

# *Embracing Sustainability in Community Plans*

**American Planning Association**  
**November 2010**  
Benjamin A Herman, FAICP  
Clarion Associates



# Overview

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- Sustainability and planning
- Key sustainability plan elements and topics
- Sustainable community plan examples



# Why Sustainable Community Planning?

Sustainability is...

*aligning our built environment and socioeconomic activities with the natural systems that support life...with future generations in mind*

...**Good Planning**

“The nation behaves well if it treats the natural resources as assets which it must turn over to the next generation increased, and not impaired, in value.”

~ Theodore Roosevelt

# Sustainability and Planning

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- Underlying values of sustainability are those of good plans:
  - A long range view
  - Integration of local and regional factors
  - An environmental, social, and economic component
  - Focus on implementation

# Sustainability and Planning

But ...

The convergence of global environmental and energy issues warrants a new approach!



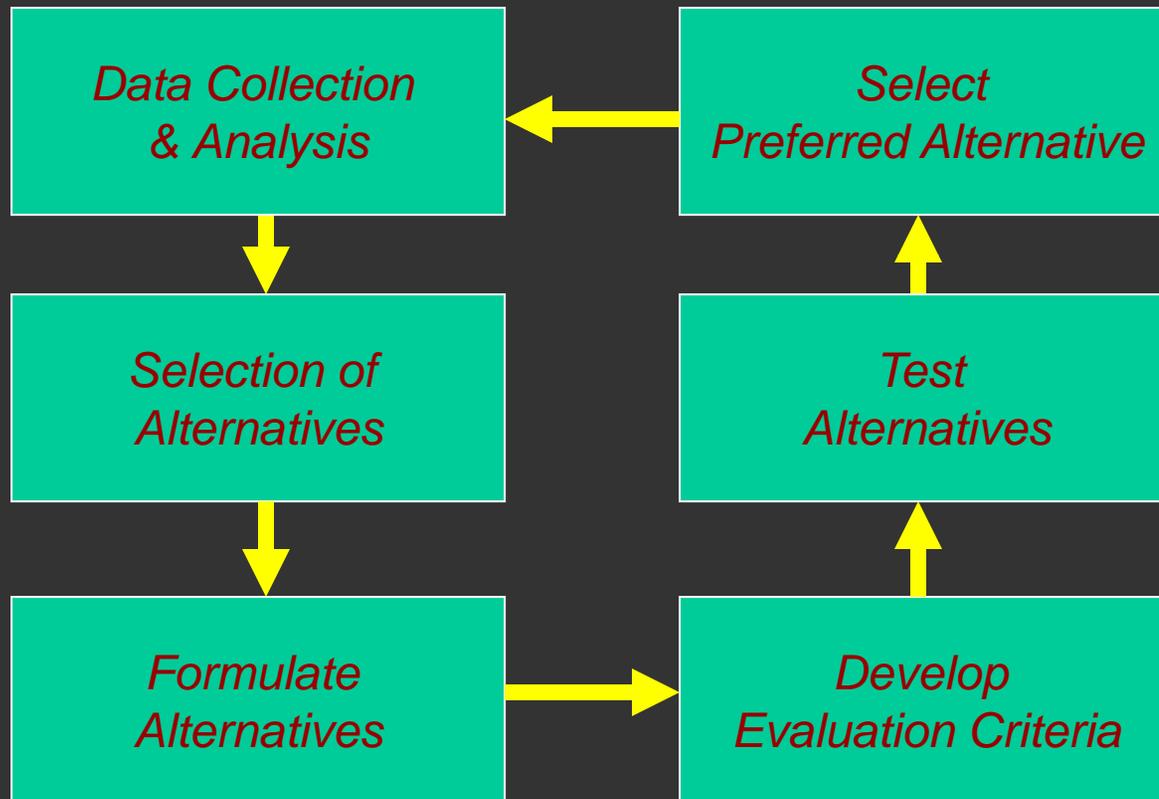
# Sustainability and Planning

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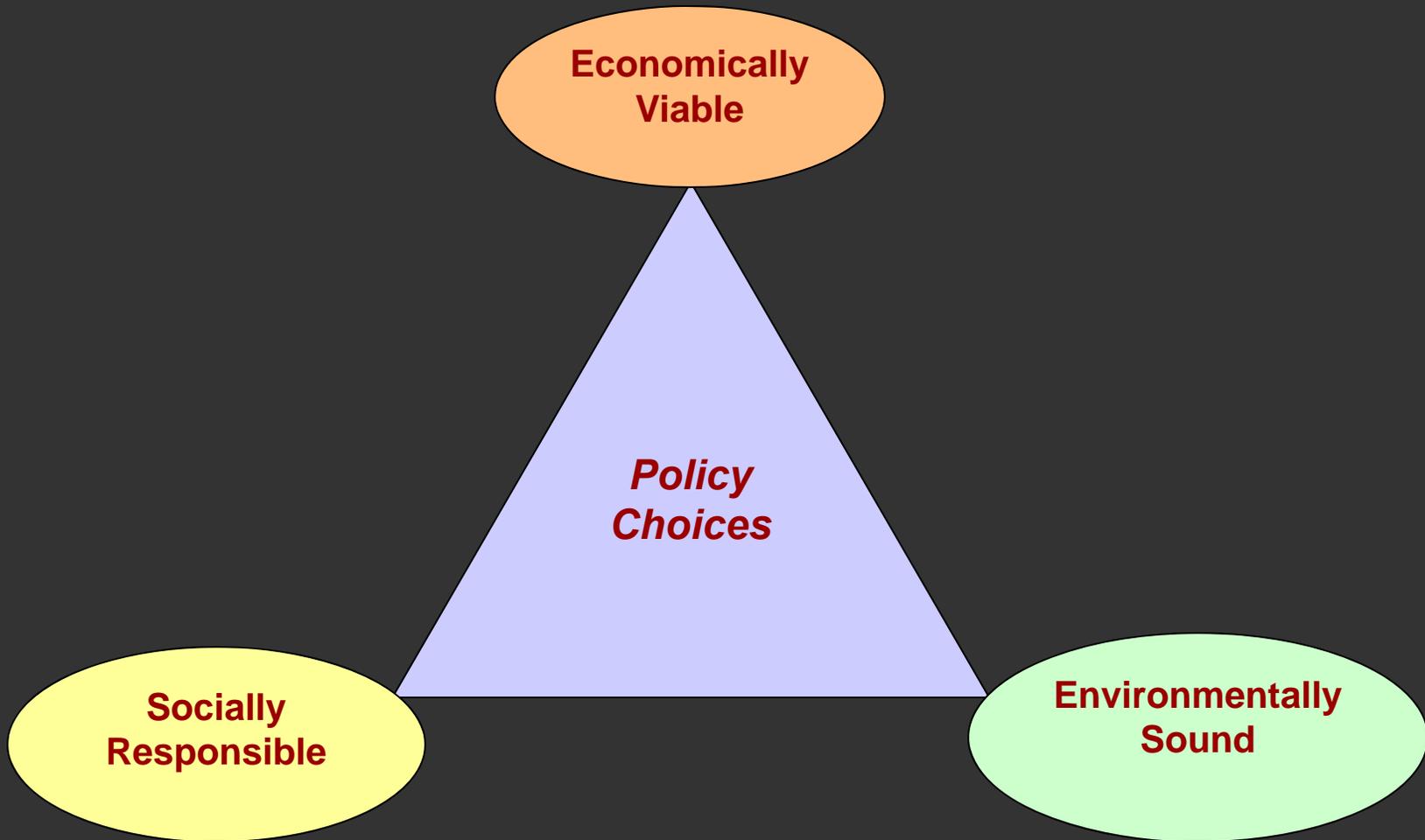
## What's Different?

1. Organizational structure & decision-making process
2. Linking issues
3. New topics and new approaches
4. More emphasis on measuring and monitoring progress

# Typical Decision-Making Approach



# Sustainable Decision-Making Approach



# 1. Organizational Structure

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# Typical Plan Elements

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- Air Quality
- Appearance and Design
- Arts and Culture
- Community Facilities and Infrastructure
- Economic Development
- Environmental Conservation/ Stewardship
- Environmental Hazards
- Historic and Cultural Resources
- Housing/ Neighborhoods
- Land Use and Growth
- Parks/Open Space/ Recreation
- Trails
- Transportation

# Typical Plan Elements - Triad

## Community

- Appearance and Design
- Arts and Culture
- Economy
- Parks and Recreation

## Built Environment

- Community Facilities & Infrastructure
- Housing/ Neighborhoods
- Land Use and Growth
- Transportation

## Natural Environment

- Air Quality
- Environmental Resources
- Environmental Hazards
- Open Space

# Sustainable Plan Elements

## Community

- Appearance and Design
- Arts and Culture
- Economic Development
- Parks and Recreation
- Community Health & Safety
- Fiscal Sustainability
- Diversity
- Housing Attainability

## Built Environment

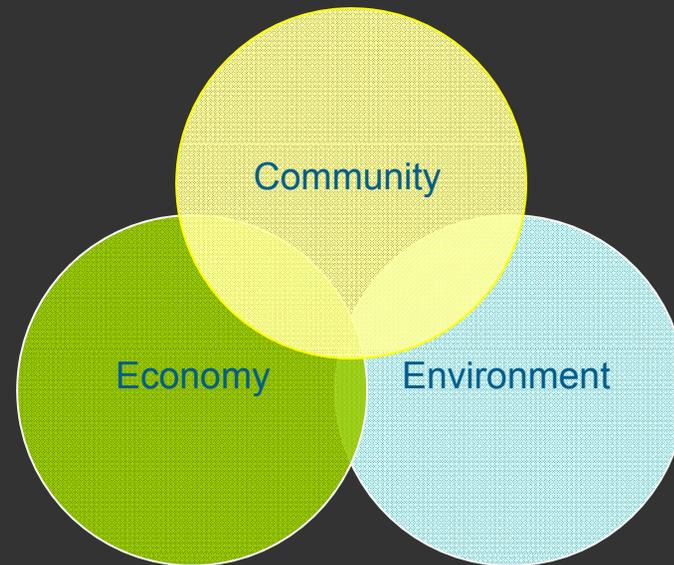
- Community Facilities & Infrastructure
- Housing/ Neighborhoods
- Land Use and Growth
- Transportation/Mobility
- Energy Conservation & Green Building
- Green Infrastructure

## Natural Environment

- Air Quality
- Environmental Resources
- Environmental Hazards
- Open Space
- Atmosphere and Climate Change
- Waste Stream Reduction/Reuse
- Agriculture
- Food Production & Security
- Renewable Energy

## 2. Linking Issues

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# “Systems, not Silos”

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- Stronger linkage between related topics:
  - Land use
  - Housing
  - Transportation
  - Economy & Finance
  - Energy & Utilities
  - Community Health & Safety

# Example: Transportation

## Traditional planning approach:

- Adequate road capacity
- Measures:
  - VMT
  - Intersection LOS
  - Mode shift



# Example: Transportation

## “Linked issues” approach:

- Mobility performance measures
- Complete Streets
- Relationship to:
  - Energy use
  - GHG emissions
  - Travel cost/social equity
- Measures:
  - Quality of access
  - LOS for all travel modes



# 3. New Topics & New Approaches



**Growing Power, Inc.**

Home  
About Us  
Our Farms  
Grow  
Bloom  
Thrive

**Our Vision:**  
Inspiring communities to build sustainable food systems that are equitable and ecologically sound, creating a just world, one food-secure community at a time.

**What's Growing On:**  
Will Allen awarded MacArthur Fellowship

[Growing Food and Justice Gathering](#)

[Blog](#)

[Training Centers \(ROTC\)](#)

[Donate](#)

**Growing Power** is a national nonprofit organization and land trust supporting people from diverse backgrounds, and the environments in which they live, by helping to provide equal access to healthy, high-quality, safe and affordable food for people in all communities. Growing Power implements this mission by providing hands-on training, on-the-ground



### The Greenhouse Effect

**SUN**

Some solar radiation is reflected by the Earth and the atmosphere.

Some of the infrared radiation passes through the atmosphere, and some is absorbed and re-emitted in all directions by greenhouse gas molecules. The effect of this is to warm the Earth's surface and the lower atmosphere.

Solar radiation passes through the clear atmosphere.

**ATMOSPHERE**

**EARTH**

Most radiation is absorbed by the Earth's surface and warms it.

Infrared radiation is emitted from the Earth's surface.

PHOTO: UNRAK

# Key Sustainability Topics

- Energy Conservation & Renewable Energy
- Climate Change
- Water Conservation
- Waste Reduction & Reuse
- Food Production & Nutrition
- Community Health & Safety
- Mobility-Connectivity
- Housing Diversity & Attainability
- Urban Forestry



## Key Sustainability Topic Snapshot:

# Energy

### Why is this important?

- 85% of all energy use derived from fossil fuels in USA
- Unsustainable/uncertain economics of energy costs
- National security concerns
- Buildings use 71% of electricity in U.S.



# Energy

## Why is this important?

- Increasing role of renewable energy in the market - demand is up/\$ down
- Costs reduced to municipalities and consumers (i.e., water treatment & pumping)



# Energy

## Example goals, policies, strategies:

- Reduce per-capita nonrenewable energy use
  - ✓ Adopt energy efficiency standards for development
  - ✓ Offer incentives for renewables
  - ✓ Encourage retrofits



# Energy

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## Example plan goals, policies, strategies:

- Increase % of energy from renewable sources
  - ✓ Protect renewable sources and sites
  - ✓ Adopt green building standards and practices
  - ✓ Incentives for renewable energy-codes & review processes

# Energy

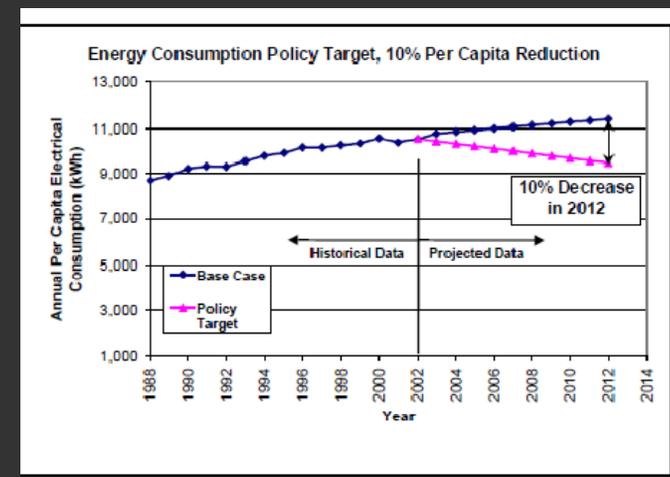
## Measuring Success:

- Annual residential and non-residential energy use
- Number of photovoltaic / WEC installations
- % of energy supply from renewable sources

INDICATOR	BENCHMARK	TARGET
Energy use per capita countywide	16,636 kWh unincorporated per capita in 2000	Reduce consumption of electricity per capita 10% by 2020
Total megawatts of photovoltaic systems installed countywide	0.0255 MW in 2000	15 MW by 2015 and 30 MW by 2020
Total megawatts of photovoltaic systems installed by County government	0 MW in 2000	0.5 MW by 2010 and 1 MW by 2015

## Sources:

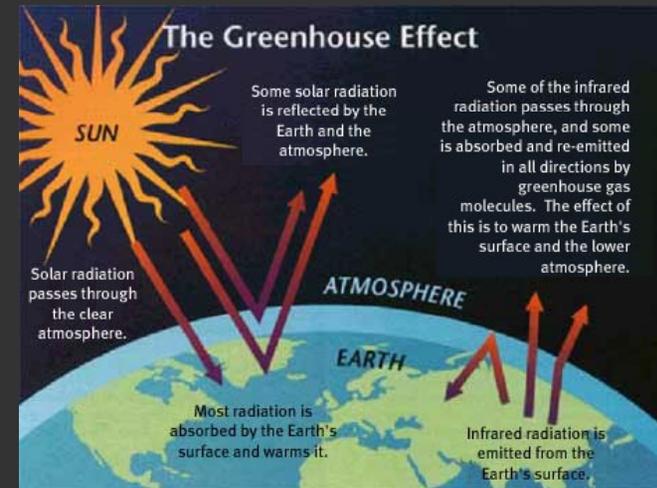
- Utility agencies
- Building permits



# Key Sustainability Topic Snapshot: Climate Change

## Why is this important?

- GHGs seen as the leading cause of climate change
  - 2/3 of U.S. carbon emissions from transportation and building energy use
- Impacts on storm frequency and severity
- Air quality and associated community health impacts



# Climate Change

## Example plan goals, policies, strategies:

- Reduce greenhouse gas (GHG) emissions and airborne pollutants
  - ✓ Reduce car use
  - ✓ Increase urban tree canopy coverage
  - ✓ Land use patterns



# Climate Change

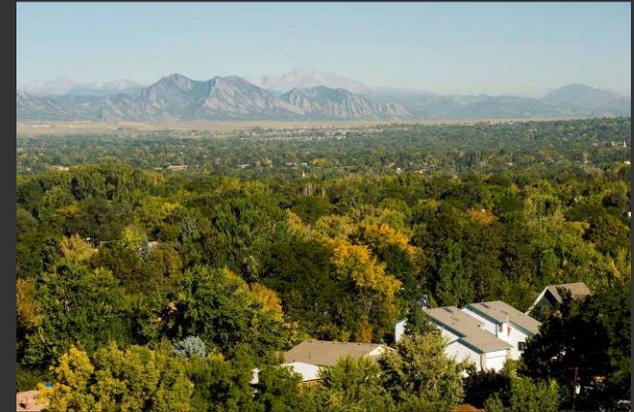
## Example plan goals, policies, strategies:

- Reduce vehicle-generated emissions
  - √ Implement mixed-use and transit-oriented development patterns
  - √ Programs to reduce VMT and encourage non-vehicle or transit travel
  - √ Reduce or manage travel demands (carpooling, work-from home)
  - √ Tree protection & planting standards

# Climate Change

## Measuring Success:

- Amount of GHG emissions citywide
- Number of days with poor/good air quality
- Tree canopy coverage (or total number of urban trees)
- VMT



### Sources:

- Air quality agencies
- State DOTs
- Public health agencies
- Forestry programs

INDICATOR	BENCHMARK	TARGET
Number of days of poor air quality per federal and state guidelines	No exceedences in 2000	No increase through 2015
Amount of greenhouse gas emissions countywide	3,005,674 tons CO2 in 1990 and 3,252,049 in 2000	Reduce 15% by 2015
Amount of greenhouse gas emissions from County government sources	16,857 tons CO2 in 1990	Reduce 15%–20% by 2015

# Key Sustainability Topic Snapshot: Recycling/Waste Reduction



## What changes are happening..

- *Recycling programs (schools, business, public places)*
- *Curbside and neighborhood composting*
- *Construction recycling and “deconstruction” vs. demolition*
- *Reuse and “Re-Stores”(Habitat for Humanity)*
- *More recyclable and compostable packaging*

Key Sustainability Topic Snapshot:

# Recycling - Waste Reduction

## Why is this important?

- US generates about 246 millions tons of trash/year
- Recycling & composting is up, but waste generation is up too
- Preserve natural resources



# Why Is It Important?

- Production from raw materials is more expensive and uses more energy than recyclables
- Extend life of landfills
- Reduce GHG from landfills
- Reduce personal spending and reduce municipal expenditures and taxes



# Plan Goals, Policies, & Strategies

## Example plan goals, policies, strategies:

- Goal: Efficient Processing and Reduced Landfill Disposal of Solid Waste
- Policies:
  - ✓ Reduce the solid waste stream (metric: increase solid waste diversion from 40%-50% by 2015)
  - ✓ Protect environmental health
  - ✓ Plan for waste transformation & disposal (of non-recyclables/non-compostables)

# Recycling/Waste Reduction

## Examples of goals, policies, strategies:

### ■ Strategies:

- ✓ Adopt codes that require waste collection and recycling service areas in all commercial buildings
- ✓ Require construction waste recycling
- ✓ Implement best management practices at landfill facilities



# Recycling/Waste Reduction

## Examples of goals, policies, strategies:

### ■ Strategies:

- ✓ Ensure adequate siting options (zone districts/uses) for recycling/composting
- ✓ Require neighborhood recycling/composting centers in new subdivisions
- ✓ Initiate curbside food waste collection program



# 4. Emphasis on Measuring/Monitoring

Plan Fort Collins  
innovate.sustain.connect

Triple Bottom Line  
Screening Indicators

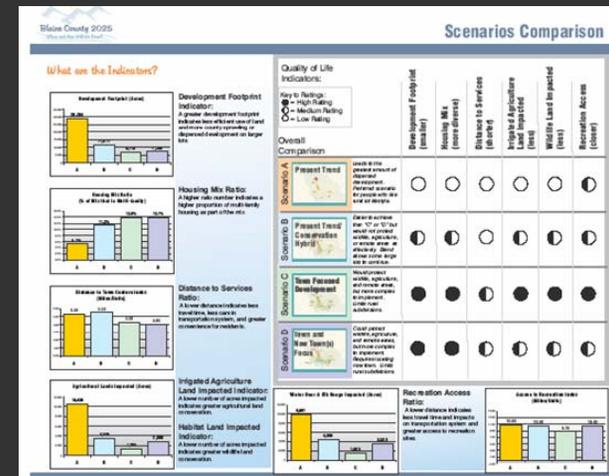
WORK IN PROGRESS  
Draft - 05/18/10



- Carbon emissions
- Energy consumption
- Stormwater runoff quality
- Water use per capita
- Air quality/mobile emissions
- Protected open space
- Wildlife habitat protected/restored
- Development efficiency
- Vehicle miles traveled
- Solid waste diversion

- Businesses and jobs (retained, new)
- Diversity of sectors
- Local business
- Retail mix
- Jobs-housing ratio
- Housing affordability
- Price of government services
- Revenues per capita
- Access to markets/freight mobility
- Life-long learning

- Fire and police protection
- Sense of community indices
- Public engagement/voting
- Facilities for physical activity (parks, trails, recreation)
- Proximity/access to health care (physical, mental)
- Agricultural lands/local food
- Self-sufficient households
- Housing unit mix
- Arts and culture availability
- Mobility/travel modes



# Measuring Sustainability

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- **Indicator** - measurement used to demonstrate movement toward or away from plan goals.
- **Benchmark** - established “starting point” for an indicator.
- **Target** - a quantifiable outcome that provides a framework for measuring progress.

# Measuring Sustainability

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- **Target** - a quantifiable outcome that provides a framework for measuring progress.

# Example:

## Indicator:

Number of residents within  $\frac{1}{4}$  mile of a city park

## Benchmark:

50% of city residents are within  $\frac{1}{4}$  mile of a city park in 2009

## Target:

80% of city residents within  $\frac{1}{4}$  mile of a city park by 2020

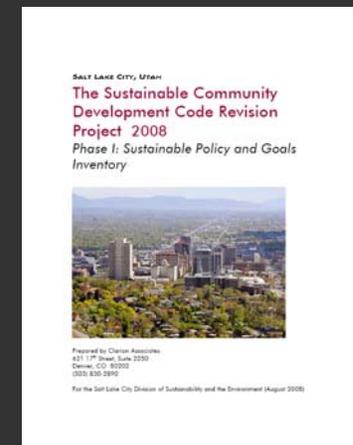
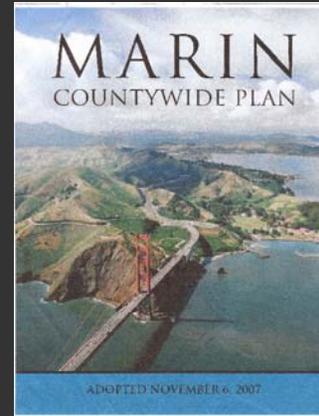
### How Success Is Measured

INDICATOR	BENCHMARK	TARGET
Number of dwelling units within $\frac{1}{2}$ mile of a transit stop	82,773 dwelling units	89,997 dwelling units
Energy use per capita countywide	16,636 kWh unincorporated per capita in 2000	Reduce consumption of electricity per capita 10% by 2020
Total megawatts of photovoltaic systems installed countywide	0.0255 MW in 2000	15 MW by 2015 and 30 MW by 2020
Total megawatts of photovoltaic systems installed by County government	0 MW in 2000	0.5 MW by 2010 and 1 MW by 2015

# Plan Examples

## Varying approaches:

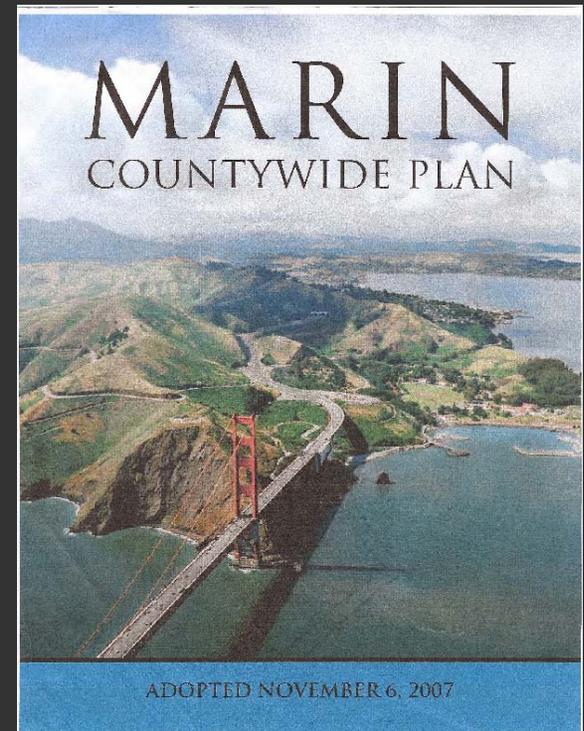
- Incorporate sustainability into Comprehensive Plan
- Standalone Sustainable Plan
- Targeted amendments
- Inventory of current plans leading to code revisions



# Marin County, CA

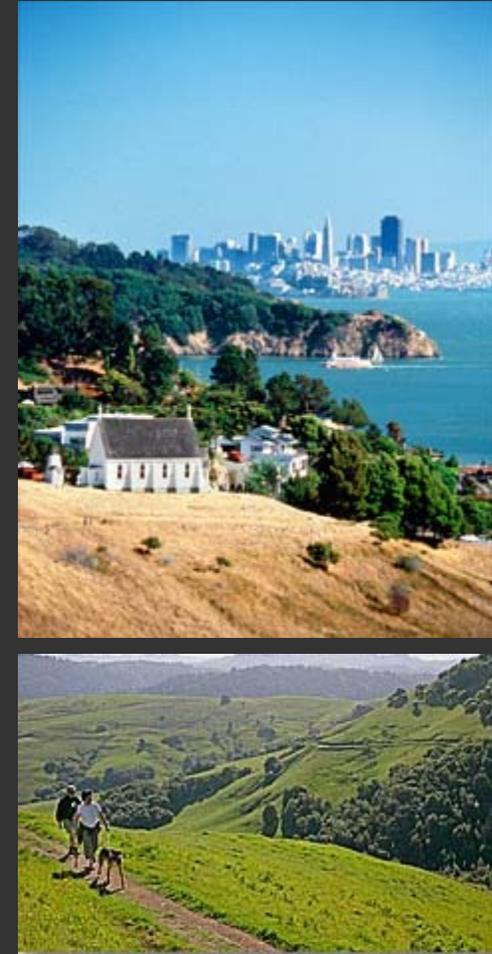
## Sustainable Community Theme

- 2007 major update adopting “Sustainable Community” theme
- Includes climate change, food production, social equity, public health, child care, environmental justice, economy, more
- 5-6 year process
- 600+ pages
- [www.future-marin.org](http://www.future-marin.org)

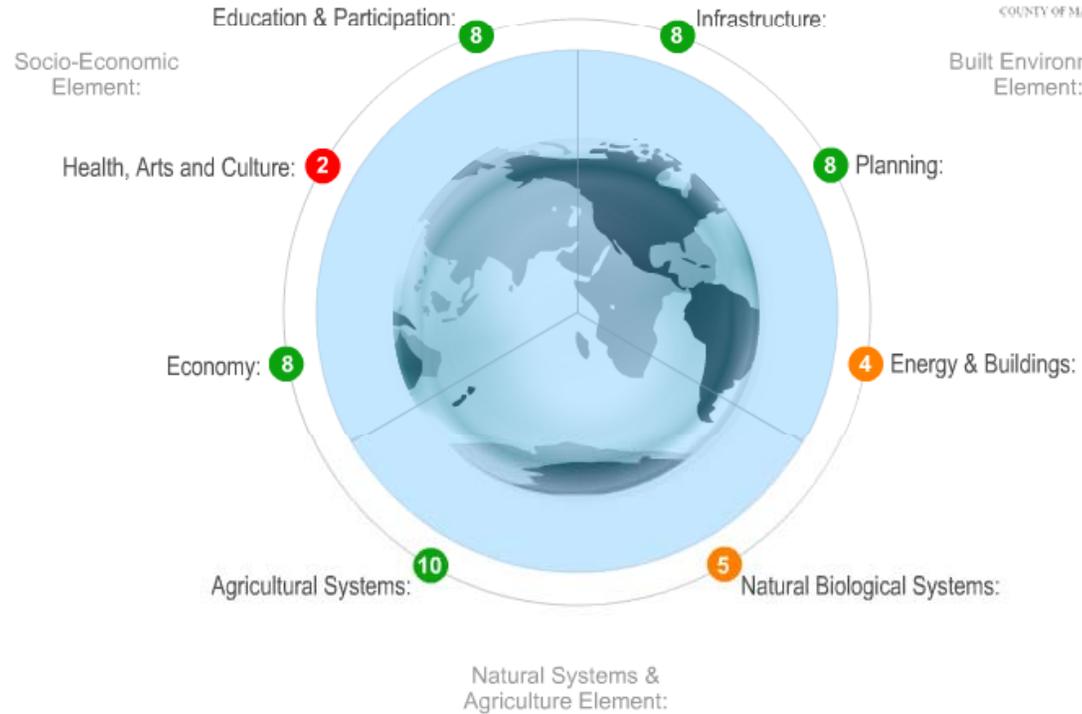


# Marin County, CA

- Documented GHG emissions by sector and calculated ecological footprint
- Specific indicators, benchmarks, and targets for all subject areas
- Identified responsibility, priority, timeframe and budget for accomplishing



Vision and Guiding Principles for the Countywide Plan (pdf)



Open Welcome Box Legend

see-it™ site © 2008 powered by: visible strategies





# New York City



## Key focus areas:

- Land
- Water
- Transportation
- Energy
- Air quality
- Climate change

A screenshot of the planNYC 2030 website displayed in a Microsoft Internet Explorer browser window. The browser title is "PLANYC 2030 - Microsoft Internet Explorer". The address bar shows the URL "http://www.nyc.gov/html/planyc2030/html/home/home.shtml". The website header includes the "planNYC" logo and navigation links for Residents, Business, Visitors, Government, and Office of the Mayor. A main navigation menu on the left lists categories: HOME, BACKGROUND, THE PLAN (with sub-items: LAND, WATER, TRANSPORTATION, ENERGY, AIR, CLIMATE CHANGE), EMISSIONS INVENTORY, GREENYC, NEWS &amp; EVENTS, and DOWNLOADS. Below this is a "PLANYC REPORT" section with buttons for "Purchase a Hardcopy" and "Sign Up for Updates". A "MORE RESOURCES" section lists "Greener, Greater Buildings Plan" and "Sustainability Indicators". The main content area features a large image of Mayor Michael Bloomberg speaking at a podium, with the text "Read the PlanYC Progress Report 2009" below it. A "NEWS &amp; EVENTS" section dated Wednesday, August 5, 2009, mentions Mayor Bloomberg and NYCHA Chairman Rhea Unveil New Housing Authority Energy Efficiency Program to Reduce Electricity Usage, Decrease Carbon Emissions and Save Money at Castle Hill Houses, with links to "Read the press release" and "Watch the video in low or high bandwidth". The browser's taskbar at the bottom shows the Start button, several open applications, and the system clock at 3:46 PM on 8/5/09.

# Ten Key Goals

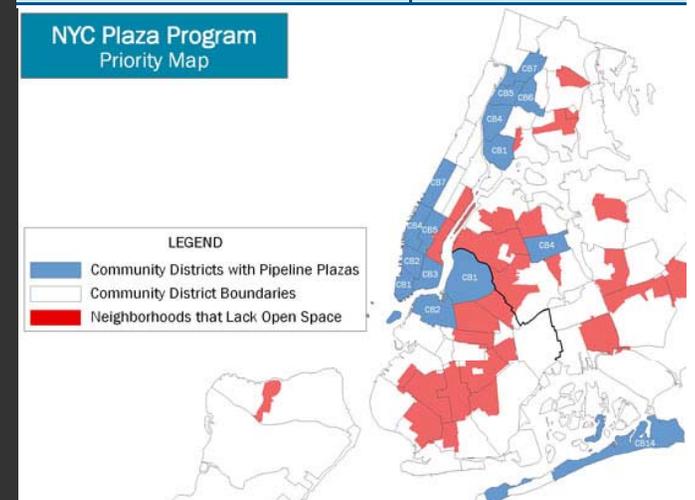


**Housing** - Create homes for almost a million New Yorkers, while making housing more affordable and sustainable

**Open Space** - Ensure that all New Yorkers live within a 10 minute walk of a park

**Brownfields** - Clean up all contaminated land in NYC

2009 MILESTONE UPDATES	PERCENT OF TOTAL
35 milestones complete	28%
50 milestones on time	39%
35 milestones delayed	28%
7 milestones redirected*	5%



- Major update to:
  - City Plan
  - Transportation Master Plan
- Builds on previous accomplishments and strong commitment to sustainability



# New Plan Topics

- Climate Change
- Fiscal Sustainability
- Health and Wellness
- Arts and Culture
- Utilities (Electric, Stormwater, Water, Wastewater)
- Strong focus on connections between topics (systems)



**NET ENERGY USE REDUCTION IN EXISTING BUILDINGS**  
 TRIPLE BOTTOM LINE EVALUATION

DATE	8/27/2010					
DESCRIPTION PRINCIPLE/POLICY/PROJECT	Building on the FortZED initiative, to what level should Fort Collins pursue net energy use reduction? Choices could include a continuum, from "net zero" energy to more modest energy use reductions. Projects could include a combination of increased energy efficiency, distributed energy sources, local renewable energy, and smart grid technologies. While this choice would provide for greater energy security for the future, it would also require significant upgrades to the City's electric grid and scaling up of renewable and distributed local energy generation sources.					
LEAD EVALUATOR	Sunde Group- Seth Jensen					
BASELINE YEAR/SCENARIO	The baseline year for this analysis is 2009, the last year for which complete data are available for City energy use.					
RELATED PRINCIPLES/POLICIES/PROJECTS	This principle is closely related to other energy-related principles such as grid modernization and net energy use reduction in new buildings.					
ASSUMPTIONS (HOW DID I GET HERE?)	<p>The analysis developed for this principle entailed developing three distinct scenarios for how the principle would be implemented:</p> <p>Scenario 1: Expand on the efforts of Fort ZED.                      Scenario 2: Scale up existing demand-side management programs.                      Scenario 3: Adopt higher energy performance standards for new construction.</p> <p>Energy use reductions from the 2009 baseline were estimated based on the projected 50 MW reduction in energy use associated with full implementation of FortZED, additional energy savings from scaling up existing city energy programs, and higher energy performance in new construction (estimates of new construction rate, building replacement rate, adoption of a specific building energy standard). Carbon emissions are based on energy use reductions, adjusted for local emissions factors.</p>					
SUMMARY OF TRIPLE BOTTOM LINE ANALYSIS (WHAT'S THE BOTTOM LINE OUTCOME?)	Economically, this policy direction could require significant investments by the City in energy demand side management programs and grid infrastructure, but increasing energy efficiency in the residential, commercial, industrial and institutional sectors would benefit the community by reducing energy costs. While few human outcomes are associated with this direction, environmental benefits would include reductions in energy and carbon emissions, and potentially benefits for regional air quality.					
DECISION SUPPORT TOOL OUTCOMES - RELEVANT QUALITATIVE AND QUANTITATIVE INDICATORS						
INDICATOR	QUANTITATIVE - Low Estimate	QUANTITATIVE - High Estimate	QUANTITATIVE - Selected Estimate	QUALITATIVE	OUTCOME VALUE	COMMENTS
<b>ECONOMIC</b>						
Costs and Savings				While total costs and savings for this principle cannot be directly quantified, national research and case studies suggest that the capital and O&M costs could range from \$2.1 million to \$4.2 million.	While total costs and savings for this principle cannot be directly quantified, national research and case studies suggest that the capital and O&M costs could range from \$2.1 million to \$4.2 million.	The Lead Evaluator feels that this national data is very closely aligned with Fort Collins Utilities and is therefore a good projection of cost range.
Return on Investment				Return on investment cannot be directly calculated for this principle as it entails an ongoing program investment.	Return on investment cannot be directly calculated for this principle as it entails an ongoing program investment.	
<b>ENVIRONMENTAL</b>						
Energy Consumption	-145,000	-300,300	-145,000		-145,000	Energy savings (-) has been quantified based on quantified savings from the City's past DSM efforts, code-related energy performance savings and the ultimate goal of Fort ZED. The low-end estimate of savings has been used to remain conservative in the estimate of benefits.

**Key Choice 10: Net Energy Use Reduction**

**Description**

Building on the FortZED initiative, to what level should Fort Collins pursue net energy use reduction? Choices could include a continuum, from "net zero" energy to more modest energy use reductions. Projects could include a combination of increased energy efficiency, distributed energy sources, local renewable energy, and smart grid technologies. While this choice would provide for greater energy security for the future, it would also require significant upgrades to the City's electric grid and scaling up of renewable and distributed local energy generation sources.

**Costs and Savings**

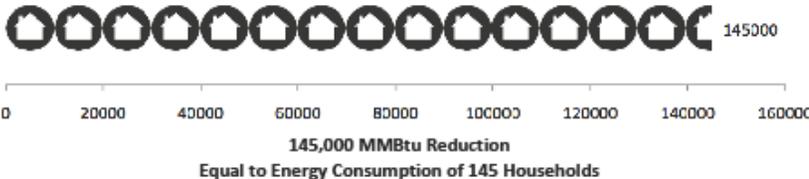
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**Return on Investment**

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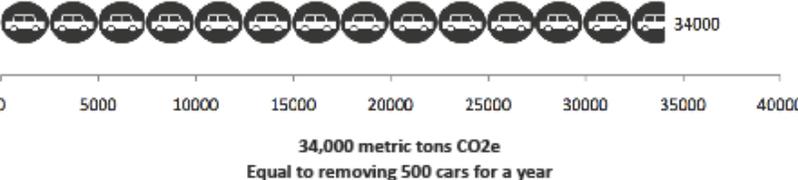
**Energy Consumption**

Proposed programs represent and estimated 145,000 Million Btus reduction in Energy Consumption.



**Carbon Emissions**

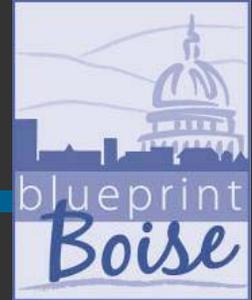
Proposed programs represent and estimated 34,000 reduction in CO2 equivalent greenhouse gas emissions.



# Showing Links Between Topics

	Environmental Health	Community and Neighborhood Livability	Safety and Wellness	Culture, Parks, and Recreation	High Performing Community	Transportation
						
<b>Economic Development</b>	<ul style="list-style-type: none"> <li>• Energy conservation and costs (ENV 5, 6, 7)</li> <li>• Waste an economic resource (ENV 15)</li> <li>• Multi-functional stormwater facilities to support redevelopment (ENV 20)</li> </ul>	<ul style="list-style-type: none"> <li>• Targeted infill and redevelopment areas (LIV 5, 6)</li> <li>• Affordable housing (LIV 7, 8, 9)</li> <li>• Commercial development (LIV 36)</li> <li>• Mixed-use neighborhoods (LIV 28, 29)</li> <li>• Mixed-use districts (LIV 32, 34, 35, 36, 37, 38, 2)</li> </ul>	<ul style="list-style-type: none"> <li>• Worksite wellness (SW 2)</li> <li>• Food production and economic opportunities (SW 3)</li> </ul>	<ul style="list-style-type: none"> <li>• Culture as an economic driver (CPR 2, 3)</li> </ul>	<ul style="list-style-type: none"> <li>• Learning and innovation (HI 2)</li> <li>• Partnerships and collaboration (HI 3, 4)</li> <li>• Fiscal stability and diversifying the revenue stream (HI 6)</li> <li>• Clear City budgeting process (HI 7)</li> <li>• Expansion of communication technologies (HI 6)</li> </ul>	<ul style="list-style-type: none"> <li>• Transportation to support activity centers and other destinations (T 2, 10, 11, 12)</li> <li>• Transportation corridors to support infill and redevelopment (T 3)</li> <li>• Movement of goods (T25)</li> </ul>

# Blueprint Boise



## New Comprehensive Plan:

- Climate Change
- Energy Conservation and Alternatives
- Air & Water Quality
- Development patterns- connect to public facilities, mobility, & utilities
- Mixed use centers
- Arts & culture focus



# Salt Lake City

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## Steps in the Process:

*Plan Inventory* → *Code Diagnosis* → *Code*

- Focus on ten sustainability topics
- Revise code in areas where plans/policies support sustainability

# California – Plans Are Changing!

- AB 32-Global Warming Solutions Act
- SB 97-Address GHG & climate change in Development/City/CEQA
- SB 375-Reduce VMTs
- CARB asked for 15% GHG redux by 2020  
HOW?  
land use, buildings, water use, and transportation
- Climate Action Plans → General Plans

# Other Notable Examples

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- Sustainable Seattle
- Greensburg, Kansas
- Sustainable Jersey
- Commerce City, Colorado
- Greenprint Denver

# Sustainable Community Plans

## What Can Planners do Better?

- More integrated approach: environmental, economic and social concerns
- Incorporate sustainability topics
- Be current – use all tools
- Encourage a global perspective
- More emphasis on benchmarking and accountability
- Inform, educate, and raise awareness



# Closing Thoughts

- Sustainable Community Plans integrate and build upon well-established, contemporary planning concepts by incorporating new topics and approaches
- Overall, it's a fundamental change in approach, not just a way to broaden policy areas



# Taking the Next Step:

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- Tailor your approach to fit the needs & values of your community
- Build in an implementation component
- Institutionalize monitoring and change
- Build in linkages and show how parts fit together

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