

## **ENERGY RESOURCES TOWARD BUILD-OUT**

Utilizing available energy resources in the most efficient manner possible, while supporting the development of new and renewable energy sources, provides a long-term benefit to every member of the Chandler community. Responsible use and development of energy works to support City goals of improved living quality and continued economic expansion.

Recognizing the importance of energy resources and long-range planning, the State of Arizona has adopted expanded General Plan requirements for municipalities. The existing and future livability of our desert cities will be enhanced through the conservation of energy and the development and application of alternative, non-polluting energy sources.

The required General Plan Energy Element addresses the efficient use of energy and the expanded use of renewable energy as required by State law. In addition, Chandler recognizes it can be a center for innovation of new energy technologies. Citizen, stakeholder and technical inputs, including a successful Energy/Green Building Forum, confirm Chandler's aspirations to be a leader in all three of these areas.

Chandler's excellent employment base and identity as a center for technology serve to support public and private sectors in improving energy efficiency and sustainability.

### **GOAL: ENCOURAGE THE EFFICIENT USE OF ENERGY RESOURCES.**

*Objective:* Establish an incentivized Green Building Program.

*Objective:* Promote energy conservation through public education.

*Objective:* Modify City development standards to encourage energy efficiency.

*Objective:* Encourage energy efficient retrofitting for private development.

*Objective:* Promote land uses that result in increased pedestrian and bicycle transportation opportunities.

### **GOAL: IMPROVE ENERGY EFFICIENCY IN PUBLIC APPLICATIONS.**

*Objective:* Provide leadership in energy conservation through City projects and purchases.

*Objective:* Utilize energy efficient retrofits for existing public facilities.

*Objective:* Perform energy audits, assessing energy use of municipal facilities and programs.

*Objective:* Utilize the most fuel-efficient vehicles possible while being economically sensible and meeting the needs of the City.

### **GOAL: MAXIMIZE THE USE OF RENEWABLE ENERGY SOURCES.**

*Objective:* Encourage the use of renewable energy in residential, commercial and industrial applications.

*Objective:* Demonstrate municipal leadership by developing or aiding in the development of an alternative energy project such as large-scale, roof-mounted, solar panels or similar project.

**GOAL: ENCOURAGE THE DEVELOPMENT OF CLEAN ENERGY TECHNOLOGIES.**

*Objective:* Actively pursue businesses specializing in "green energy".

*Objective:* Encourage new energy technologies in public and private project designs.

*Objective:* Establish Chandler's Innovation Zones and supporting infrastructure as sites for energy development.

**Current Programs and Practices**

Organizations including the United States Green Building Council (USGBC) have taken the lead in promoting energy conservation through design enhancements. USGBC is a non-profit composed of organizations representing a broad spectrum of the building industry committed to construction that is environmentally responsible, profitable and healthy to occupy.

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System is a key program of the USGBC. Local adoption of a LEED Green Building Program is becoming common in Arizona.

The City of Chandler currently has limited programs in place to promote energy efficiency but has several projects underway that are consistent with energy conservation:

- Adoption of International Energy Conservation Code (IECC).
- Energy efficiency in new vehicle purchases.
- New City facilities, including City Hall and Fire Administration building being designed to LEED standards.
- The recruitment of companies providing green products or services such as solar energy.
- Conversion of traffic signal lights from incandescent light bulbs to energy efficient LED lights.

**Assets.** Adequate electrical energy supplies are currently available to all City users. Electrical energy distribution infrastructure has been constructed well in advance of increasing demands, and particularly in under-served and newly-developing areas. Industrial and institutional demands continue to be readily met in support of expected economic growth.

Arizona Public Service (APS) and Salt River Project (SRP) are the primary providers of electrical power to Chandler. These private utility companies offer programs that promote energy efficiency including APS Green Choice and SRP EarthWise Energy.

**Challenges/Issues.** As Chandler's population growth rate slows, per capita energy demands are rising. Conservation and improved efficiency remain significant challenges for all Arizona communities including Chandler. Projections and development policy indicate a slowing of residential construction, accompanied with increases in commercial and employment development. The type of energy demands change as build-out nears from primarily new residential connections to more commercial, industrial and institutional users.

Emphasizing sustainable energy sources, such as renewable energy (solar power, biomass, biofuels and geothermal), is essential in meeting global goals of reduced environmental degradation.

In preparation of this General Plan update, planning workshop participants clearly preferred energy-conserving building practices for new construction in Chandler. Programs that create incentives for green designs that reduce energy consumption over the life cycle of a building or project were suggested. Alternative energy sources such as solar programs received support from citizens participating in the plan updating process.

**Opportunities.** Improved efficiency in energy consumption can be supported by Chandler in several ways including program establishment, incentive creation and updated development requirements. A Green Building Program will provide clear direction and criteria to assure improved energy efficiency. Incorporating incentives to encourage LEED certification will expand the program's use and effectiveness. Additionally, reviewing the City's development standards could identify opportunities for new development or redevelopment projects to meet minimum efficiency values.

The City of Chandler held its first Energy/Green Building Forum in 2007. The well-attended session provided energy-related information and gave participants an opportunity to offer input on the City's energy policies and the General Plan Update. Participants favored voluntary green building encouraged by processing and fee reduction incentives. Using the USGBC's LEED Green Building Rating System as a standard and requiring new City buildings to achieve LEED certification were preferred as well.

Primary opportunities to employ energy-conscious designs and establish a leadership role for the City exist in the design of public facilities and in the selection of capital items such as vehicles and equipment.

Energy Savings Performance Contracting (ESPCs) can enable the City to make energy efficiency upgrades to existing facilities without large upfront costs. ESPCs involve a third party company installing energy efficiency upgrades at no cost. A contractual arrangement would result in the third party company sharing the energy cost savings until the upgrades are paid off and a profit is made.

Increased utilization of alternative energy sources can be supported by public and private commitments to renewable energy and public-private partnerships supporting recycling and innovative energy programs.

Solar System Service Agreements can enable solar panel installation on City buildings at little or no cost to the City. Third party companies install solar panels on City facilities and take advantage of the rebates and tax incentives. The City can demonstrate renewable energy leadership by having solar panels installed on City buildings.

Chandler has the opportunity to be a world-wide leader in energy development. Bolstered by a strong high tech industrial base and sound infrastructure, Chandler is

uniquely positioned to capture business and employment opportunities related to energy research and development.

### **Build-Out Policies**

Chandler's energy policies must be consistent with strategic preparation for residential, commercial and employment build-out. Proposed programs and policies consider: 1) enhanced conservation, in the form of both voluntary and required changes; 2) improved access to alternative energy sources; and 3) the relationship of technological advancement to Chandler's economic future.

Policies to support energy goals were identified in conjunction with this General Plan Update by citizen participants:

- ◆ The City will be a role model in energy conservation and related issues.
- ◆ Implement City green building for public facilities.
- ◆ Encourage compliance with locally accepted Green Building practices for residential and commercial construction.
- ◆ Attract energy-related industrial development.
- ◆ Assure that energy use policies are practical and cost effective.
- ◆ Explore financial incentives for homeowners and businesses to employ solar energy.
- ◆ Encourage vehicle trip reduction.
- ◆ Support the compatible, retro-fit of solar equipment on existing homes in cooperation with neighborhood aesthetic requirements.

### **Implementation Recommendations**

As identified by community Goals, Objectives and Policies, recommendations are suggested below.

Conserving energy relates to many General Plan Elements: Public Buildings, Housing, Public Services and Facilities, Redevelopment, Neighborhood Planning, Land Use and Environmental Planning.

**Efficiency and Conservation.** Arizona Statutes require greater municipal responsibility for encouraging efficient use of energy. Conservation can be achieved through improved design of our built environment including our homes, workplaces and public spaces.

**Recommendation:** Establish and maintain a Green Building Program that is appropriate for the desert environment, in achieving improved energy efficiency. Incorporate incentives to advance the program's appeal to all potential users. Monitor program utilization and effectiveness in order to fine tune to meet Chandler's agreed upon goals.

Demonstrate City leadership and commitment to energy conservation through City projects that are LEED certified, by staffing a LEED-accredited professional and by maintaining USGBC membership. The City should target existing public facilities and services for energy audits.

Although voluntary, the benefits of green building are appealing to an ever-expanding market. Strong community energy conservation policies appeal to companies that the City is striving to attract. The establishment of a Green Building Program in Chandler is essential to meeting energy conservation goals. A newly emerging, companion program, LEED-ND, focuses on sustainable neighborhood design and should be considered as a possible expansion point once initial Green Building policies are in place.

Community commitment and momentum for establishing improved building practices, and hence energy conservation, can be provided by City of Chandler actions relating to construction of City facilities and making an accredited professional available to the development community. The City may choose to participate in Energy Savings Performance Contracting (ESPCs) facilitating efficiency upgrades to City facilities without large, upfront costs.

As suggested by citizen input, policies and incentives offered by the City must be practical and cost-effective in making progress towards agreed-upon goals of conservation and sustainability.

**Recommendation:** Explore feasible incentives, whether locally, state or federally based, private or public that effectively increases Green Building certification and utilization of renewable energy sources. Development incentives related to site utilization, residential density, or development intensity should be considered when significant energy efficiencies are available.

The perception of energy-conserving building practices as too expensive or impractical must be addressed by public information and education that demonstrates the short-, mid- and long-term benefits of green building.

**Recommendation:** Partner with SRP, APS and other organizations in promoting existing programs and establishing educational resources that emphasize energy efficient choices available to all citizens whether at work, school or play.

**Renewable Energy Use.** Greater use of renewable energy sources is the goal, as specified by Arizona statute, and implementation will be achieved with follow through by both public and private interests. Opportunities exist to partner with private interests and utility providers to implement renewable energy projects.

**Recommendation:** Use innovative energy projects such as Solar System Service Agreements, to support the expanded use of alternative energy sources. Consider partnering with utilities and industry to accelerate or expand innovative, renewable energy projects.

A City Green Building coordinator could have responsibility to lead energy conservation programs and multi-partner projects. Effectively promoting energy conservation, green building and renewable energy is key.

**New Technology.** The need to develop new energy sources and enhancements to existing technology offers a significant opportunity to Chandler.

Chandler is potentially the center of research and development of renewable energy technologies for the Southwest. Existing infrastructure and technological expertise coupled with the resources of three State Universities including nearby ASU, create the opportunity to meet future energy challenges while supporting desirable economic expansion.

**Recommendation:** Actively advance Chandler's unique and strategic position as an Innovation Center with an established research and development industry cluster in attracting businesses and organizations developing green and renewable energy technologies.

Embrace Chandler's Innovation Zones (See Land Use Element) as a viable location for research and development of renewable energy technologies. Promote unique existing infrastructure, such as hydrogen and nitrogen distribution systems and accelerate new infrastructure that supports specific industry needs.

Changing priorities in future land use towards commercial and industrial development and away from new residential construction are consistent with providing appropriate sites, both large and small, for new industry locations and expansion of existing energy-based companies.