



Fundamentals of Sustainable Community Design

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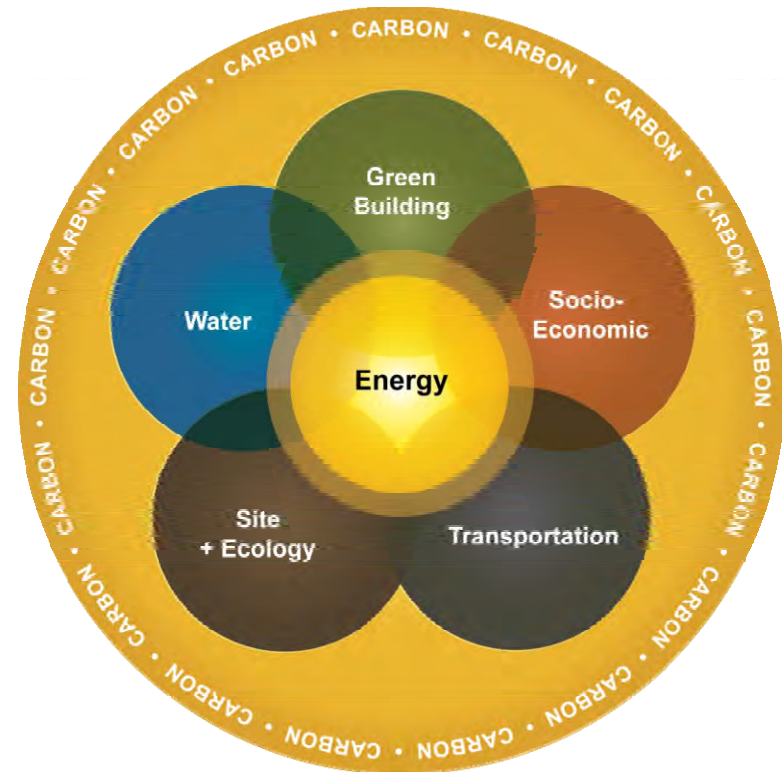
Presentation Overview

- ✓ Sustainable Community Design Measures
- ✓ Project Programming
- ✓ Measuring Costs & Benefits



Sustainable Community Design Measures: Themes

- ✓ Urban Form
- ✓ Energy Supply and Demand
- ✓ Transportation and Mobility
- ✓ Water
- ✓ Ecosystem and Landscape
- ✓ Socio-Cultural





Urban Form Strategies

Density

- / Town, City, Neighborhood centers
- / Compact design, higher density
- / Balanced open space

Diversity of Land Use

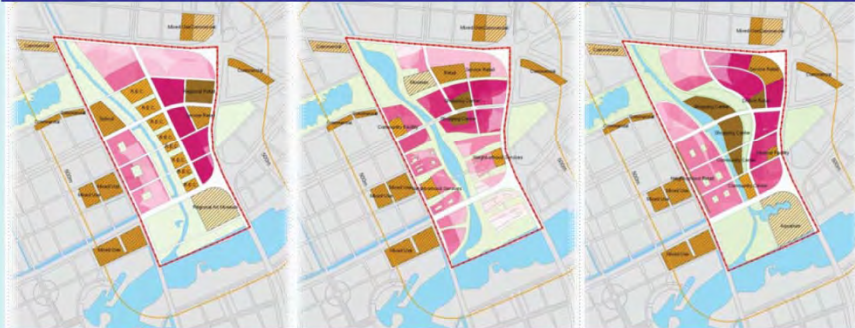
- / Broad range of housing
- / Jobs/housing balance
- / Local services





Model Assisted Urban Design

ACCESS TO SERVICES



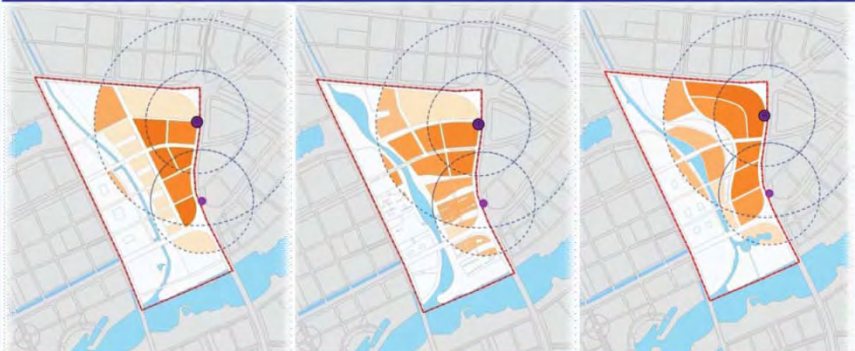
	Option 1	Option 2	Option 3
% of Pop. has access to at least one service (2 min. walking)	89.4%	81.7%	82.2%
Service Accessibility Score	8.1	5.9	6.0

ACCESS TO JOBS



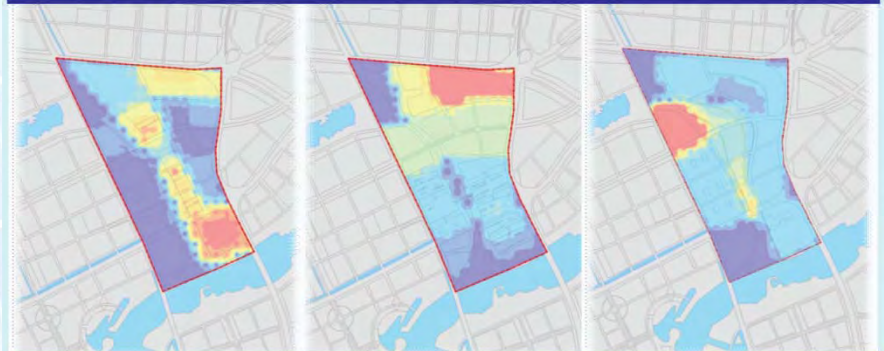
	Option 1	Option 2	Option 3
Job-Housing Ratio (within 500 meter Area)	2.2 : 1	1.1 : 1	2.2 : 1
Job Accessibility Score	1.7	1.2	1.9

ACCESS TO TRANSIT



	Option 1	Option 2	Option 3
% of Pop. has access to transit	89.8%	70.9%	89.5%
Transit Accessibility Score	2.60	1.87	2.43

CARBON EMISSIONS PER CAPITA



	Option 1	Option 2	Option 3
CO2 Emission Per Service Population (MTCO2e Per Year)	6.7	6.2	6.5



Building and Infrastructure Energy Efficiency

Site Orientation

- / Passive architecture and shading
- / Building orientation

Building Shell

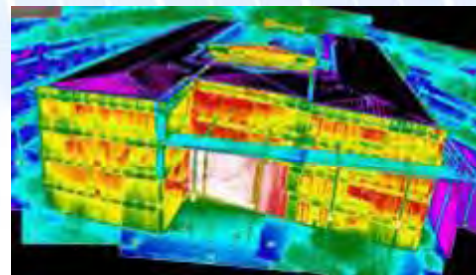
- / Insulation
- / Windows, glazing

High Efficiency Plant and Appliances

- / HVAC efficiency
- / Water heating
- / Appliances
- / Lighting
- / Demand Control Technology

Public Realm Energy

- / Street lighting
- / Lighting levels optimized by land use
- / “Dark Sky”





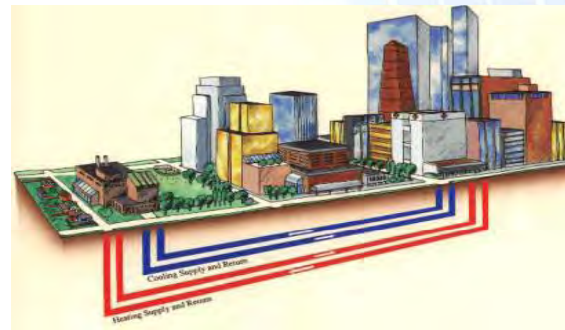
Energy Supply

On-Building Renewables

- / Photovoltaic panels
- / Thermal hot water
- / Ground source heating and cooling

District Energy Supply

- / Photovoltaic farm
- / Wind turbines
- / Combined Heat and Power (CHP)
- / Biomass
- / Biogas
- / Geothermal





Transportation and Mobility

Internal Project Measures:

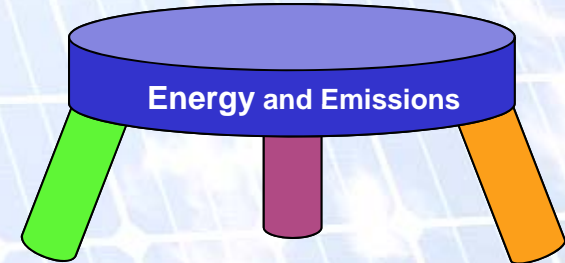
- / Travel demand management (TDM)
- / Internal shuttle service
- / Sheltered transit stops
- / Shared parking, ride-share
- / EV charge stations, fleet mix
- / Shared vehicles, NEV's, bikes
- / Bike/walk trail network
- / Traffic calming, pedestrian-oriented design
- / NextBus.com, transit frequency

External Project Measures

- / Coordinating entity
- / External shuttles
- / Regional transit extensions
- / Freight, product delivery

Housing / Employment Linkage Measures

- / On-site jobs/housing balance
- / Employer proximity subsidy
- / 'Google bus'



Vehicle Fuel
Consumption

System
Management

Vehicle
Miles
Traveled



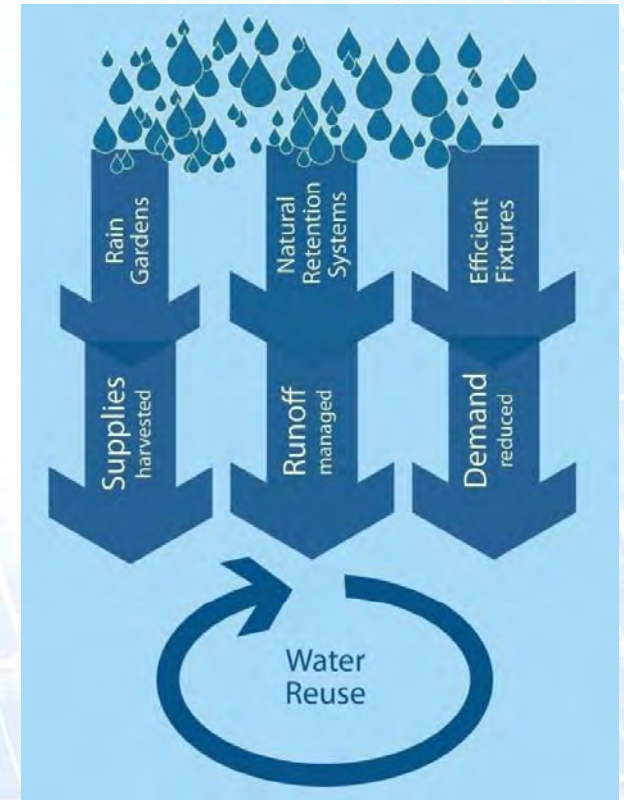
Water Balance Planning

Surface Water Management

- / Reduce pollutant loads
- / Control runoff
- / Recharge groundwater
- / Rainwater capture

Water Use Efficiency

- / Intelligent irrigation
- / High-efficiency fixtures
- / Reuse of greywater
- / Treated effluent use





Ecosystem Services

Carbon Sequestration

- / Increased landscape planting/trees
- / Preserve existing biological carbon
- / Restore ecosystems

Urban Heat Island Reduction

- / Highly reflective surfaces
- / Shading
- / Water features

Community Agriculture

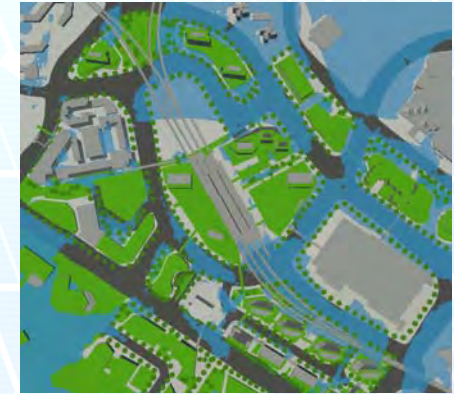
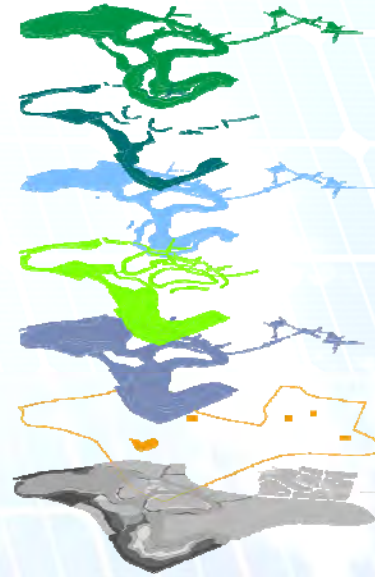
- / Community Supported Agriculture
- / Community Gardens
- / Farmers Markets

Biodiversity

- / Native plant landscapes
- / Habitat networks and corridors

Education

- / Nature education to encourage conservation behavior and knowledge
- / Biomimicry



REDUCTION IN TEMPERATURE COMPARED TO BAU 





Socio Cultural

Health:

- / Security
- / Healthy Lifestyles

Access:

- / Schools
- / Jobs
- / Child Care
- / Parks
- / Quality food

Equity:

- / Personal growth
- / Accumulation of wealth

Sustainable Behavior:

- / Opportunities
- / Awareness
- / Consumption and waste

Child Care and Pre-School Facilities

Nurseries - Crèches - After School Clubs - Playgroups - Children Centres - Day Nurseries

