# CHAPTER 6:
# Monitor and Report Performance

## Metrics

Metrics are ways of measuring the outcome of a given set of actions.

The ability to demonstrate positive performance results will help your city to[1]:

**Garner support for innovative efforts**

**Gain favorable public recognition**

**Retain or increase funding**

**Recruit and retain talented staff**

**Enlist and motivate able volunteers**

**Attract new participants**

**Engage collaborators**

**Win designation as a model or best practice**

Measurement results can also help:

**Strengthen existing programs**

**Target effective services for expansion**

**Identify staff and volunteer training needs**

**Develop and justify budgets**

**Prepare long-range plans**

**Focus city staff attention on programmatic issues**

Some system of metrics is necessary for any program that seeks continuous improvement. There are, in general, two sorts of metrics. The first, prescriptive metrics, tell an audience what they will do, and set out the precise basis for measuring whether that aim is achieved. Most building codes, and health and safety codes fall under this category.

A second type of metrics are performance metrics. These set the desired outcome, then measure what has been achieved. The actor can choose any number of ways of meeting the goal, in contrast to prescriptive standards, which spell out only one approach. According to the Department of Energy:

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[1] List modified from the United Way Outcome Measurement Resource Network, national.unitedway.org/outcomes/resources/What/OM_What.cfm, 5 October 2006.

"A PERFORMANCE METRIC is a standard of measurement of a function or operation. Performance metrics provide owners, operators, occupants and society a way of quantifying and tracking how well [for example] buildings are doing compared to performance goals.[2]"

The importance of benchmarking and performance metrics for Climate Protection programs is they allow cities to:

**Determine the success or failure of individual programs and determine how the programs should be changed, added or eliminated;**

**Track the big picture progress of the Climate Action Plan;**

**Compare their own progress with other cities; and Determine what still needs to be done to reach goals.**

# Metrics for Climate Action Plan

## Greenhouse Gas (GHG) Inventory

Once a city has set a greenhouse gas emission baseline, it can perform a periodic inventory to track the progress of its programs to reduce GHGs. Chapter 3 describes how to establish a baseline inventory, what tools are available and how to use them to track sector emissions. The resulting numbers can be compiled into reports, which, when combined with an economic analysis of program, will enable a city to determine the success of its programs, what measures need to be adjusted, and the extent to which its actions are cost-effective. Cities should compute their GHG emissions for each sector, assess how emissions compare to last year's and decide whether they are on track to meet their goals.

Utilizing a periodic GHG inventory stacks annual progress and exact GHG reduction, but does not help a city determine how far away it is from reaching all of its long-term, big picture goals.

## Indicators[3]

Measurements called "Indicators of Sustainability"[4] can help city officials and citizens understanding and enhance the relationships between the economy, energy use, and the various environmental and social aspects of achieving long-term sustainability. This manual focuses on indicators that directly relate to climate protection and reducing GHG emissions, however, if used correctly, a Local Climate Protection Plan will not only achieve carbon reduction, but will also enhance overall community sustainability.

Once cities have implemented initial best bets to reduce their emissions (switch to LED lights, implement other energy efficiency programs, provide city bus passes, etc), they will have to consider more systematic programs to reduce GHG emissions. These will have to be balanced with programs to meet all of a community's priorities. At this point, setting and monitoring indicators can enable a community to ensure that its programs meet all of its priorities.

Indicators provide a vision of the direction a city wishes to head, and enable it to measure how far it is from reaching its desired goals and vision. There are many measurements that a city can make. It is important that indicators are:

**Relevant; they show you something about the system that you need to know.**

**Easy to understand; even by people who are not experts.**

**Reliable; you can trust the information that the indicator is providing.**

**Based on accessible data; the information must be available or able to be gathered while there is still time to act.**

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[2] Department of Energy Metric Terminology, www.eere.energy.gov/buildings/highperformance/performance_metrics/metrics_terminology.html, 5 October 2006.

[3] Definition of indicators and effectiveness are taken from the website of Maureen Hart, a consultant in community sustainability, www.sustainablemeasures.com. This website provides a wealth of information including definitions, training, resources and a database of existing indicator projects.

[4] International Sustainability Indicators Network, www.sustainabilityindicators.org/resources/WhoWorkingOnIndicators.html#Communities, 8 October 2006.

Recent signatories of the Mayor's Climate Protection Agreement may wish to start with climate specific indicators. At a later time, they can expand indicators to reflect broader sustainability goals.

## Process to Establish Indicators

As you develop indicators, record the following elements for each one. It helps to use a simple table for this purpose. During the brainstorming phase it is not essential to complete each section, but will be a helpful tool for adopted indicators.[5]

### Indicator name

*Definition:* Define the indicator in detail. What metric will the indicator will use to measure progress toward your community's target?

*Justification:* Why will data gathered for this indicator clearly tell you whether your strategy is being successfully implemented and that your community is making progress toward realizing the target?

*Units:* What are the units associated with this indicator. For example: Percent, Parts per million (ppm), Incidence per 1000 people, etc.

*Data Sources:* Where will the data be obtained? Will it be gathered by the community? Can it be accessed from local or regional administrative records? Do local NGOs or federal agencies gather data?

*Data Gathering Methodology:* What method will be used to gather the data?

### Apply Selection Criteria

*Incisive:* the indicators chosen should tell clearly and specifically about the problems the city is addressing. Avoid choosing indicators that can fluctuate for reasons unrelated to efforts the community is making.

*Measurable:* in order to be useful for assessing progress, indicators need to be quantifiably measurable.

*Results oriented:* can focus on measurement of the effect of the actions taken. This will sometimes seem difficult, since the pressures that lead to a situation like air or water pollution often take place far outside the community.

*Reliable:* indicators must be based on variables that can be measured as accurately as possible. In addition, you must be able to gather the needed data at an appropriate scale and frequency.

*Replicable:* if a measurement can't be accurately repeated, you will not be able to assess progress over time.

*Simple:* choose indicators that are easy to understand, while being as precise as possible.

*Cost-effective*: relatively inexpensive to monitor without diminishing the effectiveness or quality of the data.

*Relevant:* relevancy is a top priority when developing indicators. Do not spend your time with indicators that to not relate to the goals and targets you have developed.

### Examples of Climate Indicators

The following is a list of indicators that can be used to assess a city's progress around climate protection. Each indicator provides a measurement that demonstrates decreased GHG emissions within the community.

*Resource Conservation:*
Energy Use
Renewable Energy Use
Carbon/ GHG Footprint
GHG emissions
Procurement practices
Imported Energy
Energy Program
Solid Waste Generation
Water Use
Agricultural practices

*Transportation:*
Residential Use of Sustainable Transportation Options
Vehicle Miles Traveled
Bus Ridership
Car/Van Pool Programs
Bicycle Lanes
Alternative Fueled City Vehicles
Transportation Options Available
Plug in hybrid programs
Traffic Congestion

*Environmental and Public Health:*
Wastewater Generation
Vehicle Miles Traveled
Local Purchasing Policies in Place (cont'd)

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[5] LASER Unit Six, Indicators of Community Performance, www.global-laser.org/resources/indicator_development.pdf, also archived at, www.natcapsolutions.org/ClimateManual/Cities/Chapter7/LASER_indicators.pdf, 5 December 2006.

*Environmental and Public Health (cont'd):*
Urban Runoff Reduction[6]
Air Quality[7]

*Education and Outreach:*
Community Energy/Climate Task Force
Community Energy Website
Green Builder Program
Small Business Assistance

*Land Use:*
Presence of Urban Forestry Program
Open Space/ Green Space
Sustainable Agriculture Practices
Carbon Conscious Land Use and Development Program

*Buildings:*
Green Building/construction
Production of Energy Efficient Housing
Financial Assistance Program for Energy Efficient Housing
Net Zero Energy Homes

**Monitoring Indicators**
Indicators should be monitored regularly to assess whether various programs created to achieve them are being successful. Well-designed indicators set targets and specify goals that a city aims to achieve within each metric. Through assessment and measurement, cities can determine if they are on track to reach targets for each climate indicator. Cities may choose to track some goals annually while other goals are better measured at key milestones.

Santa Monica released a Report Card[8] to measure and report their indicator progress. The report card describes how the city is meeting its goals and highlights challenges and successes.

The grades given reflect the progress on the part of the entire community to reach the adopted goals. A secondary grade reflects the level of effort the community has put forth. Similar report cards could be used to evaluate cities from across the nation on their level of commitment to reduce the GHG emissions and achieve overall sustainability.

The trick to establish indicators is to determine the variables that will incisively and meaningfully demonstrate the city's progress. If done correctly, a list is created of the specific type of data that might reveal where the city is and where direction it is headed with respect to goals.

For help in creating a list of indicators, make sure to seek out examples of other cities. Below are a few cities that have established climate related indicators.

Sustainability Indicators Include Climate

# CASE STUDY: Minneapolis, MN

In 2006, the Minneapolis City Council passed a resolution establishing 24 sustainability indicators. The initial indicators were developed in two public roundtable meetings facilitated by Crossroads Resource Center (through a grant from the Minnesota Office of Environmental Assistance).

The process involved asking approximately 100 residents and professionals to express a 50-year vision for the City's future. The City then set 10-year targets to provide numerical and focused goals to move the city towards this vision.

The indicators reflect areas in which the city aspired to improve.[9] These are high level, forward-looking measurements on specific topics. They center on a vision for the community's long-term future and address the linkages between various issues. Specific climate indicators are included in the list.

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[6] Can serve as an indicator for lack of impermeable surfaces, which will then tend to heat a city.
[7] When used as a basis for regulation.
[8] Santa Monica Report Card, santa-monica.org/epd/scpr/SCRC_ReportCard_2006.pdf, also archived at, www.natcapsolutions.org/ClimateManual/Cities/Chapter7/SantaMonica_ReportCard.pdf, 22 September 2006.
[9] Minneapolis Sustainability Initiatives www.ci.minneapolis.mn.us/environment/Sustainability-Initiatives.asp, 22 September 2006.

Sample of climate indicators and
accompanying ten year targets
for each Indicator:

| | |
|---|---|
| Renewable Energy Use | *Municipal (City buildings/fleets):*<br> By 2008, increase renewable electrical to 10% above renewable energy supply by Xcel and at that time set a longer-term target.<br>*City Wide:*<br>By 2015, increase renewable energy usage to 10% above state/federal mandates. |
| Bicycle Lanes and Paths | 44 additional miles of bike trail & bike lanes by 2015 (14 miles of on-street bike lanes and 30 miles of off-street bike trails). |
| Carbon Dioxide Emissions | Reduce municipal operations emissions by 12% by 2012 and by 20% by 2020.<br>Reduce City-wide emissions by 12% by 2012 and by 20% by 2020. |
| Urban Tree Canopy | *Municipal*: Plant at least 2,500 trees on public land every year thru 2015.<br>*City Wide*: No net loss of tree canopy cover (26.4%) thru 2015. |

Minneapolis released a 2005 Sustainable Initiatives Annual Report introducing the indicators and showing progress made to date. Below is an update on their Renewable Energy Use Goal. Minneapolis is working to integrate their indicators[10] into the future decision making process:

As directed by the City Council, the principles, goals and indicators from the Sustainability Report will be incorporated into all city decision-making. Elements from the report will become part of all City departments' business plans. Each department will develop strategies to meet the sustainability goals that correspond to their business areas and report on annual progress in their business plans. Coordination among City departments is critical to achieving these goals.

Stronger alignment among stakeholders will help by streamlining resources, spurring creativity and institutionalizing sustainability principles.[11]

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[10] Minneapolis Sustainability Target Highlights Matrix, www.ci.minneapolis.mn.us/environment/docs/indicators-matrix.pdf, also archived at, www.natcapsolutions.org/ClimateManual/Cities/Chapter7/Minneapolis_Indicators.pdf, 22 September 2006.
[11] Minneapolis Sustainability Initiative 2005 Annual Report, http://www.ci.minneapolis.mn.us/sustainability/sustainability-report2005.pdf, also archived at, www.natcapsolutions.org/ClimateManual/Cities/Chapter7/Minneapolis_SustReport2005.pdf, 22 September 2006.

# CASE STUDY:  Santa Monica, CA

Santa Monica was one of the first cities to develop comprehensive sustainability indicators, adopting them in 1994[12].  In 2001, when Santa Monica's task force reviewed the progress made since the original adoption of indicators in 1994, members decided it was time to update their indicators to portray a more comprehensive picture.  This process began in July 2001 with the Sustainability City Working Group.  The group met often during a 15-month period to discuss future goals.  After receiving public input, the task force introduced a new Santa Monica Sustainable City Plan.[13]  The plan includes eight goal areas that as a whole represent a vision for sustainability in the community.  The goals are:

1. Resource Conservation
2. Environmental and Public Health
3. Transportation
4. Economic Development
5. Open Space and Land Use
6. Housing
7. Community Education and Participation
8. Human Dignity

The Santa Monica Sustainability Matrix[14] presents the goals and indicators and the relationship between them.  The following shows a segment of the Resource Conservation Indicators and how each performance metric addresses Santa Monica's eight goal areas.

| | Resource Conservation | Environmental and Public Health | Transportation | Economic Development | Open Space and Land Use | Housing | Community Education and Civic Participation | Human Dignity |
|---|---|---|---|---|---|---|---|---|
| **Resource Conservation Indicators** | | | | | | | | |
| Solid waste generation | • | | | • | | | | |
| Water use | • | • | | • | | | • | |
| Energy use | • | • | • | • | | • | | |
| Renewable energy use | • | • | | • | | | • | |
| Greenhouse gas emissions | • | • | • | • | • | • | | |
| Ecological Footprint for Santa Monica | • | • | • | • | • | • | | |
| Indicator of sustainable procurement | • | • | | • | | | | |
| "Green" construction | • | • | • | | | • | | |

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[12] Local Government Guide to the Internet, www.rural.org/lgg/Ch15_CommIndic.html, 5 December 2006.
[13] Santa Monica Sustainable City Plan, archived at:
www.natcapsolutuions.org/ClimateManual/Cities/Chapter7/SCP_2006_Adopted_Plan.pdf, 5 December 2006.
[14] Santa Monica Matrix santa-monica.org/epd/scp/matrix.htm, entire goal indicator archived at,
www.natcapsolutions.org/ClimateManual/Cities/Chapter7/SantaMonica_GoalIndicator.doc, 5 December 2006.

# Celebrating Successes

Celebrating successful initiatives within a community will be critical to a city's progress in reaching its GHG reduction goals. There are many ways to celebrate accomplishments. Many cities choose to give awards. These can provide an opportunity for both the city and the participating organizations to celebrate their achievements. Awards should provide organizations and individuals:

**Positive Publicity**—Recognition of achievements should enhance the person's or the organization's image in the community. This can be done through award ceremonies, newspaper stories, posting winners on city website, providing a plaque to be posted in the group's office, etc

**Credibility for Environmental Achievements**—A city's recognition of program achievements provides outside verification of actual reductions and success.

**Support in Maintaining Momentum**—Awards maintain organizations internal momentum by providing continued encouragement for management and staff. It also helps to encourage other organizations to address their GHG reductions and sustainability programs.

**Networking Opportunities**—Recognition as a leader in GHG reductions provides an opportunity to work with other environmentally minded organizations.

**Recognition of a Broader Change**—Although all the points above are important for cities to recognize, organizations mostly need recognition that their programs and achievements are helping to protect the climate.[15]

## Examples of Climate Awards

**Connecticut Climate Change Leadership Awar**ds[16] During 2006, awards were given for exemplary actions to reduce greenhouse gas emissions in the following six categories:
1. Fleet Vehicle Incentives and Initiatives
2. Transit, "Smart Growth" and Vehicle Miles Traveled Reduction
3. Forest and Agricultural Land Preservation
4. Increase Recycling and Source Reduction
5. Clean Energy Option
6. Public Education Initiative

**Clean Air – Cool Planet presents Climate Champion Awards**[17] Every two years to organizations and individuals for their actions to reduce GHG emissions and the threat of global warming. The City of Stamford, Connecticut was one of the 2005

winners. CA-CP Executive Director, Adam Markam stated, "Stamford has long been a leader in energy efficiency. The City has a full-time energy manager and has achieved significant savings of taxpayer dollars by annually reducing 60,000 emissions tons of heat-tapping gases from public operations."[18]

**EPA Climate Protection Partnership Awards**[19] EPA gives a variety of awards to recognize outstanding efforts to protect the climate.

**Climate Protection Awards** are presented to companies, non-governmental organizations (NGOs), and individuals each year to recognize exceptional leadership, outstanding innovation, personal dedication and technical achievements in protecting the Earth's climate.

**Energy Star Awards** honor businesses and organizations that made outstanding contributions to reducing GHG emissions through energy efficiency.

**Energy Star Combined Heat and Power (CHP) Awards** recognize projects that reduce emissions and use at least 5% less fuel than state-of-the-art comparable separate heat-and-power generation.

**Green Power Leadership Awards** recognize the actions of individuals, companies and

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[15] Climate Biz, Receiving Recognition, www.climatebiz.com/sections/backgrounder_detail.cfm?UseKeyword=Recognition, 5 October 2006.

[16] Connecticut Leadership Awards, ctclimatechange.com/CTClimateChangeLeadershipAwards.html, 5 October 2006.

[17] Clean Air – Clean Planet www.cleanair-coolplanet.org/GlobalWarmingSolutions05/documents/awards.php, 5 October 2006.

[18] Clean Air – Clean Planet, 2005 Climate Champion Award Winner, www.cleanair-coolplanet.org/GlobalWarmingSolutions05/documents/Stamford.php, 5 October 2006.

[19] EPA Climate Protection Partnerships Awards, www.epa.gov/appdstar/awards/awards.htm, 5 October 2006.

organizations that significantly advance the development of renewable electricity sources through green power markets.

# CASE STUDY: Portland, OR[20]

Portland's Office of Sustainable Development has presented the BEST (Businesses for Environmentally Sustainable Tomorrow) Award since 1993. The award is given each year to the seven companies demonstrating excellence in business practices that promote economic growth and environmental benefits.

The 2006 BEST Award Winners:

**Sustainable Energy: The Holland Inc**

**Sustainable Product Development: Arnold Creek Productions**

**Water Efficiency: Port of Portland Property Maintenance Department**

**Sustainable Food Systems: Portland State University**

**Transportation Alternatives: Portland Energy Conservation, Inc.**

**Waste Reduction/ Pollution Prevention: Columbia Steel Casting Company & SCRAP**

**BEST Practices for Sustainability: Large Company: Nike, Inc.**

**BEST Practices for Sustainability: Medium Company: Stumptown Coffee Roasters**

**BEST Practices for Sustainability: Small Company: Eleek, Inc.**

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[20] Portland BEST Awards, www.portlandonline.com/osd/index.cfm?c=41891, 22 September 2006.

Celebrating Successes

# CASE STUDY:  San Mateo County, CA

Since 1999, Sustainable San Mateo County (SSMC) has conducted an annual Sustainability Awards program[21], an event that heightens community awareness about sustainability.  The awards recognize San Mateo County businesses, community groups and individuals that have demonstrated an outstanding commitment to bringing sustainable practices to their work.  Nominations are accepted at large; individuals and groups may self-nominate.

Each nomination is evaluated based on how well the nominee's actions reflect basic sustainability criteria:

**Future and long-term oriented**

**Aware of ecological and resource limits**

**Regional, as well as local in scope**

**Cognizant that everything is interconnected**

**Concerned with creating diverse and balanced communities**

**Inclusive of social equity and well-being**

**Supportive of public involvement in community decisions**

In addition, SSMC, the County of San Mateo's RecycleWorks program and the San Mateo County Chapter of the American Institute of Architects present a Green Building Award.  The goal is to inspire and support sustainable design in architecture and to recognize the designers, builders and owners of green buildings in San Mateo County.

More than 250 community leaders, volunteers, interested citizens and local media representatives attend the awards event.

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[21] San Mateo County Sustainability Awards, www.sustainablesanmateo.org/index.cfm?fuseaction=awards.welcome, 22 September 2006.

## Additional Resources

**Sustainable Cities Report, Best Practices in Renewable Energy & Energy Efficiency, Austin, Chicago, Fort Collins and Portland**[22]
The purpose of Sustainable Cities is to help all cities efficiently implement energy sustainability programs. It is an in-depth look into the history, status and results of the programs in four cities. The report identifies 14 key elements that all cities can use to become more sustainable and includes more than 80 links to web pages and source reports allowing deeper exploration of a particular city's programs.

**SustainLane**[23] provides detailed report cards ranking U.S. city's quality of life combined with indicators of sustainability programs, policies and performance. The 2005 results place San Francisco as the leader in sustainability with Portland, Oregon a close second. Overall rankings were determined by averaging 12 individual category rankings into a cumulative average. Cumulative averages ranged from 5 for the highest-scoring city to 18.93 for the lowest-scoring city. The best possible score would be 1 (average of first place across all categories) and the worst

possible score would be 25 (average of 25th place across all categories.) Categories include: Transportation, Tap Water Quality, Air Quality, LEED Building, Solid Waste, Food/Agriculture, Zoning, Land Use, Planning, Energy/Climate Policy, City Innovation and Knowledge Base

**Sustainable Measures**[24] is a private consulting firm dedicated to promoting sustainable communities, primarily through the development, understanding and use of effective indicators and systems for measuring progress. They help governments, businesses, and non-profits find appropriate, practical ways to contribute to the overall sustainability of their communities.



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[22] Downloadable from Sierra Club Rocky Mountain Chapter's library: www.rmc.sierraclub.org/energy/library/index.shtml, also archived at, www.natcapsolutions.org/ClimateManual/Cities/Chapter7/SustainableCitiesReport.pdf, 22 September 2006.

[23] To compare SustainLane U.S. City Rankings and report cards, refer to www.sustainlane.com/cityindex/citypage/ranking/, 5 October 2006.

[24] Sustainable Measures, www.sustainablemeasures.com, 8 October 2006.