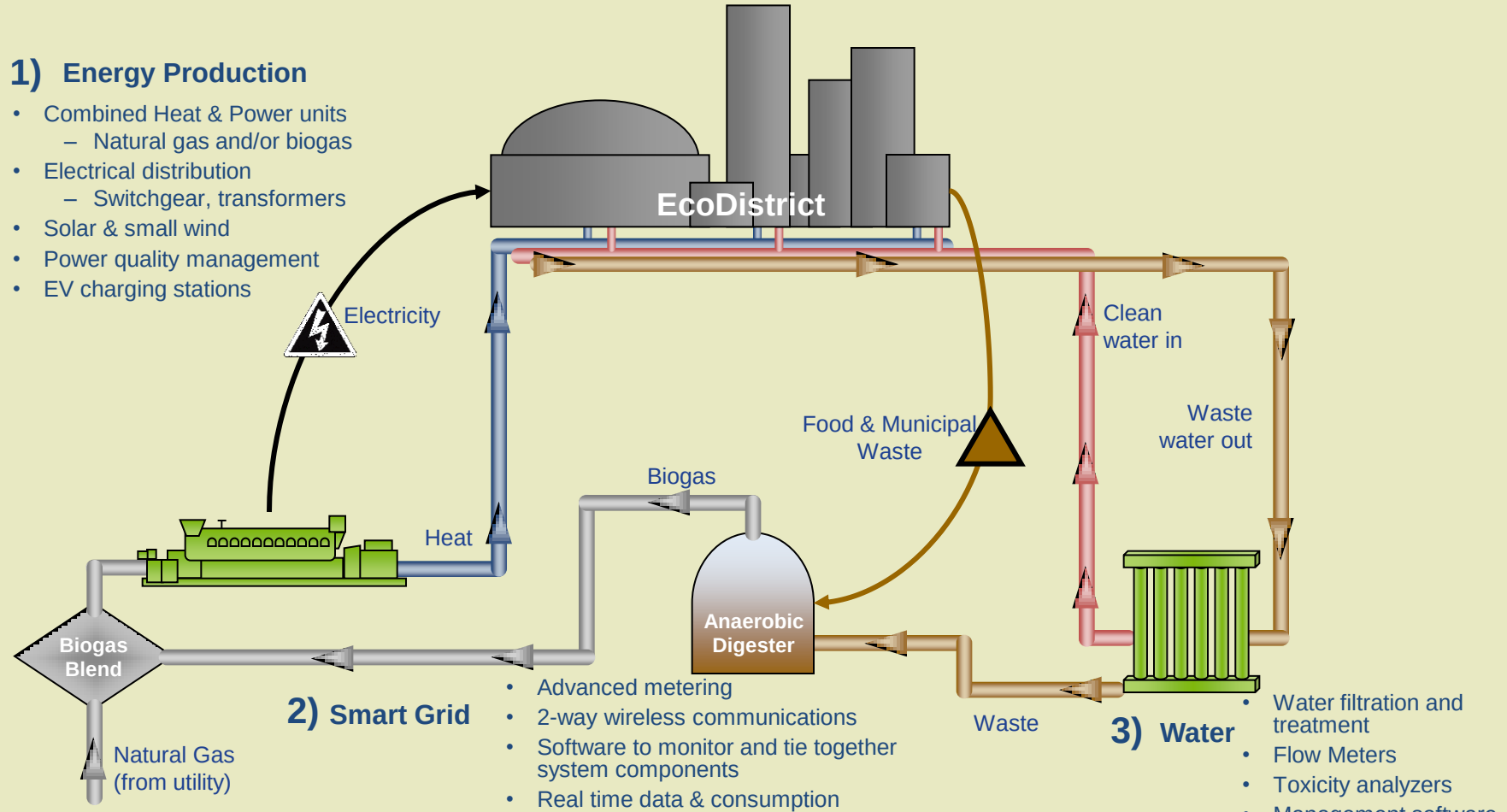
Cluster Growth: Smart, Shared Infrastructure



Cluster Growth: Smart, Shared Infrastructure



Partnerships

- Engagement on a strategic level, not to make a sale
- Technical expertise
- Strong interest in research and commercializing new products and technologies for the built environment
- Ability to leverage our efforts to support your needs
- Willingness to collaborate with other partners
- Resources that you are willing to contribute

Lew Bowers, Director, Central City Division

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