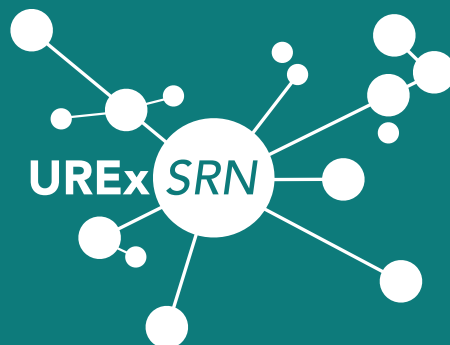




# Resilience, Sustainability, and Equity: Syracuse 2080

WORKSHOP REPORT | MAY 31, 2019

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Urban Resilience to  
Extremes Sustainability  
Research Network

[www.URExSRN.net](http://www.URExSRN.net)

# Workshop Summary

Cities need to build resilience in the face of climate risks that are shaping a new global reality. In Syracuse NY, a major research initiative joined with scientists from Syracuse University to create positive, resilient, and sustainable visions of the future of the city and the Central New York region. This initiative, the Urban Resilience to Extremes Sustainability Research Network (UREx SRN), is an international effort, funded by the National Science Foundation, that brings together researchers and practitioners from cities in the United States and Latin America to support urban planning and development and promote resilience to extreme climate events, such as urban floods, extreme heat, and droughts.

Scenarios are coherent visions about the future of a place or a situation. They allow us to think creatively about ways to address challenges facing cities in the long-term, and to question the limits of what is normally considered possible, desirable, or inevitable. With this

in mind, in May 2019 we held a workshop in Syracuse to develop future community visions of sustainability and resilience to climate change and extreme weather events. Some UREx SRN workshops focus on scenarios at the regional scale, and discussion of Central New York challenges as well as those specific to Syracuse were discussed.

The Syracuse workshop brought together 24 practitioners, administrators, decision makers, civic and community organization leaders, designers, researchers, and students from different institutions at the Center of Excellence in downtown Syracuse. Participants worked in small groups to jointly develop five visions for the future of Syracuse and Central New York in 2080 (see box). Some visions explored adaptation options, and some visions were meant to inspire transformative change. Through various activities, the participants worked to define goals, strategies, implementation timelines, maps, and narratives.

The five visions that were co-produced during the Syracuse workshop were:

- “Equitable Syracuse”, to ensure basic needs are met for all, and to preserve the character of the city and its neighborhoods.
- “Green & Wet Syracuse”, covering preservation of the environment, water and flood infrastructure, agriculture, and access to clean water and food.
- “Healthy Syracuse”, addressing local threats to well-being and promoting thriving lifestyles.
- “Innovative Syracuse”, to generate new avenues to prosperity with support for all residents.
- “Smart & Connected Syracuse”, to connect and move people, energy, and information in the most efficient ways possible.

## About the Urban Resilience to Extremes Sustainability Research Network (UREx SRN)

The goal of the UREx SRN project is to improve the resilience of urban social, ecological and technological systems in the face of the growing challenges that climate change poses to cities. The UREx SRN network includes ten cities affected by floods, heat waves and/or droughts. The network has a wide range of researchers from universities in the North and South, as well as municipal practitioners, members of the civil society, and residents.

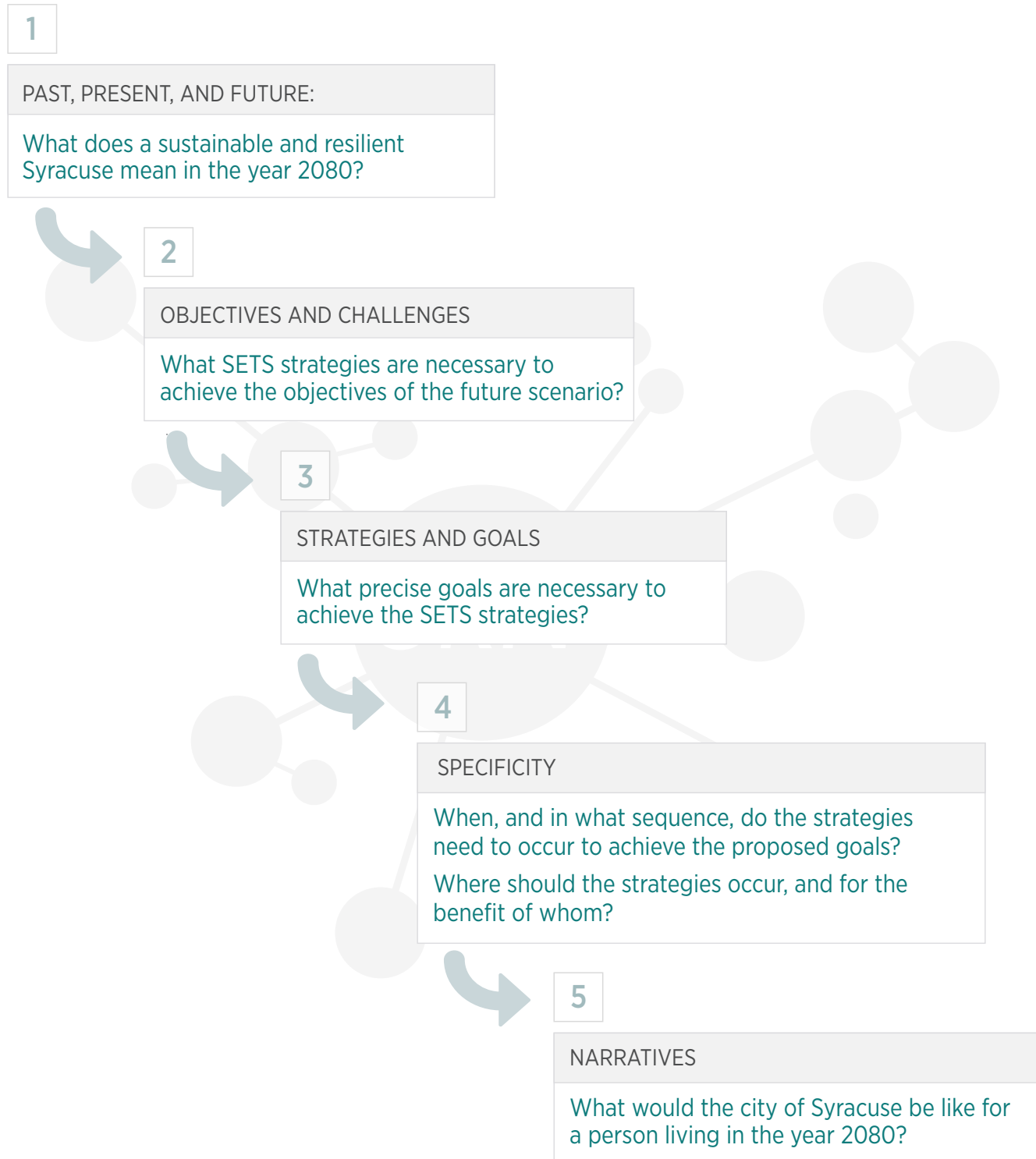
Through the co-development of scenarios in participatory workshops - such as those described in this document - we research possible transition paths to help transform cities for a more sustainable future.



# Scenario Development Process

Workshop participants began by establishing and deliberating the main goals for a future Syracuse that is more just, equitable, sustainability, and resilient by 2080. Several social, ecological and technological strategies were presented and imagined that have been implemented in adaptation and resilience interventions in other cities around the world.

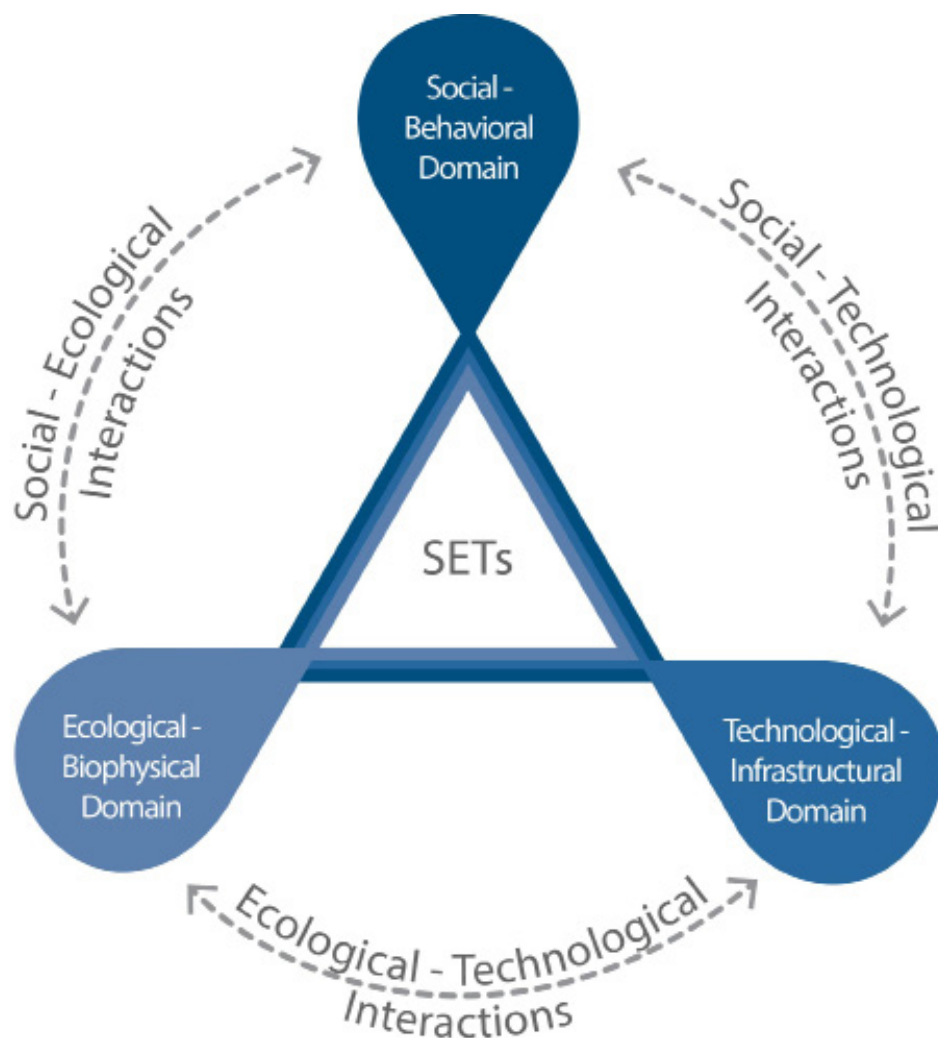
The UREx SRN team presented a vision of the city's infrastructure as a social, ecological and technological system (SETS) to help frame in an integrated manner the different dimensions of the city. Several activities were designed to facilitate scenario development based on the following questions:



# Social-Ecological-Technological Systems (SETS)

Many of the problems we face today, such as climate change, social inequality, or environmental health, cannot be solved by traditional planning approaches. These are complex problems and with high levels of uncertainty that require the integration of different perspectives, experiences, and knowledge. One of the problems that challenges the planning and governance of cities like Phoenix is how to create resilience to extreme external forces such as those posed by climate change that endangers lives, communities, and infrastructure in the urban system. When they are resilient, cities can persist, grow, and even transform, maintaining their functions and identity. The thinking of social-ecological-technological systems (SETS) integrates these three dimensions from a perspective of complex systems and is essential to promote resilience in cities and facilitate their transformation towards more sustainable futures.

Cities are complex SETS, and so too are parts of cities such as neighborhoods, parks, and infrastructure. The social dimension includes both decision makers and the people affected by them. The ecological dimension includes elements of a non-human nature that are part of the fabric of cities, for example, trees, soils, and water. The technological dimension includes the built components of cities, for example, the road system, buildings, or public transport networks. But perhaps the most important feature of the SETS approach is that it is a systems approach. This means that the social, ecological, and technological elements are not considered separately, but rather as a whole and paying special attention to the relationships and interactions between the three dimensions.





# Scenarios

## Equitable Syracuse

### Objectives and Goals

This scenario imagines Syracuse built around norms in which all citizens are valued, unified around a shared vision, and empowered to give input on the future of the city and its operation and to work to realize that future. It seeks to preserve the character and identity of Syracuse and its neighborhoods even in the face of rapid and increasing change. Migrants are valued for their contributions as stresses on the systems of integrating them into local society are eased. Poverty is recognized as a function of an outmoded societal model and is virtually eliminated. Infrastructure is renovated to eliminate inequitable distribution of risk and exposure to stress and harm.



### Strategy Examples:

- 1) Watershed-wide management of water supply;
- 2) All lead water pipes replaced, starting in low-income areas, supported by ordinances targeting lead remediation especially in housing with children;
- 3) Stormwater and sewer systems permanently separated, eliminating combined sewer overflows;
- 4) Career training programs implemented in high schools to build community through training in green infrastructure and renewable energy technical skills;
- 5) Mini-grant programs help communities apply for shared resources;
- 6) Gerrymandering corrected;
- 7) Participatory process strengthened for decision making on education, transit, employment, and other aspects;
- 8) Small-scale (neighborhood-level) governance organized around community hubs;
- 9) City-wide neighborhood community garden ensure access to nutritious food.



# Scenarios

## Green and Wet Syracuse

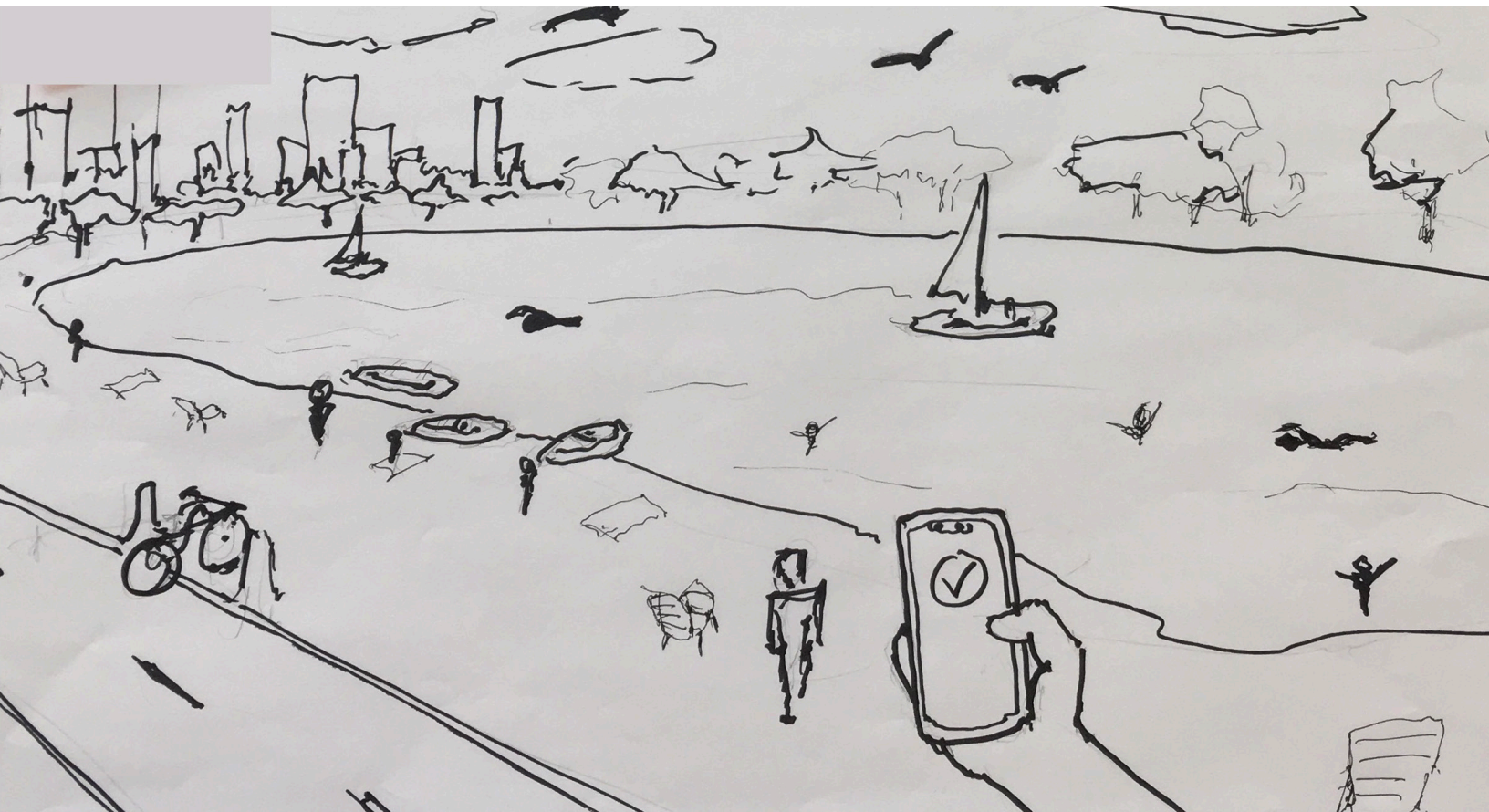
### Objectives and Goals

In contrast to some regions, a major hurdle for Syracuse is occasionally getting too much water. Its proximity to Onondaga and Oneida Lakes and numerous creeks and rivers, annual melt from frequent lake effect winter snowstorms, and drainage complicated by glaciation make water management, and maintenance of water management systems, ongoing challenges. Water quality is an important concern too - industrial and agricultural operations, as well winter road salting to control snow and ice, must be addressed to ensure access to clean drinking water as well as to protect wildlife and support ecosystem processes. Therefore, goals and strategies for this scenario seek to balance activities supporting the operations of a mid-size US city with those that transition it to a more low-impact environmental footprint.

### Strategy Examples:

■ 1) Syracuse is recognized as an outdoor haven of natural

beauty and vibrant function with equitable access to thriving natural systems: Restoration and conservation of green spaces, aquatic ecosystems, and habitat are prized; ■ 2) Equitable access to clean, safe, and affordable drinking water-water quality a top priority; ■ 3) Syracuse water infrastructure balances nature-based elements and technological advancements to achieve resilience, keeping pace with anticipated climate and other changes; ■ 4) Backup systems developed to divert extreme floods to wetlands or to infiltration ponds; ■ 5) Protective zoning overlay prevents inappropriate development in and near streams, wetlands, and steep slopes; ■ 6) Vacant lots converted to multi-use green space; ■ 7) Green assets successfully branded and marketed as leverage for local economy; ■ 8) Sensor networks monitor water quality and use, and detect leaks; ■ 9) Regional source-water protection plan and multi-jurisdictional floodplain planning implemented.





# Scenarios

## Healthy Syracuse

### Objectives and Goals

A clean environment, safe facilities for living, working, and playing, and economic equity all combine fundamentally to support the value of human health. This scenario draws on multiple changes to the ecological and social landscapes of Syracuse and Central New York to ensure impacts from human activities are nullified where possible and mitigated where not, and that residents thrive and are protected from harm.

### Strategy Examples

- 1) 100% access to clean air, water, soil, and housing;
- 2) Connected, protected, and accessible spaces provide walkability in all seasons;
- 3) Infrastructure supporting human-powered mobility is a widespread norm;
- 4) 100% access to affordable healthcare;
- 5) Full employment

## Innovative Syracuse

### Objectives and Goals

In this scenario, Syracuse employs both new technologies and new social systems to achieve widespread prosperity and to ensure sustainability and resilience. Educational access and attainment provide not only workforce opportunity but also the most informed engagement with city governance and operations. Innovation is naturally applied to the region's environmental challenges, including the increasing threat of heat waves and the perennial winter storms.

### Strategy Examples:

- 1) Restore the local and regional economy by building

in living wage jobs; ■ 6) Minimal to no crime; ■ 7) Redundant systems engineered to ensure water for drinking and hygiene in emergencies; ■ 8) Urban growth boundaries established to protect greenspace; ■ 9) All buildings LEED certified; ■ 10) Cannabis legalization provides economic opportunities, and provide tax funding to health clinics.



on existing strengths and creating new income streams; ■ 2) Rebrand the city and region to change perceptions and attract more personal and economic investment; ■ 3) Establish geothermal infrastructure; ■ 4) 100% renewable energy sold throughout region; ■ 5) Remove highway within city limits, refit city to be completely walkable, and establish high-speed commute transport throughout region; ■ 6) Reconceptualize public land use to improve incomes and general quality of life; ■ 7) Increase tree canopy to provide shade benefits as well as appeal to visitors and new residents; ■ 8) Build intercity partnerships with other Central/Western New York cities.



# Scenarios

## Smart and Connected Syracuse

### Objectives and Goals

This scenario is all about using the latest knowledge, new ways of understanding and problem solving, and modern technologies to build the future of Syracuse in a more informed and forward-thinking manner than was ever possible before. It would replace aged infrastructure with smarter redevelopment, construct a new transportation network prizing walkability and other low-impact modes, share resources and provide equal access to amenities and services, and better integrate technology to acquire, process, and disseminate information.

### Strategy Examples

- 1) Work towards a 0% carbon-based energy model through expansion of solar generation and fundamental efficiency-related retrofits;
- 2) Build energy-sharing economy and grid interconnectivity;
- 3) Inner harbor redevelopment as economic catalyst;
- 4) Development reorientated around clean and renewable public (rather than personal) transit;
- 5) Multi-jurisdictional planning, zoning, and management to prevent inappropriate development (e.g. in flood plains) that puts citizens at risk;
- 6) Extend and intensify greenway network;
- 7) Consolidate school districts to improve cross-communication and eliminate funding inequities.





# Next Steps

## Data Analysis

The UREx SRN is reviewing the results from each of the activities conducted in the workshop to produce three synthetic outputs being returned to the stakeholders throughout 2019.

**Models.** Simulation models help to evaluate the outcomes of adopting different strategies into the future. For instance, increasing the amount of tree canopy generally decreases temperature overall, but models can be used to test the details of different hypotheses. For example, what if we increase shade by 10% rather than 20%? What if we target “hot spots” of higher temperature as ideal places to increase shade? Land use change models are being created to explore these questions in each of the scenarios created by participants in Syracuse and Central New York.



**Resilience Assessment.** Models cannot capture everything that is important for a desirable future. Things like resilience, equity, and sustainability are difficult to assess using models. Instead, we developed a qualitative tool to assess resilience, equity, sustainability, and importantly, the potential of each of the strategies for creating transformative change.

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## Participating Institutions & Organizations



## About UREx SRN

Our mission is to connect scientists and practitioners to create resilient infrastructure with information, models, images, maps, histories, and projects from 10 cities, accelerating the production of knowledge and the implementation of innovative and sustainable solutions in urban ecosystems.

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