



City of Chandler Green Building Program



city of chandler
**green building
program**

Prepared by Long Range Planning
June 10, 2008



ACKNOWLEDGEMENTS

City Council

Boyd Dunn, Mayor
Lowell Huggins, Vice Mayor
Bob Caccamo
Trinity Donovan
Matt Orlando
Martin Sepulveda/ Kevin Hartke
Jeff Weninger

Planning and Zoning Commission

Mike Flanders, Chair
Mark Irby, Vice Chair
Mike Cason
Angela Creedon
Kristian Kelley
Leigh Rivers

Green Building Task Force

Brennan Ray
Brion Boucher
Cara Cameron
Chris Samila
Darrell Mills
Deborah Dupée
Garry Hays
James Donley
Jerry Ufnal
Jim Stack
Kendall Baxley
Marian Norris
Mark Eckhoff
Mike Flanders
Pete Trowbridge
Robert Sty
Sheree Sepulveda
Susen Mills

City Staff

W. Mark Pentz, *City Manager*
Pat McDermott, *Assistant City Manager*
Doug Ballard, *Planning and Development Director*
Dave Nakagawara, *Assistant Planning and Development Director*
Jeff Kurtz, *Assistant Planning and Development Director*
Hank Pluster, *Interim Long Range Planning Manager*
David de la Torre, *Principal Planner*
Jason Crampton, *City Planner*
Erik Swanson, *City Planner*

Table of Contents

Introduction.....	1
WHY GREEN BUILDING?.....	1
PUBLIC PARTICIPATION PROCESS.....	2
Purpose.....	3
Goals.....	3
Green Building Incentives.....	4
EXPEDITED PLAN REVIEW.....	4
AWARDS/ RECOGNITION.....	8
GREEN BUILDING CERTIFICATION FEE REIMBURSEMENT	9
IMPLEMENTATION	11
GREEN BUILDING ASSISTANCE.....	12
EDUCATIONAL OPPORTUNITIES	12
City Commitments	13
NEW CITY BUILDINGS.....	13
EXISTING FACILITIES/ OPERATIONS.....	14
GREEN BUILDING COORDINATION/ ASSISTANCE	15
FORMING PARTNERSHIPS	17
EDUCATIONAL PROGRAM	17
REGIONAL GREEN BUILDING EVENTS	18
MAINTAIN USGBC MEMBERSHIP	19
FUNDING	20
UPDATING THE GREEN BUILDING PROGRAM	21
DEFINITIONS	22

Introduction

WHY GREEN BUILDING?

Sustainability considerations are becoming increasingly important in today's world as growing populations demand more of the planet's limited supply of natural resources and create more waste by-products, placing significant strains on the earth's atmosphere and ecosystems. Sustainability has several definitions but is often described as meeting today's needs without sacrificing future generations' ability to meet their needs. Sustainability not only encompasses environmental concerns, but, rather, considers the "triple bottom line" - environment, economy and society.

As development in the City of Chandler continues, sustainability must be a top priority. A focus on sustainability in the City of Chandler will have local, regional and global benefits. Globally, a sustainability focus can help reduce the depletion of limited natural resources and contribute to a reduction in greenhouse gas emissions. Regionally, sustainability can alleviate strains on Arizona's water supplies and improve air quality. Locally, sustainability efforts can reduce urban heat island impacts and contribute to sustained economic benefits through lower building operating costs and productivity increases.

Buildings are a major part of Chandler's sustainability focus because buildings contribute to a large portion of our environmental impact. Buildings are responsible for the consumption of 36% of the nation's total energy and 65% of the nation's electricity consumption. This energy use constitutes a large portion of the nation's greenhouse gas production. Energy used in buildings is responsible for the generation of 36%, 46% and 19% of the nation's carbon dioxide (CO₂)¹, sulfur dioxide (SO₂)², and nitrogen oxides (NO_x)³ emissions, respectively. Buildings also account for 30% of the nation's raw materials use and 12% of the nation's potable water consumption⁴.

The "green building" concept strives to reduce the negative environmental impacts of buildings, while considering economic and societal issues as well. Green building lessens buildings' environmental impacts by creating more energy efficient structures, utilizing renewable energy, reducing water consumption, and utilizing environmentally-sensitive building materials while diverting construction debris from landfills. Green buildings address societal concerns by creating healthier living and working environments and encouraging the preservation of urban open spaces and/ or parks. Furthermore, green buildings can provide economic benefits through the reduction of building operating and maintenance costs.

Some studies have shown that green building can result in higher up front costs. The United States General Services Administration conducted a detailed study on the costs of green building and found that construction and design costs for green buildings are on the range of 0 –

¹ CO₂ is one of the primary greenhouse gases contributing to global warming.

² SO₂ is a major contributor to acid rain. The presence of SO₂ is hazardous to respiratory functions.

³ NO_x contributes to smog, global warming, and acid rain. The presence of NO_x is also hazardous to respiratory functions.

⁴ United States Green Building Council. <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1718>

8% more than that of traditional buildings⁵. Other studies have found that green buildings have no significant cost premium over traditional buildings⁶. If green building strategies are incorporated early in the project design and the project team has experience building green, there may indeed be little or no initial cost premium to build green.

Despite the potential for higher initial construction and design costs, several studies also show that green building practices typically result in significant economic savings over the entire life of a building. Initial investments in green building are generally recouped within three years. Furthermore, over the entire life of a building, green building improvements typically result in savings of over ten times the cost of the initial investment⁷.

These savings are generated in large part because operating, maintenance and personnel costs are much higher over the life of a building than initial construction costs. When assuming a 30-year lifespan for buildings, operations and maintenance costs can be up to three times greater than up front construction costs. Green buildings reduce operating costs by reducing water and energy use. Energy savings alone can typically more than pay for the up front costs associated with building green⁸. Additionally, personnel costs can be over forty times higher than initial building costs⁹. Green buildings' focus on creating healthier and more pleasant indoor environments can boost employee productivity by up to sixteen percent and reduce absenteeism by up to 40%¹⁰. Even conservative studies conclude that increased ventilation, daylighting and individual lighting control can lead to productivity increases of 1.0 to 1.5%, resulting in savings of approximately eight to ten times the initial green building investment over the life of the building¹¹.

PUBLIC PARTICIPATION PROCESS

The development of this Green Building Program has incorporated a number of approaches to garner public and developer participation. These approaches include a survey administered to development professionals, an Energy and Green Building Public Forum, Green Building Task Force meetings, a Planning and Zoning Commission meeting, and City Council meetings.

⁵ Cost premiums vary depending on the level of green building certification being pursued. LEED Certified and Silver buildings have cost premiums that range from 0 – 4%, while LEED Gold buildings have cost premiums of 2 – 8%. Source: United States General Services Administration (GSA), 2004. "GSA LEED Cost Study". <http://www.wbdg.org/ccb/GSAMAN/gsaleed.pdf>

⁶ Source: Davis Langdon, 2007. "The Cost of Green Revisited".

<http://www.dladamson.com/USA/Research/ResearchFinder/2007-The-Cost-of-Green-Revisited/>

⁷ Source: Kats, Greg. 2003. "The Costs and Financial Benefits of Green Buildings: A Report to California's Sustainable Building Task Force". <https://www.usgbc.org/ShowFile.aspx?DocumentID=1992>.

⁸ Energy costs of a green building are assumed to be 30% less than traditional buildings' energy costs. Source: Kats, Greg. 2003. "The Costs and Financial Benefits of Green Buildings: A Report to California's Sustainable Building Task Force". <https://www.usgbc.org/ShowFile.aspx?DocumentID=1992>.

⁹ Source: United States Green Building Council, 1996. "Sustainable Building Technical Manual".

¹⁰ Source: Kats, Greg. 2003. "The Costs and Financial Benefits of Green Buildings: A Report to California's Sustainable Building Task Force". <https://www.usgbc.org/ShowFile.aspx?DocumentID=1992>.

¹¹ Source: Kats, Greg. 2003. "The Costs and Financial Benefits of Green Buildings: A Report to California's Sustainable Building Task Force". <https://www.usgbc.org/ShowFile.aspx?DocumentID=1992>.

Purpose

As recognized in a Mayor and Council goal to “encourage the use of shade and environmentally sensitive design”, as recommended by the Chandler General Plan¹², as supported by the general public¹³, and as directed by the Green Building Task Force, this City of Chandler Green Building Program aims to promote sustainability by encouraging green building in the private sector and making City commitments to green building and green building education and outreach.

Goals

1. To encourage but not require green building certification among private development.
2. To enhance City green building.
3. To promote green building opportunities, events, and education.

In order to accomplish these goals, this program outlines a comprehensive approach including incentives for green building certification, City commitments to build green, and the promotion of education and opportunities for green retrofits of existing homes. The following sections describe in more detail how each of these goals will be met.

¹² The Energy Element of the 2008 General Plan Update recommends establishing a Green Building Program that encourages green building, energy efficient construction, and the utilization of renewable energy.

¹³ Based on results from Energy and Green Building Public Forum, November 15, 2007.

Green Building Incentives

Goal 1: *To encourage green building certification among private development.*

Due to the environmental, social and economic benefits associated with green building, the City of Chandler will offer incentives to encourage green building in the private sector. Incentives will be based on the achievement of LEED Certification from the United States Green Building Council (USGBC)¹⁴. Staff will be available to analyze other green building rating systems to determine whether or not the program should be amended to incorporate an alternate green building rating system.



**Figure 1 - Chandler CARE Center
Pursuing LEED Certification**

EXPEDITED PLAN REVIEW

Projects that meet the following criteria (see list on page 5) will be eligible for expedited plan review upon building permit application. Expedited plan review is a plan review process with a faster review time than the standard twenty-day period. Expedited plan reviews will be completed within ten business days. This expedited review enables projects to obtain building permits and begin construction sooner than if they did not receive expedited plan review. Once a project has been granted expedited plan review, the project shall not be removed from the expedited process and placed in the standard, 20-day review except as expressly set forth herein.

¹⁴ See the Definitions section for descriptions of the LEED Green Building Rating System and the USGBC.

Although expedited plan review will hasten each submittal's review time, the overall review time will also depend on the quality and completeness of the submittal and on designer response time between submittals.

Expedited plan review is available for LEED for New Construction (LEED-NC), Core and Shell (LEED-CS), Commercial Interiors (LEED-CI), and Schools (LEED for Schools).

To qualify for expedited plan review, projects must meet the following criteria:

- Projects must pursue LEED Silver Certification or higher.
- Projects must be LEED registered.
- Project teams must include a LEED Accredited Professional or hire a consultant that is a LEED Accredited Professional.
- Projects must submit a LEED Checklist showing which LEED points are being pursued. Supporting documentation may be required to show the measures being taken to meet these points. In addition to pursuing LEED Silver Certification or higher, projects must pursue certain water, energy and heat island effect points as detailed in the Application Requirements section below.
- Applicants must sign an agreement form, stating that projects will be built as indicated on approved site plan and construction documents. Additionally the agreement will state that development will be carried out as indicated by any supporting documentation that was submitted to show conformance with certain LEED prerequisites and/or points.
- If any subsequent plan submittals indicate that previously specified LEED points are no longer being pursued, resulting in the project not being able to meet the requirements to earn LEED Silver Certification or higher, the applicant must resubmit building permit applications and go back through the plan review process from the beginning at the standard twenty-day review period.

The Planning and Development Director reserves the right to deny expedited plan review for any project due to any of the following reasons¹⁵:

- Inconsistencies among LEED points being pursued.
- Insufficient supporting documentation verifying the pursuit of the LEED points indicated on the applicant's submitted checklist.
- Inconsistencies among points being pursued and site plan, floor plan, building elevation or other submitted documentation.
- An overabundance of applications for expedited plan review. If the volume of applications received would result in a workload that would not allow the Planning and

¹⁵ Once expedited plan review is granted, it cannot be subsequently taken away except as expressly set forth herein. Expedited plan review can only be denied before expedited plan review has been granted except as expressly set forth herein.

Development Department to complete expedited reviews and other submitted projects, the Planning and Development Director may deny expedited plan review.

Application Requirements

To obtain expedited plan review, the following criteria must be met:

1. An expedited plan review application must be submitted. The application shall include at a minimum:
 - a. Name and contact information of applicant
 - b. Project information (name, location, size, anticipated completion date)
 - c. Name and contact information of LEED Accredited Professional on the project team or the name and contact information of the LEED Accredited Professional hired as a consultant.
 - d. Documentation verifying that the project is LEED registered.
 - e. Checklist showing which LEED points are being pursued. Projects must pursue enough points as required to obtain LEED Silver or higher¹⁶.
 - i. For LEED for New Construction (LEED-NC 2.2¹⁷), a minimum 33 points must be pursued. To receive expedited plan review in the City of Chandler, the following LEED-NC points must be pursued and indicated on the submitted LEED-NC Checklist:
 1. At least three of the five Water Efficiency (WE) points, including at least one point from WE Credit 1, Water Efficient Landscaping.
 2. At least one point from Sustainable Sites (SS) Credit 7, Heat Island Effect.
 3. At least one point from Energy and Atmosphere (EA) Credit 2, On-Site Renewable Energy, or at least four points from EA Credit 1, Optimize Energy Performance. If EA Credit 2 is pursued, the renewable energy must be indicated on site plans and/or building elevations¹⁸.
 - ii. For LEED for Core and Shell projects (LEED-CS 2.0), a minimum of 28 points must be pursued. To receive expedited plan review in the City of Chandler, the following LEED-CS points must be pursued and indicated on the submitted LEED-CS Checklist:
 1. At least three of the five Water Efficiency (WE) points, including at least one point from WE Credit 1, Water Efficient Landscaping.

¹⁶ See www.usgbc.org for LEED checklists and requirements.

¹⁷ As LEED is updated and new versions of LEED are utilized, the Green Building Coordinator will be responsible for determining the specific points required to earn expedited plan review. The points required will match, to the closest extent possible, the points required under the versions of LEED that were in place when this Green Building Program was adopted. LEED Silver or Three Globes or higher will still be required to earn expedited plan review.

¹⁸ If EA Credit 1 is pursued, the applicant must submit energy modeling results that verify that the building will meet the energy savings requirements to earn at least four points.

2. At least one point from Sustainable Sites (SS) Credit 7, Heat Island Effect.
3. At least one point from Energy and Atmosphere (EA) Credit 2, Renewable Energy, or at least four points from EA Credit 1, Optimize Energy Performance¹⁹.
- iii. For LEED for Commercial Interiors (LEED-CI 2.0), a minimum of 27 points must be pursued. To receive expedited plan review in the City of Chandler, the following LEED-CI points must be pursued and indicated on the submitted LEED-CI Checklist:
 1. At least one of the two Water Efficiency (WE) points.
 2. At least three points from Energy and Atmosphere (EA) Credit 1, Optimize Energy Performance.
- iv. For LEED for Schools 2007, a minimum of 37 points must be pursued. To receive expedited plan review in the City of Chandler, the following LEED for Schools points must be pursued and indicated on the submitted LEED for Schools Checklist:
 1. At least four of the seven Water Efficiency (WE) points.
 2. At least one point from Sustainable Sites (SS) Credit 7, Heat Island Effect.
 3. At least one point from Energy and Atmosphere (EA) Credit 2, On-Site Renewable Energy, or at least four points from EA Credit 1, Optimize Energy Performance. If EA Credit 2 is pursued, the renewable energy must be indicated on site plans and/or building elevations²⁰.
- f. Project site plan, floor plan, building elevations, other construction documents, and any other supporting documentation that may be necessary to show conformance to the points being pursued. All plans and documents must show conformance to the points being pursued.
- g. A brief narrative describing energy efficiency measures undertaken to pursue points from EA Credit 1, Optimize Energy Performance. Alternatively, the applicant may submit energy modeling results that show the energy efficiency of the building (The USGBC now requires all projects to acquire at least two points from EA Credit 1 before LEED Certification is issued).
- h. Agreement form, signed by the applicant and property owner, agreeing to the following:
 - i. Expedited Plan Review is subject to the approval of the Planning and Development Director.
 - ii. Project will strive to achieve LEED Silver Certification or higher, including the pursuit of all prerequisites and all points indicated in the attached checklist.
 - iii. Development will conform to the approved site plan and construction documents. Additionally the development must be carried out as indicated by any supporting documentation that was submitted to show

¹⁹ See footnote 18.

²⁰ If EA Credit 1 is pursued, the applicant must submit energy modeling results that verify that the building will meet the energy savings requirements to earn at least four points.

conformance with certain prerequisites and/or points. Any modifications must be approved by the Planning and Development Director.

- iv. If any subsequent plan submittals indicate that previously specified LEED points are no longer being pursued, resulting in the project not being able to meet the requirements to earn LEED Silver Certification or higher, the applicant will resubmit building permit applications and go back through the plan review process from the beginning at the standard twenty-day review period.

IMPLEMENTATION

The Planning and Development Department will be responsible for creating the expedited plan review application, processing all submitted applications, and carrying out the expedited plan review.

The Long Range Planning, Current Planning (including Site Development), and Building Plan Review divisions will coordinate to review applications and verify that site plans, building plans and other submitted documents include green building strategies that will be able to meet the requirements of all prerequisites and points being pursued. These Divisions will also be responsible for assuring that each additional submittal maintains the previously shown green building strategies.

The Planning and Development Director and the Green Building Coordinator must approve any expedited plan review application before expedited plan review is commenced. The Green Building Coordinator and/or planning staff should work with developers before plans are submitted to ensure that the Planning and Development Department has ample time to verify that the project meets all the requirements to earn expedited plan review. If the developer has no dialogue with the Green Building Coordinator until plans are submitted, the first plan review period may exceed ten days because it will be necessary for the Green Building Coordinator to verify that the project meets expedited plan review requirements before expedited plan review can begin.

If approved for expedited plan review, Site Development and Building Plan Review Staff will complete plan review within ten working days of application. Each additional submittal will also be reviewed within ten working days.

AWARDS/ RECOGNITION

The City of Chandler will provide awards and/or recognition to Chandler Green Building Program participants as outlined below. In today's increasingly environmentally-conscience society, recognition for green building can be a powerful marketing tool.

Developments that obtain certification under LEED-NC, LEED-CS, LEED-CI, LEED for Existing Buildings (LEED-EB), or LEED for Schools will be eligible for the following:

1. Preferential consideration for an Architectural Excellence Award.

2. Inclusion on the Chandler Green Building Program Participant List to be posted on the City website and available at the front counter of the Planning and Development building.
3. City of Chandler Green building seal of approval that can be displayed on a sign that is posted during and prior to the site's construction.
4. City of Chandler Green building recognition sign, provided by the City of Chandler, that can be posted on a window/ glass door.

IMPLEMENTATION

The Green Building Coordinator will be responsible for compiling and updating the Chandler Green Building Program Participant List. The list should include names of projects and the developers and/or architects that worked on the project. The Green Building Coordinator will be responsible for determining other green building rating systems that will be recognized in Chandler's Green Building Program Participant List.

The Architectural Excellence Awards Committee is responsible for determining Architectural Excellence Award winners. This committee may establish a new, Green Building Award category, or may give preferential consideration to LEED Certified buildings in existing award categories.

The Planning and Development Department will be responsible for designing a Chandler green building seal of approval. This seal will be made available to projects that have been awarded expedited plan review. Developers will be responsible for posting a sign that includes that Chandler green building seal.

The Planning and Development Department will be responsible for creating and distributing green building recognition signs that can be displayed on building windows or entrances. See the 'Funding' Section (Page 20) for details on how these signs will be funded.

GREEN BUILDING CERTIFICATION FEE REIMBURSEMENT

Projects attaining certification under LEED-NC, LEED-CS, LEED-CI, LEED-EB or LEED for Schools will be eligible for certification fee reimbursements. Eligible projects may have LEED Certification fees paid to the USGBC reimbursed by the City.

Fee reimbursements will be issued on a first-come, first-serve basis. The first projects that obtain LEED certification will be the first projects to be awarded a fee reimbursement. Fee reimbursements will only be available as long as funding exists. Funding for fee reimbursements is subject to annual budget approvals by Mayor and Council.

In order to attain LEED Certification, the USGBC charges LEED Certification fees that vary based on building size. Certification fees cover costs for a reviewer to verify that buildings meet certain green criteria necessary to attain LEED Certification.

The Certification fees listed in Table 1 apply to LEED for: New Construction, Commercial Interiors, Core and Shell, and Schools. Table 2 shows the fees that apply to LEED for Existing Buildings. The fees listed in Tables 1 and 2 are current as of June 2008 and may be changed by the USGBC. City of Chandler fee reimbursements will be based upon current fees and not necessarily the fees shown in Tables 1 and 2.

Table 1

LEED* Certification Fees

Building Size	Certification Fees**
0 - 50,000 SF	\$1,750
50,000 - 500,000 SF	\$.035/ SF
Over 500,000 SF	\$17,500

*LEED-NC, LEED-CS, LEED-CI, and LEED for Schools

**Certification fees shown are at the USGBC member rate.

Table 2

LEED-EB Certification Fees

Building Size	Certification Fees*
0 - 50,000 SF	\$1,250
50,000 - 500,000 SF	\$.025/ SF
Over 500,000 SF	\$12,500

*Certification fees shown are at the USGBC member rate.

Certain projects that attain LEED Certification may be eligible for a partial or complete reimbursement of certification/ assessment fees. LEED for New Construction, Core and Shell, and Existing Building projects must achieve at least two of the five Water Efficiency Points and at least one of the two Heat Island Reduction Points. Commercial interior projects must achieve at least one of the two water efficiency points and at least three points from Energy and Atmosphere Credit 1, Optimize Energy Performance. Projects that achieve LEED Certification and the specifically referenced Water and Heat Island or Energy and Atmosphere points will be eligible for fee reimbursements.

Chandler's fee reimbursements will be based upon current certification fees. The only exception is that LEED Platinum buildings are not charged a certification fee. City of Chandler reimbursements for LEED Platinum projects will be based upon the LEED Certification fee that would have been required for a LEED Certified project of the same size. Additionally, all LEED reimbursements will be based on the USGBC member rate, regardless of a project's USGBC membership status. Fee reimbursements will not be issued until certification is officially awarded by the USGBC and proof of LEED Certification is submitted to the City. The City of Chandler will not reimburse any USGBC membership fees, LEED registration fees, or LEED-CS pre-certification fees.

Fee reimbursement amounts vary based on the rating level achieved, as shown in Table 3:

Table 3

LEED Fee Reimbursements		
LEED	Rating	Percentage of LEED Certification Fee to be Reimbursed*
	Certified	50%
	Silver	75%
	Gold	100%
	Platinum	100%

* Fee reimbursements are based on the USGBC member rate LEED Certification fees.

IMPLEMENTATION

The Planning and Development Department will be responsible for developing an application for projects requesting fee reimbursements. At a minimum, the application must include the following:

- Project name, location, lot size, building size
- Applicant name and contact information
- Developer and property owner name (if different from the applicant) and contact information
- Level of LEED Certification Achieved
- Amount Paid for LEED Certification Application (Applicant must include a copy of the receipt)
- LEED scorecard showing which points were earned
- Applicant and property owner signature, agreeing that all information presented is accurate
- Proof of LEED Certification

The Planning and Development Department will be responsible for distributing applications (applications will also be available on the City's Green Building Program and Unified Development Manual websites) and for processing all applications submitted. The Green Building Coordinator will review each application and verify that the project has received LEED Certification and has achieved the required water and urban heat island or energy and atmosphere points. Once approved administratively, the Planning and Development Department will issue a check to the applicant.

The funding amount that will be applied toward Green Building Program incentives will not exceed \$50,000 for the first year (Fiscal Year 08/09). This \$50,000 will come out of the \$75,000 allocated to the Green Building Program. Incentive funds will be made available on a first-come first-serve basis – the first projects to achieve LEED Certification will be the first projects in line for fee reimbursement. Once \$50,000 has been utilized during the 2008/2009 Fiscal Year, no additional green building projects will receive financial assistance for the remainder of the fiscal year.

In subsequent fiscal years, Mayor and Council will need to approve the continued funding of this green building application assistance program. If funding is not approved, fee reimbursements will not be issued after the 08/09 fiscal year.

GREEN BUILDING ASSISTANCE

The City of Chandler Planning and Development Department will provide non-technical assistance for projects interested in pursuing a green building project. City Staff will assist developers with questions regarding green building techniques and strategies, the LEED Certification process, and general requirements to obtain LEED points. City Staff will also be available to assist individual homeowners that may be interested in remodeling their homes to meet green standards. City Staff will not provide specific construction or design recommendations. Rather, City Staff will provide broad information about LEED and green building and will direct developers or homeowners to more appropriate sources that can provide specific green building advice.

IMPLEMENTATION

See “Green Building Coordination/ Assistance” in the City Commitments section for the implementation strategy.

EDUCATIONAL OPPORTUNITIES

Development professionals and residents that are interested in participating in the Chandler Green Building Program can take advantage of green building educational programs offered by the City of Chandler. For more information on the educational programs see Goal 4.

IMPLEMENTATION

See “Educational Program” in the City Commitments section for the implementation strategy.

City Commitments

Goal 2: To enhance City green building.

Although City of Chandler municipal buildings constitute a small percentage of buildings within the City's jurisdiction, it is critical that the City be a leader in green building, to set an example for private development.

The following list encompasses some approaches that the City can take to promote sustainability in its own operations. These items are further described in the paragraphs that follow.

New City Buildings

- New City buildings will attain LEED Silver Certification or higher when feasible.

Existing City Buildings

- Upgrade Energy Management System.
- Energy audits and retrofits in existing buildings.
- Pursue LEED for Existing Buildings when feasible.
- Purchase Green Power.

Green Building Coordination/ Assistance

- Provide general green building and LEED assistance to developers and homeowners.
- Promote and coordinate recycling opportunities.

Forming Partnerships

- Explore Partnerships with utilities and other organizations to promote residential retrofit opportunities.

Educational Program

- Provide lecture series, green building publications and a green building website.

Green Building Events

- Get involved with the Green Building Expo, Greensummit and other events.

NEW CITY BUILDINGS

All new, occupied City of Chandler buildings larger than 5,000 square feet shall be designed, contracted, and built to LEED Silver standards or higher when feasible. When project conditions permit, the City should pursue the Gold or Platinum of certification. Mayor and Council may grant exceptions to this requirement when they deem appropriate. The LEED Silver requirement will only apply to projects that have an anticipated payback of ten years or less. If the anticipated payback is greater than ten years, Staff will recommend to the City

Council which level of LEED Certification is appropriate for that particular project. If no level of LEED Certification is feasible, then the project under consideration shall include as many LEED principles as feasible.

The City should utilize a cross-departmental Staff when designing new City buildings. Including Staff from Buildings and Facilities, Public Works, Planning and Development, and Environmental Management is essential to create a building that is not only green, but that also effectively meets the City's day-to-day operation and maintenance needs.

Given the results of the various studies referenced in the Introduction section finding that green buildings could cost 0 – 8% more than standard buildings, the City will need to commit additional funding to cover up-front costs. According to these studies, this additional upfront cost can be recouped in as quickly as three years. Over the remaining life of the building, the City will realize savings through reduced maintenance and operating costs.

IMPLEMENTATION

The commitment for all new City buildings to be built to LEED standards will be made by Mayor and Council through the adoption of a resolution.

EXISTING FACILITIES/ OPERATIONS

Buildings and Facilities Staff is currently working on upgrading the City's Energy Management System. This upgrade will address energy operations in 49 City buildings and will result in reduced energy consumption in these buildings, and therefore, reduced utility costs.

Additionally, the City should conduct an energy audit on existing City facilities, beginning with an audit on municipal buildings in the downtown campus. The City can partner with Arizona Public Service (APS) to finance the audit of municipal buildings within the APS service area.

Based on findings from the audit, the City should take the necessary steps to improve energy efficiency when the estimated payback from such improvements is estimated to be ten years or less. It is anticipated that after the investment is paid back, the City will experience considerable energy cost savings as a result of these efforts.

The City can also consider purchasing green power from its utility providers. Although green power costs more than nonrenewable energy, by purchasing green power, the City can showcase its commitment to sustainability and set a positive example for the community.

In addition to energy improvements, the City should analyze the feasibility of water conservation measures on existing City properties. When building water fixtures are scheduled for replacement, the fixtures will be replaced with low water use fixtures when feasible. In cases where older water fixtures exceed the standards set by the 1992 Energy Policy Act (see 'Low Water Use Fixtures' Definition for the flow rates established by the 1992 Energy Policy Act), the City should be proactive in replacing high water use fixtures with low water use fixtures.

Additionally, the City should enhance water conservation efforts in landscaped areas on City properties. The City should utilize water-conserving technologies such as smart controllers equipped with weather-based sensors that automatically reduce water usage when it has rained. The City should also consider converting certain landscaped areas from turf to native landscaping. Areas of turf that serve recreational purposes should not be converted.

To address a more broad range of environmental issues, including energy and water conservation and indoor environmental quality, the City should analyze the feasibility of pursuing LEED for Existing Buildings (LEED-EB) on existing City buildings. The City should pursue LEED-EB when the anticipated payback period is ten years or less.

IMPLEMENTATION

Buildings and Facilities Staff will be responsible for coordinating the Energy Management System upgrade as well as any approved energy audits, energy efficiency upgrades, and/or LEED-EB Certifications. Buildings and Facilities Staff, along with Water Resources Staff will coordinate water conservation efforts.

The City Manager's Office will be responsible for determining the amount (if any) of green power purchased from utility providers.

Goal 3: To promote green building opportunities, events and education.

GREEN BUILDING COORDINATION/ ASSISTANCE

The Planning and Development Department will staff an employee that can serve as the Green Building Coordinator. The Planning and Development Director will designate a planning department employee to serve as the Green Building Coordinator for the 2008/2009. Preferably, this person will be a LEED Accredited Professional and knowledgeable of green building strategies and resources. After the 2008/ 2009 Fiscal Year, the City may hire a full-time green building coordinator, or an existing staff member may continue to fill this role. Additionally, at least one employee in Current Planning, Site Development and Building Plan Review should be familiar with green building strategies and the LEED Green Building Rating System. If possible, these employees should be encouraged to become LEED Accredited Professionals.

These employees will be able to provide assistance to development professionals that are interested in participating in the Chandler Green Building Program and/or interested in designing a LEED-Certified building. City Staff will be available to answer general questions about LEED and green building and will be able to direct developers to sources that can assist developers with more specific matters. Additionally, the City will provide Chandler Green Building Program information, including a list of City incentives available, to all development applicants. This assistance will be provided free of charge to development clientele with projects in Chandler.

Green Building assistance will also be provided as a courtesy to homeowners that may be interested in “greening” their homes by improving energy efficiency, water efficiency, indoor environmental quality, and/or other green strategies. A Green Building Coordinator will provide assistance via telephone, Internet and face-to-face correspondence. The Coordinator will not design any green building components of a home for homeowners but will be able to direct homeowners to sources that can provide more specific construction information.

Where City recycling service is not available, the City will continue to promote awareness of waste reduction opportunities and provide recycling collection resources and expertise for multi-family developments, schools, and businesses to implement recycling service. The City should also work to pair construction teams with companies that recycle construction debris.

Additionally, the Green Building Coordinator shall establish and maintain a City of Chandler Green Building website. This website will include basic green building strategies and links to sources where homeowners and/or developers can locate more specific construction information and details about green building incentives from other agencies. The website shall also include details of the Chandler Green Building Program as well as upcoming educational events.

IMPLEMENTATION

The Green Building Coordinator (a role filled by a designated Planning and Development Department employee during the 2008/2009 Fiscal Year), Current Planning, Site Development, and Building Plan Review Staff will be able to assist developers and homeowners with green building inquiries. The Green Building Coordinator will offer general assistance regarding LEED applications and the requirements to earn LEED points. The coordinator will also be responsible for connecting developers and homeowners to sources that provide more detailed green building strategies.

The Green Building Coordinator shall be responsible for creating a handout summarizing Chandler’s Green Building Program. The handout will contain at a minimum:

- Information on the Green Building Program, including:
 - Incentives Available
 - Eligibility Criteria for Incentives
 - A List of Suggested Green Site Design Strategies
- A summary of renewable energy and energy efficiency incentives available from SRP and APS,
- A summary of federal and state tax incentives for renewable energy installation and energy efficient construction/ renovation.

This handout will be made available on the City’s Unified Development Manual website. Additionally, Planners will distribute this handout at any pre-application meetings. Current Planners should refer applicants to the Green Building Coordinator for more information.

Solid Waste Services staff and the Green Building Coordinator will take the lead in addressing environmental awareness and procedures that offer resources and practices for waste reduction and recycling opportunities. This will include development of public information for distribution to individuals, organizations, multi-family developments, construction teams, small and large businesses involved in or considering green building construction. Solid Waste Services will collaborate with other City Departments to promote awareness of resources for waste reduction, reuse and recycling.

The Green Building Coordinator shall be responsible for developing the Green Building Program website. The website should contain this Green Building Program document, the Green Building Program handout, upcoming educational events, educational publications, information about incentives available for energy efficiency upgrades/ renewable energy use, recycling information, a list of Green Building Program participants, statistics showing the effectiveness of the Green Building Program, and contact information for the Green Building Coordinator and other Staff knowledgeable in green building and the LEED Green Building Rating System.

FORMING PARTNERSHIPS

The City will explore partnerships with APS, SRP and other agencies to provide Chandler homeowners with opportunities for assistance in remodeling their homes.

Additionally, the City will explore partnerships with home improvement suppliers and green product manufacturers and/or vendors to promote the use of green materials that enhance energy and water efficiency and indoor environmental quality.

The City will explore partnerships with organizations that install residential solar power systems with little or no initial investment from the homeowner. These organizations recoup solar installation costs by leasing the solar equipment to the homeowner. The homeowner can pay for this lease through electricity cost savings.

IMPLEMENTATION

The Planning and Development Department will coordinate with the Legal Department, the Communications and Public Affairs Department and the City Manager's Office in exploring and/or establishing such partnerships. See the 'Funding' Section for details on the funding of pursuing and forming partnerships.

EDUCATIONAL PROGRAM

The City of Chandler will assemble an educational program that includes one or more of the following components:

- A green building website with educational material
- Green building publications
- Green building lecture series
- Suggested green site design strategies

The City should explore partnerships with the City of Scottsdale, APS, SRP and other agencies that have educational programs. Educational material will be offered to development clientele and the public in general.

The educational material and events offered will focus, at least in part, on providing Chandler homeowners with the information that they will need in order to ‘green’ their homes. This information will include basic green building strategies, information regarding existing tax incentives or rebates available through the federal and state governments, utilities and any other agencies. Educational material will also provide Chandler residents with links to other resources that may provide more detailed green building strategies and information about specific green building products that can assist homeowners in ‘greening’ their homes. Chandler’s Green Building website should act as an information center where residents can understand green building principles and access information about some of the best products, materials, and/or strategies that can be used to ‘green’ their homes. The educational program will provide Chandler residents with the knowledge and resources that they will need in order to improve their home’s energy and water efficiency in a cost effective manner.

Additionally, the City will provide a document that provides a list of suggested green site design strategies. This list of strategies will be available to homeowners and developers.

IMPLEMENTATION

The educational program should be implemented within one year of adoption of the Green Building Program. The Green Building Coordinator will be responsible for establishing and coordinating the website, green building publications, and lecture series. Any green building publications will be made available on the green building website and through the Planning and Development Department. Planning Staff will distribute a list of suggested green site design strategies to developers at pre-application meetings and on other occasions when such information has been requested. See the ‘Funding’ Section on Page 20 for the details of the funding of the education program.

REGIONAL GREEN BUILDING EVENTS

The City should look for opportunities to promote and be involved with events that promote environmental sustainability and green building.

Along with the cities of Tempe, Phoenix and Scottsdale, the City of Chandler should be a sponsor of the annual Green Building Expo. The Green Building Expo is an annual event that offers a valuable educational series and provides green product vendors and manufacturers with the ability to promote their products to valley residents.

The City has joined the GreenSummit Alliance. The GreenSummit is similar to the Green Building Expo in that the annual event offers educational events and networking opportunities for product vendors and manufacturers. Joining the GreenSummit Alliance will

enable the City of Chandler to promote its Green Building Program and other sustainability efforts, while learning successful approaches being led by other local governments.

IMPLEMENTATION

The cost to become a sponsor of the Green Building Expo is estimated at \$5,000 (see the 'Funding' Section on Page 20 for funding details). The City also may be expected to have employees serve on the Green Building Expo Planning Committee. The Green Building Coordinator will be able to serve on the committee if needed. Additionally, the City of Chandler can provide presenters for the Expo's educational sessions. Long Range Planning, Water Resources and other divisions may provide staff to be available for such presentations.

The GreenSummit Alliance does not require any financial commitment from the City. Being a member of the GreenSummit Alliance enables the City to coordinate with other existing and emerging local green building programs around the State. The Green Building Coordinator and, if available, other Planning Services Staff will be responsible for attending GreenSummit Alliance meetings and events.

MAINTAIN USGBC MEMBERSHIP

The United States Green Building Council (USGBC) is a leading organization in green building. The City shall remain an active member of this organization to ensure the continued success of the City's green building efforts.

USGBC memberships include a number of benefits, including:

- Discounts on green building conferences and training workshops,
- Discounts on LEED Registration and Certification fees,
- Access to information that greatly assists project teams in LEED Certification,
- Optional participation in member events,
- City recognition for being a leader in green building.

IMPLEMENTATION

USGBC membership can be maintained by paying annual dues. Currently, the annual dues are \$500 but may be changed in the future. The City Manager's Office will be responsible for maintaining the City's USGBC membership and contributing the annual dues.

FUNDING

The Green Building Program fee reimbursements, awards and recognition costs, educational events, costs to pursue and form partnerships, and green building promotion efforts (including sponsoring events such as the Green Building Expo) will be funded from the \$75,000 allocated to the Green Building Program for the 08/09 Fiscal Year. Funding for new City buildings and energy audits and/ or retrofits to existing City facilities will need a separate budget approval before these projects will begin. All other aspects of the Green Building Program will rely on existing City Staff and department budgets. Due to the reliance on third party verification of green building through LEED, it is anticipated that the implementation of this Green Building Program will not necessitate a significant amount of Staff resources or department budgets.

The \$75,000 allocated to the Green Building Program will be distributed as follows:

- \$50,000 will be made available for LEED Certification fee reimbursements,
- \$25,000 will be utilized to develop and operate an educational program, form partnerships, provide green building recognition signs, and green building promotion.

UPDATING THE GREEN BUILDING PROGRAM

This initial version of the Green Building Program is a start-up program and may need to be significantly amended after one year of monitoring program success. The City shall revisit the Green Building Program on an annual basis once the program is fully operational. If necessary, the program will be updated based on the program's level of success, changing market conditions, funding and staffing concerns, or any other factors that may generate a need to update the program.

IMPLEMENTATION

The Planning and Development Department will be responsible for leading the Green Building Program updates. The update efforts, however, should include various City departments and divisions, including but not limited to:

- Buildings and Facilities
- Planning and Development
- Water Resources
- Solid Waste
- Transit Services
- Economic Development
- Environmental Management
- City Manager's Office
- Legal Department

The program will be revisited on an annual basis. Planning and Development Department Staff will keep record of the number of projects utilizing the Green Building Program and conduct research on national and local green building trends each year. Depending upon the results of this research, the program's overall success or lack of success, and Mayor and Council goals, the program may need to be substantially revised. Planning and Development Department Staff will be responsible for conducting research and leading program revision efforts. At a minimum, annual analysis and revision of the Green Building Program will include the following:

- Zoning Code Analysis to determine any potential Zoning Code conflicts with green building that may be addressed,
- Analysis of the effectiveness of educating developers on green site design strategies,
- Exploration in establishing a green development policy that would apply to rezoning requests,
- Analysis of existing and emerging green building rating systems that may be considered for incentives,
- Monitoring new green building technologies and development strategies,
- Analysis of the effectiveness of incentives,
- Revision of incentive package/ eligibility criteria if necessary,
- Consideration of expanding the program to more directly address new and existing residential development,
- Examination of the extent to which City Commitments have been achieved,
- Consideration of additional City Commitments.

DEFINITIONS

Energy Audit - An inspection, survey and analysis of energy flows in a building, process or system with the objective of understanding the energy dynamics of the system under study. Typically an energy audit is conducted to seek opportunities to reduce the amount of energy input into the system without negatively impacting the output(s). When the object of study is an occupied building then reducing energy consumption while maintaining or improving human comfort, health and safety are of primary concern. Beyond simply identifying the sources of energy use, an energy audit seeks to prioritize the energy uses according to the greatest to least cost effective opportunities for energy savings.

Green Building - A comprehensive approach to building that results in increased energy and water efficiency, a healthier and more pleasant indoor environment, and a sustainable site design, all accomplished while minimizing construction waste and using environmentally-friendly building materials.

Leadership in Energy and Environmental Design (LEED) Green Building Rating System – A key program of the USGBC, LEED is a voluntary, consensus-based national rating system for developing high-performance, sustainable buildings. LEED addresses strategies in five areas: sustainable site development, water conservation, energy efficiency, materials and resources selection, and indoor environmental quality. For additional information about the LEED Green Building Rating System, see www.usgbc.org.

Low Water Use Fixtures – Water fixtures (water closets, urinals, lavatories, showerheads, and kitchen sinks) that exceed the efficiency required by the Energy Policy Act (EPAct) of 1992. The following table depicts the flowrates of fixtures that meet the 1992 EPAct and typical flowrates of low-flow fixtures:

Table 4: Standard and Low-Flow Flowrates

Flush Fixture	Flowrate (Gallons per Flush)			
	EPAct	Low-Flow	Ultra Low-Flow	Waterless
Water Closet	1.6	1.1	0.8	NA
Urinal	1	0.5	NA	0
Lavatory	Flowrate (Gallons per Minute)			
	EPAct	Low-Flow	Ultra Low-Flow	Waterless
Lavatory	2.5	1.8	0.5	NA
Kitchen Sink	2.5	1.8	NA	NA
Shower	2.5	1.8	NA	NA

Non-Occupied Building – Buildings such as storage and maintenance sheds that are not meant to be regularly occupied by City employees or residents. These buildings do not require comfortable indoor temperatures and/or regular lighting. Non-occupied buildings are not required to be built to LEED Standards.

Occupied Building – A City building is considered to be an occupied building if it is designed as a dwelling unit, intended to provide regular working space for employees, or meant to provide a space to be regularly utilized by residents and/or employees. Occupied buildings over 5,000 square feet in size must be designed and built to LEED standards as set forth in Resolution 4200.

Payback Period – The amount of time required to pay back the additional building expense generated from designing and building to LEED standards or from implementing energy improvements to existing buildings. The payback period is determined based on the net-present value of energy savings. This methodology will take into account inflation and expected energy cost increases.

United States Green Building Council (USGBC) - A non-profit organization that was established in 1993 to support and promote sustainable building design and construction practices. The USGBC is comprised of groups and individuals representing a broad spectrum of the building industry committed to construction that is environmentally responsible, profitable and healthy to occupy.

Urban Heat Island Impact – Occurs when warmer temperatures are experienced in urban landscapes compared to adjacent rural areas as a result of solar energy retention on constructed surfaces. Principal surfaces that contribute to the heat island effect include streets, sidewalks, parking lots and buildings.