

Behavior, Energy and Climate Change Conference (BECC) | November 2012

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Training for Transition: International Trainer for Climate Change

the race is really the

designing community capacity in
ecodistricts

prize.

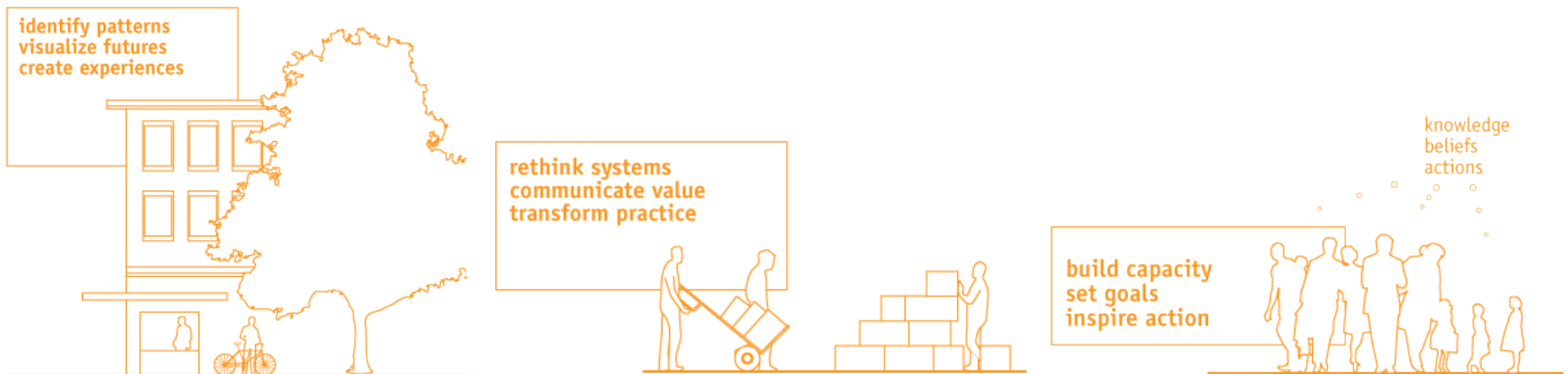
sustainability

is a cultural phenomenon.

We can see it in

PLACES....
PROCESSES...
& PEOPLE...

are key to creating a
culture of sustainability



Technological information

**creates new
opportunities for
sustainable
communities.**

CREATING A LIVING CITY

A CASE STUDY IN ECO-DISTRICT PLANNING





The Post-Industrial City :: Larimer

2011 population
2,000



How does a post-industrial neighborhood
transform itself into a living community?

The Living City :: Larimer

2035 population
6,500



stabilize
CONSOLIDATE RESOURCES
 AGGREGATE OPEN SPACE
 DENSIFY DEVELOPMENT
 PRESERVE EQUITY

grow
ECONOMIC SECURITY
 TRANSIT ORIENTED DEVELOPMENT
 INVITE REGION WITH SPORTS ANCHOR
 ENHANCE CONNECTIVITY

diversify
INCREASE RESILIENCY
 VARY HOUSING TYPES
 INCREASE COMMERCIAL
 OPPORTUNITIES
 IMPROVE ECOLOGICAL INTEGRITY

sustain
MAINTAIN VIBRANCY
 CONTINUE INFILL DEVELOPMENT
 IMPLEMENT RENEWABLE ENERGY
 SOURCES
 INNOVATE SUSTAINABLE LIVING

The Post-Industrial City :: Larimer

1940 population
13,350

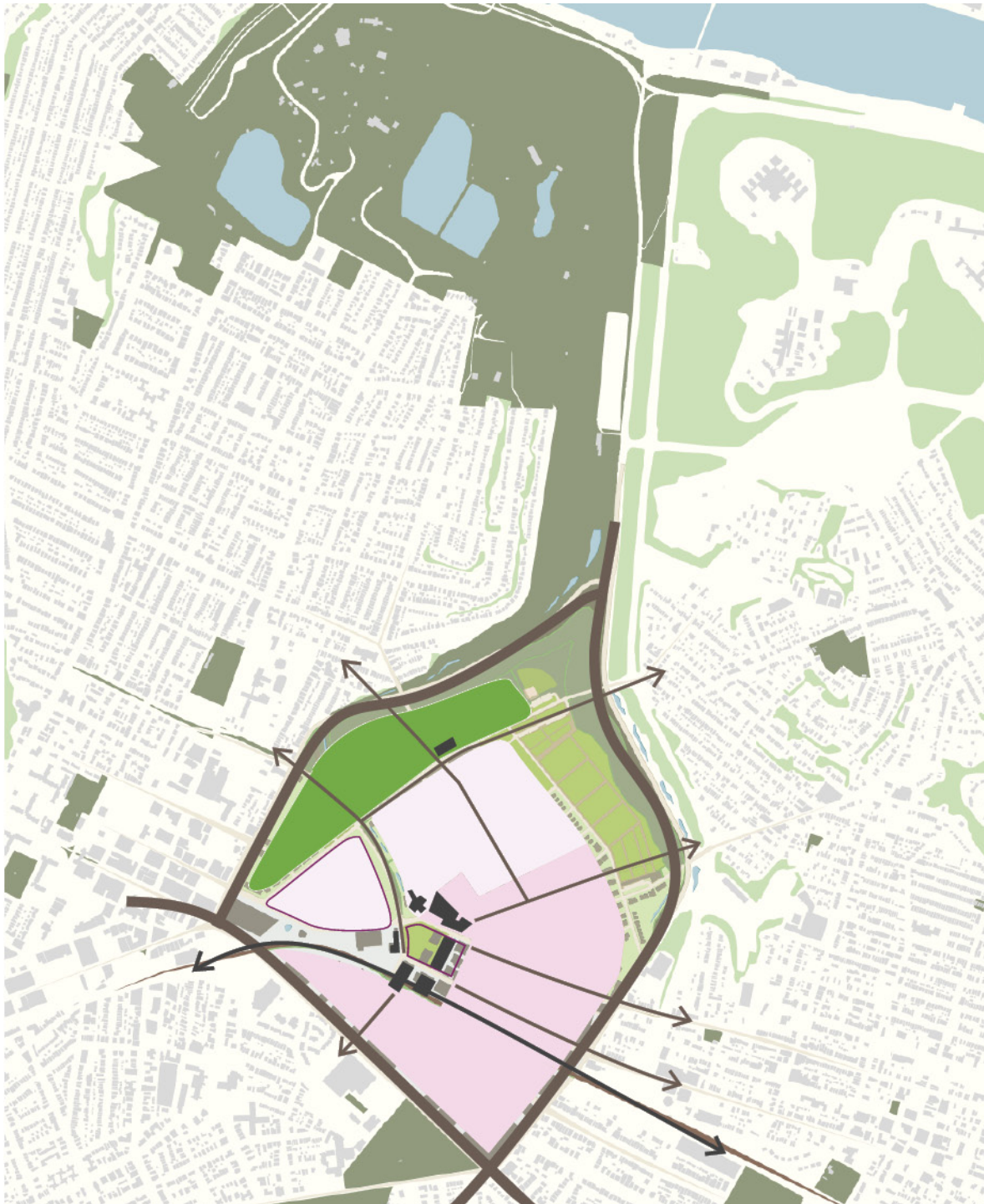


A living city plans around environmental systems
and the social infrastructure that supports it.



source: Shrinking Cities: International Research, ed. Phillip Oswalt, 2005

First,
change the way we
think about design



Urban design goals typically include the creation of diverse, mixed use, walkable communities, the identification of economic drivers, and improved connectivity.

-  **open space & recreation**
economic driver
-  **mixed use residential**
-  **mixed use commercial**
-  **connectivity / TOD**
economic driver

ECO-DISTRICTS

Urban design goals typically include the creation of diverse, mixed use, walkable communities, the identification of economic drivers, and improved connectivity.

Ecodistricts extend these ideas to environmental performance. Ecodistrict planning quantifies system performance, assigns value to ecological processes, and promotes social equity and scalar economies.



ENERGY

DIST. GENERATION &
ENERGY COOPS

economic driver



WATER

WATER & SEWER
DISTRICTS

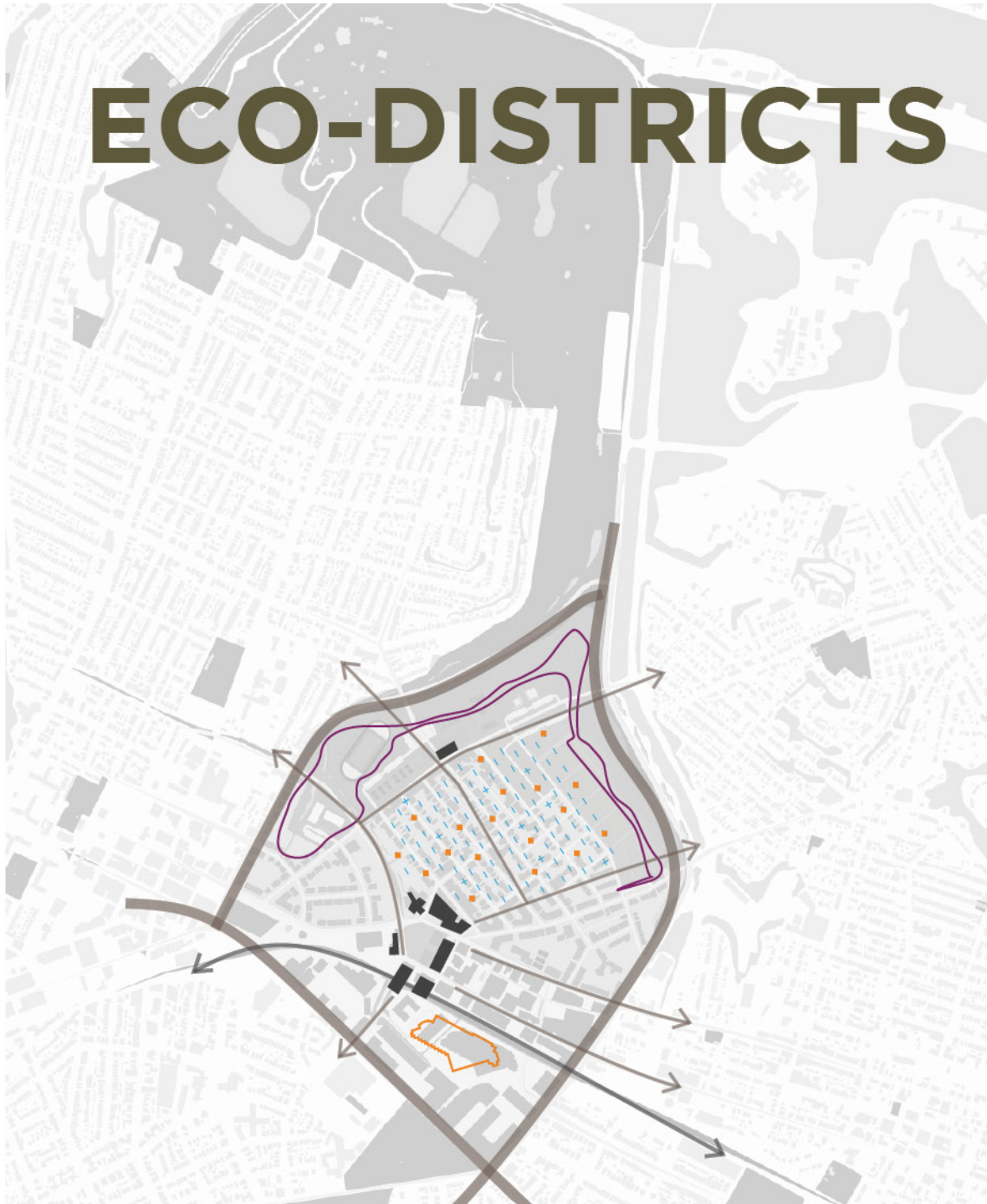
economic driver



FOOD

URBAN AGRICULTURE

economic driver

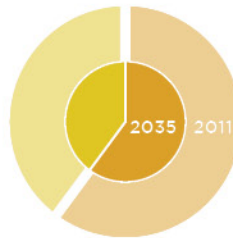


...how can energy independence make a community more resilient?

RESIDENTIAL
40
 acres pv

2011
 55.9 kBTU/sf total energy use
 65% of total energy is electric
 36.3 kBTU/sf electrical energy use

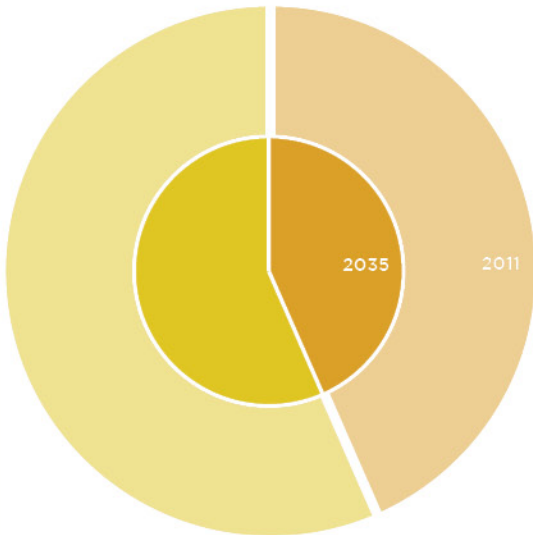
2035 (50% better efficiency)
 18.2 kBTU/sf electrical energy



COMMERCIAL
63
 acres pv

2011
 131 kBTU/sf total energy use
 44% of total energy is electric
 57.64 kBTU/sf electrical energy use

2035 (50% better efficiency)
 30.2 kBTU/sf electrical energy use



As design alternatives were developed, the team calculated the total energy use required for each area or building type to anticipate the energy technologies needed to reach net zero energy. A layered system of technologies were developed and “spark” projects were identified.

low income households spend **1/3** of their budgets on energy

ENERGY strategies

| LEVERAGE PUBLIC INFRASTRUCTURE IMPROVEMENTS

Leverage large scale public investment with energy infrastructure such as geothermal under fields and solar infrastructure shading devices over parking or structures.

| AGGREGATE RESIDENTIAL SYSTEMS

Blocks of residential development (new or renovated) create opportunities for development based geothermal or renewable systems.

| ENCOURAGE GREEN COMMERCIAL DEVELOPMENTS

Commercial and institutional developments integrate building and site based energy technologies and renewable and use building rating systems for construction and renovation. Aggregate multiple sites for larger and more efficient systems.

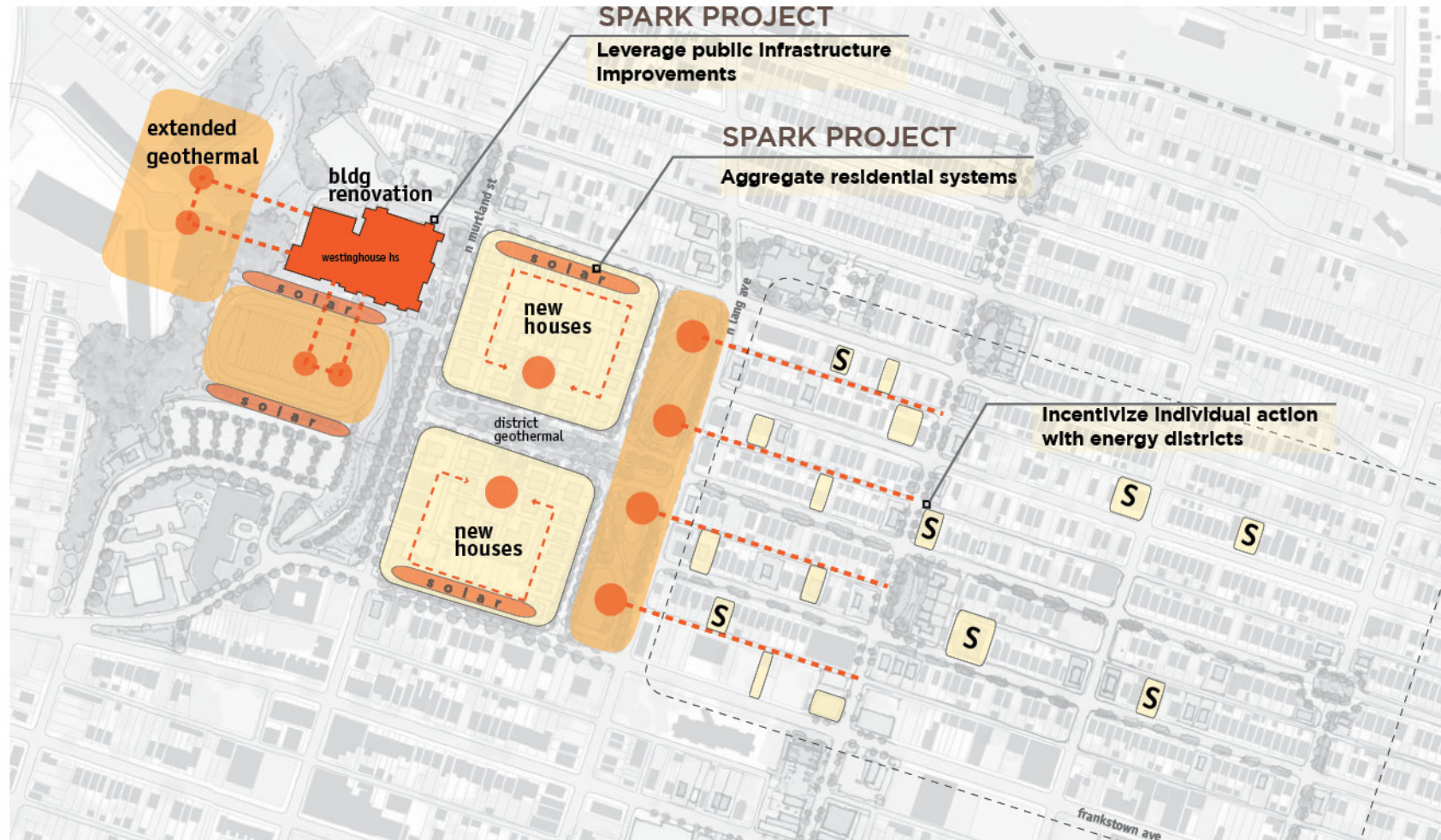
| INCENTIVIZE INDIVIDUAL ACTION WITH ENERGY DISTRICTS

Energy districts are created with infrastructure improvements and programs that incentivize individual action.



GOAL

net zero energy and equitable energy creation and use.



...how can food & waste be seen as part of the same cycle?

Nutrient cycles were calculated to understand what capacity the neighborhood has to deliver food to the community and how waste loops might be closed and lessen the burden on municipal systems.

Knowing the site capacity enabled the team to develop business models for economic development and community empowerment throughout the different stages of neighborhood transformation.

1.05
FAR

15
percent per LCC requirement



only **44 percent** of county residents have access to affordable whole food

NUTRIENTS strategies

| HARVEST FROM RESIDUAL & UNDER-UTILIZED SPACES

Look for under-utilized or under maintained spaces for opportunities to insert food growing plants and communities.

| OPTIMIZE FOR LOCALIZED ADMINISTRATION UNITS

The type and scale of urban agriculture is determined by the scale of the administrative unit. It may range in scale from an urban farm (aggregated properties with single administration), public green space (larger scale with public administration), vacant lots (smaller scale with individual administration) to edge condition or residual space (smaller scale with little or unidentified administration).

| ENCOURAGE GREEN COMMERCIAL DEVELOPMENTS

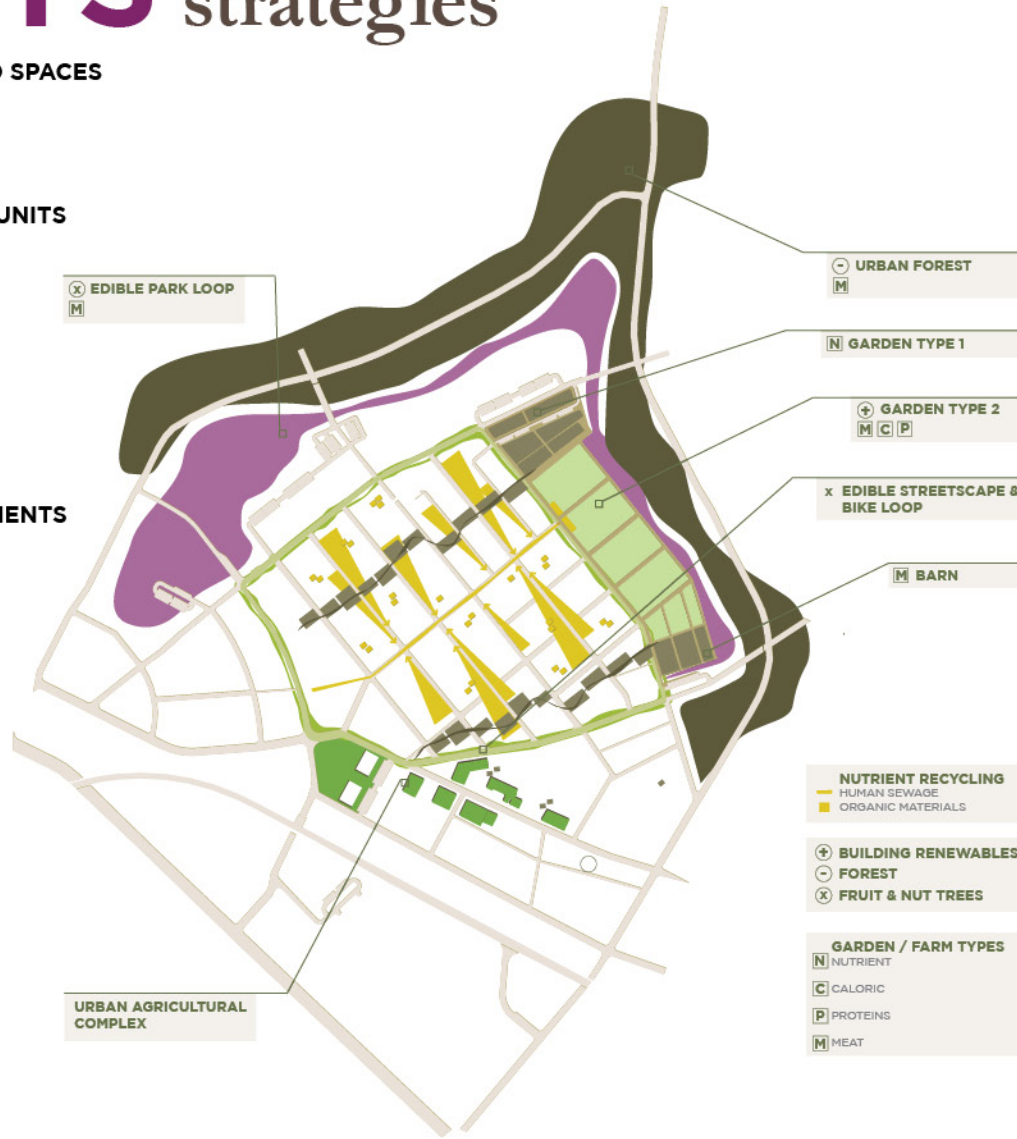
Commercial and institutional developments integrate building and site based energy technologies and renewable and use building rating systems for construction and renovation. Aggregate multiple sites for larger and more efficient systems.

| MATCH SOURCES & USES

Inventory and align sources and uses based on immediate neighborhood and local demand for fresh produce. Determine a partner for the produced goods whether it is a neighborhood market, local restaurant or grocer who can consistently support the supply.

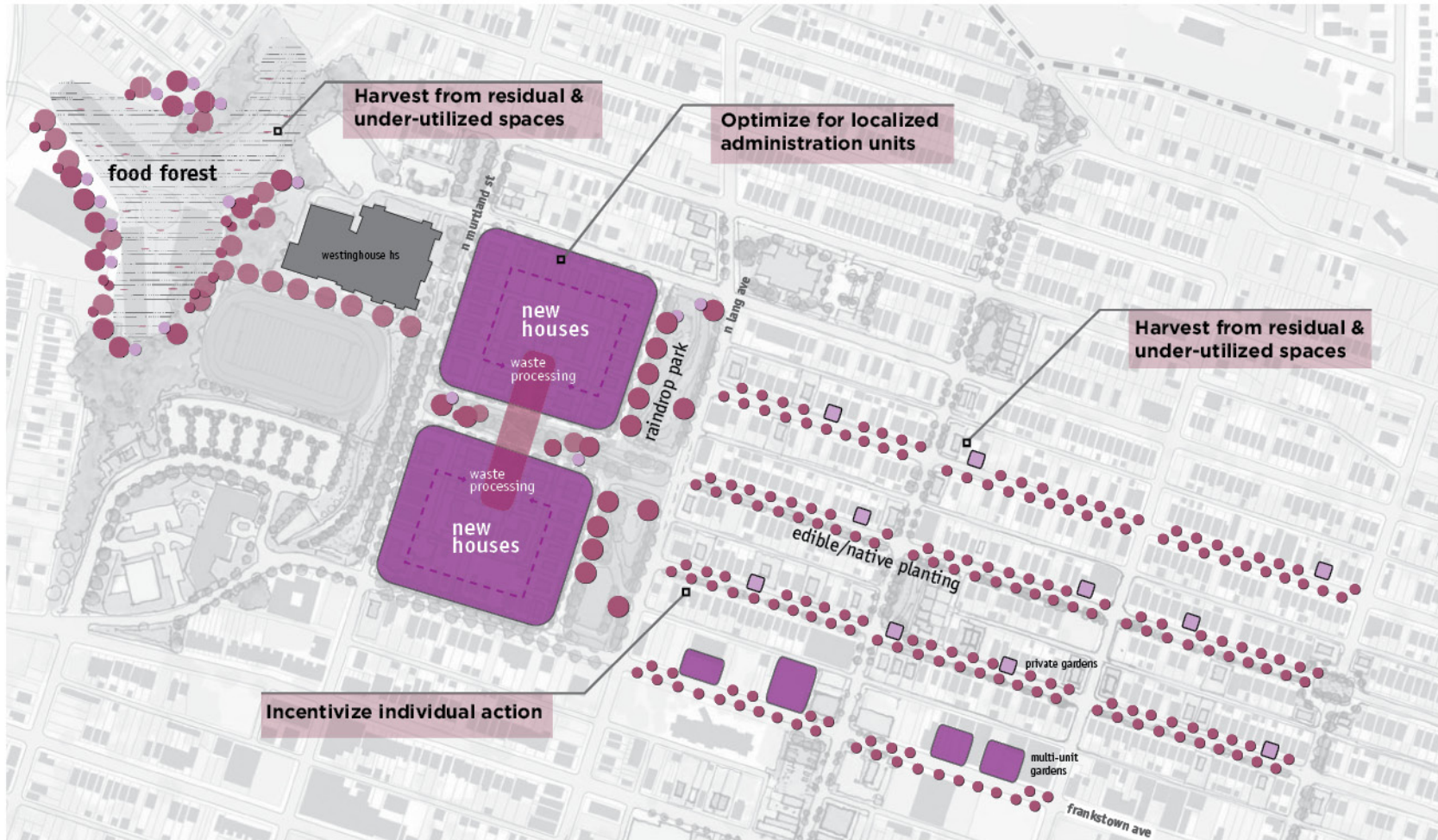
| INCENTIVIZE INDIVIDUAL ACTION

Large scale urban agriculture provides a base infrastructure to support individual efforts in proximity to the resources and knowledge of large scale efforts. Encourage administration of large scale agriculture to provide community education support services.



GOAL

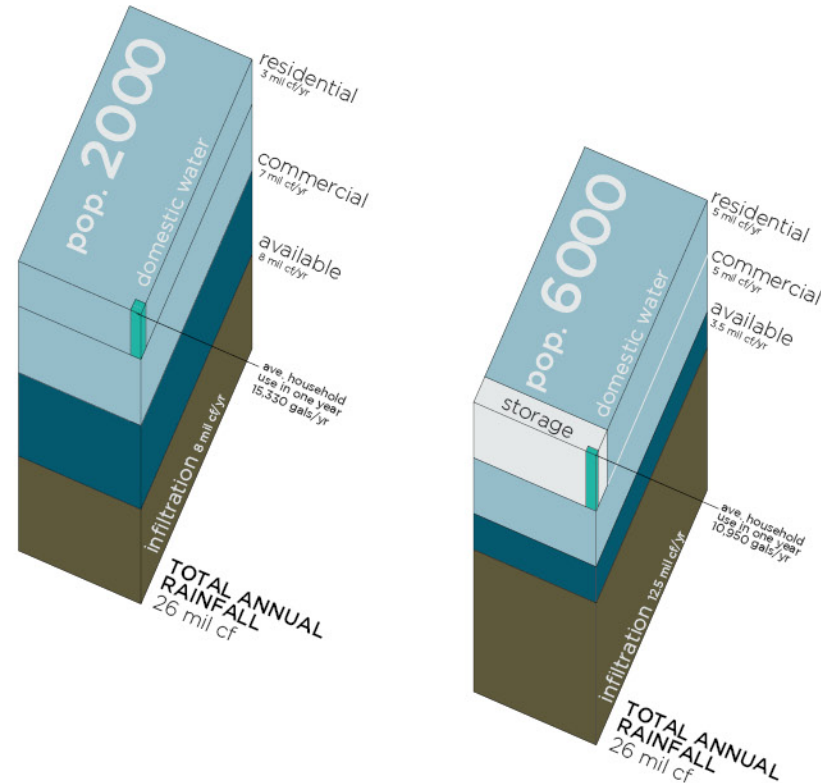
close the loops of food and waste with a high productive landscape.



...how can a community improve the region's water cycle?

As design alternatives were developed, the stormwater profile and capacity were estimated to help the community understand solutions that would provide real engineering benefit and create neighborhood amenities.

Tragically during this project, four people died in a flash flood downstream from these neighborhoods. A performance-based systems approach could have prevented this with designs that are both performative and beautiful.



rebuilding the city's sewers may cost as much as **50 billion** dollars

WATER strategies

| REESTABLISH NATURAL SYSTEMS

Target major investment in locations where the reestablishment of wetlands and recharge zones can lessen stormwater impact on public infrastructure.

| CONNECT SYSTEMS WITH PUBLIC INFRASTRUCTURE

Linear raindrop parks can be community amenities and working landscapes that infiltrate, clean and convey water. They can be connected to larger investments in natural systems infrastructure.

| USE WATER FOR STRONG PLACEMAKING

Commercial and institutional developments integrate building and site based energy technologies and renewable and use building rating systems for construction and renovation. Aggregate multiple sites for larger and more efficient systems.

| TARGET NET ZERO WATER FOR NEW DEVELOPMENTS

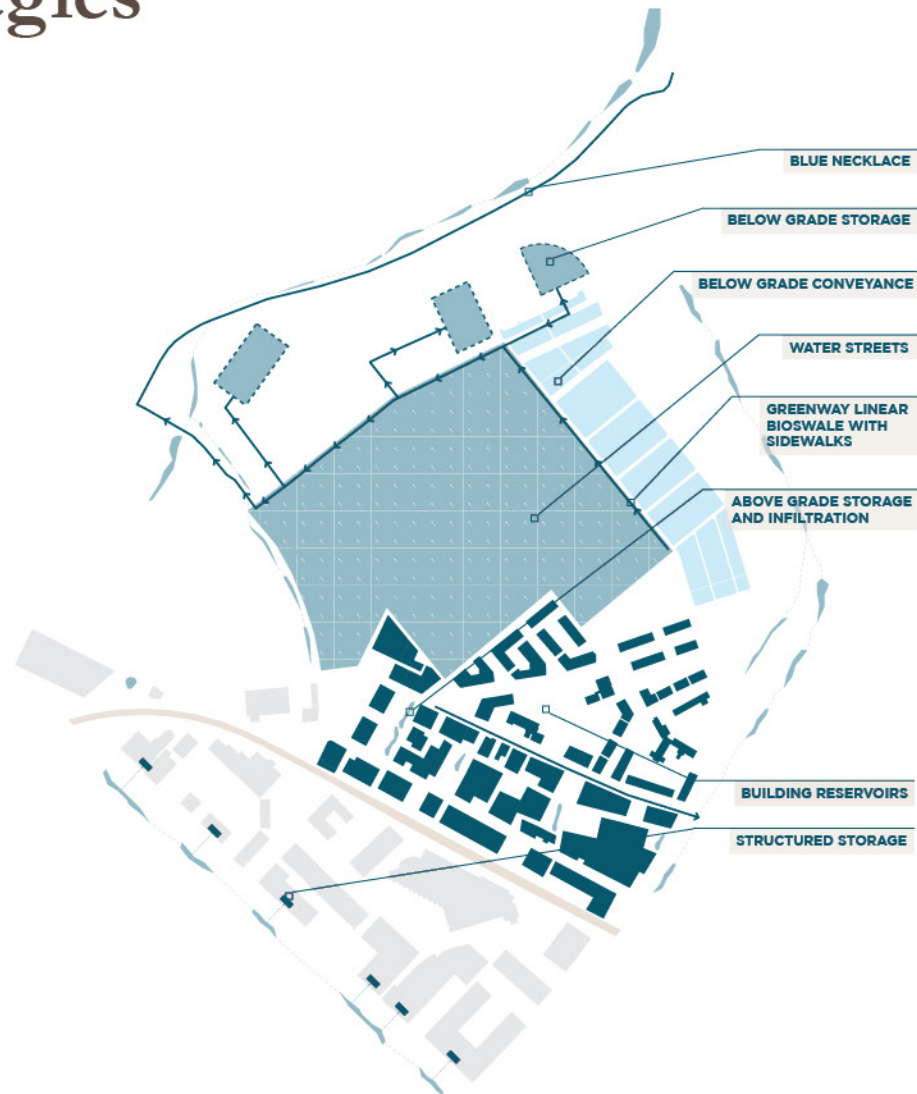
New commercial or multifamily residential sites can use localized collection and building systems that capture stormwater for on site reuse.

| MATCH SOURCES & USES

Inventory and align sources and uses based on water quality, quantity and availability. Shorten physical distances between source and use gravity to avoid energy penalty to move water. Aggregate sites for greater effectiveness.

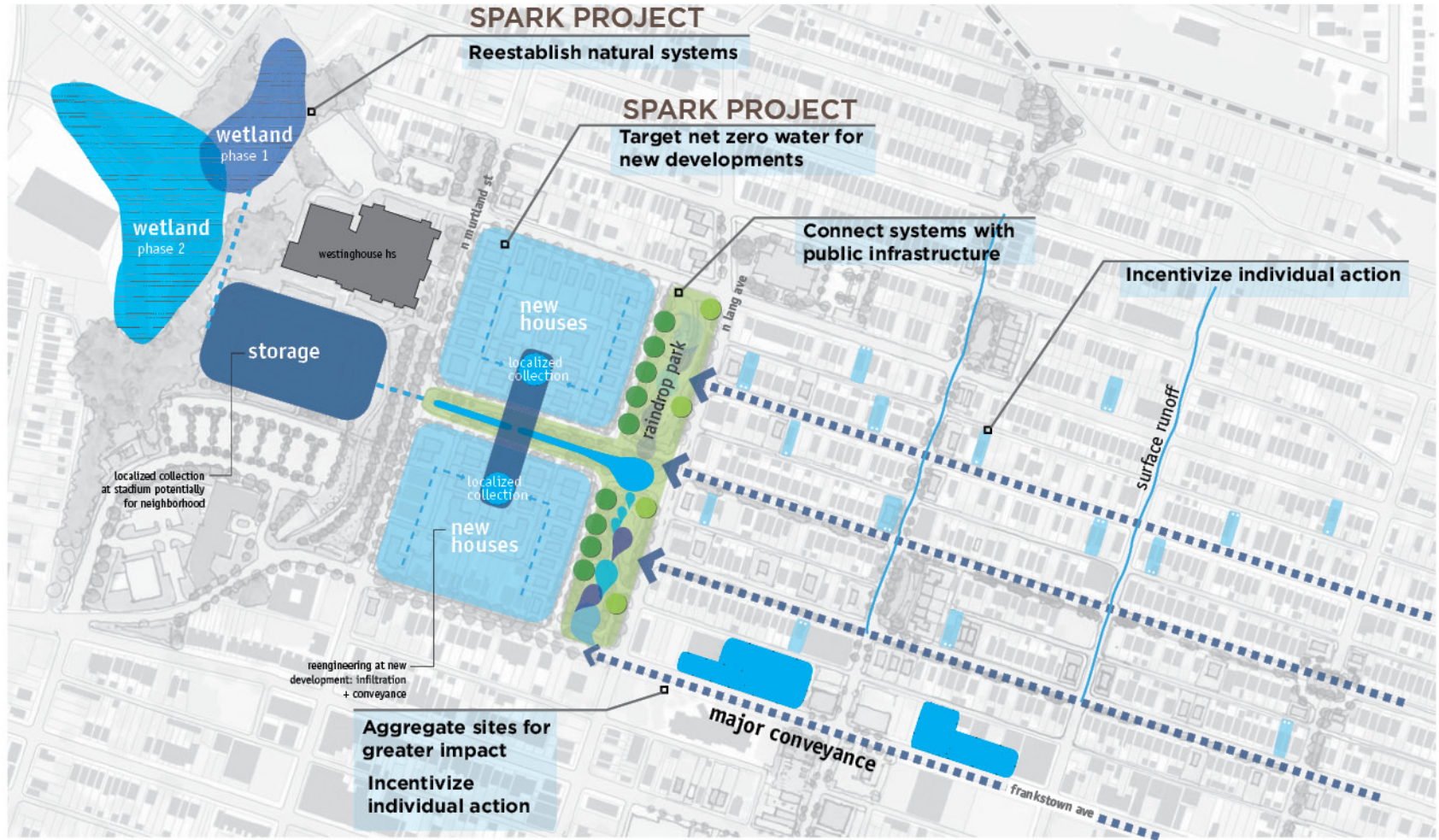
| INCENTIVIZE INDIVIDUAL ACTION

Watershed districts create supportive networks for financial, legislative, and informational support to encourage individual action.



GOAL

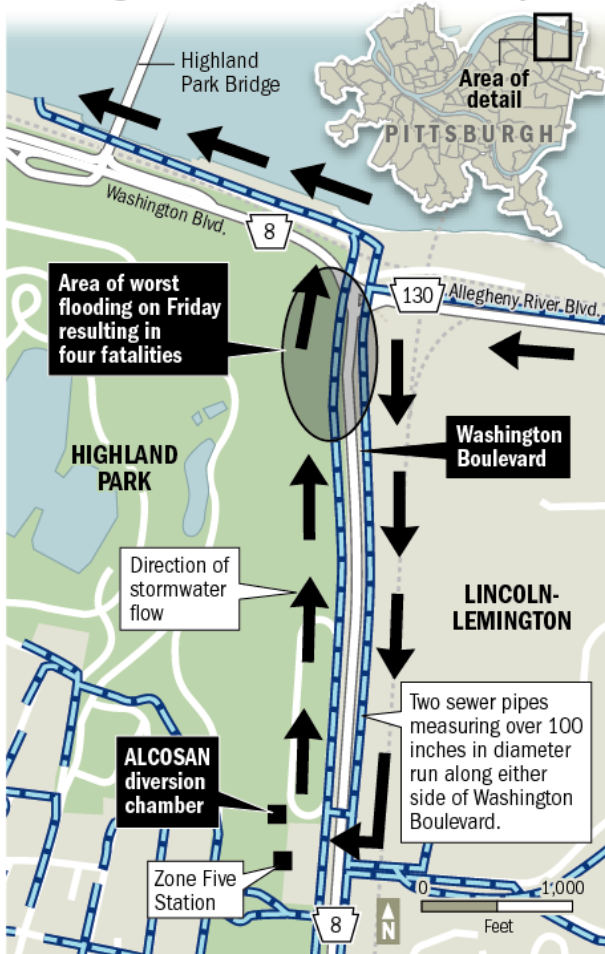
net zero water and improved ecological water flows.





We need a systems approach.
Ecodistricts are a way to begin that
conversation.

Washington Boulevard: stormwater system



Source: PWSA

Post-Gazette

Tuesday, August 23, 2011

Updated: 11:34 a.m.

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How did the flash floods happen? Authorities uncertain about approach to fixing problem

Sunday, August 21, 2011

By Sean D. Hamill and Diana Nelson Jones, Pittsburgh Post-Gazette

After four people drowned in a flash flood on a road on a weekday afternoon in the midst of a major America city, the question that lingers is obvious: Why did this happen?

"It's hard to believe those kind of events can still happen," said Tom Palmosina, co-director of the Pittsburgh Water and Sewer Authority.

How it happened is a difficult question in the case of the two women and two children who died Friday afternoon near the intersection of Washington and Allegheny River boulevards because a nearly identical flood occurred there just a month ago and the three governments responsible for the infrastructure had already begun talking about how to fix the problem.



Bob Donaldson/Post-Gazette

Mud-covered vehicles destroyed Friday in flooding on Washington Boulevard await their fate at the Pittsburgh Police Zone 5 Station.

Article Tools



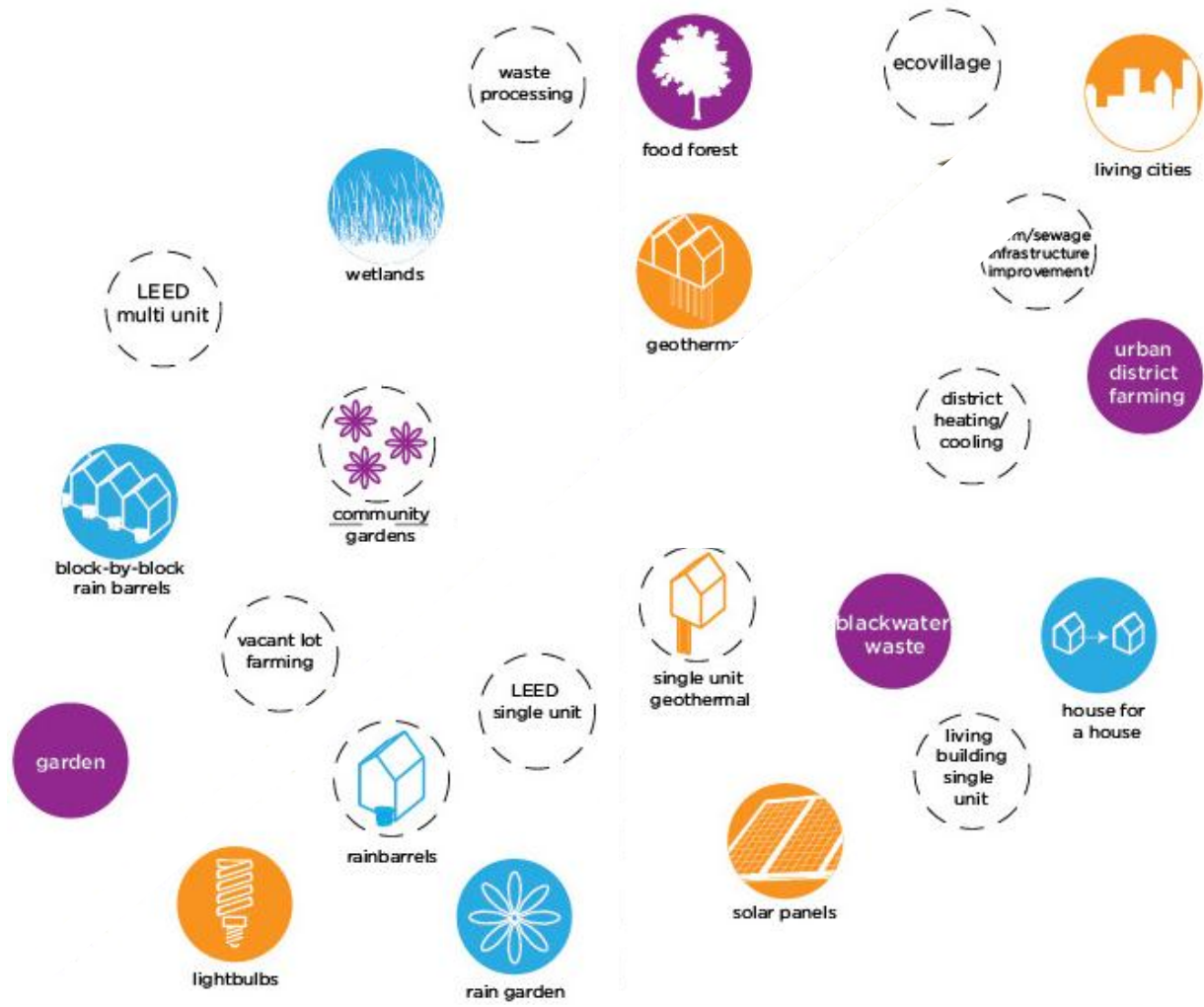
Images

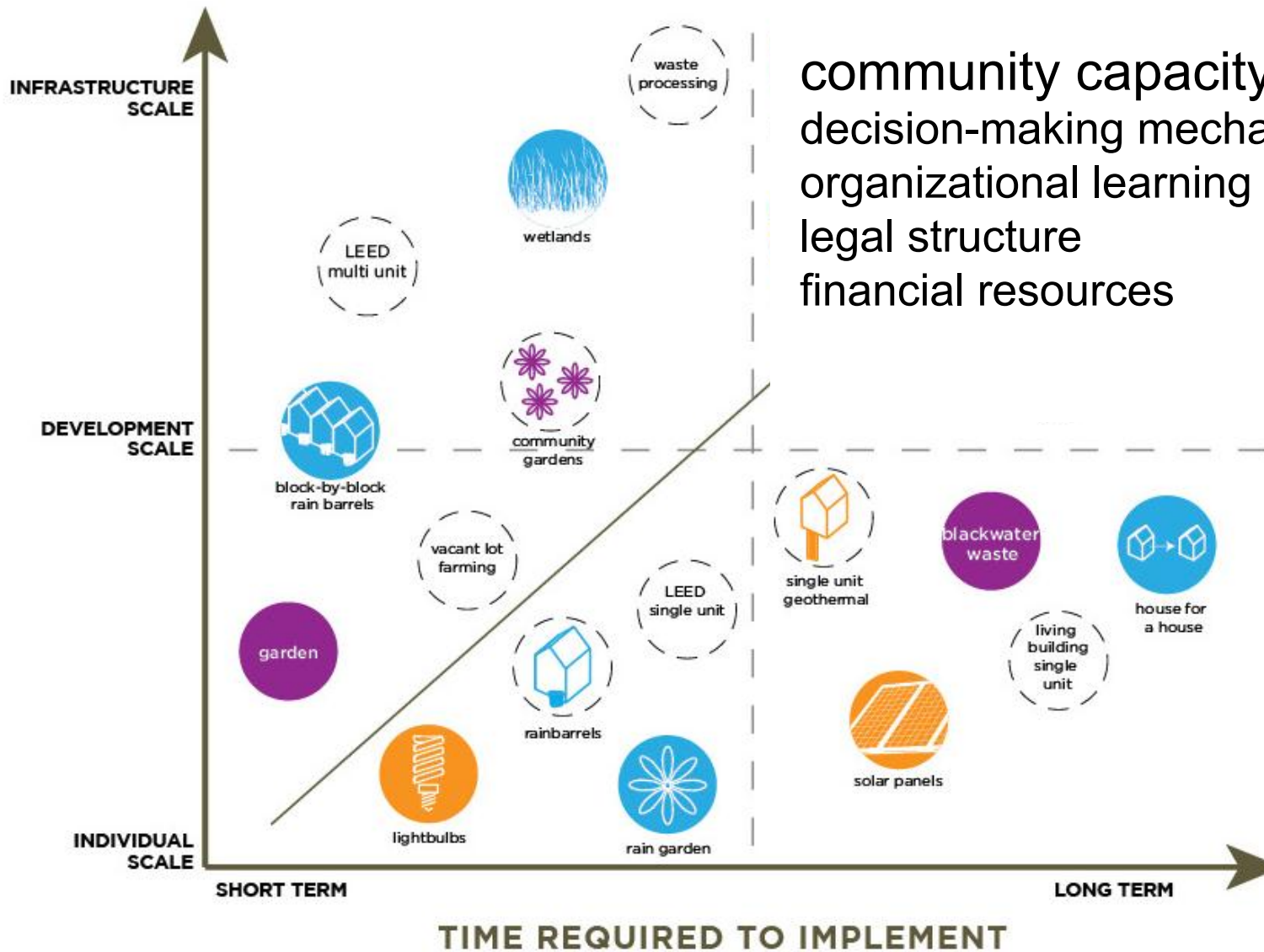
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We need a systems approach.
Ecodistricts are a way to begin that conversation.

First,
change the way we
think about design





community capacity
 decision-making mechanisms
 organizational learning
 legal structure
 financial resources

yields
engagement strategies

Measuring to Manage

Tribe Building

Kicking the Tires

Creating the Commons

community capacity

Metrics and monitoring for literacy
decision-making mechanisms
and cycles of improvement
organizational learning

legal structure

Cultivate authentic leadership to
strengthen decision making
financial resources

Place-based demonstrations to assist
organizational learning

Creating a legal structure to create
equity and financial resiliency

How can engagement
strategies actively
contribute to community
capacity?



Kingsley Association

An Anchor Organization

**To inspire and promote our community
growth as a physical anchor;
social, wellness, and service program
provider and thought leader**

engagement strategies

Measuring to Manage | Tribe Building | Kicking the Tires | Creating the Commons

Measuring to Manage

The role of metrics and monitoring for ongoing literacy and cycles of improvement.

This is a concurrent approach:

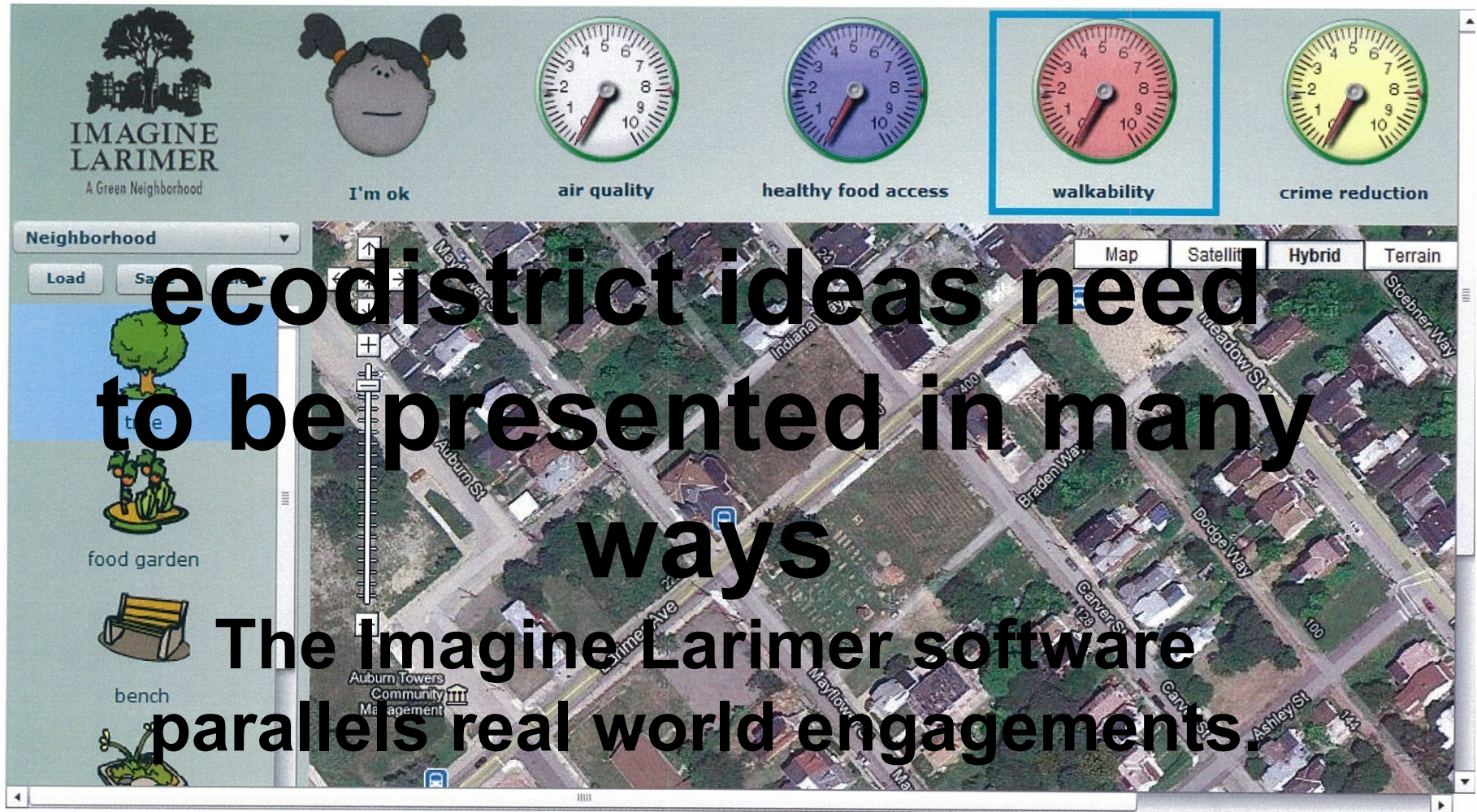
Brick and Mortar + Human Development

- Vacancy
- Flat Land
- Unemployment
- Concentrated Poverty
- Crime Indices
- Education
- Vocation
- Green IQ



Kingsley Association





Measuring to Manage

engagement strategies

Measuring to Manage | Tribe Building | Kicking the Tires | Creating the Commons

Tribe Building

The need to cultivate authentic leadership to strengthen decision making mechanisms

Kingsley's role is to provide strategic direction and resources to fulfill the community's vision

You need: a plan to revitalize a community + indigenous assets

Place & Environment: Long-range vision

Community & Organization: Road Map for future development

Human Needs: Necessary tools



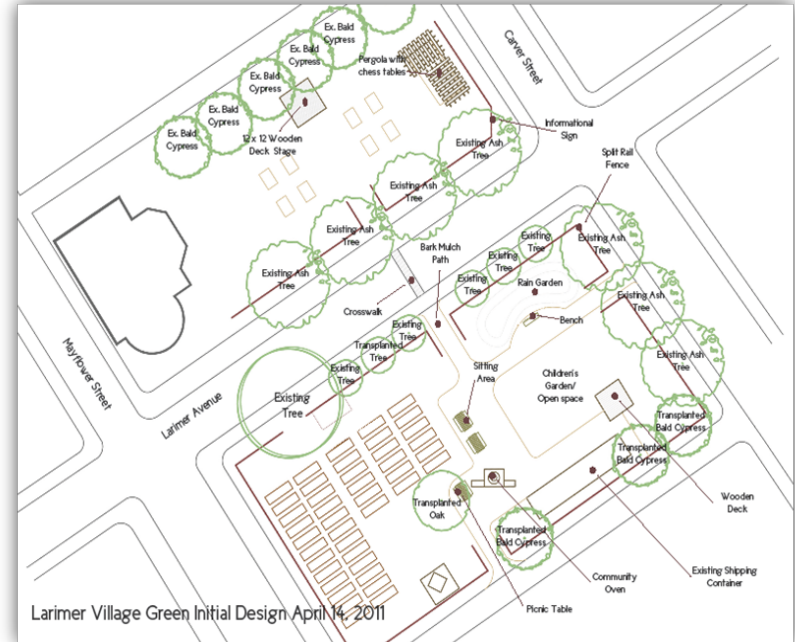
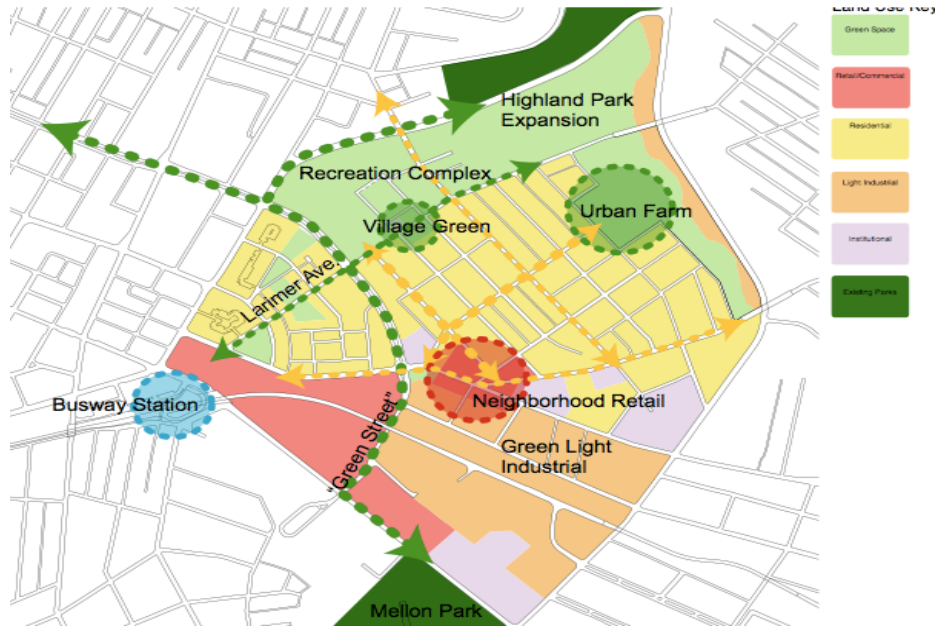
leveraging sweat equity

The Larimer Green Team has contributed over \$700K in volunteer hours over four years

Tribe Building

engagement strategies

Measuring to Manage | Tribe Building | Kicking the Tires | Creating the Commons



Kicking the Tires

Leveraging place-based demonstrations to strengthen organizational development and community empowerment.

engagement strategies

Measuring to Manage | Tribe Building | Kicking the Tires | Creating the Commons



success breeds success
The Larimer Living Waters project has
attracted \$60K + has over \$900K in grant
applications.

Kicking the Tires

engagement strategies

Measuring to Manage | Tribe Building | Kicking the Tires | Creating the Commons

Creating the Commons

Developing a legal structure to create equity and financial resiliency with resources held in common.



The LCG is working on land banking, land trusts, co-community ownership, coops, and entrepreneurial and small business corridors. The community is focusing on a repopulated density of 6,000 people from 13,000. Additionally, the LCG is implementing a mix income and sustainable community design principle commons:

- Landscape Coop
- BPI Energy Auditors
- Industrial Mechanics
- Retrofit Builders
- Gardeners/Farmers



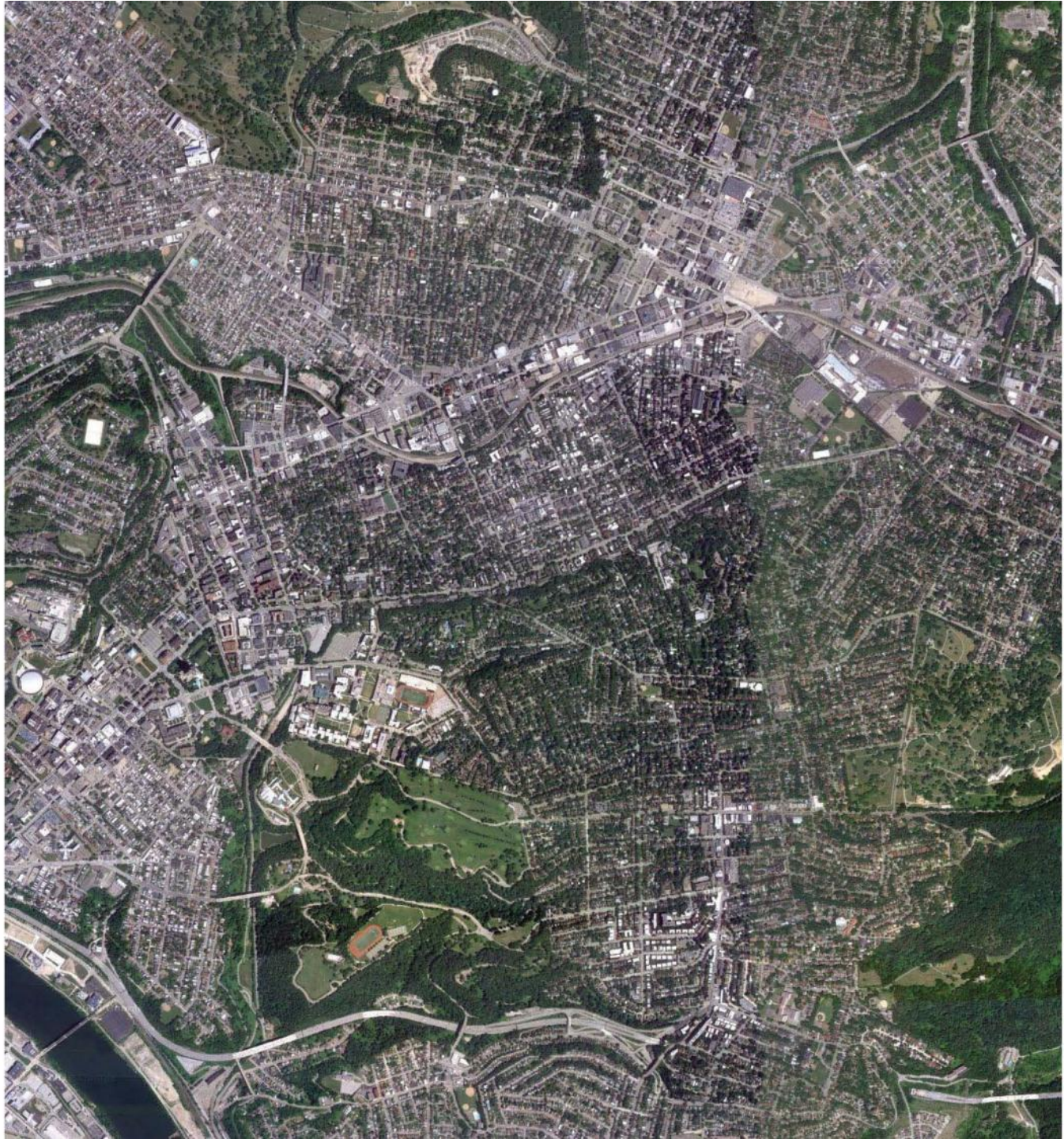
new relationships yield new opportunities

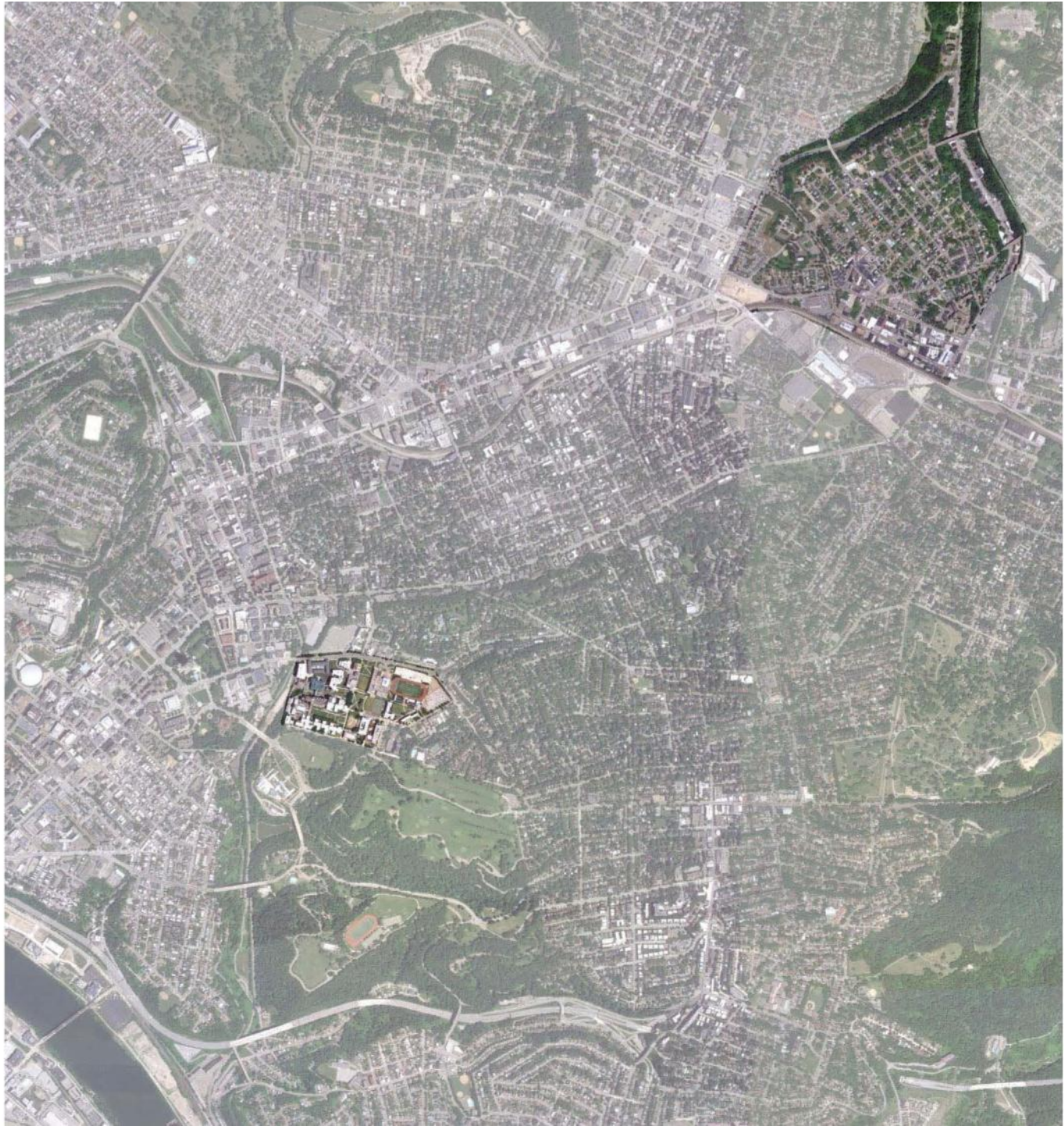
Macro coops for solar panel farms, geothermal grids and aquaponics can help offset fixed income challenges.

The background image is an architectural rendering of a sustainable urban development. It features several buildings, some with solar panels on their roofs. Key features are labeled with lines pointing to them: 'NATURAL SHADING' (a tree), 'BIKE PATH' (a path), 'URBAN FARM' (a garden area), 'SOLAR PANELS' (on a building roof), 'COHOUSING UNITS' (a building), 'WATER FILTRATION LANDSCAPE' (a garden area), 'RECYCLING STATION' (a building), 'COMMUNITY CENTER' (a building), 'INDUSTRIAL HOUSE' (a building), and 'WATER TREATMENT' (a building). The overall scene is a mix of modern architecture and green infrastructure.

Creating the Commons

In making resilient
communities
the race is really the
prize.





engagement strategies

Measuring to Manage | Tribe Building | Kicking the Tires | Creating the Commons

Measuring to manage – the role of metrics and monitoring for ongoing literacy and cycles of improvement

Tribe building – the need to cultivate authentic leadership to strengthen decision making mechanisms (FB-thinking about the LCG...is there a way to distill the experience?)

Kicking the tires – leveraging the power of place-based demonstration as an influential method for organizational learning (FB-completed...EECO house, gardens. In the works....Betsy Damon, John Folan)

Creating the commons – creating a legal structure to create equity and create financial resiliency with resources held in common (FB-not sure what the latest is on this)

engagement strategies

Measuring to Manage | Tribe Building | Kicking the Tires | Creating the Commons

Measuring to manage

The role of metrics and monitoring for ongoing literacy and cycles of improvement

Tribe building

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