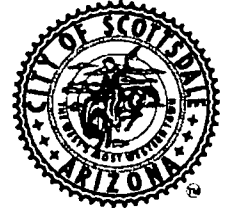


# CITY COUNCIL REPORT



Meeting Date: December 6, 2022  
 General Plan Elements: ***Safety, Housing, Energy and Environmental Elements***  
 General Plan Goals: ***Prevent hazards and reduce physical risks;  
 Support diverse, safe, resource-efficient, and high-quality housing options;  
 Work toward becoming a net-zero energy community;  
 Expand green building construction standards***

## ACTION

### **Residential, Energy and Green Construction Code Updates.**

1. Adopt Ordinance No. 4575, adopting the 2021 editions of the International Residential Code, and the International Energy Conservation Code, and the 2022 City of Scottsdale amendments to the International Codes, repealing and replacing Articles II and VII of Chapter 31 of the Scottsdale Revised Code (S.R.C.) with new Articles II and VII of Chapter 31 of the S.R.C., and establishing an effective date.
2. Adopt Resolution No. 12499, declaring as public records those certain documents filed with the City Clerk of the City of Scottsdale and entitled the "*International Residential Code for One and Two-Family Dwellings, 2021 Edition*," including appendices AA, AB, AC, AH, AJ, AK, AR, AS, AT and AU, as published by the International Code Council, Inc., and as amended by the "2022 City of Scottsdale Amendments to the International Residential Code, 2021 Edition."
3. Adopt Resolution No. 12503, declaring as public records those certain documents filed with the City Clerk of the City of Scottsdale and entitled the "*International Energy Conservation Code, 2021 Edition*," including appendices CB and RB, as published by the International Code Council, Inc., and as amended by the "2022 City of Scottsdale Amendments to International Energy Conservation Code, 2021 Edition."
4. Adopt Ordinance No. 4576, adopting the 2021 edition of the International Green Construction Code as mandatory, and the 2022 City of Scottsdale amendments to the International Code; repealing and replacing Article X of Chapter 31 of the Scottsdale Revised Code (S.R.C.) with a new Article X of Chapter 31 of the S.R.C., and establishing an effective date.
5. Adopt Resolution No. 12505, declaring as public records those certain documents filed with the City Clerk of the City of Scottsdale and entitled the "*International Green Construction Code, 2021 Edition*," as published by the International Code Council, Inc., and as amended by the "2022 City of Scottsdale Amendments to the International Green Construction Code, 2021 Edition."

### **Potential Additions to IRC and IECC Code Updates**

Add Option A – EV capable charging infrastructure requirement for new single-family homes (attachment 4); and/or

Add Option B – Retain minimum ceiling insulation value of R-38 instead of R-49 for new single-family homes (attachment 5)

## **BACKGROUND**

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The family of building codes are developed through the US-based International Code Council (ICC) and supported by the American Institute of Architects (AIA), the National Association of Home Builders (NAHB), Building Owners and Managers Association (BOMA), professional trade associations and building product and material manufacturers including structural, fire safety, electrical, energy, mechanical and plumbing systems. The energy codes are supported by Southwest Energy Efficiency Project (SWEET), Northeast Energy Efficiency Partnership (NEEP), Residential Energy Services Network (RESNET), American Council for an Energy Efficient Economy (ACEEE), Energy-Efficient Codes Coalition (EECC), Energy and Environmental Building Association (EEBA), local electric utility companies and the US Department of Energy. The adoption of the 2021 codes includes elements that are consistent with the General Plan 2035 (Safety, Housing, Water Resources, Energy and Environmental elements).

On September 20, 2022, the City Council adopted the 2021 editions of the amended International Building Code, International Fire Code, International Mechanical Code, International Plumbing Code, International Fuel Gas Code, International Existing Building Code, International Swimming Pool and Spa Code, and 2020 edition of the National Electrical Code. The effective date is January 1, 2023. The city is currently operating under the 2015 edition of the construction codes.

On August 23, 2022, the City Council held a study session to discuss the proposed updates to the residential, energy, and green construction codes with amendments to the 2021 edition of the International Residential Code (IRC), International Energy Conservation Code (IECC) and the International Green Construction Code (IgCC). City council advised staff to seek further public input on certain provisions of the proposed energy code amendments and the adoption of the green construction code as mandatory.

### **1. 2021 International Residential Code (IRC) Updates**

The residential code contains all the necessary code requirements for single-family homes. The 2021 edition of the residential code (IRC) has new provisions regulating habitable attics; energy storage systems; fuel cell power systems; solar roof single requirements; residential use of commercial cooking equipment; and shower/tub valves rating for lower flow rates. The 2021 IECC and IRC increases the ceiling insulation in single family homes from R-38 to R-49.

OPTION A: Additional Proposed Amendment for single-family homes

- Add EV capable charging infrastructure (this would also be replicated in the residential provisions of the IECC amendments if included)

Benefits	Disadvantages
<ul style="list-style-type: none"><li>• Residents can easily install EV charging stations</li><li>• Supports a net zero emissions goal</li></ul>	<ul style="list-style-type: none"><li>• Technology may change and electrical circuit breaker size may not be used</li><li>• Added minimal expense</li></ul>

OPTION B: Additional Proposed Amendment

- Retain minimum ceiling insulation value of R-38 instead of R-49 (this would also be replicated in the residential provisions of the IECC amendments if included)

R-38 Benefits	R-49 Benefits
<ul style="list-style-type: none"><li>• Continue annual energy cost savings</li><li>• R-38 will not increase upfront building cost that could result from higher exterior walls and roof heights (may conflict with zoning height restrictions)</li><li>• R-38 avoids additional complexity and construction constraints</li></ul>	<ul style="list-style-type: none"><li>• R-49 will result in net savings over the life of home (30 years).</li></ul>

## 2. 2021 International Energy Conservation Code (IECC) Updates

The energy code contains requirements for the efficient use of energy including thermal envelope insulation, air leakage, heating/cooling systems, service water heating and lighting. It provides flexibility to permit the use of innovative materials and technologies. The 2021 edition of the energy code (IECC) clarifies energy conservation measures related to insulation, air infiltration, solar heat gain, mechanical systems, water heating and lighting. Lighting efficiency requirements have been updated to reflect newer lighting technologies in the market.

One- and two-family residential IECC changes include:

- All supply and return ducts must to be tested for air leakage,
- All permanently installed lighting fixtures must be high efficiency (e.g. – LED)
- Interior lighting required to be controlled by either a dimmer, occupant sensor or built-in lighting control excluding bathrooms, hallways, exterior light fixtures and lighting designed for safety or security.
- Exterior lighting greater than 30 watts is required to be controlled by automatic shut-off device.
- New efficiency package section requires selection of additional energy efficiency option related to building envelope improvements, heating/cooling equipment

efficiency, water heating, air duct distribution or improved air sealing/ventilation. Scottsdale amendment adds an additional option for PV solar energy system.

- Solar-ready roof zone required for future installation of solar energy system on new single-family roof tops that is not less than 10 percent of the roof area.

Commercial and multi-family IECC changes include:

- Parking garage 50% lighting reduction when no motion is detected by zone.
- Reduced power allowance for interior lighting.
- Plant growth lighting must meet photon efficiency standards.
- Automatic receptacle control for 50 percent of receptacles in enclosed offices, conference rooms, break rooms and classrooms.
- Solar-ready roof zone required for future installation of solar energy system on new multifamily and commercial roof tops that is not less than 40 percent of roof area.
- EV capable charging infrastructure for future EV charging of at least 20% of multifamily and hotel parking spaces. In addition, 4% of parking spaces are required to be installed with EV supply equipment (EVSE) for charging.

Benefits	Disadvantages
<ul style="list-style-type: none"><li>• Residents can access EV charging stations</li><li>• Supports a net zero emissions goal</li></ul>	<ul style="list-style-type: none"><li>• Technology and electrical requirements may change</li><li>• Added expense</li></ul>

### 3. 2021 International Green Construction Code (IgCC) Updates

The 2021 IgCC is being proposed as mandatory for all new multi-family and commercial construction. The green building code provides requirements for sustainable commercial and multifamily buildings including renewable energy, water efficiency, indoor environmental quality and reduced impact materials. The 2021 edition of the green building code (IgCC) has been updated for better usability and flexibility. Green measures with Scottsdale amendments have been clarified as related to heat island mitigation, EV charging infrastructure for commercial building, irrigation efficiency, indoor/outdoor water conservation, on-site renewable energy, low VOC material finishes, construction waste management and low impact building materials. Many components of the 2021 code are already required in Scottsdale. Since 2012, more than 30 building projects encompassing multifamily dwellings units, hotels and non-residential projects, have been approved under the voluntary green code (IgCC). It is estimated that energy and green codes for residential and commercial buildings will be able to save \$138 billion energy cost savings and 900 million metric tons of avoided CO<sup>2</sup> emissions (cumulative 2010-2040).

In 2016, Scottsdale City Council amended the 2015 edition of the plumbing code (IPC) for high efficiency plumbing fixtures; amended the 2015 energy code (IECC) for single-family



roof top solar-ready zones; and the 2015 green code (IgCC) as a public benefit for zoning bonus consideration (voluntary).

<b>Benefits for Mandatory IgCC</b>	<b>Disadvantages for Mandatory IgCC</b>
<ul style="list-style-type: none"><li>• Reduction in waste to landfill, less energy and water use over life of building and improved indoor air quality</li><li>• Provides consistency and certainty</li><li>• Demonstrated continued regional and national leadership in green buildings</li></ul>	<ul style="list-style-type: none"><li>• Increased construction costs</li><li>• New requirements may be burdensome and unfamiliar to development community</li><li>• Increased enforcement expense to city</li><li>• Some requirements may be difficult to achieve immediately (e.g., construction waste diversion)</li></ul>

## **COMMUNITY INPUT**

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Throughout the public process, feedback was received from the Home Builders Association of Central Arizona, AZ American Institute of Architects AZ, Southwest Energy Efficiency Project (SWEET), AZ Multihousing Association, American Lung Association, Nelsen Partners Architects and Planners, Scottsdale Area Association of Realtors, Experience Scottsdale, Environment Arizona, Arizona PIRG (Public Interest Research Group), SW Gas, Vote Solar and electric utilities.

A community open house was conducted on September 27<sup>th</sup> at the Scottsdale Community Design Studio. More than 80 individuals participated. The open house was an opportunity for the public to provide input on the proposed amendments to the energy and green construction codes. A portion of the participants provided extensive comments with an overwhelming number in support of the adoption of the codes with the proposed amendments. A small number of individuals wanted the codes to go further in terms of energy efficiency, solar energy, heat island mitigation and water conservation. See attached summary report of public comments.

## **BOARD & COMMISSION RECOMMENDATIONS**

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**The Scottsdale Building Advisory Board of Appeals (BABA)** held ten public meetings to discuss and accept public comments on the adoption of the 2021 ICC codes. Over the course of these meetings the board recommended City Council adoption of the codes as follows:

1. International Residential Code (IRC) with staff recommended amendments including R-38 ceiling insulation for single family homes but not including EV charging capability for single family homes.
2. International Energy Conservation Code (IECC) with staff recommended amendments including R-38 ceiling insulation for single family homes but not including EV charging capability for single family homes.

3. International Green Construction Code (IgCC) to be mandatory for zoning and planning bonuses and remain voluntary for all other multi-family residential and commercial buildings/projects.

**The Scottsdale Environmental Advisory Commission (SEAC)** held eight public meetings to discuss and accept public comments on the International Residential Code, International Energy Conservation Code, and the International Green Construction Code. Over the course of these meetings, the board unanimously recommended City Council adoption of the following codes with amendments:

1. International Residential Code (IRC) with amendments in alignment with the IECC for energy efficiency.
2. International Energy Conservation Code (IECC) including R-49 ceiling insulation for single family homes and amendments for EV charging capability for new single-family, multifamily and hotels; cool roofs for low-slope roofs of new residential and commercial buildings; solar PV compliance option for new single-family homes, and updated commissioning exceptions for commercial heating/cooling and ventilation systems.
3. International Green Construction Code (IgCC) as a mandatory code for new commercial and multifamily buildings.

## **IMPACT ANALYSIS**

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Additional staff positions will be needed for plan review and inspections enforcement if the green construction code (IgCC) becomes mandatory. Current plan review staff is responsible for review of residential and commercial projects for compliance with the building, structural, accessibility, fire, plumbing, mechanical, electrical, and fuel gas codes. A total number of 38 commercial and multifamily building permits for new construction have been issued since January of this year. During this time, one green hotel permit was issued, and three green commercial projects (hotel, apartments, and office facility) are pending permit approval – this level of green review is completed by one staff member at present date. Based on existing plan review workload and staffing levels, there is insufficient staff for plan review and inspections if all commercial buildings are required to comply with the green building and updated energy code requirements.

As the zoning ordinance is written, with the adoption of Ordinance No. 4576 and Resolution No. 12505 making the green construction code (IgCC) mandatory, developers will receive zoning bonuses for complying with a mandatory IgCC code. A text amendment will be proposed to remove the IgCC as a voluntary option associated with zoning bonuses. It will take approximately six months to update the zoning ordinance to reflect such a change.

If the City Council wishes to keep the IgCC voluntary, the following motion should be made: “Adopt Ordinance No. 4576 and Resolution No. 12505 with amendments to make the 2021 International Green Construction Code (IgCC) and City amendments to the IgCC voluntary, with a January 7, 2023 effective date.”

## ACTIONS

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**Action 1:** Adopt Ordinance No. 4575, Resolution Nos. 12499, 12503, adopting the 2021 International Residential Code (IRC) and 2021 International Energy Conservation Code (IECC) including all amendments in attachment 2 and 3 with an effective date of January 7, 2023.

### **Potential Additions**

Option A – EV capable charging infrastructure requirement for new single-family homes (attachment 4) and/or

Option B – Retain minimum ceiling insulation value of R-38 instead of R-49 for new single-family homes (attachment 5)

**Action 2:** Adopt Ordinance No. 4576 and Resolution No. 12505, adopting the 2021 International Green Construction Code (IgCC) including all amendments in attachment 7 as a mandatory code for all new commercial building projects with an effective date of the later of July 1, 2023, or the date the City zoning ordinance is amended in response to Ordinance No. 4576.

## **Proposed Next Steps**

Once adopted, staff will identify key resources and provide in-house training, education and outreach to the planning and development community in line with the effective date of July 1, 2023, or later for the green construction code (IgCC) and January 7, 2023 for the residential (IRC) and energy (IECC) codes.

## RESPONSIBLE DEPARTMENTS

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Planning and Development Services

## STAFF CONTACTS

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Michael L. Clack, Chief Development Director  
480-312-7629, [MClack@scottsdaleaz.gov](mailto:MClack@scottsdaleaz.gov)

Lisa McNeilly, Sustainability Director  
480-312-2831, [LMcNeilly@scottsdaleaz.gov](mailto:LMcNeilly@scottsdaleaz.gov)


Anthony Floyd, Green Building Program Manager/Energy Code Specialist  
480-312-4202, [AFloyd@scottsdaleaz.gov](mailto:AFloyd@scottsdaleaz.gov)

## APPROVED BY

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Michael L. Clack, Chief Development Director  
480-312-7629, [MClack@scottsdaleaz.gov](mailto:MClack@scottsdaleaz.gov)

11/16/2022  
Date

  
Erin Perreault, AICP, Executive Director  
480-312-7093, [EPerreault@scottsdaleaz.gov](mailto:EPerreault@scottsdaleaz.gov)

11/16/2022

\_\_\_\_\_  
Date

  
Brent Stockwell, Assistant City Manager  
480-312-7288, [BStockwell@scottsdaleaz.gov](mailto:BStockwell@scottsdaleaz.gov)

11/16/2022  
Date

  
Jim Thompson, City Manager  
480-312-2800, [JThompson@scottsdaleaz.gov](mailto:JThompson@scottsdaleaz.gov)

11/16/2022  
Date

## ATTACHMENTS

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1. Ordinance No. 4575, Adopting International Residential Code (IRC) and the International Energy Conservation Code (IECC).
2. Resolution No. 12499, Declaring the IRC as a public record
3. Resolution No. 12503, Declaring the IECC as a public record
4. Option A for Ordinance No. 4575 and Resolutions Nos. 12499 and 12503 – IRC and IECC with EV Charging for Single-Family
5. Option B for Ordinance 4575 and Resolutions Nos. 12499 and 12503 – IRC and IECC with reduction of ceiling insulation
6. Ordinance No. 4576, Adopting International Green Construction Code (IgCC) as mandatory
7. Resolution No. 12505, Declaring the IgCC as a public record
8. Community Open House Summary Report held September 27, 2022
9. Industry Stakeholder Feedback

**ORDINANCE NO. 4575**

AN ORDINANCE OF THE COUNCIL OF THE CITY OF SCOTTSDALE, MARICOPA COUNTY, ARIZONA, ADOPTING PART OF THE BUILDING CODE OF THE CITY OF SCOTTSDALE, INCLUDING THE 2021 EDITIONS OF THE *INTERNATIONAL RESIDENTIAL CODE* AND *INTERNATIONAL ENERGY CONSERVATION CODE*, AND THE 2022 CITY OF SCOTTSDALE AMENDMENTS TO THE INTERNATIONAL CODES; REPEALING AND REPLACING ARTICLES II AND VII OF SCOTTSDALE REVISED CODE (S.R.C.) CHAPTER 31, BUILDING AND CONSTRUCTION REGULATIONS, WITH NEW ARTICLES II AND VII OF S.R.C. CHAPTER 31, BUILDING AND CONSTRUCTION REGULATIONS; AND ESTABLISHING AN EFFECTIVE DATE.

BE IT ORDAINED by the Council of the City of Scottsdale, Arizona, as follows:

Section 1. The following documents, declared public records by the Resolutions of the City of Scottsdale specified below, one paper copy and one electronic copy of which are on file in the Office of the City Clerk of the City of Scottsdale, are adopted by these references and made a part hereof as if fully set out in this Ordinance, and shall be part of the Building Code of the City in conjunction with the other articles in Chapter 31 of the Scottsdale Revised Code:

- (1) The *International Residential Code for One- and Two-Family Dwellings*, 2021 Edition, including appendices AA, AB, AC, AH, AJ, AK, AR, AS, AT, and AU, as published by the International Code Council, Inc., and as amended by the "2022 City of Scottsdale Amendments to the International Residential Code, 2021 Edition," declared public records by Resolution No. 12499 of the City of Scottsdale, are hereby referred to, adopted, and made a part hereof as if fully set out in this Ordinance.
- (2) The *International Energy Conservation Code*, 2021 Edition, including Appendices CB and RB, as published by the International Code Council, Inc., and as amended by the "2022 City of Scottsdale Amendments to the International Energy Conservation Code, 2021 Edition," declared public records by Resolution No. 12503 of the City of Scottsdale, are hereby referred to, adopted, and made a part hereof as if fully set out in this Ordinance.

Section 2. Article II, Sections 31-50 through 31-69, and Article VII, Sections 31-110 through 31-119 of Chapter 31, Building and Construction Regulations, of the Scottsdale Revised Code are hereby repealed and replaced by a new Article II, Sections 31-50 through 31-69, and Article VII, Sections 31-110 through 31-119 of Chapter 31, Building and Construction Regulations, of the Scottsdale Revised Code, which shall read as specified in those certain documents entitled, "2022 City of Scottsdale Amendments to the International Residential Code, 2021 Edition" and "2022 City of Scottsdale Amendments to the International Energy



Conservation Code, 2021 Edition," declared to be a public record by Resolution Nos. 12499 and 12503, respectively, of the City of Scottsdale, and hereby referred to, adopted, and made a part hereof as if fully set out in this Ordinance.

Section 3. If any section, subsection, sentence, clause, or phrase of this Ordinance is, for any reason, held to be invalid or unconstitutional, such decision shall not affect the validity of the remaining portions of this Ordinance. The Scottsdale City Council hereby declares that it would have passed this law, and each section, subsection, clause, or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses, and phrases be declared invalid or unconstitutional.

Section 4. The existing provisions of Chapter 31 that are being repealed and replaced by this Ordinance will remain in effect until the effective date of this Ordinance. The repeal of any provision of the Scottsdale Revised Code effectuated by this Ordinance does not affect the rights and duties that matured or penalties that were incurred and proceedings that were begun before the effective date of this Ordinance.

Section 5. If there is any conflict or inconsistency between the provisions of this Ordinance, the more restrictive provisions apply.

Section 6. The effective date of this Ordinance shall be January 7, 2023.

PASSED AND ADOPTED BY THE Council of the City of Scottsdale, Maricopa County, Arizona this \_\_\_\_\_ day of \_\_\_\_\_, 2022.

ATTEST:

CITY OF SCOTTSDALE,  
a municipal corporation

\_\_\_\_\_  
Ben Lane, City Clerk

\_\_\_\_\_  
David D. Ortega, Mayor

APPROVED AS TO FORM:  
OFFICE OF THE CITY ATTORNEY



Sherry R. Scott, City Attorney

By: Kimberly Campbell, Senior Assistant City Attorney

RESOLUTION NO. 12499

A RESOLUTION OF THE COUNCIL OF THE CITY OF SCOTTSDALE, MARICOPA COUNTY, ARIZONA, DECLARING AS PUBLIC RECORDS THOSE CERTAIN DOCUMENTS FILED WITH THE CITY CLERK OF THE CITY OF SCOTTSDALE AND ENTITLED THE "*INTERNATIONAL RESIDENTIAL CODE FOR ONE- AND TWO-FAMILY DWELLINGS*, 2021 EDITION" INCLUDING APPENDICES, AND THE "2022 CITY OF SCOTTSDALE AMENDMENTS TO THE INTERNATIONAL RESIDENTIAL CODE, 2021 EDITION."

WHEREAS, the Building Department of the City of Scottsdale wishes to replace the existing building and construction codes with updated versions of the codes, and to amend the International and National Codes and the Scottsdale Revised Code to better address the needs of the City of Scottsdale;

WHEREAS, State law permits cities to declare documents a public record; and

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

Section 1. The following documents are hereby declared to be public records, and one paper copy and one electronic copy are hereby ordered to remain on file in the office of the City Clerk and kept available for public use and inspection:

- (1) The *International Residential Code for One- and Two-Family Dwellings*, 2021 Edition, including appendices AA, AB, AC, AH, AJ, AK, AR, AS, AT, and AU as published by the International Code Council, Inc., and
- (2) That certain document entitled "2022 City of Scottsdale Amendments to the International Residential Code, 2021 Edition," attached hereto as Exhibit "A."

PASSED AND ADOPTED by the Council of the City of Scottsdale, Maricopa County,  
Arizona this \_\_\_\_\_ day of \_\_\_\_\_, 2022.


CITY OF SCOTTSDALE, an Arizona  
municipal corporation

ATTEST:

\_\_\_\_\_  
Ben Lane, City Clerk

\_\_\_\_\_  
David D. Ortega, Mayor

APPROVED AS TO FORM:

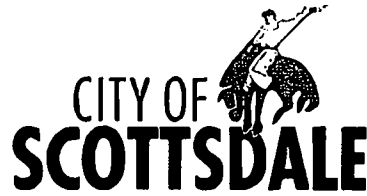


Sherry R. Scott, City Attorney

By: Kimberly Campbell, Senior Assistant City Attorney



# Exhibit "A"



## 2022 CITY OF SCOTTSDALE AMENDMENTS TO THE INTERNATIONAL RESIDENTIAL CODE, 2021 EDITION

Ordinance No. 4575, Resolution No. 12499

**2022 City of Scottsdale Amendments  
to the International Residential Code, 2021 Edition**

**SCOTTSDALE REVISED CODE  
CHAPTER 31 – BUILDING AND CONSTRUCTION REGULATIONS**

**ARTICLE II. INTERNATIONAL RESIDENTIAL CODE FOR ONE- AND TWO-FAMILY DWELLINGS**

**DIVISION 1. ADOPTED CODE**

**Sec. 31-50. International Residential Code for One- and Two-Family Dwellings adopted and amended.**

The International Residential Code for One- and Two-Family Dwellings (IRC), 2021 Edition, including appendices AA, AB, AC, AH, AJ, AK, AR, AS, AT and AU, as published by the International Code Council, Inc., declared a public record by city Resolution No. 12499, are adopted as part of the city Building Code.

**DIVISION. 2. AMENDMENTS TO IRC**

**Sec. 31-51. IRC CHAPTER 1 – amendments.**

(a) *Section 101.1, Title, is amended to read as follows:*

**101.1 Title.** These regulations shall be known as the *Residential Code for One- and Two-Family Dwellings* of the City of Scottsdale and shall be cited as such and will be referred to herein as “this code.”

(b) To the extent that Chapter 1 of the International Residential Code for One- and Two-Family Dwellings, 2021 Edition, conflicts with the city amendments to Chapter 1 of the International Building Code, 2021 Edition, the amendments to the International Building Code prevail.

**Sec. 31-52. IRC CHAPTER 3 BUILDING PLANNING - amendments.**

*Only the following portions of CHAPTER 3 BUILDING PLANNING, are amended:*

(a) *Table R301.2, CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA, is amended to read as follows:*

<b>TABLE R301.2 CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA</b>	
Ground snow load	0
Wind speed	105 mph
Topographic effects	No
Special wind region	No

Windborne debris zone	No
Seismic design category:	B
Weathering	Negligible
Frost line depth	Final grade
Termite	Moderate
Ice barrier underlayment required	No
Flood hazard	See Scottsdale Revised Code, Chapter 37
Air freezing index	0
Mean annual temperature	71.2°F
<b>MANUAL J DESIGN CRITERIA</b>	
Elevation:	1,473 feet
Latitude:	33.62 N
Altitude correction factor	0.97
Daily range	High (H)
Mean coincident wet bulb	70°F
Indoor summer design relative humidity	45%
Indoor summer design dry-bulb temperature:	Minimum of 75°F
Indoor winter design dry-bulb temperature:	Maximum of 72°F
Outdoor summer design dry-bulb temperature:	107°F
Outdoor winter design dry-bulb temperature:	37°F
Heating temperature difference	20.6 °F
Cooling temperature difference	20.1°F

(b) Section R303.3, *Bathrooms*, is amended to read as follows:

**R303.3 Bathrooms.** Bathrooms, water closet compartments and other similar rooms shall be provided with a permanently installed lighting fixture and local exhaust fan. The minimum local exhaust rates shall be determined in accordance with Section M1505. Exhaust air from the space shall be exhausted directly to the outdoors.

**Exception:** A local exhaust fan system shall not be required for bathrooms and water closet compartments located in an unconditioned space with an openable window area of not less than 1.5 square feet (0.15 m<sup>2</sup>).

**R303.3.1 Exhaust fan controls.** Exhaust fans shall be switched separately from lighting systems. Except where functioning as a component of a whole house ventilation system, exhaust fans in bathrooms with a shower or tub shall be provided with a delay timer or humidity/condensation control switch.

*(c) Section R303.10, Required heating, is retitled, and amended to read as follows:*

**R303.10 Required heating and cooling.** Dwellings shall be provided with heating per Section R303.10.1 and cooling per Section R303.10.2.

**R303.10.1 Heating.** Heating facilities shall be provided, capable of maintaining a room temperature of not less than 68°F (20°C) in all habitable rooms, bathrooms, and toilet rooms, based on the winter design temperature of 34°F (01°C) for Phoenix, per Appendix D of the International Plumbing Code. Cooking appliances and portable space heaters shall not be used to achieve compliance with this section.

**Exception:** Heating systems are not required for interior spaces where the primary purpose of the space is not associated with human comfort.

**R303.10.2 Cooling.** Cooling facilities shall be provided, capable of maintaining room temperature of not more than 85°F (29°C) in all habitable rooms, bathrooms and toilet rooms, based on the summer design temperature of 107°F (42°C) for Phoenix, per Appendix D of the International Plumbing Code.

**Exception:** Cooling systems are not required for interior spaces where the primary purpose of the space is not associated with human comfort.

*(d) Section R313, Automatic Fire Sprinkler Systems, is amended to read as follows:*

**R313 Automatic Fire Sprinkler Systems.** See Scottsdale Revised Code, Chapter 36, for automatic fire sprinkler system requirements.

#### **Sec. 31-53. IRC CHAPTER 4 FOUNDATIONS - amendments.**

*Only the following portions of CHAPTER 4 FOUNDATIONS, are amended:*

*(a) Section R403.1.1, Minimum size, is amended to read as follows:*

**R403.1.1 Minimum size.** The minimum width, W, and thickness, T, for concrete footings shall be in accordance with Tables R403.1(1) through R403.1(3) and Figure R403.1(1) or R403.1.3, as applicable, but not less than 12 inches in width and 6 inches in depth.

All footings in these tables shown as 12 to 16 inches wide shall be at least 16 inches wide.

All footings in these tables shown as 17 to 24 inches wide shall be at least 24 inches wide.

All footings in these tables shown as 25 to 32 inches wide shall be at least 32 inches wide.

All footings in these tables shown as greater than 32 inches wide shall be as stated or larger.

Maximum bearing pressure from service loads shall not exceed 1500 psf. Footing projections, P, shall be not less than 2 inches and shall not exceed the thickness of the footing. Footing thickness and projection for fireplaces shall be in accordance with Section R1001.2.

The size of footings supporting piers and columns shall be based on the tributary load and allowable soil pressure. An isolated column carrying a load greater than 750 lbs. shall be supported on a minimum 4 square feet of footing, with minimum width of 24 inches.

A certified soils report from a registered design professional may be used in lieu of these requirements.

- (b) *Section R403.1.4, Minimum depth, is amended to read as follows, with the subsections remaining the same:*

**R403.1.4 Minimum depth.** All footings shall be placed at least 18 inches (457 mm) below the undisturbed ground surface or engineered fill. Where applicable, the depth of footings shall also conform to Section R403.1.4.1. Deck footings shall be in accordance with Section R507.3.

**Sec. 31-54. IRC CHAPTER 5 FLOORS - amendments.**

*Only the following portion of CHAPTER 5 FLOORS, is amended:*

- (a) *A new Section R502.11.4.1, Deferred submittals, is added to read as follows:*

**R502.11.4.1 Deferred submittals.** Floor truss design drawings may be submitted in compliance with Section 107.3.4.1 of the International Building Code (IBC).

**Sec. 31-55. IRC CHAPTER 7 WALL COVERING – amendments.**

*Only the following portion of CHAPTER 7, WALL COVERING, is amended:*

- (a) *Section R703.7.2.1, Weep Screeds, is amended by adding the following:*

**Exception:** Weep screeds are not required to maintain a 2-inch (51 mm) clearance above paved areas, where located at doors provided with an overhang that projects at least 36 inches (914 mm) from the wall to the outer edge of the overhang. They shall be installed per manufacturer's instructions.

**Sec. 31-56. IRC CHAPTER 8 ROOF-CEILING CONSTRUCTION - amendments.**

*Only the following portions of CHAPTER 8 ROOF-CEILING CONSTRUCTION, are amended:*

- (a) *A new Section R802.10.1.1, Deferred submittals, is added to read as follows:*

**R802.10.1.1 Deferred submittals.** Roof truss design drawings may be submitted in compliance with Section 107.3.4.1 of the IBC.

- (b) *Section R806.1, Ventilation, is amended by adding the following exception:*

**Exception:** Enclosed attic and rafter spaces are not required to be ventilated where there is 24 inches or less between the bottom of roof sheathing and the ceiling.

**Sec. 31-57. IRC CHAPTER 9 ROOF ASSEMBLIES - amendments.**

*Only the following portion of CHAPTER 9 ROOF ASSEMBLIES, is amended:*

- (a) *Section R905.5, Mineral-surfaced roll roofing, is revised by adding the following:*

**R905.5.6 Drip edge.** A drip edge shall be provided at eaves and rake edges. Adjacent segments of drip edge shall overlap not less than 2 inches (51 mm). Drip edges shall extend not less than 1/4 inch (6.4 mm) below the roof sheathing and extend onto the roof deck not less than 2 inches (51 mm). Drip edges shall be fastened to the roof deck at not more than 12 inches (305 mm) on center with fasteners as specified in Section R905.2.5. Underlayment shall be installed over the drip edge along eaves, and under the drip edge along rake edges.

**Sec. 31-58. IRC CHAPTER 10 CHIMNEYS AND FIREPLACES - amendments.**

*Only the following portions of CHAPTER 10 CHIMNEYS AND FIREPLACES, are amended:*

- (a) *A new Section R1007, Clean Burning Fireplaces, Woodstoves and Solid Fuel Burning Devices, is added to read as follows:*

**SECTION R1007**

**CLEAN BURNING FIREPLACES, WOODSTOVES AND SOLID FUEL BURNING DEVICES**

**R1007.1 Purpose.** This Section regulates fireplaces, woodstoves, and other solid fuel burning devices to reduce air pollution caused by particulate matter and carbon monoxide.

**R1007.2 Installation restrictions.**

1. Only the following fireplaces, woodstoves and solid fuel burning devices are permitted:
  - 1.1 A fireplace with a permanently-installed gas or electric log insert.
  - 1.2 A fireplace, woodstove, or solid fuel burning device certified by the United States Environmental Protection Agency as conforming to 40 Code of Federal Regulations Part 60, Subpart AAA, as amended.
  - 1.3 A fireplace, woodstove or solid fuel burning device listed by a nationally-recognized testing agency as meeting performance standards equivalent to 40 Code of Federal Regulations Part 60, Subpart AAA, as amended.
  - 1.4 A fireplace, woodstove or other solid fuel burning device determined by the Maricopa County Air Quality Department as meeting performance standards equivalent to 40 Code of Federal Regulations Part 60, Subpart AAA, as amended.
  - 1.5 A fireplace with a permanently-installed woodstove insert which complies with paragraph 1.2, 1.3, or 1.4 above.
2. The following are not regulated by these requirements:
  - 2.1 Furnaces, boilers, incinerators, kilns, and similar space-heating equipment.
  - 2.2 Industrial process equipment.
  - 2.3 Cook-stoves, barbecue grills, and similar appliances designed primarily for cooking.

**R1007.3 Alterations prohibited.**

1. No permanently-installed gas or electric log insert, or woodstove insert, in a fireplace, shall be altered or removed to convert the fireplace to burn wood or other solid fuel.
2. No alteration shall be made to a fireplace, woodstove or solid fuel burning device to void its certification or remove its compliance with this section.

**R1007.4 Permits required.** Construction, installation and alteration of all fireplaces; woodstoves; and gas, electric and solid fuel burning devices and equipment, are subject to the requirements, permits and inspections of this code.

- (b) *A new Section R1008, Chimneys and Fireplaces, is added to read as follows:*

**R1008 CHIMNEYS AND FIREPLACES**

**R1008.1 Outdoor wood-burning devices.** Outdoor fireplaces, woodstoves, fire pits and other devices capable of burning wood shall be installed:

1. At least 8 feet from any property line that abuts another property; or

2. At least 10 feet from any property line in a zero lot line subdivision.

**Exceptions:**

1. When a property line abuts a street or alley, the setback for these devices shall comply with the Zoning Ordinance.
2. The building official may allow a smaller setback if safety standards are met.

**R1008.2 Outdoor gas devices.** Outdoor fireplaces, fire pits and other devices that burn gas only shall be vented as required by IRC Chapter 24 - Fuel Gas.

**R1008.3 Chimneys and flues.** Fireplaces, woodstoves, fire pits and other devices with a chimney or flue shall comply with Section R1003.9 Termination.

**R1008.4 Code compliance.**

1. Construction, installation and alteration of all outdoor fireplaces; woodstoves; fire pits and similar gas, electric and solid fuel burning devices and equipment, are subject to the requirements, permits and inspections of this code.

**Exception:** No permit is required for the masonry surround for outdoor fireplaces; woodstoves; fire pits and similar gas, electric, and solid fuel burning devices.

2. With the permit application, a site plan shall be submitted indicating the location of the device and its proximity to the property line, alley, public right-of-way and all structures on the property.

**Sec. 31-59. IRC CHAPTER 11 ENERGY EFFICIENCY - amendments.**

*Only the following portions of CHAPTER 11, ENERGY EFFICIENCY, are amended:*

- (a) Section N1101.6 (R202), Defined terms, is amended by adding the following:*

**LOW-SLOPED ROOF.** A roof having a slope less than 2 units vertical in 12 units horizontal.

- (b) Reserved.*

- (c) Reserved.*

- (d) Table 1102.4.1.1 (R402.4.1.1), Air Barrier, Air Sealing and Insulation Installation – Rim Joists and footnote b are revised to read as follows, with the rest of the table remaining unchanged.*

COMPONENT	AIR BARRIER CRITERIA INSULATION	INSTALLATION CRITERIA
Rim joists	Rim joists shall include an air barrier.  The junctions of the rim board to the sill plate and the rim board to the subfloor shall be air sealed.	Rim joists shall be insulated so that the insulation maintains permanent contact with the exterior rim board. <sup>b</sup>

- b. Insulation full enclosure is not required in unconditioned/ventilated attic spaces and at rim joists.

(e) Section N1102.4.6 (R402.4.6), *Electrical and communication outlet boxes (air-sealed boxes)*, is amended to read as follows:

**N1102.4.6 (R402.4.6) Electrical and communication outlet boxes (air-sealed boxes).**

Where air-sealed boxes are required by Table N1102.4.1.1 (R402.4.1.1), electrical and communication boxes shall comply with all of the following:

1. be tested in accordance with NEMA OS 4, Requirements for Air-Sealed Boxes for Electrical and Communication Applications;
2. have an air leakage rate of not greater than 2.0 cubic feet per minute (0.944 L/s) at a pressure differential of 1.57 psf (75 Pa);
3. be marked "NEMA OS 4" or "OS 4" in accordance with NEMA OS 4; and
4. be installed per the manufacturer's instructions and with any supplied components required to achieve compliance with NEMA OS 4.

(f) A new Section N1102.6 (R402.6), *Roof solar reflectance and thermal emittance*, is added to read as follows:

**N1102.6 (R402.6) Roof solar reflectance and thermal emittance.** Where not prohibited by the city environmentally sensitive lands ordinance (ESLO), low-sloped roof surfaces over conditioned and unconditioned spaces in *Climate Zones* 0 through 3 shall comply with one or more of the options in Table N1102.6 (R402.6).

**Exception:** Portions of the roof that are covered by roof decks, vegetation, walkways, skylights, and solar energy systems are exempt from the requirements of Table N1102.6 (R402.6).

**TABLE N1102.6 (R402.6)**  
**MINIMUM ROOF REFLECTANCE AND EMITTANCE OPTIONS**

Three-year-aged solar reflectance index (SRI) of 64
Three-year-aged solar reflectance of 0.55 and a three-year aged thermal emittance of 0.75

(g) Section N1103.5.1.1.1 (R403.5.1.1.1), *Demand recirculation water systems*, is amended to read as follows:

**N1103.5.1.1.1 (R403.5.1.1.1) Demand recirculation water systems.** Demand recirculation water systems are required when the length of hot water supply piping from the source of hot water to the furthest fixture fitting exceeds the specified length in Table N1103.5.1.1.1 (R403.5.1.1.1). Where the piping contains more than one size of pipe, the largest size of pipe within the piping shall be used for determining the maximum allowable length of piping before a recirculating hot water system is required. For the purpose of this section, the source of hot water shall be a water heater, boiler, circulation loop piping, distribution manifold, or heat-traced piping.

Demand recirculation water systems shall have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance or sensing the flow of hot or tempered water to a fixture fitting or appliance.



<b>Table N1103.5.1.1.1 (R403.5.1.1.1) DEMAND RECIRCULATION WATER SYSTEM REQUIREMENT BASED ON PIPE SIZE AND LENGTH</b>	
<b>Nominal Pipe Size (inches)</b>	<b>Piping Length (feet)</b>
3/8 inch line or less	> 50 feet
1/2 inch line	> 43 feet
5/8 inch line	> 32 feet
3/4 inch line	> 21 feet

(h) *Reserved.*

(i) *Table N1105.2 (R405.2), Requirements for Total Building Performance – Building Thermal Envelope, is revised by adding a new line for Section N1102.6 (R402.6) as follows:*

**TABLE N1105.2 (R405.2)  
REQUIREMENTS FOR TOTAL BUILDING PERFORMANCE**

<b>Building Thermal Envelope</b>	
<b>N1102.6 (R402.6)</b>	Roof solar reflectance and thermal emittance.

(j) *Table N1106.2 (R406.2), Requirements for Energy Rating Index - Building Thermal Envelope, is revised by adding a new line for Section N1102.6 (R402.6) as follows:*

**TABLE N1106.2 (R406.2)  
REQUIREMENTS FOR ENERGY RATING INDEX**

<b>Building Thermal Envelope</b>	
<b>N1102.6 (R402.6)</b>	Roof solar reflectance and thermal emittance.

(k) *Section N1108.2 (R408.2), Additional efficiency package options, is amended to read as follows:*

**N1108.2 (R408.2) Additional efficiency package options.** Additional efficiency package options for compliance with Section N1101.13.5 are set forth in Sections N1108.2.1 through N1108.2.6.

(l) *A new Section N1108.2.6 (R408.2.6), On-site renewable energy option, is added as follows:*

**N1108.2.6 (R408.2.6) On-site renewable energy option.** Provide an on-site renewable energy generation system that meets one of the following:

1. Provides a total rated capacity of not less than 2 watts per square foot (22 W/m<sup>2</sup>) of the total conditioned floor area.

2. Provides not less than 50 percent of the estimated annual energy use within the building for mechanical, service water-heating, lighting and electric vehicle charging.

**Sec. 31-60. IRC CHAPTER 15 EXHAUST SYSTEMS - amendments.**

*Only the following portions of CHAPTER 15, EXHAUST SYSTEMS, are amended:*

- (a) Section M1503.3, *Exhaust discharge*, is amended by deleting the exception.
- (b) Section M1505.2, *Recirculation of air*, is amended to read as follows:

**M1505.2 Recirculation of air.** Exhaust air from bathrooms, toilet rooms and kitchens shall be exhausted directly to the outdoors and not recirculated indoors. Exhaust air from bathrooms, toilet rooms and kitchens shall not discharge into an attic, crawl space or other areas inside the building.

**Sec. 31-61. IRC CHAPTER 29 WATER SUPPLY AND DISTRIBUTION – amendments.**

*Only the following portion of CHAPTER 29 WATER SUPPLY AND DISTRIBUTION, is amended:*

- (a) Table P2903.2, *MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING FIXTURES AND FIXTURE FITTINGS*, is amended to read as follows:

**TABLE P2903.2  
MAXIMUM FLOW RATES AND CONSUMPTION FOR  
PLUMBING FIXTURES AND FIXTURE FITTINGS<sup>b</sup>**

<b>PLUMBING FIXTURE OR FIXTURE FITTING</b>	<b>MAXIMUM FLOW RATES AND OR QUANTITY</b>
Lavatory faucet	1.5 gpm at 60 psi
Shower head <sup>a</sup>	2.0 gpm at 80 psi
Kitchen faucet <sup>c</sup>	1.8 gpm at 60 psi
Sink faucet	2.2 gpm at 60 psi
Water closet	1.28 gallons per flushing cycle <sup>d,e</sup>

For SI: 1 gallon per minute = 3.785 L/m,

1 pound per square inch = 6.895 kPa.

- a. The total flow rate from all shower fixtures controlled by one valve shall not exceed 2.0 gpm. This includes hand-held sprays, body sprays, jets, waterfalls, and rain systems.

- b. Consumption tolerances shall be determined from referenced standards.
- c. Kitchen faucets shall be permitted to temporarily increase the flow greater than 1.8 gpm but shall not exceed 2.2 gpm and must automatically revert to the established maximum flow rate of 1.8 gpm upon physical release of the activation mechanism or closure of the faucet valve.
- d. For dual flush, the full-flush volume shall not exceed 1.28 gallons.
- e. 1.6 gallons per flushing cycle is permitted in existing buildings where a water closet is connected to a building's existing sanitary drainage piping.

**Sec. 31-62. IRC CHAPTER 30 SANITARY DRAINAGE - amendments.**

*Only the following portion of CHAPTER 30 SANITARY DRAINAGE, is amended:*

*(a) A new exception to Section P3009.8, Percolation tests, is added to read as follows:*

**Exception:** A percolation test is not required where a graywater system is installed with a maximum discharge rate of 160 gallons per day as determined by this code based on the number of occupants and connected fixtures. Graywater systems shall comply with Arizona Department of Environmental Quality rules and guidelines.

**Sec. 31-63. IRC CHAPTER 39 POWER AND LIGHTING DISTRIBUTION - amendments.**

*Only the following portion of CHAPTER 39 POWER AND LIGHTING DISTRIBUTION, is amended:*

*(a) Section E3908.9, Types of equipment grounding conductors, is deleted in its entirety and replaced with the following:*

**E3908.9 Types of equipment grounding conductors.** Equipment grounding conductors shall comply with the National Electric Code as adopted and amended in Article III of this Chapter.

**[Section 31-64. Reserved]**

**DIVISION. 3. ADOPTION AND AMENDMENTS TO IRC: APPENDICES**

**Sec. 31-65. Appendices to IRC.**

The following appendices are adopted:

APPENDIX AA - SIZING AND CAPACITIES OF GAS PIPING

APPENDIX AB - SIZING OF VENTING SYSTEMS SERVING APPLIANCES EQUIPPED WITH DRAFT HOODS, CATEGORY I APPLIANCES, AND APPLIANCES LISTED FOR USE WITH TYPE B VENTS

APPENDIX AC - EXIT TERMINALS OF MECHANICAL DRAFT AND DIRECT-VENT VENTING SYSTEMS

APPENDIX AH - PATIO COVERS

APPENDIX AJ - EXISTING BUILDINGS AND STRUCTURES

APPENDIX AK - SOUND TRANSMISSION

APPENDIX AR - LIGHT STRAW-CLAY CONSTRUCTION

APPENDIX AS - STRAWBALE CONSTRUCTION  
APPENDIX AT - SOLAR-READY PROVISIONS - DETACHED ONE- AND TWO-FAMILY  
DWELLINGS AND TOWNHOUSES  
APPENDIX AU - COB CONSTRUCTION (MONOLITHIC ADOBE)

**Sec. 31-66. APPENDIX AH – PATIO COVERS – amendments.**

*(a) A new Section AH103.3, Fire rating, is added to read as follows:*

**AH103.3 Fire rating.** All patio covers shall be protected with a one-hour fire-resistive wall and parapet where:

1. Combustible patio covers are less than 3 feet from the property line.
2. Non-combustible patio covers are less than 1 foot 6 inches from the property line.

**Exception:** Where the one-hour fire-resistive wall and parapet are required, a one-hour roof-ceiling assembly may be substituted for the parapet if:

- a. The roof-ceiling framing members are parallel to the one-hour wall, and the one-hour roof-ceiling assembly extends at least 5 feet from wall.
- b. The roof-ceiling framing members are perpendicular to the one-hour wall, and the entire span of the framing is at least one-hour fire-resistive construction.
- c. Openings in the roof are at least 5 feet from the property line.

**Sec. 31-67. APPENDIX J of IBC applicable to IRC.**

APPENDIX J Grading, of the IBC, and the city amendments to APPENDIX J, are applicable to the IRC.

**Sec. 31-68. APPENDIX AT – SOLAR-READY PROVISIONS – DETACHED ONE AND TWO FAMILY DWELLINGS AND TOWNHOUSES – amendments.**

*(a) Section AT103.3, Solar-ready zone area, is amended to read as follows:*

**AT103.3 Solar-ready zone area.** The total solar-ready zone area shall be not less than 10 percent of the total roof area over *conditioned space* but not less than 300 sq. ft. (27.87 m<sup>2</sup>), exclusive of areas covered by skylights, occupied roof decks, vegetative roof areas and mandatory access or setback areas as required by the *International Fire Code*. New townhouses three stories or less in height above grade plane and with a total floor area less than or equal to 2,000 square feet (185.8 m<sup>2</sup>) per dwelling shall have a solar-ready zone area of not less than 150 square feet (13.94 m<sup>2</sup>). The solar-ready zone shall be composed of areas not less than 5 feet (1524 mm) in width and not less than 80 square feet (7.44 m<sup>2</sup>) exclusive of access or setback areas as required by the *International Fire Code*.

**[Section 31-69. Reserved.]**

RESOLUTION NO. 12503

A RESOLUTION OF THE COUNCIL OF THE CITY OF SCOTTSDALE, MARICOPA COUNTY, ARIZONA, DECLARING AS PUBLIC RECORDS THOSE CERTAIN DOCUMENTS FILED WITH THE CITY CLERK OF THE CITY OF SCOTTSDALE AND ENTITLED THE "*INTERNATIONAL ENERGY CONSERVATION CODE, 2021 EDITION*" INCLUDING APPENDICES, AND THE "2022 CITY OF SCOTTSDALE AMENDMENTS TO THE INTERNATIONAL ENERGY CONSERVATION CODE, 2021 EDITION."

WHEREAS, the Building Department of the City of Scottsdale wishes to replace the existing building and construction codes with updated versions of the codes, and to amend the International and National Codes and the Scottsdale Revised Code to better address the needs of the City of Scottsdale;

WHEREAS, State law permits cities to declare documents a public record; and

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

Section 1. The following documents are hereby declared to be public records, and one paper copy and one electronic copy are hereby ordered to remain on file in the office of the City Clerk and kept available for public use and inspection:

- (1) The *International Energy Conservation Code, 2021 Edition*, including Appendices CB and RB, as published by the International Code Council, Inc., and
- (2) That certain document entitled "2022 City of Scottsdale Amendments to the International Energy Conservation Code, 2021 Edition," attached hereto as Exhibit "A."

PASSED AND ADOPTED by the Council of the City of Scottsdale, Maricopa County, Arizona this \_\_\_\_\_ day of \_\_\_\_\_, 2022.

CITY OF SCOTTSDALE, an Arizona  
municipal corporation

ATTEST:

\_\_\_\_\_  
Ben Lane, City Clerk

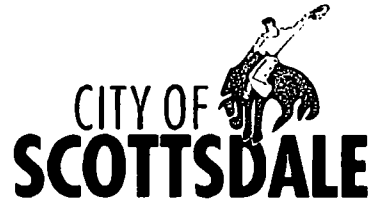
\_\_\_\_\_  
David D. Ortega, Mayor

APPROVED AS TO FORM:

  
Sherry R. Scott, City Attorney

By: Kimberly Campbell, Senior Assistant City Attorney

# Exhibit "A"



## 2022 CITY OF SCOTTSDALE AMENDMENTS TO THE INTERNATIONAL ENERGY CONSERVATION CODE, 2021 EDITION

Ordinance No. 4575, Resolution No. 12503

**2022 City of Scottsdale Amendments  
to the International Energy Conservation Code, 2021 Edition**

**SCOTTSDALE REVISED CODE  
CHAPTER 31 – BUILDING AND CONSTRUCTION REGULATIONS**

**ARTICLE VII. INTERNATIONAL ENERGY CONSERVATION CODE**

**DIVISION 1. ADOPTED CODE**

**Sec. 31-110. International Energy Conservation Code adopted and amended.**

The International Energy Conservation Code (IECC), 2021 Edition, including appendices CB and RB, as published by the International Code Council, Inc., declared a public record by city Resolution No. 12503, are adopted by reference as part of the city Building Code.

**DIVISION 2. AMENDMENTS TO IECC**

**Sec. 31-111. IECC Amendments – Chapter 1 (Commercial).**

*Only the following portion of CHAPTER 1, SCOPE AND ADMINISTRATION, is amended:*

(a) *Section C101.1, Title, is amended to read as follows:*

**C101.1 Title.** This code shall be known as the “*Energy Code*” of the City of Scottsdale and shall be cited as such. It is referred to herein as “this code.”

**Sec. 31-112. IECC Amendments – Chapter 2 (Commercial).**

*Only the following portion of CHAPTER 2, DEFINITIONS, is amended:*

(a) *Section C202, General Definitions, is amended by adding the following:*

**AUTOMATIC LOAD MANAGEMENT SYSTEMS (ALMS).** A control system that allows multiple connected *EVSE* to share a circuit or panel and automatically reduce power at each charger, reducing the total connected electrical capacity of all *EVSE*.

**ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE).** The conductors, including the ungrounded, grounded, and equipment grounding conductors, and the electric vehicle connectors, attachment plugs, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle.

**EV CAPABLE SPACE.** A designated parking space provided with electrical raceway and capacity to support future EV charging.

**EV INSTALLED SPACE.** A designated parking space with dedicated electric vehicle supply equipment.



**Sec. 31-113. IECC Amendments – Chapter 4 (Commercial).**

Only the following portions of CHAPTER 4, COMMERCIAL ENERGY EFFICIENCY, are amended:

- (a) Section C402.3, *Roof solar reflectance and thermal emittance*, is amended to read as follows, with the exceptions and table remaining unchanged.

**C402.3 Roof solar reflectance and thermal emittance.** Low-sloped roof surfaces over conditioned and unconditioned spaces in *Climate Zones 0 through 3* shall comply with one or more of the options in Table C402.3.

- (b) Section C405.12, *Energy Monitoring*, is deleted in its entirety.

- (c) A new Section C405.13, *Electric Vehicle (EV) charging infrastructure*, is added as follows:

**C405.13 Electric Vehicle (EV) charging infrastructure.** New construction shall accommodate future installation and use of *Electric Vehicle Supply Equipment (EVSE)* in accordance with the *National Electrical Code (NFPA 70)*.

**C405.13.1 Required EV installed spaces and EV capable spaces.** Parking shall be provided with *EV installed spaces* and *EV capable spaces* in accordance with Table C405.13.1. The required number of *EV installed spaces* or *EV capable spaces* shall be rounded up to the next highest whole number. Where a branch circuit serves a single charging space, it shall have a capacity not less than of 8.3 kVA (40A, 208/240V). Where a branch circuit serves multiple charging spaces, an *Automatic Load Management System (ALMS)* may be used to reduce the total electrical capacity provided that all charging spaces are capable of simultaneously charging at a minimum rate of 4.1 kVA (20A, 208/240V).

For *EV capable spaces*, the electrical service panel shall have reserved circuit breaker space(s) labeled "Future EV Charging". Raceway(s) shall be installed from the electrical service panel to outlet box(es) within the planned EV charging parking area(s). Outlet box(es) shall be labeled "Future EV charging".

**TABLE C405.13.1  
ELECTRIC VEHICLE CHARGING INFRASTRUCTURE REQUIREMENTS**

Occupancy Group	Minimum number of EV Installed Spaces <sup>a</sup>	Minimum number of EV Capable Spaces <sup>a</sup>
Group R-1 (hotels, motels) and Group R-2 (apartments, condominiums)	4% of total required parking spaces	20% of total required parking spaces

<sup>a</sup> Parking spaces designated for other than passenger vehicles may be excluded from the number of parking spaces used to calculate the minimum number of EV spaces.

**C405.13.2 Documentation.** Construction documents shall indicate location(s) for *EV installed spaces* and *EV capable spaces*. Information shall be provided on raceway methods, wiring schematics and electrical load calculations to verify the electrical panel

service capacity, including any on-site distribution transformers, to ensure sufficient capacity to simultaneously charge all required EV spaces at the rated amperage of the EVSE.

(d) *Table C406.10.2, Energy Use Categories, is revised by adding the following:*

**TABLE C406.10.2  
ENERGY USE CATEGORIES**

LOAD CATEGORY	DESCRIPTION OF ENERGY USE
Electric vehicle charging	Energy used for electric vehicle charging

(e) *Table C407.2, Requirements for Total Building Performance, is revised by adding the following:*

**TABLE C407.2  
REQUIREMENTS FOR TOTAL BUILDING PERFORMANCE**

Envelope	
C402.3	Roof solar reflectance and thermal emittance

(f) *Exceptions to Section C408.2 Mechanical systems and service water-heating systems commissioning and completion requirements, are amended to read as follows:*

**Exceptions:** The following systems are exempt:

1. Mechanical systems in buildings where the total mechanical equipment capacity is less than 180,000 Btu/h (52.8 kW or 15 tons) for cooling, 300,000 Btu/h (87.9 kW) for space-heating and 10,000 cfm for ventilation.
2. Service water-heating systems rated under 50,000 Btu/h (14.7 kW).
3. Water pumping and mixing systems under 5 hp (4kW).
4. Systems included in Section C403.5 that serve individual *dwelling units* and *sleeping units*.

**Sec. 31-114. IECC Amendments – Chapter 1 (Residential).**

*Only the following portion of CHAPTER 1, SCOPE AND ADMINISTRATION, is amended:*

(a) *Section R101.1, Title, is amended to read as follows:*

**R101.1 Title.** These regulations shall be known as the “Energy Code” of the City of Scottsdale, hereinafter referred to in this Article as “this code”.

**Sec. 31-115. IECC Amendments – Chapter 2 (Residential).**

*Only the following portion of CHAPTER 2, DEFINITIONS, is amended:*

(a) *Section R202, Definitions, is amended by adding the following:*

**LOW-SLOPED ROOF.** A roof having a slope less than 2 units vertical in 12 units horizontal.

**Sec. 31-116. IECC Amendments – Chapter 4 (Residential).**

*Only the following portions of CHAPTER 4, RESIDENTIAL ENERGY EFFICIENCY, are amended:*

(a) *Reserved.*

(b) *Reserved.*

(c) *Table R402.4.1.1, Air Barrier, Air Sealing and Insulation Installation, Rim Joists and footnote b are revised to read as follows:*

COMPONENT	AIR BARRIER CRITERIA INSULATION	INSTALLATION CRITERIA
Rim joists	Rim joists shall include an air barrier.  The junctions of the rim board to the sill plate and the rim board to the subfloor shall be air sealed.	Rim joists shall be insulated so that the insulation maintains permanent contact with the exterior rim board. <sup>b</sup>

b. Insulation full enclosure is not required in unconditioned/ventilated attic spaces and at rim joists.

(d) *Section R402.4.6, Electrical and communication outlet boxes (air-sealed boxes), is amended to read as follows:*

**R402.4.6 Electrical and communication outlet boxes (air-sealed boxes).** Where air-sealed boxes are required by Table R402.4.1.1, electrical and communication outlet boxes shall comply with all of the following:

1. be tested in accordance with NEMA OS 4, Requirements for Air-Sealed Boxes for Electrical and Communication Applications;
2. have an air leakage rate of not greater than 2.0 cubic feet per minute (0.944 L/s) at a pressure differential of 1.57 psf (75 Pa);
3. be marked "NEMA OS 4" or "OS 4" in accordance with NEMA OS 4; and
4. be installed per the manufacturer's instructions and with any supplied components required to achieve compliance with NEMA OS 4.

(e) *A new Section R402.6, Roof solar reflectance and thermal emittance, is added to read as follows:*

**R402.6 Roof solar reflectance and thermal emittance.** Where not prohibited by the city environmentally sensitive lands ordinance (ESLO), low-sloped roof surfaces over conditioned and unconditioned spaces in *Climate Zones* 0 through 3 shall comply with one or more of the options in Table R402.6.

**Exception:** Portions of the roof that are covered by roof decks, vegetation, walkways, skylights, and solar energy systems are exempt from the requirements of Table R402.6.

**TABLE R402.6  
MINIMUM ROOF REFLECTANCE AND EMITTANCE OPTIONS**

Three-year-aged solar reflectance index (SRI) of 64
Three-year-aged solar reflectance of 0.55 and a three-year aged thermal emittance of 0.75

(f) *Section R403.5.1.1.1, Demand recirculation water systems, is amended to read as follows:*

**R403.5.1.1.1 Demand recirculation water systems.** *Demand recirculation water systems are required when the length of hot water supply piping from the source of hot water to the furthest fixture fitting exceeds the specified length in Table R403.5.1.1.1. Where the piping contains more than one size of pipe, the largest size of pipe within the piping shall be used for determining the maximum allowable length of piping before a recirculating hot water system is required. For the purpose of this section, the source of hot water shall be a water heater, boiler, circulation loop piping, distribution manifold, or heat-traced piping.*

*Demand recirculation water systems shall have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance or sensing the flow of hot or tempered water to a fixture fitting or appliance.*

<b>Table R403.5.1.1.1 DEMAND RECIRCULATION WATER SYSTEM REQUIREMENT BASED ON PIPE SIZE AND LENGTH</b>	
<b>Nominal Pipe Size (inches)</b>	<b>Piping Length (feet)</b>
3/8 inch line or less	> 50 feet
1/2 inch line	> 43 feet
5/8 inch line	> 32 feet
3/4 inch line	> 21 feet

(g) *Reserved.*

(h) *Table R405.2, Requirements for Total Building Performance – Building Thermal Envelope, is revised by adding a new line for Section R402.6 as follows:*

**TABLE R405.2  
REQUIREMENTS FOR TOTAL BUILDING PERFORMANCE**

<b>Building Thermal Envelope</b>	
R402.6	Roof solar reflectance and thermal emittance

- (i) *Table R406.2, Requirements for Energy Rating Index – Building Thermal Envelope, is revised by adding a new line for Section R402.6 as follows:*

**TABLE R406.2  
REQUIREMENTS FOR ENERGY RATING INDEX**

Building Thermal Envelope	
R402.6	Roof solar reflectance and thermal emittance

- (j) *Section R408.2, Additional efficiency package options, is amended to read as follows:*

**R408.2 Additional efficiency package options.** Additional efficiency package options for compliance with Section R401.2.1 are set forth in Sections R408.2.1 through R408.2.6.

- (k) *A new Section R408.2.6, On-site renewable energy option, is added as follows:*

**R408.2.6 On-site renewable energy option.** Provide an on-site renewable energy generation system that meets one of the following:

1. Provides a total rated capacity of not less than 2 watts per square foot (22 W/m<sup>2</sup>) of the total *conditioned floor area*.
2. Provides not less than 50 percent of the estimated annual energy use within the building for mechanical, service water-heating, lighting and electric vehicle charging.

### **DIVISION. 3. ADOPTION AND AMENDMENTS TO IECC: APPENDICES**

#### **Sec. 31-117. Appendices to IECC.**

The following appendices are adopted:

APPENDIX CB – SOLAR-READY ZONE - COMMERCIAL

APPENDIX RB – SOLAR-READY PROVISIONS – DETACHED ONE- AND TWO-FAMILY DWELLINGS AND TOWNHOUSES

#### **Sec. 31-118. IECC Amendments – Appendix CB (Commercial).**

*Only the following portion of APPENDIX CB SOLAR-READY ZONE of the IECC is amended.*

- (a) *Section CB103.1, General, is amended to read as follows:*

**CB103.1 General.** A solar-ready zone shall be located on the roof of buildings that are oriented between 110 degrees and 270 degrees of true north or have low-slope roofs. Solar-ready zones shall comply with Sections CB103.2 through CB103.9.

**Exceptions:**

1. A building with a permanently installed, on-site renewable energy system.
2. A building with a solar-ready zone that is shaded for more than 70 percent of daylight hours annually.
3. A building where the licensed design professional certifies that the solar zone area required by Section CB103.3 cannot be met because of extensive rooftop equipment, skylights, vegetative roof areas or other obstructions.

**Sec. 31-119. IECC Amendments – Appendix RB (Residential)**

*Only the following portion of APPENDIX RB SOLAR-READY PROVISIONS of the IECC is amended.*

*(a) Section RB103.3, Solar-ready zone area, is amended to read as follows:*

**RB103.3 Solar-ready zone area.** The total solar-ready zone area shall be not less than 10 percent of the total roof area over *conditioned space* but not less than 300 sq. ft. (27.87 m<sup>2</sup>), exclusive of areas covered by skylights, occupied roof decks, vegetative roof areas and mandatory access or setback areas as required by the *International Fire Code*. New townhouses three stories or less in height above grade plane and with a total floor area less than or equal to 2,000 square feet (185.8 m<sup>2</sup>) per dwelling shall have a solar-ready zone area of not less than 150 square feet (13.94 m<sup>2</sup>). The solar-ready zone shall be composed of areas not less than 5 feet (1524 mm) in width and not less than 80 square feet (7.44 m<sup>2</sup>) exclusive of access or setback areas as required by the *International Fire Code*.

## Option A

### Amendments to Resolution Nos. 12499 and 12503, Ordinance No. 4575

#### IRC and IECC with EV Charging for Single-Family

To include EV charging for single-family homes in the *International Residential Code for One- and Two-Family Dwellings* (IRC), 2021 Edition, the 2022 City of Scottsdale Amendments to the International Residential Code, 2021 Edition, and the *International Energy Conservation Code* (IECC), 2021 Edition, and the 2022 City of Scottsdale Amendments to the International Energy Conservation Code, 2021 Edition, the following changes would be made:

#### IRC

1. **Resolution No. 12499, Exhibit “A” – Add definition of Electric Vehicle Supply Equipment to Section 31-59(a) of the Scottsdale Revised Code (S.R.C.) as follows (with additions in shading):**

(a) *Section N1101.6 (R202), Defined terms, is amended by adding the following:*

**ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE).** The conductors, including the ungrounded, grounded, and equipment grounding conductors, and the electric vehicle connectors, attachment plugs, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle.

**LOW-SLOPED ROOF.** A roof having a slope less than 2 units vertical in 12 units horizontal.

2. **Resolution No. 12499, Exhibit “A” – Replace S.R.C. Section 31-59(h) as follows (with additions in shading, deleted text in strikethrough):**

(h) ~~Reserved.~~ A new *Section N1104.4 (R404.4), Electric Vehicle (EV) charging infrastructure, is added as follows:*

**N1104.4 (R404.4) Electric Vehicle (EV) charging infrastructure.** New construction shall accommodate future installation and use of *Electric Vehicle Supply Equipment (EVSE)* in accordance with the *National Electrical Code (NFPA 70)*.

**N1104.4.1 (R404.4.1) EV-capable charging.** The main electrical service panel shall have a reserved space to allow installation of a full size 2-pole circuit breaker for future EV charging and shall be labeled “Future EV Charging”. Where the electrical service panel is located beyond the perimeter of the garage wall, a raceway shall be installed from the electrical service panel to a location within the garage, where it shall terminate in a junction box or outlet and be labeled “Future EV Charging”.

Where resident parking is provided in a common parking area in lieu of individual *dwelling unit* garages or carports, EV charging infrastructure shall comply with Section C405.13 of the City Energy Code (IECC).

3. **Resolution No. 12499, Exhibit “A” – Amend S.R.C. Section 31-59(i) as follows (with additions in shading, deleted text in strikethrough):**

- (i) *Table N1105.2 (R405.2), Requirements for Total Building Performance – Building Thermal Envelope and Electrical Power and Lighting Systems, is are revised by adding a new line for Sections N1102.6 (R402.6) and N1104.4 (R404.4) as follows:*

**TABLE N1105.2 (R405.2)**  
**REQUIREMENTS FOR TOTAL BUILDING PERFORMANCE**

Building Thermal Envelope	
N1102.6 (R402.6)	Roof solar reflectance and thermal emittance.
Electrical Power and Lighting Systems	
N1104.4 (R404.4)	Electric vehicle charging infrastructure

4. **Resolution No. 12499, Exhibit “A” – Amend S.R.C. Section 31-59(j) as follows (with additions in shading, deleted text in strikethrough):**

- (j) *Table N1106.2 (R406.2), Requirements for Energy Rating Index - Building Thermal Envelope and Electrical Power and Lighting Systems, is are revised by adding a new line for Sections N1102.6 (R402.6) and N1104.4 (R404.4) as follows:*

**TABLE N1106.2 (R406.2)**  
**REQUIREMENTS FOR ENERGY RATING INDEX**

Building Thermal Envelope	
N1102.6 (R402.6)	Roof solar reflectance and thermal emittance.
Electrical Power and Lighting Systems	
N1104.4 (R404.4)	Electric vehicle charging infrastructure

**IECC**

5. **Resolution No. 12503, Exhibit “A” – Add definition of Electric Vehicle Supply Equipment to S.R.C. Section 31-115(a) as follows (with additions in shading):**

- (a) *Section R202, Definitions, is amended by adding the following:*

**ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE).** The conductors, including the ungrounded, grounded, and equipment grounding conductors, and the electric vehicle connectors, attachment plugs, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle.

**LOW-SLOPED ROOF.** A roof having a slope less than 2 units vertical in 12 units horizontal.



6. **Resolution No. 12503, Exhibit “A” – Replace S.R.C. Section 31-116(g) as follows (with additions in shading, deleted text in strikethrough):**

- (g) ~~Reserved.~~ A new Section R404.4, *Electric Vehicle (EV) charging infrastructure*, is added as follows:

**R404.4 Electric Vehicle (EV) charging infrastructure.** New construction shall accommodate future installation and use of *Electric Vehicle Supply Equipment (EVSE)* in accordance with the *National Electrical Code (NFPA 70)*.

**R404.4.1 EV capable charging.** The main electrical service panel shall have a reserved space to allow installation of a full size 2-pole circuit breaker for future EV charging and shall be labeled “Future EV Charging”. Where the electrical service panel is located beyond the perimeter of the garage wall, a raceway shall be installed from the electrical service panel to a location within the garage, where it shall terminate in a junction box or outlet and be labeled “Future EV Charging”.

Where resident parking is provided in a common parking area in lieu of individual *dwelling unit* garages or carports, EV charging infrastructure shall comply with Section C405.13.

7. **Resolution No. 12503, Exhibit “A” – Amend S.R.C. Section 31-116(h) as follows (with additions in shading, deleted text in strikethrough):**

- (h) Table R405.2, *Requirements for Total Building Performance – Building Thermal Envelope and Electrical Power and Lighting Systems*, ~~is~~ are revised by adding a new line for Sections R402.6 and R404.4 as follows:

**TABLE R405.2  
REQUIREMENTS FOR TOTAL BUILDING PERFORMANCE**

Building Thermal Envelope	
R402.6	Roof solar reflectance and thermal emittance
Electrical Power and Lighting Systems	
R404.4	Electric vehicle charging infrastructure

8. **Resolution No. 12503, Exhibit “A” – Amend S.R.C. Section 31-116(i) as follows (with additions in shading, deleted text in strikethrough):**

- (i) *Table R406.2, Requirements for Energy Rating Index – Building Thermal Envelope and Electrical Power and Lighting Systems, ~~is~~ are revised by adding a new line for Sections R402.6 and R404.4 as follows:*

**TABLE R406.2  
REQUIREMENTS FOR ENERGY RATING INDEX**

Building Thermal Envelope	
R402.6	Roof solar reflectance and thermal emittance
Electrical Power and Lighting Systems	
R404.4	Electric vehicle charging infrastructure

## Option B

### Amendments to Resolution Nos. 12499 and 12503, Ordinance No. 4575

#### IRC and IECC Reducing the Ceiling Insulation Requirements

To reduce the ceiling insulation requirements for single-family homes to R-38 in the *International Residential Code for One- and Two-Family Dwellings* (IRC), 2021 Edition, the 2022 City of Scottsdale Amendments to the International Residential Code, 2021 Edition, and the *International Energy Conservation Code* (IECC), 2021 Edition, and the 2022 City of Scottsdale Amendments to the International Energy Conservation Code, 2021 Edition, the following changes would be made:

#### IRC

1. **Resolution No. 12499, Exhibit “A” – Replace subsections (b) and (c) of Scottsdale Revised Code (S.R.C.) Section 31-59 as follows (with additions in shading, deleted text in strikethrough):**

- (b) ~~Reserved.~~ Table N1102.1.3 (R402.1.3), *Insulation Minimum R-Values and Fenestration Requirements by Component, Ceiling R-Value for Climate Zone 2*, is amended to read as follows:

CLIMATE ZONE	CEILING R-VALUE
2	38

- (c) ~~Reserved.~~ Section N1102.2.1 (R402.2.1), *Ceilings with attic spaces*, is amended to read as follows:

**N1102.2.1 (R402.2.1) Ceilings with attic spaces.** Where Section N1102.1.3 (R402.1.3) requires R-38 insulation in the ceiling or attic, installing R-30 over 100 percent of the ceiling or attic area requiring insulation shall satisfy the requirement for R-38 insulation wherever the full height of uncompressed R-30 insulation extends over the wall top plate at the eaves. This reduction shall not apply to the insulation and fenestration criteria in Section N1102.1.2 (R402.1.2) and the Total UA alternative in Section N1102.1.5 (R402.1.5).

#### IECC

2. **Resolution No. 12503, Exhibit “A” – Replace subsections (a) and (b) of S.R.C. Section 31-116 as follows (with additions in shading, deleted text in strikethrough):**

- (a) ~~Reserved.~~ Table R402.1.3, *Insulation Minimum R-Values and Fenestration Requirements by Component, Ceiling R-Value for Climate Zone 2*, is amended to read as follows:

CLIMATE ZONE	CEILING R-VALUE
2	38

(b) ~~Reserved.~~ *Section R402.2.1, Ceilings with attic spaces, is amended to read as follows:*

**R402.2.1 Ceilings with attic spaces.** Where Section R402.1.3 requires R-38 insulation in the ceiling or attic, installing R-30 over 100 percent of the ceiling or attic area requiring insulation shall satisfy the requirement for R-38 insulation wherever the full height of uncompressed R-30 insulation extends over the wall top plate at the eaves. This reduction shall not apply to the insulation and fenestration criteria in Section R402.1.2 and the Total UA alternative in Section R402.1.5.

Where Section R402.1.3 requires R-38 insulation in the ceiling or attic, the full height of uncompressed insulation shall extend to the outer edge of the wall top plate at the eaves.

**ORDINANCE NO. 4576**

AN ORDINANCE OF THE COUNCIL OF THE CITY OF SCOTTSDALE, MARICOPA COUNTY, ARIZONA, ADOPTING PART OF THE BUILDING CODE OF THE CITY OF SCOTTSDALE, INCLUDING THE 2021 EDITION OF THE *INTERNATIONAL GREEN CONSTRUCTION CODE* AND THE 2022 CITY OF SCOTTSDALE AMENDMENTS TO THE INTERNATIONAL CODE; REPEALING AND REPLACING ARTICLE X OF SCOTTSDALE REVISED CODE (S.R.C.) CHAPTER 31, BUILDING AND CONSTRUCTION REGULATIONS, WITH A NEW ARTICLE X OF S.R.C. CHAPTER 31, BUILDING AND CONSTRUCTION REGULATIONS; AND ESTABLISHING AN EFFECTIVE DATE.

BE IT ORDAINED by the Council of the City of Scottsdale, Arizona, as follows:

Section 1. The following documents, declared public record by Resolution No. 12505 of the City of Scottsdale, one paper copy and one electronic copy of which are on file in the Office of the City Clerk of the City of Scottsdale, are adopted by this reference and made a part hereof as if fully set out in this Ordinance, and shall be part of the Building Code of the City in conjunction with the other articles in Chapter 31 of the Scottsdale Revised Code:

- (1) The *International Green Construction Code*, 2021 Edition, as published by the International Code Council, Inc., and as amended by the "2022 City of Scottsdale Amendments to the International Green Construction Code, 2021 Edition," declared public records by Resolution No. 12505 of the City of Scottsdale, are hereby referred to, adopted, and made a part hereof as if fully set out in this Ordinance.

Section 2. Article X, Sections 31-140 through 31-164 of Chapter 31, Building and Construction Regulations, of the Scottsdale Revised Code is hereby repealed and replaced by a new Article X, Sections 31-140 through 31-164 of Chapter 31, Building and Construction Regulations, of the Scottsdale Revised Code, which shall read as specified in the certain document entitled, "2022 City of Scottsdale Amendments to the International Green Construction Code, 2021 Edition," declared to be a public record by Resolution No. 12505 of the City of Scottsdale, and hereby referred to, adopted, and made a part hereof as if fully set out in this Ordinance.

Section 3. If any section, subsection, sentence, clause, or phrase of this Ordinance is, for any reason, held to be invalid or unconstitutional, such decision shall not affect the validity of the remaining portions of this Ordinance. The Scottsdale City Council hereby declares that it would have passed this law, and each section, subsection, clause, or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses, and phrases be declared invalid or unconstitutional.

Section 4. The existing provisions of Chapter 31 that are being repealed and replaced by this Ordinance will remain in effect until the effective date of this Ordinance. The repeal of

any provision of the Scottsdale Revised Code effectuated by this Ordinance does not affect the rights and duties that matured or penalties that were incurred and proceedings that were begun before the effective date of this Ordinance.

Section 5. If there is any conflict or inconsistency between the provisions of this Ordinance, the more restrictive provisions apply.

Section 6. The effective date of this Ordinance shall be the later of: July 1, 2023 or the date the City of Scottsdale zoning ordinance is amended in response to this Ordinance.

PASSED AND ADOPTED BY THE Council of the City of Scottsdale, Maricopa County, Arizona this \_\_\_\_\_ day of \_\_\_\_\_, 2022.

ATTEST:

CITY OF SCOTTSDALE,  
a municipal corporation

\_\_\_\_\_  
Ben Lane, City Clerk

\_\_\_\_\_  
David D. Ortega, Mayor

APPROVED AS TO FORM:  
OFFICE OF THE CITY ATTORNEY



\_\_\_\_\_  
Sherry R. Scott, City Attorney

By: Kimberly Campbell, Senior Assistant City Attorney

RESOLUTION NO. 12505

A RESOLUTION OF THE COUNCIL OF THE CITY OF SCOTTSDALE, MARICOPA COUNTY, ARIZONA, DECLARING AS PUBLIC RECORDS THOSE CERTAIN DOCUMENTS FILED WITH THE CITY CLERK OF THE CITY OF SCOTTSDALE AND ENTITLED THE "*INTERNATIONAL GREEN CONSTRUCTION CODE, 2021 EDITION*" AND THE "2022 CITY OF SCOTTSDALE AMENDMENTS TO THE INTERNATIONAL GREEN CONSTRUCTION CODE, 2021 EDITION."

WHEREAS, the Building Department of the City of Scottsdale wishes to replace the existing building and construction codes with updated versions of the codes, and to amend the International and National Codes and the Scottsdale Revised Code to better address the needs of the City of Scottsdale;

WHEREAS, State law permits cities to declare documents a public record; and

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

Section 1. The following documents are hereby declared to be public records, and one paper copy and one electronic copy are hereby ordered to remain on file in the office of the City Clerk and kept available for public use and inspection:

- (1) The *International Green Construction Code, 2021 Edition*, as published by the International Code Council, Inc., and
- (2) That certain document entitled "2022 City of Scottsdale Amendments to the International Green Construction Code, 2021 Edition," attached hereto as Exhibit "A."

PASSED AND ADOPTED by the Council of the City of Scottsdale, Maricopa County,  
Arizona this \_\_\_\_\_ day of \_\_\_\_\_, 2022.

CITY OF SCOTTSDALE, an Arizona  
municipal corporation

ATTEST:

\_\_\_\_\_  
Ben Lane, City Clerk

\_\_\_\_\_  
David D. Ortega, Mayor

APPROVED AS TO FORM:

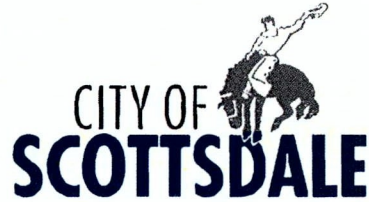


Sherry R. Scott, City Attorney

By: Kimberly Campbell, Senior Assistant City Attorney



# Exhibit "A"



## 2022 CITY OF SCOTTSDALE AMENDMENTS TO THE INTERNATIONAL GREEN CONSTRUCTION CODE, 2021 EDITION

Ordinance No. 4576, Resolution No. 12505

**2022 City of Scottsdale Amendments  
to the International Green Construction Code, 2021 Edition**

**SCOTTSDALE REVISED CODE  
CHAPTER 31 – BUILDING AND CONSTRUCTION REGULATIONS**

**ARTICLE X. GREEN CONSTRUCTION CODE**

**Section 31-140. Adoption of International Green Construction Code.**

The International Green Construction Code (IgCC), 2021 Edition, by the International Code Council, Inc., declared a public record by city Resolution No. 12505, is adopted by reference as part of the city Building Code.

**Section 31-141. IgCC CHAPTER 1, SCOPE AND ADMINISTRATION – amendments.**

*Only the following portions of CHAPTER 1, SCOPE AND ADMINISTRATION, are amended:*

*(a) Section 101.1, Title, is amended to read as follows:*

**101.1 Title.** These regulations shall be known as the *Green Construction Code* of the City of Scottsdale, hereinafter referred to as "this code."

*(b) Section 101.3, Scope, is amended to read as follows, including adding a new Section 101.3.2:*

**101.3 Scope.** The provisions of this code shall apply to the design, construction, addition, alteration, equipment, change of occupancy, relocation, replacement, demolition and removal of every commercial and multifamily building or structure or appurtenances connected or attached to such buildings or structures and to the building site on which the building is located except where otherwise noted. Occupancy classifications shall be determined in accordance with the *International Building Code*.

**101.3.1 Applicability.** The provisions of this code do not apply to the following:

1. One- and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories in height above grade with a separate means of egress, their accessory structures, and the site or lot upon which these buildings are located.
2. Manufactured houses (mobile homes).
3. Manufactured houses (modular).
4. Building projects that use none of the following:
  - a. Electricity.
  - b. Fossil fuels.
  - c. Water.

**101.3.2 Above code programs.** Buildings registered for certification or designation under the following national or regionally recognized green building programs shall be deemed to comply with this code:

1. LEED green building rating system certification.
2. Green Globes green building rating system certification.
3. Living Building Challenge certification.

(c) Section 101.5, *Compliance*, is amended to read as follows:

**101.5 (4.1 & 4.2) Compliance.** Building projects shall comply with this code. Within each of Chapters 5 through 9, building projects shall comply with all mandatory provisions (x.3) and, where offered, either the:

1. Prescriptive Option (x.4) or
2. Performance Option (x.5).

(d) Section 101.5.1, *Jurisdictional options*, including Table 101.5.1, is deleted in its entirety.

(e) References to the "authority having jurisdiction" in this code shall mean the "building official" unless otherwise noted.

(f) Section 102.4, *Referenced codes and standards*, is amended to read as follows:

**102.4 Referenced codes and standards.** The building codes of the City of Scottsdale, adopted and amended in Chapters 31 and 36 of the Scottsdale Revised Code, shall be considered part of the requirements of this code.

(g) Section 103, *Code Compliance Agency*, is deleted in its entirety.

(h) Section 107.1, *Information on construction documents*, is amended to read as follows:

**107.1 Information on construction documents.** The content and format of construction documents shall comply with the *International Building Code* as adopted and amended in the Scottsdale Revised Code, Chapter 31, Article I.

(i) Section 108, *Fees*, is deleted in its entirety.

(j) Section 111.1, *General*, is amended to read as follows:

**111.1 General.** Appeals of orders, decisions or determinations made by the building official relative to the application and interpretation of this code shall be made to the Building Advisory Board of Appeals as set forth in the Scottsdale Revised Code, Chapter 31, Article I.

**Section 31-142. IgCC CHAPTER 3, DEFINITIONS, ABBREVIATIONS AND ACRONYMS – amendments.**

Only the following portions of CHAPTER 3 DEFINITIONS, ABBREVIATIONS AND ACRONYMS, are amended:

(a) Section 301.2, *Definitions*, is amended by adding the following:

**automatic load management systems (ALMS):** A control system that allows multiple connected EVSE to share a circuit or panel and automatically reduce power at each charger, reducing the total connected electrical capacity of all EVSE.

**EV capable space:** A designated parking space provided with electrical raceway and capacity to support future EV charging.

**EV installed space:** A designated parking space with dedicated electric vehicle supply equipment.

**Section 31-143. IgCC CHAPTER 5, SITE SUSTAINABILITY – amendments.**

*Only the following portions of CHAPTER 5 SITE SUSTAINABILITY, are amended:*

- (a) *Section 501.3.1, Site selection, including 501.3.1.1 and 501.3.1.2, is retitled and amended to read as follows:*

**Section 501.3.1 Land use and site development.** Land use and site development shall comply with Scottsdale Revised Code Appendix B.

- (b) *Section 501.3.2, Predesign site inventory and assessment, is retitled and amended to read as follows:*

**501.3.2 Site inventory and assessment.** A plant inventory and assessment including natural features of the site shall comply with Scottsdale Revised Code Appendix B, Article VII, Section 7.504 and Article X.

- (c) *Section 501.3.3, Plants, is amended to read as follows:*

**501.3.3 Plants.** Plants and landscaping shall comply with Scottsdale Revised Code Appendix B, Article VII, Section 7.503 and Article X.

- (d) *Section 501.3.4, Stormwater management, is amended to read as follows:*

**501.3.4 Stormwater management.** Stormwater management systems, including, but not limited to infiltration, evapotranspiration; rainwater harvesting, collection and use shall comply with Scottsdale Revised Code, Chapter 37.

- (e) *Section 501.3.5.2, Walls, is deleted in its entirety.*

- (f) *Section 501.3.5.3, Roofs, is amended to read as follows:*

**501.3.5.3 Roofs.** Building and covered parking roof surfaces for *building projects* in Climate Zones 0 through 3 shall comply with Section C402.3 of the City Energy Code (IECC).

- (g) *Section 501.3.6, Reduction of light pollution, is amended to read as follows:*

**501.3.6 Reduction of light pollution.** Reduction of light pollution shall comply with Scottsdale Revised Code Appendix B, Article VII, Section 7.600 to 7.603.

- (h) *Section 501.3.7.1, Pedestrian and bicycle connectivity, and Section 501.3.7.2, Bicycle parking, are deleted in their entity and replaced with the following:*

**501.3.7.1 Pedestrian mobility, bicycle connectivity and bicycle parking.** Pedestrian mobility, bicycle connectivity, and bicycle parking shall comply with Scottsdale Revised Code Appendix B, Article IX, Sections 9.103, 9.104 and 9.106; and the Design Standards and Policies Manual (DSPM).

(i) A new Section 501.3.7.2 is added to read as follows:

**501.3.7.2 Changing and shower facilities.** Buildings with a total building floor area greater than 10,000 square feet (929 m<sup>2</sup>) and that are required to be provided with bicycle parking and storage in accordance with the city Zoning Ordinance and city design standards shall be provided with onsite changing room and shower facilities. Not less than one shower shall be provided for each 20 bicycle parking spaces, or fraction thereof, that are required by city ordinance. Where more than one changing room and shower facility is required, separate facilities shall be provided for each sex.

**Exception:** Group R-2 buildings.

(j) Section 501.3.7.3, *Electric vehicle charging facilities*, is amended to read as follows:

**501.3.7.3 Electric vehicle charging facilities.** *EV installed spaces* and *EV capable spaces* shall be provided in accordance with Table 501.3.7.3. The required number of *EV installed spaces* or *EV capable spaces* shall be rounded up to the next highest whole number. Where a branch circuit serves a single charging space, it shall have a capacity not less than of 8.3 kVA (40A, 208/240V). Where a branch circuit serves multiple charging spaces, an *Automatic Load Management System (ALMS)* may be used to reduce the total electrical capacity provided that all charging spaces are capable of simultaneously charging at a minimum rate of 4.1 kVA (20A, 208/240V).

For *EV capable* spaces, the electrical service panel shall have reserved circuit breaker space(s) labeled "Future EV Charging". Raceway(s) shall be installed from the electrical service panel to outlet box(es) within the planned EV charging parking area(s). Outlet box(es) shall be labeled "Future EV charging".

**TABLE 501.3.7.3  
ELECTRIC VEHICLE CHARGING INFRASTRUCTURE REQUIREMENTS**

<b>Occupancy Group</b>	<b>Minimum number of <i>EV Installed</i> Spaces<sup>a</sup></b>	<b>Minimum number of <i>EV Capable</i> Spaces<sup>a</sup></b>
Group R-1 (hotels, motels) and Group R-2 (apartments, condominiums)	4% of total required parking spaces	20% of total required parking spaces
Group A, B, E, F, I, M, and S	4% of total required parking spaces or not less than 8% of designated employee only parking spaces	10% of total required parking spaces

<sup>a</sup> Parking spaces designated for other than passenger vehicles may be excluded from the number of parking spaces used to calculate the minimum number of EV spaces.

(k) Section 501.3.8, *Building site waste management*, is deleted in its entirety.

**Section 31-144. IgCC CHAPTER 6, WATER USE EFFICIENCY – amendments.**

*Only the following portions of CHAPTER 6 WATER USE EFFICIENCY, are amended:*

(a) Section 601.3.1.1, *Landscape Design*, is amended to read as follows:

**601.3.1.1 Landscape Design.** Landscape design shall comply with Scottsdale Revised Code Appendix B, Article VII, Section 7.500 to 7.506 and Article X.

(b) Section 601.3.1.2, *Irrigation*, including Sections 601.3.1.2.1, 601.3.1.2.2, and 601.3.1.2.2.1 is amended to read as follows:

**601.3.1.2 Irrigation.** Irrigation systems shall comply with Sections 601.3.1.2.1 and 601.3.1.2.2.

**601.3.1.2.1 Irrigation system design.** The design of the irrigation system shall be performed by an accredited or certified irrigation professional and shall be in accordance with the following:

a. Irrigation systems:

1. Shall be based on *hydrozones*. *Turfgrass* areas shall be on their own *irrigation stations*. Trees in *turfgrass* shall have a separate drip irrigation zone.
2. Shall have backflow prevention in accordance with the city plumbing code (IPC).
3. Shall have a master valve on municipally supplied water sources that allows pressurization of the irrigation mainline only when irrigation is scheduled. The master valve shall be installed immediately downstream of the back flow prevention device.
4. Shall have an isolation valve installed immediately upstream of each irrigation control valve.

b. Irrigation *turfgrass* sprinklers:

1. Shall not spray water directly on buildings or *hardscape* area.
2. Shall be prohibited on landscape areas having any dimension less than 8 feet.
3. Shall be limited to use with *turfgrass*.
4. Sprinkler heads including rotors, heads with rotating and fixed spray nozzles shall contain pressure regulating sprinkler bodies.

c. Landscape emitters:

1. The drip irrigation control valve shall be equipped with a pressure regulator and a cleanable wye strainer filter.
2. At the end of each lateral, a flush cap shall be installed in a six (6) inch round pit box.
3. Drip emitters shall be of pressure compensating type.

**601.3.1.2.2 Irrigation Controllers.** All irrigation systems shall use a weather based smart irrigation controller that is WaterSense labeled or equivalent and capable of frequency adjustment and day exclusion.

**601.3.1.2.2.1.** The following settings and schedule for the irrigation control system shall be documented on the Compliance Certificate

- a. Precipitation rate of each *irrigation station*.
- b. *Plant* factors for each *hydrozone*.

- c. Soil type.
- d. Rain sensor settings.
- e. Peak demand schedule, including run times, cycle starts, and soak times.
- f. Maximum runtimes to prevent water runoff and standing water.
- g. Gallons per minute for each irrigation station.

(c) Section 601.3.1.2.3, *Irrigation of Rainfall-ET<sub>c</sub> Compatible Plants*, is deleted.

(d) The title of Section 601.3.2.1h, *Residential showerheads*, is amended to read as follows:

**h. Showerheads.**

(e) Section 601.3.2.1i, *Residential shower compartment (stall) in dwelling units and guest rooms*, is amended to read as follows:

- i. Residential shower compartment (stall) in dwelling units and guest rooms.** The total flow rate from all shower outlets controlled by one valve shall not exceed 2.0 gpm (7.6 L/min). This includes hand-held sprays, body sprays, jets, waterfalls and rain systems.

(f) Section 601.3.2.1j, *Water-bottle Filling Stations*, is amended to read as follows:

- j. Water-bottle filling stations.** Water dispensers shall be an integral part of or shall be installed adjacent to all drinking fountains as required by Section 410.1.1 of the City Plumbing Code (IPC).

(g) Section 601.3.2.3e relating to *HVAC Condensate*, is deleted.

(h) Section 601.3.2.5, *Commercial food service operations*, is amended to read as follows:

**601.3.2.5 (6.3.2.5) Commercial food service operations.** (e.g., restaurants, cafeterias, food preparation kitchens, caterers, etc.). Commercial food service operations:

- a. Shall use high-efficiency prerinse spray valves (i.e., valves that function at 1.3 gpm [4.9 L/min] or less and comply with a 26 second performance requirement when tested in accordance with ASTM F2324).
- b. Shall use dishwashers that comply with the requirements of the ENERGY STAR Program for Commercial Dishwashers.
- c. Shall use boilerless/connectionless food steamers that consume no more than 2.0 gal/h (7.5 L/h) in the full operational mode.
- d. Shall use combination ovens that consume not more than 10 gal/h (38 L/h) in the full operational mode.
- e. Shall use air-cooled ice machines that comply with the requirements of the ENERGY STAR Program for Commercial Ice Machines.

(i) Section 601.3.2.6, *Medical and laboratory facilities*, is deleted.

(j) Section 601.3.3, *Hot-Water Distribution*, including Sections 601.3.3.1 and 601.3.3.2, is amended to read as follows:

**601.3.3 Hot-Water Distribution.** Hot-water distribution systems shall comply with Sections C404.5 and C404.6 of the City Energy Code (IECC).

(k) *Section 601.3.4, Special Water Features, is amended to read as follows:*

**601.3.4 Special Water Features.** Special water features including ornamental fountains shall comply with Scottsdale Revised Code Chapter 49, Article VII, Division 1, Section 49-242.

(l) *Section 601.3.5, Water consumption measurement, including 601.3.5.1, 601.3.5.2 and 601.3.5.3, is amended to read as follows:*

**601.3.5 Water consumption measurement.** Metering shall comply with Scottsdale Revised Code Chapter 49, Article II, Division 1, Section 49-32.

(m) *Section 601.3.8, On-site reclaimed water treatment systems, is deleted in its entirety.*

(n) *Section 601.3.9, Dual water supply plumbing, is deleted in its entirety.*

**Section 31-145. IgCC CHAPTER 7, ENERGY EFFICIENCY – amendments.**

(a) *CHAPTER 7, ENERGY EFFICIENCY, is deleted in its entirety except for the following sections, which are amended to read as follows:*

**701.1 Scope.** This section specifies requirements for energy efficiency for buildings and appliances and for *on-site renewable energy systems*.

**701.2 Compliance.** Energy systems shall comply with the amended Section 701.3 of this code and the City Energy Code (IECC). The exception for air barriers in Sections C402.5.1 and C402.5.1.2 of the IECC shall not apply.

**701.3 On-site renewable energy systems.** *Building projects* shall contain on-site photovoltaic systems with a total rated capacity in accordance with one of the following:

1. Not less than 3 percent of the annual estimated energy used within the building for building mechanical, service water-heating and lighting.
2. Not less than 2 watts per square foot (22 W/m<sup>2</sup>) multiplied by the horizontal projection of the gross roof area over *conditioned spaces* and *semiheated spaces*.

**Exceptions:**

1. A building with gross conditioned floor area less than 5,000 square feet (465 m<sup>2</sup>)
2. On-site renewable energy systems, other than photovoltaic systems, that result in an equal or greater annual energy production.
3. All or part of the required renewable energy generation is permitted to be replaced by equivalent annual energy savings, as calculated using the total building performance compliance path in Section C407 of the City Energy Code (IECC).

Onsite renewable energy systems shall be tested after installation to verify that the installed performance meets design specifications. A report of the tested performance shall be provided to the building owner, and to the building official, if requested by the city. Onsite renewable energy systems shall be individually metered.



**Section 31-146. IgCC CHAPTER 8, INDOOR ENVIRONMENTAL QUALITY (IEQ) – amendments.**

*Only the following portions of CHAPTER 8, INDOOR ENVIRONMENTAL QUALITY (IEQ), are amended:*

*(a) Section 801.3.1, Indoor air quality, is deleted in its entirety and amended to read as follows:*

**801.3.1 Indoor air quality.** Buildings shall comply with the ventilation requirements of Chapter 4 of the City Mechanical Code (IMC).

*(b) Section 801.3.2, Thermal environmental conditions for human occupancy, is deleted in its entirety.*

*(c) Section 801.3.3, Acoustical control, is amended to read as follows:*

**801.3.3 Acoustical control.** Buildings shall comply with Section 1206, Sound Transmission and Section 1207, Enhanced Classroom Acoustics, of the City Building Code (IBC).

*(d) Section 801.3.4, Soil-gas control, is deleted.*

*(e) Section 801.3.5, Lighting quality, is deleted.*

*(f) Section 801.3.6, Moisture control, is deleted.*

*(g) Section 801.3.7, Glare control, is deleted.*

*(h) Section 801.3.8, Occupant override, is deleted.*

*(i) Section 801.3.9, Exterior views, is deleted.*

*(j) Section 801.4.1, Daylighting, is amended to read as follows:*

**801.4.1 Daylighting.** Buildings shall comply with Section C402.4.2, Minimum skylight fenestration area, of the City Energy Code (IECC).

*(k) Section 801.4.2, Materials, including the exception is amended to read as follows:*

**801.4.2 Materials.** Reported emissions or volatile organic compound (VOC) contents specified in the following subsections shall be from a representative product sample. Products certified under third-party certification programs as meeting the specific emission requirements listed in the following subsections shall be deemed to comply.

*(l) Section 801.4.2.1, Adhesives and sealants, is amended to read as follows, including adding a new table:*

**801.4.2.1 Adhesives and sealants.** At least 85 percent by weight or volume, of specific categories of site-applied adhesives and sealants used on the interior side of building envelope, shall comply with the VOC content limits in Table 801.4.2.1 or alternative VOC emission limits in Table 801.4.2.1.1.

**TABLE 801.4.2.1  
VOC CONTENT LIMITS FOR ADHESIVES AND SEALANTS**

<b>ADHESIVES</b>	<b>VOC LIMIT grams per liter (g/L) <sup>a,b</sup></b>
Building envelope membrane adhesive	250
Carpet and carpet pad adhesives	50

Ceramic tile adhesives	65
Cove base adhesives	50
Drywall and panel adhesives	50
Multipurpose construction adhesives	70
Rubber floor adhesive	60
Structural glazing adhesives	100
Subfloor Adhesive	50
VCT and asphalt tile adhesives	50
Wood flooring adhesives	100
<b>SEALANTS</b>	
Architectural sealants including foam and grout	250

- a. Values in this table are derived from those specified by SCAQMD Rule 1168, October 2017.
- b. For low-solid adhesives and sealants, the VOC limit is expressed in grams per liter of material as specified in SCAQMD Rule 1168. For all other adhesives and sealants, the VOC limits are expressed in grams of VOC per liter of adhesive or sealant less water and less exempt compounds as specified in SCAQMD Rule 1168.

**Table 801.4.2.1.1**  
**ADHESIVES AND SEALANTS VOC EMISSION LIMITS**

VOC	LIMIT
Individual	$\leq \frac{1}{2}$ CA chronic REL <sup>a</sup>
Formaldehyde	$\leq 16.5 \mu\text{g}/\text{m}^3$ or $\leq 13.5 \text{ ppb}^b$

- a. CDPH/EHLB/Standard Method V.1.1 Chronic Reference Exposure Level (CREL).
- b. Formaldehyde emission levels need not be reported for materials where formaldehyde is not added by the manufacturer of the material,

(m) Section 801.4.2.2, *Paints and coatings*, is amended to read as follows, including adding a new table:

**801.4.2.2 Paints and coatings.** At least 85 percent by weight or volume, of site-applied interior architectural coatings shall comply with the VOC content limits in Table 801.4.2.2 or alternative VOC emission limits in Table 801.4.2.2.1.

**TABLE 801.4.2.2**  
**VOC CONTENT LIMITS FOR PAINTS AND COATINGS**

CATEGORY	VOC LIMIT grams per liter (g/L) <sup>a,b</sup>
Flat paints	50
Nonflat paints	50
Nonflat High-gloss paints	150

Specialty coatings:	
Concrete/masonry sealers	100
Floor coatings	50
Primers, sealers and undercoats	100
Stains	250
Wood coatings	275

- a. Limits are expressed as VOC Regulatory, thinned to the manufacturer's maximum thinning recommendation, excluding any colorant added to tint bases.
- b. Values in this table are derived from those specified by the California Air Resources Board *Suggested Control Measure for Architectural Coatings* dated May 2020.

**Table 801.4.2.2.1**  
**PAINTS AND COATINGS VOC EMISSION LIMITS**

VOC	LIMIT
Individual	$\leq \frac{1}{2}$ CA chronic REL <sup>a</sup>
Formaldehyde	$\leq 16.5 \mu\text{g}/\text{m}^3$ or $\leq 13.5 \text{ ppb}^b$

- a. CA Chronic Reference Exposure Level (CREL).
- b. Formaldehyde emission levels need not be reported for materials where formaldehyde is not added by the manufacturer of the material.

(n) Section 801.4.2.3, *Floor covering materials*, is amended to read as follows, including adding a new table:

**801.4.2.3 Floor covering materials.** At least 85 percent of the total area of flooring installed within the interior of the building shall comply with the requirements in Table 801.4.2.3. Where flooring with more than one distinct product layer is installed, the emissions from each layer shall comply with these requirements. The test methodology used to determine compliance shall be from CDPH/EHLB/Standard Method V1.2 (commonly known as California Section 01350). The emissions testing shall be performed by a laboratory that has the CDPH/EHLB/Standard Method V1.2 test methodology in the scope of its ISO 17025 Accreditation. Products certified under third-party certification programs as meeting the specific emission limits in Table 801.4.2.3 shall be an acceptable means for compliance.

**801.4.2.3.1 Deemed to comply.**

1. Floor covering products certified under nationally recognized third-party certification programs as meeting the emission requirements of Table 801.4.2.3.
2. Floor covering materials listed in Table 801.4.2.3.1, where post-manufacture coatings or surface applications have not been applied.

**Table 801.4.2.3  
FLOOR COVERING VOC EMISSION LIMITS**

VOC	LIMIT
Individual	$\leq \frac{1}{2}$ CA chronic REL <sup>a</sup>
Formaldehyde	$\leq 16.5 \mu\text{g}/\text{m}^3$ or $\leq 13.5$ ppb

a. CA Chronic Reference Exposure Level (CREL).

**TABLE 801.4.2.3.1  
FLOOR COVERING MATERIALS DEEMED TO COMPLY  
WITH VOC EMISSION LIMITS**

Ceramic and concrete tile
Natural stone
Gypsum plaster
Clay masonry
Concrete masonry
Concrete
Metal

(o) Section 801.4.2.5, *Office furniture systems and seating*, is deleted.

(p) Section 801.4.2.6, *Ceiling and wall assemblies and systems*, is retitled and amended to read as follows, including adding a new table:

**801.4.2.6 Acoustical ceiling tiles and wall systems.** At least 85 percent of the total area of acoustical ceiling tiles and wall systems, shall comply with the requirements in Table 801.4.2.6. Where ceiling and wall systems with more than one distinct product layer are installed, the emissions from each layer shall comply with these requirements. The test methodology used to determine compliance shall be from CDPH/EHLB/Standard Method V1.2 (commonly known as California Section 01350). The emissions testing shall be performed by a laboratory that has the CDPH/EHLB/ Standard Method V1.2 test methodology in the scope of its ISO 17025 Accreditation.

**801.4.2.6.1 Deemed to comply.**

1. Ceiling and wall products certified under nationally recognized third-party certification programs as meeting the emission requirements of Table 801.4.2.6.
2. Ceiling and wall materials listed in Table 801.4.2.6.1 where post-manufacture coatings or surface applications have not been applied.

**TABLE 801.4.2.6  
ACOUSTICAL CEILING AND WALL  
PRODUCTS VOC EMISSION LIMITS**

VOC	LIMIT
Individual	$\leq \frac{1}{2}$ CA chronic REL <sup>a</sup>
Formaldehyde	$\leq 16.5 \mu\text{g}/\text{m}^3$ or $\leq 13.5$ ppb

a. CA Chronic Reference Exposure Level (CREL).

**TABLE 801.4.2.6.1  
ACOUSTICAL CEILING AND WALL MATERIALS DEEMED TO  
COMPLY WITH VOC EMISSION LIMITS**

Ceramic and concrete tile
Natural Stone
Gypsum plaster
Clay masonry
Concrete masonry
Concrete
Metal

(q) Section 801.4.2.7, *Insulation*, is deleted.

(r) Section 801.4.3, *Lighting for presentations*, is deleted.

**Section 31-147. IgCC CHAPTER 9, MATERIALS AND RESOURCES – amendments.**

*Only the following portions of CHAPTER 9, MATERIALS AND RESOURCES, are amended.*

(a) Section 901.3.1.1, *Diversion*, is amended to read as follows:

**901.3.1.1 Diversion.** A minimum of 50% of nonhazardous construction, demolition, or deconstruction waste material shall be diverted from disposal in landfills and incinerators through reuse, recycling, repurposing, and/or composting. Excavated soil and land-clearing debris shall not be included in the calculation. *Alternative daily cover* and waste-to-energy incineration shall not be included as diverted material. All diversion calculations shall be based on weight throughout the construction process.

**Exception:** Building projects less than 5,000 sq. ft. of new, added or remodeled floor area.

(b) Section 901.3.1.2, *Total waste*, is deleted.

(c) Section 901.3.4.1, *Recyclables*, is amended to read as follows:

**901.3.4.1 Recyclables.** There shall be areas dedicated to the collection and storage of nonhazardous materials for recycling, including paper, corrugated cardboard, glass, plastics, and metals. Mailrooms, breakrooms, and kitchen/kitchenette areas shall be provided with built-in or pull-out recycling containers. Site location for refuse/recycling pick up shall be identified.

(d) *Section 901.3.4.3, Fluorescent and high-intensity discharge (HID) lamps and ballasts, is retitled and amended to read as follows:*

**901.3.4.3 Trash disposal and recycling facilities.** Every dwelling unit shall be provided with a kitchen cabinet pull-out compartment containing no fewer than two bins, each with a capacity of at least 7-gallons, for the separation and collection of trash and recyclable materials.

Multifamily buildings 4 or more stories shall be provided with separate trash and recycling chutes or recycling collection area on each floor. Multifamily mailrooms and common kitchen/kitchenette areas shall be provided with built-in or pull-out recycling containers. Space shall be allocated for central collection and storage of refuse and recyclable materials until pick up.

(e) *Section 901.3.4.4, Electronics and batteries, is deleted.*

(f) *Section 901.3.5, Mercury content levels of lamps, is deleted.*

**Section 31-148. IgCC CHAPTER 10, CONSTRUCTION AND PLANS FOR OPERATION – amendments.**

(a) *Chapter 10, CONSTRUCTION AND PLANS FOR OPERATION, is deleted in its entirety and replaced with the following:*

**CHAPTER 10 – CONSTRUCTION AND PLANS FOR OPERATION**

**1001.1 Scope.** This section specifies requirements for construction and plans for operation, including commissioning, functional performance testing, metering, and reporting.

**1001.2 Compliance.** Construction and plans for operation of commercial buildings shall comply with Section C408 of the City Energy Code (IECC), Maintenance Information and System Commissioning.

City of Scottsdale

# Proposed Updates for Scottsdale's Energy and Green Construction Codes

Summary of September 27, 2022  
Open House Meeting

## **Open House Summary**

On September 27, 2022, a community open house was conducted at the Scottsdale Community Design Studio with the goal of reviewing proposed provisions of the latest energy and green construction code adoptions. With more than 80 community participants, the open house was an opportunity for the public to hear, discuss and provide input on the 2021 editions of the International Energy Conservation Code (IECC), International Residential Code (IRC) and International Green Construction Code (IgCC). Many of the participants provided extensive comments with an overwhelming number in support of the adoption of the codes with recommended amendments. Some of the participants would like to see the provisions go further in the areas of energy efficiency, solar energy, heat island mitigation and water conservation. Most participants were supportive of the proposed provisions energy (IECC), residential (IRC) and green (IgCC) construction codes.

## **Comments and Input Categories**

After a presentation on the codes being considered by Anthony Floyd (Senior Building Consultant), participants were asked ten questions to solicit their comments with respect to energy efficiency, cool roofs, electric vehicle charging infrastructure, on-site solar PV, heat island mitigation, water efficient irrigation systems, low VOC material emissions, construction waste management and low environmental impact building materials. Responses to these questions fall into three categories:

1. Positive comments in support of the purposed change. Examples include comments like “yes!”, “great idea”, “good addition” or “potential to amend in the future.”
2. Neutral comments that neither support nor oppose the proposed provisions. Some of these comments were characterized by questions, suggestions, lack of context, or lack of opinion. Examples include “no opinion”, “use white coatings on asphalt streets”, or “need more info on this.”
3. Negative comments generally disagree with a particular provision or state that it goes too far or not far enough. This is shown in comments such as, “it does not make sense to force EV capable or ready charging infrastructure” and “codes should be mandatory particularly when ‘minimum’ standard.”

Summaries of the feedback for each of the ten questions is provided below. Overall, attendees had an overwhelmingly positive outlook on all ten questions.

## **Q1: COOL ROOFS FOR RESIDENTIAL AND COMMERCIAL BUILDINGS**

A cool roof uses solar reflectance and thermal emittance to help mitigate urban heat island sinks. Comments were predominantly positive with 58% of participants in favor of the provision. Negative comments (11%) stated that this did not go far enough and wanted to have all roofs changed to this technology. Neutral comments addressed the energy savings to cost ratio.



## **Q2: ELECTRIC VEHICLE CHARGING INFRASTRUCTURE FOR SINGLE- AND MULTI-FAMILY BUILDINGS**

Electric vehicle (EV) capable charging infrastructure would accommodate future charging equipment for plug-in hybrid/electric vehicles. 63% of participants were in support, while 16% had questions on the practical implementation of this infrastructure (neutral). Negative comments included those who suggested the requirement was too burdensome and questioned the benefits of electric vehicles.

## **Q3: EFFICIENCY PACKAGE OPTIONS FOR RESIDENTIAL SOLAR PV INSTALLATION**

Adding on-site renewable energy as an additional efficiency option was widely viewed as an effective change. 63% of individuals were in favor of the change, with most of the neutral suggestions being to increase the emphasis and enforcement of performance. There were no negative comments regarding this change.

## **Q4: EV CAPABLE CHARGING INFRASTRUCTURE FOR COMMERCIAL BUILDINGS**

58% of participants were in favor of adding EV infrastructure for non-residential buildings. A small minority (5%) was opposed, and the remainder did not share any comments.

## **Q5: HEAT ISLAND MITIGATION FOR 50% OF ASPHALT PARKING AREAS**

The proposed amendment would mitigate the heat island effect by requiring 50% of the site hardscape be shaded or light color surfaces. 47% of participants agree with this provision, while 11% participants had questions on its implementation. Some commenters wanted to know if streets or highways would fall under this mitigation effort. There were no negative comments for this question.

## **Q6: WATER EFFICIENT SITE LANDSCAPE IRRIGATION SYSTEMS FOR COMMERCIAL PROJECTS**

45% of participants were in favor of this provision for commercial projects. Interestingly, neutral comments (16%) asked for more information on how this would be accomplished and how much water would be saved. There were no negative comments for this question.

## **Q7: SOLAR PV SYSTEM INSTALLATION REQUIREMENT FOR COMMERCIAL BUILDINGS**

Most commenters were in favor of this code with 47% of participants supportive. 5% were negative, raising concerns about continued operation and performance of on-site solar systems. Neutral comments were received from 11% of participants.

**Q8: LOW VOC PAINTS, SEALANTS, ADHESIVES, FLOORING, AND ACOUSTICAL CEILING TILES FOR COMMERCIAL BUILDING**

This question received more positive comments than any other one, with all individuals who commented (53%) being in support of the measure. There were no negative responses.

**Q9: CONSTRUCTION WASTE MANAGEMENT FOR COMMERCIAL BUILDINGS**

This measure was well supported with 42% of participants in favor of this code provision. 11% of participants were neutral, although some had questions on enforcement. There were no negative comments for this measure.

**Q10: REDUCED IMPACT MATERIAL OPTIONS FOR COMMERCIAL BUILDINGS**

This question had 47% of participants in support and 11% neutral. There were no negative comments for this measure.



**Scottsdale Environmental Advisory Commission**  
**Office of Environmental Initiatives**  
**City of Scottsdale**  
 7447 E Indian School Rd STE 125  
 Scottsdale, AZ 85251

**Staff Contact: Lisa McNeilly**  
**Email** [lmcneilly@scottsdaleaz.gov](mailto:lmcneilly@scottsdaleaz.gov)  
**PHONE** 480-312-2831  
**FAX** 480-312-7314  
**WEB** [www.ScottsdaleAZ.gov](http://www.ScottsdaleAZ.gov)

August 2, 2022

Dear Mayor and City Council:

The Scottsdale Environmental Advisory Commission (SEAC) has reviewed and recommends adoption of the 2021 International Energy Conservation Code (IECC), International Plumbing Code (IPC), International Residential Code (IRC), and International Green Construction Code (IgCC) with associated amendments for implementing energy efficiency, water conservation, indoor environmental quality and material resource measures in Scottsdale. We understand the amended IECC, IPC, and IRC are intended to be mandatory codes as part of the overall building code update. However, the IgCC is currently proposed by building code staff to remain as a voluntary code applicable to the Green Building Program and where required as a planning tool for zoning bonuses or other stipulation requirements. SEAC recommends that the amended IgCC be adopted as a mandatory code applicable to new commercial buildings with additional building code staff resources for enforcement.

Since the buildings we live and work in constitute the fourth largest source of carbon emissions in the United States; surpassed only by vehicle, power plant, and industrial emissions, keeping pace with code updates from highly vetted code authorities is one of the most forward-looking and impactful actions that Scottsdale can take to keep our city resilient and protect our collective future from climate change.

### **Recommendation**

SEAC recommends adoption of the IECC, IPC and IRC as modified by the Scottsdale-specific SEAC-recommended amendments currently under consideration. These amendments clarify discrepancies between various code provisions, cross-reference existing Scottsdale ordinance requirements and make modifications to tailor code requirements to our city. Notable amendment provisions supported by SEAC include:

- Solar-ready zones for new residential and commercial buildings (IECC) – expansion of the extent of the threshold area to ten percent of the single-family home roof area; also includes an electrical pathway allocation to accommodate future solar electric photovoltaic (PV) systems in both residential and commercial buildings.
- Solar power generation compliance option (IECC) – an option to install on-site solar power generation in lieu of other efficiency requirements.
- Electric Vehicle (EV) Capable and Installed Infrastructure (IECC/IRC) – reserved circuit breaker spaces and raceways for future EV charging in single-family dwellings and both EV capable (20% of parking spaces) and EV installed (4% of parking spaces) infrastructure in multifamily buildings and hotels.
- Recycling Accommodations (IBC/IRC):
  - Dedicated recycling/trash pull-out bins in residential kitchen cabinets
  - Recycling and trash chutes in multifamily buildings of 4 or more stories or provide recycling collection areas on each floor

- Recycling accommodations in mailrooms, breakrooms and common kitchen areas of multifamily and commercial buildings.
- High efficiency plumbing fixtures for residential and commercial buildings (IPC/IRC):
  - Maximum flow rates for lavatory faucets, showerheads, kitchen faucets, water closets and urinals that are consistent with EPA WaterSense and ASHRAE 189.1 standards
  - Water-bottle filling stations (dispensers) for 100% of all drinking fountains

SEAC enthusiastically supports all of these provisions while rejecting the IECC amendments proposed by the Home Builders Association of Central Arizona.

We understand that building code staff recommend adoption of the updated IgCC to remain as the code for voluntary participation in Scottsdale's Green Building Program and for mandatory use where required as a planning tool for zoning bonuses or stipulation requirements. As noted in our introduction, SEAC wholeheartedly believes that the time has come for the IgCC to be adopted for all new commercial development. This action will align our building codes with many of the goals and policies in the 2035 General Plan, build on the success of Scottsdale's Green Building Program, and propel Scottsdale once again to an environmental leadership position in Arizona. With the understanding that the IgCC must be amended, we support these and other key provisions as mandatory code:

- On-Site Solar PV Power Generating System – a minimum total rated capacity of either (1) not less than 3% of the estimated annual energy used within the building for heating, cooling, water-heating, and lighting, or (2) not less than 2 watts per square foot of gross roof area over conditioned spaces; exceptions for buildings with 80% or more of the roof area covered by a permanent obstruction (i.e., mechanical equipment, skylights, occupied roof decks and mandatory access or setbacks required by the International Fire Code) or for buildings with less than 5,000 square feet are acceptable.
- Construction Waste Management – diversion of not less than 50% of construction and demolition waste from the landfill for recycling and reuse including metal, wood, cardboard, concrete, and masonry; exceptions for building projects less than 5,000 square feet of new, added or remodeled floor area or for building permit applications submitted prior to July 1, 2023, that divert at least 35% of construction waste from the landfill are acceptable.
- Material Resources – any two reduced impact materials requirements including (1) not less than 10% of building materials must have recycled content or salvaged material; (2) not less than 15% of building materials or products must be regionally sourced or manufactured within a radius of 500 miles of the project site; (3) not less than 5% of building materials must be biobased and contain certified wood content; and (4) not less than 10 building products must have environmental product declarations or certifications.
- Heat Island Mitigation – light color surfaces on 100% of roofs (based on solar reflectance and roof slope) and shaded or light color surfaces on at least 50% of site hardscape.
- Site Water Use Efficiency – efficient irrigation systems with WaterSense-labeled controllers.
- Indoor Environmental Quality – at least 85% of interior finishes to be low-volatile organic compound emitting materials.

SEAC understands that some of the building code staff's hesitancy in supporting the mandatory adoption of the IgCC may be based on current code compliance resources within the city. Therefore, SEAC recommends adjusting staffing budgets to accommodate the additional resources required for the adoption of a mandatory IgCC and to support its enforcement.

Another proposal that SEAC supports is to require electric ready receptacles for major appliances (e.g., dryers, heaters, and stoves) at new residential structures when natural gas is plumbed to the home. This provision is not overly burdensome from a cost perspective as electricity is already provided at sufficient loads to new residential structures. Providing electric receptacles for major appliances provides residents the flexibility for conversion to an all-electric home, if they so choose, which will lower greenhouse gas emissions from residential structures when the source of our electrical generation transitions from fossil fuels.

### **Leadership for the Future**

Buildings and the building construction sector are responsible for over one-third of global energy consumption and contribute to nearly 40 percent of total direct and indirect CO<sub>2</sub> emissions. Building energy and green codes contribute to the health, safety and welfare of citizens and communities, reduce energy bills, improve occupant and community health, enhance resilience, and reduce greenhouse gas emissions.

Scottsdale's adoption of standardized national model codes promoted by reputable national organizations committed to green infrastructure is a robust step in the right direction. While SEAC supports adoption of the 2021 IECC, IgCC, IPC and IRC codes in the near term, we challenge the City to adopt a more pro-active leadership position by researching and exploring new ways to improve our built environment, such as adopting building code standards that exceed minimum code requirements, by implementing energy efficiency requirements that not only apply to new but existing commercial and residential buildings as well, and by promoting and investing in solar energy transition technologies. Championing such cutting-edge energy efficiency standards will confirm and enhance Scottsdale's reputation as a leader in green and energy efficiency, and it will contribute to a more resilient and cleaner energy future for our businesses and community.

If you have any questions regarding the adoption of the 2021 edition of the IECC, IgCC, IPC and IRC, please contact Anthony Floyd in Scottsdale's Office of Environmental Initiatives.

Respectfully,

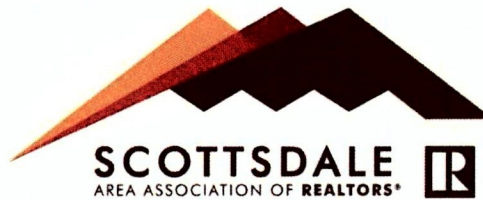


Natalie Chrisman Lazarr, Chair  
(602) 316-1324  
[Natalie.ChrismanLazarr@aps.com](mailto:Natalie.ChrismanLazarr@aps.com)



Anthony Coletta, Vice Chair  
(480) 650-4751  
[Tony.Coletta@novagroupgbc.com](mailto:Tony.Coletta@novagroupgbc.com)





August 8, 2022

To: City of Scottsdale | Mayor - David Ortega  
Vice Mayor - Tom Durham  
Councilmembers - Tammy Caputi, Betty Janik, Kathy  
Littlefield, Linda Milhaven, Solange Whitehead

RE: Scottsdale Building Code Update - Electric Vehicle (EV) Charging Capability Requirements

The Scottsdale Area Association of REALTORS® (SAAR) looked extensively into the proposed building code changes to require EV Charging Station infrastructure for new single-family residential homes, multifamily project, and hotels.

Regarding single-family residential homes, SAAR supports the proposed changes outlined in **R404.4** and **R404.4.1**. The minimum requirement to install a single raceway, receptacle, and reserve a breaker space for 'Future EV Charging' is not unreasonable.

**R404.4 Electric Vehicle (EV) charging infrastructure.** New construction shall accommodate future installation and use of *Electric Vehicle Supply Equipment (EVSE)* in accordance with the *National Electrical Code (NFPA 70)*.

**R404.4.1 EV capable charging.** The main electrical service panel shall have a reserved space to allow installation of a full size 2-pole circuit breaker for future EV charging and shall be labeled "Future EV Charging". Where the electrical service panel is located beyond the perimeter of the garage wall, a raceway shall be installed from the electrical service panel to a location within the garage, where it shall terminate in a junction box or outlet and be labeled "Future EV Charging".

Regarding the new proposed requirements for **Groups R-1** and **R-2** (hotels, motels, apartments, condominiums) which are outlined in **C405.13**, we are still reviewing the full impact on the multi-family sector as there are multiple complex variables to take into account

Concerning the new EV requirements for single-family homes however, the Scottsdale Area Association of REALTORS® is in full support of the proposed changes presented as **R404.4** and **R404.4.1** of the new update for the Scottsdale Building Code.

Respectfully,

Rebecca Grossman  
Chief Executive Officer

Suzanne Brown  
Director of Community & Government Affairs



## SOUTHWEST ENERGY EFFICIENCY PROJECT

*Saving Money and Protecting the Environment Through More Efficient Energy Use*

February 17th, 2022

Marcy Kostewa, Chair  
Julian Anderson, Vice-Chair  
Brian Brose, Board Member  
Randall Lukas, Board Member  
Michael Kravit, Board Member

Dear Building Advisory Board Members,

Re: Item 3, "(2021 I-Codes Adoption)"

**The Southwest Energy Efficiency Project (SWEEP) appreciates the opportunity to provide these comments to support the City of Scottsdale's efforts to develop an Electric Vehicle-Ready building code and electric readiness in the 2021 code adoption cycle.**

SWEEP believes this action will enable the growth of electric vehicles (EVs) while ensuring the charging process is safe in all building types.

Increased use of EVs will spur economic development and improve air quality—benefits that all Scottsdale residents gain. To realize these benefits, the City of Scottsdale must invest in EV infrastructure to make EV charging readily available for everyone, including those who live in historically disadvantaged communities. Approving EV readiness in this building code cycle is critical for ensuring accessibility and deployment of EV charging equipment.

Furthermore, including electric vehicle supply equipment (EVSE) in this building code cycle is critical to cost-effectively preventing the use of extension cords to inappropriate outlets for vehicle charging. Suppose the City of Scottsdale fails to prepare for the onslaught of EVs that global automakers have committed to producing. In that case, the cost of EVSE could skyrocket in the future while not addressing critical safety matters. Now is the time to prepare

For all of these reasons, SWEEP encourages the City of Scottsdale Building Advisory Board to approve Staff's recommendation for the 2021 International Energy Conservation Code with the inclusion of EV-Capable provisions to ensure equal access to charging equipment is done safely, reliably, and affordably.

Thank you for your time and the opportunity to submit these comments.

**Caryn Potter**

Manager, Utility Program  
Southwest Energy Efficiency Project (SWEEP)

*SWEEP is a public-interest organization promoting greater energy efficiency and clean transportation in Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming in order to save consumers money, protect the environment, and build a more resilient, robust economy.*



**Capitol Consulting, LLC**

January 19, 2022

Dear Chair Jostewa and Members of the Building Advisory Board of Appeals:

I write you today on behalf of the Arizona Multihousing Association (AMA) regarding the proposed Electric Vehicle (EV) parking requirements to be presented to the Board on January 20, 2022.

Under the proposed ordinance, all new multi-family developments would be required to, at a minimum, install EV "capable" parking spaces in twenty percent of the proposed development's total parking spaces and, at a minimum, install EV charging stations in four percent of the proposed development's parking spaces.

The AMA is concerned that such a prescriptive requirement imposes an undue regulatory burden that does not consider or reflect current, or even future, market conditions. In a survey to multi-family operators in Scottsdale and throughout the Valley, responses indicated that market penetration for EV, and more specifically renters requesting EV charging capabilities, remains low. According to the Arizona Department of Transportation, of the 7.4 million total vehicles registered in the state of Arizona, only 40,964 vehicles are EVs.<sup>1</sup>

While the AMA supports EVs and the move towards this emerging technology, the AMA would request that the city refrain from adopting mandatory and prescriptive requirements that will force builders to install costly infrastructure components at a time when the technology continues to rapidly evolve. Improvements to batteries, rapid charging capabilities, solar charging stations and even solar charging cells imbedded into the vehicles themselves, could very well make these costly parking infrastructure requirements moot.

Moreover, multi-family operators are well positioned and highly incentivized to respond to market conditions. For example, if EV penetration in Scottsdale were to somehow double, triple, or quadruple overnight - and most importantly the demand for EV charging stations from renters emerged - owners would respond swiftly. This is no different than any other market change or demand which operators routinely address.

On the other hand, housing affordability has become an immediate concern for Scottsdale citizens. See:

- [As Scottsdale's rental prices soar, experts call for more apartments \(azcentral.com\)](https://www.azcentral.com/story/news/politics/economy/2021/12/22/scottsdale-rental-prices-soar-experts-call-for-more-apartments/7048112002/)
- [Affordable housing vanishing in Scottsdale | City News | scottsdale.org](https://www.citynews12.com/story/news/local/2021/12/22/scottsdale-affordable-housing-vanishing/7048112002/)
- [Most workers in Scottsdale can't afford living here | City News | scottsdale.org](https://www.citynews12.com/story/news/local/2021/12/22/scottsdale-workers-cant-afford-living-here/7048112002/)

Adding new construction requirements, such as the proposed EV parking requirements, will only add to the overall cost of housing in Scottsdale and continue to exacerbate housing affordability concerns.

It is for these reasons that we request the Board oppose the proposed EV multi-family parking requirements.

Should you have any questions, please do not hesitate to reach out at any time at [bastien@azcapitolconsulting.com](mailto:bastien@azcapitolconsulting.com).

Respectfully,

Bastien Y. Andruet  
Capitol Consulting, LLC

Cc: Courtney Gilstrap LeVinus  
Jake Hinman

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<sup>1</sup> <https://azdot.gov/fast-facts>



March 2, 2022



Chairwoman Marcy Kostewa  
Vice Chair Julian Anderson  
Board member Brian Brose  
Board member Michael Kravit  
Board member Randall Lukas

Building Advisory Board of Appeals  
One Civic Center Building  
7447 E Indian School Rd. Suite 105  
Scottsdale, AZ 85251

Chairwoman Kostewa and Members of the Building Advisory Board of Appeals,

I write today to express Southwest Gas Corporation's (Southwest Gas or Company) respectful opposition to the proposed inclusion of the "Electric Readiness" amendment to the 2021 International Energy Conversation Code (IECC) currently being considered for inclusion in Scottsdale's 2022 building code update. Though we appreciate the city's desire to explore various policy ideas, this proposal strays from Scottsdale's stated purpose for adopting building codes which is to "provide a reasonable level of safety, and protection of public health, general welfare and property<sup>1</sup>."

Adoption of the "Electric Readiness" provision would lead to higher costs and could potentially restrict fuel choice for current home buyers. Further, while the proposal has been positioned as a policy that will improve the environment, the underlying facts prove that assumption to be incorrect. Lastly, adoption of the this "Electric Readiness" provision would not only put Scottsdale at odds with the carefully crafted 2021 IECC code, but it will also place the city in conflict with Arizona law.

### **Energy Cost and Choice**

As you know, the "Electric Readiness" provision will require homebuilders and multifamily developers to plumb homes for electric clothes dryers, water heaters, household ranges and cooking equipment even if the builder plans to equip a project with natural gas appliances. Adopting this amendment will force builders to choose between complying with the new code and incurring higher costs or avoiding those higher costs by building homes all electric.

Cost increases associated with the "Electric Readiness" requirement would not simply be contained to the labor and materials used to install the outlet wiring in each home. Homebuilders would also incur costs related to meeting increased electric load requirements to serve a subdivision, even if the wiring or outlets were to go unused by most homebuyers.

Scottsdale already has an affordability problem. This requirement will exacerbate it. According to a 2021 study by the National Association of Homebuilders, for every \$1,000 increase to the median home price in Arizona, 3,260 people are priced out of the market<sup>2</sup>. As you know, purchasing a home in Scottsdale is

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<sup>1</sup> City of Scottsdale. *Building Code Information*. <https://www.scottsdaleaz.gov/codes/building-code>

<sup>2</sup> Zhao, Na. (February, 2021) *NAHB Priced-Out Estimates for 2021*. <https://www.nahb.org/-/media/NAHB/news-and-economics/docs/housing-economics-plus/special-studies/2021/special-study-nahb-priced-out-estimates-for-2021-february-2021.pdf>

already unattainable for many. We should not make the problem worse by adopting policies that increase costs with no public benefit.

Under this policy, the only way for a builder to avoid the added costs associated with the “Electric Readiness” mandate is to build all electric homes and subdivisions. But even in the desert Southwest, natural gas appliances are overwhelmingly popular because of their efficiency, performance, and the low-cost energy source used to fuel them. This policy will increase energy costs for homeowners and ultimately make Scottsdale a less desirable place to buy a home.

In 2020, 91% of single-family homes built in Southwest Gas’ Arizona service territory were built with gas due to strong customer demand. If builders are encouraged to build all-electric, consumers will likely consider other communities where fuel choice exists and their home appliance preferences can be accommodated. Furthermore, if consumers are forced to buy an all-electric home, the outcome will be higher household utility bills. According to the United States Energy Information Administration (EIA), natural gas is 67% less expensive on an energy equivalent basis compared to electricity, which leads to real savings for consumers<sup>3</sup>. Nationally, homeowners who use natural gas in their home for heating and cooking save nearly \$900 a year on their utility bills<sup>4</sup>.

### **Environmental Impact**

According to staff, the rationale behind including the “Electric Readiness” amendment in Scottsdale’s 2022 code update is that doing so will be better for the environment. The assumption that electric appliances are cleaner than natural gas appliances is incorrect. When examining an appliance’s emissions performance, a full life cycle analysis of the energy source must be considered.

Using natural gas directly in appliances is the most efficient way to use our product, as only 9% of its energy content is lost when transporting it from the wellhead to the appliance. Conversely, when burning fossil fuels to create electricity, 64% of usable energy is lost in the generation and distribution process<sup>5</sup>.

Unless a home has solar panels installed onsite, appliances like stoves, water heaters and clothes dryers are powered by the electric grid. SRP<sup>6</sup> and APS<sup>7</sup> overwhelmingly generate their electricity from natural gas and coal, with nuclear and renewables only making up approximately 17% and 18% of the companies’ 2021 Resource Peak Capacity, respectively. Due to the current electricity resource diversity in Scottsdale and the efficiency dynamics explained above, adopting policies that promote greater electric appliance use will actually lead to more natural gas and coal being used in Arizona.

According to the EIA’s most recent available data, carbon emissions from natural gas use in the residential sector makes up 2.02% of Arizona’s overall emissions<sup>8</sup>. Even with a very clean product, Southwest Gas is already taking steps to reduce our minimal emissions with the incorporation of clean fuels like renewable natural gas (RNG) and green hydrogen onto our system. Adopting this electric ready provision would be akin to a solution in search of a problem, as the Company’s service contributes a de

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<sup>3</sup> American Gas Association. *Building the Value of Natural Gas, A Fact Base*. (2020, May). Pg. 34.

<sup>4</sup> American Gas Association. *Every-day affordability*. <https://www.aga.org/natural-gas/affordable/>. (2020).

<sup>5</sup> American Gas Association. *Building the Value of Natural Gas, A Fact Base*. (2020, May). Pg. 25.

<sup>6</sup> Salt River Project. *2021 Summer Preparedness* (2021, March). Pg 6.

<https://docket.images.azcc.gov/E000012564.pdf?i=1644959474465>

<sup>7</sup> Arizona Public Service Company. *2021 Summer Preparedness* (2021, March) Pg 6.

<https://docket.images.azcc.gov/E000012598.pdf?i=1644959474465>

<sup>8</sup> U.S. Energy Information Administration. *State Carbon Emissions from Fossil Fuels Tables*. (2021, March).

<https://www.eia.gov/environment/emissions/state/excel/states/arizona.xlsx>

minimis amount of carbon emissions to Arizona's environment and we are committed to getting even cleaner.

**Inconsistent with the International Energy Conservation Code and Arizona Revised Statutes**

Every three years, the International Code Council (ICC) adopts several new construction codes through carefully considered input from code officials, design professionals, trade associations, builders, contractors, manufacturers and suppliers, and government agencies. During the development of the 2021 IECC, an "Electric Readiness" proposal was considered a total of 4 times during two formal hearings, an online vote, and an appeal process. In 3 of the 4 aforementioned instances, the "Electric Readiness" proposal was struck down. Ultimately, the ICC Board of Directors found that the "Electric Readiness" proposal did not meet the scope and intent of the IECC. The ICC's rejection of this policy after a thorough stakeholder process should further illustrate that the "Electric Readiness" provision is not sound policy for Scottsdale.

Lastly, adoption of an "Electric Readiness" provision in Scottsdale's Code would put the city in conflict with A.R.S. §9-467.D. That statute stipulates, in part, that a municipality issuing a building permit shall ensure that all applicable permits contain requirements that do not exceed the requirements for use of other utility providers. Under the "Electric Readiness" proposal, a homebuilder who wishes to build with all gas appliances would be saddled with the additional requirement of plumbing that home for future electric appliance use. Conversely, that same standard would not be extended to a builder who intends to build an all-electric home.

On behalf of Southwest Gas, I would like to thank you for your public service and your desire to create sound policy for the City of Scottsdale. For all the reasons mentioned above, I humbly ask for your opposition to the inclusion of the "Electric Readiness" provision in the code recommendation that you will make to the Scottsdale City Council.

Sincerely,

*Matthew R Ligouri*

Matthew Ligouri  
Manager, Public Affairs  
Southwest Gas Corporation

c: Jim Thompson, City Manager, City of Scottsdale  
Michael Klack, Director of Development Services, City of Scottsdale  
Anthony Floyd, Green Building Program Manager and Energy Code Specialist, City of Scottsdale



February 16th, 2022

Marcy Kostewa, Chair  
Julian Anderson, Vice-Chair  
Brian Brose, Board Member  
Randall Lukas, Board Member  
Michael Kravit, Board Member

Dear Chair Marcy Kostewa and Members of the Building Advisory Board,

**Re: Agenda Item # 3, "2021 I-Codes Adoption"**

On behalf of the American Lung Association, we are pleased to offer support for the City of Scottsdale's proposal to adopt the 2021 International Energy Conservation Code.<sup>1</sup> We are grateful that the City is exploring ways to advance codes that help to reduce air pollution, while helping residents to conserve energy and save money on their utility bills.

Arizona has some of the most dangerous levels of unhealthy air in the United States. The American Lung Association 2021 "State of the Air" report<sup>2</sup> shows 86% of Arizona residents live in counties impacted by poor air quality. Air pollution contributes to respiratory and cardiovascular impacts including increased asthma attacks, worsened COPD, heart attacks and strokes, and premature death. Vulnerable populations such as children, the elderly, people of color, and low-income individuals are most at risk from these health harms. To learn more about Arizona's air quality please see our fact sheet [here](#).

The American Lung Association supports widespread transportation electrification (TE) as a first step to reduce greenhouse gas emissions, improve air quality, and protect Arizonans' health. Our 2020 "Road to Clean Air" report found the transportation sector is the leading contributor to our air pollution challenges, especially in at-risk communities. Adopting building energy codes that enable the growth of the zero-emission transportation sector by 2050 could yield \$1.5 billion in health benefits annually. Arizona's air quality crisis requires bold investments in electric cars, buses and medium/heavy-duty trucks coupled with increasing levels of non-combustion, renewable energy sources - these policies are widely supported among Arizona constituents and City of Scottsdale residents. To make these health savings a reality, we urge the City of Scottsdale Building Advisory Board to adopt the electric vehicle language in the code in order to ensure higher EV adoption can be done cost-effectively and safely.

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<sup>1</sup>

[https://eservices.scottsdaleaz.gov/planning/projectsummary/unrelated\\_documents/2021%20IECC%20Amendments.pdf](https://eservices.scottsdaleaz.gov/planning/projectsummary/unrelated_documents/2021%20IECC%20Amendments.pdf)

<sup>2</sup> <https://www.lung.org/research/sota/city-rankings/states/arizona>

A 2021 poll<sup>3</sup> conducted by the American Lung Association in Arizona released in December 2021 showed nearly 75% of Arizona voters support a transition away from fossil fuels with investments towards non-combustion energy and zero-emission vehicles.

- 67% support switching all public vehicle fleets including transit buses, school buses, maintenance trucks, and government-owned cars to all electric vehicles.
- 66% support investments in publicly available charging infrastructure for electric vehicles as well as consumer incentives to encourage EV purchases.

As a leading public health organization, we urge the City of Scottsdale Building Advisory Board to consider the will of Arizona voters and support electric vehicle growth by greenlighting the International Energy Conservation Code with EV provisions proposed before you today.

Thank you for your consideration of our comments.

Sincerely,

JoAnna Strother  
Senior Advocacy Director American Lung Association

Melissa Ramos  
Manager, Clean Air Advocacy American Lung Association

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<sup>3</sup> <https://www.lung.org/media/press-releases/az-climate-action-survey-21>



February 16th, 2022

Marcy Kostewa, Chair  
Julian Anderson, Vice-Chair  
Brian Brose, Board Member  
Randall Lukas, Board Member  
Michael Kravit, Board Member

Dear Members of the City of Scottsdale Building Advisory Board of Appeals,

Re: Agenda Item No. 3 — “ 2021 I-CODES ADOPTION,”

Environment Arizona is a citizen-based environmental advocacy organization dedicated to protecting our air, water, and open spaces.<sup>1</sup> We were thrilled to learn that the City of Scottsdale Building Advisory Board is considering the adoption of the 2021 IECC with amendments for solar and EV-readiness. Both provisions will make it easier for these technologies to be easily installed in the future. ***We encourage the Board to vote in favor of this proposal.***

Every year enough sunlight shines on America to provide 100-times more power than we need. But we’re only capturing a tiny percentage of it. Harnessing more of this power would mean cleaner air and a more stable climate; less strain on natural resources and more resilient communities; and an energy source we can depend on to be virtually pollution-free for as long as we can imagine.

Adoption of the CB Solar-Ready Zone of the IECC as well as the EV-Readiness sections would help to ensure buildings are “ready” for the proper, easy installation of solar and EV technologies and will bring their many benefits to the residents and businesses in the City of Scottsdale including:

- Avoided energy costs,
- Avoided capital and capacity investment,
- Reduced Financial risks and electricity prices,
- Avoided greenhouse gas emissions, and
- Reduced air pollution that harms public health.

We urge you to approve the 2021 IECC with the CB Solar-Ready Zone and EV-Readiness sections so that we can position Arizona to be a leader of our future, more efficient economy. Thank you for the opportunity to provide these comments.

Sincerely,  
Emma Searson  
Director, 100% Renewable Campaign  
Environment Arizona

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<sup>1</sup> <https://environmentarizona.org/>





February 16th, 2022

Dear Members of the City of Scottsdale Building Advisory Board of Appeals,

Re: Vote Solar supports the adoption of the 2021 International Energy Conservation Code with the inclusion of Appendix CB Solar-Ready Zone and Electric Vehicle(EV) Charging Infrastructure

**Building Advisory Board Item No. 3 — “2021 I-CODES ADOPTION”**

Since 2002 Vote Solar has been working to make solar affordable and accessible to more Americans. We have a successful history of working in Arizona to support policies and programs to build a cleaner electricity grid and enable more Arizonans to adopt solar.

**Vote Solar strongly supports the adoption of the 2021 International Energy Conservation (2021 IECC) Code with the inclusion of Appendix CB Solar-Ready Zone and Electric Vehicle(EV) Charging Infrastructure.<sup>1</sup>**

Appendix CB’s solar-ready provisions will ensure that new homes in the City of Scottsdale have simple, inexpensive electrical features, like a slot open on the electric panel and wiring from the electrical panel to the roof, so that homeowners have the option to install solar PV systems in the future. Adoption of the EV capable provisions will also lower the cost of future solar and electric vehicle supply equipment installations and make them faster and easier to implement. After all, running conduit when a home is being built is much easier and less expensive than undertaking a major renovation effort later on. Additionally, upgrading the electrical panel upfront saves the homeowner money down the road. For these reasons, the adoption of Appendix CB and the EV capable provisions are critical for eliminating barriers to solar and EV adoption and helping Pima County build a cleaner, more affordable electricity grid.

Clean energy is the future, and we need building energy codes that reflect that future. Vote Solar urges the City of Scottsdale to follow suit and include Appendix CB Solar-Ready zone and Electric Vehicle(EV) Charging Infrastructure when it enacts the 2021 IECC.

Sincerely,

***Yara Marin***

Interior West Regional Director

Vote Solar

[yaneth@votesolar.org](mailto:yaneth@votesolar.org)

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<sup>1</sup> “City of Scottsdale Amendments to the International Energy Conservation Code, 2021 Edition,” [https://eservices.scottsdaleaz.gov/planning/projectsummary/unrelated\\_documents/2021%20IECC%20Amendments.pdf](https://eservices.scottsdaleaz.gov/planning/projectsummary/unrelated_documents/2021%20IECC%20Amendments.pdf)

May 19, 2022

I have been a Scottsdale Realtor since 2003, specializing in energy efficiency since 2008. As an instructor and former Director at Scottsdale Area Association of REALTORS (SAAR) and former Residential Committee Chair for the U.S. Green Building Council (USGBC), I educate others to lead energy efficiency in Maricopa County.

Based on this experience, I highly recommend every aspect of the 2021 IECC. Moreover, I do not recommend amendments that weaken the 2021 IECC. Scottsdale homebuyers expect the best of construction for these higher-priced homes. Scottsdale leads the way in Arizona for the best of energy efficiency and must continue to meet that demand. Scottsdale must also meet the demand for EV charging and electrification.

A 2017 Consumer Survey by the National Association of Realtors reflected that 84% of consumers were either highly concerned or concerned about their energy bills. Since COVID, these numbers have most likely risen as Americans have spent more time in their homes and working from home.

Kelley Blue Book reports that electrified vehicle sales accounted for 9.7% of all sales in 2021 and 11.8% of sales in the fourth quarter – adding that electrified vehicle sales might have increased even more last year if inventory and supply issues had not been as problematic.

In fact, I own a 2021 Tesla. Picking up my Tesla in Scottsdale on December 29, 2020, I was pleasantly surprised to see 20 other couples picking up cars at the same time.

My car came with a Tesla charger, but I needed a 220 outlet. My electric panel is not located on a garage wall. I paid \$660 to install a 220 outlet in my garage. An outlet installed at the time of construction would have been a fraction of that cost. I highly recommend making Scottsdale single and multi-family residences EV ready.

Scottsdale wants to be known as a place where people can come – whether it's to spend the winter season or for an afternoon of shopping – without having to worry about where or if they can charge their electric vehicle.

As a Realtor in Scottsdale since 2003, specializing in high performance homes, I highly recommend adoption of the 2021 IECC without weakening amendments. Homebuyers in Scottsdale care about energy efficiency and expect quality construction. The number of electric vehicles in Scottsdale will only continue to increase. To maintain its place as a progressive, clean and well-planned city, Scottsdale's homes, apartments and other buildings must be built for the future.



Jan Green  
REALTOR, EcoBroker, SFR, GREEN  
602-620-2699, jan@gotgreen.info



## Floyd, Anthony

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**From:** Rachel Pearson <rpearson@experiencescottsdale.com>  
**Sent:** Wednesday, April 27, 2022 4:05 PM  
**To:** Floyd, Anthony  
**Cc:** Wiebusch, Dale; Laura Magnus  
**Subject:** RE: Scottsdale Proposed EV Charging Infrastructure Requirements

**⚠ External Email: Please use caution if opening links or attachments!**

Hi Anthony,

Our public policy committee met today and there were no major concerns since this is related to new construction. The group agreed that having this infrastructure as part of a new build is much more cost effective and efficient than attempting to install following construction.

Dale Wiebusch was part of today's conversation so I'm copying him in as well.

Thank you again for helping to keep us updated on future conversations around policy/code changes that impact the tourism industry.

~Rachel



**RACHEL PEARSON, ABC** (she/her)  
Vice President of Community & Government Affairs  
480.429.2259 | 800.782.1117 | [ExperienceScottsdale.com](https://www.experiencescottsdale.com)  
4250 N. Drinkwater Blvd, Ste. 300, Scottsdale, AZ 85251  
Follow us on [LinkedIn](#)  
[Celebrate Diversity in Scottsdale](#)

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**From:** Floyd, Anthony <ANTF@SCOTTSDALEAZ.GOV>  
**Sent:** Wednesday, April 27, 2022 9:35 AM  
**To:** Rachel Pearson <rpearson@experiencescottsdale.com>  
**Subject:** RE: Scottsdale Proposed EV Charging Infrastructure Requirements

Rachel,

Do you have any comments on the proposed EV charging infrastructure requirements for hotels?

Anthony

*Anthony Floyd, FAIA, CSP, NOMA, LEED AP*  
Green Building/Energy Codes  
Office of Environmental Initiatives  
Planning and Development  
City of Scottsdale  
480-312-4202

---

**From:** Rachel Pearson <rpearson@experiencescottsdale.com>  
**Sent:** Tuesday, April 26, 2022 12:59 PM

To: Floyd, Anthony <[ANTF@SCOTTSDALEAZ.GOV](mailto:ANTF@SCOTTSDALEAZ.GOV)>

Subject: RE: Scottsdale Proposed EV Charging Infrastructure Requirements

**⚠ External Email: Please use caution if opening links or attachments!**

Hi Anthony,

Thanks for your time on the phone today. As I noted, we would like to be included on future communications related to potential policy and code changes that could impact the tourism industry, including for new construction. We can gather feedback and insights from the Scottsdale-area hospitality community that would provide valuable insight for the city.

Thank you for adding me to your distribution list for when these proposed changes are brought forward.



**RACHEL PEARSON, ABC** (she/her)

Vice President of Community & Government Affairs

480.429.2259 | 800.782.1117 | [ExperienceScottsdale.com](http://ExperienceScottsdale.com)

4250 N. Drinkwater Blvd, Ste. 300, Scottsdale, AZ 85251

Follow us on [LinkedIn](#)

[Celebrate Diversity in Scottsdale](#)

Hello Nicole,

I'm the green building/energy code specialist for the City of Scottsdale, Office of Environmental Initiatives. Scottsdale is preparing to update its building codes, including the adoption of the 2021 edition of the international Energy Conservation Code (IECC). We're proposing an amendment that would require all new multifamily and hotel developments to provide EV charging infrastructure.

As you're aware, electric vehicles are on the rise. By 2030, US automakers are expecting 50% of automobile sales to be electric. By 2035, GMC and other automobile manufacturers have stated they will only be selling EVs. The biggest challenge in Arizona and Scottsdale in particular, is the lack of readily available charging stations. For level 2 charging, the most efficient location is at homes, apartments, condominiums and hotels where cars are parked overnight for a full charge.

The following proposed energy code provisions are proposed and will be presented to city council for approval sometime between June and September. The requirements will apply to new construction of apartments, condominiums and hotels. Below is the proposed code amendment.

**C405.13 Electric Vehicle (EV) charging infrastructure.** New construction shall accommodate future installation and use of *Electric Vehicle Supply Equipment (EVSE)* in accordance with the *National Electrical Code (NFPA 70)*.

**C405.13.1 Required EVSE-installed and EVSE-capable charging spaces.** Parking shall be provided with *EVSE-installed* and *EVSE-capable* charging spaces in accordance with Table C405.13.1 based on the total number of parking spaces rounded up to the nearest whole number. Where a branch circuit serves a single charging space, it shall have a capacity not less than of 8.3 kVA (40A, 208/240V). Where a branch circuit serves multiple charging spaces, an *Automatic Load Management System (ALMS)* may be used to reduce the total electrical capacity provided that all charging spaces are capable of simultaneously charging at a minimum rate of 4.1 kVA (20A, 208/240V).

For *EVSE-capable* spaces, the electrical service panel shall have reserved circuit breaker space(s) that is labeled "Future EV Charging". Raceway(s) shall be installed from the electrical service panel to an outlet box within the planned EV-charging parking area(s). Outlet box(es) shall be labeled "Future EV charging".

**TABLE C405.13.1  
ELECTRIC VEHICLE CHARGING INFRASTRUCTURE REQUIREMENTS**

<b>Occupancy Group</b>	<b>Minimum number of <i>EVSE-Installed Spaces</i><sup>a, b</sup></b>	<b>Minimum number of <i>EVSE-Capable Spaces</i><sup>a, b</sup></b>
Group R-1 (hotels, motels) and Group R-2 (apartments, condominiums)	4% of total parking spaces	20% of total parking spaces

<sup>a</sup> Where more than 4% of *EVSE-installed* parking spaces are provided, each charging port may count towards meeting 2 of the required number of *EV-capable* spaces.

<sup>b</sup> Parking spaces designated for other than passenger vehicles may be excluded from the total number of parking spaces.

We consider the above thresholds for EV-installed and EV-capable parking facilities to be on the conservative side, considering the projected rise of EV ownership over the next 5 to 10 years. The provisions serve as a minimum baseline and does not limit a developer from exceeding code minimum.

We would appreciate your input and welcome feedback.

Thank you.

*Anthony Floyd, FAIA, CSP, NOMA, LEED AP*

Green Building/Energy Codes

**Office of Environmental Initiatives**

Planning and Development

City of Scottsdale

480-312-4202



**Floyd, Anthony**

---

**From:** Diane Brown <dbrown@arizonapirg.org>  
**Sent:** Wednesday, February 16, 2022 5:45 PM  
**To:** Building Advisory Board of Appeals; Floyd, Anthony  
**Cc:** Diane Brown  
**Subject:** Arizona PIRG Supports IECC including EV Charging Infrastructure

**⚠ External Email: Please use caution if opening links or attachments!**

Please share with members of the Building Advisory Board. Thank you.

February 16th, 2022

Dear Chair Kostewa and members of the Building Advisory Board,

**Re: Support for Scottsdale's Adoption of the 2021 International Energy Conservation Code *including* Electric Vehicle (EV) Charging Infrastructure**

Since our inception, the Arizona Public Interest Research Group (Arizona PIRG) has supported strong state, federal, and local energy efficiency policies because of the important consumer benefits these investments deliver. We have been very encouraged by Scottsdale's efforts to advance energy efficiency, including efforts to achieve ENERGY STAR® certification for City buildings.

**Today, I write to offer Arizona PIRG's strong support for Scottsdale's adoption of the 2021 International Energy Conservation Code as recommended by the City's Staff.** The Committee's recommendation was developed as a result of continuous conversations with interested stakeholders for months.

The adoption of the 2021 International Energy Conservation Code is important for Scottsdale residents and businesses for many reasons including:

- The least expensive source of electricity is the electricity we don't have to use. When we reduce waste, the savings compound, in bill after bill, month after month, year after year. But when we fail to limit waste, the costs compound in the same way.
- Energy efficiency can help stabilize homeowner energy costs, improve homeowner comfort, and allow homeowners additional space in their budget to prioritize other projects and expenditures.
- Efficient homes ensure economic resilience, making it easier for people to buy, sell and own a home; decreasing the likelihood that a home will default; and preventing surprise expenses like the need for new insulation.

In closing, we need robust building energy codes that ensure long-lasting, durable construction that have fewer surprises to consumers, less maintenance, and fewer repairs.

**Please adopt the Committee's recommendation without additional changes.**

Thank you for your consideration of our comments.

Sincerely,

Diane

Diane E. Brown, Executive Director  
Arizona PIRG (Arizona Public Interest Research Group)  
835 W. Warner Rd., Suite 101-464 -- *Please note new address*  
Gilbert, AZ 85233  
[\(602\)252-9227](tel:(602)252-9227) (o)  
[\(602\)318-2779](tel:(602)318-2779) (c)

# Memorandum



**To: Honorable Mayor and City Council**

**From: Michael Clack, Chief Development Officer**

**Through: Erin Perreault, Planning, Economic Development & Tourism Executive Director**

**Date: November 29, 2022**

**RE: December 6, 2022, Council Meeting, Energy, Residential and Green Code Adoptions**

Honorable Mayor and City Council,

Please find attached support letters received for the proposed adoption of the energy, residential and green construction codes for the December 6, 2022, City Council meeting.

Attachment 1 – American Institute of Architects – Arizona letter

Attachment 2 – Energy-Efficient Codes Coalition letter

Attachment 3 – Southwest Energy Efficiency Project letter

Attachment 4 – American Lung Association – Arizona

Attachment 5 – EV Industry letter

Attachment 6 – Arizona PIRG letter

Attachment 7 – Vote Solar letter



November 29, 2022

City of Scottsdale  
3939 N Drinkwater Blvd  
Scottsdale, AZ 85251

Dear Mayor Ortega, Vice Mayor Durham, and council members Caputi, Janik, Littlefield, Milhaven, and Whitehead,

The American Institute of Architects Arizona (AIA Arizona) and the local chapter AIA Phoenix Metro support the City of Scottsdale proposed adoption of the 2021 suite of building codes, in particular the International Energy Conservation Code (IECC) and International Green Construction Code (IgCC) as mandatory codes.

According to the latest Intergovernmental Panel on Climate Change (IPCC) report, the time for climate action is now. Energy efficiency and renewable energy, materials transparency, the protection of water resources, and other sustainability strategies support mitigation by conserving resources and reducing carbon emissions. Resilient design helps communities adapt to evolving conditions, reduce harm and property damage, and more readily, effectively, and efficiently recover from adverse events. Architects draw upon both sustainability and resilience to become a force of valuable change by transforming the day-to-day practice of architecture to achieve a zero-carbon, equitable, resilient, and healthy built environment.

Scottsdale amendments to the 2021 IECC include the following:

1. EV capable charging for new single-family, multifamily buildings, and hotels
2. Non-tradable cool roof requirement for low-slope roofs of new residential and commercial buildings
3. Commissioning provisions for heating, cooling, and ventilation systems
4. Solar-ready zones for 10% of single-family homes and 40% for commercial buildings (excluding areas covered by skylights, equipment, or decks)

Major provisions of the 2021 IgCC includes the following for commercial buildings:

1. EV charging capability for new commercial buildings (Group A, B, E, F, I, and M) in addition to the residential requirements under the IECC.
2. Efficient irrigation design including smart irrigation controllers (new commercial developments).
3. On-site solar PV system requirement for new commercial buildings. Exceptions includes (1) buildings less than 5,000 sq. ft. in gross conditioned floor area; (2) on-site renewable energy systems, other than photovoltaic systems, that result in an equal or greater annual energy production; and (3) improved energy efficiency measures equivalent to annual energy that would be produced by the solar PV system.

4. Low-VOC paints, adhesives, sealants, floor coverings, composite wood products, and acoustical ceiling tiles.
5. Construction waste management with minimum 50% diversion of waste from landfill.
6. Reduced impact materials that meet any two of the following options: 1) minimum 10% of materials to be recycled content material (e.g. – steel, metal, insulation, flooring, composite wood products, acoustical tile); 2) minimum 15% of materials to be regional (masonry, stone, tile, concrete); 3) minimum 5% of materials to be sustainable certified lumber (SFI, FSC); or 4) minimum of 10 building products have Environmental Product Declarations.

Regulation of the building industry shapes the built environment. As industry leaders and major stakeholders, architects rely on the application of codes and standards to protect the health, safety, and public welfare while ensuring energy efficient, sustainable, and resilient design.

AIA Arizona and AIA Phoenix Metro support the City of Scottsdale's proposed adoption of the 2021 suite of building codes and associated amendments related to a sustainable, resilient, carbon-free, and net-zero energy future.

Best Regards,



John Czarnecki, Associate AIA  
Executive Director  
AIA Arizona (state component)  
AIA Phoenix Metro (local chapter)  
Scottsdale resident



Dan Clevenger, AIA  
Architect  
Principal, DLR Group  
AIA Phoenix Metro 2022 Chapter President

## Letter of Support: Scottsdale Environmental Advisory Commission Recommendations for the 2021 International Energy Conservation Code

The Energy Efficient Codes Coalition (EECC) commends the City of Scottsdale for its consideration of the 2021 IECC and other codes that promote the efficient and responsible use of energy resources. Updating the energy code regularly is essential to protecting health and quality of life of building owners and occupants. The benefits of energy efficiency reaped through code updates are well-documented and include lower and more stable monthly energy bills, improved indoor comfort and air quality, and lower peak utility loads.

EECC is in support of Scottsdale Environmental Advisory Commission (SEAC)  
Recommendations as follows:

- International Energy Conservation Code (IECC) with amendments for EV charging capability for new single-family, multifamily and hotels; cool roofs for low-slope roofs of new residential and commercial buildings; solar PV compliance option for new single-family homes, and updated commissioning exceptions for commercial heating/cooling and ventilation systems.
- International Residential Code (IRC) with associated amendments related to energy and indoor water efficiency.
- International Green Construction Code (IgCC) as a mandatory code for new commercial and multifamily buildings.

The incorporation of these amendments will result in energy savings and construction of buildings that are resilient and prepared to meet the needs of the electric grid of the future.

EECC is concerned, however, about the deletion of IECC C405.12 Energy Monitoring and the electrification amendment that would provide for the installation of electric-ready receptacles where gas water heaters, dryers or cooking equipment is installed in new single-family homes. Energy monitoring enables building owners, managers, and tenants to have greater awareness and control of their energy use, which is vital to energy conservation. Implementing electric-ready technologies at time of construction is the easiest and cheapest means of future-proofing buildings, negating the need to perform costly updates down the road. Preemption statutes that disallow the use of energy monitoring and installation of electric-ready receptacles put consumers at a disadvantage and create unnecessary barriers to cost and energy savings over the life of the building.

Overall, EECC strongly supports the City of Scottsdale in their continued leadership in the efficient building space and urges the City Council to follow the recommendations of the Scottsdale Environmental Advisory Commission.

Sincerely,







## SOUTHWEST ENERGY EFFICIENCY PROJECT

*Saving Money and Protecting the Environment Through More Efficient Energy Use*

August 22nd, 2022

David D. Ortega, MAYOR  
Tom Durham, COUNCILOR  
Tammy Caputi, COUNCILOR  
Betty Janik, COUNCILOR  
Kathy Littlefield, COUNCILOR  
Linda Milhaven, COUNCILOR  
Solange Whitehead, COUNCILOR

Dear Mayor Ortega and Members of the Scottsdale City Council

**The Southwest Energy Efficiency Project<sup>1</sup> (SWEEP) appreciates the opportunity to provide these comments to support the adoption of the 2021 International Energy Conservation Code (IECC) including the electric vehicle (EV) charging infrastructure requirements.**

By approving the 2021 IECC with EV charging infrastructure requirements, the City of Scottsdale will be able to unlock significant consumer savings. According to a recent study by the Pacific Northwest National Laboratory (PNNL)<sup>2</sup>, one of the U.S. Department of Energy's national laboratories, Scottsdale homeowners can gain more than \$101,000 in economic benefits annually with the energy savings attributed to the 2021 code cycle.<sup>3</sup> Given the significant savings and economic potential that the 2021 IECC can offer, SWEEP believes the City of Scottsdale should move forward with the 2021 IECC as proposed, *with the exception of* the Energy Monitoring section, C405.12. Currently, the proposed code language has removed this section, which we believe should be reversed. Today's HVAC, lighting systems, building management systems, and other electronics support measurement recording and communications.

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<sup>1</sup> SWEEP is a public-interest organization promoting greater energy efficiency and clean transportation in Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming in order to save consumers money, protect the environment, and build a more resilient, robust economy.

<sup>2</sup> "Cost-Effectiveness of the 2021 IECC for Residential Buildings in Arizona,"  
[https://www.energycodes.gov/sites/default/files/2021-07/ArizonaResidentialCostEffectiveness\\_2021\\_0.pdf](https://www.energycodes.gov/sites/default/files/2021-07/ArizonaResidentialCostEffectiveness_2021_0.pdf)

<sup>3</sup> SWEEP utilized PNNL's 2021 IECC for Residential Buildings in Arizona analysis in order to calculate savings and economic benefits for the City of Scottsdale residents.



## SOUTHWEST ENERGY EFFICIENCY PROJECT

*Saving Money and Protecting the Environment Through More Efficient Energy Use*

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Furthermore, the City of Scottsdale should invest in EV infrastructure to make EV charging readily available for everyone, including those who live in historically disadvantaged communities. Approving EV readiness in this building code cycle is critical for ensuring the accessibility and deployment of EV charging equipment.

Including electric vehicle supply equipment (EVSE) in this building code cycle is critical to cost-effectively preventing the use of extension cords to inappropriate outlets for vehicle charging. Suppose the City of Scottsdale fails to prepare for the onslaught of EVs that global automakers have committed to producing. In that case, the cost of EVSE could skyrocket in the future while not addressing critical safety matters. Now is the time to prepare for the incoming surge of electric vehicles so that all Scottsdale residents have equal access to charging in all building types.

For all of these reasons, SWEEP encourages the City of Scottsdale to approve the 2021 International Energy Conservation Code with the inclusion of the Energy Monitoring section (C405.12) as well as the inclusion of EV charging infrastructure requirements for residential and nonresidential buildings to ensure equal access to charging equipment is done safely, reliably, and affordably.

Thank you for your time and the opportunity to submit these comments.

***Caryn Potter***

Arizona Representative

Southwest Energy Efficiency Project

***Jim Meyers***

Director, Buildings Program

Southwest Energy Efficiency Project



August 22, 2022

David D. Ortega, MAYOR  
Tom Durham, VICE MAYOR  
Tammy Caputi, COUNCILOR  
Betty Janik, COUNCILOR  
Kathy Littlefield, COUNCILOR  
Linda Milhaven, COUNCILOR  
Solange Whitehead, COUNCILOR

Dear City of Scottsdale Mayor and Council,

**Re: "2021 I-Codes Adoption"**

On behalf of the American Lung Association, we are pleased to offer support for the City of Scottsdale's proposal to adopt the **2021 International Energy Conservation Code (IECC) with the EV-Ready provisions and the mandatory International Green Construction Code (IgCC)**.<sup>1</sup> We are grateful that the City is exploring ways to advance codes that help to reduce air pollution, while helping residents to conserve energy and save money on their utility bills.

Arizona has some of the most dangerous levels of unhealthy air in the United States. The American Lung Association 2022 "State of the Air" report<sup>2</sup> shows 84% of Arizona residents live in counties impacted by poor air quality. Phoenix Metro, including Scottsdale, ranks among the most polluted metropolitan areas in the United States for ozone and particulate pollution. Air pollution contributes to respiratory and cardiovascular impacts including increased asthma attacks, worsened COPD, heart attacks and strokes, and premature death. Vulnerable populations such as children, the elderly, people of color, and low-income individuals are most at risk from these health harms. To learn more about Arizona's air quality please see our fact sheet attached.

The American Lung Association supports widespread transportation electrification (TE) as a first step to reduce greenhouse gas emissions, improve air quality, and protect Arizonans' health. Our electric vehicle report, "Zeroing in on Healthy Air" found that the transportation sector is the leading contributor to our air pollution challenges, especially in at-risk communities. Adopting building energy codes that enable the growth of the zero-emission transportation sector could yield \$15.1 billion in public health benefits just here in Arizona between now and 2050.

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<sup>1</sup> <https://www.scottsdaleaz.gov/Asset89432.aspx>

<sup>2</sup> <https://www.lung.org/research/sota/city-rankings/states/arizona>

Arizona's air quality crisis requires bold investments in electric cars, buses and medium/heavy-duty trucks coupled with increasing levels of non-combustion, renewable energy sources - these policies are widely supported among Arizona constituents and City of Scottsdale residents. To make these health savings a reality, we urge the Scottsdale City Council to adopt the electric vehicle charging infrastructure provisions in the IECC and IgCC in order to ensure higher EV adoption can be done cost-effectively and safely.

A 2021 poll<sup>3</sup> conducted by the American Lung Association in Arizona in December 2021 showed nearly 70% of Arizona voters support a transition towards electrification:

- 67% support switching all public vehicle fleets including transit buses, school buses, maintenance trucks, and government-owned cars to all electric vehicles.
- 66% support investments in publicly available charging infrastructure for electric vehicles as well as consumer incentives to encourage EV purchases.

As a leading public health organization, we urge the Scottsdale City Council to consider the will of Arizona voters and support electric vehicle growth by greenlighting the 2021 IECC with the proposed EV provisions and the mandatory IgCC proposed before you today.

Thank you for your consideration of our comments.

Sincerely,

JoAnna Strother  
Senior Advocacy Director American Lung Association

Melissa Ramos  
Manager, Clean Air Advocacy American Lung Association

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<sup>3</sup> <https://www.lung.org/media/press-releases/lung-association-az-supports-renewable-energy>



August 22nd, 2022

David D. Ortega, MAYOR  
Tom Durham, COUNCILOR  
Tammy Caputi, COUNCILOR  
Betty Janik, COUNCILOR  
Kathy Littlefield, COUNCILOR  
Linda Milhaven, COUNCILOR  
Solange Whitehead, COUNCILOR

Dear Mayor Ortega and Members of the Scottsdale City Council,

**Re: Industry Support for IECC EV-Readiness Provisions**

**The following comments are provided on behalf of EVgo, Tesla, and Siemens, which strongly support the adoption of EV-Ready provisions for new residential and commercial buildings as part of the City of Scottsdale's 2021 IECC adoption cycle.<sup>1</sup>**

This proposal is highly critical because auto industry-standard projections expect significant growth of electric vehicles in the next decade. The US electric vehicles market is expected to reach 6.9 million individual sales by 2025,<sup>2</sup> with Arizona being one of the major economic hubs of the industry. Currently, Arizona ranks 7th in the nation for most registered electric vehicles. With federal targets calling for 50% of vehicle sales to be electric in 2030,<sup>3</sup> as well as the Arizona Department of Transportation (ADOT) plan to utilize \$76.5 million in federal dollars to deploy an EV fast charger network,<sup>4</sup> Arizona's market share will only continue to grow.

It is clear that Arizona stands to reap significant economic benefits from more electric vehicles on its roads. Supportive policies like EV-Ready building codes can reduce the cost of installing EV charging stations due to the lack of pre-existing infrastructure in single-family, multi-family, and commercial buildings. Approving an EV-Ready building code ensures reliable and accessible deployment of EV charging equipment now and into the future.

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<sup>1</sup> <https://www.scottsdaleaz.gov/Asset89432.aspx>

<sup>2</sup> "US EV market sales to rise to 6.9 million units by 2025," S&P Global, <https://www.spglobal.com/platts/en/market-insights/latest-news/electric-power/111920-us-ev-market-sales-to-rise-to-69-million-units-by-2025-frost-amp-sullivan>

<sup>3</sup> "FACT SHEET: President Biden Announces Steps to Drive American Leadership Forward on Clean Cars and Trucks," <https://www.whitehouse.gov/briefing-room/statements-releases/2021/08/05/fact-sheet-president-biden-announces-steps-to-drive-american-leadership-forward-on-clean-cars-and-trucks/>

<sup>4</sup> "ADOT Electric Vehicle Infrastructure Deployment Plan," <https://azdot.gov/planning/transportation-studies/arizona-electric-vehicle-program>

For all of these reasons, the signatories of this letter encourage the City of Scottsdale's Mayor and Council to adopt the proposed EV-Readiness provisions in the 2021 IECC. We look forward to continued work with the City of Scottsdale on its transportation electrification efforts. Thank you for the opportunity to submit these comments.

Respectfully submitted this 22nd day of August 2022 by:

**Francesca Wahl**  
*Senior Charging Policy Manager*  
Tesla

**Chris King**  
*Senior Vice President, eMobility*  
Siemens

**Romic Aevaz**  
*Associate, Market Development and Public Policy*  
EVgo

# Arizona PIRG

Arizona Public Interest Research Group

September 27, 2022

Dear Mayor and Council Members,

Re: Support for Scottsdale to Adopt the 2021 IECC, IgCC, and IRC Codes

On behalf of the Arizona Public Interest Research Group (Arizona PIRG), I am writing to follow-up on our letters dated February 16, 2022 and August 22, 2022. Previously, we encouraged the City of Scottsdale to adopt the 2021 International Energy Conservation Code including Electric Vehicle (EV) Charging Infrastructure. Today, I write to also encourage you to adopt the IgCC and IRC Codes.

Arizona PIRG is pleased that Scottsdale continues on the path towards adoption of the codes as well as measures you have taken towards water conservation. Reducing energy and water waste and supporting EV charging infrastructure can save Scottsdale citizens money while helping to improve air quality and public health.

We strongly support Scottsdale moving forward and urge you to adopt the following codes and amendments:

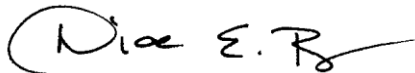
1. International Energy Conservation Code (IECC). Arizona PIRG continues to support amendments to the IECC related to expanding EV charging. More specifically, we support amendments related to EV charging for single-family and multi-family homes. In addition, we support a solar option for new single-family homes and cool roofs for low-slope roofs of residential and commercial buildings.
2. International Green Construction Code (IgCC). By *requiring* the IgCC for commercial and multifamily buildings, Scottsdale will continue down the path of water conservation and will be positioning the City and its citizens to reap benefits associated with onsite renewable energy, reduction of solid waste, and EVs and EV charging infrastructure.
3. International Residential Code (IRC). We support amendments to strengthen energy, water conservation, and recycling accommodations for single-family homes.

Through adopting the above codes and amendments, Scottsdale has an opportunity to help lead the way as our state continues to build. Arizona PIRG appreciates municipalities advancing policies that benefit the pocketbooks of its citizens, while also protecting our air, water, and health.

Please let me know if you have any questions. I can best be reached at [dbrown@arizonapirg.org](mailto:dbrown@arizonapirg.org) or (602)252-9227.

Thank you for your service.

Sincerely,



Diane E. Brown  
Executive Director



August 20, 2022

Re: "2021 I-CODES ADOPTION"

Dear Mayor Ortega and Council Members,

Since 2002, Vote Solar has been working to make solar affordable and accessible. We have a successful history of working in Arizona to support policies and programs to build a cleaner electricity grid and enable more Arizonans to adopt solar. We appreciate the City Council's efforts to implement smart building codes that will help Scottsdale residents and businesses save money on their energy bills and benefit from the growth of clean technologies.

Vote Solar strongly supports the adoption of the 2021 International Green Construction Code (2021 IgCC) including On-site Renewable Energy Systems and Electric Vehicle (EV) Charging Infrastructure as a mandatory code for all new commercial and multifamily buildings.

Additionally, Vote Solar strongly supports the adoption of the 2021 International Energy Conservation Code (2021 IECC) with the inclusion of amendments for:

- a. Solar PV compliance option for single-family homes (R408.2.6)
- b. Electric Vehicle (EV) Charging Infrastructure
- c. Appendix CB Solar-Ready Zone
- d. Appendix RB Solar-Ready Provisions

Finally, Vote Solar strongly supports adoption of the 2021 International Residential Code (2021 IRC) with the inclusion of amendments for

- a. Solar PV compliance option for single-family homes (N1108.2.6)
- b. Electric Vehicle (EV) Charging Infrastructure
- c. Appendix AT Solar-Ready Provisions

Adoption of these building codes will ensure that more homes and businesses in Scottsdale benefit from local, clean solar energy resources. Additionally, the solar-ready provisions include simple and inexpensive features that enable building owners to install solar at lower costs in the future (for example, an available slot on the electric panel and unobstructed space on the roof). Similarly, adoption of the EV-capable provisions lowers the cost and hassle of installing EV charging equipment in the future. This is particularly important for residents of multifamily buildings, who have limited options for home charging if accommodations for chargers are not made upfront. After all, running conduit during construction is much easier and less expensive than undertaking a major renovation effort later on. In sum, implementing smart building energy codes today protects homes and businesses from expensive upgrades in the future and positions them to take advantage of the benefits of clean energy.

Vote Solar urges the City of Scottsdale to adopt, as mandatory, the 2021 IgCC, IECC, and IRC, with the amendments listed above.

Sincerely,

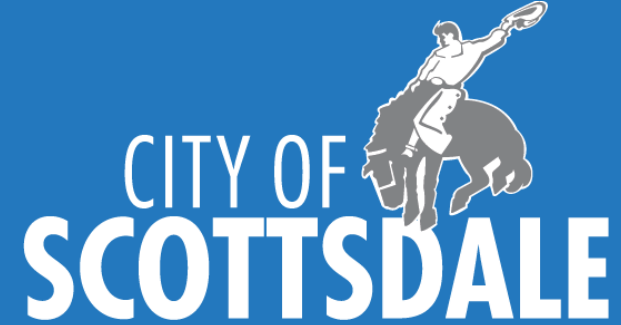
**Kate Bowman**

Interior West Regulatory Director

Vote Solar

kbowman@votesolar.org





# 2021 Residential, Energy & Green Construction Codes Updates

Scottsdale City Council Meeting

December 6, 2022

## Background: Building Codes

Developed by US-based International Code Council (ICC)

Supported by:

- American Institute of Architects (AIA)
- National Association of Home Builders (NAHB)
- Building Owners and Managers Association (BOMA)
- Professional Trade Associations
- Building product and material manufacturers

# Community Impacts and Benefits

- Clarify code provisions while enhancing life-safety
- Improve community value and quality of life
- Protect natural resources
- Accounts for new technologies

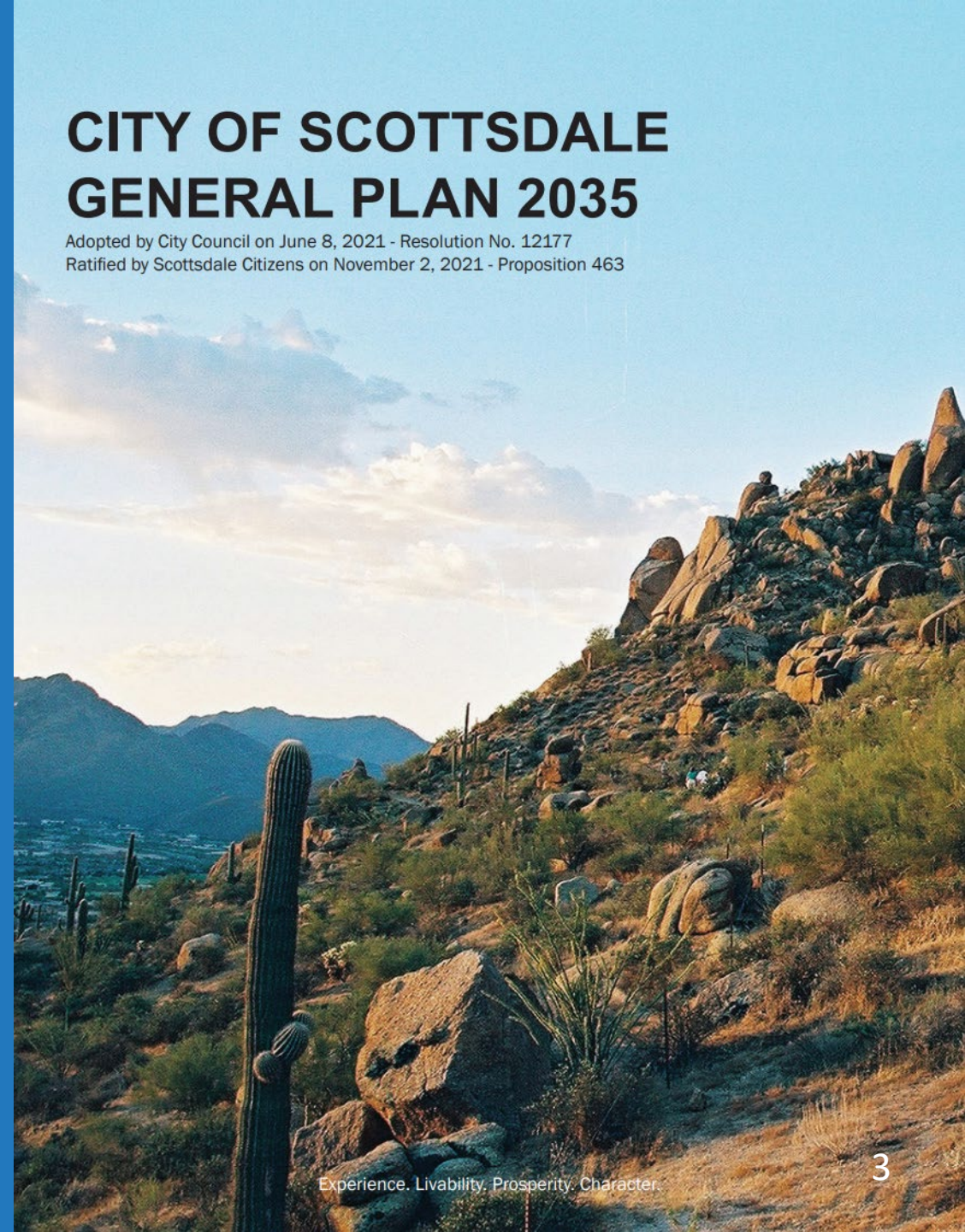
# 2021 Code Updates

## Consistent with General Plan

- Safety Element
- Housing Element
- Water Resources Element
- Energy Element
- Environmental Element

## CITY OF SCOTTSDALE GENERAL PLAN 2035

Adopted by City Council on June 8, 2021 - Resolution No. 12177  
Ratified by Scottsdale Citizens on November 2, 2021 - Proposition 463



# 2021 Residential, Energy & Green Construction Codes Updates

## **Aug 23, 2022:** City Council Work Study Session Consensus

- Advance building & fire code amendments in September
- Conduct additional public outreach
- Advance IgCC for council consideration as mandatory before year-end

## **Sept 20, 2022:** City Council Adopted 8 Building & Fire Codes

## **Sept 27, 2022:** Community Open House (IRC, IECC, IgCC)

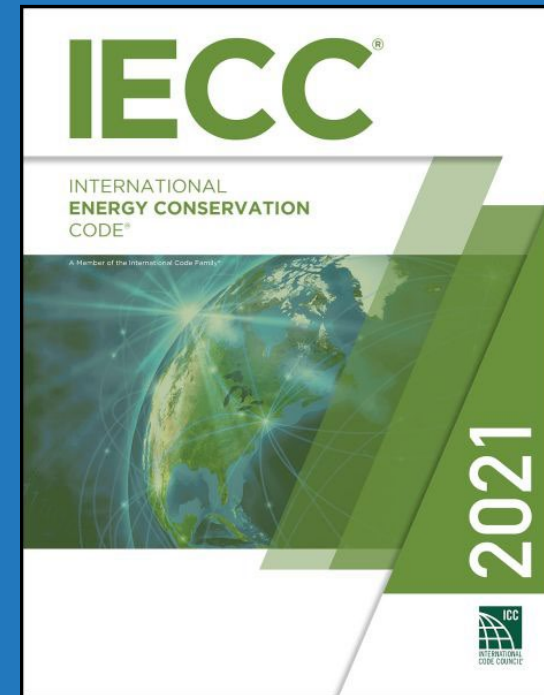
- More than 80 attendees (in person & virtual)
- Received majority comments in support

# 2021 International Energy Conservation Code (IECC)

## Single Family, Multifamily and Commercial Buildings

### Energy Components

- Thermal envelope
- Heating and cooling systems
- Service water heating
- Electrical power and lighting systems
- Solar-ready zones





# IRC /IECC Amendment: Electric Vehicle Charging Capacity

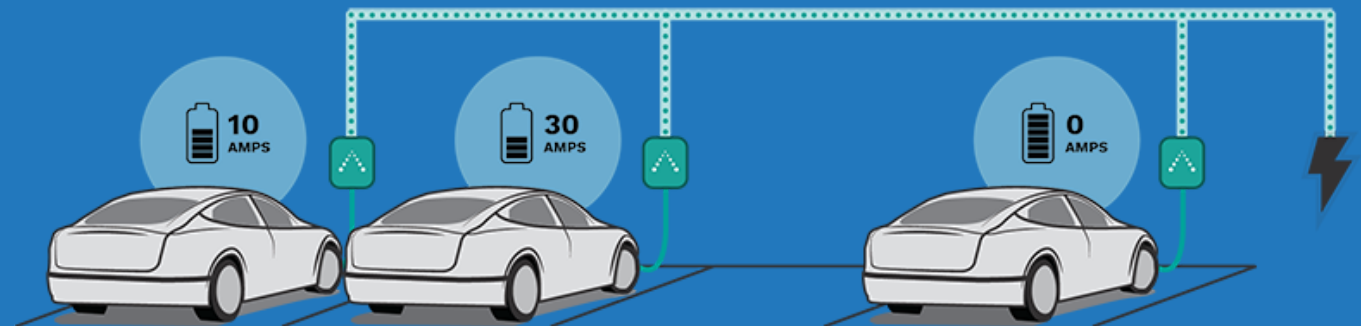
## New single-family homes

- EV-capable
- Install raceway for future wiring
- Reserve electrical service panel space



## New multi-family and hotels

- 20% EV-capable
- 4% installed



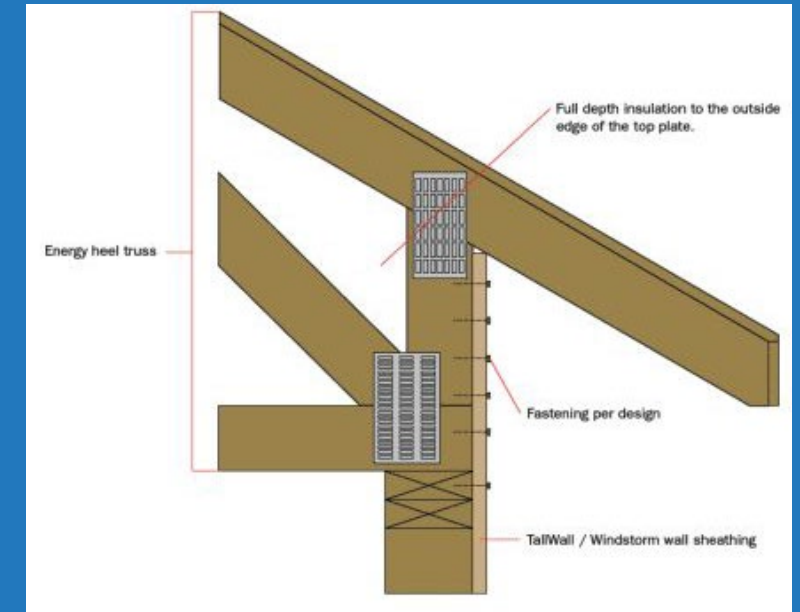
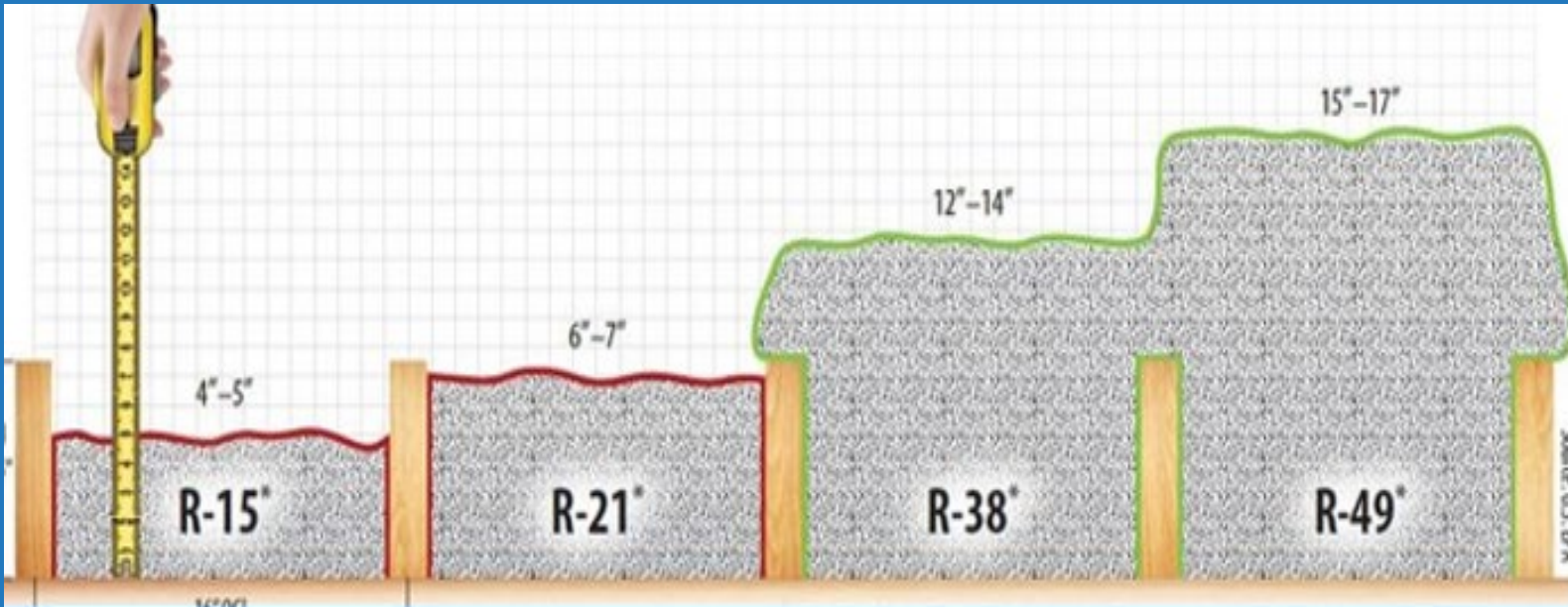
Source: EverCharge SmartPower

# Option A: Add EV-Capable Charging (IRC/IECC)

Benefits	Disadvantages
<ul style="list-style-type: none"><li>• Residents can easily install EV charging stations</li><li>• Supports a net zero emissions goal</li></ul>	<ul style="list-style-type: none"><li>• Technology may change and electrical circuit breaker size may not be used</li><li>• Added minimal expense</li></ul>



# IRC/IECC Amendment: Ceiling Insulation R-38 (2015) vs R-49 (2021)

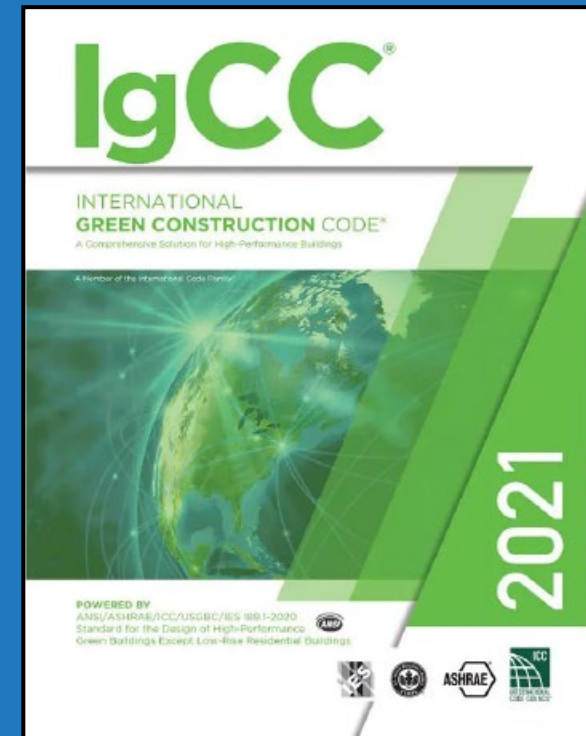


## Option B: Retain R-38 vs R-49

R-38 Benefits	R-49 Benefits
<ul style="list-style-type: none"><li>• Continue annual energy cost savings</li><li>• R-38 will not increase upfront building cost that could result from higher exterior walls and roof heights (May conflict with zoning height restrictions)</li><li>• R-38 avoids additional complexity and construction constraints</li></ul>	<ul style="list-style-type: none"><li>• R-49 will result in net savings over the life of home (30 years)</li><li>• Improved occupant comfort</li></ul>

# Major 2021 IgCC Provisions

- **Site** (existing in Planning & Stormwater SRC)
- **Water** (existing in IPC/SRC)
- **Energy** (existing in IECC/SRC)
- **Indoor Environmental Quality**
  - Low VOC interiors
  - Acoustics and Daylighting (IBC, IECC)
- **Material Resources**
  - Recycling infrastructure (IBC)
  - Reduced impact materials



# IgCC Significant Changes

- Low VOC interior materials and finishes
- Heat island mitigation
- EV ready charging infrastructure
- Construction waste management
- Low impact building materials
- Water efficiency (indoor/outdoor)
- On-site PV solar



# Mandatory IgCC for Commercial Buildings

Benefits if Mandatory	Impacts if Mandatory
<ul style="list-style-type: none"><li>• Reduces energy, water use and waste over life of building</li><li>• Improved indoor air quality</li><li>• Consistency and certainty</li><li>• Demonstrated continued regional and national leadership in green buildings</li></ul>	<ul style="list-style-type: none"><li>• Increased construction costs</li><li>• Increased review and enforcement expenses to city</li><li>• New requirements may be considered burdensome due to unfamiliarity to IgCC requirements</li><li>• Some requirements may be difficult to achieve immediately</li></ul>

# Community Input

- Home Builders Association of Central AZ
- Southwest Energy Efficiency Project
- American Institute of Architects
- Nelsen Partners Architects & Planners
- Scottsdale Area Association of Realtors
- AZ PIRG (Public Interest Research Group)
- AZ Multihousing Association
- American Lung Association
- Experience Scottsdale
- Environment Arizona
- Southwest Gas
- Vote Solar
- Energy Raters
- BABA
- SEAC

# Building Advisory Board of Appeals (BABA) Recommendations

## Adoption of IRC/IECC with all amendments:

- Oppose EV capable charging for single-family homes
- Support EV charging infrastructure for multi-family and hotels
- R-38 ceiling insulation for single-family homes

## Adoption of IgCC with all amendments:

- Mandatory for zoning & planning bonuses
- Voluntary for all other commercial projects

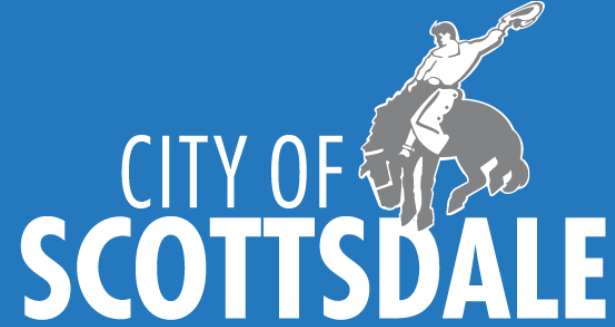
# Scottsdale Environmental Advisory Commission (SEAC) Recommendations

Adoption of IRC/IECC with all amendments:

- EV charging capabilities (new single-family, multi-family & hotels)
- R-49 ceiling insulation for new single-family homes

Adoption of IgCC as a mandatory code for new commercial and multi-family buildings





# Residential, Energy & Green Construction Codes Updates

Questions?

## **Action 1: IRC & IECC**

“Adopt Ordinance No. 4575, Resolution Nos. 12499, 12503, adopting the 2021 International Residential Code (IRC) and 2021 International Energy Conservation Code (IECC) including all amendments in attachment 2 and 3 with an effective date of January 7, 2023.”

### **Potential Additions:**

Option A: Add EV capable charging infrastructure requirement for new single-family homes (attachment 4) and/or

Option B: Retain minimum ceiling insulation value of R-38 instead of R-49 for new single-family homes (attachment 5)

## **Action 2: IgCC as Mandatory**

“Adopt Ordinance No. 4576 and Resolution No. 12505, adopting the 2021 International Green Construction Code (IgCC) including all amendments in attachment 7 as a mandatory code for all new commercial building projects with an effective date of the later of July 1, 2023, or the date the City zoning ordinance is amended in response to Ordinance No. 4576.”

## **Alternate Action 2: IgCC as Voluntary**

“Adopt Ordinance No. 4576 and Resolution No. 12505 with amendments to make the 2021 International Green Construction Code (IgCC) and City amendments to the IgCC voluntary, with a January 7, 2023 effective date.”

**From:** notifications@cognitoforms.com on behalf of City of Scottsdale <notifications@cognitoforms.com>  
**Sent:** Thursday, December 1, 2022 2:12 PM  
**To:** Cordova, Rommel  
**Subject:** City Council Public Written Comment Form - Jan L Green

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Entry Details

Agenda Item

MEETING DATE

12/6/2022

WHICH AGENDA ITEM WOULD YOU LIKE TO COMMENT ON?

18. Adoption of Residential, Energy, and Green Construction Code Updates

Name

FULL NAME

Jan L Green

NAME OF GROUP OR ORGANIZATION

HomeSmart

Contact Information

PHONE

(602) 620-2699

EMAIL

jan@gotgreen.info

ADDRESS

8388 E Hartford Dr Suite 100

## Comment

### COMMENT

Scottsdale is an entertainment mecca for winter visitors and residents alike. And, Scottsdale is not just a city, it's a BRAND. That BRAND should include the best of technology since that's what consumers have come to expect.

As one of the first cities with a green building program, Scottsdale should provide cutting edge building science and technology for homes. A big part of that technology is providing electric vehicle charging in new construction. Providing access, as a means to charge vehicles in Scottsdale homes, is a must due to the current environment of rapid sales of electric vehicles, and more people than ever working from home.

As an EV (Tesla) owner, realtor working from home, I charge my vehicle regularly at home during "super off-peak hours." Thanks to APS, Super Off Peak Hours are from 11 pm to 5 am, the perfect time to charge. I've owned my Tesla for 2 years and have charged it 90% of the time at home since i have a 350 milie driving range.

The cost to charge at home is nominal, convenient, and less than Tesla chargers. But, I had to install the outlet which was much more costly (\$660) than if it had already been installed during construction. It's easy and relatively inexpensive for a builder to provide this in the electrical panel and in the wall in a garage during construction. EV chargers should be an included option since it costs the builder a few dollars to manage up front. Home buyers in Scottsdale will come to expect this feature.

The median sales price of a home in Scottsdale is \$830,000 as of 12/1/22. Buyers come to expect that amenity at this sales price. By comparison, the median sales price in Phoenix is \$425,000 (12/1/22.) Home buyers are less likely to expect an EV charger at that price point.

Arizona is #7 in the country for EVs. There are several EV manufacturers, an electric truck manufacturing plant, battery companies, and a battery recycling plant is coming to Maricopa

County. The Phoenix area is known as the Silicon Valley of the desert. EV chargers should be included as more executives relocate to our cities and expect forward- thinking homes to coincide with the technological environment that exists.

According to ElectricCarReport.com, “The United States, as the second-largest EV market, is forecast to generate \$61.1bn from EV sales next year, up from \$49bn in 2022. Together, the two markets account for more than half of global EV car sales. As the next three markets, Germany, France, and the United Kingdom account for another 20%.” It only makes sense to provide EV chargers in our homes to meet future demand.

And according to <https://www.recurrentauto.com/research/2022-arizona-ev-trends>, demand for EV's rose 112% between February, 2022 to March, 2022. Gas prices most likely had something to do with this, but this clearly demonstrates that EV chargers SHOULD be included in new construction in Scottsdale.

**From:** notifications@cognitoforms.com on behalf of City of Scottsdale <notifications@cognitoforms.com>  
**Sent:** Thursday, December 1, 2022 8:58 PM  
**To:** Cordova, Rommel  
**Subject:** City Council Public Written Comment Form - Alexia Melendez Martineau  
**Attachments:** PIA comments on Scottsdale building codes.docx.pdf

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# City of Scottsdale

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#### Agenda Item

MEETING DATE 12/6/2022

WHICH AGENDA ITEM WOULD YOU LIKE TO COMMENT ON? 18. Adoption of Residential, Energy, and Green Construction Code Updates

#### Name

FULL NAME Alexia Melendez Martineau

NAME OF GROUP OR ORGANIZATION Plug In America

#### Contact Information

EMAIL amartineau@pluginamerica.org

CITY Los Angeles, CA

#### Comment



**COMMENT**

Plug In America encourages you to adopt:

1. IgCC as mandatory with proposed amendments
2. IECC with proposed amendments
3. IRC with proposed amendments
4. Option A amendments to the IECC and IRC

Please see our attached comments.

---

**Attachments**

**FILE UPLOAD**

PIA comments on Scottsdale building  
codes.docx.pdf



Re: 12/6/22 Regular Agenda Item #18 - Residential, Energy and Green Construction Code

Dear Mayor Ortega, Vice Mayor Durham and Council Members,

We are writing to you on behalf of Plug In America, a non-profit consumer advocacy organization with a mission to accelerate the shift to plug-in vehicles powered by clean, affordable, domestic electricity. As the voice of the electric vehicle (EV) consumer, Plug In America is proud to represent our strong member base across the state of Arizona. We are writing to encourage you to adopt all of the proposed new Electric Vehicle (EV) infrastructure provisions as mandatory measures in Scottsdale's updated building codes, specifically

1. IgCC as mandatory with proposed amendments
2. IECC with proposed amendments
3. IRC with proposed amendments
4. Option A amendments to the IECC and IRC

As EVs become increasingly more ubiquitous, Scottsdale residents and drivers are likely to reap significant benefits from adopting these clear-sighted requirements for new construction. EVs reduce air, noise, heat, and climate pollution; they are substantially cheaper to operate, especially when charged at home; and with \$100 billion of EV-related federal funding available, the EV revolution is well underway. Requiring new parking to include EV infrastructure is financially prudent, as buildings tend to last for several decades and during construction is by far the cheapest time for EV charging installation.

### **EVs Are Much Better for the Climate**

From cradle to grave, EVs outperform gas cars on global warming emissions. The emissions benefits of *driving* on electricity far outweigh the higher emissions costs of vehicle *manufacturing* and *disposal*. This statement is true even in Arizona heat and using Arizona's current electricity grid. A typical EV driven in Scottsdale today [will emit the equivalent CO2 emissions as a gas car getting 79 MPG](#). While heat can affect the mileage of certain older EV models, excessive heat also affects the efficiency of gas cars; [and most EV models now include Battery Thermal Management Systems](#), dramatically reducing heat-related efficiency losses. Most EVs "pay back" their production emissions within one or two years of driving – and this period will continue to shorten as Arizona's electricity grid grows cleaner.

### **EVs Are Coming Faster (and cheaper) Than You Might Realize**

[Automakers](#) today are investing [hundreds of billions](#) to shift their production to electric vehicles, with many committing to selling only electric models by 2040 or sooner. The federal Inflation Reduction Act (IRA) gives US consumers [considerable EV incentives](#), significantly lowering up-front purchase costs on *new and used* EVs for the next ten years. Even without these incentives, EVs are expected to reach price parity with comparable gas cars [within the next few years](#). The cost of fueling an EV is equivalent to [less than \\$2](#) per gallon of gasoline; and EV

maintenance costs are also substantially lower than for gas cars. EVs are also quieter, and more fun to drive. So it's maybe no surprise that the majority of voters across parties and demographics [support public investments](#) in accelerating the transition to electric vehicles.

### **Yes, the Grid Can Handle EVs**

Early concerns about the effects of EVs' increased demand on the electric grid have proven to be unfounded: places like [California](#) and [Norway](#) with high EV market share have shown [little to no adverse grid impacts](#). (Electrifying the global vehicle fleet would add [just 25 percent](#) to global electricity demand in 2050, while global electricity supply is [forecast to grow more than 60 percent](#) from 2020 levels by 2026.) In fact, EVs are poised to help *improve* the grid by [adding backup storage capacity](#).

### **Home and Workplace Charging Is Essential**

The most [significant barrier to EV adoption](#) is a lack of [home or workplace charging](#). Because over 90% of daily trips are [under 40 miles](#), most EV drivers can take advantage of the long dwell-time at their home or workplace parking to fuel their cars most conveniently and affordably. And putting that infrastructure in at the time of new construction is – by far – [the least expensive](#) time to do so. This is why several states and dozens of US cities – including [Honolulu](#), [Denver](#), [Seattle](#), [Atlanta](#), and [Washington, DC](#) – have already chosen to adopt EV-ready building codes.

### **EV Signage Is (inexpensive and) Always Helpful**

One often-overlooked, inexpensive component to a successful EV building code is a requirement for prominent signage at the EV charging space. Particularly for EV Capable spaces, where the wiring is hidden in the walls, signage indicating the potential for EV charging is a simple, easy to implement, and very low-cost strategy for increasing EV adoption and ensuring a return on this early investment. For EV Ready spaces, signage provides a highly effective means of educating drivers about the types and locations of EV charging, and also helps potential drivers to overcome another barrier to adoption: range anxiety. We therefore encourage you to consider adding a signage requirement to these code provisions.

In closing, EV-ready building codes are one of the most effective and low-cost strategies local governments can take to encourage their residents to join the EV revolution. EVs will help keep money in Scottsdale's local economy, improve Scottsdale's air quality, and reduce harmful health impacts of traffic pollution for residents. Scottsdale's currently proposed provisions are a great first step in supporting local EV infrastructure. We urge you to make use of this effective tool and update your codes in this cycle to include EV-readiness provisions, including IgCC mandatory, IECC, IRC, and Option A. Thank you for the opportunity to comment.

Sincerely,

Joel Levin, Executive Director  
Plug In America

Vanessa Warheit, EV Charging for All  
Sr. Program Advisor  
Plug In America

**From:** notifications@cognitoforms.com on behalf of City of Scottsdale <notifications@cognitoforms.com>  
**Sent:** Saturday, December 3, 2022 9:57 PM  
**To:** Cordova, Rommel  
**Subject:** City Council Public Written Comment Form - Greg Duclos

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# City of Scottsdale

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#### Agenda Item

MEETING DATE 12/6/2022

WHICH AGENDA ITEM WOULD YOU LIKE TO COMMENT ON? 18. Adoption of Residential, Energy, and Green Construction Code Updates

#### Name

FULL NAME Greg Duclos

#### Contact Information

PHONE (480) 548-1919

EMAIL act2dy@gmail.com

ADDRESS 11260 E Poinsettia Dr

CITY Scottsdale

## Comment

### COMMENT

The EV building codes are needed to explain into more use: I've only found 3 public charging units that work. One of was in The Shops Gainey Village but its not working for the past two year. So I no longer go eat dinner there.

Scottsdale's proposed provisions are a first step in supporting local EV infrastructure. Please make use of the update your codes in this cycle to include EV-readiness provisions, including IgCC mandatory, IECC, IRC.

Thank you.

---

**From:** notifications@cognitoforms.com on behalf of City of Scottsdale <notifications@cognitoforms.com>  
**Sent:** Sunday, December 4, 2022 11:17 AM  
**To:** Cordova, Rommel  
**Subject:** City Council Public Written Comment Form - Lawrence J Rogoff

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# City of Scottsdale

## Web Scottsdale City Council Meeting Written Comment Form

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#### Agenda Item

MEETING DATE 12/6/2022

WHICH AGENDA ITEM WOULD YOU LIKE TO COMMENT ON? 18. Adoption of Residential, Energy, and Green Construction Code Updates

#### Name

FULL NAME Lawrence J Rogoff

#### Contact Information

PHONE (480) 490-2360

EMAIL imtherog@gmail.com

ADDRESS 20701 N SCOTTSDALE RD

CITY SCOTTSDALE

## Comment

### COMMENT

EV-ready building codes are one of the most effective and low-cost strategies our city can take to encourage our residents to switch to electric.

Electric Vehicles will help keep money in Scottsdale's local economy, improve Scottsdale's air quality, and reduce harmful health impacts of traffic pollution for residents.

Scottsdale's currently proposed provisions are a great first step in supporting local EV infrastructure. Future provisions, particularly in multi-family and commercial office buildings and their employee/guest parking lots, should be on the agenda soon.. We urge you to make use of this effective tool and update your codes in this cycle to include EV-readiness provisions, including IgCC mandatory, IECC, IRC, and Option A.

---

**From:** notifications@cognitoforms.com on behalf of City of Scottsdale <notifications@cognitoforms.com>  
**Sent:** Sunday, December 4, 2022 4:19 PM  
**To:** Cordova, Rommel  
**Subject:** City Council Public Written Comment Form - James A. Bristol  
**Attachments:** 2022 Arizona Healthy Air Fact Sheet.pdf; 2022 Zeroing in on Healthy Air Report.pdf

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# City of Scottsdale

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#### Agenda Item

MEETING DATE 12/6/2022

WHICH AGENDA ITEM WOULD YOU LIKE TO COMMENT ON? 18. Adoption of Residential, Energy, and Green Construction Code Updates

#### Name

FULL NAME James A. Bristol

#### Contact Information

PHONE (860) 388-7404

EMAIL jim.bristol@gmail.com

ADDRESS 10047 East Scopa Trail

CITY Scottsdale



## Comment

### COMMENT

Dear Mayor, Vice Mayor, and City Council Members.

Re: Agenda Item #18: Adoption of Residential, Energy, and Green Construction Code Updates

Please cast your vote for:

1. IgCC as MANDATORY with proposed amendments
2. IECC with proposed amendments
3. IRC with proposed amendments
4. Option A amendments to the IECC and IRC

I have been a resident of Scottsdale since 2007 and I own and drive two electric vehicles (EVs). For the past 48 years I have worked exclusively in the healthcare industry, both pre and post retirement, where my efforts have been dedicated to improving health and well-being.

Your passage of the above #1-4 will benefit both the economic and physical health of the residents of Arizona.

In addition to the significant economic benefits for Scottsdale builders, developers and residents that would accrue following adoption of this resolution, there are also attendant and significant health benefits derived from cleaner air resulting from the increased use of EVs in Arizona.

Attached to this message are two reports from the American Lung Association (ALA) which is “the leading organization working to save lives by improving health and preventing lung disease through research, education and advocacy.” American Lung Association State of the Air 2022; and, Zeroing in on Healthy Air, 2022.

The ALA State of the Air Report for Arizona states clearly that Phoenix (and by extension, Scottsdale) ranks among the most polluted cities in the U.S. Gasoline and diesel-powered vehicles contribute to ~50% of this pollution. In support of this, the ALA Zeroing in on Healthy Air report, page 5, lists the reductions in toxic vehicle pollutants that can be achieved by moving toward zero vehicle emission over the next 28 years.

This is a health issue, not a political issue, and one

that benefits all the citizens of Arizona. Scottsdale can lead the way in adopting relatively simple, health effective, and cost-effective measures through the adoption of building codes for single and multi-family homes as well as commercial buildings that will facilitate EV charging now and well into the future.

Again, please vote in support of EV readiness to accelerate the switch to cleaner and cheaper and healthier electric fuel in our great city of Scottsdale.

Sincerely,

James A. Bristol, Ph.D.  
10047 East Scopa Trail  
Scottsdale, AZ 85262,  
860 388 7404

---

## Attachments

FILE UPLOAD

2022 Arizona Healthy Air Fact Sheet.pdf  
2022 Zeroing in on Healthy Air Report.pdf

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## State of the Air 2022

**More than 4 in 10 Americans breathe unhealthy air. In Arizona, it's often worse.** Tailpipe emissions and extreme heat drive up ozone pollution, while prolonged drought conditions and other impacts from climate change, such as historic Western wildfires, contribute to particle pollution.

Phoenix ranks among the most polluted cities in the United States for ozone and particulate pollution. It is one of just a handful of U.S. cities to land on all three of the State of the Air report's Top 25 most polluted cities lists:

**5th** 

in most unhealthy  
ozone days.

**11th** 

in unhealthy particle  
pollution days.

**8th** 

in unhealthy annual levels  
of particle pollution.

**84%** of Arizonans live in the 5 counties that received at least one failing grade for ozone days, particle days and/or annual particles.

Poor air quality contributes to a wide range of negative health impacts, including childhood asthma attacks, impaired lung function and development, lung cancer, heart attacks and strokes and premature deaths. Low-income communities and communities of color are disproportionately impacted by bad air quality.

## Zeroing in on Healthy Air

Moving away from combustion to zero-emission technologies is critical to clean air, health equity and a healthy climate. The American Lung Association's [Zeroing in on Healthy Air](#) report finds that a widespread shift to zero-emission transportation and clean energy would yield major health benefits between 2020 and 2050.

The widespread transition to zero-emission cars, buses and trucks could avoid 1,360 premature deaths and generate over \$15 billion in public health benefits.

### Health Impacts Avoided (2020-2050)

- Premature Deaths: 1,360
  - Asthma Attacks: 38,500
  - Lost Work Days: 182,000
- 
- Health Cost Savings: \$15.1 Billion

## Taking Action = Cleaner Air and Healthier Lungs

- **Use Clean Air Act authority** to adopt zero-emission standards for light, medium- & heavy-duty vehicles.
- **Pursue fully electric public fleets** and support zero-emission infrastructure including in all public buildings and garages.
- **Invest in publicly available charging infrastructure** along major highways and roads to ensure both personal and commercial charging opportunities exist.
- **Support accelerated fleet turnover through incentive programs** targeting older vehicles, consumer purchase decisions via point-of-purchase rebates and non-financial incentives.

## American Lung Association Poll

Arizona voters overwhelmingly view climate change as a significant present-day threat and strongly support actions to transition toward electric vehicles.\*



**78%** view climate change as a serious problem.



**69%** support a plan for utilities to cut carbon emissions by 50% by 2032 and 100% by 2050.



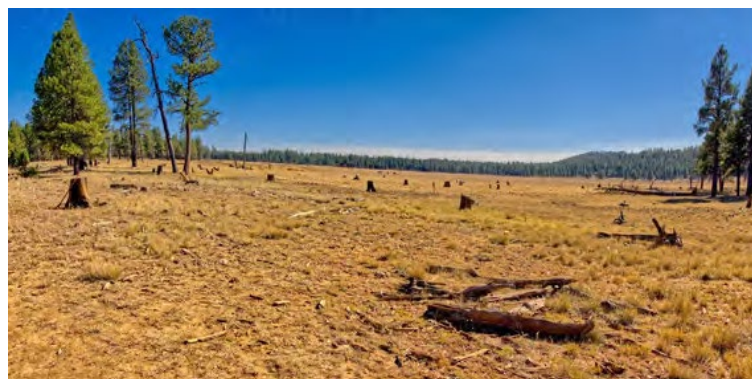
**67%** support transition to electric school buses, transit buses and government fleets.



**66%** support consumer incentives to encourage electric-vehicle purchases.



**66%** support investing in public charging infrastructure for electric vehicles.



“It is clear that Arizonans are deeply concerned about air pollution and climate change and understand the benefits of shifting away from harmful fossil fuels such as coal, oil and gas,” said JoAnna Strother, Senior Advocacy Director for the American Lung Association in Arizona. “Policies that clean our air and safeguard healthy environments are popular, and our policymakers need to act. An immediate opportunity to do this is for the Arizona Corporation Commission to encourage utilities to make investments in noncombustion electricity.”





## Zeroing in on Healthy Air

A National Assessment  
of Health and Climate Benefits  
of Zero-Emission Transportation  
and Electricity



## About this Report

**Zeroing in on Healthy Air** finds that a widespread transition to zero-emission cars, trucks, buses and other vehicles, coupled with non-combustion, renewable energy resources would yield tremendous air quality, public health and climate benefits across the United States. To illustrate the potential benefits, a transition to 100 percent sales of light-duty passenger vehicles and medium-and heavy-duty vehicles were assumed over the coming decades, along with a transition to non-combustion electricity generation.

**Zeroing in on Healthy Air** builds off the 2020 Road to Clean Air report by the American Lung Association, and illustrates the potential scale of benefits to public health, air quality and climate change if the United States accelerates the course to a zero-emission transportation sector coupled with non-combustion renewable sources like wind and solar energy. While similar to the 2020 “Road to Clean Air” report on zero-emission transportation, this report stands alone. Updates to technical models, assumptions and methods do not allow for direct comparisons between “Road to Clean Air” and this new analysis.

The American Lung Association developed this project with the assistance and technical support of ICF Incorporated, LLC (ICF). Using a series of modeling tools, ICF provided estimated fleet characteristics and emissions profiles (US EPA MOVES2021 model, ICF’s custom fleet modeling), emissions associated with fuel and electricity generation (Argonne National Lab GREET Model, ICF’s custom IPM model) and health outcomes associated with changes in emissions (US EPA COBRA health model). ICF conducted a comprehensive analysis of the potential health and climate benefits of this transition as a consultant to the American Lung Association, which is solely responsible for the content this report. Additional details on the structure of the report, a full methodology and assumptions about future vehicle fleets, changes in the electric power grid and citations are detailed in the technical report document prepared by ICF for the American Lung Association. Available online at [Lung.org/ev](https://www.lung.org/ev).







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### Executive Summary

**Zeroing in on Healthy Air** is a report by the American Lung Association illustrating the public health urgency of policies and investments for transitioning to zero-emission transportation and electricity generation in the coming decades. These sectors are leading sources of unhealthy air in the United States. Today, over four in ten Americans — more than 135 million people — live in communities impacted by unhealthy levels of air pollution. Research demonstrates that the burdens of unhealthy air include increased asthma attacks, heart attacks and strokes, lung cancer and premature death. These poor health outcomes are not shared equitably, with many communities of color and lower income communities at greater risk due to increased exposure to transportation pollution. The transportation sector is also the largest source of greenhouse gas emissions that drive climate change, which threatens clean air progress and amplifies a wide range of health risks and disparities.

This report finds that a national shift to 100 percent sales of zero-emission passenger vehicles (by 2035) and medium- and heavy-duty trucks (by 2040), coupled with renewable electricity would generate over \$1.2 trillion in public health benefits between 2020 and 2050. These benefits would take the form of avoiding up to 110,000 premature deaths, along with nearly 3 million asthma attacks and over 13 million workdays lost due to cleaner air. This report calculates the emission reductions possible from shifting to vehicles without tailpipes, as well as eliminating fuel combustion from the electricity generation sector so that neither those living near roads or near electricity generation would be subjected to unacceptable doses of toxic air pollution. The report also highlights the fact that the shift to zero-emission transportation and electricity generation in the United States will yield avoided global climate damages over \$1.7 trillion.

By expediting investments and policies at the local, state and federal levels to reduce harmful pollution, all communities stand to experience cleaner air. Policies and investments must prioritize low-income communities and communities of color that bear a disproportionate pollution burden. State and local jurisdictions should act to implement policies as soon as possible, including in advance of the benchmarks used in this report's methodology. These actions are needed to achieve clean air, reduce health disparities and avoid even more dire consequences of climate change.

### Zeroing in on Healthy Air

In the United States, transportation and electricity generation are leading sources of unhealthy air and the pollutants that cause climate change.

Those living near highways, ports, railyards, warehouses, and other transportation hubs are at greater health risk, as are those impacted by fuel refining, electricity generation and processes.

The widespread, rapid shift to zero-emission transportation and electricity generation is critical to healthy air, and can yield more than \$1.2 trillion in health benefits and 110,000 pollution-related deaths avoided over the coming decades along with over \$1.7 trillion in global climate benefits.





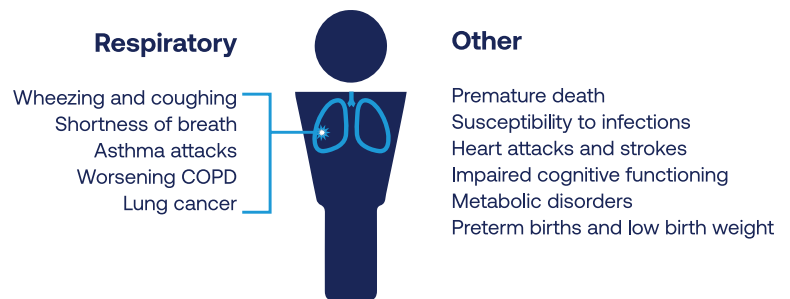


### The Public Health Need for Zero Emissions

#### Air Pollution Remains a Major Threat to Americans' Health

Despite decades of progress to clean the air, more than 4 in 10 of all Americans — 135 million — still live in a community impacted by unhealthy levels of air pollution.<sup>ii</sup> Those impacted by polluted air face increased risk of a wide range of poor health outcomes as the result of increased ozone and/or particle pollution.<sup>iii</sup> The adverse impacts of pollution from the transportation and electricity generation sectors are clear, and must be recognized as a threat to local community health, health equity and a driver of major climate change-related health risks. Even with certification to meet existing standards, it is clear that combustion technologies often generate far greater levels of pollution in the real world than on paper.

**Air pollution** can harm children and adults in many ways



“The shift to zero-emission transportation and electricity generation will save lives and generate massive health benefits across the United States. It is critical that we ensure these benefits are realized in the near term in communities most impacted by harmful pollution today.”

Harold Wimmer, American Lung Association President and CEO





### Location Matters: Disparities in Exposure Burden

Exposure to pollution with its associated negative health consequences is dictated by where someone lives, attends school or works. In general, the higher the exposure, the greater the risk of harm. Many communities face disproportionate burdens due to pollution generated from production, transportation, refining and combustion of fuels along the transportation and electricity generating systems. Lower income communities and communities of color are often the most over-burdened by pollution sources today<sup>iv</sup> due to decades of inequitable land use decisions and systemic racism.

The American Lung Association's State of the Air 2021 report illustrated the disparities in pollution burdens across the United States, noting that a person of color in the United States is up to three times more likely to be breathing the most polluted air than white people.<sup>v</sup> All sources of harmful air and climate pollution must shift rapidly away from combustion and toward zero-emission technologies to ensure all Americans have access to the benefits of less-polluting technologies.

**“Pollution from the transportation sector has been a long-standing obstacle to advancing environmental justice, as many communities of color and low-income families live near areas where pollution from vehicles and engines is abundant, and therefore experience disproportionate exposures to this pollution.”**

US EPA  
Transportation and Environmental Justice  
Fact Sheet March 2022

**“Rapidly eliminating emissions from the transportation and electricity generation sectors must be a national priority. The nationwide transition to electric vehicles is urgently needed to improve lung health and advance health equity.”**

Harold Wimmer  
American Lung Association President and CEO



For those living in close proximity to major transportation hubs like highways, ports, railyards or warehouses, tailpipe (or “downstream”) emissions yield an outsized risk to community health.



Similarly, “upstream” emissions from transportation fuels generate localized health burdens near oil and gas extraction sites, refineries and even local gas stations, all of which generate toxic air pollution and threaten community health.



Health of communities all along the electricity production system — from the extraction of fossil fuels such as coal, oil and gas, transportation of these fuels, and combustion at the power plant itself — can be adversely impacted.



## Estimated Benefits of Zero-Emission Transportation and Electricity Generation

The combustion of fuels in the electricity generation and transportation sectors is a major contributor to the health and climate burdens facing all Americans. These sources of pollution also create significant disparities in pollution burdens and poor health, especially in lower-income communities and communities of color. The transition to non-combustion technologies is underway and must continue to accelerate to protect the health of communities today and across the coming decades. Key findings are presented below:

### Pollution Reduction Benefits from Zero-Emission Transportation

Accelerating the shift to zero-emission transportation and non-combustion electricity generation will generate major reductions in harmful pollutants. Key pollutants included in this research are described below along with projected on-road pollution reductions with the shift to zero-emission technologies when compared with a modeled “Business As Usual” case for the on-road fleet.

Pollutant	Impact	On-Road Pollution Reductions by Year		
		2030	2040	2050
<b>Nitrogen Oxides (NOx)</b>	NOx and VOCs are building blocks for ozone (“smog”) and contribute to particle pollution formation and a wide range of health impacts including asthma attacks, heart attacks, strokes, and premature death. Breathing VOCs can irritate the eyes, nose and throat, can cause difficulty breathing and nausea, and can damage the central nervous system as well as other organs. Some VOCs can cause cancer. NO2 is associated with increased risk of asthma attacks, ER visits, hospitalizations and a range of other health consequences.	-6% ↓	-56% ↓	-92% ↓
<b>Volatile Organic Compounds (VOC)</b>		-8% ↓	-42% ↓	-78% ↓
<b>Fine Particle Pollution (PM2.5)</b>	Particle pollution can increase the risk of heart disease, lung cancer and asthma attacks and can interfere with the growth and work of the lungs. Major health impacts include asthma attacks, heart attacks, stroke, COPD, lung cancer and death.	-8% ↓	-43% ↓	-61% ↓
<b>Sulfur Dioxide (SO2)</b>	Contributes to wheezing, shortness of breath and chest tightness, reduced lung function, increased risk of hospital admissions or emergency room visits.	-15% ↓	-67% ↓	-93% ↓
<b>Greenhouse Gases (GHG)</b>	Drives climate change health risks, including extreme weather, wildfires and degraded air quality among others.	-14% ↓	-66% ↓	-93% ↓



## Benefits of Moving All Vehicle Classes to Zero-Emissions

All vehicles must move to zero-emission technologies to ensure the most robust public health benefits occur. The 2020 passenger vehicle fleet represents approximately 94 percent of the nation's on-road vehicle fleet and generates over 1 million tons of ozone- and particle-forming NOx emissions, and over 33,400 tons of fine particles annually. Heavy-duty vehicles represent approximately six percent of the on-road fleet in 2020, but generate 59 percent of ozone- and particle-forming NOx emissions and 55 percent of the particle pollution (including brake and tire particles).

Differentiating the relative impacts of fleet segments is particularly important when considering the concentrations of heavy-duty vehicles in environmental justice areas near highways, ports, railyards and warehouse settings. For greenhouse gases (GHG), the 2020 light duty vehicle fleet generates approximately 69 percent of GHG emissions, while the heavy-duty fleet produces 31 percent.

The table below illustrates the relative emission reduction benefits of on-road transportation electrification for each the light-duty fleet and the medium- and heavy-duty segments compared with the "Business-As-Usual" case. It is important to note that these on-road reductions could yield major benefits within each class, with light-duty vehicles reducing nearly twice the GHGs as heavy-duty, while heavy-duty engines could yield approximately eight times the smog- and particle-forming NOx emissions when compared with the light-duty fleet. Ultimately, all segments produce harmful pollutants and must move quickly to zero-emissions to protect health and reduce climate pollution.

Pollutant	Light Duty: On-Road Emission Reductions (Tons per Year, Percent Reduction)			Heavy Duty: On-Road Emission Reductions (Tons per Year, Percent Reduction)		
	2030	2040	2050	2030	2040	2050
Nitrogen Oxides	-23,124 -8%	-80,975 -61%	-111,168 -92%	-51,274 -6%	-478,879 -55%	-887,640 -92%
Volatile Organic Compounds	-49,080 -9%	-195,520 -41%	-347,094 -76%	-4,316 -5%	-41,379 -51%	-80,375 -87%
Fine Particles	-2,903 -10%	-11,369 -42%	-16,170 -58%	-644 -4%	-5,737 -43%	-9,682 -68%
Greenhouse Gases (CO <sub>2</sub> e, Short Tons)	-198 M -18%	-733 M -70%	-1.0 B -94%	-37 M -7%	-322 M -58%	-572 M -92%



## National Results: Public Health and Climate Benefits

The shift to zero-emission transportation and non-combustion electricity generation could yield major health benefits throughout the nation in the coming decades. Cumulatively, the national benefits of transitioning away from combustion in the transportation sector toward 100 percent zero-emission sales and a non-combustion electricity generation sector could generate over \$1.2 trillion in health benefits across the United States between 2020 and 2050. These benefits include approximately 110,000 lives saved, over 2.7 million asthma attacks avoided (among those aged 6-18 years), 13.4 million lost work days and a wider range of other negative health impacts avoided due to cleaner air.<sup>1,2</sup> In addition to these health benefits, this analysis found that over \$1.7 trillion in global climate benefits could be achieved with a reduction of over 24 billion metric tons of GHGs by mid-century.<sup>3</sup>

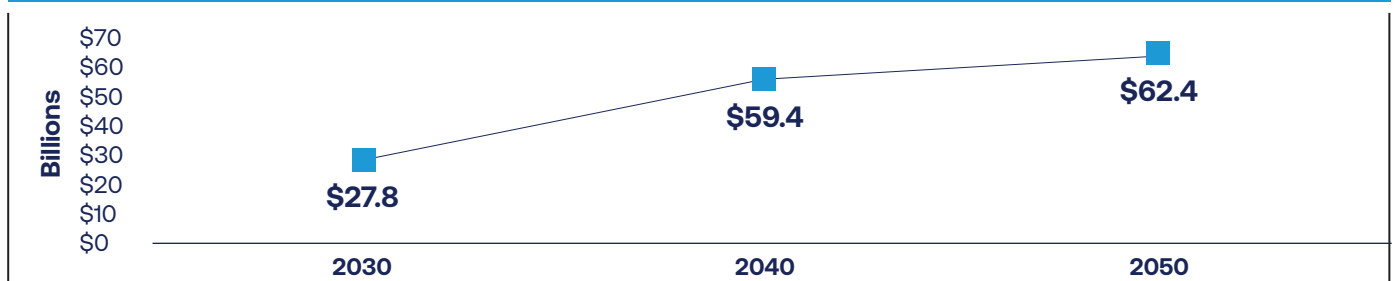
### National Scale Benefits to Health and Climate (Cumulative: 2020-2050)

Public Health Benefits 2020-2050			Value of Benefits 2020-2050	
Premature Deaths Avoided	Asthma Attacks Avoided	Lost Work Days Avoided	Public Health Benefits	Climate Benefits
110,000	2.78 M	13.4 M	\$1.2 T	\$1.7 T

## Near-Term Health Benefits

While the benefits noted above are cumulative between 2020 and 2050, this analysis also finds that annual health benefits could reach into the tens of billions by the end of this decade – nearly \$28 billion in 2030 alone. Health benefits increase significantly as deployments of zero-emission technologies in the transportation and electricity generating sectors expand.

### Annual Health Benefits (Billions)



Note: Total values presented for all vehicles using high estimate of benefits using a 3% discount rate and using 2017\$.

<sup>1</sup>Note that the analysis and report include ozone-precursor emissions data. However, ozone-related health effects are not included in this report. US EPA's COBRA model relies on PM2.5 health effects to assess and monetize impacts. Results therefore do not include significant health burdens posed by ozone pollution throughout the United States independent of those related to PM reductions, as described in the health effects section of this report.

<sup>2</sup>In all cases, avoided health costs are presented in 2017 dollars. The value of avoided mortality estimates is grown from EPA's 1990 value of a statistical life to future years using standard income growth data and are presented in 2017 dollars. These results reflect the benefits of cumulative emission reductions estimated between 2020 and 2050, utilizing the American Lung Association's on-road and upstream emissions scenarios. Health results include the number of avoided adverse health impacts and the economic value of these health risk reductions at a 3% discount rate and reflect higher range estimates associated with the Di et al. (2017) health study. Greenhouse gas emission benefits are based on interim SCC values published in February 2021 by the Interagency Working Group on Social Cost of Greenhouse Gases, United States Government; climate benefits are also presented in 2017\$ values at a 3 percent discount rate.

<sup>3</sup>The social cost of CO2 emissions (SC-CO2) is a measure, in dollars, of the long-term damage done by a ton of carbon dioxide (CO2) emissions in a given year. This dollar figure also represents the value of damages avoided for a small emission reduction (i.e., the benefit of a CO2 reduction). SC-CO2 is intended to be a comprehensive estimate of climate change damages and includes changes in net agricultural productivity, human health, property damages from increased flood risk, and value of ecosystem services. However, not all important damages are included due to data limitations. Note that the climate change benefits of clean electricity generation are limited to the transportation-driven marginal increases in emissions, and do not include all benefits from the entire grid shifting to non-combustion sources, which differs from the whole-grid approach to air pollutants.



## State Results: Public Health Benefits Across the United States

Every state in the U.S. stands to experience significant public health benefits from the widespread implementation of zero-emission transportation and electricity resources over the coming decades. As shown below, more than half of the states could experience more than \$10 billion in cumulative public health benefits. Two states (California and Texas) could exceed \$100 billion in health benefits, and six more states (Pennsylvania, Florida, Ohio, New York, Illinois, and Michigan) could see benefits exceeding \$50 billion by 2050. These benefits cover a wide range of avoided health impacts, three of which (premature deaths, asthma attacks, lost workdays) are shown in the table below.

State	Cumulative Health Benefits, 2020 - 2050			
	Health Benefits (Billions)	Premature Deaths Avoided	Asthma Attacks Avoided	Lost Work Days Avoided
California	\$169.0	15,300	440,000	2,160,000
Texas	\$104.0	9,320	346,000	1,520,000
Pennsylvania	\$86.8	7,940	148,000	735,000
Florida	\$85.6	7,760	142,000	766,000
Ohio	\$68.5	6,280	137,000	635,000
New York	\$68.2	6,200	159,000	825,000
Illinois	\$59.5	5,410	138,000	670,000
Michigan	\$51.4	4,700	97,400	466,000
New Jersey	\$43.6	3,960	92,400	464,000
Indiana	\$36.8	3,360	83,000	373,000
North Carolina	\$35.3	3,210	79,100	387,000
Virginia	\$29.7	2,700	70,900	350,000
Georgia	\$29.3	2,640	78,500	385,000
Maryland	\$27.8	2,530	63,600	315,000
Tennessee	\$24.9	2,180	53,800	255,000
Kentucky	\$20.4	1,850	43,000	200,000
Wisconsin	\$19.2	1,760	39,300	186,000
Missouri	\$18.8	1,710	41,300	193,000
Massachusetts	\$18.0	1,640	35,500	195,000
Louisiana	\$17.8	1,610	40,800	184,000
South Carolina	\$17.0	1,550	32,000	154,000
Arizona	\$15.1	1,360	38,500	182,000
Minnesota	\$14.9	1,350	36,600	171,000
Alabama	\$14.3	1,300	28,300	134,000



## Zeroing in on Healthy Air

State	Cumulative Health Benefits, 2020 - 2050			
	Health Benefits (Billions)	Premature Deaths Avoided	Asthma Attacks Avoided	Lost Work Days Avoided
Connecticut	\$13.7	1,250	27,400	143,000
Oklahoma	\$12.3	1,120	31,700	136,000
Iowa	\$10.8	989	24,500	108,000
West Virginia	\$9.8	898	16,100	81,200
Colorado	\$9.5	857	31,200	151,000
Arkansas	\$9.5	865	20,300	90,700
Mississippi	\$8.5	773	18,300	80,600
Nevada	\$7.5	676	14,800	78,900
Kansas	\$6.9	625	18,100	77,400
Washington	\$5.9	531	15,000	73,200
Utah	\$5.7	506	26,100	94,300
Nebraska	\$5.2	476	14,300	60,500
Delaware	\$5.1	462	11,200	55,100
Maine	\$4.5	402	5,870	31,000
New Hampshire	\$3.9	356	5,860	32,800
Rhode Island	\$3.8	348	6,570	35,600
New Mexico	\$3.0	273	7,380	32,300
Oregon	\$2.7	242	5,600	28,300
Vermont	\$2.0	183	2,880	15,700
Idaho	\$1.8	166	4,850	20,000
District of Columbia	\$1.7	149	5,680	36,400
South Dakota	\$1.6	143	4,140	16,500
North Dakota	\$1.5	133	3,300	14,800
Montana	\$1.3	122	2,550	11,800
Wyoming	\$0.9	81	2,290	9,870

**Note:** Health results include the number of avoided adverse health impacts and the economic value of these health risk reductions at a 3% discount rate and reflect higher range estimates associated with the Di et al. (2017) health study. Mortality estimates are grown from EPA 1990 value of a statistical life using standard income growth data while non-fatal costs are presented in 2017\$ values.

**Note:** Data for Alaska and Hawaii are not presented in this report because the US EPA COBRA Model provides health outputs for the contiguous United States.





### Local Results: Public Health Benefits Across America

Communities across the United States stand to benefit from the widespread transition to zero-emission transportation and electricity generation. As transportation emissions are a dominant source of local exposures in many communities, a carefully and equitably designed shift to non-combustion transportation can mean cleaner air for all, and especially those most burdened by pollution from these sources today. Similarly, a shift away from fossil-fueled electricity generation is critical to improving the health of those most impacted by emissions from power plants, including in lower-income, rural communities across the United States.

This analysis found that the 100 U.S. counties (roughly 3 percent of all counties assessed) with the highest percent populations of People of Color could experience approximately 13 percent of the cumulative health benefits of this transition (\$155 billion, between 2020–2050). Expanding this further, the 500 U.S. Counties (16 percent of counties assessed) with the highest percent populations of People of Color could experience 40 percent of the benefits, or \$487 billion cumulatively between 2020 and 2050. It is also clear that the presence of benefits within these counties does not directly translate to benefits to individual neighborhoods or residents, however. This is an indicator of the urgent need to center equity in policies and investments to ensure access to the benefits of pollution-free mobility and power.

Additional analysis of the benefits in rural communities, lower-income communities, and neighborhood exposure levels could provide deeper insights into more equitable policy and investment designs. At a broader scale, this analysis shows a leveling of benefits across the country as the locations of power plants and transportation hubs are often impacting communities with varying socioeconomic characteristics.

As shown in the table on the next page, communities across the United States could experience billions in public health benefits, and significantly reduce premature deaths, asthma attacks and other negative health consequences of polluted air through 2050. The table includes the 25 Metropolitan Areas across the United States showing the largest cumulative health benefits by 2050 considering the shift to non-combustion electricity generation and zero-emission transportation.







## Zeroing in on Healthy Air

Top 25 Metro Areas, Public Health Benefits	Cumulative Public Health Benefits 2020-2050			
	Health Benefits (Billions)	Premature Deaths Avoided	Asthma Attacks Avoided	Lost Work Days Avoided
1. Los Angeles-Long Beach, CA	\$95.5	8,680	241,000	1,210,000
2. New York-Newark, NY-NJ-CT-PA	\$84.2	7,660	206,000	1,070,000
3. Chicago-Naperville, IL-IN-WI	\$46.5	4,230	113,000	552,000
4. San Jose-San Francisco-Oakland, CA	\$42.5	3,850	113,000	561,000
5. Philadelphia-Reading-Camden, PA-NJ-DE-MD	\$41.1	3,760	86,600	424,000
6. Washington-Baltimore-Arlington, DC-MD-VA-WV-PA	\$38.9	3,540	104,000	516,000
7. Miami-Port St. Lucie-Fort Lauderdale, FL	\$36.5	3,320	62,300	342,000
8. Houston-The Woodlands, TX	\$33.4	3,000	130,000	568,000
9. Detroit-Warren-Ann Arbor, MI	\$29.2	2,690	55,100	268,000
10. Dallas-Fort Worth, TX-OK	\$28.0	2,530	88,300	405,000
11. Boston-Worcester-Providence, MA-RI-NH-CT	\$22.7	2,070	43,000	238,000
12. Atlanta-Athens-Clarke County-Sandy Springs, GA-AL	\$20.9	1,890	59,400	296,000
13. Cincinnati-Wilmington-Maysville, OH-KY-IN	\$20.7	1,900	51,600	233,000
14. Cleveland-Akron-Canton, OH	\$20.3	1,870	31,500	153,000
15. Pittsburgh-New Castle-Weirton, PA-OH-WV	\$19.9	1,830	26,100	138,000
16. Orlando-Lakeland-Deltona, FL	\$12.9	1,160	22,400	121,000
17. San Diego-Chula Vista-Carlsbad, CA	\$12.4	1,100	29,200	151,000
18. Indianapolis-Carmel-Muncie, IN	\$12.2	1,120	32,000	144,000
19. St. Louis-St. Charles-Farmington, MO-IL	\$12.2	1,120	25,800	122,000
20. Minneapolis-St. Paul, MN-WI	\$11.7	1,070	30,700	145,000
21. Phoenix-Mesa, AZ	\$11.0	994	30,700	145,000
22. Tampa-St. Petersburg-Clearwater, FL	\$10.9	988	20,100	108,000
23. Charlotte-Concord, NC-SC	\$9.2	833	23,200	113,000
24. Harrisburg-York-Lebanon, PA	\$8.8	805	16,500	78,700
25. San Antonio-New Braunfels-Pearsall, TX	\$8.8	791	25,200	112,000

**Note:** Health results include the number of avoided adverse health impacts and the economic value of these health risk reductions at a 3% discount rate and reflect higher range estimates associated with the Di et al. (2017) health study. Mortality estimates are grown from EPA 1990 value of a statistical life using standard income growth data while non-fatal costs are presented in 2017 \$ values.

**Note:** The counties assigned to a metropolitan area follow the groupings determined by the White House Office of Management and Budget (OMB) and used by the U.S. Census Bureau. The Metropolitan Statistical Areas and Combined Statistical Areas are used as the basis for considering populations at risk in these urban areas because they reflect the “high degree of social and economic interaction as measured by commuting ties,” as OMB describes them. In some cases, metropolitan area results may exceed state results due to geographies of metropolitan areas crossing state lines.



### Policy Recommendations to Achieve Public Health and Climate Benefits

At every level of government, transportation and energy decisions are essentially public health decisions. The phase-out of combustion in the transportation and electricity generation sectors is critical as the nation transitions to a healthier future. Continued investments in combustion technologies may prolong the use of harmful fuels or otherwise delay investment in healthier choices today. Public leaders must align transportation and energy decisions and investments with the protection of public health and reductions in harmful emissions.

#### **Recommended Federal Policies to Achieve Public Health Benefits of Zero-Emission Transportation and Electricity Generation**

The Federal Government has a critical opportunity to move the nation to healthier, pollution-free transportation and power systems through a combination of strong policies and investments in zero-emission technologies and infrastructure, actions that enjoy broad public support according to a recent American Lung Association poll.<sup>vi</sup> A key down payment was made in the transition to zero-emission transportation with the President signing the Bipartisan Infrastructure Law in November 2021. This law invests \$2.5 billion in zero-emission school buses and set \$7.5 billion in motion to expand the national infrastructure for zero-emission vehicles — an important start to the larger, and longer-term public/private investments needed. These investments must not only continue and scale up, but must be paired with stronger laws and rules to reduce harmful air and climate pollution:

- Fully implementing the provisions of the bipartisan infrastructure and vehicle investments and continuing to increase funding for non-combustion electricity generation and transportation as the nation continues to invest in a healthier future.
- Extending and increasing incentive and grant programs to support zero-emission vehicle purchases by consumers, transit agencies, school districts and other entities.
- Leading by example by converting public fleets to zero-emission vehicles immediately.
- Congress must pass legislation to accelerate the transition to zero-emission transportation more broadly than contained in the Bipartisan Infrastructure Law and to ensure more equitable distribution of clean air benefits.
- US EPA must act quickly to update National Ambient Air Quality Standards (NAAQS) for NO<sub>2</sub>, SO<sub>2</sub>, carbon monoxide, lead, ozone and particle pollution in line with the scientific understanding of what levels are appropriate with an adequate margin of safety of the most vulnerable communities.
- US EPA and the National Highway Traffic Safety Administration (NHTSA) must adopt standards that drive the complete transition to zero-emission passenger vehicles.
  - EPA has finalized regulations that help clean up carbon pollution from the light-duty vehicle sector through Model Year 2026. NHTSA must finalize the Corporate Average Fuel Economy Standards (CAFE) regulations through 2026 for light-duty vehicles.
  - These actions must be followed by increasingly stronger rules beyond 2026 that deliver on President Biden's goal for 50 percent of vehicles sold in the United States to be zero-emission by 2030, and a more complete transition to follow shortly thereafter.



## Zeroing in on Healthy Air

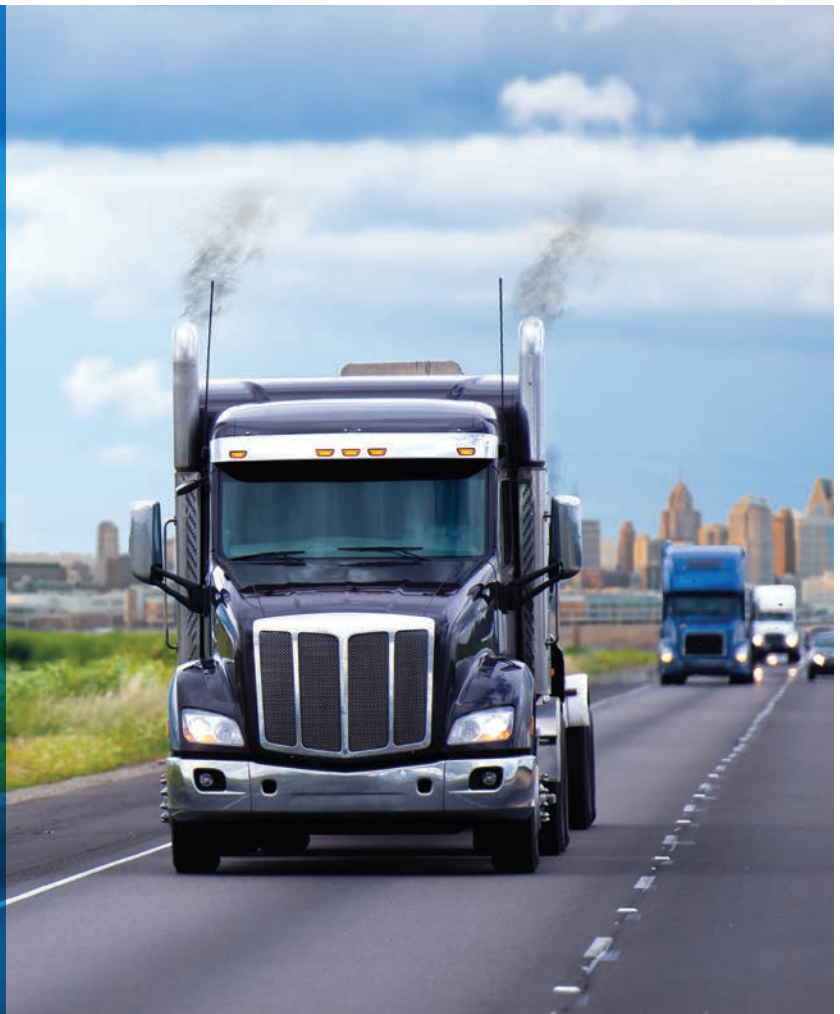
- US EPA must move quickly to approve the next generation standards for heavy-duty trucks in 2022 that acknowledge the growing market for combustion-free medium- and heavy-duty vehicles:
  - More stringent greenhouse gas emission standards for heavy trucks by 2027
  - 90 percent reduction in smog-forming NOx emissions for new trucks by 2027
  - These actions must be followed by stronger rules for subsequent years that drive a complete transition to zero-emission heavy-duty vehicles
- The Biden Administration's Justice40 initiative must ensure that major investments are made in environmental justice communities throughout the United States. These investments must ensure that the benefits of zero-emission technologies are felt in historically underserved and over-polluted communities.
  - Treat 40 percent investment as a minimum requirement
  - Ensure that investments are located in communities of concern, and that health, climate and other benefits actually accrue within these communities
- Increase and sustain policies, incentives and investments to accelerate non-combustion renewable electricity generation and the retirement of combustion-based power plants to achieve the Biden Administration's target for 100 percent carbon pollution-free electricity by 2035.

### Broad Public Support for Transportation Electrification

70% of American voters believe the federal government should:

- implement policies that support a transition to zero-emission vehicles; and
- require that by 2040 all new freight trucks, buses and delivery vans sold in the U.S. must produce zero tailpipe emissions.

American Lung Association Poll, 2021





### Recommended State Policies to Achieve Public Health Benefits of Zero-Emission Transportation and Electricity Generation

Under the Federal Clean Air Act, California holds the authority to seek a waiver to enact stronger-than-national standards to address its air pollution challenges, while states can — and increasingly do — follow these more health-protective rules. At present, 15 states have adopted zero-emission vehicle standards and increasing numbers are pursuing zero-emission truck requirements. In addition to adopting these standards, states must invest in the fueling infrastructure needed to support the growing market, while also supporting the transition to non-combustion renewable power.

State	Zero Emission Vehicle Standard	Zero Emission Truck Standard	Zero Emission Truck MOU
California	●	●	●
Colorado	●		●
Connecticut	●		●
Hawaii			●
Maine	●		●
Maryland	●		●
Massachusetts	●	●	●
Minnesota	●		
Nevada	●		
New Jersey	●	●	●
New York	●	●	●
North Carolina			●
Oregon	●	●	●
Pennsylvania			●
Rhode Island	●		●
Vermont	●		●
Virginia	●		●
Washington	●	●	●
Washington, DC			●

**Note:** The California Zero Emission Vehicle standard sets increasing requirements for zero-emission passenger vehicle sales. The California Advanced Clean Truck standard sets similar sales percentages for medium- and heavy-duty truck sales. The Multi-State Memorandum of Understanding creates a coordinated approach to achieving 30 percent zero-emission truck sales by 2030 and 100 percent sales by 2050.



## Zeroing in on Healthy Air

- States must adopt state standards for passenger vehicles and medium- and heavy-duty trucks to require that 100 percent of sales are zero-emissions.
- States must lead by example by converting public fleets to zero-emission vehicles.
- States must establish incentive programs to accelerate zero-emission mobility options and set clear requirements for the equitable distribution of incentive funding and infrastructure investments so that all communities (including urban, rural, lower-income, etc.) have access to the benefits of zero-emission mobility.
- States must remove barriers to equitable utility investments in zero-emission infrastructure serving all communities, and invest in upgrades needed to integrate light-, medium- and heavy-duty zero-emission vehicles across the grid.
- California must utilize its unique Clean Air Act authority to develop and implement stringent near- and long-term zero-emission standards (e.g., Advanced Clean Cars, Advanced Clean Trucks) that support attainment of NAAQS and state climate policies while also ensuring equity is central to policy design.
- States must enact programs and investments in infrastructure, consumer rebates and other supportive programs to join the growing list of jurisdictions following these more health-protective Advanced Clean Cars and Advanced Clean Trucks standards.
- States must not preempt actions by local governments seeking to expand zero-emission fueling infrastructure and clean electricity installations or to set more protective building codes.
- States can also join regional or other partnerships such as the Regional Electric Vehicle Midwest Coalition or the Multi-State Memorandum on Zero Emission Trucks to leverage broader resources to achieve healthier transportation.
- States must adopt and accelerate clean electricity standards, modernize electric grids and ensure equitable access to clean electricity to ensure full benefits of non-combustion electricity generation and transportation.





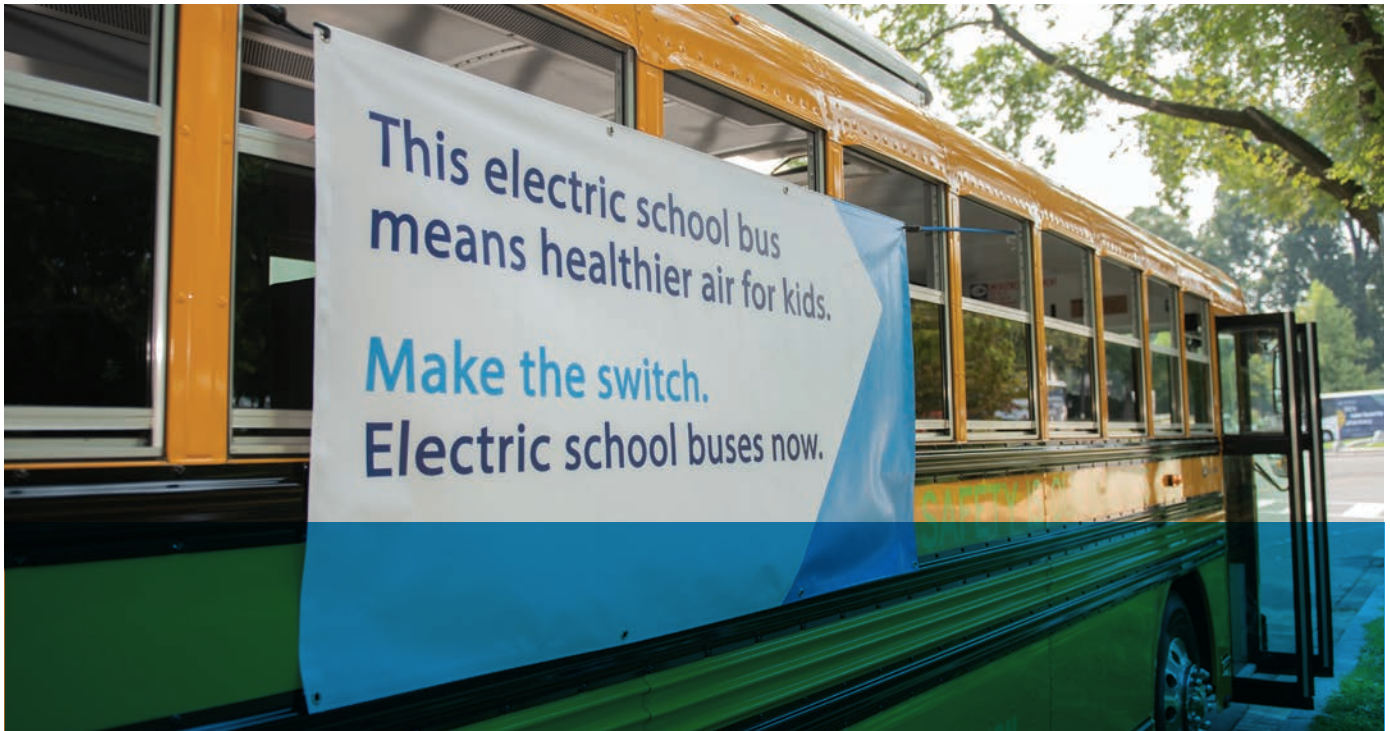


### Recommended Local Policies to Achieve Public Health Benefits of Zero-Emission Transportation and Electricity Generation

In planning and building bike lanes and sidewalks, transit routes and carpool lanes, local government decisions impact how we move, and how safely and easily it is we do so. Local decisions can also ease the transition to zero-emissions. There are examples across the nation of public agencies, rural and urban transit fleets and school districts incorporating or fully converting to zero-emission technologies within their own fleets and make it easier for residents and businesses to make the switch and capture the benefits of cleaner air. Local governments must:

- Develop resources with utilities, manufacturers, local and regional governments and others to accelerate regional deployment of zero-emission vehicles, electricity and associated infrastructure
- Shift public fleets to zero-emissions across all weight classes.
- Establish simplified renewable energy and zero-emission fueling infrastructure installation processes for businesses, homeowners, renters and apartment managers.
- Coordinate with local agencies to implement zero-emission mobility options for lower-income neighborhoods, including car share, bike share, on-demand transit, etc.
- Ensure building code requirements follow best practices for charging readiness.
- Develop non-financial incentives such as preferred parking, sidewalk charging or other, visible measures to support residents in this transition.

At all levels, local, state and federal partners must collaborate and coordinate to deliver the framework for accessible, sustainable and reliable deployment of zero-emission transportation.





### Conclusion

Too many Americans face unhealthy air that is being polluted by the transportation and electricity generation sectors. Climate change is making air pollution worse. This is especially true in lower-income communities and communities of color experiencing highly concentrated doses of pollution from diesel hotspots, refineries, power plants and other fossil fuel facilities. To reduce air pollution burdens and disparities, and to protect public health against the worst impacts of climate change, policies and investments must align with rapid reduction and elimination of combustion in these sectors. Doing so could yield over \$1.2 trillion in public health benefits across the United States between 2020 and 2050 and \$1.7 trillion in climate benefits. Acting now provides opportunities for major benefits in the near term and establishes pathways for generations to breathe healthier air.

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<sup>i</sup>American Lung Association. Health Impact of Air Pollution. April 2021. <https://www.lung.org/research/sota/health-risks>

<sup>ii</sup>American Lung Association. State of the Air 2021. April 2021. [www.lung.org/sota](http://www.lung.org/sota)

<sup>iii</sup>American Lung Association. State of the Air 2021. April 2021. [www.lung.org/sota](http://www.lung.org/sota)

<sup>iv</sup>United States Environmental Protection Agency. Transportation and Environmental Justice Fact Sheet. March 2022. <https://www.epa.gov/system/files/documents/2022-03/420f22008.pdf>

<sup>v</sup>American Lung Association. State of the Air 2021. April 2021. [www.lung.org/sota](http://www.lung.org/sota)

<sup>vi</sup>American Lung Association poll. June 2021. <https://www.lung.org/media/press-releases/seventy-percent-of-voters-support-federal-action>

**From:** notifications@cognitoforms.com on behalf of City of Scottsdale <notifications@cognitoforms.com>  
**Sent:** Monday, December 5, 2022 9:05 AM  
**To:** Cordova, Rommel  
**Subject:** City Council Public Written Comment Form - Stephen Mogowski

**⚠ External Email: Please use caution if opening links or attachments!**

# City of Scottsdale

## Web Scottsdale City Council Meeting Written Comment Form

[Open Form](#)

### Entry Details

#### Agenda Item

MEETING DATE 12/6/2022

WHICH AGENDA ITEM WOULD YOU LIKE TO COMMENT ON? 18. Adoption of Residential, Energy, and Green Construction Code Updates

#### Name

FULL NAME Stephen Mogowski

NAME OF GROUP OR ORGANIZATION Desert Skies Energy

#### Contact Information

PHONE (480) 489-2692

EMAIL stephen@desertskaiesenergy.com

ADDRESS 127 W Juanita Ave Suite 298



## Comment

### COMMENT

Thank you for the opportunity to submit this comment.

My name is Stephen Mogowski and I'm the owner of Desert Skies Energy, a HERS Rating Provider based in Mesa, AZ. I am a Quality Assurance Designee for RESNET and in charge of quality assurance for our firm. We work with 200+ single family builders, many multifamily builders, as well as architects and developers.

Our comment is with respect to the proposed R-38 attic insulation amendment:

It is our professional opinion that a properly installed R-38 attic/ceiling insulation level is sufficient for Climate Zone 2. Increasing insulation beyond R-38 will have design implications (e.g. deeper truss requirements that may limit ceiling heights due to overall structure height requirements). Furthermore, it is well documented that insulation beyond R-38 has diminishing returns.

We believe that a more effective approach that meets the City's intent (increasing the rigor of the IECC) would be to implement the following:

1. Keep R-38 attic/ceiling R-Value requirement for an amended 2021 IECC requirement
2. Actively enforce insulation ruler installation to ensure proper depths are installed (already part of IRC)
3. Ensure adequate insulation is applied in eaves of pitched homes (via energy/raised heel trusses, already part of IRC)
3. Actively enforce third party inspections by HERS Raters to ensure proper air and thermal barrier alignment AND proper levels of insulation (R-Value). This includes ensuring there is sufficient attic insulation in tight areas (e.g. adequate insulation above ductwork in sealed attics).

If these four items were implemented, this would be a substantial increase in home performance for new home construction. It also would not create a

series of potential design changes which would, in our opinion, be a win-win-win scenario for home owners, builders, and the City of Scottsdale.

Thank you for your time.

Best,  
Stephen

---

**From:** notifications@cognitoforms.com on behalf of City of Scottsdale <notifications@cognitoforms.com>  
**Sent:** Monday, December 5, 2022 9:40 AM  
**To:** Cordova, Rommel  
**Subject:** City Council Public Written Comment Form - William Holoman

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# City of Scottsdale

## Web Scottsdale City Council Meeting Written Comment Form

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### Entry Details

#### Agenda Item

MEETING DATE

12/6/2022

WHICH AGENDA ITEM WOULD YOU  
LIKE TO COMMENT ON?

18. Adoption of Residential, Energy, and Green  
Construction Code Updates

#### Name

FULL NAME

William Holoman

#### Contact Information

EMAIL

wholoman@hotmail.com

ADDRESS

7502 E Main St.

CITY

Scottsdale

#### Comment

**COMMENT**

Please vote “yes” to adopt the Residential, Energy and Green Construction updates. The benefits of these code changes to Scottsdale residents today and into the future far outweigh any costs.  
Thank you,  
Will Holoman

---

**From:** notifications@cognitoforms.com on behalf of City of Scottsdale <notifications@cognitoforms.com>  
**Sent:** Monday, December 5, 2022 12:09 PM  
**To:** Cordova, Rommel  
**Subject:** City Council Public Written Comment Form - Linnea Brudenell, Director of Sustainability

**⚠ External Email: Please use caution if opening links or attachments!**

# City of Scottsdale

## Web Scottsdale City Council Meeting Written Comment Form

[Open Form](#)

### Entry Details

#### Agenda Item

MEETING DATE 12/6/2022

WHICH AGENDA ITEM WOULD YOU LIKE TO COMMENT ON? 18. Adoption of Residential, Energy, and Green Construction Code Updates

#### Name

FULL NAME Linnea Brudenell, Director of Sustainability

NAME OF GROUP OR ORGANIZATION Nelsen Partners

#### Contact Information

PHONE (480) 949-6800

EMAIL lbrudenell@nelsenpartners.com

ADDRESS 15210 NORTH SCOTTSDALE ROAD

## Comment

### COMMENT

As the Director of Sustainability at Nelsen Partners, an architecture and planning firm with offices in Scottsdale and Austin, Texas, I have focused my career for the last ten years exclusively on both mandatory and voluntary sustainability and resiliency compliance in the commercial sector. In the post-pandemic design and construction market, our clients, and their financing sources, are demanding high-performance buildings with healthy indoor air quality, stringent water conservation, electrification, and energy-efficient buildings, as well as energy and water resilience.

I have personally been in the proverbial trenches working on successful IgCC projects in Scottsdale. Compliance with the IgCC is currently used as a development incentive and it is a straight forward easily understood process, that adds zero cost to a project because it is built in from conceptual design, and compliance information is included in all the construction documents and specifications clearly stating the IgCC requirements for bidding. Many of our projects require a third-party green building rating to qualify for financing, banks are requiring this because a building product using a TPC (third-party certification) is proven to be of higher quality and lower operational costs. IgCC compliance for this type of project parallels the owner's project requirements for the TPC. The IgCC as proposed is heavily amended and provides many options for compliance, it is essentially an "IgCC lite" code. For example, solar is a requirement in the IgCC, however, the proposed amendments allow for other compliance options.

In other climate zones, there are mandatory code provisions to prevent hurricane damage, provide earthquake and seismic protection, and structural allowances for snow loads, we live in the desert where extreme heat and drought require a mandatory code to protect our water and energy resources.

We support the adoption of the IgCC as proposed with local amendments as a mandatory code for all commercial projects. Thank you.

**From:** notifications@cognitoforms.com on behalf of City of Scottsdale <notifications@cognitoforms.com>  
**Sent:** Monday, December 5, 2022 12:52 PM  
**To:** Cordova, Rommel  
**Subject:** City Council Public Written Comment Form - Michael Fiflis

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# City of Scottsdale

## Web Scottsdale City Council Meeting Written Comment Form

[Open Form](#)

### Entry Details

#### Agenda Item

MEETING DATE 12/6/2022

WHICH AGENDA ITEM WOULD YOU LIKE TO COMMENT ON? 18. Adoption of Residential, Energy, and Green Construction Code Updates

#### Name

FULL NAME Michael Fiflis

#### Contact Information

EMAIL fiflaw@cox.net

ADDRESS 7454 E. Camino Rayo de Luz

CITY Scottsdale, AZ 85266

#### Comment

COMMENT

I urge you to adopt the IgCC as mandatory and the IECC and IRC, with Option A (not Option B).

You recently considered at least two large scale construction projects (Optima McDowell Mountain Village and High Street) where the developers gladly agreed to comply with the 2021 IgCC. That is a clear signal that builders in Scottsdale are ready, willing and able to build to higher standards.

But building better should not be “in exchange” for zoning variances and amended development standards. It should be the norm. We need to get serious about protecting our water resources and the livability of our environment. We face a longstanding drought, cutbacks from our major water supply source (CAP), worsening air quality, and an indisputably hotter Valley. Because our built environment is so impactful on our environment, our quality of life and our pocketbooks, we must raise building standards to address these challenges. Adopting the IgCC as mandatory is a step in that direction.

My home is an example. It was built to a higher standard than Scottsdale’s then-current minimum building code. I appreciate the impacts of the higher standard nearly every day. For example, the home is quite well insulated. In the summer, the home is more livable because the heat is kept out; in the winter, the home is more livable because the heat is kept in. My carbon footprint is much smaller. I save money each month on utilities. The IgCC would bring a similar higher quality in construction to commercial and multifamily – for the benefit of all. Every city should adopt the IgCC.

Please adopt the IgCC as mandatory. I also support adoption of the IECC and IRC, with Option A. I do not support Option B.

Thank you.



**From:** notifications@cognitoforms.com on behalf of City of Scottsdale <notifications@cognitoforms.com>  
**Sent:** Monday, December 5, 2022 2:28 PM  
**To:** Cordova, Rommel  
**Subject:** City Council Public Written Comment Form - Raejean M. Fellows  
**Attachments:** VoteYesBLDGEVCODES.pdf; retrofitcosts.jpg

 **External Email: Please use caution if opening links or attachments!**

# City of Scottsdale

## Web Scottsdale City Council Meeting Written Comment Form

[Open Form](#)

### Entry Details

#### Agenda Item

MEETING DATE 12/6/2022

WHICH AGENDA ITEM WOULD YOU LIKE TO COMMENT ON? 18. Adoption of Residential, Energy, and Green Construction Code Updates

#### Name

FULL NAME Raejean M. Fellows

NAME OF GROUP OR ORGANIZATION Plug In America, Scottsdale Electric Vehicle Association

#### Contact Information

PHONE (860) 798-8208

EMAIL raejeanfellows@gmail.com

ADDRESS

25825 N. 106th Way

CITY

Scottsdale

## Comment

COMMENT

This is a chance to be one of the first five Arizona cities to lead the charge on EV friendly building codes. We will be joining Flagstaff, Sedona, Tucson, and Avondale. These cities realize that EVs are increasingly popular and that their owners will want to visit and live in places that can fuel their EVs conveniently. Let's be ahead of the curve.

Please cast your vote for:

1. IgCC as mandatory with proposed amendments
2. IECC with proposed amendments
3. IRC with proposed amendments
4. Option A amendments to the IECC and IRC

Please read my letter in the attachments for more information. I welcome your questions. Thank you for the opportunity to comment.

## Attachments

FILE UPLOAD

VoteYesBLDGEVCODES.pdf  
retrofitcosts.jpg

Mayor, Vice Mayor, Councilmembers,

December 6, 2022

I am a long time Scottsdale resident, and owner of electric vehicles since 2015. Since retiring in 2003 from a successful business, I have volunteered for non-profits. Today, I am the Education Director on the Board of the Scottsdale Electric Vehicle Association. Thank you for letting me comment on your upcoming vote. Please forgive the length, but I thought you would want to have lots of good data from original sources for your decision. I welcome your questions.

I feel lucky that I can charge my EV in my garage. Just as I plug in my phone, I plug in my car—and wake up with a full tank.

I want every Scottsdale resident to drive electric *if they want to* and to be able to charge near home. This convenience should not just be for the well off. I want the tourists arriving in their cars and new residents moving here to see that Scottsdale has the forethought to be EV ready in its homes and businesses. I want to be proud of my city – a city that is innovative and proactive to amend its building codes for new construction to include EV charging readiness.

With the mindset of a business person, I am not a huge fan of regulation or any extra cost on businesses. In this case—it's easy for me, because, this isn't a budget buster, in fact, it's a budget booster and good for our local economy, our state and our country.

### **This is about future proofing Scottsdale for the coming switch to the electrification of transportation.**

About 28K EVs are registered in Arizona, with about 2.4M registered vehicles--we are about 1% electric.\*

Given our demographics and the recent addition of electric trucks ([Rivian](#), [Ford 150 Lightning](#)) to the marketplace, I suspect Scottsdale runs at a little higher than 1% electric of total cars/trucks on the road.

### **Arizona's Plan for Transportation Electrification**

Our utilities recently committed to a goal of supporting 1,076,000 new electric passenger cars and light trucks statewide by 2030, plus 3,830 medium-duty delivery trucks, 785 transit buses and 1,425 school buses.

### **1 Million EVs in Arizona by the year 2030**

This sounds like a lot, and yet our neighbor to the West has already purchased 1.3M electric vehicles in the last several years and has had no significant disruptions to its grid. This is very achievable, especially with the growing variety of EVs available (115) and their popularity. Remember how quickly we all changed from land lines to cell phones?

Some say the southwest is not good for battery powered cars. While heat can affect the mileage of certain older EV models, excessive heat also affects the efficiency of gas cars; and

most EV models now include [Battery Thermal Management Systems](#), dramatically reducing heat-related efficiency losses. Scottsdale is a very good place for electric vehicles.

To help us get there, utilities will be offering more incentives for rate payers who drive electric to encourage the switch from gas to electric. The newly passed IRA—offers incentives (\$7,500/\$4,000) for both NEW and USED EV purchase.

Why?

As you all likely know, over 50% of the pollution comes from the transportation sector. And it's expensive, in a number of ways. There is also a rationale for preferring clean, affordable *domestic* energy.

[The report by the consulting firms Illume and Energy+Environmental Economics](#) cited potential benefits of rapid EV adoption including rate designs that:

- Reduce peak loads
- Take advantage of times with low-priced electricity
- Increased grid reliability
- Lower costs to consumers
- Reduced emissions
- Other potential social and environmental benefits.

**EV growth is not a budget buster, in fact, it's a budget booster.**

The report said: "The adoption of personal electric vehicles is beneficial not only to EV owners, but also to utility ratepayers and all Arizonans, . . . **resulting in \$12 billion in net benefits.** The study estimated that **each new EV on the road would provide net benefits of about \$3,600 for participants in lower transportation costs, and \$4,500 for utility ratepayers as the additional electric-bill payments by EV customers outweigh the cost of the additional power.**"

**Utility rates will go down, for all customers, electric and gas vehicle owners.**

There really is no question that the switch to zero emission vehicles is going to happen in the next two-three decades.

The real question is: **How are these 1 Million new Electric Vehicles in our state going to be supported with charging infrastructure by 2030? How will Scottsdale residents charge conveniently and cost effectively?**

**BTW—California already has 1.3M EVs purchased—and its grid has handled them all, without adverse effect.**

*Answer:* To prepare for the future here in Scottsdale, **we need vastly more charging ports** in residences, workplaces, schools, hotels and retail parking lots--places where the cars sit for extended periods of time.

## Where is most of the charging done now?

*Answer: Currently, 90% of us charge at home, at night, while we are asleep.* Getting fuel for EVs is not like looking around outside your home for a gas station. It is more similar to charging your cell phone. Plug in at home or work, and go do something else.

*And yet—there is a big segment of our Scottsdale residents who are left out of this.*

**Over 50% of Americans live in multi-unit housing. The vast majority of these citizens have no access to charging where they live.**

## What is the biggest obstacle to people buying electric cars?

Answer: 6 out of 10 buyers report feeling uncertain of where and how they will charge. Most are unaware of how easy it is, when you can charge at home at night, or at a workplace. Over 50%, simply lack access to street or overnight charging.

Removing this obstacle by ensuring that a minimum of charging infrastructure is installed in new construction is a simple, but vital beginning for Scottsdale.

Let's future proof Scottsdale.

This vote is a vote for developers and builders of new construction. These developers and builders will become more competitive. Yes- that's right. EV owners will favor renting and owning properties with charging infrastructure already in place. With the continuing growth trends spurred by newcomers moving here from other states, Scottsdale will be a preferred place to live for EV owners, helping our real estate community.

This vote is a vote for economic development. Tourists arriving here on road trips will look to whether our city is friendly to EV charging. I always select my hotel by the ones who have charging. One of the most exciting of the 115 EVs available is [Lucid electric cars](#). They are made in Casa Grande, AZ. Can we lure more auto makers to our valley? EVs are good for business and employment.

This vote is a vote for low to middle income Scottsdale residents, who will be able to drive cars with lower lifetime costs in fueling and servicing. This vote is a vote for renters and condo buyers—who will have a basic level of readiness for charging capability.

This vote is a vote for the health and well-being of Scottsdale residents. This vote is a vote for clean air. This choice is good for our quality of life here in Scottsdale. (See comment by Dr. James Bristol on EV effect on air quality and disease avoidance in children and older adults)

This is a simple and easy vote. The cost to builders is minor. When we consider the major benefits of adding upfront charging infrastructure where it is most needed, the choice is easy.

This is important to do NOW, because the costs of retrofitting later are 4-6 times more.\*\* Let's remember, homes and buildings stay in place for a long time.

And lastly, this is a chance to be one of the first five Arizona cities to lead the charge on EV friendly building codes. We will be joining Flagstaff, Sedona, Tucson, and Avondale. These cities realize that EVs are increasingly popular and that their owners will want to visit and live in places that can fuel their EVs conveniently. Let's be ahead of the curve.

Please cast your vote for:

1. IgCC as mandatory with proposed amendments
2. IECC with proposed amendments
3. IRC with proposed amendments
4. Option A amendments to the IECC and IRC

Sincerely,

Raejean M. Fellows

25825 N. 106<sup>th</sup> Way

Scottsdale, AZ 85255

860-798-8208 - cell

Director, [Scottsdale Electric Vehicle Association \(EVA\)](#)

Past President [National Electric Vehicle Association](#)

Director, [Plug In America](#)

\* as of June 2021, according to the U.S. Department of Energy's Alternative Fuels Data Center.

\*\*See attachment showing retrofit costs are 4-6X more when done later

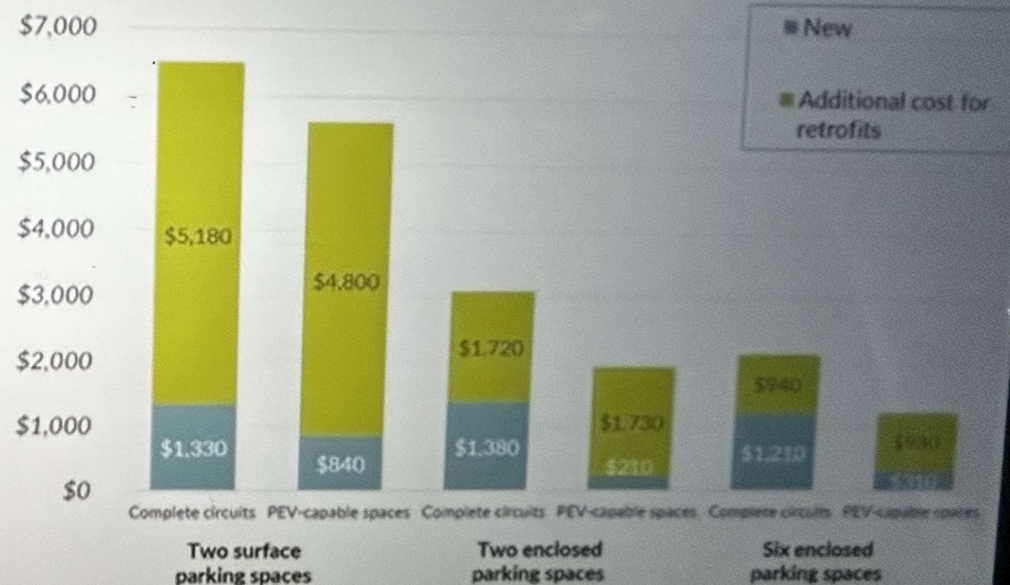
\*\*\*See attachment, Arizona's Plan for Transportation Electrification



## Avoid EV Charging Infrastructure Retrofit Costs

“Installing EV capable parking spaces in stand-alone retrofits is typically 4 to 6 times more expensive compared to installing EV capable parking spaces during new construction. If EV capable parking spaces are installed during new construction, \$2,040 - \$4,635 per parking space is saved over the retrofit scenario.”

- Energy Solutions (2019)



Costs modeled for the City of Oakland

**From:** notifications@cognitoforms.com on behalf of City of Scottsdale <notifications@cognitoforms.com>  
**Sent:** Monday, December 5, 2022 5:43 PM  
**To:** Cordova, Rommel  
**Subject:** City Council Public Written Comment Form - Laura Schwartz

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**City of Scottsdale**  
Web Scottsdale City Council Meeting Written Comment Form

Open Form

Entry Details

<b>Agenda Item</b>	
MEETING DATE	12/6/2022
<hr/>	
WHICH AGENDA ITEM WOULD YOU LIKE TO COMMENT ON?	18. Adoption of Residential, Energy, and Green Construction Code Updates
<hr/>	
<b>Name</b>	
FULL NAME	Laura Schwartz
<hr/>	
<b>Contact Information</b>	
PHONE	(602) 881-7539
<hr/>	
EMAIL	lschwartz27@gmail.com
<hr/>	
ADDRESS	6705 E Montecito Ave
<hr/>	
CITY	Scottsdale
<hr/>	



## Comment

### COMMENT

Dear Mayor and City Councilors,

I attended the presentation on September 27 where the 2022 Energy and Green Construction Code changes were presented. As a longtime resident I was excited to hear about this forward looking strategic approach to building our city for the climate stresses that we face now and in the future.

These code changes are modest improvements to the building code and move the city in the right direction, setting an example for neighboring communities. Amongst many benefits, the new codes will improve Scottsdale City readiness through a consideration of the life of a building. The code changes will increase electric vehicle charging capacity, mitigate heat by using lower roof reflectance, increase ceiling insulation effectiveness, build solar ready roofs, reduce reflective hard scapes by increasing shade, and improve water efficiency with smart controllers, all making Scottsdale a more resilient city.

Please support this effort by voting to approve the adoption of all of the Residential, Energy, and Green Construction Code Updates.

Thank you,  
Laura Schwartz

**From:** notifications@cognitoforms.com on behalf of City of Scottsdale <notifications@cognitoforms.com>  
**Sent:** Monday, December 5, 2022 7:22 PM  
**To:** Cordova, Rommel  
**Subject:** City Council Public Written Comment Form - Helene Tack

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# City of Scottsdale

## Web Scottsdale City Council Meeting Written Comment Form

[Open Form](#)

### Entry Details

#### Agenda Item

MEETING DATE 12/6/2022

WHICH AGENDA ITEM WOULD YOU LIKE TO COMMENT ON? 18. Adoption of Residential, Energy, and Green Construction Code Updates

#### Name

FULL NAME Helene Tack

#### Contact Information

PHONE (480) 250-5252

EMAIL azhelene27@gmail.com

ADDRESS 8401 E. Edgemont Ave

CITY Scottsdale

## Comment

### COMMENT

I am a Scottsdale resident writing in support of the proposed Energy (IECC) and Green Construction (IgCC) codes. I attended the Open House on 9/27/22. I have long been a fan of the city's Green Building program, and have some city pride that Scottsdale has this long-standing program. As we deal with the impacts of climate change, we must push forward with codes and requirements that reflect a hotter, drier environment. As we adapt to new conditions, we must also reduce the contributions we as a community make to climate change via greenhouse gas emissions. The proposed updates for Scottsdale's Energy and Green Construction codes as well as making the Green Construction code mandatory will move us in the right direction.

There are many positives in these codes and the proposed amendments with respect to water conservation, waste diversion, energy efficiency, renewable energy production, and heat island mitigation. I support all the proposed amendments discussed at the Open House. But I would like to see MORE done. I hope we won't wait for the 2024 building codes to make further advancements in areas such as water conservation and energy benchmarking.

I see that since the Open House, a new amendment has come up, referred to as Option B. That amendment would reverse course, taking us back to the same ceiling insulation levels in effect since 2012 – ten years! This proposed amendment was not even discussed at the Open House, nor were we asked our opinion. Please do not approve the backward-looking Option B.

In sum, while I wish the 2021 codes and amendments were stronger, please support the mandatory IgCC, the IECC, the IRC, and Option A.

**From:** notifications@cognitoforms.com on behalf of City of Scottsdale <notifications@cognitoforms.com>  
**Sent:** Monday, December 5, 2022 10:26 PM  
**To:** Cordova, Rommel  
**Subject:** City Council Public Written Comment Form - John S Martinson  
**Attachments:** ScottsdaleCouncilComments12.6.22.pdf

 **External Email: Please use caution if opening links or attachments!**

# City of Scottsdale

## Web Scottsdale City Council Meeting Written Comment Form

[Open Form](#)

### Entry Details

#### Agenda Item

MEETING DATE 12/6/2022

WHICH AGENDA ITEM WOULD YOU LIKE TO COMMENT ON? 18. Adoption of Residential, Energy, and Green Construction Code Updates

#### Name

FULL NAME John S Martinson

NAME OF GROUP OR ORGANIZATION Scottsdale Electric Vehicle Association

#### Contact Information

PHONE (480) 797-1075

EMAIL john.s.martinson@hey.com

ADDRESS 31421 N 69th St

CITY

Scottsdale

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## Comment

COMMENT

I have attached a letter and will speak at the meeting.

---

## Attachments

FILE UPLOAD

ScottsdaleCouncilComments12.6.22.pdf

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Dear Mayor, Vice Mayor, and City Council Members,

Regarding: #18 **Adoption of Residential, Energy, and Green Construction Code Updates**

1. IgCC as MANDATORY with proposed amendments
2. IECC with proposed amendments
3. IRC with proposed amendments
4. Option A amendments to the IECC and IRC

I am a resident of North Scottsdale's environmentally sensitive lands ordinance area, a former Scottsdale business owner (co-Founder of China Mist Tea Company, 1982 - 2016), and in 2016, I earned an Executive Master of Sustainability Leadership from ASU's School of Sustainability. Currently, I am a Steward with the McDowell Sonoran Conservancy, and Co-Founder and President of the [Scottsdale Electric Vehicle Association](#), whose mission is to educate and advocate for the rapid adoption of electric vehicles.

Since 2000, I have owned and driven eight electric vehicles (EVs) beginning with a General Motors EV1 in the year 2000. My wife and I currently own two EVs charged by rooftop solar with two backup batteries (Tesla Powerwalls).

I also founded and administer a Facebook group for Tesla Road Trippers—an online community of over 6,500 who advise each other about electric road trips. Unequivocally, EV owners prefer tourism destinations that provide electric vehicle charging.

Passage of the Residential, Energy, and Green Construction Code updates is critical in preparing Scottsdale for the transition to electrified transportation. According to Bloomberg, [electric vehicles are expected to hit more than 50% of all vehicle sales by 2030](#). It is essentially putting the tools in place to meet current and future demand for battery electric vehicles. The good news is if Scottsdale moves to implement the codes at the time the buildings are built, it will be about a quarter of the cost of doing it later.

For example, to retrofit, one must rip up concrete, cut into walls, and/or run conduit on exterior walls after the fact. Having retrofitted two homes for EV chargers, I can attest to what it takes to do so. At one home, I had to run conduit from the panel over my roof and down an exterior wall and then through the wall at substantial cost, and adding to that, the time delay for permitting makes for a drawn-out process.

I am a proud Scottsdale resident. Scottsdale has made great efforts to build a sustainable and resilient community. Futureproofing for electrified transportation is another crucial step in that process.

I urge you to cast your vote for adoption of the Residential, Energy, and Green Construction Code Updates.

Thank you very much.

Sincerely,

John S. Martinson  
President  
Scottsdale Electric Vehicle Association

**From:** notifications@cognitoforms.com on behalf of City of Scottsdale <notifications@cognitoforms.com>  
**Sent:** Monday, December 5, 2022 11:29 PM  
**To:** Cordova, Rommel  
**Subject:** City Council Public Written Comment Form - Frederick Henry Tack

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# City of Scottsdale

## Web Scottsdale City Council Meeting Written Comment Form

[Open Form](#)

### Entry Details

#### Agenda Item

MEETING DATE 12/6/2022

WHICH AGENDA ITEM WOULD YOU LIKE TO COMMENT ON? 18. Adoption of Residential, Energy, and Green Construction Code Updates

#### Name

FULL NAME Frederick Henry Tack

#### Contact Information

PHONE (602) 826-0509

EMAIL frederick.tack@gmail.com

ADDRESS 8401 East Edgemont Ave

CITY Scottsdale

## Comment

### COMMENT

I submit this comment as both a resident of Scottsdale, and as a professional civil engineer and board certified water resource engineer.

Scottsdale should adopt the 2021 building codes. This is a minimum responsibility of local or state government (local in the case of Arizona), and the International Green Construction Code (IgCC) should be mandatory. The word "green" creates some confusion. The IgCC is not a green building program or green certification. It is an overlay code designed to fill in gaps not covered by other codes and to augment other codes.

Unfortunately, Scottsdale's proposed IgCC amendments delete entire portions of the model code. I think the amendments go too far – way too far. I would like to see mandatory adoption of a more robust IgCC. But since that isn't up for consideration, I support adoption of the IgCC as amended as a MANDATORY code.

Most of the IECC and IRC amendments are positive changes for our local climate. I support adoption of the IECC and IRC with Option A included. I do NOT support adoption of Option B.

Thank you for considering my input.



**From:** notifications@cognitoforms.com on behalf of City of Scottsdale <notifications@cognitoforms.com>  
**Sent:** Tuesday, December 6, 2022 12:26 AM  
**To:** Cordova, Rommel  
**Subject:** City Council Public Written Comment Form - John Czarnecki  
**Attachments:** ScottsdaleAIA ArizonaDec letter.pdf

 **External Email: Please use caution if opening links or attachments!**

# City of Scottsdale

## Web Scottsdale City Council Meeting Written Comment Form

[Open Form](#)

### Entry Details

#### Agenda Item

MEETING DATE 12/6/2022

WHICH AGENDA ITEM WOULD YOU LIKE TO COMMENT ON? 18. Adoption of Residential, Energy, and Green Construction Code Updates

#### Name

FULL NAME John Czarnecki

NAME OF GROUP OR ORGANIZATION AIA Arizona and the AIA Phoenix Metro chapter

#### Contact Information

PHONE (602) 252-4200

EMAIL john@aia-arizona.org

ADDRESS 7686 E Pleasant Run

CITY

Scottsdale

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## Comment

COMMENT

Please see attached letter.

---

## Attachments

FILE UPLOAD

ScottsdaleAIA ArizonaDec letter.pdf

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November 29, 2022

City of Scottsdale  
3939 N Drinkwater Blvd  
Scottsdale, AZ 85251

Dear Mayor Ortega, Vice Mayor Durham, and council members Caputi, Janik, Littlefield, Milhaven, and Whitehead,

The American Institute of Architects Arizona (AIA Arizona) and the local chapter AIA Phoenix Metro support the City of Scottsdale proposed adoption of the 2021 suite of building codes, in particular the International Energy Conservation Code (IECC) and International Green Construction Code (IgCC) as mandatory codes.

According to the latest Intergovernmental Panel on Climate Change (IPCC) report, the time for climate action is now. Energy efficiency and renewable energy, materials transparency, the protection of water resources, and other sustainability strategies support mitigation by conserving resources and reducing carbon emissions. Resilient design helps communities adapt to evolving conditions, reduce harm and property damage, and more readily, effectively, and efficiently recover from adverse events. Architects draw upon both sustainability and resilience to become a force of valuable change by transforming the day-to-day practice of architecture to achieve a zero-carbon, equitable, resilient, and healthy built environment.

Scottsdale amendments to the 2021 IECC include the following:

1. EV capable charging for new single-family, multifamily buildings, and hotels
2. Non-tradable cool roof requirement for low-slope roofs of new residential and commercial buildings
3. Commissioning provisions for heating, cooling, and ventilation systems
4. Solar-ready zones for 10% of single-family homes and 40% for commercial buildings (excluding areas covered by skylights, equipment, or decks)

Major provisions of the 2021 IgCC includes the following for commercial buildings:

1. EV charging capability for new commercial buildings (Group A, B, E, F, I, and M) in addition to the residential requirements under the IECC.
2. Efficient irrigation design including smart irrigation controllers (new commercial developments).
3. On-site solar PV system requirement for new commercial buildings. Exceptions includes (1) buildings less than 5,000 sq. ft. in gross conditioned floor area; (2) on-site renewable energy systems, other than photovoltaic systems, that result in an equal or greater annual energy production; and (3) improved energy efficiency measures equivalent to annual energy that would be produced by the solar PV system.

4. Low-VOC paints, adhesives, sealants, floor coverings, composite wood products, and acoustical ceiling tiles.
5. Construction waste management with minimum 50% diversion of waste from landfill.
6. Reduced impact materials that meet any two of the following options: 1) minimum 10% of materials to be recycled content material (e.g. – steel, metal, insulation, flooring, composite wood products, acoustical tile); 2) minimum 15% of materials to be regional (masonry, stone, tile, concrete); 3) minimum 5% of materials to be sustainable certified lumber (SFI, FSC); or 4) minimum of 10 building products have Environmental Product Declarations.

Regulation of the building industry shapes the built environment. As industry leaders and major stakeholders, architects rely on the application of codes and standards to protect the health, safety, and public welfare while ensuring energy efficient, sustainable, and resilient design.

AIA Arizona and AIA Phoenix Metro support the City of Scottsdale's proposed adoption of the 2021 suite of building codes and associated amendments related to a sustainable, resilient, carbon-free, and net-zero energy future.

Best Regards,



John Czarnecki, Associate AIA  
Executive Director  
AIA Arizona (state component)  
AIA Phoenix Metro (local chapter)  
Scottsdale resident



Dan Clevenger, AIA  
Architect  
Principal, DLR Group  
AIA Phoenix Metro 2022 Chapter President

**From:** notifications@cognitoforms.com on behalf of City of Scottsdale <notifications@cognitoforms.com>  
**Sent:** Tuesday, December 6, 2022 9:37 AM  
**To:** Cordova, Rommel  
**Subject:** City Council Public Written Comment Form - Raymond Lazar

**⚠ External Email: Please use caution if opening links or attachments!**

# City of Scottsdale

## Web Scottsdale City Council Meeting Written Comment Form

[Open Form](#)

### Entry Details

#### Agenda Item

MEETING DATE 12/6/2022

WHICH AGENDA ITEM WOULD YOU LIKE TO COMMENT ON? 18. Adoption of Residential, Energy, and Green Construction Code Updates

#### Name

FULL NAME Raymond Lazar

#### Contact Information

PHONE (612) 961-4761

EMAIL Rmlazar39@gmail.com

ADDRESS 7121 E Rancho Vista Dr

CITY Scottsdale AZ 85251

## Comment

### COMMENT

Please recognize the future benefits to our beautiful community by passing the important improvements to our residential building code. The proposed changes to the Code will protect our environment and maintain our property values as our planet experiences significant changes. Thank you.

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**From:** notifications@cognitoforms.com on behalf of City of Scottsdale <notifications@cognitoforms.com>  
**Sent:** Tuesday, December 6, 2022 10:47 AM  
**To:** Cordova, Rommel  
**Subject:** City Council Public Written Comment Form - Morgan McIlwain

 **External Email: Please use caution if opening links or attachments!**

# City of Scottsdale

## Web Scottsdale City Council Meeting Written Comment Form

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### Entry Details

#### Agenda Item

MEETING DATE 12/6/2022

WHICH AGENDA ITEM WOULD YOU LIKE TO COMMENT ON? 18. Adoption of Residential, Energy, and Green Construction Code Updates

#### Name

FULL NAME Morgan McIlwain

#### Contact Information

PHONE (859) 699-0430

EMAIL mmcilwain7@icloud.com

ADDRESS 7127 E. Rancho Vista Dr. #5008

CITY Scottsdale

## Comment

### COMMENT

I would like to strongly encourage Council adoption of the updated provisions of our Residential, Energy and Green Building Codes. Given the current challenges we face due to climate changes impacting our water and energy sources and use; it's critical that we make these changes to adapt to these evolving challenges and continue to make Scottsdale a more sustainable community.

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**From:** [Lori Singleton](#)  
**To:** [City Council](#)  
**Cc:** [Lane, Benjamin](#); [Kaileigh Walker](#); [Melissa Keckler](#); [Alejandra Melgar](#)  
**Subject:** Letter to Mayor and City Council  
**Date:** Monday, December 5, 2022 5:26:14 PM  
**Attachments:** [image002.png](#)  
[Letter in Support of City of Scottsdale Building Codes.pdf](#)  
[Letter in Support of City of Scottsdale Building Codes.pdf](#)  
**Importance:** High

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**External Email: Please use caution if opening links or attachments!**

Hello Blane,

Respectfully we submit the attached letter to the Mayor and City Council in support of the adoption of increased building code requirements for the City of Scottsdale.

Thank you.

Lori  
**LORI SINGLETON**  
President & CEO



**Office: 602.240.2408**  
**Cell: 602.499.5465**  
[lsingleton@arizonaforward.org](mailto:lsingleton@arizonaforward.org)



# ArizonaForward

ESTABLISHED 1969

December 5, 2022

Mayor David Ortega  
Vice Mayor Tom Durham  
Councilwoman Tammy Caputi  
Councilwoman Betty Janik  
Councilwoman Kathy Littlefield  
Councilmember Linda Millhaven  
Councilwoman Solange Whitehead

Dear Mayor and City Council,

Arizona Forward, formed more than 53 years ago, is a 501c3 dedicated to bringing business and civic leaders together to promote cooperative efforts to improve the environmental sustainability and the economic vitality of our state and local regions. Arizona Forward is pleased that the City of Scottsdale has been as a member organization since 1991 and has continually demonstrated leadership in its environmental efforts.

We are so pleased to hear, and heartily support, the City of Scottsdale's adoption of the 2021 International Green Construction Code (IgCC) as mandatory, the 2021 International Energy Conservation Code (IECC), and the 2021 International Residential Code, including the electric vehicle capable infrastructure for new homes.

These codes support many of Arizona Forward's top priorities which include advancing climate action, shaping a sustainable water future, improving air quality, leveraging mobility, conserving natural resources and building a more sustainable future. Adopting the mandatory IgCC, as well as the amended IECC and IRC will help ensure Arizonans continue to grow in an environmentally responsible manner.

On behalf of Arizona Forward, I encourage the Mayor and City Council to vote in support of these green building codes for the City of Scottsdale.

Regards,

Lori Singleton  
President & CEO  
[lsingleton@arizonaforward.org](mailto:lsingleton@arizonaforward.org)

**From:** notifications@cognitoforms.com on behalf of City of Scottsdale <notifications@cognitoforms.com>  
**Sent:** Tuesday, December 6, 2022 12:17 PM  
**To:** Cordova, Rommel  
**Subject:** City Council Public Written Comment Form - Anitra Pickett

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# City of Scottsdale

## Web Scottsdale City Council Meeting Written Comment Form

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### Entry Details

#### Agenda Item

MEETING DATE 12/6/2022

WHICH AGENDA ITEM WOULD YOU LIKE TO COMMENT ON? 18. Adoption of Residential, Energy, and Green Construction Code Updates

#### Name

FULL NAME Anitra Pickett

NAME OF GROUP OR ORGANIZATION AZ Build Green Coalition

#### Contact Information

EMAIL anitrapickett1@gmail.com

CITY Scottsdale

#### Comment

**COMMENT**

As a Scottsdale resident and green building professional, I strongly support the approval of agenda item #18.

Raising the bar on high performance building standards should be a priority for our city and for Arizona. Scottsdale has been a leader in the use of this green building code for over a decade now and has paved the way for widespread interest in the use and adoption of IgCC in other Arizona municipalities. The 2021 IgCC and IECC align with the city's General Plan and Scottsdale Sustainability Policy that is currently being developed. Other states and cities around the nation are aggressively adopting sustainability policies and it is important for the future of our citizens that Scottsdale does the same. This is just one tool for the toolbox of city sustainability initiatives, but an important one in order to establish a baseline for building more efficiently and sustainably in the future.

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**From:** notifications@cognitoforms.com on behalf of City of Scottsdale <notifications@cognitoforms.com>  
**Sent:** Tuesday, December 6, 2022 12:44 PM  
**To:** Cordova, Rommel  
**Subject:** City Council Public Written Comment Form - JoAnna Strother  
**Attachments:** 2022 Arizona Healthy Air Fact Sheet.pdf

 **External Email: Please use caution if opening links or attachments!**

# City of Scottsdale

## Web Scottsdale City Council Meeting Written Comment Form

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### Entry Details

#### Agenda Item

MEETING DATE 12/6/2022

WHICH AGENDA ITEM WOULD YOU LIKE TO COMMENT ON? 18. Adoption of Residential, Energy, and Green Construction Code Updates

#### Name

FULL NAME JoAnna Strother

NAME OF GROUP OR ORGANIZATION American Lung Association in Arizona

#### Contact Information

EMAIL joanna.strother@lung.org

CITY Phoenix

#### Comment

#### COMMENT

The American Lung Association supports the adoption of energy codes that will reduce emissions and improve air quality. Please see our healthy air factsheet attached with our key report findings.

Adopting building energy codes that enable the growth of the zero-emission transportation sector could yield \$15.1 billion in public health benefits just here in Arizona between now and 2050 according to our "Zeroing in on Healthy Air" report.

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## Attachments

#### FILE UPLOAD

2022 Arizona Healthy Air Fact Sheet.pdf

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## State of the Air 2022

**More than 4 in 10 Americans breathe unhealthy air. In Arizona, it's often worse.** Tailpipe emissions and extreme heat drive up ozone pollution, while prolonged drought conditions and other impacts from climate change, such as historic Western wildfires, contribute to particle pollution.

Phoenix ranks among the most polluted cities in the United States for ozone and particulate pollution. It is one of just a handful of U.S. cities to land on all three of the State of the Air report's Top 25 most polluted cities lists:

**5th** 

in most unhealthy  
ozone days.

**11th** 

in unhealthy particle  
pollution days.

**8th** 

in unhealthy annual levels  
of particle pollution.

**84%** of Arizonans live in the 5 counties that received at least one failing grade for ozone days, particle days and/or annual particles.

Poor air quality contributes to a wide range of negative health impacts, including childhood asthma attacks, impaired lung function and development, lung cancer, heart attacks and strokes and premature deaths. Low-income communities and communities of color are disproportionately impacted by bad air quality.

## Zeroing in on Healthy Air

Moving away from combustion to zero-emission technologies is critical to clean air, health equity and a healthy climate. The American Lung Association's [Zeroing in on Healthy Air](#) report finds that a widespread shift to zero-emission transportation and clean energy would yield major health benefits between 2020 and 2050.

The widespread transition to zero-emission cars, buses and trucks could avoid 1,360 premature deaths and generate over \$15 billion in public health benefits.

### Health Impacts Avoided (2020-2050)

- Premature Deaths: 1,360
  - Asthma Attacks: 38,500
  - Lost Work Days: 182,000
- 
- Health Cost Savings: \$15.1 Billion

## Taking Action = Cleaner Air and Healthier Lungs

- **Use Clean Air Act authority** to adopt zero-emission standards for light, medium- & heavy-duty vehicles.
- **Pursue fully electric public fleets** and support zero-emission infrastructure including in all public buildings and garages.
- **Invest in publicly available charging infrastructure** along major highways and roads to ensure both personal and commercial charging opportunities exist.
- **Support accelerated fleet turnover through incentive programs** targeting older vehicles, consumer purchase decisions via point-of-purchase rebates and non-financial incentives.

## American Lung Association Poll

Arizona voters overwhelmingly view climate change as a significant present-day threat and strongly support actions to transition toward electric vehicles.\*



**78%** view climate change as a serious problem.



**69%** support a plan for utilities to cut carbon emissions by 50% by 2032 and 100% by 2050.



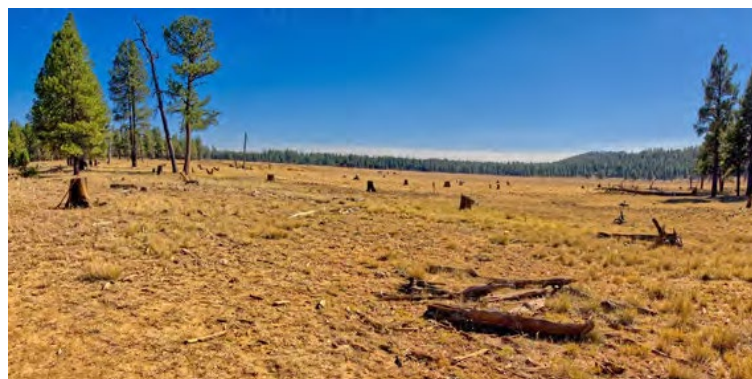
**67%** support transition to electric school buses, transit buses and government fleets.



**66%** support consumer incentives to encourage electric-vehicle purchases.



**66%** support investing in public charging infrastructure for electric vehicles.



“It is clear that Arizonans are deeply concerned about air pollution and climate change and understand the benefits of shifting away from harmful fossil fuels such as coal, oil and gas,” said JoAnna Strother, Senior Advocacy Director for the American Lung Association in Arizona. “Policies that clean our air and safeguard healthy environments are popular, and our policymakers need to act. An immediate opportunity to do this is for the Arizona Corporation Commission to encourage utilities to make investments in noncombustion electricity.”