



# MAJOR HIGHLIGHTS OF THE 2021 BUILDING CODES

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BYRON KING: CHIEF BUILDING OFFICIAL, ERIC  
KUTCH: DEPUTY BUILDING OFFICIAL, RICK  
NORQUIST: DIVISION MANAGER STRUCTURAL, and  
BILLY SIMMONS

HOUSTON PERMITTING CENTER: BUILDING CODE  
ENFORCEMENT | BCE



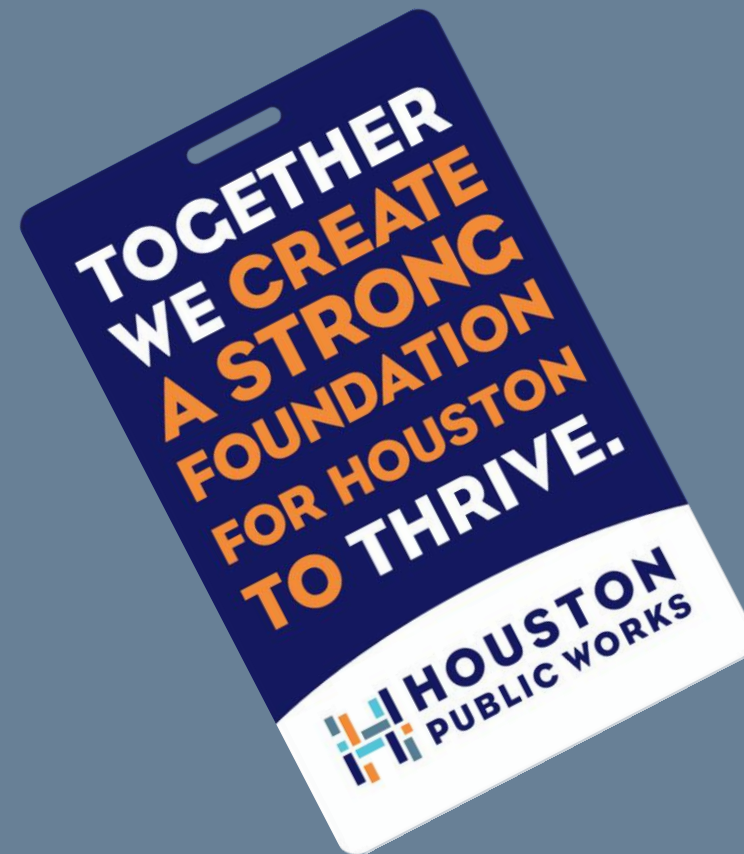
# PURPOSE

together we create a strong  
foundation for Houston to thrive

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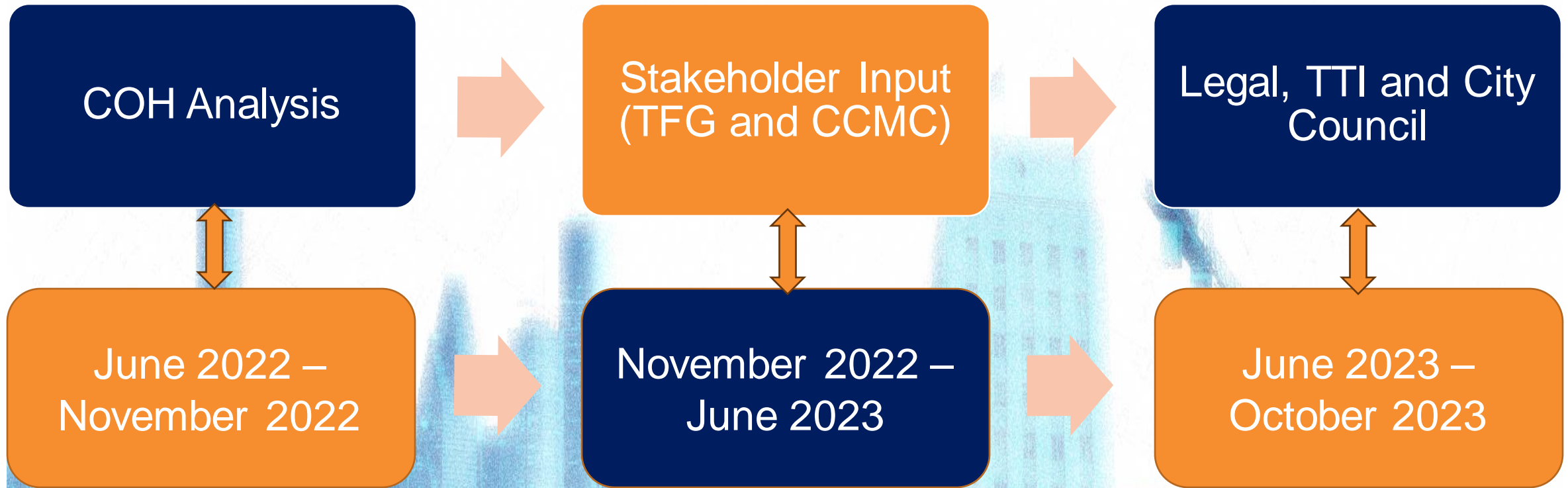
## 5 to THRIVE VALUES

respect | ownership | communication | integrity | teamwork



# Construction Code Modernization

## BRIEF HISTORY



# **2021 Houston Construction Code UPDATES INCLUDE:**

**2021 International Building Code (IBC)**

**2021 International Existing Building Code (IEBC)**

**2021 International Fire Code (IFC)**

**2021 International Residential Code (IRC)**

**2021 International Swimming Pool & Spa Code (ISPSC)**

**2021 International Energy Conservation Code (IECC)**

**2021 Uniform Mechanical Code (UMC)**

**2021 Uniform Plumbing Code (UPC)**

**2023 National Electrical Code (NEC)**





# **“GRANDFATHERING” PROJECTS**

1

Will be the same as the current “grandfathering” process for the 2015 amendments

2

Applicable to all projects submitted before 2021 Codes effective date

3

Projects can still be designed or built under 2021 Codes



# 2021 BUILDING CODES – IRC TECHNICAL | EDUCATIONAL PAPERS



# 2018 IRC – SIGNIFICANT CHANGES

1

The occupiable floor area is not less than 70 square feet in accordance with Section R304.

2

The occupiable floor area has a ceiling height in accordance with Section R305.

3

The occupiable space is enclosed by the roof assembly above, knee walls (if applicable) on the sides and the floor-ceiling assembly below.

4

The floor of the occupiable space shall not extend beyond the exterior walls of the floor below.

**Revised definition of Attic, habitable: A finished or unfinished habitable space within an attic.** This definition removed floor area and ceiling height restrictions as well as references to sections R304 and R305 which are now found in section R325.6.

Finishing off an attic for habitable space



# 2021 UPC Houston Amendment

## 603.5.18.2– WATER SOFTENERS



1

**Update to Houston  
amendment for water  
treatment units**

**603.5.18.2 Water Treatment Units-** Reverse osmosis drinking water treatment units shall meet the requirements of the appropriate standards referenced in Table 1701.1 Waste or discharge from reverse osmosis or other types of water treatment units shall enter the drainage system through an airgap. The water supply for commercial water softeners must be protected by a double- check valve assembly

2

**Removes mandatory double  
check valve requirement  
from Residential**





# **Amendment Proposal TFG-2 020**

## **R703- EXTERIOR COVERING'S**

**R703.7 Exterior plaster. Installation of these materials shall be in compliance with ASTM C 926, ASTM C 1063 and the provisions of this code.**

**Exception: Lath may be continuous behind control joints.**

**R703.7.2.2 Alternative plaster applications. When approved by the building official, plaster products and applications not covered in Section R703.7.2 shall be provided and installed in accordance with the manufacturer's approved instructions and approved design. Products and applications approved by ICC-ES Evaluation reports are considered approved unless specifically prohibited by the building official.**

# **Approved!**

# A2L REFRIGERANTS: 2024 UMC SECTION 1103.1.1 HOUSTON AMENDMENT

Adopted 2024 IAPMO's UMC NEW  
A2L refrigerants to:

1

Address the new  
federal mandates.

2

Reduce the amount  
of ozone  
depleting chemicals

## ASHRAE 34

Higher Flammability	A3	B3
Flammable	A2	B2
Lower Flammability	A2L	B2L
No Flame Propagation	A1	B1
	Lower Toxicity	Higher Toxicity





# 2018 IRC – SIGNIFICANT CHANGES

## New Appendix Q- Tiny Houses

### Defines Tiny Houses

- Dwelling that is 400 square feet or less in floor area excluding lofts

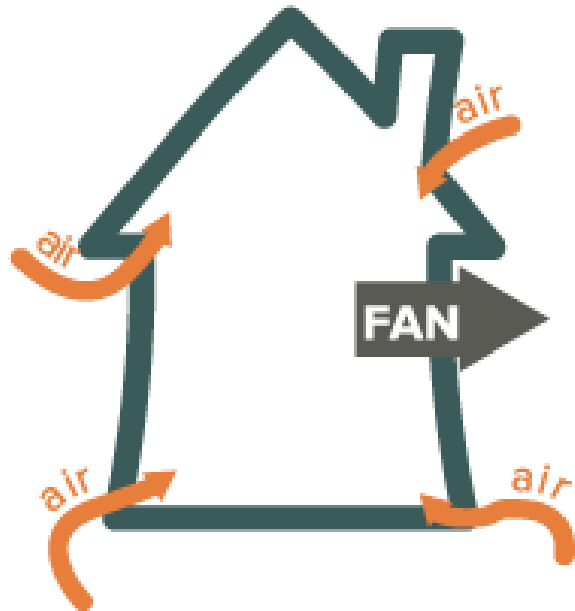
TABLE A-1

Element	General requirement
Egress roof access window	A skylight or roof window for emergency escape from a loft
Loft	Open on one side with a ceiling height of less than 6 feet 8 inches
Tiny house	Maximum area 400 square feet excluding lofts
Ceiling heights	Generally 6 feet 8 inches or less
Minimum loft area	35 square feet with 5-foot minimum dimension
Stairway	Width: 17 to 25 inches Headroom: 6 feet 2 inches Risers: 7 to 12 inches Treads: Calculated based on riser height
Ladders	Width: 12 inches Rung spacing: 10 to 14 inches Incline 70 to 80 degrees
Loft guard height	One-half of the clear height to ceiling Not required to be over 36 inches

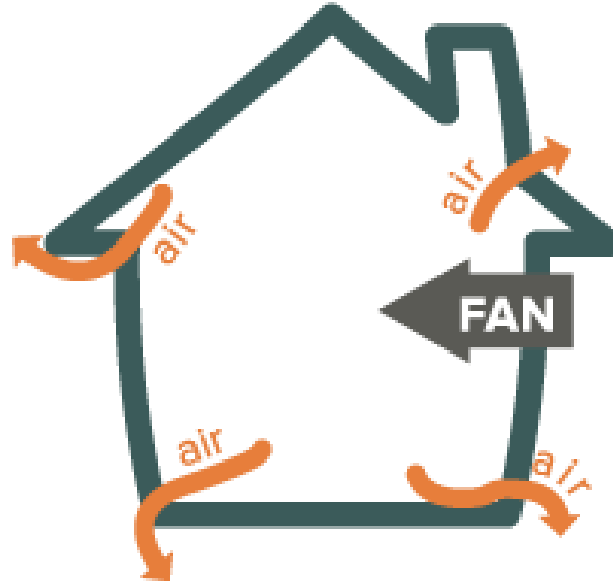
# MECHANICAL VENTILATION IN NEW HOMES

## 2021 – CHAPTER 15 IRC AND CHAPTER 5 UMC

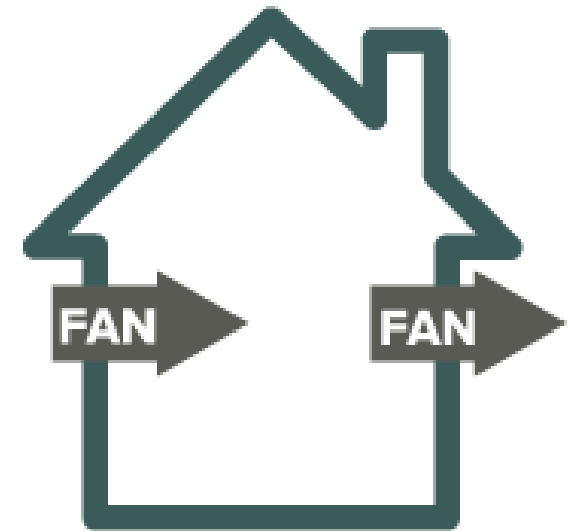
### Exhaust



### Supply



### Balanced



# **2021 BUILDING CODES – IECC TECHNICAL/EDUCATIONAL PAPERS**





# 2021 AMENDMENT SOLAR-READINESS



1

Will continue adoption of Residential Solar-Ready appendix (mandatory)

2

Will include Commercial Solar-Ready as new optional appendix

3

Intended to support future solar installs in both commercial and residential



The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

**RB103.6 Capped roof penetration sleeve.**

A capped roof penetration sleeve shall be provided indicated on the construction documents adjacent to a solar-ready zone located on a roof slope of not greater than 1 unit vertical in 12 units horizontal (8-percent slope). The capped roof penetration sleeve shall be sized to accommodate the future photovoltaic system conduit, but shall have an inside diameter of not less than 1¼ inches (32 mm).

[EDITORIAL NOTE: ALL OTHER PROVISIONS OF THIS APPENDIX REMAIN AS SET FORTH IN 2021 IECC.]

# Amendment Proposal

## TFG-2 020

### APPENDIX RB SOLAR READY PROVISIONS- DETACHED ONE AND TWO-FAMILY DWELLINGS AND TOWNHOMES

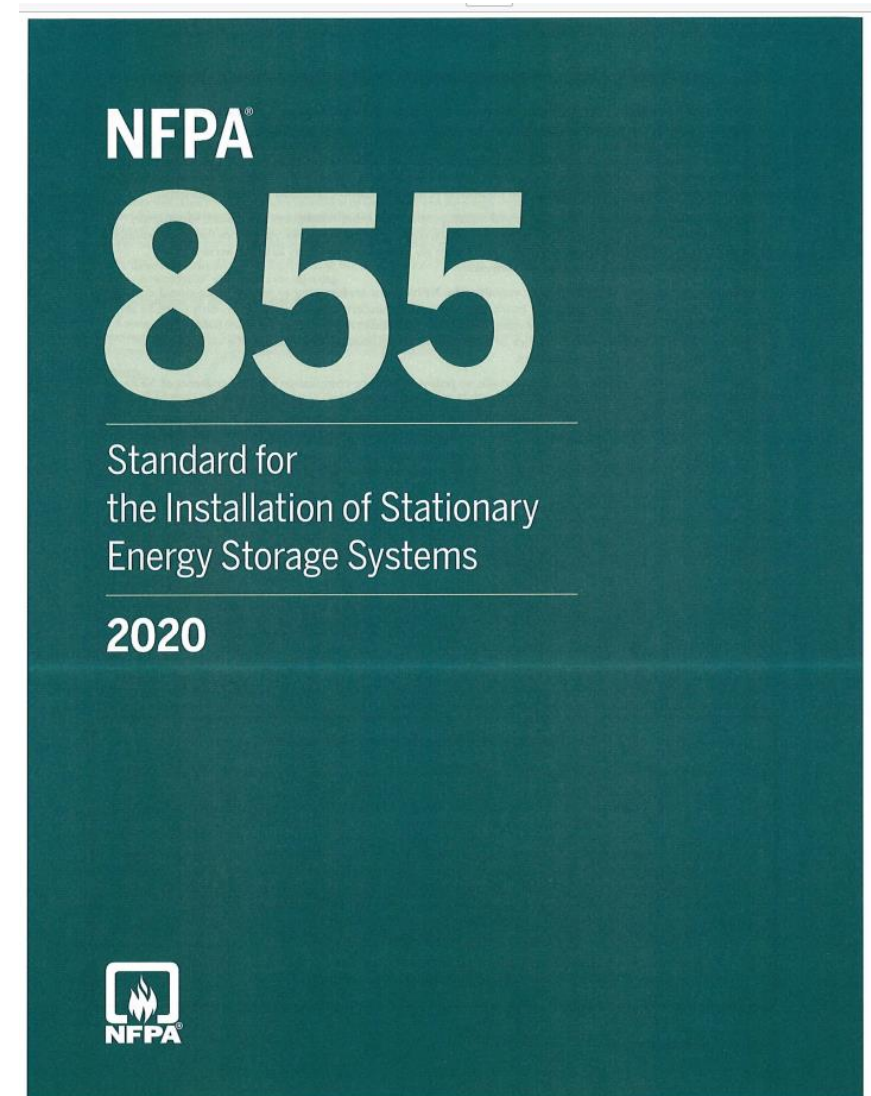
# Approved!



# ELECTRICAL ENERGY STORAGE SYSTEMS (ESS)



Photo credited to [thesolarpeople.co.uk](https://thesolarpeople.co.uk)





# REQUIRED IN THE PLANS

4.1.2.1.1 The plans and specifications associated with an ESS and its intended installation, replacement or renewal, commissioning, and use shall be submitted to the AHJ for approval and include the following:

(1) Location and layout diagram of the room or area in which the ESS is to be installed.

15.3 Installation. ESS shall be installed in accordance with the manufacturer's instructions and their listing.

(2) Provide a copy of the manufacturer's installation, operation, and maintenance instructions provided with the listed system.

(3) 6.1.2. System commission shall be conducted in accordance with 6.1.2.1 and 6.1.2.2 after the installation is complete but prior to final inspection and approval.


15.5 ESS Spacing. Individual ESS units shall be separated from each other by a minimum of 3 ft (914 mm) unless smaller separation distances are documented to be adequate as approved by the AHJ, based on large-scale fire testing complying with 4.1.5.

## 15.6 Location.


(3) Outdoors on exterior walls or on the ground located a minimum of 3 ft. (914 mm) from doors and windows.

**MINIMUM 24" ABOVE  
500 YR FLOOD  
PLAIN PER COH  
ORDINANCE**

# SOLARAPP+




## BENEFITS




### SHORTER Project Timelines

A typical SolarAPP+ project is permitted, installed, and inspected around 13 business days sooner than traditional projects  
*Based on differences in median durations*



### Staff Time SAVINGS

NREL estimates SolarAPP+ saved around 9,900 hours of jurisdiction staff time through automated permit reviews in 2022



### Potential Inspection BENEFITS

*(further research required)*  
SolarAPP+ projects have been about 29% less likely to fail inspections than traditional projects  
*Based on data from 12 jurisdictions*

Image Courtesy of National Renewable Energy Laboratory

# 2021 HOUSTON AMENDMENT – EV-READY READINESS



1

Houston Energy Code will now include optional EV-Ready appendix

2

EV-Ready are included in both Residential and Commercial Energy Codes

3

Intended to be used as guidelines for future EV installs



# R103.2 INFORMATION ON PLANS

**NOT NEW**

**NEW**

## 4. LET THE SOFTWARE CALCULATE

**NOT NEW**

**R103.2 Information on construction documents.** Construction documents shall be drawn to scale on suitable material. Electronic media documents are permitted to be submitted where *approved* by the *code official*. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed, and show in sufficient detail pertinent data and features of the *building*, systems and equipment as herein governed. Details shall include the following as applicable:

1. Energy compliance path.
2. Insulation materials and their *R*-values.
3. Fenestration *U*-factors and *solar heat gain coefficients* (SHGC).
4. Area-weighted *U*-factor and *solar heat gain coefficients* (SHGC) calculations.
5. Mechanical system design criteria.
6. Mechanical and service water-heating systems and equipment types, sizes and efficiencies.
7. Equipment and system controls.
8. Duct sealing, duct and pipe insulation and location.
9. Air sealing details.

**R103.2.1 Building thermal envelope depiction.** The *building thermal envelope* shall be represented on the construction documents.

# 3' OR 5' FIREWALL VS. FIRE BARRIER CHECK LIST

Item	Less than 3' from property line	between 3-5' from property line	
Double firewall in walls and concealed spaces	yes	yes	
Double firewall to be taped and floated in concealed spaces	yes	no	<u>Other Items that come up randomly:</u> Poly seal foam is allowed on blocks and penetrations under stairs
Poly seal foam allowed at bottom plate	yes	yes	
Poly seal foam allowed at top plate	yes	yes	Firecaulk holes (where wires go through) in rated junction boxes is not required
Poly seal at windows	yes	yes	Poly seal at tops of AC chases with 2x or 5/8" is acceptable
No openings greater than 16 " squared per stud bay	yes	no	5/8" FW is taped and floated at the tops of AC chases is not required
Up to 25% openings allowed in overall wall	no	yes	
Firecaulk plate penetrations	yes	no	
Poly seal plate penetrations	no	yes	
Double sheetrock behind breaker box	yes	no	
2 hour rated junction boxes in walls and ceiling	yes	yes	



# 2021 HOUSTON AMENDMENT – ASCE 7 - 2022

1

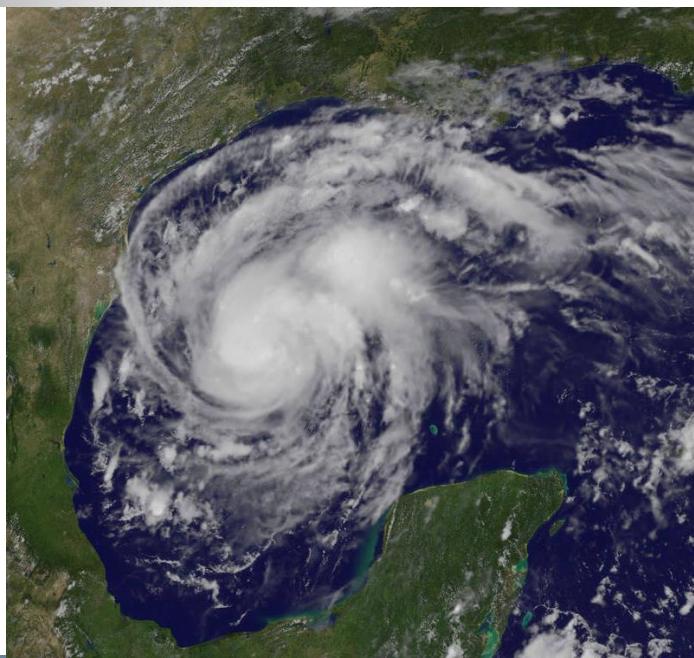
Includes updates to rain, wind, and tornado loads for more resilient construction

2

Expands the Risk Categories for certain Institutional occupancies and other high-risk occupancies

3

Improves roof underlayment in high wind regions and water infiltration in hurricane prone regions





# CROSS REFERENCE GUIDE

**Confidential Notice:** This file is confidential and intended solely for the use of the individual or entity to whom this file is shared with. This is notification that any unauthorized review, disclosure, dissemination, distribution, or copying of it or its contents is prohibited. Thank you.

2015 Houston IBC – Chapter 1 Scope and Administration	2021 IBC – Chapter 1 Scope and Administration	2021 Houston Amendments – Chapter 1 Scope and Administration	Code Analysis
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SECTION 101  
SCOPE AND GENERAL REQUIREMENTS

[A] 101.1 Title. These regulations shall be known as the City of Houston Building Code of [NAME OF JURISDICTION], hereinafter referred to as “this code,” and also known as the Building Code.  
The Construction Code collectively includes this volume and certain other codes, pamphlets, specifications and documents that are adopted in or by reference through the adopting ordinance. City of Houston Ordinance No. 2021-1037\*, which appears in the preamble of this code. A predecessor document to this code was known as the City of Houston Building Code—General Provisions, and any reference to the City of Houston Building Code—General Provisions in other ordinances or documents of the jurisdiction shall be construed to mean this code. In certain instances, references to the Building Code may be found in ordinances, contracts, and other documents of the jurisdiction. In any instance in which it can be determined from the context or scope of the document, that the reference was intended to include one or more of the codes that now collectively constitute the Construction Code, then it shall be so construed.

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No change to Houston amendment.

# Customer Service

## Community Trainings

- Jan. 10: BOMA – Half Day Commercial
- Jan. 24: GHBA – Half Day Residential
- Feb. 07: AIA (½ Day Commercial and ½ Day Residential)
- Feb. 14: Construction Industry Council | CIC for General Public (Commercial) – TBD
- Feb. 21: IAPMO – UPC Half Day
- Feb. 22: American Wood Council presents “Understanding Tall Mass Timber Code Changes”
- Feb. 28: IEC, NECA and IBEW – NEC Half Day
- TBD: IAPMO – UMC Half Day

# Customer Service

## Current 2023 Website Design- Plan Review Contact List



FOR APPLICANTS



### Quick Links

Popular links to help you find what you need quickly

- [Building code amendments](#)
- [Departments and agencies](#)
- [GovQA open records request portal](#)
- [Hotel employee training](#)
- [Infrastructure design manual](#)
- [Plan Review Contact List](#)
- [Residential facilities](#)
- [Utility availability letters](#)



### Contact E-Services

For assistance, please contact the appropriate group:

- [Commercial Plan Review](#)
- [Residential Plan Review](#)
- [Solar Panel Plan Review](#)
- [Electronic Locks Plan Review](#)
- [Addressing](#)
- [iPermits](#)
- [Sign Administration](#)
- [Office of the City Engineer](#)

More →



### Popular Downloads

- [Occupancy Application \(CE1045A\)](#)
- [Building Permit Application \(CE1263\)](#)
- [Declaration Supporting Building Permit Application - Individual](#)
- [Declaration Supporting Building Permit Application - Business Entity](#)
- [Sidewalk Driveway Permit Application \(CE1023\)](#)

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ENGINEERING SERVICES STANDARDS AND SPECIFICATIONS / GIS				
LAST, FIRST NAME	TITLE	EMAIL	PHONE	2nd LANGUAGE
MAIN CONTACT INFORMATION				
FOSTER, MARY	Managing Engineer	ocall@houston.gov	832-394-9113	
ENGINEERING STANDARDS		Mary.Foster@houston.gov	832-394-9100	
BEIGZADEH, SAHAR	Engineer	Sahar.Beigzadeh@houston.gov	832-394-9071	
HANNA, NASEEF	Engineer	Naseef.Hanna@houston.gov	832-394-9023	
GUTIERREZ, JOSE	Graduate Engineer	Jose.Gutierrez@houston.gov	832-394-9488	
GIS				
FOSTER, MARY	Managing Engineer	Mary.Foster@houston.gov	832-394-9100	
ENGINEERING SERVICES - UTILITIES - STORMWATER				
LAST, FIRST NAME	TITLE	EMAIL	PHONE	2nd LANGUAGE
MAIN CONTACT INFORMATION				
WANG, JAY	Manager Engineer	jay.wang@houston.gov	832-394-9466	
BROWN, KATHLEEN	Administrative Specialist	Kathleen.Brown@houston.gov	832-394-9424	
ENGINEERING STANDARDS				
TRAN, LAM	Supervising Engineer	Lam.Tran@houston.gov	832-394-9134	
DHAKAL, BIPLOD	Engineer	Biplo.Dhakal@houston.gov	832-394-9160	
MOHAMMADZAH, HUSSAIN	Engineer	Hussain.Mohammadzahan@houston.gov	832-394-9107	
WANG, LYNN (LINDA)	Engineer	Lynn.Wang@houston.gov	832-394-9599	
GUO, YAPING (ANGELA)	Graduate Engineer	Angela.Guo@houston.gov	832-394-9158	
TEODOREANU, MICHAEL	Graduate Engineer	Michael.Teodoreanu@houston.gov	832-394-9548	Romanian, French, Spanish
ENGINEERING STANDARDS - WISCONSIN STATE QUALITY				
CHEPKOLLA, JESSICA	Project Manager	Jessica.chepkolla@houston.gov	832-394-9133	Portuguese
NAMAKI, GHOLAM	Graduate Engineer	Gholam.Namaki@houston.gov	832-394-9107	
ENGINEERING STANDARDS - PRIVATE				
BHURTEL, UTTAM	Supervising Engineer	Uttam.Bhurte@houston.gov	832-394-9139	
NIKULAKO, EKUNDAYO (LANS)	Project Manager	Janis.Nikulako@houston.gov	832-394-9064	
LAFERTY, ADAM	Graduate Engineer	Adam.Laferty@houston.gov	832-394-9540	
AKHTER, FARIA	Graduate Engineer	Faria.Akhter@houston.gov	832-394-9990	Kurdish, Arabic
AZIZ, SHAMIA	Graduate Engineer	Shamia.Aziz@houston.gov	832-394-9392	
WILLIAMS, BRETT	Graduate Engineer	Brett.Williams@houston.gov	832-394-9382	
MOHAMMADI, NAHID	Sr. Plan Analyst	Nahid.Mohammadi@houston.gov	832-394-9654	

### Plan Review Contact List



# Contact Us

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**Houston Permitting Center**  
1002 Washington Ave.  
Houston, TX 77002

☎ 832.394.9000  
🌐 [www.houstonpermittingcenter.org](http://www.houstonpermittingcenter.org)  
✉ [Hpc-ra@houstontx.gov](mailto:Hpc-ra@houstontx.gov)

**Save The Date**

## **2023 Infrastructure Design Manual Roll Out Webinar**



**Monday,  
February 12, 2024**



**12:00 P.M. - 3:30 P.M.**

**Register here: [bit.ly/2023IDM](https://bit.ly/2023IDM)**



# Thank you!



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# QUESTION & ANSWER

**You Have Questions, We are here to help !!!**

