City of Phoenix
PLANNING DEPARTMENT

General Plan Amendment
Staff Report

Application No.:	GPA-2-08
Applicant:	Councilman Greg Stanton Chair of the Parks, Education, Bio-science and Sustainability Subcommittee
Text Amendment:	Amend the City of Phoenix General Plan to rename the Natural Resources Conservation Element to Natural Resources Conservation and Energy Element and add Goals, Policies and recommendations to address the conservation of energy and the greater use of renewable energy resources. This amendment also satisfies the state legislation that requires the addition of Energy Element criteria to the General Plan.
Requested Change:	Addition of Energy Element Criteria to the General Plan
Reason for Change:	Conformance with State Law
Village Planning Committee Action:	See attachment
Staff Recommendation:	Staff recommends approval of this request per the language in Attachment A.

BACKGROUND:

Growing Smarter (1998) and Growing Smarter Plus (2000) legislation requires each city to adopt a general plan for the development of land within their jurisdiction. House Bill 2638 (Local Energy Plans) passed in 2007 and requires cities with populations of 50,000 or more to include an energy element in their general plan.

Per ARS 9-461.05 General Plans, the energy element must include policies to encourage and provide incentives for efficient use of energy and assess and identify methods for greater use of renewable energy sources.

Staff proposes to rename the current Natural Resources Conservation Element to the Natural Resources Conservation and Energy Element and add a goal with supporting policies and recommendations to meet the new state statute. Staff hopes to come into compliance with state law by before the end of 2008. As part of the General Plan Update that is required every

10 years, staff hopes to provide additional goals, policies and recommendations to further augment what is currently proposed.

This report will document existing goals, policies and recommendations that already exist in the General Plan related to energy conservation and renewable energy sources and summarize efforts currently underway by the city of Phoenix.

EXISTING GOALS, POLICIES AND RECOMMENDATIONS:

Within the current General Plan there are a number of goals, policies and recommendations found in other elements that already address conservation of energy and greater use of renewable energy sources. Excerpts from those elements can be found in Attachment B to this staff report.

Those existing goals, policies and recommendations address such items as solar energy, alternative modes of transportation, improved access to transportation, appropriate mix of land uses, reduced commute times, increases in public transit facilities and higher usage, alternative-energy technology and energy-efficient design and green buildings.

It is anticipated that these related goals as well as those proposed will be reorganized with the next General Plan update and additional goals related to energy conservation and renewable energy resources will be considered.

CURRENT CITY EFFORTS:

The Environmental Sustainability Program was initially written in 2007 at the recommendation of the Sustainability Task Force. The document established the baseline for sustainability efforts already underway. Listed below are just a few of the efforts mentioned that relate to the conservation of energy and greater use of renewable energy resources. Additional information is available on the website (http://phoenix.gov/sustainability.html). It is anticipated that this document will be updated each year to reflect additional efforts and successes.

Land Use

Land use can have a significant impact on energy use and efficiency. Compact development and live/work environments result in reduced land and energy consumption. The concept of the Urban Village Model allows for greater height and density in the village core and promotes an appropriate mix of uses that allows residents to live, work and play within their urban village without long commutes to get to jobs, retail, services and recreation.

In 2003, City Council adopted an Interim Transit-Oriented Zoning Overlay District in anticipation of light rail transit. This zoning overlay district encourages development close to light rail stations, which will enhance transit ridership and decrease automobile dependency by providing a complimentary mixture and density of activity.

In April 2008, City Council adopted the new Planned Unit Development (PUD) District. This new zoning district encourages mixed use development and allows greater flexibility in uses and development standards in exchange for better design and more sustainable development.

In July 2008, City Council adopted The Downtown Phoenix Plan. This document provides a plan for the anticipated 30,000 new jobs and up to 40,000 new residents expected in the downtown over the next 30 years.

Climate

In January 2008, the Office of Environmental Programs (OEP) began a comprehensive effort to develop a Climate Action Plan to reduce greenhouse gas (GHG) emissions from city operations.

In June 2007, Mayor Phil Gordon joined other mayors in signing the U.S. Mayor's Climate Protection Agreement. Under the Agreement, Mayor Gordon committed to conduct a GHG inventory, reduce Phoenix GHG emissions, and serve as a model environmental steward for other local governments.

Green Building and Energy

Leadership in Energy and Environmental Design (LEED)

In June 2005, the city council adopted a policy that, at a minimum, all new city buildings built with the 2006 Bond Funds be constructed to the basic LEED standard. The following buildings are either LEED Registered or LEED Certified:

- Fire Station #50 - LEED "Certified" in 2004;
- Desert Broom Library - LEED "Certified" in 2006;
- Cesar Chavez Library - operational and certification in process;
- Phoenix Convention Center West Building- LEED “Silver” in May 2008;
- Glenrosa Service Center Bldg. - operational and certification in process;
- Burton Barr Central Library - certification in process for EB (Existing Building);
- ASU Cronkite School of Journalism/KAET 8 - construction complete June 2008, certification in process;
- Rio Salado Audubon Center - in design, construction began summer 2008; and,
- ASU College of Nursing and Healthcare Innovation - in design.

In 2006, Building Standards were revised to include additional energy related standards for city projects that supplement the LEED standards. When compared to the Energy Act of 1992, these buildings should accomplish the following:

- 50% less water usage in landscaping;
- 20% less water usage in interiors; and
- 30% less overall energy usage.

Phoenix Energy Conservation Program

Since the late 1970s, the Phoenix Energy Conservation Program has addressed the following three items:

- Energy Efficiency Retrofits for Air Conditioning and Lighting

In 1983, Council approved the Energy Conservation Saving Reinvestment Fund that allows staff to work on a number of retrofit projects for city facilities.

- Energy Conservation Outreach
  Public Works staff promotes energy conservation through presentations a variety of groups.
- Energy Star Program
  This program makes Energy Star rating a requirement for city purchases such as computers, monitors, printers and copiers. Energy Star rated equipment is in the top 10% of the most efficient equipment available. This program was initiated by the Energy Management Task Force.

Building Codes

In 2007, Council adopted the 2006 International Energy Conservation Code which established minimum energy conservation standards for development. Energy reductions from 10 to 40% may be achieved in buildings built to this new code.

Renewable Energy

In 2008, Council approved a goal that by 2025, 15% of the energy used by the city should come from renewable energy sources. The Environmental Quality Commission and Public Works Department developed this goal.

Clean Fuels

Since November 2007, the Public Works and Aviation fleets have used only B20 biodiesel to fuel their diesel vehicles.

Landfill Gas-to-Energy (LFGTE)

Gas generated from landfills is a viable renewable energy source. The city has the following three potential landfill sites for consideration:

- 27th Avenue Landfill;
- Skunk Creek Landfill; and
- State Route 85 Landfill.

Solar Energy

Solar or photovoltaic (PV) power is created by transforming solar energy collected by modules into electricity. The following projects are among some of the city's efforts, some including partnerships with utility providers.

- Central Avenue transit solar-powered shade canopies;
- North Mountain Park solar-powered security lights;
- South Mountain Park restroom facility roof-mounted PV panels;
- 40th Street and Pecos Road park and ride, canopy-mounted PV system;
- North Gateway Solid Waste Transfer Station PV system;
- North Mountain Park Visitor Center retrofitted with a roof-mounted PV system;
- Pecos Community Center roof-mounted PV system (partnership with SRP); and

- Phoenix Convention Center - West Building roof-mounted PV system (partnership with APS).

Cooling Systems

The City/Downtown District Cooling System was built in 1993 and supports the following buildings with an estimated savings of over $200,000 per year. A Thermal Energy Storage Tank under the Adams Parking Garage provides chilled water during on-peak hours and during off-peak hours, the Central Plant Chillers in the basement of City Hall recharge the Thermal Energy Storage Tank.

- Phoenix City Hall;
- Orpheum Theater;
- Personnel Building;
- Calvin Goode Municipal Building;
- Walker Building, Municipal Courthouse;
- Historic City Hall; and
- The 305 Garage.

The Northwind District Cooling System is privately owned and uses an industrial grade, ice-based chiller system that manufactures 3 million pounds of ice each night when utility loads and rates are lowest. During peak periods, the ice is melted and distributed through underground pipes. The following city buildings use this system:

- TGen/CC Headquaters;
- ASU Downtown University Center;
- Phoenix Convention Center;
- Herberger Theater; and
- Symphony Hall.

Energy Efficient Housing

The Housing Department encourages energy efficient improvements in all affordable housing proposals. Through the selection process, additional points are awarded for such energy savings items such as HVAC with a SEER rating greater than 10 and use of Energy Star appliances.

The Housing Department has also invested over $25 million in modernization of their rental properties for lower income residents. Improvements include the following items:

- Coating flat roofs with energy saving reflective ceramic polymer material;
- Replacement of interior incandescent lighting with lower energy use fluorescent lights;
- Replacement of exterior incandescent lights with lower energy use high pressure sodium light fixtures;
- Purchasing only Energy Star appliances;
- Use of gas appliances with electronic ignitions (instead of pilot lights);
- Replacement of evaporative coolers with high SEER-rated HVAC systems; and
- Installation of master chiller systems.

The Neighborhood Services Department utilizes house plans with energy reduction measures that cost around $3,500 per house, but reduce monthly energy costs by $35 per month.

Light Emitting Diode (LED) Devices
By the end of 2007, the Street Transportation Department replaced more than 9,000 incandescent traffic signal bulbs with LED devices, reducing energy use by 90%.

Water
Energy efficiency is incorporated into all new construction and upgrades at Water Services Department facilities. Through the energy optimization program, water and wastewater plants and facilities run efficiently as possible, reducing peak energy demands and overall energy usage.

Other
Numerous efforts of various departments and additional information is numerated in the full 39 page document, Phoenix: Living Like It Matters!, Environmental Sustainability Program which can be found on the city's website.

STAFF RECOMMENDATION:

Staff recommends approval of the language in Attachment A.

Writer
MD
9/5/08

Attachments
Staff's Proposed Language (Attachment A)
General Plan Related Existing Goals, Policies and Recommendations (Attachment B)

MD/dfr\s:\general plan amendments\docs\2008\gpa-2-08.doc

FM Listening Systems or Qualified Sign Language Interpreters are available with 72 hours notice. Materials in alternate formats (large print, Braille, audio-tape or computer diskette) are available upon requests. For further ADA information call the Planning Department, Theresa Damiani at Voice/602-262-6888 or FAX/602-495-3793, or City TDD Relay/602-534-5500.

ATTACHMENT A

City of Phoenix

GENERAL PLAN

Natural Resources Conservation AND ENERGY Element

EXECUTIVE SUMMARY

Natural Resources Conservation and Energy element addresses ~~four~~ five topics: flooding, erosion, preservation of vegetation, ~~and~~ wildlife protection, and the conservation of energy while encouraging the greater use of renewable energy resources.

Flooding protection: protect people and property from the threat and damage of flooding.

Erosion protection: eliminate or minimize on-site or down slope erosion.

Vegetation protection: protect native plants from extinction and use them to preserve the character of the Sonoran desert.

Wildlife protection: maintain large, intact patches of native vegetation to protect wildlife habitat and take steps to protect wildlife corridors.

Energy: provide for the efficient use of energy while at the same time encouraging the greater use of renewable energy resources.

INTRODUCTION

Conservation is the act of preserving, guarding or protecting from loss, decay, injury or violation. Conservation goes hand in hand with sustainability, defined by the World Commission on Environment and Development as "meeting the needs of the present without compromising the ability of future generations to meet their own." In the 21st Century we must recognize the earth as a fragile system and ourselves as a part of that system. Conserving our natural resources - water, vegetation, and wildlife - has expanded to include concern with a deteriorating environment, be it energy, pollution, global warming, land productivity or the landscape itself. The urban form is the result of cheap energy, economic health, and technological advances, all of which can diminish the natural environment. The challenge in conservation is to link urbanization with the underlying natural systems. By doing so, we begin to work with the natural systems towards conserving our limited resources.

Arizona state law directs the Natural Resources Conservation element to address "conservation, development and utilization of natural resources, including forests, (deserts), soils, rivers and other waters, harbors, fisheries, wildlife, mineral and other natural resources." Further, state law requires the Energy Element to identify policies that encourage and provide incentives for the efficient use of energy while assessing policies and practices that provide for greater uses of renewable energy sources. Protecting and conserving these resources that contribute to our quality of life is everyone's responsibility. The policies and recommendations of this plan are intended to ensure we retain our natural resources while allowing economic and environmental well-being for the community. The Water Resources element addresses water supply, water reclamation, water quality, and ground water. The Environmental Planning element addresses sustainability, air quality, energy efficiency, noise mitigation, pollution prevention and related topics.

GOAL 1 FLOODING PROTECTION: THE THREAT OF FLOODING FOR PEOPLE, PROPERTY, AND THE NATURAL ENVIRONMENT SHOULD BE MINIMIZED.

Every site potentially contributes to and has solutions for flood control and storm water quality management. The challenge is to achieve appropriate land use, whether or not the site is adjacent to stream channels or other water bodies. Every development needs to provide solutions for flood control and storm water management within its boundary, by using the existing drainage features in and adjacent to its site. The solutions can be site based, small, numerous and inexpensive and rely on maintenance practices instead of being regional, large, expensive and made of concrete.

Policies:

1. Separate, where feasible, storm water runoff from the sanitary sewer system and active irrigation ditches.

2. Provide drainage facilities in areas where the natural topography has been disturbed or cannot reasonably be restored to predevelopment conditions.

3. Support flood control planning and coordinate with other entities in that planning (e.g., Maricopa County Flood Control District, and U.S. Army Corps of Engineers).

Recommendations:

A. Continue developing, planning and maintaining the storm water drainage system.

B. Work cooperatively with the Planning/Design Branch of the U.S. Army Corps of Engineers, to seek engineering solutions in our larger ephemeral wash systems (that run only in response to rain), which are more sensitive to the existing environment and provide a quality recreation space and habitat for flora and fauna. Comprehensively maintain existing washes to prevent excessive erosion.

C. Continue working with the Arizona Game and Fish Department, the Arizona Department of Water Resources, the Arizona Department of Environmental

Quality, the U.S. Army Corp of Engineers, and other agencies whose mission is to preserve and protect riparian areas and water quality, in order to address shoreline stabilization and habitat restoration needs at municipal lakes and parks.

D. Study the impacts of new development in areas known to flood onto surrounding properties.

4. Cooperate with neighboring cities to solve mutual drainage problems.

Recommendation:

A. Require developers to work with adjacent communities in their master planning to provide small, on-site solutions that reduce storm water flows off-site and minimize maintenance of storm water channels caused by silt from construction and impervious sites (that repel water and increase runoff) within developments.

5. Develop projects that control flooding while maintaining the larger hydrologic systems within our urban environment.

Recommendation:

A. Work with Arizona Flood Plain Managers (AFMA) in developing draft guidelines for future flood control projects.

6. Pursue funding for flood control projects.

Recommendation:

A. Identify revenue sources for constructing a storm water drainage system that provides communitywide protection.

7. Develop ways to address management and maintenance needs in our urban desert washes.

8. Improve water quality, habitat preservation, and storm water management through compliance with the regulations of the Clean Water Act, Section 404.

Recommendations:

A. Choose non-structural solutions to flood control problems that will provide storm water quality benefits and support the city's efforts to comply with the federal Clean Water Act, Section 404.

B. Continue information and resource outreach on the Clean Water Act, Section 404 through:

- ❑ Distributing information to the public on the Clean Water Act, Section 404
- ❑ Continuing training appropriate city staff in natural and cultural resource

compliance

- Continuing the city's 404 Program, through implementing the 404 policy, and coordinating with the 404 Project Team

9. Maximize on-site retention through Best Management Practices and minimize impermeable surfaces or separate impervious areas where possible, to allow storm water infiltration and decrease off-site flows. Impervious areas do not include paved streets.

Recommendations:

A. Continue to require on-site water retention for new development.

B. Investigate creating a city code applying to parking lots and similar areas, which permits the use of alternative materials and paving practices that allow permeability and water recharge without adding to particulate levels.

C. Investigate parking lot standards specifically addressing permeability and storm water management for adoption into City Code.

10. Use landscape islands in paved areas to receive storm water and reduce the impact of impervious areas.

11. Preserve and restore the natural systems of ephemeral desert washes to manage nonstructural storm water and control flooding where feasible.

12. Preserve the unimpeded flow of washes as part of a larger hydrologic system.

Recommendations:

A. Limit the obstacles, crossings, and obstructions to all washes, both on-site and through a site, as part of a larger interconnected wash network.

B. Coordinate with AFMA to develop nonstructural flood control solutions.

GOAL 2 EROSION PROTECTION: GRADING AND EROSION CONTROL PRACTICES, SEDIMENT CONTROL PRACTICES AND WATERWAY CROSSINGS SHOULD ELIMINATE OR REDUCE POTENTIAL ON SITE ORDOWN SLOPE EROSION.

The construction process and the removal of vegetation make soils vulnerable to wind and water erosion. Soil erosion endangers water resources by reducing water quality, and creates siltation, necessitating the repair of sewer and storm drains. Clearing and grading during construction also causes a loss of native vegetation and wildlife habitat.

Policies:

1. Minimize transportation of sediment from and through a site.

Recommendation:

A. Review current city ordinance on grading to comply with new/current industry standards and technological advances.

2. Encourage the reduction of clearing and grading entire sites. Explore methods to preserve contiguous areas of natural vegetation such as those listed on the State of Arizona Native Plant Law threatened and endangered (T&E) list.

3. Use vegetation with native plant species as the principal method of erosion control.

Recommendation:

A. Promote using vegetation instead of artificial means as a method of permanent erosion control.

GOAL 3 VEGETATION PROTECTION: VEGETATION SHOULD BE PROTECTED AND CONSERVED AS A MEANS OF PRESERVING THE DIVERSE CHARACTER OF LOCAL PLANT COMMUNITIES.

The Sonoran Desert contains some of the most unique natural landscapes in the world. Rugged mountains, modest slopes, and washes invite a complex intermingling of trees, shrubs, cacti, succulents and groundcover. In addition, the urbanized areas of Phoenix include a vegetative character that is very unique and in contrast to the Sonoran Desert. Plants help fulfill both the aesthetic and functional needs of our urban communities. A benefit of incorporating native plants into the built landscape is that it can replace native vegetation removed in the development process.

In 1997, the State of Arizona passed the Arizona Native Plant Law, which prohibits or limits the salvaging of plants or parts of plants, including seeds or fruit, based on the threat of state or local extinction of that plant. The protected plants are separated into five categories: Highly Safeguarded, Salvage Restricted, Export Restricted, Salvage Assessed, and Harvest Restricted.

Highly safeguarded - native plants likely within the foreseeable future to become jeopardized or in danger of extinction throughout all or a significant portion of their ranges. This category includes those plants listed as endangered, threatened or category 1 in the Federal Endangered Species Act of 1973.

Salvage restricted - native plants requiring salvage permits, tags, and seals. Plants in this category have a high potential for damage by theft or vandalism.

Export restricted - native plants protected from over-depletion through interstate sale or shipment.

Salvage assessed - native plants requiring tags, seals and annual salvage permits that have a sufficient value to support the cost of salvage.

Harvest restricted - native plants restricted from excessive harvesting or overcutting because of the intrinsic value of their byproducts, fiber or woody parts.

There are numerous benefits to using native plants. Of particular interest to the city are:

- ❑ Using native plants to provide habitat, shelter, nesting areas and forage for wildlife.
- ❑ Using native plants to retain regional character.
- ❑ Using native plants in xeriscape gardening for the environmental benefits such as lower water use.

Policies:

1. Continue to uphold the State of Arizona Native Plant Law.

   Recommendations:

   A. Identify sites that contain species on the Arizona Native Plant Law list, during the development review process.

   B. Establish a volunteer work force to periodically remove nonnative plants from city property and privately owned property, with the owners' permission, in coordination with the appropriate governmental agency.

2. Promote re-vegetation using native plant species.

   Recommendations:

   A. Promote the use of native plant species, especially those listed in the State of Arizona Native Plant Law as highly safeguarded and salvage-restricted.

   B. Promote replanting native trees versus exotic species in the event of mortality of existing vegetation, unless out of character with historic or predominant vegetation.

3. Develop criteria and map protected areas where vegetation removal is prohibited or should be limited.

   Recommendations:

   A. Require as part of the rezoning process, when necessary, a landscape inventory and salvage plan for new development prior to issuing a grading and drainage permit, when the site contains species on the Arizona Native Plant Law list.

   B. Retain, to the extent possible, all mature vegetation on site for those plants on the State of Arizona Native Plant Law list.

4. Continue to endorse area plans and design guidelines that promote using a plant list or plant pallet to promote a specific landscape character or quality.

Recommendations:

A. Promote in all development the xeriscape landscape, which uses predominantly native Sonoran vegetation, as well as the fundamental principles of landscape design for greatest water efficiency.

B. Promote relocating versus destroying non-mature native species on the State of Arizona Native Plant Law list.

C. Promote preserving vegetation in the urban areas where the vegetative character of the area is established.

GOAL 4 WILDLIFE PROTECTION: LARGE INTACT PATCHES OF NATIVE VEGETATION SHOULD BE MAINTAINED TO PROTECT WILDLIFE HABITAT.

The Sonoran Desert is home to a wide variety of wildlife. The diversity of wildlife depends on a variety of components including structure, plant community and plant community evolution, landforms, soil, and climate and the stability of the landscape. The Saguaro cactus, an icon for the Sonoran Desert, exemplifies diversity: spiders, silverfish and moth larvae live in its pleats; bats pollinate its flowers, and birds and rodents eat its fruit. Woodpeckers, flickers, doves and red-tailed hawks nest in its arms and, over time, owls and martins move in. When a Saguaro is removed or destroyed, the entire natural hub of activity is also destroyed.

The built environment alters portions of the landscape and habitat areas permanently. Phoenicians seek out and enjoy the environment and its wildlife. Many area residents have come to expect encounters with a variety of wildlife supported by the desert preserves and surrounding landscape communities. Wildlife conservation, therefore, is an obligation to the community that must be carefully balanced and weighed against the need to accommodate future development.

Policies:

1. Prevent fragmentation of continuous areas of habitat, by maintaining large, intact areas of native vegetation and/or encourage planting of native vegetation in areas of new development.

Recommendations:

A. Identify existing areas of natural vegetation and prioritize importance based on predetermined criteria, such as the presence of native vegetation, existing wildlife habitat, potential for wildlife habitat or threat of local extinction of a wildlife population.

B. Maintain existing isolated fragments of native habitat within the urban environment and develop wildlife corridors connecting the fragments or, in the case where the corridor remains, provide land management that will preserve the corridor in the future. Encourage the use of native plant materials in

development, which can help provide connections to isolated fragments of habitat.

2. Limit land use, and intensity of use, around intact areas of native vegetation to those uses with the least impact.

Recommendations:

A. Explore and strongly consider revising on the General Plan map, the adjacent land use for any critical habitat to reflect the land use most compatible with the continuance of that patch, such as a low intensity use verses a high-intensity use such as commercial or industrial.

B. Explore and strongly consider buffers of low-intensity use that surround areas of natural vegetation functioning as wildlife habitat.

3 Maintain connections among wildlife habitat.

Recommendation:

A. Investigate processes, based on the biological characteristics of the specie or species involved, for preserving or developing wildlife corridors that connect areas of natural vegetation.

4. Identify and protect existing wildlife corridors, and identify and develop new corridors for wildlife movement.

Recommendation:

A. Maintain pockets of open areas with connecting corridors where feasible. Dense clusters of development may be required for this. Work with private entities to allow for maintenance of open space and natural areas so that fire hazard situations do not develop.

5. Discourage all exotic species, especially those that are or have the potential for invasiveness, for areas of special Sonoran Desert significance, such as areas adjacent or close to:

- ❑ Desert foothills and mountainous areas
- ❑ Desert preserves
- ❑ Streams and rivers, particularly the Rio Salado
- ❑ Desert wash areas
- ❑ Riparian zones
- ❑ Xeroriparian areas

Recommendation:

A. Investigate funding to re-vegetate areas of important and significant habitat, such

as desert foothills areas, from the inclusion of exotic species to replicate and replace native species.

6. Explore methods to preserve existing habitat and biotic communities.

Recommendation:

A. Work with other agencies to educate the general public and development community on the importance of native vegetation and the reciprocal relationship to wildlife.

7. Segregate areas of higher impact recreational uses, such as mountain biking, from areas of wildlife habitat and conservation.

GOAL 5 ENERGY: THE WISE USE OF ENERGY SHOULD BE ENCOURAGED THROUGH EDUCATION, CONSERVATION, AND EFFICIENCY

Energy conservation is the act of reducing the consumption of energy while achieving or maintaining a similar outcome. Energy conservation allows us to mitigate numerous adverse environmental and social impacts of energy production and consumption, such as air pollution, loss of wilderness areas, foreign energy dependence, and others.

For decades, the city of Phoenix has recognized the importance of energy conservation. Since the late 1970's, the city has saved over $75 million through various energy awareness and conservation programs including:

- Energy efficiency retrofits for air conditioning and lighting;
- Design standards for city buildings;
- Energy conservation outreach programs;
- An Interdepartmental Energy Management Task Force; and
- Water and wastewater treatment plant optimization.

Policies:

1. Continue to refine and improve the City of Phoenix Energy Conservation Program.

Recommendation:

A. As new and more efficient energy saving methods become available, consider incorporating these new methods into the city's Energy Conservation Program.

2. Strongly encourage the use of renewable fuels and energy efficient vehicles in the city's fleet.

Recommendations:

A. Increase the purchase and use of energy-efficient vehicles in the city fleet.

B. Expand the use of ethanol, biodiesel and other renewable fuels in the city fleet and other equipment engines.

3. Reduce energy consumption through the city's Green Building Program by requiring a policy that all new city buildings are to be constructed to the basic (Leadership in Energy and Environmental Design) LEED standard including meeting the requirements of the more stringent energy standards in the city's Building Standards Manual.

4. Maintain and enhance energy efficiency standards in the City Building Code.

A. Review and consider adoption of supplements to the 2006 International Energy Conservation Code currently included in the City Building Code.

5. Continue to investigate and implement renewable energy projects including solar, wind, gas-to-energy and other renewable sources.

Recommendations:

A. Implement the city's Renewable Energy Goal to achieve 15% of the city's energy use from renewable sources by 2025.

B. Encourage renewable energy research, projects and businesses in the community.

ATTACHMENT B

General Plan Existing Goals, Policies and Recommendations

This document provides excerpts from other elements of the existing General Plan that relate to energy conservation and use of renewable energy sources. Additional information is contained within each element.

Land Use Element

Goal 13 Solar Access: Measures to protect solar access rights should be developed.

Policies:

1. Increase public awareness of potential energy conservation by use of solar systems. Recommendation:

   A. Distribute materials available on use of solar energy.

2. Study the need for measures to protect solar access rights and adopt ordinances if necessary.

   Recommendation:

   A. Develop and promote solar access ordinances for property owners, builders and developers who are investing in solar energy systems, after researching the cost and property value implications for all affected property owners.

Circulation Element

Goal 1 An effective multi-modal transportation system: A multimodal transportation system should be developed that will allow the movement of goods and all people safely and efficiently throughout the city, especially into, and between, the urban village cores.

Policies:

1. Greatly expand and integrate public transit, pedestrian, bicycle and other alternative modes of transportation into the city's street system to reduce traffic congestion, improve air quality, conserve energy and provide better transportation for those who choose not to or are unable to drive.

4. Support the Land Use element goals of balancing housing and employment in urban villages and encouraging a mixture of land uses in neighborhoods to reduce the length and number of vehicle trips.

6. Plan and design multi-modal and multipurpose terminals and transfer locations between transportation modes.

Recommendations:

B. Support regional studies of the use of HOV lanes for value lanes or HOT (High Occupancy Toll) lanes.

C. Study the feasibility and desirability of public pathways within neighborhoods to connect houses, shopping, schools and parks, and allow the use of slow motorized and non-motorized vehicles that are prohibited on arterial streets. This element recognizes that Phoenix has a variety of neighborhood designs. In many older neighborhoods with a grid street pattern, additional pathways are unnecessary. In some newer neighborhoods with cul-de-sac design, the pathways may be very important. The desirability of installing pathways for neighborhood access should be balanced with consideration of any negative impacts on homes adjacent to the pathways.

Benchmarks:

1. The average time it takes to get to or from work (by all modes) should be 25 to 30 minutes.

2. By the year 2020, there should be no more than 60 miles of one-way freeway segments that are over capacity (level of service F) on the 289 miles of one-way freeway segments in Phoenix.

3. Within five years of implementation HOV lanes should carry as many person trips as adjacent general purpose lanes.

Goal 3 Urban Public Transit: Urban public transit and related facilities and services should be supplemented and expanded to encourage greater use of transit, reduce traffic congestion, increase the effective person-carrying capacity of the roadway system, improve air quality, conserve energy, and provide better transportation options for those who choose not to or are unable to drive.

Policies:

1. Expand all forms of mass transit service to significantly increase the proportion of all trips using transit and reduce the proportion of trips in automobiles.

2. Provide transit route frequencies appropriate to the convenience and volume of riders.

3. Promote efficient and convenient connections between transit modes.

4. Promote the use of public transit.

5. Give priority to village cores when locating transit centers that provide connection of transit or people movers within cores to regional transit routes.

6. Facilitate bicycle use of transit facilities.

7. Consider private taxi service to be a part of the public transit system and facilitate transfers between mass transit facilities and taxis.

   Recommendations:

   A. Continually monitor new and existing transit services to ensure that services such as local bus and neighborhood circulators provide convenient connections to and from other existing and future services such as bus rapid transit and light rail transit.

Benchmarks:

1. Transit usage in the metropolitan area should increase from 37.5 million transit boardings annually (30.8 million on the city of Phoenix Transit System) to 76.2 million boardings by 2020.

2. Transit productivity, measured in total passenger boardings per mile, should increase to between 2.5 to 2.7 by 2020.

Housing Element

GOAL 1
Housing development: All housing should be developed and constructed in a quality manner.

Policies:

2. Encourage quality design of new housing and housing developments.
   Recommendations:

   H. Encourage alternative-energy technology and energy-efficient design in new housing and housing development.

Environmental Planning Element

Goal 5
Energy Efficiency Planning and Design: Encourage the efficient use of energy resources.

Policies:

1. Continue efforts to improve energy efficiency for the city of Phoenix facilities and equipment operations.

2. Explore the potential for using renewable energy and energy-efficient resources.

   Recommendations:

   A. Support energy efficient and renewable energy technology demonstration projects.

   B. Research available sources of funding and technical assistance for energy efficient projects for city facilities.

3. Promote developments that include energy efficient features and technologies:
   - Shade trees
   - Building orientation
   - Light-colored roofs
   - Architectural shading
   - High-efficiency appliances
   - Windows and window treatments
   - Energy-efficient building techniques

   Recommendations:

   A. Support the State of Arizona's effort to educate the public about energy efficient products and equipment and renewable energy resources.

   B. Support legislation to protect solar access for property owners, builders and developers who are investing in solar energy systems.

   C. Support legislation requiring homeowner associations to apply reasonable architectural standards for photovoltaic and solar heating systems.

4. Explore energy-efficiency guidelines for city buildings.

   Recommendations:

   A. Coordinate with state and federal agencies to encourage coordinated energy policies.

   B. Study and explore options for supporting legislation that provides incentives for solar industries.

   C. Support development of solar power generation at the beginning of the existing power grid and infrastructure, i.e. at the power plants.

Goal 6 Green Buildings: Encourage green building construction techniques.

Policies:

1. Study and explore options for using green building techniques and goals when designing and constructing city facilities.

   Recommendations:

   A. Study and consider developing options for expanding the city's use of green building techniques in the construction and remodeling of city facilities.

   B. Review the city of Phoenix's green building approach for municipal buildings as well as green building programs in other jurisdictions.

2. Study and consider options for encouraging green building techniques in private construction projects.

   Recommendations:

   A. Study the initial and long-term cost of various green building techniques and the environmental and economic impacts.

   B. Study and consider options for developing a green building program for private-sector construction.

   C. Study and explore options for developing a public education program about the benefits and costs of using green building techniques.