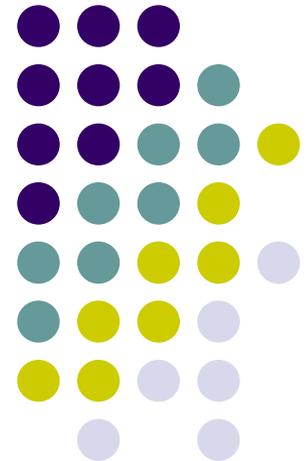


Scottsdale 2015 Green Building Trends



**City of Scottsdale
Green Building Program
Office of Environmental Initiatives**
April 16, 2025



Prepared by Anthony Floyd, FAIA, LEED-AP



City of Scottsdale Green Building Program

- **Established in 1998**
 - Rating criteria based on Sonoran Desert region
- **Single family homes**
 - Green Home Rating Checklist - voluntary
- **Multifamily and Commercial**
 - International Green Construction Code (2021 IgCC) - mandatory
- **Verification and Compliance**
 - Review and assessment of green building systems and components
- **Public Outreach and Engagement**
 - Green building education program



Green Building Program Collaboration with other City Initiatives

1. General Plan - Future Growth & Development
2. Planning/Zoning Ordinances & Stipulations
3. Sensitive Design Principles
4. Energy and Green Construction Codes
5. Water Conservation Ordinance
6. City Facility Management
7. Housing Rehab Office



SCOTTSDALE



Scottsdale Residential Building Trends 1998 – 2025

● Energy Efficiency

- Energy and Green Code adoptions with enhanced performance
- Cathedralized attics (insulation at underside of roof decks)
- Energy Star products, LED lighting and solar ready zones
- Third-party energy raters and building commissioning

● Indoor Environmental Quality

- Outside fresh air intake for whole-house mechanical ventilation

● Water Efficiency

- Xeriscaping and efficient irrigation systems
- High efficiency plumbing fixtures
- Efficient hot water delivery systems

● Heat Island Mitigation

- Recessed entrances, shaded hardscapes

● On-Site Solar Generation

- Growing number of rooftop solar PV and battery storage



Green Home Checklist for GB Designation

Baseline Green Measures are based on Building Codes, Industry Standards and Market Trends

City of Scottsdale

One- and Two-Family Residential Green Building Checklist
 New Construction, Major Remodels & Additions
Version 6.0 (March 23, 2023)



SCOTTSDALE
GREEN BUILDING PROGRAM

Plan Check # _____ Building Permit # _____ **GB Rating Level** _____

Project or Owner's Name: _____

Project Address: _____

Architect/Designer Name: _____

Builder Name: _____

Use this rating worksheet to qualify projects under the Green Building Program for one- and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories above grade plane in height with a separate means of egress (International Residential Code - IRC Section R101.2).

All building system components, materials, and equipment must be installed per code and manufacturer's instructions.

| Tier 1 - GB Designation | Tier 2 - GB Designation |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> Meet all <u>10 mandatory measures</u> (p. 2 – 6). | <ul style="list-style-type: none"> Meet all <u>10 mandatory measures</u> (p. 2 – 6). Accumulate at least <u>20 points</u> from the rated options in the checklist (p. 4 - 12). |

| Tier 2 - Rating Categories and Maximum Available Points | | | | | |
|---------------------------------------------------------|--------|-----------------------|--------|----------------------------|------------|
| 1. Site | 20 pts | 6. Lighting and Power | 14 pts | 11. Doors, Cabinetry, Trim | 11 pts |
| 2. Structural Elements | 29 pts | 7. Plumbing System | 16 pts | 12. Flooring | 15 pts |
| 3. Energy Rating/Renewables | 40 pts | 8. Roofing | 12 pts | 13. Solid Waste | 11 pts |
| 4. Thermal Envelope | 7 pts | 9. Exterior Finishes | 9 pts | 14. House Size | +/- varies |
| 5. HVAC | 19 pts | 10. Interior Finishes | 4 pts | 15. Innovative Design | 8 pts |

Over 1464 Green Designated Homes 1998 -2024



Silversmith Residence - Tate Studio Architects



Beaulieu House



Becker Residence – Perry Becker Architect



Desert Courtyard House – Wendell Burnette Architects

Over 1464 Green Designated Homes 1998 -2024



Relic Rock House – DCH Global Building System



Autoclaved aerated concrete - Edwards Design Group



Silverleaf home – Cullum Homes



Miller Adobe – Clint Miller Architect

Over 1464 Green Designated Homes 1998 -2024



McDonnell Infill – Design/Build by Owner



Legacy at DC Ranch - Camelot Homes



Scoria lightweight concrete walls – Swaback Architect



Residence – Perspective Architecture

Over 1464 Green Designated Homes 1998 -2024



Foam House – Don Grieb, Architect



Autoclaved Aerated Concrete – Edwards Design Group



Rammed Earth – Shelby Wilson Architect

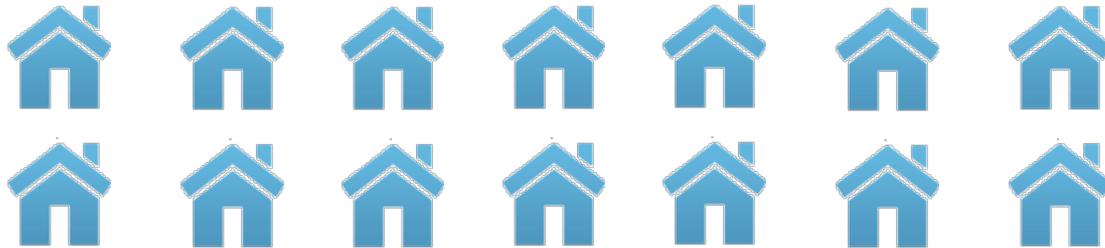


Strawbale – Edwards Design Group

Green House Gas Reduction as a result of 1,464 Green Homes



Annual reduction of **2,782 tons of carbon dioxide (CO₂)**
equivalent to not consuming **282,552 gallons** of gasoline.



Source: epa.gov/energy/greenhouse-gas-equivalencies-calculator

Energy Savings and Environmental Impact Reduction based on Average Size Green Homes

Estimated energy savings and equivalent greenhouse gas reduction resulting from houses completed under the Green Building Program.

| Green Home Energy Measures | Annual Energy Savings and Pollution Reduction | |
|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|
| | Per Home | Total Savings for 1,464 green homes in 2024 |
| <u>Average</u> Size Home¹ | 2,700 square feet | |
| Average Annual Energy Reduction¹ | 4,634 Kilowatt hours (kWh) | 6,784,176 Kilowatt hours (kWh) |
| Average Annual Energy Cost Savings | \$523.18 per year (0.1129 per kWh) ² | \$765,935.52 (0.1129 per kWh) ² |
| Equivalent Annual Greenhouse Gas Reduction³ | 1.9 tons of carbon dioxide (CO ₂) avoided | 2,781.6 tons of carbon dioxide (CO ₂) avoided |
| Equivalent reduction of CO² emissions from gasoline consumed³ | 193 gallons | 282,552 gallons |
| Equivalent reduction of CO² emissions from barrels of oil consumed³ | 4 barrels | 5,856 barrels |

Sources: ¹Scottsdale Green Home Energy Study (2009); ²electricitylocal.com/states/arizona/; ³epa.gov/energy/greenhouse-gas-equivalencies-calculator

Energy Savings and Environmental Impact Reduction of Average Custom Green Homes

Estimated energy savings and equivalent greenhouse gas reduction resulting from houses completed under the Green Building Program.

| Green Home Energy Measures | Annual Energy Savings and Pollution Reduction | |
|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------|
| | Per Home | Total Savings for 1,464 green homes in 2024 |
| <u>Average</u> Size Custom Home¹ | 5,500 square feet | |
| Average Annual Energy Reduction¹ | 11,183 Kilowatt-hours (kWh) | 16,371,912 Kilowatt-hours (kWh) |
| Average Annual Energy Cost Savings | \$1,262.56 per year (0.1129 per kWh) ² | \$1,848,387.84 (0.1129 per kWh) ² |
| Equivalent Annual Greenhouse Gas Reduction³ | 4.6 tons of carbon dioxide (CO ₂) avoided | 6,734.4 tons of carbon dioxide (CO ₂) avoided |
| Equivalent reduction of CO² emissions from gasoline consumed³ | 467 gallons | 683,688 gallons |
| Equivalent reduction of CO² emissions from barrels of oil consumed³ | 9.6 barrels | 14,054.4 barrels |

Sources: ¹Scottsdale Green Home Energy Study (2009); ²electricitylocal.com/states/arizona/;
³epa.gov/energy/greenhouse-gas-equivalencies-calculator

IRC Residential Projects

- **Projects complying with efficiency provisions of the 2021 International Residential Code (IRC)**
 - New single-family homes - 390 permits (2024)
 - Remodels and additions - 619 permits (2024)
 - **Efficiency provisions for new and remodeled homes include:**
 1. High efficiency plumbing fixtures and hot water supply
 2. Tightly insulated and sealed thermal building envelope
 3. Mechanical ventilation (supply and exhaust flow rates)
 4. Solar-ready roof top zones (10% of clear roof area)
 5. EV-capable charging (conduit run from electrical service panel to garage)

IgCC Commercial Projects

- **Projects complying with mandatory International Green Construction Code (IgCC) or alternative LEED/Green Globes certification in 2024**
 - New commercial buildings - 31 building permits
 - Tenant improvement (remodeling) projects - 472 permits
 - Multifamily residential units - 929 permits



The Kimsey – Seeking LEED cert. (2025)



Remi (Maya) Hotel – IgCC Compliant (2025)

Early IgCC Adopters



Scottsdale Residences on Main
IgCC Compliant (2024)



Senna House Hotel
Green Globes Certified (2022)



Caesars Republic Hotel – Green Globes (2024)



TSG Foundation – Orcutt Winslow Architects
Rammed earth construction – IgCC Compliant (2023)

Early IgCC Adopters



Scottsdale Quarter Office
IgCC Compliant (2017)



Gramercy Safari – IgCC Compliant (2021)



Vitri Apartments – IgCC Compliant (2020)



Canopy Hotel – LEED Certified (2020)

Early IgCC Adopters



Broadstone Scottsdale Quarter
IgCC Compliant (2015)



Optima Sonoran Village
IgCC Compliant (2015)



Apple Store at Fashion Square
IgCC Compliant (2018)



Element Hotel at SkySong
LEED Certified (2019)

Early IgCC Adopters



Equinox – IgCC Compliant (2016)



MZ2– IgCC Compliant (2019)



70th Street Lofts– IgCC Compliant (2021)



Eclipse – IgCC Compliant (2019)

Early IgCC Adopters



Douglas Townhomes – IgCC Compliant (2016)



Eldorado on First – IgCC Compliant (2017)



Creative Center – IgCC Compliant (2016)



Broadstone Waterfront
LEED Platinum (2015)

Early IgCC Adopters



Skysong Apartments – IgCC Compliant (2014)



SkySong 5 – LEED Certified (2020)



Broadstone Papago – IgCC Compliant (2022)



Springhill Suites– IgCC Compliant (2023)

Early IgCC Adopters



ASU Scottsdale SkySong Innovation Center Buildings 1 & 2
LEED Silver certification (2008 and 2009)

Early IgCC Adopters



SkySong 3 – LEED Silver (2014)



SkySong 4 – LEED Silver (2016)



SkySong 5 – LEED Gold (2020)



SkySong 6 – LEED Silver (2020)

Early IgCC Adopters



TomScott Scottsdale – IgCC Compliant (2017)



Broadstone at Lincoln – LEED Certified (2014)



SOHO Townhomes – IgCC Compliant (2020)



SOHO Condo – IgCC Compliant (2020)

Early IgCC Adopters



Optima Camelview Village
LEED certified (2008)



Envy Condos - IgCC Compliant (2016)



Safari Drive - IgCC Compliant (2008)



Project MZ - IgCC Compliant (2016)

Early IgCC Adopters



Foothills Academy – Weddle Gilmore Architects
Strawbale constructed walls (2002)



Papago Buttes Church of the Brethren
Insulated Concrete Forms Walls (2005)



Civic Center Office and Studio - John Douglas
Architects - IgCC Compliant (2009)



Pinnacle Presbyterian Church
RJA Architecture (2001)

Early IgCC Adopter Commercial Interiors



Energy Systems Design (ESD) Office at Scottsdale Waterfront
LEED Platinum (2010)

Green Building Certificates and Plaques used prior to mandatory IgCC

SCOTTSDALE City of Scottsdale
Green Building Designation

GREEN BUILDING PROGRAM
2016

Awarded to
Creative Center of Scottsdale
3616 N. Scottsdale Road
Scottsdale, Arizona

 This project was designed to minimize environmental impact and reduce energy and water consumption while contributing to the health of its occupants through improved indoor environmental quality.

SCOTTSDALE City of Scottsdale
Green Building Designation

GREEN BUILDING PROGRAM
2012

Awarded to
Douglas Architects Office
4400 N. Civic Center Plaza
Scottsdale, Arizona

 This project was designed to minimize environmental impact and reduce energy and water consumption while contributing to the health of its occupants through improved indoor environmental quality.





Scottsdale City Resolution for LEED Certified City Buildings

17 LEED certified buildings (2005 – 2025)



Granite Reef Senior Center – LEED Gold



Downtown Fire Station 602 – LEED Platinum



Arabian Library – LEED Certified



Appaloosa Library – LEED Gold



Scottsdale City Resolution for LEED Certified City Buildings

17 LEED certified buildings (2005 – 2025)



Gateway Trailhead – LEED Platinum



McKellips Police District Station 1 – LEED Silver



**McCormick Stillman Model
Railroad Building – LEED Gold**



Fire Station 601 – LEED Platinum



Scottsdale City Resolution for LEED Certified City Buildings

17 LEED certified buildings (2005 – 2025)



Fire Station 608 – LEED Platinum



Brown's Ranch Trailhead – IgCC Compliant



Airport Operations Center – LEED Silver



Museum of the West – LEED Gold



Scottsdale City Resolution for LEED Certified City Buildings

17 LEED certified buildings (2005 – 2025)



Aviation Business Center – LEED Gold



Fire Station 613 – LEED Certified



Fire Station 616 – LEED Certified



Fire Station 603 – LEED Certified



Scottsdale City Resolution for LEED Certified City Buildings



Scottsdale Spring Training Stadium and Multi-Use Event
Center – LEED Certified (2020)



Office of Environmental Initiatives

Planning and Development

Green Building Program

Anthony Floyd, FAIA, LEED-AP, CEM

www.scottsdaleaz.gov/greenbuilding