

work, learning, and living environments, with more natural light and better air quality, and typically contribute to improved employee health, comfort, and productivity.

The USGBC serves as a certifying agency for green buildings under the LEED™ program. Nationally, there are currently 1,832 LEED™ registered projects and 215 LEED™ green certified buildings. Eight (8) of these 215 certified buildings are at the Platinum level, forty-seven (47) are Gold, sixty-four (64) are Silver, and ninety-five (95) are basic level Certified. Arizona currently has one (1) Gold, one (1) Silver, and four (4) basic Certified LEED™ buildings. In addition, there are currently fifty-two (52) registered LEED™ projects in Arizona that are in the process of seeking certification at one of the four levels. Scottsdale's new Senior Center is an example of a city building that is registered and upon completion of construction will be Gold certified under the LEED™ Program.

Scottsdale's nationally recognized Green Building Program focused originally on residential building. Recently this voluntary program has been extended to encourage green commercial building and residential remodeling. Currently, three commercial projects are registered with the city, with another half dozen in process. By committing the city to design, contract and build new municipal buildings and major renovation of those buildings to achieve LEED™ Certification, Scottsdale will enhance its environmental leadership role and augment its national reputation as a quality location.

Recently, several other valley municipalities, including Phoenix, Tempe and Tolleson, have announced programs and the construction of LEED™ certified city buildings. Nationally, many municipalities now have enviable Green Building performance records, and at least ten cities have adopted LEED™ Silver as a minimum level of certification for municipal structures. Vancouver, BC, Canada, has adopted LEED™ Gold certification.

On Feb. 11, Arizona Governor Napolitano signed Executive Order 2005-05 implementing a LEED™ Silver standard for all new state funded-buildings.

Financial Considerations- Studies indicate that with initial integrated design, sustainable buildings have an average 0-2% increase in design/construction costs over their conventional counterparts, but the overall, long term financial benefits- due to reduced operating, maintenance and other costs, exceed additional design/construction costs by a factor of 10 to 1. (Upfront design/construction costs to make a building that is currently planned or under construction "greener" could be as much as 5% higher.) See Attachment 4- Cost/Benefit Analysis, and Attachment 5- Benefits of a Green Building Policy.

Data from existing LEED™ certified projects indicates there is an almost immediate payback on additional design/construction cost (attachment 4). A LEED™ certified building should payback any additional design/construction cost in 1-5 years, and then return many years of savings over the useful life of the building.

Under this proposal, any new, occupied, city building project that has a payback of five years or less will achieve LEED™ Gold certification. Where the payback is anticipated to be more than five years, staff will recommend to City Council which level of LEED™ certification is appropriate for that particular city building. If no level of LEED™ certification is feasible, then the project under construction shall include as many principles as possible. Any additional costs to achieve the policy

will be recovered through reduced operating costs over the life of the building.

There are also capital costs unique to the LEED™ process that will require budgeting as part of overall budgets for CIP projects, including:

- 1) consulting costs for energy modeling,
- 2) consulting costs for a “green administrator”,
- 3) consulting costs for building commissioning,
- 4) LEED™ project registration fee, and
- 5) LEED™ building certification fee

The first two consulting costs are absorbed with minimal additional expense in the cost to design/construct the building if the project is planned for LEED™ certification from the earliest conceptual design stage. If not planned from the beginning, these costs would typically add approximately a total of \$30,000. The third consulting cost is typically 0.5%-1.5% of the total construction budget, and is an additional cost. This fee is for testing the building’s systems to ensure they are operating as designed before the city takes possession. The fourth and fifth items are fees that range from \$2,250 to \$9,000 total per project depending on project size and complexity (As the certifying agency, the United States Green Building Council (USGBC) assesses fees for project registration and certification. Since Scottsdale has been a long time member of USGBC, the city is eligible for reduced fees. Non-USGBC members could pay as much as \$25,000 per project.)

Arizona Revised Statutes 9-499.11 already requires that a life cycle cost analysis be used to evaluate the design, equipment and materials for efficient and effective lighting systems for new construction and major renovations of municipal buildings. This Green Building (LEED™) policy would satisfy the city’s requirement to comply with this statute.

Community involvement. This LEED™ Green Building Policy has been discussed by both the Environmental Quality Advisory Board (EQAB) and by its Green Building Advisory Committee (GBAC) at a number of meetings that have been open to the public. Both EQAB and the GBAC passed resolutions supporting adoption of a Green Building (LEED™) Policy that contains a process designed to achieve the LEED™ Gold level at a minimum. The City of Scottsdale has been an innovative leader in environmental issues. The community has pushed for land preservation, quality and innovative design and leadership in many EPA programs. In 1998, Scottsdale was the first Arizona community to establish a Green Building Program.

RESOURCE IMPACTS

Staffing, workload impact. LEED™ design and planning will be incorporated into the overall design contract for the city buildings covered by this policy. The minimal additional design fees will be incorporated into the capital budget for the project. Existing Green Building/Plan Review staff will assist in training of project managers as needed, and act as a resource to the Capital Project Management staff.

Capital Project Management staff, will be assisted by the environmental office, Green Building/Plan Review staff, and staff working on energy efficiency to ensure all capital improvement projects covered by this policy are designed for LEED™ from the earliest conceptual stage, monitoring all projects through to construction, documenting the performance and efficiencies of new buildings, and periodically reporting on that performance and the performance of this policy to the City Council.

Staff will also analyze existing city building systems for energy and water efficiency, and ensure that appropriate city Green Building Program Commercial and Remodeling Guidelines are incorporated into expansion and remodeling of existing, occupied city buildings to the maximum extent feasible. Other responsibilities would include orientation and training for appropriate city staff.

Future budget implications. Future capital improvement project budget requests will include costs for LEED™ design, commissioning, registration and certification if this policy is adopted.

OPTIONS & STAFF
RECOMMENDATION

Description of Option A: Adopt Resolution No. 6644 approving the Green Building policy that new, occupied, city buildings will be designed, contracted and built to achieve certification in the LEED™ Program at the Gold certification level when the project payback is five years or less. Where the payback is anticipated to be more than five years, staff will make a recommendation to City Council which level of certification is appropriate for that building. If no level of LEED™ certification is feasible, then the project under consideration shall include as many principles of both the LEED™ program and the city's Green Building Program as are feasible.

Description of Option B: Do not adopt the Green Building LEED™ policy outlined in this report.

Description of Option C: Continue this item for additional information and/or provide additional direction to staff.

Recommended Approach: Approve the proposed policy as outlined in Option A.

RESPONSIBLE DEPT(S)

Municipal Services, Community Services, and Planning & Development Services

STAFF CONTACTS

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APPROVED BY

Robert J. Cafarella Date
Preservation Director

Al Dreska Date
General Manager, Municipal Services Administration

Craig Clifford Date
General Manager, Financial Services Department

Debra Baird Date
General Manager, Community Services

Kroy Ekblaw Date
General Manager, Current Planning

Ed Gawf Date
Deputy City Manager

ATTACHMENTS

1. Resolution No. 6644
2. LEEDTM Rating System Checklist
3. LEEDTM Green Building Rating System Overview
4. Cost/Benefit Analysis
5. Benefits of Green Building

Attachment 1: Resolution No. 6644

RESOLUTION NO. 6644

A RESOLUTION OF THE MAYOR AND CITY COUNCIL OF THE CITY OF SCOTTSDALE, MARICOPA COUNTY, ARIZONA, ADOPTING THE CITY OF SCOTTSDALE GREEN BUILDING POLICY.

WHEREAS, the City of Scottsdale is an acknowledged environmental leader in Green Building and Sensitive Facilities Design; and

WHEREAS, the City of Scottsdale recognizes and accepts its responsibility to implement and promote building practices that protect Scottsdale's natural and built environment; and

WHEREAS, the City of Scottsdale desires to model environmentally sensitive building design, as developed in the city's Green Building Program, in its own facilities; and

WHEREAS, the Leadership in Energy and Environmental Design (LEED™) Green Building Rating System and Certification is a nationally recognized standard for excellence in facility design and has multiple levels of certification; and

WHEREAS, the Scottsdale City Council finds that green design and construction decisions made by the city in the construction and remodeling of city buildings can result in significant cost savings to the city over the life of the buildings;

NOW, THEREFORE, BE IT RESOLVED by the Mayor and Council of the City of Scottsdale, Maricopa County, Arizona, as follows:

Section 1. That the Scottsdale City Council hereby adopts the "City of Scottsdale Green Building Policy". This reflects the City's commitment to encouraging environmentally sensitive construction practices in the City of Scottsdale by adopting construction practices inspired by both the Leadership in Energy and Environmental Design (LEED™) certification process and the City of Scottsdale Green Building program.

Section 2. That the Scottsdale City Council hereby declares that all new, occupied (as defined by the City's building code) city buildings, of any size, will be designed, contracted and built to achieve certification in the LEED™ Gold certification level, and to strive for the highest level of certification (currently Platinum) whenever project resources and conditions permit.

Section 3. That the Scottsdale City Council hereby declares that all future renovations and non occupied (as defined by the City's building code) city buildings will be designed, contracted and built to include as many principles of both the LEED™ program and the City's Green Building Program as are feasible.

Section 4. That the Scottsdale City Council, to maintain tight control over the cost of city building projects, qualifies the above Section 2 of this Green Building Policy to require a pay back period of no more than five (5) years for projects designed to the LEED™ Gold Standard. Where the payback is anticipated to be more than five (5) years, City staff is directed to 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 principles of both the LEED™ program and the City's Green Building Program as are feasible.

Section 5. The City Council may grant exceptions to this Policy when it deems appropriate.

PASSED AND ADOPTED by the Council of the City of Scottsdale, Maricopa County, Arizona this ____ day of _____, 2005.

ATTEST:

CITY OF SCOTTSDALE, an Arizona
Municipal Corporation

By: _____
Carolyn Jagger, City Clerk

By: _____
Mary Manross, Mayor

APPROVED AS TO FORM:

By: _____
Joseph R. Bertoldo, City Attorney

Project Checklist

U.S. Green Building Council
LEED™ Rating System Version 2.1

	Sustainable Sites	14 Possible Points	
Prereq 1	Erosion & Sedimentation Control		Required
Credit 1	Site Selection		1
Credit 2	Urban Redevelopment		1
Credit 3	Brownfield Redevelopment		1
Credit 4.1	Alternative Transportation , Public Transportation Access		1
Credit 4.2	Alternative Transportation , Bicycle Storage & Changing Rooms		1
Credit 4.3	Alternative Transportation , Alternative Fuel Vehicles		1
Credit 4.4	Alternative Transportation , Parking Capacity		1
Credit 5.1	Reduced Site Disturbance , Protect or Restore Open Space		1
Credit 5.2	Reduced Site Disturbance , Development Footprint		1
Credit 6.1	Stormwater Management , Rate and Quantity		1
Credit 6.2	Stormwater Management , Treatment		1
Credit 7.1	Heat Island Effect , Non-Roof		1
Credit 7.2	Heat Island Effect , Roof		1
Credit 8	Light Pollution Reduction		1
	Water Efficiency	5 Possible Points	
Credit 1.1	Water Efficient Landscaping , Reduce by 50%		1
Credit 1.2	Water Efficient Landscaping , No Potable Use or No Irrigation		1
Credit 2	Innovative Wastewater Technologies		1
Credit 3.1	Water Use Reduction , 20% Reduction		1
Credit 3.2	Water Use Reduction , 30% Reduction		1
	Energy & Atmosphere	17 Possible Points	
Prereq 1	Fundamental Building Systems Commissioning		Required
Prereq 2	Minimum Energy Performance		Required
Prereq 3	CFC Reduction in HVAC&R Equipment		Required
Credit 1	Optimize Energy Performance		1–10
Credit 2.1	Renewable Energy , 5%		1
Credit 2.2	Renewable Energy , 10%		1
Credit 2.3	Renewable Energy , 20%		1
Credit 3	Additional Commissioning		1
Credit 4	Ozone Depletion		1
Credit 5	Measurement & Verification		1
Credit 6	Green Power		1
	Materials & Resources	13 Possible Points	

Prereq 1	Storage & Collection of Recyclables	Required
Credit 1.1	Building Reuse , Maintain 75% of Existing Shell	1
Credit 1.2	Building Reuse , Maintain 100% of Shell	1
Credit 1.3	Building Reuse , Maintain 100% Shell & 50% Non-Shell	1
Credit 2.1	Construction Waste Management , Divert 50%	1
Credit 2.2	Construction Waste Management , Divert 75%	1
Credit 3.1	Resource Reuse , Specify 5%	1
Credit 3.2	Resource Reuse , Specify 10%	1
Credit 4.1	Recycled Content , Specify 5% (p.c. + 1/2 p.i.)	1
Credit 4.2	Credit 4.2 Recycled Content , Specify 10% (p.c. + 1/2 p.i.)	1
Credit 5.1	Credit 5.1 Local/Regional Materials , 20% Manufactured Locally	1
Credit 5.2	Credit 5.2 Local/Regional Materials , of 20% in MRc5.1, 50% Harvested Locally	1
Credit 6	Credit 6 Rapidly Renewable Materials	1
Credit 7	Credit 7 Certified Wood	1
	 Indoor Environmental Quality 15 Possible Points	
Prereq 1	Minimum IAQ Performance	Required
Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
Credit 1	Carbon Dioxide (CO₂) Monitoring	1
Credit 2	Ventilation Effectiveness	1
Credit 3.1	Construction IAQ Management Plan , During Construction	1
Credit 3.2	Construction IAQ Management Plan , Before Occupancy	1
Credit 4.1	Low-Emitting Materials , Adhesives & Sealants	1
Credit 4.2	Low-Emitting Materials , Paints	1
Credit 4.3	Low-Emitting Materials , Carpet	1
Credit 4.4	Low-Emitting Materials , Composite Wood	1
Credit 5	Indoor Chemical & Pollutant Source Control	1
Credit 6.1	Controllability of Systems , Perimeter	1
Credit 6.2	Controllability of Systems , Non-Perimeter	1
Credit 7.1	Thermal Comfort , Comply with ASHRAE 55-1992	1
Credit 7.2	Thermal Comfort , Permanent Monitoring System	1
Credit 8.1	Daylight & Views , Daylight 75% of Spaces	1
Credit 8.2	Daylight & Views , Views for 90% of Spaces	1
	 Innovation & Design Process 5 Possible Points	
Credit 1.1	Innovation in Design	1
Credit 1.2	Innovation in Design	1
Credit 1.3	Innovation in Design	1
Credit 1.4	Innovation in Design	1
Credit 2	LEED™ Accredited Professional	1
	 Project Totals 69 Possible Points	
	Certified 26-32 points	
	Silver 33-38 points	
	Gold 39-51 points	
	Platinum 52-69 points	

Attachment 3: LEED™ Green Building Rating System Overview

The LEED™ process rewards energy and water efficiency, innovative design and attention to healthy indoor environmental quality. The LEED™ process requires seven prerequisites:

1. Erosion and Sedimentation Control
2. Fundamental Building Systems Commissioning
3. Minimum Energy Performance
4. CFC Reduction in Heating, Ventilation, Air Conditioning & Refrigeration Equipment
5. Storage and Collection of Recyclables during construction
6. Minimum Indoor Air Quality Performance
7. Environmental Tobacco Smoke Control

In addition to these prerequisites, there are a number of options for achieving point totals. These options are clustered in the six categories:

1. Sustainable Sites
2. Water Efficiency
3. Energy and Atmosphere
4. Materials and Resources
5. Indoor Environmental Quality
6. Innovation and Design Process

There are a total of 69 points in these optional categories. All levels of LEED™ certification require all seven (7) prerequisites at a minimum, and then add point totals for higher levels of certification.

- The highest level - Platinum - requires 52-69 points.
- Second highest level is Gold 39-51 points.
- Third highest level is Silver 33-38 points.
- The basic level is “Certified” 26-32 points.

As the certifying agency, USGBC assess fees for project registration and certification. Since Scottsdale has been a long time member of USGBC, we are eligible for reduced fees. Registration fees vary from \$750 to \$3000 and certification fees vary from \$1500 to \$6000 depending on building square footage.

Attachment 4: LEED™ Cost/Benefit Analysis

Summary: Data from existing LEED™ Gold certified projects yield an almost an immediate payback. A LEED™ Gold Certified building should payback the premium (additional) costs in 1 or at the most 2 years. And then return many years of savings to follow.

Analysis: LEED™ certified buildings have been constructed for the last nine years. In 2003, Gregory Kats produced "The Costs and Financial Benefits of Green Building " for the California Sustainable Building Task Force, studying 40 LEED™ registered buildings. Kats determined that the average cost premium for green buildings is two percent. With reported construction costs at \$150 – \$250 per square foot, a two percent green building premium is equivalent to \$3 – \$5 per square foot. The net financial benefits of green design were estimated to between \$50 and \$67 per square foot. This is 10 to 16 times larger than the average two percent cost premium (median \$4 per square foot) over a 20-year period. See chart below for the financial benefit components at 5-, 10- 15- and 20-year increment.

Another study, "Costing Green: A Comprehensive Cost Database and Budgeting Methodology," (2004) by Lisa Fay Matthiessen and Peter Morris of Davis Langdon Adamson (DLA) indicates that other factors affect cost much more than any possible green premium. Evidence suggests that if there is any premium associated with building green, it is far less significant than a range of other factors that affect building cost. This report looked at the cost implications of pursuing LEED™ points by comparing the cost per square foot of 45 LEED™ projects with 93 non-LEED™ projects. The authors found "no statistically significant cost difference between the LEED™ population and the non-LEED™ population."

Summary Of Financial Benefits (per square foot)¹				
Category	5-Year NPV²	10-Year NPV²	15-Year NPV²	20-Year NPV²
Energy Value ³	\$2.00	\$3.53	\$4.78	\$5.79
Emissions Value ⁴	\$0.30	\$0.60	\$0.90	\$1.18
Water Value ⁵	\$0.15	\$0.30	\$0.45	\$0.51
Waste Value ⁶ (construction only – 1 year)	\$0.03	\$0.03	\$0.03	\$0.03
Operations & Maintenance ⁷	\$3.10	\$5.51	\$7.41	\$8.47
Sub Total (hard costs):	\$5.58	\$9.97	\$13.57	\$15.98
Less Green Cost Premium	(\$4.00)	(\$4.00)	(\$4.00)	(\$4.00)
Net Cost/Savings:	\$1.58	\$5.97	\$9.57	\$11.98
Productivity and Health Value ⁸	\$13.85	\$27.70	\$41.55	\$55.33
Total NPV² (LEED™ Gold level certification)	\$15.43	\$33.67	\$51.12	\$67.31

¹ Derived from USGBC & Capital E Analysis, "The Costs and Financial Benefits of Green Buildings" October 2003 (www.cap-e.com).

² NPV - Net Present Value in savings; assumes a nominal discount rate of seven percent (including two percent inflation).

³ Assumes a 30 percent savings based on \$1.47/ft²/yr energy costs at five percent discount rate over 20-year term.

⁴ Based on 36% pollution reduction from reduced energy use and assumes a dollar value of \$5 per ton for CO₂.

⁵ Assumes a 30 percent water reduction for indoor use and 50 percent reduction for landscaping (see USGBC LEED™ Reference Package for base line analysis).

⁶ Based on 50% reduction of construction waste.

⁷ Assumes an Operation & Maintenance cost decline of five percent per year.

⁸ Based on 1.5 percent productivity and health gain from studies (Center for Building Performance at Carnegie Mellon University) and "indoor environmental quality" performance data.

Attachment 5: Benefits of a Green Building Policy

The following points are a distillation of numerous studies and papers about the efficiencies and effectiveness of Green Building policies and LEED™ certification. Copies of supporting documents are made available upon request.

1. Increase human performance and satisfaction with building interiors – Green Building practices use materials that provide a healthier indoor environment. Products that contain toxic materials are reduced or avoided entirely. The benefits of this strategy are: 1) greater productivity from workers, customers and visitors; 2) less absenteeism; 3) buildings that avoid “Sick Building Syndrome” (building related illnesses). Because Green Buildings are healthier, there is less risk and liability for the city (lawsuits), its employees and citizens.

2. Reduce use of non-renewable energy and minimize environmental pollutants – The sustainable design and construction of Green Buildings results in buildings that are more energy- and resource-efficient to operate. A Green Building Policy would require an integrated design approach incorporating the site orientation of the building, selection of building materials, and selection of equipment.

The State of Arizona recently designed and constructed two buildings to meet LEED™ standards. The Arizona Department of Environmental Quality’s (ADEQ) new headquarters has reduced energy use by 23%, saving approximately \$90,000 annually. The Arizona Department of Administration (ADOA) has reduced energy use by 24%, saving approximately \$100,000 annually. These savings can be expected to increase as energy costs rise in the future.

3. Reduce use of water – One of the major features of the city’s Green Building Program, and the LEED™ certification system is that they are sensitive to saving water, a precious natural resource. We live in an arid climate, and we must be sensitive to water use, making every effort to conserve it.

4. Lower the Life-Cycle (Total Cost of Ownership) – As Scottsdale operating funds are primarily sales tax driven, it is essential that the city investigate and implement ways to reduce the ongoing expense of operating a building. Green Buildings have been shown conclusively to out-perform conventional buildings, lowering operational costs.