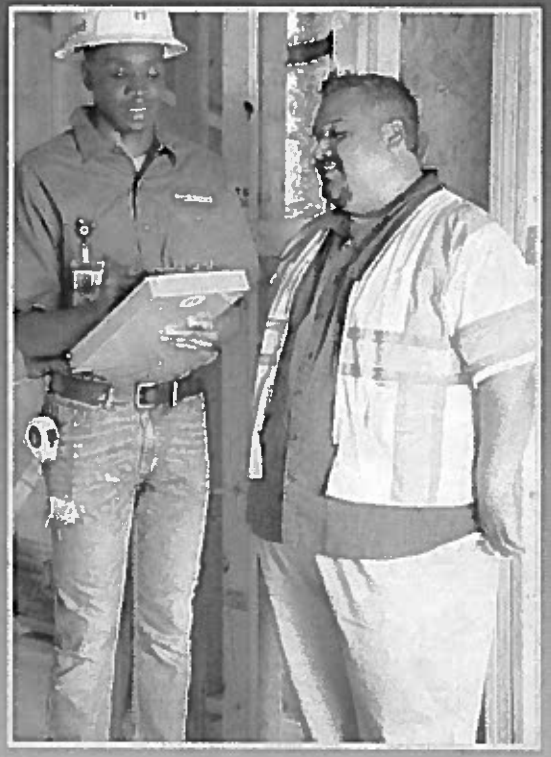
CITY OF AUSTIN
Development
SERVICES DEPARTMENT

International Residential Code (IRC) – Plumbing Code



June 8, 2017

International Residence Code:

- A prescriptive code used for residential construction
- Outlines the minimum life safety requirements for residential construction as a single source reference
- Adopted by surrounding communities and 12 largest cities in Texas

Why adopt the IRC?

Zucker Report / Action Plan Recommendations

- Adopt the International Codes to achieve a harmonized set of codes.
- Eliminate existing local code amendments whenever possible.

Imagine Austin Priorities:

- Water
- Affordability

How does IRC meet Imagine Austin Priorities?

IRC Requirements	Water	Affordability
Smaller Water Supply Fixture Units (WSFU) - homeowners can keep existing 5/8" meter when calculations are presented to Austin Water	X	X
Provides group fixture units for sizing WSFU and smaller drainage fixture units (DFU)	X	X
Longer trap arms = more flexibility in design, less roof penetrations		X

How does IRC meet Imagine Austin Priorities? (cont'd)

IRC Requirements	Water	Affordability
Reduced pipe sizes = smaller boring and notching of structural framing members; less hot water wasted in pipes.	X	X
Surrounding communities and 12 of the largest Texas cities have adopted the IRC as a reference standard bringing consistency & cost efficiency		X
Provides a single point of reference for home construction		X

Summary

Cost Savings:

- Smaller pipe sizes eliminate the need to upgrade water meters. Cost savings can range from $700 to $3,000 (based on plat date) plus private installation of the water meter ($10K-$20K).

- Keeping a 5/8″ meter saves the customer nearly 50% every month on the service charge alone - $7.10 vs $13.00.

Other Considerations:

- Smaller pipes and longer trap arms meet Water *and* Affordability priorities of Imagine Austin
- Consistency with surrounding communities provides the City with a larger work force thereby reducing training costs
- Provides a single point of reference for the construction of homes.

QUESTIONS?

Planning and Development Review Department

Workflow Organizational Assessment

Austin, Texas

By

Zucker Systems
Paul Zucker, President, FAICP
Brad Remp, CBO, Executive Vice President,
Mary Blais, Senior Planner
Brent Muchow, PE, Engineer
Mac Birch, Technology Expert

3038 Udall St.
San Diego, CA 92106
(619) 260-2680, cell (619) 804-1769
www.zuckersystems.com
paul@zuckersystems.com

April 2015, Final Report

It is recognized that the process of adding new staff can be very burdensome for existing staff and generally has a negative impact on the group's ability to continue to respond to an increased workload. This impact will continue, not only through the actual hiring process, but last until the new employee is deemed fully capable of performing the full range of inspections appropriate for the position. Frequently this ride-along training process can take up to a year or more. During this period, not only does the City miss the benefit of a fully trained new employee, but the effectiveness of the Inspector assigned the training role is reduced. Many jurisdictions have recognized and addressed these challenges by temporarily employing qualified contract staff or by temporarily bringing back recently retired employees on a part-time basis until the new staff has become fully trained. This approach helps ensure that the existing inspection workload is being addressed and helps avoid employee burnout for those individuals tasked with the responsibility of completing both their daily inspections and training new employees.

67. ***Recommendation:*** **The Department should temporarily hire qualified contract inspectors, recently retired inspectors, or third party inspection firms to perform routine inspections while new inspectors are being hired and until they are fully trained.**

D. Policy Issues

Code Adoptions

Unlike many other states, the State of Texas does not mandate that local jurisdictions adopt and enforce a specific set of construction codes. This list of adopted codes in Austin generally represents the most current editions of the nationally recognized codes. The Department should be commended for adopting the current set of codes. While we generally recommend that jurisdictions adopt a set of codes that utilize a process that helps assure compatibility among the codes, the political forces present in Austin has led to an approach that incorporates codes adopted by both the International Code Council (ICC) and the International Association of Plumbing and Mechanical Officials (IAPMO). In some cases, trade codes published by both organizations have been adopted in order to fully address the types of projects that Austin routinely reviews. We also encourage jurisdictions to minimize the number of local amendments that they incorporate into their local code adoption process. We feel that the existence of a large number of local amendments helps contribute to confusion on the part of both designers and contractors. As Austin continues to compete to attract world-class development, the need for designers to comply with both a combination of national codes and a large volume of local amendments might be a disincentive for some nationally recognized design firms to participate in design competitions in Austin. In addition, contractors working in multiple

jurisdictions in the region are placed under an additional burden to know and apply these differing regulations based on which jurisdiction they have chosen to build in.

Those Codes adopted with amendments by the City of Austin include the following:

- International Building Code, 2012 Edition (ICC)
- International Residential Code, 2012 Edition (ICC)
- International Existing Building Code, 2012 Edition (ICC)
- International Plumbing Code, 2012 Edition (ICC)
- International Mechanical Code, 2012 Edition (ICC)
- International Fuel Gas Code, 2012 Edition (ICC)
- International Property Maintenance Code, 2012 Edition (ICC)
- Uniform Mechanical Code, 2012 Edition (IAPMO)
- Uniform Plumbing Code, 2012 Edition (IAPMO)
- Uniform Solar Energy Code, 2006 Edition (IAPMO)
- International Energy Conservation Code, 2012 Edition (ICC)
- National Electrical Code, 2011 Edition

68. ***Recommendation:*** **The Building Official should adopt the International Code Council set of national codes in order to achieve a more harmonized set of codes.**

69. ***Recommendation:*** **The Building Official should work to eliminate existing local code amendments whenever possible.**

Expired Permits Program

The City of Austin has implemented a very comprehensive program to identify properties with expired permits. While we support the need for obtaining permits for construction projects, it appears to us that the City of Austin has taken the obligation to resolve all expired permits to a level that we have not seen anywhere else in the country. Comments from customers and staff reveal that frequently the existence of an expired permit does not become known until the customer is ready to obtain a new permit for unrelated work. In many cases these expired permits are decades old and have little or no impact on the life safety of those individuals utilizing the property. Resolving these expired permits usually requires a very large expenditure of resources on the part of City staff and the

ROADMAP FOR BUILDING A BETTER AUSTIN

Development Services Department
Planning and Zoning Department

Recommendation No. 67

Zucker Recommendation
The Department should temporarily hire qualified contract inspectors, recently retired inspectors, or third party inspection firms to perform routine inspections while new inspectors are being hired and until they are fully trained.

Department Recommendation and Action Step(s)
The Development Services Department (DSD) routinely hires temporaries to assist with peak volumes. In some cases, the temporaries are retired City employees who previously worked in the department. DSD will explore the use of use of contract inspectors.

Priority Area	Work Group	Staff Contact	Staff Feedback	Start Date	End Date
Staffing	*Building Inspection*	*Carl Wren*	*Concur*	*Jul-2015*	*May-2016*

Financial Considerations
To be determined

Recommendation No. 68

Zucker Recommendation
The Building Official should adopt the International Code Council set of national codes in order to achieve a more harmonized set of codes.

Department Recommendation and Action Step(s)
Adopt the International Code Council (ICC) Code. Develop code adoption and local amendments ordinances for appropriate construction codes developed by the ICC. Meet with the various boards to obtain input to the adoption process and develop recommendations for Council consideration.

Priority Area	Work Group	Staff Contact	Staff Feedback	Start Date	End Date
Project Managers/ Processes	*Building Inspection*	*Carl Wren*	*Concur*	*Jan-2015*	*May-2016*

Financial Considerations
None

ROADMAP FOR BUILDING A BETTER AUSTIN

Development Services Department
Planning and Zoning Department

Recommendation No.	Zucker Recommendation
69	*The Building Official should work to eliminate existing local code amendments whenever possible.*

Department Recommendation and Action Step(s)
Limit the Number of Local Code Amendments. Evaluate local amendments with stakeholders to determine the need to retain local amendments during adoption of the 2015 editions of technical codes.

Priority Area	Work Group	Staff Contact	Staff Feedback	Start Date	End Date
Project Managers/ Processes	*Building Inspection*	*Carl Wren*	*Concur*	*Oct-2016*	*May-2017*

Financial Considerations
None

Recommendation No.	Zucker Recommendation
70	*The Building Official should reevaluate the existing expired permit program and redirect resources to only those projects with outstanding life safety issues.*

Department Recommendation and Action Step(s)
Change How Expired Permits Are Addressed. Develop a code amendment if necessary and develop standard operating procedures for rolling expired permits into new permit submittals and for activating and clearing expired permits identified due to complaint or referral.

Priority Area	Work Group	Staff Contact	Staff Feedback	Start Date	End Date
Project Managers/ Processes	*Building Inspection*	*Carl Wren*	*Concur*	*Jul-2015*	*May-2016*

Financial Considerations
None

None listed	Building Inspection	Melissa Martinez and Carl Wren	60	The inspector's office space should be remodeled to eliminate the individual cubicles that are rarely used and replaced with an open floor plan that better accommodates group meetings. It should include appropriate office space for all inspection staff assigned to the main office and a private conference room.	Concur	Facility Improvements - Development Services will coordinate with building management to reconfigure inspection office space to accommodate other full-time personnel within the department, and to build out meeting room space, and improve the general appearance of the area.	Jan-16	Sep-16	The funding for this recommendation has been included in the FY2015-16 Proposed Budget. The estimated cost for this request is $100,000.	One-Time	2
Staffing	Building Inspection	John Beasley	61	The Building Official should relocate the minimum inspector qualifications from the adopted ordinances and place them in the approved job descriptions.	Concur	Development Services Human Resources Manager will update and collaborate with appropriate management to review the job classification family, update minimum qualifications and licensure requirements and submit to Corporate Human Resources for review, input and approval. The Assistant Director will work with staff and stakeholders to remove personnel qualifications from the adopting ordinances for the building codes.	Aug-15	May-16	To be determined	N/A	1
Staffing	Building Inspection	Carl Wren and John Beasley	62	The Building Official should review the Municipal Code and add an "or equivalency" clause to the need for prior supervisory experience in order to be hired as a supervisor or entry level inspector.	Concur	The Development Services Assistant Director will work to remove qualifications from code adoption ordinances. The Development Services Human Resources Manager will work with the Corporate Human Resources Department to differentiate job descriptions to include detailed qualifications.	Jan-17	Mar-17	None	N/A	2
Performance Standards	Building Inspection	John Beasley	63	The Building Official should augment the current qualitative performance standards for next-day inspections with an qualitative standard to ensure quality inspections.	This item requires additional research.	Human Resources Manager and the Executive Team will review with the Corporate Human Resources Department the code requirements and discuss options. Any changes to the municipal code will require action by the City Council.	Oct-16	May-17	None		2
Finance	Building Inspection	Carl Wren	64	The Building Official should encourage the assessment of re-inspection fees on residential projects that demonstrate a pattern of calling for inspection before the work is completed.	Concur	The Building Official shall enforce the assessment of existing reinspection fees and develop a standard operating procedure that calls for paid re-inspection fees as detailed in the residential fee schedule.	Oct-15	May-17	None	N/A	1
Staffing	Building Inspection	Jose Roig	65	The Building Official should hire the equivalent of three (3) additional Combination Residential Inspectors and one (1) supervisor as part of a multiphase staffing augmentation program.	Concur	This recommendation will be implemented over the next two (2) fiscal years. A supervisor position will be included in the FY2015-16 Proposed Budget; and three (3) inspector positions will be included in the FY2016-17 budget request.	Oct-15	Sep-16	The funding for this recommendation will be split between the FY2015-16 and the 2016-17 Proposed Budget. The estimated cost for the supervisor position is $104,368 for FY2015-16, and the estimated cost for the three (3) inspector positions is $284,292 for FY2016-17.	N/A	1
Staffing	Building Inspection	Jose Roig	66	After hiring the first phase of additional combination inspectors, the Building Official should evaluate the need to hire additional combination inspectors and a supervisor in order to improve quality and training and reduce daily workload to an acceptable level.	Concur	Monitor Possible Need For Additional Inspectors. Division Manager will monitor workload for both first line inspectors and the potential need for a second residential inspections supervisor.	Mar-16	May-16	None	N/A	2
Staffing	Building Inspection	Carl Wren	67	The Department should temporarily hire qualified contract inspectors, recently retired inspectors, or third party inspection firms to perform routine inspections while new inspectors are being hired and until they are fully trained.	Concur	The Development Services Department (DSD) routinely hires temporaries to assist with peak volumes. In some cases, the temporaries are retired City employees who previously worked in the department. DSD will explore the use of use of contract inspectors.	Jul-15	May-16	To be determined		1
Project Managers/ Processes	Building Inspection	Carl Wren	68	The Building Official should adopt the International Code Council set of national codes in order to achieve a more harmonized set of codes.	Concur	Adopt the International Code Council (ICC) Code. Develop code adoption and local amendments ordinances for appropriate construction codes developed by the ICC. Meet with the various boards to obtain input to the adoption process and develop recommendations for Council consideration.	Jan-15	May-16	None	N/A	1
Project Managers/ Processes	Building Inspection	Carl Wren	69	The Building Official should work to eliminate existing local code amendments whenever possible.	Concur	Limit the Number of Local Code Amendments. Evaluate local amendments with stakeholders to determine the need to retain local amendments during adoption of the 2015 editions of technical codes.	Oct-16	May-17	None	N/A	2
Project Managers/ Processes	Building Inspection	Carl Wren	70	The Building Official should reevaluate the existing expired permit program and redirect resources to only those projects with outstanding life safety issues.	Concur	Change How Expired Permits Are Addressed. Develop a code amendment if necessary and develop standard operating procedures for rolling expired permits into new permit submittals and for activating and clearing expired permits identified due to complaint or referral.	Jul-15	May-16	None	N/A	1

AIA
Austin

July 25, 2016

Ms. Susan Barr, AIA
Residential Inspections Supervisor
City of Austin
505 Barton Springs Road, 2nd Floor
Austin, Texas 78704

Ref: Adoption of 2015 IRC for residential plumbing

Dear Ms. Barr,

As you are well aware, plumbing codes are not exclusive to plumbers – they involve builders, architects and property owners. After reviewing the proposed recommendation, AIA-Austin is in full support of staff's recommendation to adopt the plumbing sections of the 2015 IRC for single-family, duplex and townhome construction. Additionally, we recommend that the UPC be considered by the Building Official as an alternate method of compliance to ease the transition to a new code.

Adopting the plumbing sections of the IRC would support the City's current action plan to adopt the International Code Council set of national codes in order to achieve a more harmonized set of codes while the Building Official should work to eliminate existing local code amendments whenever possible.

Respectfully,

Stuart Sampley, AIA
Advocacy Commissioner / Past-President

The American Institute of Architects
AIA Austin
801 W. 12th Street
Austin, TX 78701-1709
512-452-4332
www.aiaaustin.org

BOAT
BUILDING OFFICIALS ASSOCIATION OF TEXAS

Richard C. Anderson
Residential Inspections Supervisor
City of Austin Development Services Department
One Texas Center, 3rd Floor
505 Barton Springs Rd
Austin TX, 78704

April 24, 2017

RE: International Residential, Plumbing, Mechanical, and Gas Codes.

The purpose of this letter is to provide information and support of the International Plumbing Code (IPC) and the entire family of I-codes. Many Texas cities transitioned from the Uniform Plumbing Code (UPC) to the International Plumbing Code (IPC) throughout the years. We understand the change was met with apprehension as contractors' had a level of comfort with the UPC and hesitation using an "international" code. When SBCCI, ICBO, and BOCA, (the previous legacy code bodies) met they combined their efforts to form a national code, which created the International Code Council (ICC). Creating a broader appeal all codes since then are in the I-Code family. For the IPC, over time, the changeover has proved to be simpler for contractors than expected with a greater flexibility in plumbing installations. The IPC allows methods which require less time to install, reduced number of fittings, less material and reduced costs.

The International Residential Code (IRC) also provides the same benefits as one publication which covers all aspects of home construction, including plumbing, fuel gas, and mechanical provisions providing uniformity for both contractors and inspectors. Texas's transition to the International Building, Plumbing, Mechanical, Energy and Fire Codes has improved consistency and construction throughout the State. One code document with consistent language and standards which are the most widely used and recognized in Texas and across the country.

The Building Officials Association of Texas, design professionals and code officials throughout Texas support the International Code Council and the network of Code Chapters providing relevant training on the entire family of I-Codes.

Our communities deserve the advantages and improved methods of the most up to date codes that utilize sustainable construction practices. The International Plumbing Code and International Residential Code provide this and are valuable resources used throughout our great State of Texas.

Please contact me if you have any questions or are in need of any assistance.

Respectfully,

Selso Mata AIA, C.B.O.
President

HOME BUILDERS ASSOCIATION
GREATER AUSTIN

www.HBAAustin.com
8140 Exchange Drive
Austin, TX 78754
P • 512.454.5588
F • 512.454.5036

July 27, 2016

Mechanical, Plumbing, and Solar Board
City of Austin
301 W 2nd Street
Austin, TX 78701

Dear Members of the Board,

On Behalf of the Volume Builders Council (VBC) of the Home Builders Association of Greater Austin (HBAGA), we would like to express our full support for the adoption of the International Code Council (ICC) plumbing provisions including the plumbing amendments to the International Residential Code and the International Plumbing Code(IPC) for residential use.

The VBC represents the Volume Builder Corporations that are members of the HBAGA. In 2015 alone our volume builders pulled 13,058 permits in this area which accounted for 75.8% of the overall new housing market.

Currently, the City of Austin along with the Travis County Water District are the only entities in our area that require the Uniform Plumbing Code. We believe that the plumbing provisions of the ICC are not only superior to any other plumbing code, but also much more cost effective. The IPC addresses scientifically based health and safety concerns while the UPC requires labor-intensive processes and methods as well as more expensive materials.

The IPC is specifically developed to work in concert with the rest of the ICC codes including the International Residential Code (used for all single family construction), International Building Code, International Fire Code, and others. These codes are developed through an extensive process lead by the Building Officials and Code Administrators (BOCA), the International Conference of Building Officials (ICBO) and the Southern Building Code Congress International (SBCCI). During the process, input is also received from a diverse group of other bodies including the Building Owners and Managers Association International, National Association of Home Builders, National Fire Protection Association, and others. By creating these codes in unison with each other, it often eliminates incompatible and conflicting codes. In a City like Austin where there are already an atmosphere of confusion around the Land Development Code, switching to the ICC codes would be a step in the right direction to begin to unravel all of the complexities of the code here in Austin.

We would urge the Mechanical, Plumbing, And Solar Board to consider the adoption of the ICC plumbing provisions.

Sincerely,

Emily Lubbers
CEO
Home Builders Association of Greater Austin

Geoffrey Tahuahua
Vice President of Public Policy
Home Builders Association of Greater Austin

CC: DR Horton Homes, Cal Atlantic Homes, KB Home, Milestone Community Builders, Pacesetter Homes, Lennar Homes, Gehan Homes, Taylor Morrison, Express Homes, Meritage Homes, Pulte Group, LGI Homes, Highland Homes, Wilshire Homes, David Weekley Homes, Ashton Woods Homes, Grand Haven Homes, Scott Felder Homes, Chesmar Homes, Buffington Homes, Centerra Homes, Drees Homes, Brohn Homes, Wes Peoples Homes, Sitterle Homes, Toll Brothers.

City of Austin

Founded by Congress, Republic of Texas, 1839
Planning & Development Review Department
One Texas Center, 505 Barton Springs Road
P.O. Box 1088, Austin, Texas 78767

February 19, 2015

To: Members of the Plumbing, Mechanical, Solar Board

The International Family of Codes or "I" codes are a complete set of codes and work well together as such. It is essential to keep these bodies of code together as one complete unit. A very important part of this family of codes is the PMG set. The International Plumbing Code, International Mechanical Code, and International Fuel Gas Code complete this set of unitary/family of codes. The ICC family of codes is currently being used by several municipalities in the State and offers a simple way for all the phases of construction to work together.

To quote the "I" codes "This code is founded on principles intended to establish provisions consistent with the scope of a plumbing code that adequately protects public health, safety and welfare; provisions that do not unnecessarily increase construction costs; provisions that do not restrict the use of new materials, products or methods of construction; and provisions that do not give preferential treatment to particular types or classes of materials, products or methods of construction."

To quote an article published by BOMA "The IPC focuses on scientifically based health and safety concerns while the UPC mandates traditional, labor-intensive plumbing materials and methods that serve to promote the interests of the plumbing unions. The International Plumbing Code, on the other hand, promotes advanced, cost-effective technology prohibited under the Uniform Plumbing Code."

Sincerely,
Trebor Brown
Chief Mechanical Plumbing Inspector
Planning Development and Review Department, City of Austin

Plumbing, Heating & Air Conditioning, Inc.
87 N. Fannin • P.O. Box 3447 • Amarillo, TX 79116-3447
PH. 806-376-9797 • FAX 806-376-9147

Date: February 18, 2015

City of Austin, Mechanical Plumbing and Solar Board
2800 Spirit of Texas Drive
RE: Adoption of ICC PMG Codes

Dear Board Members,

I am owner and RME master plumber of MMM Plumbing Heating and A/C Inc. in Amarillo Texas. I am also current Zone A Director for Plumbing Heating and Cooling Contractors of Texas (PHCC-TX). I am writing this letter to inform the board of my support and encouragement that Austin adopt the complete family I–Codes.

In Amarillo, TX we have adopted afore mentioned codes and feel it is in the best interest of both the contractors as well as the citizens of Amarillo. The ICC PMG Codes will take some adjustment to contractors, but the end result with added safety and value justifies making the move.

In addition to these benefits it also puts Austin on a level playing field with other urban communities of our great state. Whether you have outside contractors coming into Austin or Austin contractors going into other cities, it just makes sense to adopt this more widely used code. In closing I would like to state that, the ICC PMG code has proven to be very leading edge in supporting "low flow" plumbing fixtures being mandated and necessary to save our precious water resources.

Dickie McCurdy – President

MMM PLBG HTG & A/C INC.

87 North Fannin

Amarillo Tx. 79106

Anderson, Richard

From: Jim Olk <Jim.Olk@farmersbranchtx.gov>
Sent: Thursday, February 19, 2015 10:17 AM
To: Brown, Trebor
Cc: Mark Roberts; Scott McDonald
Subject: Plumbing Code Adoption

Trebor,
Would you please share this with your Mechanical, Plumbing and Solar Board.
Please let me know if there is anything else I can do. Sorry I could not be in attendance at the meeting, I have a City Council meeting that I have to attend.

Dear Board members,

Thank you for your service to the City of Austin. The responsibility bestowed on you to make recommendation as to the minimum standards for public safety related to plumbing and mechanical codes should not be taken lightly. The potential for large scale health hazards related to improperly installed plumbing has long been recognized in the State of Texas. In 1897 the State Legislature enacted legislation requiring cities to enact plumbing codes. Now, almost 120 years later the potential hazards still exist and we still have the need for safe, sanitary plumbing. This risk to the residents of Austin is minimized through adoption and enforcement of codes. Your recommendation as to which code will be used can have a significant impact on protection of the general public from these hazards.

Over the past century things have changed, cities don't draft their own plumbing codes they now use model codes developed by model code organizations. Understanding what's in the codes as well as how the codes are developed is key to making a good decision for the residents of Austin. It is my understanding that you are considering adopting an updated plumbing code.

I really felt that I needed to share some things with your committee that may be of value to you as you make your recommendations. A little about me, I have more than 35 years' experience in the plumbing trade. Starting as a plumbing apprentice up through plumbing inspections and now as a code official. I currently Chair the Plumbing, Mechanical and Fuel Gas Membership Council at the national level. I am also past president of a statewide code official organization which represents code officials all across the State of Texas. Having participated in the development of model codes for more than 30 years with many of the model code organizations I have found that integrated construction codes provides better protection for the public.

As you look at recommending adopting the International Plumbing Code (IPC) understand that the code is developed through a governmental consensus process. The process involves a diverse committee of subject matter experts which debate proposals to amend the code from any interested party. These proposed code changes are further vetted by the membership of the International Code Council (ICC), which has a membership of over 50,000 construction professionals. The proposed code changes are reviewed for potential conflicts with codes like the International Building Code, International Residential Code, International Mechanical Code, International Fuel Gas Code and the rest of the International Code series. In the end you are assured that the proposed code change and the entire series of codes provides for health, safety and welfare of the residents of Austin because only those people that are charged with protection of the public through code enforcement have agreed that the codes meet those requirements. No other model code organization can make that claim.

Additionally, as I have participated with construction professionals across the State and across the nation, the one common thread of concern is uniform enforcement. Having different codes adopted in different communities creates real problems for the construction industry adding additional cost which is borne by the consumer. By far the vast

majority of communities in Texas adopt the International Code Series, including the International Plumbing Code and International Mechanical Code. Having one code used throughout the State is good the residents and good for the construction industry.

I would encourage you to recommend adoption of the International Plumbing Code, International Mechanical Code and International Fuel Gas Code for the City of Austin.

Thank you for your service to the residents of Austin.
Sincerely

Jim Olk
Chairman ICC PMG Membership Council
Director of Community Services/Building Official
City of Farmers Branch, Texas
972-919-2533

Anderson, Richard

From: Michael Shannon (DSD) <Michael.Shannon@sanantonio.gov>
Sent: Thursday, February 19, 2015 12:22 AM
To: Brown, Trebor
Cc: mroberts@iccsafe.org
Subject: City of San Antonio codes

Trebor - Good evening. Can you please forward this to the board members for your meeting tomorrow? Thanks in advance. Please call me if you have any questions.

Mike Shannon, PE, CBO
Assistant Director – Field Services Division Deputy Building Official Development Service Department City of San Antonio, Texas
210-207-5006

Dear City of Austin Mechanical, Plumbing and Solar Board,

My name is Mike Shannon, PE, CBO and I am the City of San Antonio's Assistant Development Services Director and Deputy Building Official. I understand that your Board is in the process of reviewing the 2015 mechanical and plumbing codes to determine which ones to adopt for your City. Naturally, this question then becomes whether or not to adopt the ICC International Plumbing, Mechanical and Fuel Gas codes or the IAPMO Uniform Plumbing and Mechanical codes. I am writing this correspondence to you today to offer some information as the City of San Antonio held this similar debate during our 2006 and 2009 code development processes.

Prior to 2006, the City of San Antonio adopted several of the ICC building-related family of codes (2003 versions of the IBC, IEBC, IRC, IFC, etc.) but we also adopted the IAPMO Uniform Plumbing and Mechanical codes. While these codes worked and did provide for safe design and development in our City, many of our external design and development stakeholders, as well as our internal staff (plans examiners and inspectors) found the use of the two non-coordinated sets of codes to be a challenge. In our 2006 code development process, the City chose to adopt the ICC International Mechanical Code but stayed with the Uniform Plumbing Code. However, in 2009 we adopted the complete ICC set of codes for our City including the IPC, IMC and IFGC. While there was significant debate on the UPC vs. the IPC during our 2009 open-hearings process, at the end there was overwhelming support for the adoption of the IPC which was adopted and went into effect in early 2010 in San Antonio.

Since then, the City of San Antonio updated to the 2012 ICC codes in 2012 and on January 29th of this year, we adopted the 2015 versions of the ICC codes (IBC, IEBC, IRC, IFC, IPC, IFGC, IMC, IECC and 2014 NEC). Since our 2009 adoption of the coordinated set of ICC codes, we have received a significant amount of positive stakeholder feedback (designers, developers, building owners, installing professionals, and internal plan review and inspection staff) stating that this was a good change for our City. The most common feedback we received has been that the IPC, IMC and IFGC are obviously better coordinated with the other ICC codes making the design, plan review, installation and inspection process easier for the daily users of the codes while continuing to ensure the high level of safety needed for our community.

As I noted above, my purpose for this correspondence is just to offer some information regarding the process that the City of San Antonio made a few years ago. I know that we made the right choice for our City with the adoption of the complete ICC family of coordinated building-related and fire codes back in 2009 and again in 2012 and now 2015. I wish you all good luck with your code development and review process. If I can be of any assistance during your process, please feel free to contact me anytime.

Sincerely,

Mike Shannon, PE, CBO
Assistant Director – Field Services Division Deputy Building Official Development Service Department City of San Antonio, Texas
210-207-5006

Department of
Building Safety
City of Amarillo

February 18, 2015

Uniform Plumbing Code vs. International Plumbing Code

To whom it may concern:

Let me begin with giving my background in plumbing. I have been in the plumbing trade for twenty-five years; I currently hold several state licenses: Plumbing Inspector, Master Plumber, Journeymen Plumber and International Code Council certifications as both Residential and Commercial Plumbing Inspector. I am an instructor, certified by the Texas State Board of Plumbing Examiners, for Plumbing Heating Cooling Contractors of Texas (PHCC-TX). I teach the following classes; Plumbing Continuing Education: 8hr code class, 18hr code class, medical gas certification and re-certification classes.

My entire plumbing career in the field was under the Uniform Plumbing Codes (UPC). As I made the transition into inspecting, the City of Amarillo was in the process of adopting the International Plumbing Code (IPC). I personally had to wrap my head around how these plumbing systems would even work. Under the UPC we learned every drain must have its own independent vent, in the IPC there are a multitude of venting options. One difference being the UPC accounts for the entire system being used at one time, an unrealistic approach. As we look at a master bathroom that has two lavatories, water closet, bathtub, shower, and a bidet. The UPC sizes the drains for all of these fixtures will be used at the same time and the independents vents would be needed. The IPC recognizes they will not all be used at the same time and vents the system in a more practical method. With the water restrictions being required today it is no longer necessary to neither consider a flush of 3.5 gallons of water or to have full port showers and lavatories. So we don't create a "slug" of water pushing down the drain and blowing out p-traps or creating back siphon behind it siphoning the trap dry. The water level inside the drains will not flood so air movement above the water level in the pipe acts as part of the venting system.

We have also learned with the IPC the plumbing ditches inside the structure do not have to be as deep, meaning the structures pad is no longer compromised by deep plumbing ditches. Contractors in Amarillo have been able to plumb a house with a single ditch entering a house that was twenty feet long and twelve inches deep. The majority of the plumbing being in the

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sand bed on top of the pad. With less venting there are also less penetrations through the roof assembly and less possibilities of leaks.

The economics of UPC vs. IPC comes from different angles. With have a shallower ditch there is less cost from ditching or backhoe charges. There are fewer fittings used in the IPC venting methods and less time plumbing the system saving both material and labor costs.

My professional opinion is the adoption of the International Plumbing, Mechanical and Fuel Gas Codes will be a benefit to both the City of Austin and the citizens served. My personal experience echoes this and provides my belief in Amarillo has done the right thing in helping our community be a better community to live and build in.

Sincerely,

Kevin Robinson
Assistant Building Official
Department of Building Safety
City of Amarillo
(806) 378-6262

Department of
Building Safety
City of Amarillo

February 18, 2015

RE: International Plumbing, Mechanical, and Gas Codes.

The purpose of this letter is to provide information regarding the City of Amarillo code adoption process. Let this serve as support of the International Plumbing Code, moreover support of the entire family of I-codes. The City of Amarillo transitioned from the Uniform Plumbing Code (UPC) to the International Plumbing Code (IPC) in 2008, adoption of the IMC in 2006. The change was met with great apprehension, especially the IPC . The local contractors had a level of comfort with the UPC and were uncomfortable with using an "international" code. This transition was simple; the contractors had greater flexibility in plumbing installations. Those plumbers which preferred to plumb the "old way" according to the UPC could still do so. All of the other plumbers now have the flexibility to plumb in a variety of code compliant methods. The IPC allowed methods which require less time to install, reduces the number of required fittings, thus reducing the cost of plumbing benefiting our citizens.

The City of Amarillo benefits by having one consistent family of codes, particularly on single family homes. The International Residential Code (IRC) is one publication which covers all aspects of home construction, particularly the plumbing, fuel gas, and mechanical provisions provide uniformity for both contractors and inspectors alike. The City encourages contractors to possess code books, so much so that the City makes them available for sale at City's membership cost. It provides great benefit for our homebuilders to have a consolidated set of standards which reference all aspects of home construction at their fingertips. One book, consistent language, standards which are the most widely used and most recognized in Texas and across the country. Code officials and design professionals throughout Texas have the support of ICC and the network of Chapters providing relevant training on the entire family of I-Codes.

The City of Amarillo's transition to the International Plumbing, Mechanical, and Fire Codes has improved consistency and construction in Amarillo. Our community has benefited from the improved methods, use of less material and working towards more sustainable construction practices, while reducing costs for our citizens.

Please contact me if you have any questions or are in need of any assistance.

Respectfully,

Scott A. McDonald

Scott A. McDonald, CBO
Building Official, City of Amarillo

509 S.E. 7th Ave P.O. Box 1971 Amarillo, TX 79105-1971 (806) 378-3041 Fax (806) 378-3085 TDD (806) 378-4229

BOMA POSITION

BOMA INTERNATIONAL SUPPORTS ADOPTION OF THE INTERNATIONAL PLUMBING CODE

BOMA POLICY

The International Codes, which BOMA International has strongly supported since their inception, are facing significant challenges around the country. The adoption of the "I" codes is essential in order to bring consistency to the nation's building regulatory structure. An important component of the ICC family of codes is the International Plumbing Code (IPC).

BACKGROUND

For decades, state and local governments have adopted one of three model plumbing codes developed by the Building Officials and Code Administrators International (BOCA), the International Conference of Building Officials (ICBO), and the Southern Building Code Congress International (SBCCI). In 1994, these organizations came together to form the International Code Council (ICC), with the express purpose of promulgating a single set of model codes in the best interest of the building community and the general public.

The ICC International Plumbing Code is currently used by numerous jurisdictions. The IPC is designed to protect public health and safety through provisions that do not unnecessarily increase construction costs or restrict the use of new materials, products or methods of construction, and without giving preferential treatment to particular types or classes of materials, products, or methods of construction.

OPPORTUNITY FOR IMPROVEMENT

In broad terms, the International Plumbing Code is superior to any other plumbing code, more specifically the Uniform Plumbing Code (UPC). The IPC focuses on scientifically based health and safety concerns while the UPC mandates traditional, labor-intensive plumbing materials and methods that serve to promote the interests of the plumbing unions. The International Plumbing Code, on the other hand, promotes advanced, cost-effective technology prohibited under the Uniform Plumbing Code.

OPPOSITION

Opponents of the International Plumbing Code include the International Association of Plumbing and Mechanical Officials, the Plumbing Heating and Cooling Contractors Association, the Mechanical Contractors Association and most importantly their silent partner, the United Association of Apprentices and Journeymen of the Plumbing and Piping Industry, more familiarly known as the UA or the Plumbers Union.

Much of the political clout behind the Uniform Plumbing Code (UPC), which is developed by IAPMO, comes from these sources. Ironically, the UPC also permits the unlimited use of plastic pipe. An extraordinary amount of money is being spent to promote the UPC, serving these organizations' vested interests without regard for public health, safety, and welfare.

ARGUMENTS SUPPORTING THE IPC

Following are three major points that can be used in favor of jurisdictions adopting the International Plumbing Code (IPC), as opposed to the Uniform Plumbing Code (UPC):

1) The process that develops and maintains the IPC is far superior to that underlying the UPC.

The IPC was developed through the International Code Council, an organization made up of the three model code groups: Building Officials and Code Administrators (BOCA), International Conference of Building Officials (ICBO), and Southern Building Code Congress International (SBCCI). Input is received from a diverse, nationwide body of building, plumbing, mechanical and fire officials, as well as industry representatives such as BOMA and the GSA.

In contrast, the UPC is developed exclusively by the plumbing and mechanical industry and plumbers' union representatives, along with a few self-selected plumbing and mechanical officials from the western region.

2) The International Plumbing Code is designed to work harmoniously with the International Building Code and others within the family of International Codes.

"Incompatible and conflicting codes" is the most frequent complaint voiced by those who must interpret, apply, and enforce the codes. Entities responsible for complying with those codes deserve a fair opportunity to understand the requirements without protracted appeals, hearings and multiple interpretations from different agencies in the same jurisdiction.

The provisions in the IPC are coordinated with other International Codes so that conflicts are eliminated. Jurisdictions that adopt conflicting codes will not only have to deal with internal conflicts within their code structure, but "turf" battles arising within their code enforcement agencies. Such unnecessary, counterproductive, and costly battles must be avoided.

3) The UPC contains provisions that are unnecessary and unworkable.

The UPC contains provisions that, if adopted, would require materials and methods that are unnecessary from a safety and sanitation standpoint and would add unnecessary costs to construction. As its content is exclusively controlled by the plumbing and mechanical union and related interests, the UPC places the interest of union members above public health and safety.

ACTION REQUESTED

Adoption of the International Plumbing Code, in conjunction with the International Building Code, will go a long way to simplifying the building regulatory system. Governments adopting the IPC will set a precedent for others that will be considering the "I" codes.

Given the resulting benefits, it is strongly recommended that BOMA members undertake an intensive effort to influence your state legislature to adopt the International Plumbing Code rather than the Uniform Plumbing Code.

AFFORDABILITY IMPACT STATEMENT

NEIGHBORHOOD HOUSING AND COMMUNITY DEVELOPMENT
INTERNATIONAL RESIDENTIAL CODE (2015) PLUMBING AMENDMENTS

PROPOSED CODE AMENDMENT:	PROPOSED CHANGES WOULD AMEND CHAPTER 25-12-241 OF THE LAND DEVELOPMENT CODE BY UPDATING THE GOVERNING INTERNATIONAL RESIDENTIAL CODE (IRC) FROM THE 2012 VERSION TO THE 2015 VERSION. THE PROPOSED CHANGES WOULD REMOVE OR RELAX SPECIFIC REQUIREMENTS AND STANDARDS WITHIN IRC (2015) AND PROVIDE LOCAL AMENDMENTS TO THAT EFFECT.
IMPACT ON IMPLEMENTATION OF IMAGINE AUSTIN VISION, GOALS AND PRIORITIES	☐ POSITIVE ☐ NEGATIVE ☒ NEUTRAL
LAND USE / ZONING OPPORTUNITIES FOR AFFORDABLE HOUSING DEVELOPMENT	☐ POSITIVE ☐ NEGATIVE ☒ NEUTRAL NO IMPACT FORESEEN.
IMPACT ON COST OF DEVELOPMENT	☒ POSITIVE ☐ NEGATIVE ☐ NEUTRAL THE PROPOSED CHANGES WOULD REMOVE OR RELAX IRC PLUMBING STANDARDS POTENTIALLY LESSENING MAINTENANCE AND/OR RETROFIT COSTS FOR HOMEOWNERS.
IMPACT ON PRODUCTION OF AFFORDABLE HOUSING	☐ POSITIVE ☐ NEGATIVE ☒ NEUTRAL NO IMPACT FORESEEN.
PROPOSED CHANGES IMPACTING HOUSING AFFORDABILITY:	THE REMOVAL OR RELAXATION OF IRC (2015) PLUMBING STANDARDS AND REQUIREMENTS AND THEIR REPLACEMENT BY LESS STRINGENT LOCAL STANDARDS AND REQUIREMENTS.
ALTERNATIVE LANGUAGE TO MAXIMIZE AFFORDABLE HOUSING OPPORTUNITIES:	NONE.
OTHER HOUSING POLICY CONSIDERATIONS:	NONE.
DATE PREPARED:	05/02/2017

DIRECTOR'S SIGNATURE: RM Copic for Rosie Truelove

Helping Build a Greener Tomorrow

The International Plumbing Code (IPC)

The 2015 edition of the IPC incorporates additional sustainable methods including new innovative provisions for the replacement of underground sewers with minimal disruption for pipes up to six inches in diameter via the "pipe bursting method." This new provision will provide relief for our nation's failing sewer infrastructure that is contaminating our water table. Chapter 13, "Gray Water Recycling Systems," has been replaced with a broader new chapter entitled "Non-potable Water Systems." It includes updates to the gray water provisions and new requirements for rainwater harvesting systems and systems utilizing reclaimed water for non-potable applications. These provisions are correlated with the International Green Construction Code (IgCC). Requirements related to subsurface landscape irrigation systems that were previously found in the "Gray Water Recycling Systems Chapter" were updated and relocated to a new chapter entitled "Subsurface Landscape Irrigation Systems." These provisions are correlated with the IgCC. At Ford Field (the Detroit Lions' stadium) in Michigan, the use of Air Admittance Valves saved $263,416.00 in construction costs, helped improve the indoor air quality, and protected the environment by reducing sewer gas emissions.

There are more than 10 methods of venting drainage system in the IPC. This presents a toolbox of design options that provide more flexibility and lower cost. Smarter designs limit the environmental impact not only in new plumbing systems but also in the renovation of existing systems allowing for quicker completion of jobs and greater convenience for the consumer and building owners.

Other benefits of the 2015 IPC include:

- The allowance for "Horizontal Wet Venting" with any combination of fixtures within two bathroom groups allows the engineer and plumber additional options that other model codes do not.
- Allowing for "Waste Stack Venting," another proven method that allows the designer to reduce costs.
- Allowing for "Circuit Venting," used to vent batteries of fixture.
- The IPC does not limit the use of "Combination Waste and Vent Systems" to situations where structural conditions preclude the installation of conventional systems.

Waterless urinals are allowed in the other model codes, but require the installation of a water distribution line rough-in to the urinal location in the event of a retrofit. It is highly *unusual* and *impractical* to provide for the future failures of a plumbing system. The water piping also negates much of the savings gained by installing these fixtures. Water pipe sizing in the IPC is generally smaller for the same number and type of fixtures. If installed under the appropriate code, the waterless urinal is not only a great water conservation tool, but is also considered by most health agencies to be more sanitary than a standard urinal because it is a non-touch device.

The introduction of siphonic roof drainage technology into the IPC provides typical savings of *20%* to *45%* from reduced pipe diameters, significantly less below grade drainage, and reduced trenching requirements. Horizontal pipes are installed flat level, without grade, which eases coordination with other trades. The environmental benefits include routing to harvesting, retention, and reclamation systems. There is less ground disturbance, fewer raw materials, etc.

This document is just a sample of the environmental benefits and cost savings that are possible by using the 2015 IPC.

Updated 7/20/15 - For more information, please contact Lee Clifton at lclifton@iccsafe.org

Helping Build a Greener Tomorrow
The International Plumbing Code (IPC)

The IPC is the only plumbing code that correlates with the International Energy Conservation Code (IECC). The IECC is the most widely adopted energy code in the world. The introduction of this code marked the beginning of the green movement in the code arena.

The International Code Council was involved with green initiatives and sustainability long before it captured mainstream attention with other organizations. The plumbing provisions within the IPC are the most widely adopted, sustainable-minded provisions in the world.

The IPC for many years has incorporated innovative technologies like waterless urinals and detail engineered designs allowing for the installation of smaller, more precise water and drainage systems, which result in the saving of millions of gallons of water and the installation of countless miles of conduit materials.

Other benefits of the 2015 IPC include:

- Compared to other plumbing codes, the dimensions of the drain waste and vent pipe are generally smaller for the same number and types of fixtures.
- The wide selection of venting options result in less piping needed to accomplish tasks.
- Vent terminals can terminate through outside walls versus through the roof, thereby reducing vent-piping length.

- Air admittance valve venting options that can significantly reduce the length of vent piping to outdoor terminals. The Detroit Lion Stadium in Michigan had a cost savings of over $263,416.00 in construction costs and the use of air admittance valves helped preserve indoor air quality. Using air admittance valves helps save the environment by reducing sewer gas emissions.
- There are more than 10 methods of venting drainage systems in the IPC that present a tool box of design options, which can result in cost reductions. Smarter designs limit the impact of unnecessary high cost.
    - The allowance for "Horizontal Wet Venting" with any combination of fixtures within two bathroom groups allows for additional options that other model codes do not.
    - The IPC allows "Waste Stack Venting," another proven method that allows the designer to reduce the cost.
    - The IPC allows "Circuit Venting," used to vent batteries of fixture.
    - The IPC does not limit the use of "Combination Waste and Vent Systems" to situations where structural conditions preclude the installation of conventional systems.
    - The IPC allows for fewer roof penetrations. With fewer roof penetrations in the building envelope, there is less opportunity of radiating heat out of the building, thus saving money and reducing the energy lost through leakage.
    - Side wall vent penetrations provides added flexibility and reduces the likelihood of frost over.
    - The IPC venting methods, as a collection of choices, enables flexibility of design and allows older structures in the eastern US more design flexibility. This lowers renovation costs and allows quicker time of completion on jobs resulting in greater convenience for consumers.

- Waterless urinals are allowed in the other model codes, but requires the installation of a water distribution line rough-in to the urinal location in case of a retrofit. It is highly unusual and impractical to provide for future failures of a plumbing system. The water piping also negates much of the savings from installing these fixtures. Water pipe sizing is generally smaller for the same number and type of fixtures. The waterless urinal is not

only a great water conservation tool, but is also considered by most health agencies to be more sanitary than a standard urinal because it is a non-touch device.

- The introduction of siphonic roof drainage technology into the **2012 IPC** provides a typical savings of 20% to 45% from reduced pipe diameters, significantly less below grade drainage and reduced trenching requirements. Horizontal pipes are installed on flat level, without grade, which eases coordination with other trades. The environmental benefits include routing to harvesting, retention, and reclamation systems. There is less ground disturbance, fewer raw materials, etc.

LEED identifies plumbing as approximately 12% of an energy efficient design. If plumbing is tasked with water conservation, water collection, air quality and the heating of water, which is ranked as the #1 or #2 user of energy depending on the zone Plumbing is a very real part of green design. More plumbing does not always make for a better building, especially if your design is to be cost effective or ecologically efficient. A plumbing design should meet the minimum safe standards. When a design exceeds that minimum safe standard it becomes economically infeasible and ecologically unsound. Most would agree that sewer gasses are not desirable in any occupancy; however, neither are the phthalates and dioxins produced by the off-gassing of PVC, which increases proportionately with the increase of unnecessary plumbing. An excessive plumbing design will also create greater health hazards for the public in the form of air pollution from the off -gassing during the manufacturing of the excess PVC and PEX pipe, also during the recycling of both. Neither PEX nor PVC pipe are conducive to recycling.
One can see that there is very little if any advantage to exceeding the minimum safe standards when the "big picture" is taken into account.

The **IPC** is not just a code. It's a part of a complete building safety system, providing an integral component necessary to stay current with the latest building safety technologies while meeting the public health, sanitation, and safety requirements necessary for the built environment. The **IPC** is a performance based code. It's very flexible in its approach to green building issues and encourages innovative design, much more so than any other plumbing code.

The 2015 edition of the **IPC** incorporates additional sustainable methods. New innovative provisions for the replacement of underground sewers with minimal disruption for pipes up to six inches in diameter via the "pipe bursting method" have been added to the code. This new

provision will provide relief for our nation's failing sewer infrastructure that is contaminating our water table. Chapter 13, "Gray Water Recycling Systems," has been replaced with a broader new chapter entitled "Non-potable Water Systems." It includes updates to the gray water provisions and new requirements for rainwater harvesting systems and systems utilizing reclaimed water for non-potable applications. These provisions are correlated with the International Green Construction Code (IgCC). Requirements related to subsurface landscape irrigation systems that were previously found in the "Gray Water Recycling Systems" Chapter were updated and relocated to a new chapter entitled "Subsurface Landscape Irrigation Systems." These provisions are correlated with the IgCC.

The code development process has been the key to the **IPC's** success.By leaving the final determination of code provisions in the hands of public safety officials who, with no vested financial interest, can legitimately represent the public interest in an advanced, safe and sustainable code. The principles that have made this work are openness, transparency, balance of interests, due process, an appeals process and consensus.

A Proven Legacy of Leadership in Plumbing Code Development

This table illustrates the leadership role the **International Plumbing Code** has taken in the adoption of new and safe technology and materials in comparison to the conservative "other model code". Note: **BOCA, SBCCI, CABO** represent ICC legacy codes combined to make the International Code. The dates are when the actual technology was adopted into the code.

PVC – DWV		
	BOCA	1968
	SBCCI	1968
	IAPMO	1973
CPVC		
	BOCA	1975
	SBCCI	1977
	UPC	1981
PEX		
	CABO	1992
	BOCA	1993

SBCCI	1994
IPC	1995
UPC	2000

Air Admittance Valves

IPC	1997
UPC	N/A

Horizontal Wet Venting

IPC	2006
UPC	2009 (limited application)

Nonwater Supply Urinals

IPC	2006
UPC	2009 (limited application)

Fuel Gas Provisions NFPA 54 (Water Heaters)

IFGC	1997
UPC	2003

Flood Hazard Requirements

IPC	2003
UPC	2006 (TIA 05)

Ductile Iron Water Pipe

IPC	2003
UPC	2006

Siphonic Roof Drainage Systems

IPC	2012
UPC	N/A

Single Stack Venting System

IPC	2012
UPC	N/A

Replacement of Underground Sewers by Pipe Bursting Methods

IPC	2015
UPC	Installation Standard Only

The 2015 IgCC has recently been updated and is available now. It is the only green code that correlates with the full suite of ICC codes. The IPC has laid the foundation for the safe application of sustainable building provisions and its progressive and green provisions enables and enhances many of the water related IgCC provisions. The IgCC has many references to the IPC and is correlated with the IgCC and IECC making it an extreme value to the code user.

The IPC has a greener future and we hope you decide to go in that direction. Please let us know if the Plumbing, Mechanical, and Fuel Gas (PMG) Group of ICC can be of further help.

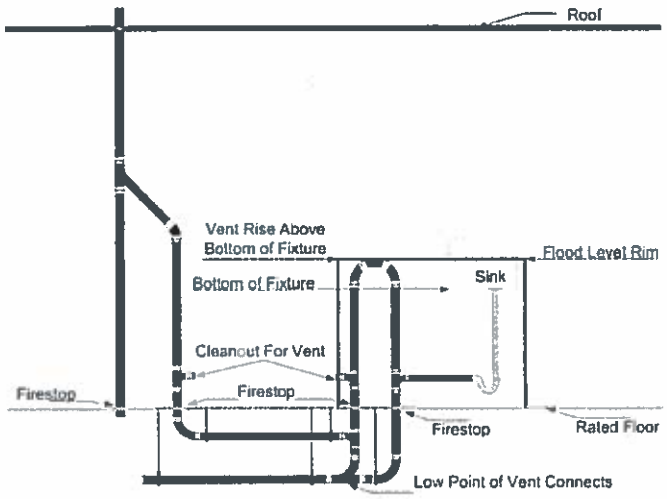
For more information, please contact Lee Clifton at lclifton@iccsafe.org

The 2015 International Plumbing Code (IPC) Cost Effective Design & Construction

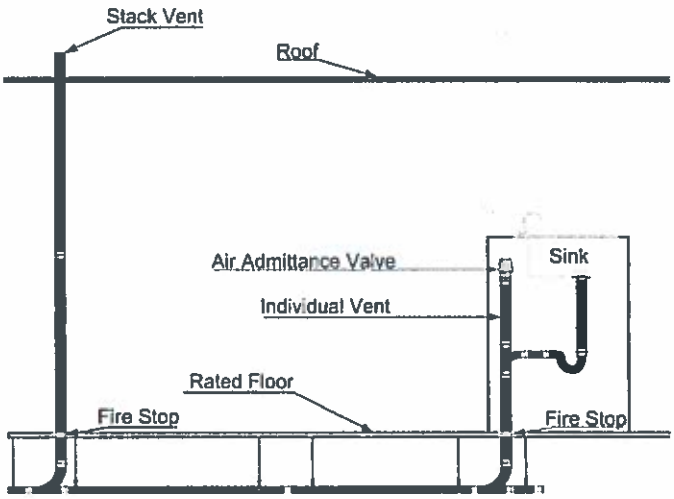
The Use of an Air Admittance Valve Does Make a Big Difference

The 2015 *International Plumbing Code* (IPC) Venting Design Options are material and time efficient. These features along with its proven modern innovative technologies allow the designer and installer to provide a cost effective installation.

The Traditional Island Vent (UPC Section 909)



Air Admittance-Individual Vent (IPC Section 918)



UPC Section 909—Traditional Vent (Cast Iron)	
Material Cost w/tax	$447.00
Sub (Core Drilling) x 4	200.00
Fire Stop x 4	80.00
Labor Plus Over/Prof	886.00
Misc.	50.00
Total Cost	**1,663.00**

IPC Section 918—Air Admittance Valve (Cast Iron)	
Material Cost w/tax	$216.00
Sub (Core Drilling) x 2	100.00
Fire Stop x 2	40.00
Labor Plus Over/Prof	443.00
Misc.	25.00
Total Cost	**824.00***

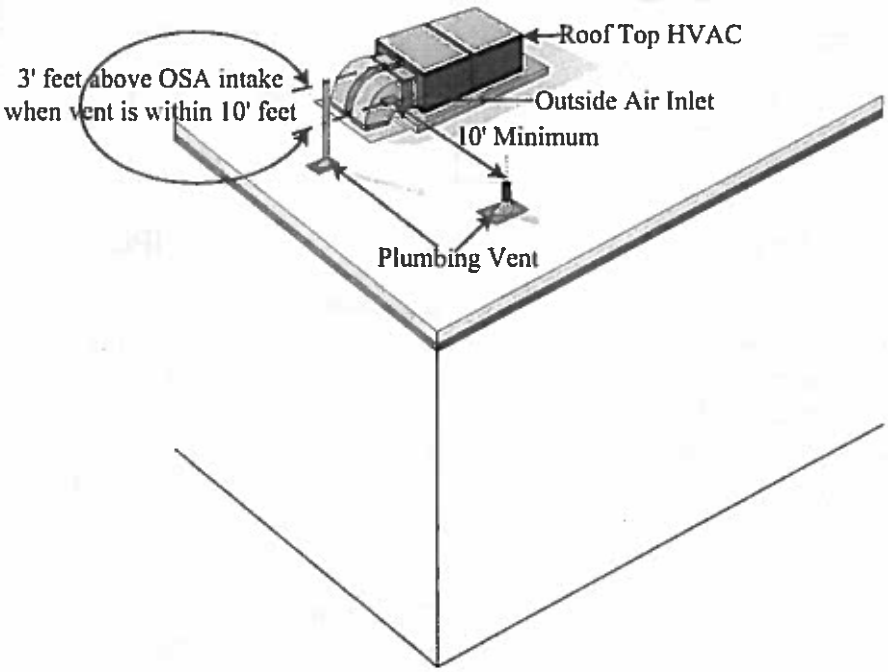
Cost analysis provided by Associates Plumbing Incorporated of Columbia, Maryland

***As much as 50% cost savings can be attained.**

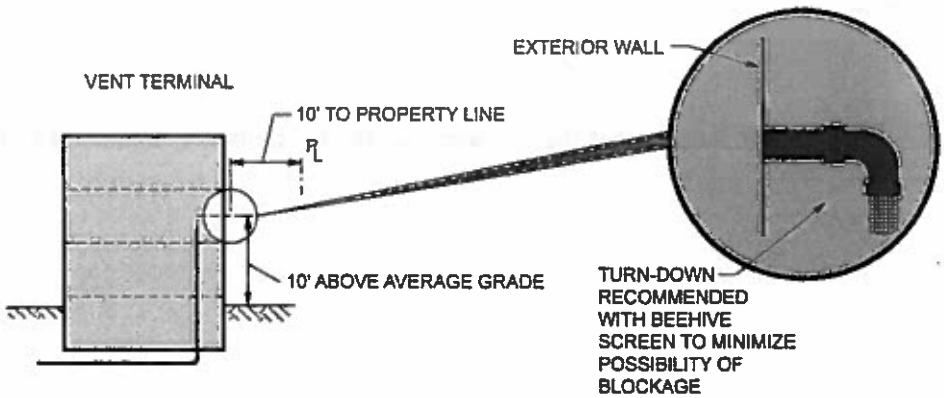
Vent Terminal Alternative

A Side wall vent terminal is an alternative to roof penetrations that can result in significant cost savings and a more aesthetically pleasing installation. For example, a sidewall vent may be preferred to penetrating membrane built-up, slate or tile roofs. Such roof penetrations are difficult to make leak proof and can be more expensive requiring added labor and material cost. Side wall penetrations can be useful in avoiding mechanical air intakes like those shown in the top drawing.

The 2015 IPC offers many design options that the designer, builder and plumbing contractor can consider.



Traditional Method



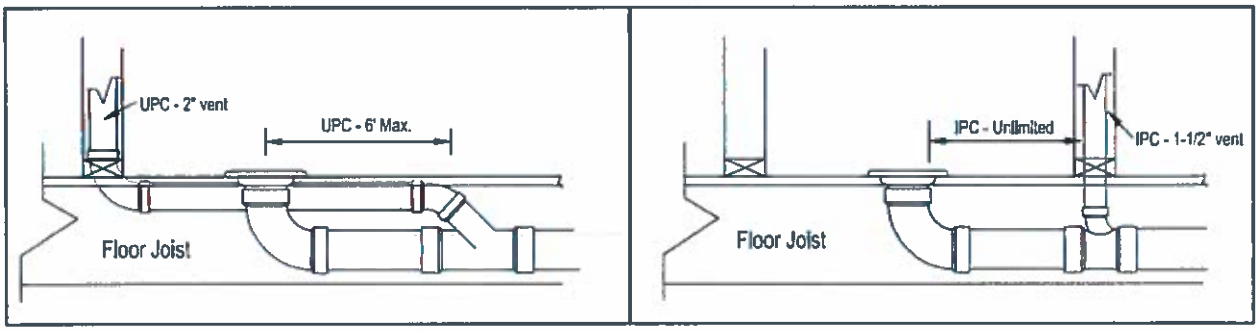
Alternative IPC Side Wall Vent Terminal

The 2015 International Plumbing Code (IPC) Cost Effective Design & Construction

Drainage Design that Offers Cost Savings

The 2015 *International Plumbing Code* (IPC) Water Closet Installation Design for Floor Joist Installation

- IPC design advantage for water closet venting
- A better fit in a floor joist space



UPC

Considerations

- Difficult to fit in floor cavity
- 6' maximum trap arm length
- Wye must roll up at least 45°
- LT 90 difficult to drill hole for
- 2" vent required
- Difficult to provide fall for pipe
- ¼" per foot fall required

Fitting List

- 1 – 2" LT 90
- 1 – 2" ST 45
- 1 – 3" x 2" WYE
- 1 – 3" Closet bend
- 1 – 3" Closet flange

IPC

Considerations

- Easier to fit in floor cavity
- Trap arm length not limited
- Adequate room for fall in most cases
- 1½" vent allowed
- ⅛" per foot fall required (3" and larger)

Fitting List

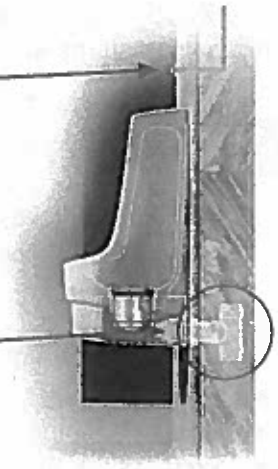
- 1 – 3" x 1½" SanTee
- 1 – 3" Closet bend
- 1 – 3" Closet flange

The 2015 IPC offers many design options that the designer, builder and plumbing contractor can consider.

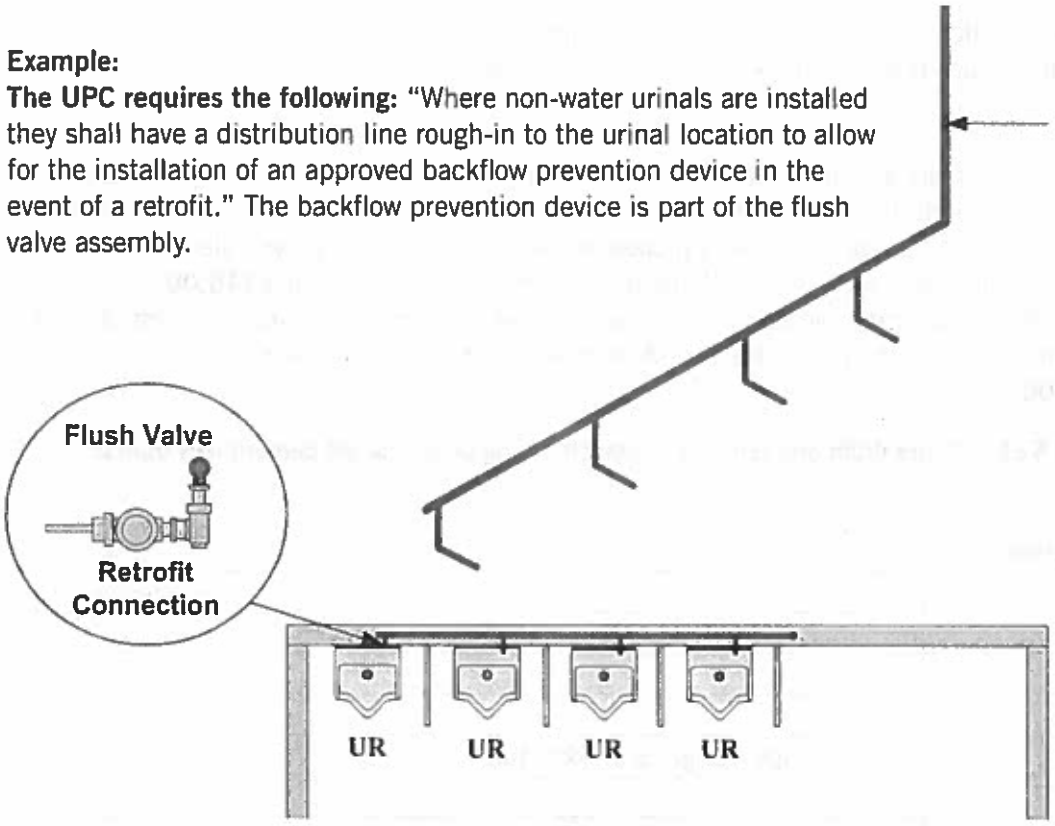
Waterless Urinals Installations

The IPC does not require a water distribution line rough-in to the urinal location for a flush valve installation in the event of a retrofit. There are other plumbing codes that mandate this.

Only a portion of the required vent and waste piping is shown.



Example:
The UPC requires the following: "Where non-water urinals are installed they shall have a distribution line rough-in to the urinal location to allow for the installation of an approved backflow prevention device in the event of a retrofit." The backflow prevention device is part of the flush valve assembly.



The result of this requirement is a significant increase in the cost of installation of a waterless urinal.

- Additional piping serving header
- In this example four future stub outs for flush valves would have to be included.
- Water service and water meter could need to be increased in size to accommodate anticipated demand.

The 2015 IPC offers many design options that the designer, builder and plumbing contractor can consider.

The 2015 International Plumbing Code (IPC) Cost Effective Design & Construction

Siphonic Roof Drainage Design

The 2015 *International Plumbing Code* (IPC) Chapter 11, Section 1107 requires siphonic roof drainage systems when utilized to be designed in accordance with ASME A112.6.9 and ASPE 45.

The high flow capacities and velocities in siphonic systems can be advantages to the designer, resulting in flexibility in the placement of stacks, smaller pipe diameters providing equivalent flow rates, no pitch requirement of piping to induce flow, and easier coordination of piping with other building elements. Conventional systems operate on a different hydraulic principle than siphonic systems.

Key Benefits:

- Cost effective with typical savings of **20% to 45%**
- Horizontal pipes are installed flat level, without grade (eases coordination with other trades)
- Small bore pipework reduces space taken up and imposes less load on the structure
- Provides ten times more flow capacity than an equivalently sized gravity system on a single story building.
- Drainage below the floor of the building can be eliminated
- Fewer roof penetrations due to high performance roof drains

Example:

A traditional roof drain covers a tributary area of **7,840 square feet** at a rainfall intensity of **3.25** inches per hour. According to IPC 2015, Chapter 11, Table 1106.2(1) the required roof drain outlet size and connected drain pipe size would be **5 inches**. A five inch drain with polyethylene dome and the first ten feet of 5 inch pipe with 1 inch insulation covering would cost about **$840.00**.
A siphonic system design covering the same roof area and rainfall intensity requires a **3 inch** drain. A three inch siphonic drain and the first ten feet of 3 inch pipe with 1 inch insulation covering would cost about **$610.00**.

That's a savings of $233.00 per drain and ten feet of branch piping or almost 28 percent less than a traditional design.

Example Calculations	
0.5900 cfs	
3.2500 in/hr	
0.2708 ft/hr	
0.0001 ft/sec	
Pipe designed at 52% full	
7842.4615 sf	
5.0000 inch	$843.00 per 10 ft
3.0000 inch	$610.00 per 10 ft
	Save $233.00 per 10 ft
	27.6% Savings

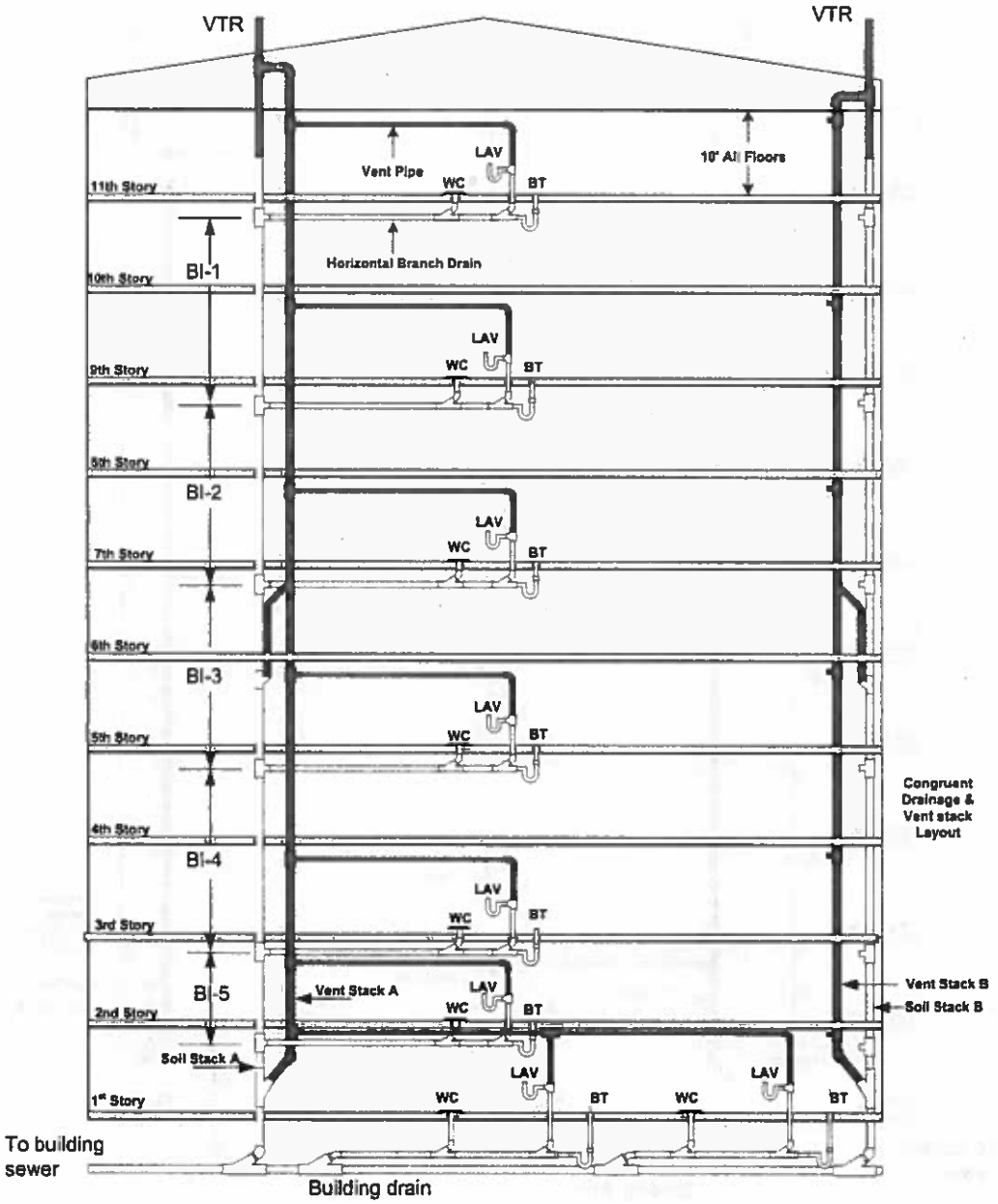
Based on R. S. Means Construction Cost Data 2005. These cost calculations are examples from real world applications; your cost may be different. These costs are given for illustration only.

Air Admittance Valves in Multi-Story Buildings—Part 2 of 2

Vent System without AAVs, *Costly*
17% More Material*
54% More Labor Hours*

Installation Disadvantaged—Codes such as the UPC limit to 1 bathroom group on a horizontal wet vent system. *This increases the cost of installation.*

**See IPS Corp Report # 12S0211E1 for High-rise 10 story, 45 unit, residential building as a typical example.*



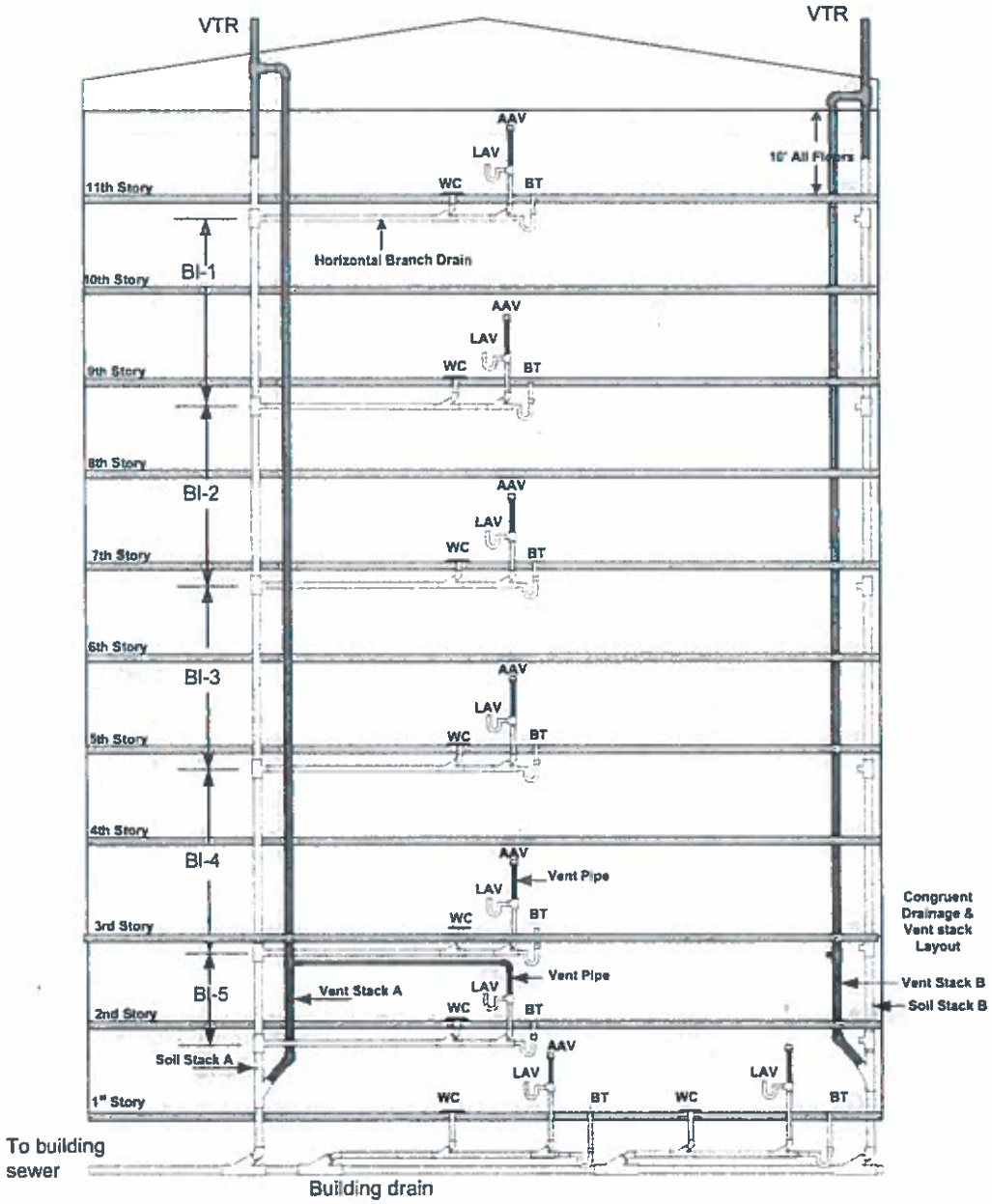
Note: Horizontal branch drain, vent pipe & AAV's serving bathrooms and connecting to vent & soil stack B are not shown but have an identical layout of those shown connectng to vent & soil stack A.

Air Admittance Valves in Multi-Story Buildings—Part 1 of 2

IPC Vent System using AAVs, *Cost Effective*
17% Less Material*
54% Less Labor Hours*

IPC Cost Advantage Multiplier—2 full bathroom groups allowed on IPC horizontal wet vent systems. *This doubles the IPC installation advantage.*

**See IPS Corp Report # 12S0211E1 for High-rise 10 story, 45 unit, residential building as a typical example.*



Note: Horizontal branch drain, vent pipe & AAV's serving bathrooms and connecting to vent & soil stack B are not shown but have an identical layout of those shown connectng to vent & soil stack A.

Presentation on Adopting the Plumbing section of the IRC vs. the UPC for Residential Construction

The Building and Fire Code Board of Appeals Meeting
July 27th, 2016

ABOUT US

Susan Barr, AIA, LEED AP BD+C, CDT
Residential Inspections Supervisor

- B.S. Architectural Studies - University of Illinois at Urbana-Champaign
- Master of Architecture - University of Illinois at Chicago
- Registered Architect in Illinois & Texas
- Experience in commercial and residential architecture

Tony Hernandez
Building Inspections Program Manager

- Master Plumber 16627, Med Gas, MRFPSS, WSPS
- Plumbing Inspector 2756, Med Gas, MRFPSS
- ICC Certified Residential Building Inspector
- ICC Certified Residential Mechanical Inspector
- ICC Certified Residential Energy Inspector

The reasons behind staff's recommendation in adopting the plumbing provisions of the International Residential Code (IRC) over the Uniform Plumbing Code (UPC):

1) **Action Plan (Zucker report recommendation)** The Building Official should adopt the International Code Council set of national codes in order to achieve a more harmonized set of codes. This change has support from management and is not a single employee idea.
2) **Action Plan (Zucker report recommendation)** The Building Official should work to eliminate existing local code amendments whenever possible. This change has support from management and is not a single employee idea.
3) **The IRC is one code book** that covers all aspects of construction for a single family home, duplex and townhome.
4) **Plumbing codes are not exclusive to plumbers**. The code also involves designers, builders and most importantly the home owner and tax payer.
5) The IRC plumbing code has **smaller Water Supply Fixture Unit** (WSFU) counts thereby allowing a homeowner to keep their existing 5/8" meter when calculations are presented to Austin Water.
6) The proposed WSFU table in the Local Amendments to the Plumbing Code has been modified to allow for the actual calculation of WSFU when sizing a residential water meter.
7) Adopting the plumbing provisions from the IRC **eliminates one code book** for residential construction.
8) The plumbing section of the IRC has longer trap arms which provides more flexibility in design.

The reasons behind staff's recommendation in adopting the plumbing provisions of the IRC over the UPC (cont.):

9) Consistency with the surrounding areas would allow plumbers outside of Austin to **compete and assist** with the skilled labor shortage in Austin.
10) Organizations wanting the IRC plumbing provision perform about **90% of the new construction** which includes builders, designers and plumbers.
11) **12 of the 13 largest cities in Texas** have adopted the IRC plumbing provisions for single family residential, duplexes and townhomes; consistency should be the priority
12) A constant problem is carry-overs. Hiring temporary inspection agencies would be a solution. However, since the surrounding jurisdictions have adopted the IRC plumbing code, there is a problem with consistency.
13) Plumbing companies do not restrict themselves to working in just one location. Most plumbers are already working under the IRC plumbing provisions.
14) Consistency should be the priority
15) Both the UPC and IRC plumbing codes would be adopted. The IRC would be for residential plumbing; the UPC for commercial plumbing.

(10) Points noted by the MPSB Working Group concerning the 2015 IPC/IMC adoption vs. the 2015 UPC/UMC adoption

This working group is made up of:

- (5) licensed Master Plumbers
- (1) Mechanical Engineer
- (1) 40 year+ Plumbing Instructor
- (1) Plumbing Designer
- About 200 years or more of total plumbing experience

POINT 1

(Chapter 3) IPC silent on utility locations, private utilities crossing lot lines, separate utilities for separate buildings and the availability and requirement to connect to utilities when available. The UPC is specific to these issues.

The specifics in the UPC are beneficial although other laws exist that would prevent this from happening

From the 2015 IRC section P2602.1 General. *The water-distribution and drainage system of any building or premises where plumbing fixtures are installed shall be connected to a public water supply or sewer system, respectively, if available. Where either a public water supply or sewer system, or both, are not available, or connection to them is not feasible, an individual water supply or individual (private) sewage-disposal system, or both, shall be provided.*

From the City of Austin's Land Development Code section
§ 15-9-123 - UNAUTHORIZED SERVICE TO ADJACENT PROPERTY PROHIBITED.
(A)Except as provided in Subsection (B), a customer may not extend or connect the customer's installation to a utility line to obtain service for property adjacent to a metered service address through the authorized meter even if the adjacent property is owned, controlled, or occupied by the customer.
(B)A customer who owns adjacent properties may extend or connect the customer's installation across or under adjacent property lines if the installation complies with the requirements of Title 25 (Land Development Code) for unified developments and applicable utility design criteria.
(C)If the City determines that a customer has extended unauthorized service to an adjacent property, the City may disconnect service to the customer 24 hours after the City has given the customer notice of the violation. The City may not reconnect service until it has determined that the unauthorized connection has been removed.
Source: 2003 Code Section 15-9-37; 1992 Code Section 18-4-056; Ord. 040805-02.

Trespassing laws

POINT 2

(Chapter 4) Both Plumbing Codes would require local amendments related to fixture standard efficiency, the UPC has already been modified in previous ordinances to reflect this.

This statement is true. However, the changes have already been provided and could easily be applied to both codes. Although the UPC and IRC are identical in the water closet max. flow rate, the International Green Construction Code is more restrictive and matches the local water closet amendment.

FIXTURE MAXIMUM FLOW RATES (PRIVATE)				
fixture	International Green Construction	IRC	UPC	UPC amendments
Lavatory faucet	1.5	2.2	2.2	
Kitchen faucet	1.8	2.2	2.2	
Water closet	1.28	1.6	1.6	1.28
Shower	2.0	2.5	2.5	

POINT 3

(Chapter 6) The UPC would require less ordinance language to adopt versus the IPC

The IPC applies to commercial plumbing. The change being proposed is for adopting the residential plumbing section of the IRC. This would be the code that governs residential plumbing only.

The IRC plumbing section and the UPC codes have been debated at the national and state level. The changes should be to a minimum to help create consistency.

Fewer changes would be consistent with the COA Action Plan (Zucker Report). A change to published code is a constant problem for designers and installers when submitting plans. Consistency should be the priority.

The IRC would provide consistency with the surrounding areas allowing outside plumbers to compete in Austin and help with the skilled labor shortage.

Point 4

(Chapter 7) There are multiple charts needed to size drainage systems in the IPC versus one chart in the UPC (UPC more user friendly).

Table 702.1 in the UPC provides minimum trap size and drainage fixtures units in one table and the IRC requires two tables for this information although the benefit of the IRC is that it provides group fixture units in the same table.

Point 5

(Chapter 9) Venting of sanitary piping systems is less restrictive in the IPC, including the use of mechanical air-admittance devices that upon failure can leak sewer gas into homes and businesses causing a health hazard. Also the IPC is less stringent upon when a combination waste and vent system can be utilized, the UPC only approves these for clear water waste installations (for example under the IPC these systems could be used on grease fixtures.)

These codes have been debated at the national level and are used throughout the United States. The mechanical air admittance valves mentioned also have approvals from IAPMO, the publishers of the UPC. Conventional venting systems also fail and allow gases into the home. The IRC venting systems allow for less piping which means less potential damage to structural elements and more options for design. The IRC plumbing allows for design around structures where the UPC requires that design be based around plumbing systems. The IRC venting systems require less piping, drainage systems allow smaller piping sizes which leads to cost savings.

Point 6

(Chapter 13 IPC/Chapter 15 UPC) UPC has more published language addressing alternate water use, IPC does not have much language pertaining to it. Language has been drafted from UPC for last 2 code cycles specifically addressing alternate water use.

Language crafted for alternate water use comes from Austin Water. This language can easily be incorporated into any code.

10 out of 13 pages of chapter 16 and 17 were amended from the UPC to meet Austin standards. An example of the UPC also not being adequate for the purpose intended.

No comparison has been made with the 2015 Water Efficiency Provisions of the 2015 International Green Construction Code.

Point 7

UPC and UMC are more prescriptive than the IPC/IMC.
The IRC is a prescriptive code that is specific to residential construction without examples this statement can not be supported.

The UPC covers plumbing installation in one book versus multiple books needed under I-Codes for plumbing installations.

Currently two books are required to build a house. With the adoption of the plumbing section of the IRC, only one book would be required.

The IRC covers building, mechanical, energy and plumbing specifically for residential construction. The UPC is a stand-alone code that covers all types of plumbing from single family to high-rise and is only specific to plumbing

I-Codes refer to manufacturer's instructions versus a prescriptive method found in UPC/UMC, I-Codes often defer to other I-Codes.
Manufacturer is mentioned 73 times in 63 pages of the IRC plumbing. Looking at the similar chapters in the UPC, manufacturer is mentioned 166 times in 151 pages. The statement about the IRC over using the manufacturer would be an incorrect statement. This is another example of personal opinion to determine code requirements.

POINT 8

There is concern that there is more variance for interpretation under the IPC/IMC compared to the UPC/UMC.

Code interpretation is an every day occurrence when working with codes. This is one reason why we have Boards. A good example of this is that the UPC has been in use in Austin for 42 years and we are still dealing with interpretations. With the I codes, there is a broader range of resources to work with and more opportunity to create consistency.

POINT 9

A change from the UPC/UMC would be a significant impact to Austin area contractors, suppliers and City staff. The UPC/UMC codes have been used in Austin since 1974.

Plumbing contractors generally do not limit themselves to a specific area. Most provide services to other cities and are already servicing areas that use the International codes. Suppliers will most likely see the biggest impact when less 4" pipe is required. A cost savings benefit to the customer should be more important that a suppliers profit margin when considering the adoption of a code.

POINT 10

More local amendments are predicted to be required under the IPC/IMC due to non-prescriptive language.

The IPC/IMC is not being proposed for adoption. The IRC is a completely prescriptive code. The complete chapter 4 of the IPC is being adopted in lieu of the equivalent chapter in the UPC. Regardless of the code, Austin Water has a lot of input into the local amendments.

12 of the largest cities in Texas have adopted the IRC plumbing provisions with no resemblance to the UPC.

	Cities	Verified	Code	Comments	
1	Houston	Ord. 2015-1316	2012 IRC w/plumbing	Allows air admittance valves minor changes	Doesn't resemble the UPC
2	San Antonio	Municode sec.10-36	2015 IRC w/plumbing	Allows air admittance valves minor changes	Doesn't resemble the UPC
3	Dallas	Ord. 29164	2012 IRC w/plumbing	Allows air admittance valves minor changes	Doesn't resemble the UPC
4	Austin	Ord. 20130606-055	2012 UPC	Only with alternate method of compliance	
5	Fort Worth	Ord. 19602-03-2011	2009 IRC w/plumbing	Allows air admittance valves minor changes	Doesn't resemble the UPC
6	El Paso	Municode sec.18-20	2009 IRC w/plumbing	Allows air admittance valves minor changes	Doesn't resemble the UPC
7	Arlington	Ord. #12-020	2009 IRC w/plumbing	Allows air admittance valves minor changes	Doesn't resemble the UPC
8	Corpus Christi	Municode sec. 14-291	2009 IRC w/plumbing	Allows air admittance valves minor changes	Doesn't resemble the UPC
9	Plano	Ord. 2016-3-12	2015 IRC w/plumbing	Allows air admittance valves minor changes	Doesn't resemble the UPC
10	Laredo	Municode sec. 7-7	2012 IRC w/plumbing	Allows air admittance valves minor changes	Doesn't resemble the UPC
11	Lubbock	Ord. 2012-00075	2012 IRC w/plumbing	Allows air admittance valves minor changes	Doesn't resemble the UPC
12	Garland	Sec 30 225	2009 IRC w/plumbing	Only allowed with approval	Doesn't resemble the UPC
13	Irving	Ord. 2015-9747	2015 IRC w/plumbing	Allows air admittance valves minor changes.	Doesn't resemble the UPC

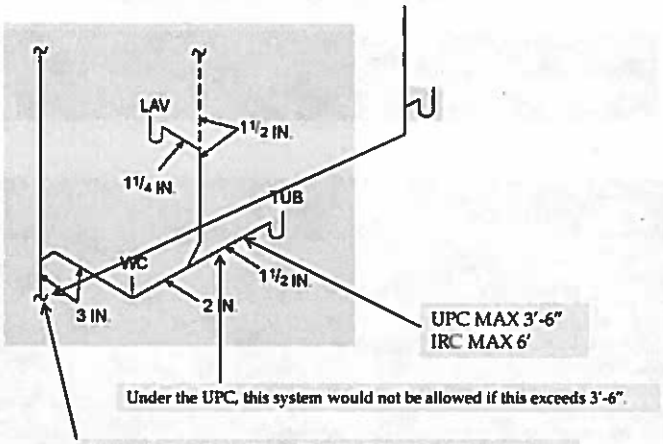
FACTS *(source: ICC's website)*:

- (37) states & (2) US Territories have adopted the IPC
- (218) Known Texas cities have adopted the IPC
- (3) known cities in Texas who adopted the UPC for Residential plumbing: Austin, Pasadena and La Port

IRC Plumbing vs UPC Trap Distance

- The most commonly used venting system is horizontal wet venting.
- The limiting factor is the maximum distance from the fixture trap to the vent. The table below shows the clear disadvantages the UPC provides.
- Shorter trap distances could mean an additional piping and additional fittings per fixture which effects cost and design.
- The IRC plumbing allows the plumbing to be designed around the building, not the house to be designed around the plumbing.

Maximum distance of fixture trap from vent		
Pipe size	IRC	UPC
1.25	5'	2'-6"
1.5	6'	3'-6"
2	8'	5'
3	12'	6'
4	16'	10'

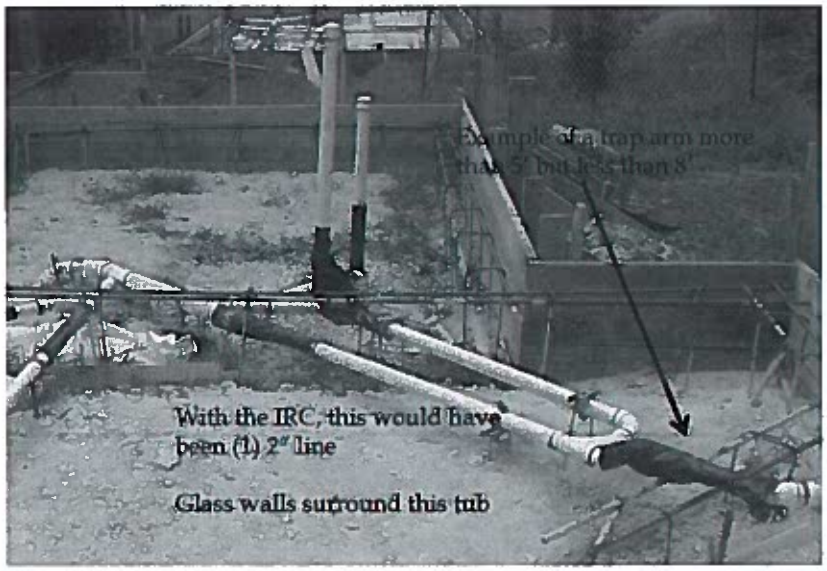


Under the UPC, this system would not be allowed if this exceeds 3'-6".

A separate branch would need to be installed from this point in order to make the design work. Or, the size would need to increase to 2" inches provided that the distance is less than 5'.

Or, the wye could be moved closer to the trap and loop the vent 180 degrees to the lavatory and install a cleanout at the point where the 135 degrees is exceeded as required by code.

If the trap arm was less than 6' it would be legal under the IRC or it could increase to two inches and have an 8' length to work with



FIXTURE UNIT COMPARISON

DRAINAGE FIXTURE UNIT COMPARISON		
2 bathrooms, dishwasher, sink, disposal, clothes washer and laundry tub	IRC	UPC
	13 DFU	19 DFU

WATER FIXTURE UNIT COMPARISON		
FIXTURES	IRC	UPC
Bathtub (with/without overhead shower head)	1.4	4.0
Clothes washer	1.4	4.0
Dishwasher	1.4	1.5
Full-bath group with bathtub (with/without shower head) or shower stall	3.6	7.5
Half-bath group (water closet and lavatory)	2.6	3.5
Hose bibb (IRC sizing for lawn sprinkler)	2.5	1.0
Kitchen group (dishwasher and sink with or without food-waste disposer)	2.5	1.5
Kitchen sink	1.4	1.5
Laundry group (clothes washer standpipe and laundry tub)	2.5	6.5
Laundry tub	1.4	1.5
Lavatory	0.7	1.0
Shower stall	1.4	2.0
Water closet (tank type)	2.2	2.5

FIXTURE UNITS DETERMINE PIPE & METER SIZE

610.1.1 Size of Water Meters for One- and Two- Family Dwellings and Townhomes. Austin Water Utility Meters provided to One- and Two-Family Dwellings and Townhomes shall be sized per the below requirements:

3 bathroom or less	=	35 fixture units	=	5/8" meter
3½ bathrooms	=	40 fixture units	=	¾" meter
4 bathroom	=	44 fixture units	=	¾" meter
5 bathrooms	=	52 fixture units	=	¾" meter
5½ bathrooms	=	55.5 fixture units	=	¾" meter
6 bathrooms	=	70 fixture units	=	1" meter
7 bathrooms	=	78 fixture units	=	1" meter
8 bathrooms	=	84.5 fixture units	=	1" meter

Current locally amended water meter size chart

610.1.1 Size of Water Meters for One-and-Two Family Dwellings and Townhomes. Austin Water Utility—meters provided to One-and-Two Family Dwellings and Townhomes shall be sized per the below requirements in table 610.1

Table 610.1

Water Meter Sizing for Residential Single Family Homes, Duplex, and Townhomes

Water Meter Size	Maximum Water Fixture Units	Typical Number of Bathrooms
5/8" meter	35 fixture units	3 bathrooms or less
¾" meter	40 fixture units	3 ½ bathrooms
¾" meter	44 fixture units	4 bathrooms
¾" meter	52 fixture units	5 bathrooms
¾" meter	55.5 fixture units	5 ½ bathrooms
1" meter	70 fixture units	6 bathrooms
1" meter	78 fixture units	7 bathrooms
1" meter	84.5 fixture units	8 bathrooms

Proposed amended water meter size chart

We have two groups that will never agree on the IRC plumbing provision because they are both directly or indirectly associated with IAPMO.

The 2015 *Uniform Plumbing Code* is supported by the American Society of Sanitary Engineering (ASSE), the Mechanical Contractors Association of America (MCAA), the Plumbing-Heating-Cooling Contractors National Association (PHCC-NA), the United Association (UA), and the World Plumbing Council (WPC). The presence of these logos, while reflecting support, does not imply any ownership of the copyright to the UPC, which is held exclusively by IAPMO. Further, the logos of these associations indicate the support of IAPMO's open consensus process being used to develop IAPMO's codes and standards.

In Summary, the plumbing section of the 2015 IRC should be adopted as the plumbing code for residential structures for the following reasons:

- The taxpayers spent a lot of money on an extensive review of the City's systems in order to provide clarity, consistency and better customer service. This report specifically called for the adoption of the International Code Council's set of national codes.
- The smaller pipe sizes of the IRC eliminates the need to upgrade a water meter to the cost savings of $700 to $3,000 (based on plat date) plus installation. Also, the monthly charge alone on a ¾" meter is nearly twice as much as a 5/8" meter ($13.00 vs. $7.10).
- The IRC plumbing offers more design flexibility with longer trap arms and smaller pipe sizes.
- The IRC plumbing brings greater consistency with the surrounding communities allowing for a larger work force thereby bringing down costs.
- Unlike the IRC plumbing, the UPC is a separate book.
- The City has the support of the HBA and AIA Austin in adopting the plumbing section of the IRC.
- The information presented is fact based and helps aid in the City's effort to bring affordability to its citizens.
- We hope all of this information will be taken into great account when making a decision to support this effort.