



**City of Sacramento, CA
Department of Parks & Recreation
Sustainability Plan 2008-2015**



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City of Sacramento, CA
Department of Parks & Recreation (DPR)
Sustainability Plan 2008-2015
Executive Summary: "38-Point Plan"

Following is a summary of the major targets of this Plan, to be achieved by 2015:

Focus Area 1: Energy Independence

1. Improve energy efficiencies in parks, community centers and daily administrative practices.
2. Expand the collection and use of solar power (e.g. farms, parking lots, roofs) and other renewable energy sources at parks and facilities (e.g. pools).
3. Replace or renovate obsolete energy or resource-inefficient infrastructure.
4. Comply with City's Administrative Policy Instructions (APIs) that promote sustainable city operations and energy efficiencies.

Focus Area 2: Climate Protection

5. Add additional trees to parks, track park tree loss and gain, and maintain trees for 100+ year permanence as an opportunity to offset the Department's carbon footprint.

Focus Area 3: Air Quality

6. Reduce carbon emissions from fleet vehicles and maintenance equipment via more efficient vehicles and equipment.
7. Achieve less driving on the part of DPR staff.
8. Increase bike trail access to DPR facilities and throughout the City to provide transportation alternatives.

Focus Area 4: Material Resources

9. Increase the reuse and recycling of materials (including "e-waste") in all facilities and operations.
10. Maximize composting of green waste within the park system.
11. Reduce consumption of material resources (e.g. reduced paper use and increased "green" purchasing).
12. Reduce the production of food waste by composting systemwide and providing public food waste composting drop off sites.
13. Develop and implement a department Integrated Pest Management (IPM) Policy and Plan for parks and minimize use of non-organics in landscape maintenance.
14. Comply with the City's Administrative Policy Instructions (APIs) that promote sustainable City Operations and waste reduction.

Focus Area 5: Public Health & Nutrition

15. Increase community gardens on parks and other City properties.
16. Increase supply of locally grown and organic foods available at DPR facilities.
17. Implement "edible landscape" demonstration gardens at select parks.
18. Increase opportunities for public education on gardening and nutrition.

Focus Area 6: Urban Design, Land Use & Green Building

19. Obtain LEED Silver certifications all new buildings, and pursue BERC certification for all existing community facilities and operations.
20. Improve sustainability guidelines for park design (improved water efficiency and recharge, renewable energy sources, recycled materials, native/low water use plants).

Focus Area 7: Parks, Open Space & Habitat Conservation

21. Develop management plans and staff expertise to manage and maintain undeveloped and natural areas in the parks system.
22. Increase the ratio of parks and open space area to City population, particularly in underserved neighborhoods.
23. Increase natural habitat protection and restoration efforts in the parks system.
24. Establish a "Nature in the City" Program to increase "wildness" within the Parks system and expand human access to and intimacy with nature.

Focus Area 8: Water Resources & Flood Protection

25. Reduce overall percentage of turf in the parks system.
26. Reduce water use for irrigation, targeting sites based on water audits on all parks/recreation facilities. Get all Parks facilities on the Centralized Irrigation System to maximize water use efficiency.
27. Increase the use of permeable pavements in parking lots.
28. Develop a master plan for a pilot ornamental "demonstration landscape" project as a tool to educate the public on how to landscape using native and low-water use plants.

Focus Area 9: Public Involvement & Personal Responsibility

29. Expand nature and sustainability education/interpretation opportunities (via programs/classes, signage, volunteer opportunities, other media).
30. Serve as a provider of educational information for all users of Parks facilities on "going greener" in all aspects of life, including the development and delivery of an organized public education/media campaign.
31. Require all users of Parks facilities and community centers to comply with sustainable practices, including the recycling program.
32. Develop incentives for public and staff participation in sustainable practices.

Implementation

33. **Staffing:** Determine additional staffing needs for Plan implementation.
34. **Financing:** Determine additional funding needed for Plan implementation and potential sources.
35. **City Reports:** Provide Sustainability Considerations information in all Parks and Recreation Commission and City Council Reports.
36. **Department Ranking:** Establish criteria/indicators and evaluate how "green" DPR is among other parks and recreation municipal organizations in the state of California.
37. **Policy:** Formally adopt the National Recreation & Park Association Environmental Stewardship Ethic and California Children's Outdoor Bill of Rights.
38. **Legislation:** Actively support state and federal legislation.

The Issues

From concerns over climate change, to drought-related water shortages, to air quality, society faces serious environmental issues locally, regionally, nationally and globally. These issues will affect the quality of life today and for generations to come. There is a growing body of evidence that a major shift in human behavior is necessary to overcome destructive tides of over-consumption and environmental degradation; and work for a better future for ourselves, our children and the numerous species that share our planet. Our existing economic systems, agricultural systems and automobile-oriented infrastructure are inherently unsustainable.

DEPENDENCE ON NON-RENEWABLE RESOURCES

Our economy and lifestyle is dependent on vast supplies of non-renewable resources, primarily derived from fossil fuels. As these resources are consumed, they will become increasingly scarce and more expensive. We must prepare for this eventuality to prevent a crisis in supply vs. demand. In addition, reducing our dependence on non-renewable fossil fuels reduces climate changing greenhouse gases and gives us greater energy independence.

OVER & EXCESSIVE USE OF NATURAL RESOURCES

We are using some renewable resources faster than nature can replenish them. Examples of this are consumption of water, lumber, wood and paper products, over fishing and soil depletion. Over-consumption of some renewable resources will cause damage and collapse of many ecosystems.

POLLUTION

Unintended by-products of manufacturing, consumption, and combustion of resources end up in our air, water, soil, and food. Many of these by-products are toxic. Material from consumption is left over as “waste” and buried in landfills. This leads to numerous negative impacts, including consumption of valuable land for landfills, pollution of that land and associated lands and waters with potentially toxic materials, and removal of resources (such as carbon and nitrogen) from natural cycles.

Our existing economic systems, built environments and cultures are inherently unsustainable. Achieving sustainability in contemporary times will require a major paradigm shift, essentially reversing long-standing trends of consumption and traditional development, and changing our philosophies and behaviors.

What is Sustainability?

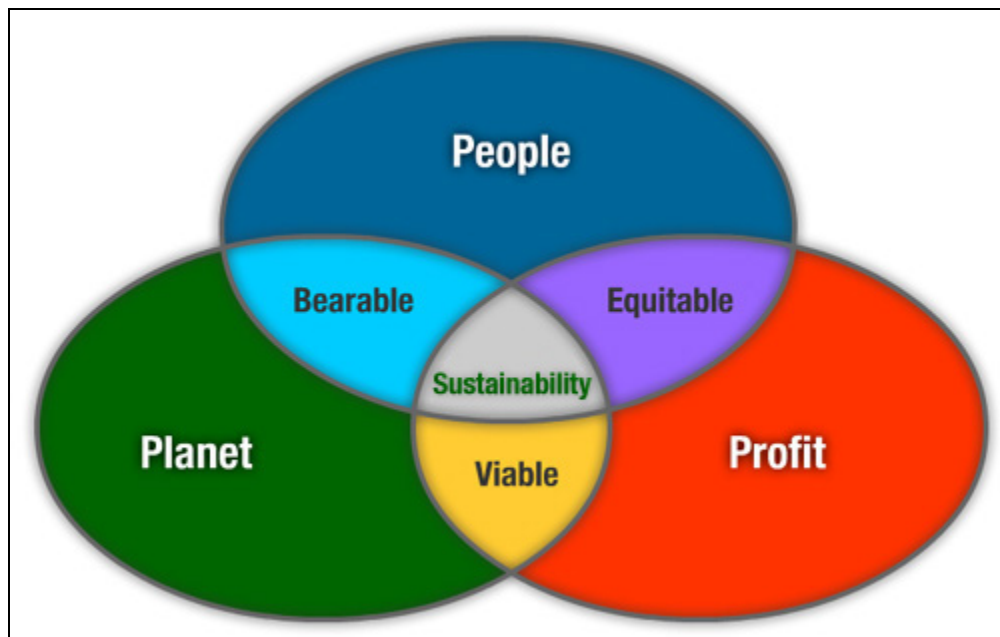
Sustainability is a broad term that generally means that a person or society lives within the means of what the Earth can provide over a long term. When a process is sustainable, it can be carried out over and over without negative effects on the environment or high costs. The definition of sustainability for the purposes of this *Plan* is:

“Sustainability meets the needs of the present without compromising the ability of future generations to meet their own needs.”

-- United Nations World Commission on Environment and Development

A sustainable society does not rely extensively on non-renewable resources as a basis for its economy. A sustainable society reduces consumption of renewable resources to levels that can be replenished by nature.

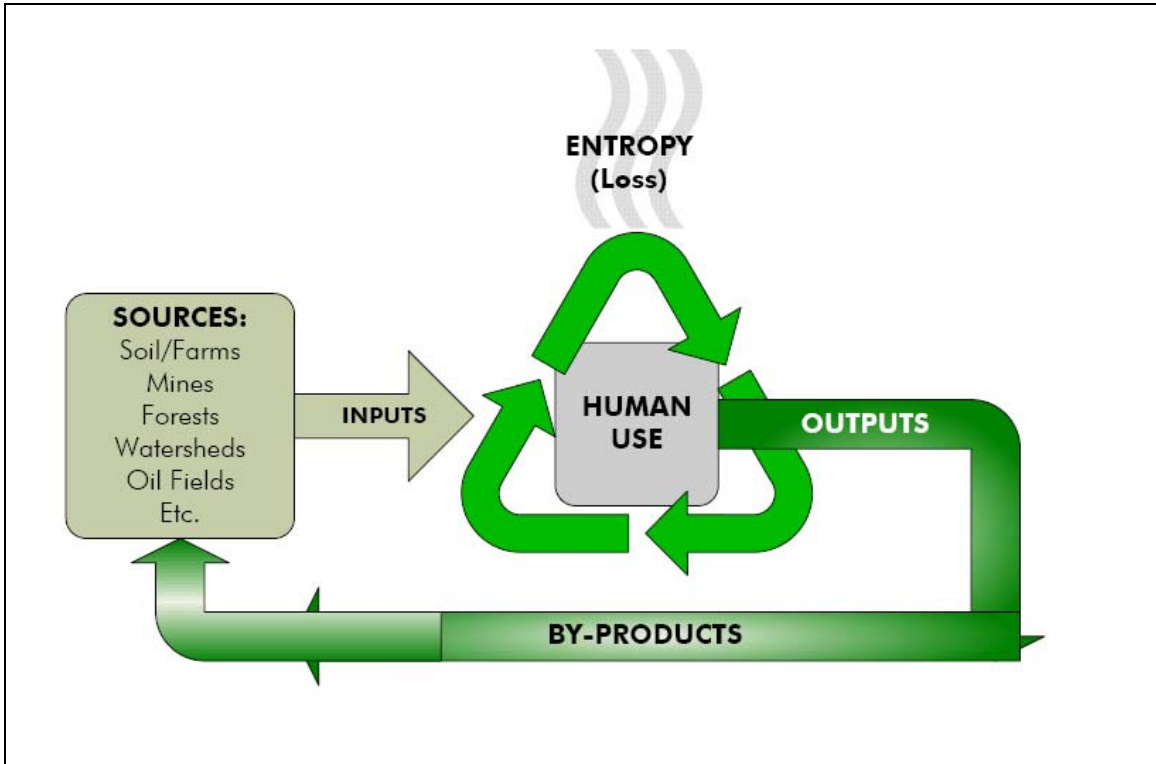
The “Triple Bottom Line” is a common theme for decision-making in a sustainable society. The Triple Bottom Line refers to the consideration of economic stability, environmental sustainability and social equity aspects of a particular decision.



Green Innovation, 2007

A sustainable society uses non-toxic and/or biodegradable materials and products and develops “cradle-to-cradle” processes to replace “cradle-to-grave” conventional processes of post-industrial society. In a “cradle-to-grave” process, materials are moved in a linear fashion rather than through one of nature’s endless cycling and recycling processes. The linear process moves materials that support life from their sources through human consumption that ultimately pollute the sinks (atmosphere, rivers, lakes, ocean, and landscape). Eventually, this one-way process also depletes and destroys the natural landscape on which it depends. A sustainable or “cradle-to-cradle” process is one that is

continually self-renewing. Linear one-way processes must be replaced by cyclic flows, continually regenerating materials that support life.



City of Sacramento, December 2007

Why a Department (DPR) Sustainability Plan?

On December 18, 2007, the Mayor and City Council adopted the City's first *Sustainability Master Plan (SMP)*. The *SMP* is meant to serve as a policy framework for the City of Sacramento to ensure that sustainability concerns are incorporated into the City's decisionmaking processes and daily activities/operations. The *SMP* is intended to be a means, and not an end, for creating a Sustainable City, and to serve as a tool for future operational and policy decisions. To proceed in a sensible way to change long-standing environmental practices, the *SMP* has nine focus areas, with associated goals and targets.

On February 12, 2008, the Mayor and City Council adopted the *2008 Sustainability Implementation Plan (SIP)*. This is a companion document to the *SMP*. It identifies key initiatives that staff plans to implement in 2008 to move the City towards the goals and targets identified in the *SMP*. The *SIP* was developed by subject matter experts on the City staff and the community. While it does not fund new City programs, the initiatives within the *SIP* will have a great impact on reducing energy usage by City facilities and will begin to educate City employees and the public on how to work and live more sustainably. The City will report on and adopt a new *SIP* annually.

The Department should be a major contributor to these citywide sustainability efforts. DPR manages approximately 3,300 acres of land and 351,000 sq. ft. of indoor facilities. It should be a leader and example in sustainability as the managers of the substantial physical assets of the City's public parks, open space, recreation and community facilities system.

In 2007, DPR generated 7% of City Operations' carbon footprint (Roberts, 2008). A carbon footprint is a measure of the impact human activities have on the environment in terms of the amount of greenhouse gases produced, measured in units of carbon dioxide (Carbon Footprint, 2008). The Department's contribution to the City Operations carbon footprint includes:

- Electricity consumption equivalent to 1,670 tons of carbon dioxide
- Natural gas consumption equivalent to 500 tons of carbon dioxide
- Fuel consumption equivalent to 1,370 tons of carbon dioxide

In an effort to be proactive and a leader in local environmental and resource stewardship, DPR developed this departmental level *Sustainability Plan* (the first City department to do so). Moving DPR towards increased sustainability will require a new consciousness and commitment to do things differently than they have been. It will require all staff and users of City parks and recreation services to:

- develop new and/or change existing programs,
- establish new priorities and change behavior,
- commit resources to sustainable causes, and
- collaborate with others to function sustainably.

The strategy for moving the Department toward sustainability focuses first on changes it has control over within the City's parks, open space areas, recreation and community facilities, and DPR offices. The *City Parks & Recreation Master Plan 2005-2010* details specific policies that protect natural resources, open space, water corridors and parkways. During the 2008 *Parks & Recreation Master Plan* update process, additional policies are being added that support sustainability. The *DPR Sustainability Plan* will function as a supplement to the *Parks & Recreation Master Plan*, providing added focus on sustainability of the Department. This *DPR Sustainability Plan* is also consistent with proposed new sustainability policies in the *City General Plan 2030*.

The *DPR Sustainability Plan* will support the citywide efforts, and will touch every department facility, operation, employee and user. To facilitate integration with and information transfer into the larger citywide effort, this document has been laid out in the same nine Focus Areas as the City's *SMP*:

1. Energy Independence
2. Climate Protection
3. Air Quality
4. Material Resources
5. Public Health & Nutrition
6. Urban Design, Land Use, Green Building & Transportation
7. Parks, Open Space & Habitat Conservation
8. Water Resources & Flood Protection
9. Public Involvement & Personal Responsibility

Within each of these focus areas, the goals found in the *DPR Sustainability Plan* were chosen to work within the scope and realm of influence of the Department, and to also further the goals and targets of the *City SMP*.

As a formal "kick off" to the effort to "go greener" in Sacramento Parks and Recreation Services, the Department held a Sustainability Workshop for approximately 100 key staff and appointed officials (Youth and Parks & Recreation Commissioners). The Workshop served to:

- educate on the key environmental issues of our times
- inform on the City's *Sustainability Master Plan* and *Implementation Plan*
- share practical applications for every day
- collect data on current practices ("what are we already doing?")
- brainstorm ideas on how to "go greener" on our work places and services
- recruit a Department "Green Team" to work on development of this *Sustainability Plan*
- share the Vision for sustainability for City parks and recreation services as follows:

VISION:

The Sacramento Parks & Recreation Department will be one of the top three most sustainable municipal parks and recreation organizations in California by 2015

Focus Area 1: Energy Independence

The United States is dependent on foreign oil; the country imports 60% of its supply and that percentage increases each year (City of Sacramento, December 2007). World demand for oil continues to increase each year. Oil supplies are finite and at some point will decline. These facts could eventually translate into a worldwide shortage of gasoline and diesel fuels, negatively affecting the federal trade deficit, harming local job creation, and increasing national security concerns. In addition, the use of carbon-based fossil fuels creates greenhouse gas emissions.

It is estimated that it will take many years to transition from a fossil fuel economy to a renewable fuels economy. This time lag between the demands and supply of fuel technology and availability could create challenging market conditions. A gradual transition towards renewable energy is prudent.

DPR must continue to practice energy efficiency and pursue the expanded use of renewable energy sources. During the 2007 baseline year, the Department produced 1,670 tons of greenhouse gases as a result of electricity usage and 500 tons as a result of natural gas consumption. As electricity rates continue to increase, so do incentives to utilize solar energy.

Goals:

- 1.1 Improve energy efficiencies in parks and in daily administrative practices.
- 1.2 Expand the collection and use of solar power in parks and community centers.
- 1.3 Replace or renovate obsolete energy or resource-inefficient infrastructure.

Accomplishments:

- 1.1 Renewable Energy
 - 1.1.1 Two solar water circulation pumps have been installed in Southside and Granite Ponds to prevent excessive algae growth. The energy savings from these two units is the equivalent to about 440,000 kW hrs per year (as compared to electric units). This equates to the annual energy used by about 40 homes or 50 passenger cars, thereby reducing equivalent carbon dioxide emissions (the leading greenhouse gas) by about 300 tons per year.
 - 1.1.2 A pool cover is used at the city's only heated pool at the Sam Pannell Aquatic Center. This cover reduces heat loss from evaporation and radiation, thereby reducing energy used for heating. During swimming season, a pool tends to gain heat from the sun during the day, then lose it at night through heat radiation as well as evaporation. If a pool is heated, covering it at night will reduce heat loss, resulting in not only warmer temperatures but an energy savings over the course of a year. Almost all of a pool's heat loss—about 95 percent—occurs at the surface, mostly through evaporation to the air and radiation to the sky (USDOE, 2000). A pool cover is an effective means to keep heat (and water) in a pool by reducing evaporation of water from the pool when it is not in use, and reduces radiant heat losses.

1.1.3 Currently use solar power for the announcement billboard at Granite Park (dog park area).

1.2 Energy Efficiency

1.2.1 At Hart Senior Center, E. Moore Community Center and Belle Cooledge Community Center, staff monitor and adjust exterior and parking lot lighting to compensate for changes in daylight savings time. These lights are on timers set by daylight hours or on photocells.

1.2.2 In new community centers, buildings are designed to maximize natural lighting (e.g. windows and sky lights) and rooms have been supplied with automatic light sensors that turn lights off when rooms are not in use.

1.2.3 Some older community centers have been retrofitted with automatic light sensors, and when this has not been possible, center staff are conscientious to turn lights off when a room is not in use.

1.2.4 Many administrative buildings have programmable thermostats or energy management systems to control heating and air conditioning units.

Implementation Targets:

1.1 Improve energy efficiencies in daily administrative activities.

1.1.1 Assist with development and implementation of the City's Administrative Policy Instructions (API) that promote sustainable City Operations and energy efficiencies through:

1. Optimizing temperature settings in office and community centers, and
2. Ensuring lights, computers and other equipment are turned off or in sleep mode when not in use.

1.1.2 Upon adoption of the sustainable operations API, inform and train staff to comply with all sustainable practices. Post information on sustainable administrative practices on Department intranet and in City facilities.

1.2 Analyze feasibility and implement solar energy sources in park designs for exterior building lighting, parking lot lighting, restrooms, irrigation controllers, etc.

1.3 Install solar water circulation pumps in other park ponds that have difficulties with excessive algal growth.

Focus Area 2: Climate Protection

Human activities are altering Earth's climate by emitting greenhouse gases such as carbon dioxide into the earth's atmosphere. It is estimated over the next 95 years that the earth's average temperature will increase between 2° F and 10° F (City of Sacramento, December 2007). Predicted local impacts include, but are not limited to, the following:

- Heat waves will be more intense, will occur more frequently, and will be sustained for longer periods.
- In Sacramento, the number of days per year over 95° F will increase from an average of 18 days/year to as many as 110 days/year.
- Sierra snow pack will be reduced by up to 90%.
- Since more precipitation will fall as rain rather than snow, the risk of winter flooding may increase.
- Since much of our water storage in California depends on snow pack, water shortages in the summer will increase.
- Rising sea levels will cause increased salt-water intrusion into the Sacramento-San Joaquin Delta, potentially putting two-thirds of California's water supply in jeopardy. (City of Sacramento, December 2007)

The City's open space and park system provides areas for tree planting. Trees sequester atmospheric carbon as part of the process of photosynthesis. Through this process, carbon dioxide is converted into stored carbon, and this is why trees are sometimes referred to as 'carbon sinks'. By taking this carbon dioxide from the atmosphere, trees clean the air and offset pollution. Each tree planted offsets your environmental impact by utilizing about 0.8 tons of carbon dioxide emissions over its lifetime of 100 years (Carbon Footprint, 2008). In fact, if the Department can plant 800 trees per year, those trees would utilize enough carbon dioxide to offset the greenhouse gases produced by DPR's vehicle and equipment fleet (Roberts, 2008).

Goals:

- 2.1 Support the City's efforts to protect the climate through participation in the *SMP*.
- 2.2 Utilize tree planting as an opportunity to offset the Department's carbon footprint.

Accomplishments:

- 2.1 Continued support and participation in the City-wide planning efforts to protect the climate.

Implementation Targets:

- 2.1 Plant trees in new and existing parks to offset the Department's carbon footprint.
- 2.2 Participate in the City's climate action efforts in the following ways:
 - 2.2.1 Specify Energy Star, EPEAT Silver office equipment for purchase by City staff.
 - 2.2.2 Continue vehicle "right-sizing" program.
 - 2.2.3 Develop and make climate change presentations for community centers' staff and users. (*Source: City SMP*)

Focus Area 3: Air Quality

Air quality is a major environmental health issue for Sacramento, particularly in the summer when an inversion layer traps pollutants close to the ground. Vehicles and other mobile sources powered by combustion (such as lawnmowers) cause 70% of our air pollution (City of Sacramento, December 2007). The Sacramento region has been designated as a severe ozone non-attainment area by the U.S. Environmental Protection Agency (US EPA). In the summer, the Sacramento area fails to meet both state and federal standards for ozone. Although ozone in the upper atmosphere protects us from harmful ultraviolet rays, at the ground level it is an irritant that causes the eyes to burn, and it can damage lung tissue. Other problematic air pollutants include carbon monoxide, hydrocarbons, sulfur dioxide, and oxides of nitrogen (NO_x).

The air quality in the Sacramento region has actually improved in the last decade due to cleaner cars, smog check requirements, reformulated gasoline, vapor recovery systems on gasoline dispensers, and state and federal regulations for solvents in paints and other consumer products. However, in the future the combined impact of more people, more cars, and more hot days due to global warming will make meeting air quality standards a greater challenge.

The Sacramento Area Council of Governments (SACOG) has estimated that there will be 1.7 million more people in the Sacramento Region in 2050 than there were in 2000, which will bring the number of residents to over 3.6 million. If present trends are continued, residents will drive many more miles annually and spend more time in their cars, which will have a negative effect on air quality. In addition, the increase in energy demand accompanying projected population increases will create the demand for additional power plants; this will further threaten our air quality.

The DPR maintenance vehicle and equipment fleet produced 1,370 tons of greenhouse gases in 2007. Consideration will be given to how to minimize this impact on the region's air quality.

Goals:

- 3.1 Encourage DPR employees to drive less.
- 3.2 Reduce department fleet and equipment emissions.
- 3.3 Increase bicycle/pedestrian friendliness and public transportation access to DPR facilities.

Accomplishments:

- 3.1 Maintenance routes have been re-organized to minimize vehicle travel time.
- 3.2 DPR staff currently walk or carpool to meetings when feasible. Some staff also utilize conference calls to reduce commuting time.
- 3.3 Allow staff to have flex schedules or telecommute.
- 3.4 The City fleet has a policy of owning a vehicle for 10 years or 100,000 miles and these vehicles are well maintained and smog checked.

Implementation Targets:

- 3.1 Update fleet to more fuel-efficient vehicles as technology improves for pick-up trucks. The City fleet is presenting alternatives for hybrid vehicles; however, Parks & Recreation currently does not have any hybrids. Almost all of Parks fleet vehicles are pick-up trucks; hybrid pick-up trucks are just starting to be developed and are limited in how much they can tow.
- 3.2 Reduce car travel time for Departmental meetings. For larger Departmental meetings, provide incentives for those that walk, bike, take public transportation or carpool to the meeting. For smaller meetings, encourage conference calls.
- 3.3 Reduce emissions from landscape maintenance equipment. Small gasoline-powered engines can significantly impact air quality, primarily because the air pollution reducing technology that has been adapted for large vehicle engines has not been adapted for smaller equipment. The emissions from gas-powered mowers and blowers account for as much as 5% of our reactive organic gases and carbon monoxide, according to the California Air Resources Board.
 - 3.3.1 Newly purchased equipment should meet the highest available standards for emissions reductions.
 - 3.3.2 The use of small landscape equipment will be reduced on “Spare the Air” days. Pertinent maintenance staff will be required to sign up for Air Alert on www.sparetheair.com (check the box to get the Daily Air Quality Forecast sent to you by e-mail). A Spare The Air advisory will be issued when the forecast is for 150 AQI or higher, and on these days use of small landscape maintenance equipment will be prohibited.
- 3.4 Focus grant and development efforts on promotion and completion of a regional trail system that can be used as a commuter route and a transportation alternative.
- 3.5 Use low or no-VOC building materials and furnishings in all DPR facilities (such as paints, finishes, furniture and carpeting).

Focus Area 4: Material Resources

Landfills have historically been the lowest cost alternative for eliminating waste; however, many factors are causing this traditional method to become less attractive:

- *Global warming:* Decomposing organic waste emits carbon dioxide and methane from landfills, both negatively affect global warming.
- *Diminishing resources:* Many useable, valuable resources are now buried in existing landfills.
- *Overuse of non-renewable resources:* Improved recycling can reduce stress on renewable resources and increase the life of existing landfills.
- *Land values:* Landfills consume valuable land and diminish surrounding land values.
- *Transportation costs:* Increased regulation and land values combine to cause many cities to ship their waste to landfills hundreds of miles away.
- *Energy production:* The energy content from a typical residential waste stream could possibly provide 25 to 50% of a home's energy needs.
- *Water quality:* Rain and landfills combine to create leachates, which can cause local groundwater contamination.

In addition, the use of toxic materials to meet the needs of citizens and businesses frequently causes unintended consequences; e.g. mercury in fish and DDT causing a decline in bird birth rates. Recycling and composting are more sustainable alternatives to landfills. Both reuse materials that would otherwise be wasted. Recycling is economical, saves energy, metals and forests.

Goals:

- 4.1 Increase the reuse and recycling of materials.
- 4.2 Maximize composting of green waste within parks.
- 4.3 Reduce consumption of material resources.
- 4.4 Reduce the use of pesticides and other toxic materials.
- 4.5 Reduce the production of food waste by composting.

Accomplishments:

- 4.1 Recycling and waste reduction
 - 4.1.1 DPR directly participates in the City's recycling program for paper, containers, batteries and e-waste. Many of these citywide services offered to the public, such as battery drop-off locations, are provided at community centers. Also, three staff positions are funded through the Solid Waste Division to deal exclusively with recyclables in parks, seven days a week throughout the majority of the year. Wherever there is a trash can in a park, there is a recycling can next to it.
 - 4.1.2 All computer equipment that is no longer in use is stored and made available as needed throughout the department or within community centers.
 - 4.1.3 Where possible, the Department purchases recycled paper products.
 - 4.1.4 In the beginning of 2008, the Department implemented the first City operations pilot worm composting program in City Hall offices.

Approximately 1/3 of Sacramento's solid waste stream is food waste, most of which could potentially be composted and turned into organic fertilizer.

- 4.1.5 Recreation Services commonly utilize recycled products for arts and crafts projects at community centers.
 - 4.1.6 New playground equipment and benches are primarily constructed out of recycled materials. These materials also tend to last longer and need to be replaced less frequently.
 - 4.1.7 In Fall 2007, maintenance staff began to either shred fallen leaves using mulching blades on mowers, or to move leaves into shrub beds. This reduces the amount of organic leaf material that ends up being disposed of in landfills.
 - 4.1.8 Completed construction of Two Rivers Trail (2-miles long) and Ueda Parkway Trail (4-miles long) out of rubberized asphalt which is made out of recycled tires and is an environmentally friendly alternative to traditional road paving. The California Waste Management Board estimates that a two-inch thick surfacing project uses over 2,000 scrap tires per mile.
- 4.2 Reduce chemical/pesticide use
- 4.2.1 When possible, community centers are utilizing environmentally friendly cleaning products.
 - 4.2.2 Pools are kept covered when they are not in use, which minimizes the need for chemicals. A cover helps keep the pool clean and extend the life of the chemicals in a pool (USDOE, 2000).
 - 4.2.3 In Fall 2007, maintenance staff began to either shred fallen leaves using mulching blades on mowers, or to move leaves into shrub beds. This mulch minimizes the need for fertilizer, as they slowly decompose and provide organic matter that helps keep the soil loose. This improves root growth, increases the infiltration of water, and also improves the water-holding capacity of the soil. Organic matter is a source of plant nutrients and provides an ideal environment for earthworms and other beneficial soil organisms.
 - 4.2.4 Two solar water circulation pumps have been installed in Southside and Granite Ponds to prevent excessive algae growth, thereby reducing the use of algaecides and herbicides.

Implementation Targets:

- 4.1 Reduce generated waste and material consumption in daily administrative and operational activities.
 - 4.1.1 Assist with development of and implement the City's Administrative Policy Instructions that promote sustainable City Operations and waste reduction through double-sided printing and copying, and recycling.
 - 4.1.2 Upon adoption of the sustainable API, inform and train staff to comply with all sustainable practices. Post information on sustainable administrative practices on Department intranet.
 - 4.1.3 Ensure that any newly purchased photocopying and printing equipment has the ability to do double-sided printing/copying when financially feasible.

- 4.2 Adopt policies to require that purchasing of goods and materials meets sustainability criteria.
 - 4.2.1 Assist with development of the City's Environmentally Preferred Purchasing (EPP) policy, which may include bid preferences to suppliers that meet minimum sustainability criteria as defined by the City of Sacramento. Upon adoption of this policy/API, ensure Department staff comply.
 - 4.2.2 Consider changing concrete specification for park construction to include more flyash instead of Portland cement while ensuring quality and performance of the products used.
(Flyash is a by-product of coal-fired electric generating plants which offers environmental advantages by diverting the material from the waste stream, reducing the energy investment in processing virgin materials, conserving virgin materials, and allaying pollution. The major component of Portland cement is quarried limestone. Mineral quarries can produce emissions of airborne pollution in the form of dust, gases, noise and vibration when operating machinery and during blasting in quarries, consumption of large quantities of fuel during manufacture, release of CO₂ from the raw materials during manufacture, and damage to countryside from quarrying.)
- 4.3 Support adoption of a Citywide Integrated Pest Management (IPM) policy and plan; thereafter, develop and implement an IPM Plan for department maintenance and facility development and design activities. Identify opportunities to reduce use of pesticides, attend annual staff training in alternatives to pesticide use and IPM, and continually investigate new products/solutions. (*Source: City SMP*)
- 4.4 Implement a departmental food waste composting system by expanding the pilot worm composting program to other DPR offices. Provide public food waste composting drop off sites.
- 4.5 Install solar water circulation pumps in other park ponds that have difficulties with excessive algal growth.

Focus Area 5: Public Health & Nutrition

The City currently has wellness programs, school food programs, community gardens, trails and exercise facilities, many of which are managed by the Department of Parks & Recreation. By improving public health, health care costs can be reduced, thus assisting to improve City livability.

Goals:

- 5.1 Improve the health of residents through access to a diverse mix of wellness activities, education and healthy food.
- 5.2 Promote gardening within the City and locally produced food through more community gardens.
- 5.3 Promote the use of locally grown and organic food.

“Parks are essential to the health of individuals and communities. They offer recreation and renewal, promote exercise, reduce crime, revitalize neighborhoods, protect the environment, and bring communities together. Children without access to parks suffer higher levels of obesity, diabetes, asthma, anxiety, and depression.”

Source: “A Healthier America? It’s a Walk in the Park”, Land & People, Trust for Public Land, Spring 2004

Accomplishments:

- 5.1 The mission of the Department's Recreation and Human Services organization is to build a viable community by ensuring opportunities for people to "Optimize the Experience of Living" by creating environments for engagement, relationship building, personal development and safety. The division has a number of units designed to provide a comprehensive range of recreation and human service programs through various delivery mechanisms. The Division also operates a variety of recreation facilities and is a leader in developing and fostering partnerships to maximize service delivery and meet the needs of a growing and diverse population.
- 5.2 DPR currently operates five permanent community gardens that allow residents to grow their own food:
 - Fremont Community Garden
 - J. Neely Johnson Park Community Garden
 - Danny Nunn Park Community Garden
 - Southside Park Community Garden
 - John Strauch Park Community Garden
- 5.3 Programs offered by Recreation and Human Services (Teen Services, 4th R, START, Older Adult Services, etc.) ensure that they serve healthy fruits and vegetables for snacks on a regular basis, affecting over 10,000 people each year. These programs also encourage field trips that are within walking distance.

Implementation Targets:

- 5.1 Develop a master plan for a pilot food production “demonstration landscape” project as a tool to educate the public on how to garden and grow their own food (“edible landscapes”). (Source: City SMP)

- 5.2 Develop more community gardens in City parks.
- 5.3 Increase supply of locally grown and organic foods available at Parks facilities.
- 5.4 Increase educational/recreational opportunities and programs on health, nutrition and gardening.

Focus Area 6: Urban Design, Land Use & Green Building

While standards exist for sustainable structures—“green buildings”—there are no standards to guide those who want to create sustainable landscapes as there are for green buildings. Yet landscapes have great potential to impact the environment. For example, the following information is from the American Society of Landscape Architects (ASLA) Sustainable Sites Initiative (SSI, 2007):

- *Greenhouse gas emissions.* Vegetation helps reduce the amount of carbon dioxide in the atmosphere, a greenhouse gas, by capturing and storing it for use in producing roots, leaves and bark. In the United States, urban trees capture up to 25 million tons of carbon each year.
- *Urban Climate.* Urban trees reduce the urban heat island effect and provide windbreaks. A study of five U.S. cities found that the presence of urban trees can result in substantial annual energy savings--\$553,000 per year in Berkeley, CA and \$187,000 in Cheyenne, WY.
- *Biodiversity.* Well-designed landscapes promote biodiversity with a mix of native species and ecologically appropriate non-native species. Approximately 85% of the invasive woody plant species in the U.S. were introduced for landscape or ornamental use, and approximately 5,000 plant species are estimated to have escaped to natural ecosystems.
- *Water waste.* Native plants and water-conserving landscapes reduce the use of scarce water resources.
- *Water pollution.* Careful plant selection and organic soil additions reduce the use of pesticides and fertilizers that can contaminate water. Good design and techniques like rain gardens or swales reduces runoff. 1995 EPA data showed that urban runoff contributed to damaging more than 26,000 river and stream miles.
- *Energy consumption.* Using local, sustainable materials takes less of a toll on our energy supply. The energy demands to produce and transport materials (embodied energy) can account for up to 15 percent of a building’s energy use over its entire lifespan.

Goals:

- 6.1 Expand and implement “green” standards for new park and community center design projects.

Accomplishments:

- 6.1 The Parks & Recreation Department has 2 community center buildings that are soon to be LEED Registered:
 - Oak Park Community Center Expansion is a 10,000 SF single story structure attempting to achieve LEED Silver under the LEED New Construction program. This building is attempting to be 25% more energy efficient than a minimally code compliant building. Estimated completion date is February 2009.
 - George Sim Community Center Expansion is a 32,000 SF single story structure attempting to achieve LEED Silver under the LEED New Construction

- program. This building is attempting to be 15% more energy efficient than a minimally code compliant building. Estimated completion date is June 2009.
- 6.2 The Park Design and Development Standards for new parks outlines Sustainable Park Design Guidelines (Section III.D) that support a commitment to maintainable, sustainable park design and water conservation.

Implementation Targets:

- 6.1 Require LEED (Leadership in Energy and Environmental Design) Silver certification or an equivalent certification for all new community centers and recreation complexes (*Source: City SMP*). Pursue BERC certification for existing buildings.
- 6.2 Update the Sustainable Park Design Guidelines in the Park Design and Development Standards for maximum sustainability and ensure these guidelines are followed during the design process.
 - 6.2.1 Ensure design guidelines are comprehensive, sustainable and maintainable. Consider sustainable design principles such as ground water recharge, solar power sources, composting or low flow restrooms, low water-use vegetation, and utilizing products made from recycled materials.
 - 6.2.2 Develop a sustainable design “checklist” as a part of the design plan review process for new parks to serve as a reference for park designers to ensure incorporation of sustainable design principles.
- 6.3 Assist with the implementation of the Bikeway Master Plan and Pedestrian Master Plan facilities to achieve an annual expansion of 5 percent of the existing system. Complete construction of the Ninos Parkway Bike Trail and the North Natomas Regional Park Bike Trail by the end of 2008 (*Source: City SMP*).

Focus Area 7: Parks, Open Space & Habitat Conservation

A City's quality of life is greatly enhanced by extensive parks and open space areas. From small urban parks to large parkways, the presence of nature, open space and habitat areas are essential to human well-being and livability of our City. The preservation of open space and our rivers and creeks is essential to the health of our community. These areas provide opportunities for recreation, provide habitat for wildlife, and support alternative modes of travel. Parks and natural areas directly mitigate climate change by moderating temperatures from the urban heat island effect.

*"... the ratio of parks to parking lots may be the best
single indicator of the livability of a city..."*
Lester R. Brown, Global Futurist

Goals:

- 7.1 Increase the amount of publicly accessible and protected parkland and green space.
- 7.2 Enhance, restore and protect existing natural resources including rivers, lakes/ponds, creeks, native vegetation, wildlife corridors and sensitive habitat.
- 7.3 Ensure compatible park and recreation uses adjacent to natural resources.

Accomplishments:

- 7.1 In 2004, City adopted the *Parks & Recreation Master Plan 2005-2010* that provides goals and policy for achieving a sustainable parks and recreation system and acreage goals for parks.
- 7.2 Enhances and restores wetlands or riparian habitat within parks. Recent projects include a vernal pool and native grassland restoration project completed at Del Paso Regional Park.
- 7.3 Plans and constructs low impact recreation trails for increased public access to riverfronts and revegetates riparian/urban stream corridors.
- 7.4 Re-develops Brownfield/closed landfill sites into parks.
- 7.5 Completed a draft inventory and restoration and management plan for the City's natural open spaces.

Implementation Targets:

- 7.1 Identify funding for the development of two maintenance specialty teams that focus on the maintenance and protection of natural open space areas (*Source: City SMP*). One team will be designated to the north area and one to the south area. Ensure that these teams are properly trained in:
 - Correct use of herbicides and pesticides in natural areas.
 - Endangered species protection.
 - Central Valley native plants and habitats.
- 7.2 Determine neighborhoods that are underserved for public green space and acquire land for additional public green space in underserved neighborhoods and infill development target areas. Complete analysis of additional acres needed and

develop implementation strategy, including financing options, relative to baseline year 2007. (Source: City SMP)

- 7.3 Seek grant funding to enhance or restore natural habitat in existing parks.
- 7.4 Ensure that new parks are designed to protect existing habitat, natural areas and waterways.
- 7.5 All new parks will be required to have 10% of their planted vegetation to be native to the Sacramento Valley. Small public, urban spaces will be exempt from this target.
- 7.6 Work with development community to identify sites in city parks that may be appropriate for habitat or tree mitigation. (Source: City SMP) Identify existing parks that would be able to sustain additional trees.
- 7.7 Establish a “Nature in the City” Program to increase “wildness” within the Parks system and increase human access to and intimacy with nature (see Appendix A), including a City sponsored public web site.
- 7.8 Develop plans for two restoration pilot project sites within the park system (Source: City SMP).
- 7.9 Develop and incorporate by reference into adopted Sacramento Parks and Recreation Master Plan:
 - Comprehensive sustainable park design goals, policies and guidelines.
 - Integrated Pest Management policy. (Source: City SMP)

"... the human child in nature may well be the most important indicator species of future sustainability."
Richard Louv, author, Last Child in the Woods

Focus Area 8: Water Resources & Flood Protection

Climate models indicate that California may experience an increased risk of summer water shortages in the future. On the other end of the spectrum, significant portions of the City are at risk from winter and spring catastrophic flooding. Flood protection in California is an intergovernmental challenge involving federal, state, local and special district governments, and private property owners. Existing City policy is to achieve 200-year flood protection. The Sacramento Area Flood Control Agency (SAFCA), sponsored in part by the City, has developed and has begun to implement a long term plan to achieve 200-year flood protection for the greater Sacramento area. The City will continue to support SAFCA's efforts in this area. DPR will contribute to these greater regional efforts when feasible.

Goals:

- 8.1 Conserve water and protect water quality.
- 8.2 Partner with local flood control entities to contribute to flood protection efforts.

Accomplishments:

8.1 Flood Protection

Worked closely with the Department of Utilities and SAFCA to allow joint use detention ponds in parks that can be utilized for water detention for flood control, water quality improvements, and recreation. Examples include Reichmuth Park, North Natomas Community Park, and Bahnfleth Park.

8.2 Water Conservation

- 8.2.1 Designed and installed centrally located irrigation systems in all new parks. Parks on this system can have their irrigation controlled from a main computer at the Corporation Yard. These systems can monitor current flow, check for breaks or leaks and turn off any offending zones or the main line. During periods of unexpected precipitation, maintenance staff also have the ability to shut down the irrigation to save water.
- 8.2.2 Maintenance staff have retrofitted irrigation systems in 55 existing parks to central irrigation (compared to 6 parks two years ago). This was done with grant funds that paid for additional booster pumps, new heads and new controllers at each park that utilize a repeater to communicate with the central system.
- 8.2.3 For parks not on the central irrigation system, the existing irrigation systems are regularly maintained by straightening heads, replacing broken heads, and ensuring heads are set to grade to minimize water use. Staff also ensure that each park has an appropriate irrigation schedule.
- 8.2.4 Maintained a standard in the design of new parks to use 20% less turf and more naturalized, drought-tolerant plant in park designs to minimize water use.
- 8.2.5 Pools are covered when not in use to minimize water evaporation. A pool cover can reduce water loss by 30 to 50 percent. (USDOE, 2000)
- 8.2.6 Installed one artificial turf ball fields (soccer) to reduce irrigation need.

8.3 Water Quality Protection

- 8.3.1 New parking lots are designed with grassy swales that filter overland run off to improve water quality.
- 8.3.2 As funding is available, dog park users are provided with dog waste sanitation bags and disposal receptacles to prevent bacterial contamination in overland runoff. Dog waste has been shown to contribute harmful bacteria to water as the waste is washed into urban creeks, ponds and lakes.

Implementation Targets:

- 8.1 Develop a master plan for a pilot ornamental “demonstration landscape” project as a tool to educate the public on how to landscape using native and low-water use plants. (*Source: City SMP*)
- 8.2 As a part of the park design process, landscape architects will develop water schedules specific for the plants, soils and topography at each individual park. This water schedule will then become the basis for the irrigation timing programmed into the central irrigation system for that park.
- 8.3 Landscape architects will maximize opportunities for ground water recharge in new park design.
- 8.4 Complete conversion of all old irrigation systems to be compatible with the central irrigation system. Out of 217 parks, 55 are currently on the centralized system.
- 8.5 Reduce “per acre” water use for irrigation by 20% over the 2007 baseline year.
- 8.6 Review irrigation schedules for existing parks to ensure that watering schedules are efficient and seasonally appropriate. Parks staff should make regular visual inspections to minimize wet and dry spots.
- 8.7 Ensure that all parks on the central irrigation system do not receive supplemental water during periods of precipitation, in the event that the precipitation provides sufficient water to the parks.
- 8.8 New parks will be required to have 10% of the vegetation to be drought-tolerant, low-water use plants.
- 8.9 A minimum of 10% of parking lot projects should be constructed of permeable pavement. Permeable paving allows rainwater to seep into the soil below the surface, filtering any associated pollutants and reducing storm water surges. Porous pavements also give urban trees the rooting space they need to grow to full size.
- 8.10 Apply principles of the Sacramento Stormwater Quality Partnership "River-Friendly Landscape Guidelines" and similar documents to park landscape design,

construction and maintenance. Provide opportunities for staff and public education on these principles.

- 8.11 Make use of recycled water for landscape irrigation should the City establish such a program.

Focus Area 9: Public Involvement & Personal Responsibility

Ultimately, sustainability effects every level and scale of organization, from the entire planet to local neighborhoods and individuals. In addressing the global and regional issues facing Sacramento, public involvement and personal responsibility is vital to effectively planning actions and implementing solutions. A central goal of this focus area is to facilitate communication, public outreach and civic engagement on sustainability – both within the Department and throughout the community.

Through a wide variety of programs and a broad-based network of partner organizations, — in schools, in parks, in community centers, and in neighborhoods — the Department of Parks & Recreation can promote an ethic of conservation and stewardship, and encourage and empower people to take actions that improve environmental quality and quality of life in and around their neighborhoods. The Department of Parks & Recreation also recognizes the value of training staff to be stewards themselves and examples for others.

Goals:

- 9.1 Provide training and incentives for Department staff to work in a sustainable manner.
- 9.2 Provide opportunities to the public to promote awareness of sustainability and natural resource protection.

Accomplishments:

- 9.1 On April 9, 2008, the Parks & Recreation Department kicked off their sustainability efforts by conducting a Sustainability Workshop. Approximately 100 staff participated in this event and learned about how they can be more sustainable in the workplace.
- 9.2 Community centers frequently provide educational materials to the public on sustainable practices such as recycling and energy conservation.
- 9.3 Recreation Services provide various curriculums and activities within their programs to educate the community on topics such as recycling and energy conservation.
- 9.4 The AmeriCorps program is currently teaching health, nutrition, and fitness curriculum to 2,400 students in an after school program. The curriculum is taught in 6-week sessions throughout the school year. Some of the curriculum that they are teaching involves gardening and recycling lessons. In terms of the gardening curriculum, the students get an opportunity to try different fruits and vegetables so that they become familiar with them, learn where/how they grow, as well as the varieties of fruits and vegetables. The AmeriCorps program has built 10 school based gardens while the rest of our AmeriCorps sites are growing their own fruits and vegetables on wheelbarrows.
- 9.5 Provides information in City publications on programs such as Recycling in Parks.
- 9.6 Developed several City University courses to educate Parks Maintenance staff on issues of sustainability. These courses include:

- Natural Resource Management in the City's Open Space Areas (35 City Employees trained to date)
 - Irrigation Management (over 75 City Employees trained to date)
 - Field Renovation (over 75 City Employees trained to date)
- 9.7 Used email and Department Intranet to disseminate information on sustainability.
- 9.8 Provided interpretive signage in nature areas to educate and encourage stewardship of natural resources. For example, an interpretive signage project has been recently completed at the Jacinto Creek Parkway.

Implementation Targets:

- 9.1 Develop a public relations strategy to educate and involve the public in the development and protection of the environment.
- 9.1.1 Use universal interpretive signage to educate the public and promote awareness of the natural resources found within the City's parks, which may be perceived as un-manicured and aesthetically displeasing.
 - 9.1.2 Promote volunteerism within parks to create opportunities for the public to be directly involved in the protection, maintenance, and enhancement of the natural and open space areas throughout the parks system.
 - 9.1.3 Serve as a provider of educational information for all users of Parks facilities on "going greener" in all aspects of life, including the development and delivery of an organized public education/media campaign.
 - 9.1.4 Require all users of Parks facilities and community centers to comply with sustainable practices, including compliance with the recycling program.
- 9.2 Develop and promote staff training for the protection and management of natural resources.
- 9.2.1 Develop a Green Team to promote sustainability throughout the Department.
 - 9.2.2 Hold an annual sustainability workshop to train and educate staff.
 - 9.2.3 Continue to offer City University course on Natural Resource Management.
 - 9.2.4 Utilize email lists and Department Intranet to inform staff on sustainability.
- 9.3 Develop incentives for public and staff participation in sustainable practices.
- 9.4 Expand recreational programming to include new educational programs that promote sustainability. Encourage participants of the 4th "R" Program to do a carbon "footprint" of their own household (*Source: City SMP*).

Implementation, Monitoring & Reporting

To adequately implement the goals and targets set forth in this *DPR Sustainability Plan*, tools must be provided to support ongoing monitoring and reporting. Initially, a matrix will be set-up for each target to help in this process. This matrix will include:

- What is the overall "cost-benefit" or impact of implementation of this target?
- What can be added to each targeted for it to be measurable? (e.g. how many new trees can be planted in parks during the timeframe of this *Sustainability Plan*?)
- What needs to be measured to determine success in meeting that target?
- Who is responsible within DPR to move the target forward and report on progress?
- Is there a cost associated with implementation of that target or can it be reached within the existing budget? Are there potential sources for additional funding?
- Is additional staffing needed to implement the target?
- Is this a target that can be reached within a short term (say, 2 years), or is a longer timeframe needed?
- Is there additional research that needs to be done before this target can be reached? (e.g. the cost vs. benefit of increased solar power installation? additional maintenance associated with permeable paving in parking lots?)

This matrix will be first completed during the Summer of 2008, and then will be reviewed and updated every six months, with a report made to the DPR Green Team and Executive Team. The information generated from this effort will also be reported quarterly and annually to the City's Sustainability Steering Committee to provide supportive information to their process. In the first few years, this *DPR Sustainability Plan* should also be reviewed annually to revise targets based on their feasibility and appropriateness.

Some procedural changes will also be made to ensure that planning efforts are sustainable. Staff will be required to provide Sustainability Considerations information in all Parks & Recreation Commission and City Council Reports. This will ensure that project managers review individual projects to give additional consideration to sustainable practices.

It is also recommended that the Department further promote sustainability efforts by adopting the National Recreation & Park Association (NRPA) Environmental Stewardship Ethic upon finalization by NRPA. The NRPA began development of this Environmental Stewardship Ethic at their May 2008 summit entitled "Environmental Stewardship For People, Parks and Public Lands". It provided a collaborative process for parks staff from across the country to begin constructing a framework for the ethical practices needed to sustain a national green agenda for parks and recreation.

DPR can also further its support of sustainability and public health by endorsing the California Children's Outdoor Bill of Rights. The California Roundtable on Recreation, Parks and Tourism – a volunteer group comprising public and private organizations from the federal, state and local levels – has created the Children's Outdoor Bill of Rights.

This Bill of Rights provides that every child between the ages of four and fourteen should have the opportunity to:

- Discover California's past
- Splash in the water
- Play in a safe place
- Camp under the stars
- Explore nature
- Learn to swim
- Play on a team
- Follow a trail
- Catch a fish
- Celebrate their heritage

The Bill of Rights has been endorsed by a variety of local and regional governments, including on a statewide level by Governor Schwarzenegger and locally by the Arcade Creek Recreation and Parks District.

The Department should also actively support any state and federal legislation that directly pertains to promoting sustainability in public parks and recreation services.

Finally, if the Sacramento Parks & Recreation Department maintains the vision to be one of the top three most sustainable municipal parks and recreation organizations in California by 2015, a list of criteria and indicators must be developed to evaluate how "green" the Department is among other parks and recreation municipal organizations throughout the state of California.

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APPENDIX A: IDEAS FOR COMPONENTS OF "NATURE IN THE CITY" PROGRAM

- ❖ Edible Landscapes
- ❖ Wildlife/Habitat Preserves, Natural Areas, Open Space Acquisition/Preservation
- ❖ Protection of biodiversity; connecting wildlands and watersheds
- ❖ Non-native/invasive plant species removal
- ❖ Nature Interpretation/Experiential Opportunities (programs, facilities) promoting human intimacy with nature
- ❖ Tree Planting
- ❖ Increasing "wildness" in regional City-County-Districts system of parks and open space
- ❖ Rooftop Gardens
- ❖ Community Gardens
- ❖ Urban Farms
- ❖ Environmental Stewardship Programs/Activities
- ❖ Publications on where to find Nature in Sacramento (maps, websites, hiking/biking/walking guides, etc.)
- ❖ Horticulture Programs/Facilities
- ❖ Enhanced and sustainable landscaping with private development
- ❖ City sponsored web site for "nature places" to visit locally

Publications

Dolan, Maria & Kathryn True. 2003. *Nature in the City Seattle*. The Mountaineers Books.

Louv, Richard. 2008. *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder*. Algonquin Books of Chapel Hill.

Other Cities/Projects

www.natureinthecity.org: San Francisco, CA (...*"connecting urban people with nature where they live"*)

City of San Francisco, CA Recreation & Park Department Natural Areas Program:
<http://sfnap.org/>

Portland, OR Metro Council "Nature in Neighborhoods" Program:
<http://www.oregonmetro.gov/index.cfm/go/by.web/id=13745>