

NYC Fuel Gas Code / NFGC Purging

**Overview / Presentation on
New York City Fuel Gas Code Piping, Gas
Restoration Procedures and Side Wall
Venting Requirements & the
National Fuel Gas Code “**NEW**” Pipe
Purging Procedures
presented at the
2010 Educational & Energy Efficiency Trade
Expo**



presented by:

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&

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September 23, 2010

Model Fuel Gas Codes

- 2 model Fuel Gas Codes – National Fuel Gas Code (known as NFPA 54) and International Fuel Gas Code (ICC) (Uniform Plumbing (UPC) and Mechanical Codes (UMC) extract most of the NFGC)
- IFGC extracts approximately 60% of NFGC
- NYC and NYS adopt ICC Codes with a NYC / NYS modification / version

Code Participation

Robert Daly:

NYC Plumbing /Mechanical/Fuel Gas Codes
International Plumbing/Mechanical Codes

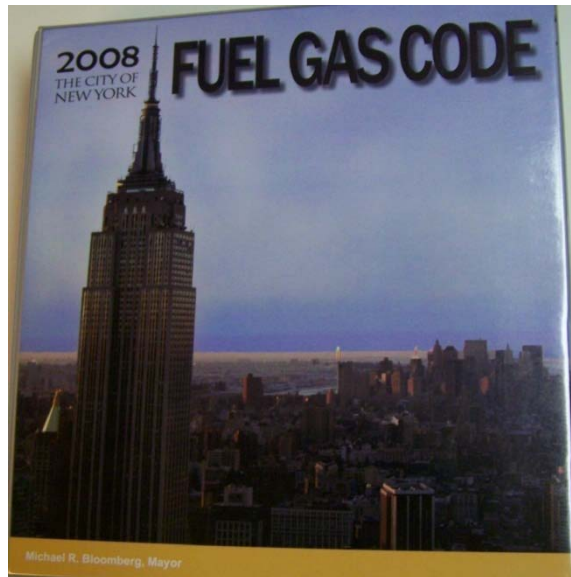
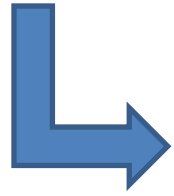
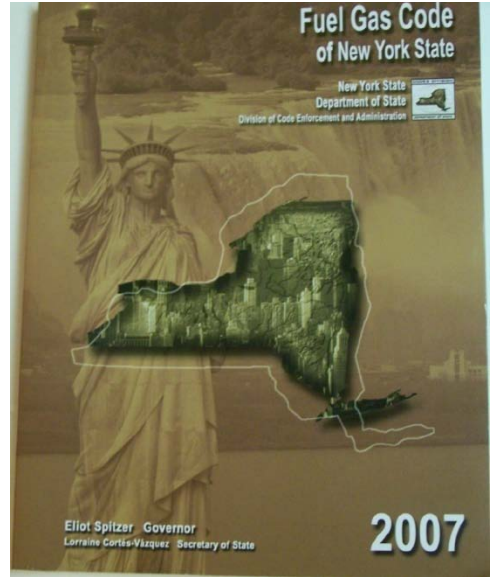
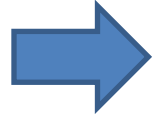
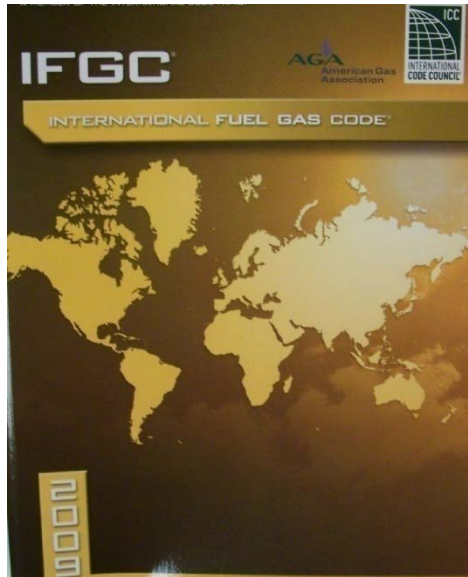
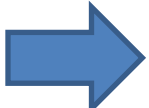
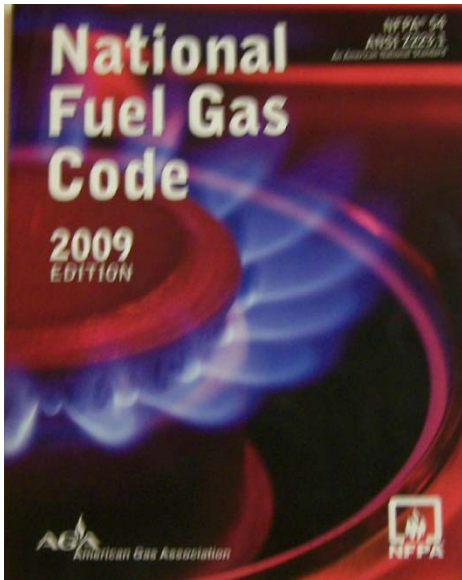
Ed Angelone:

NYC Plumbing /Fuel Gas Codes
NYS Plumbing/Mechanical/Fuel Gas Codes
National Fuel Gas Code
International Fuel Gas Code

Process / Mandated Codes

- The NYC Construction Codes consist of Administrative Provisions, Building, Fuel Gas, Mechanical and Plumbing Codes. The NYC Construction Codes went into effect July 1, 2008, and mandated for new construction projects after July 1, 2009
- In addition, effective July 1, 2010, the “**new**” New York City Energy Conservation Code (NYCECC) went into effect. The NYCECC is more stringent than the state energy code and applies to all new building and alteration projects.

Model Fuel Gas Codes – NYS / NYC



NYCFGC – 3 major categories

- Code provides installation specifications and requirements for:
- **Piping / Sizing Tables**
- **Venting / Venting Tables**
- **Equipment Installation**

(8 Chapters, 75 sections, 2 Appendix's, 13 Figures, 46 Tables, 112 pages)

NYCFGC - Chapters

- Chapter 1 - Administration
- Chapter 2 - Definitions
- Chapter 3 - General Regulations
- **Chapter 4 - Gas Piping Installations**
- Chapter 5 - Chimneys and Vents
- Chapter 6 - Specific Appliances
- Chapter 8 - Referenced Standards
- Appendix E - Meters and Gas Service Piping
- **Appendix F - Plastic Fuel Gas Piping**

Chapter 1 Administration

- 101.2 Scope: “....*apply to the installation of fuel-gas piping, utilization equipment and related accessories....*”
- 101.2.4 Systems and equipment outside the scope. This code shall not apply to the following:
 - 14.*gas piping, meters, gas pressure regulators....used by the serving gas supplier in the distribution of gas.....*
 - 101.2.5 Other fuels: “...*systems operating with fuels other than fuel gas shall be regulated by the NYC Mechanical Code*”
(*exception: Boilers, Section 631*)

Chapter 2 Definitions

- Point of Delivery....*”the outlet of the service meter assembly, or the outlet of the service regulator.....Where a valve is provided at the outlet of the service meter assembly, such valve shall be considered to be downstream of the point of delivery”*
- Service piping: All fuel gas piping, valves and fittings upstream of the point of delivery

Chapter 3 General Regulations

- 301.4 Labeling: *“appliances shall be listed and labeled”* (no longer MEA required, OTCR (Office of Technical Certification and Research) created to recognize code-prescribed and alternative materials)

Section 303 Appliance Location

- 303.3 Prohibited locations.....”shall not be located in or contain combustion air from”
....5 locations....Exception:in rooms other than those used for sleeping purposes.....
(direct vent, sealed combustion, closet, even if all air is obtained from outside is prohibited in NYC)
- Under NYC review / bulletin ?

Chapter 4 Gas Piping Installations

- 402.3 Gas piping shall be sized in accordance with:
 - pipe sizing tables 402.4 (1) to 402.4 (6).....
 - manufacturers sizing tables.....
 - other approved engineering methods
 - **individual outlets to gas ranges shall not be less than 0.75 inches**
- 404.9 underground piping systems shall be installed a **minimum depth of 24 inches**.....

Chapter 4 Gas Piping Installations

- 406.1.3 where new branches are installed, only the new branches are required to be pressure tested. Connections between the new piping and existing piping shall be tested with a noncorrosive leak detecting fluid or other approved leak detecting methods
- 406.6.3 Immediately after the gas is turned on into a new system or into a system that has been initially restored after an interruption of service, the piping shall be tested for leakage.

Chapter 4 Gas Piping Installations

- 410.3 ...an appliance regulator vent to the outside of the building is not required for regulators less than 1 1/4 inches equipped with and labeled for utilization with approved vent-limiting devices.....
- 411.1 space heaters and water heaters within dwelling units shall be connected using rigid piping and fittings....

Quick Disconnect Devices “*new*”

- NYC DOB Bulletin 2010-023 issued August 6, 2010 establishes acceptance criteria for quick disconnect devices used to supply natural gas... equipped with an automatic means to shut off the gas supply when the device is disconnected.
- Bulletin currently in revision process

Chapter 4 Gas Piping Installations

- 411.1.2 appliance connectors shall have an overall length not to exceed 3 feet except for range and domestic clothes dryer connectors.....
- 401.1.1 Meters and service piping includes the fuel gas piping up to the point of deliveryshall comply with Appendix E and F...
- 401.1.2 Underground plastic piping installed outside of buildings shall be in compliance with Appendix E and F
- Definition: service piping – All fuel gas piping, valves and fittings upstream of the point of delivery

Appendix E and F

- Appendix E ...requirements for meter and service piping....
- Intended for the local gas utility for work upstream of the point of delivery.
- Buried plastic piping *Is Not* permitted for use downstream of the utility gas meter

Chapter 5 Chimneys and Vents

- **503.5.6 Inspection of Chimneys:**

*“Before replacing an existing appliance or connecting a vent connector to a chimney, the chimney passageway **shall be examined** to ascertain that it is clear and free of obstructions and **shall be cleaned** if previously used for venting solid or liquid fuel-burning appliances or fireplaces”*

Chapter 5 Chimneys and Vents

- **503.5.6.1 Chimney Lining:** *“Chimneys shall be lined in accordance with NFPA 211” (Fire brick **Is Not** considered lining)*

Exception – *Existing chimneys shall be permitted to have their use continued when an appliance is replaced by an **appliance of similar type, input rating and efficiency***

Existing exterior masonry chimneys

When converting from oil to gas, existing masonry chimney may be oversized and will require a liner to prevent condensation, follow venting tables and manufactures specifications

Chapter 5 Chimneys and Vents

- **503.6.10 Gas vents serving equipment on more than one floor.** *A single or common gas vent shall be permitted in multistory installations to vent Category I equipment located on more than one floor level, provided the venting system is designed and installed in accordance with this section and approved engineering methods.*
- **503.6.10.1 Equipment separation.** *“All equipment connected to the common vent shall be located in *rooms that do not communicate with occupied and/or habitable spaces. (*rooms with outdoor access only)”*

Side Wall Venting

- **NYC RULE 101-02 RELATING TO SUBMISSION OF CONSTRUCTION DOCUMENTS** (issued Sept. 4, 2009) *New 2009*
- Filing of applications for construction document approval, the applicant need not be a registered design professional.

NYC RULE 101-02

- **Wall penetration.** The vent and combustion air wall penetration shall be limited to a single penetration of six inches in diameter or one opening that is a maximum of six inches square.....

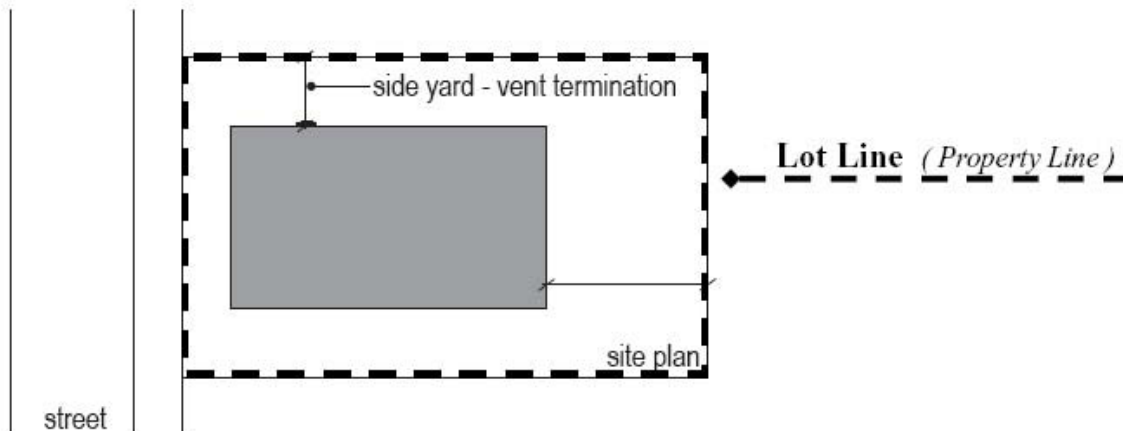
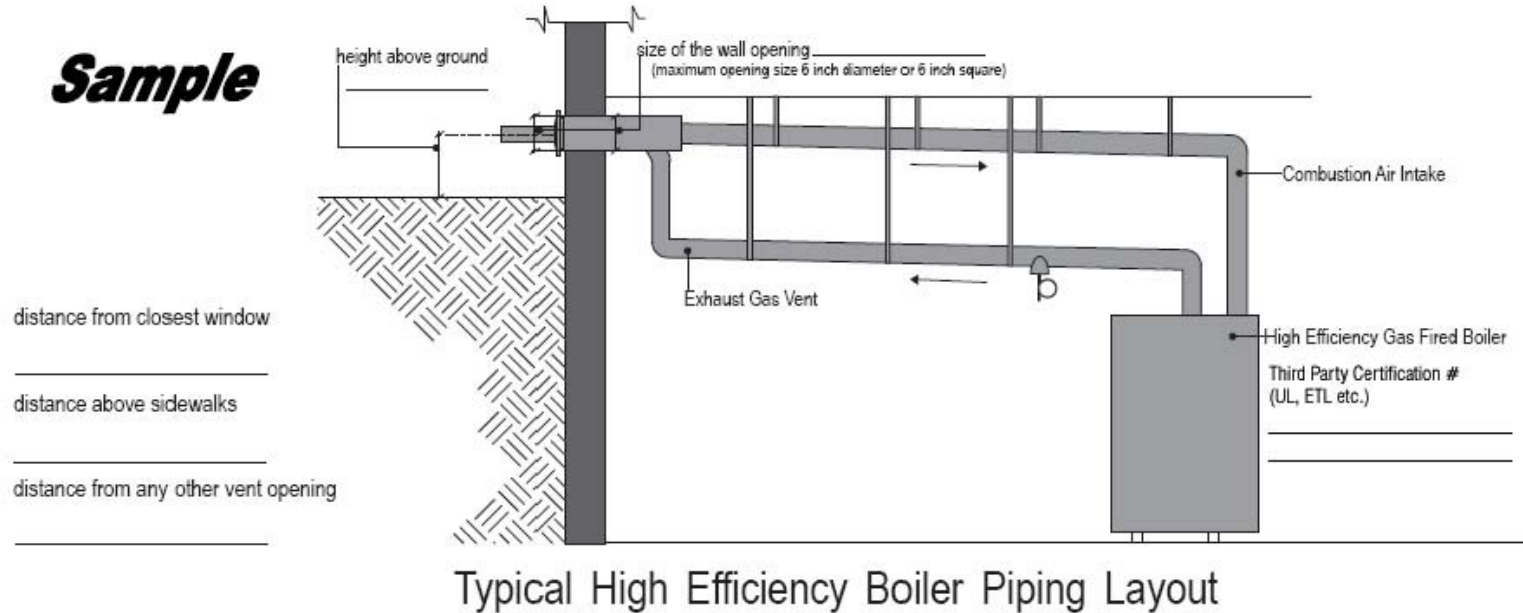
however the NYC DOB will permit:

NYC RULE 101-02

- 2 separate exterior side wall openings of 4 inches each, if the LMP certifies in the filing job description of the LAA1 form that no adapter is available from the manufacture for the given equipment and provides valid manufacturers contact information for verification of the unavailability of the adapters
- For all stipulations, check the DOB web site

NYC RULE 101-02

Sample sketch to be submitted with LAA1



Sample

SAMPLE DIAGRAM FOR ILLUSTRATIVE PURPOSES ONLY. ACTUAL SITE CONDITIONS SHALL BE INDICATED BY LMP RESPONSIBLE FOR FILING.

**Boilers with inputs greater than 350,000 btu's,
any size boiler for multi family, mixed use or
commercial use *NEW 2009***

- Ducted combustion air supply must have a fire damper or have fire proof covering to outdoors. Direct vented devices are exempt
- Motorized fresh air dampers must have an external interlock switch with all boilers
- Mechanical fresh air supply must have a flow switch and be interlocked with all combustion devices

Boilers with inputs greater than 350,000 btu's, any size boiler for multi family, mixed use or commercial use

- Floor drain or indirect waste pipe required for relief valve discharge, boiler drains, backflow discharge, etc
- Must have two low water cutoffs for every steam boiler with heat input 350,000 btu's and greater. One must be a manual reset type. One must be a mechanical type

Boilers with inputs greater than 350,000 btu's, any size boiler for multi family, mixed use or commercial use

- Blow down piping on domestic water relief lines must be copper or brass
- All natural draft gas fired boilers with heat input over 350,000 btu's input going into a common chimney must have spill switches interlocked in series
- All gas fired boilers with barometric dampers must swing both ways and spill switched mounted on the bottom of the damper

Boilers with inputs greater than 350,000 btu's, any size boiler for multi family, mixed use or commercial use

- Dual fuel gas/oil fired devices must have the spill switch on top of the barometric damper
- All natural draft boilers in individual dwelling units must have CO/smoke detector wired in series to shut down boilers if activated.

Boilers with inputs greater than 350,000 btu's, any size boiler for multi family, mixed use or commercial use

In addition, must follow the following Codes:

- NYC Fuel Gas & Mechanical Codes
- ANSI Z21.13
- UL 795
- 12 NYCRR Part 4 and 12 NYCRR Part 14 (The NYS Industrial Code Rules)
- ASME CSD 1
- NFPA 8501, 8502 and 8504
- ASME Boiler and Pressure Vessel Code

NYC DOB online boiler inspection request form *New*

- NYC DOB revised the online boiler inspection request form to shorten the time from request to inspection
- See handout
- http://www.nyc.gov/html/dob/html/forms/forms_online_boiler_appt.shtml

NYC Side Wall Venting Requirements

New 2009

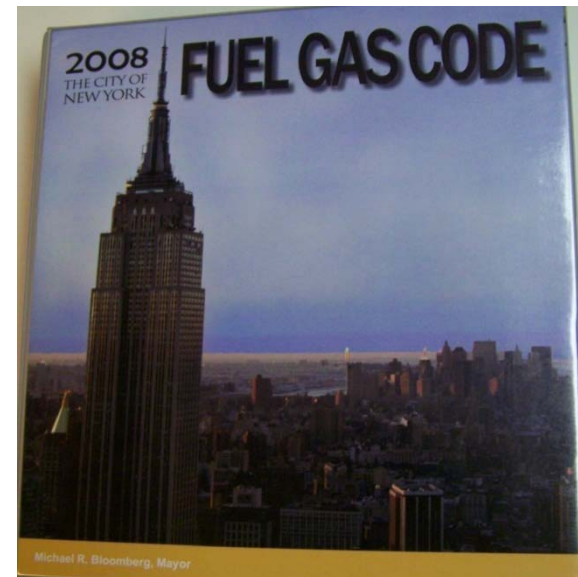
- Horizontally vent 7' above private sidewalks & driveways
- 4' below and to the side of operable windows
- 3' above forced air intakes within 10'
- 3' above grade
- 1' above doors
- 3' from inside corners of buildings
- May not horizontally vent over a public sidewalk (4' buffer required).

NYC Side Wall Venting Requirements

- Maximum of 350,000 btu's within 10' radius
- Venting into alleyways, small courts, under overhangs & terraces, or heat input over 350,000 but will be handled on a case by case basis
- Any heat input is permitted at roof line or top of highest floor

Code Revision cycle

- NYC Codes to be updated and revised every 3 years (revision process scheduled)
- 2009 current Model Codes presently in a revision process
- To purchase the current 2008 NYCFGC:
citystore@dcas.nyc.gov
www.iccsafe.org



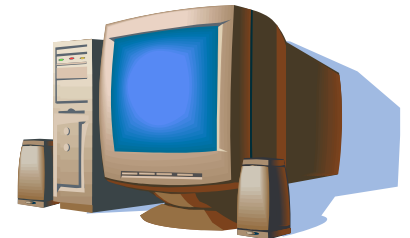
NYC DOB web site

- check the NYC Department of Buildings web site @

<http://www.nyc.gov/html/dob/html/model/model.shtml>

for current revisions to NYC Construction Codes, the NYC Energy Conservation Code, Rule 101-02 or other code information

- email questions about the NYC Construction Codes @ constructioncodes@buildings.nyc.gov



NEW National Fuel Gas Code Pipe Purging Procedures

- Recent incidents associated with purging of fuel gas piping
- US Chemical Safety Board conducted investigations
- CSB attended NFGC Jan '10 meeting and urged to accept CSB recommendations
- NFGC Committee was proactive, approximately an 18 – 24 month effort

NEW” Purging Procedures

- The Committee determined that the existing purging provisions should be amended to require gas purging of piping for industrial, commercial and public facilities to be discharged outdoors only (greater than 2 psig / large dia.)
- Requirements for safe purging of other fuel gas installations have also been included
- Option for gas Supplier in accordance with written procedures (smaller piping systems)

Addenda / TIA Issued

- ANSI Board of Standards Review approved ANSI Z223.1b-2010 (Purging) addenda to ANSI Z223.1-2009 National Fuel Gas Code issued July 27, 2010
- NFPA Standards Council on August 5, voted to issue the TIA on NFPA 54, National Fuel Gas Code, 2009 edition, with an effective date of August 25, 2010

NEW” Purging Procedures

- Piping systems required to be purged outdoors where the piping system meets either of the following:
 - 1. The design operating gas pressure is greater than 2 psig.
 - 2. The piping being purged contains one or more sections of pipe or tubing greater than 2 inches and exceeding the lengths in Table 8.3.1.1.

Table 8.3.1.1

- Size and Length of Piping

<u>Nominal Pipe Size (in)</u>	<u>Length of Piping (ft)</u>
• 2 ½	> 50
• 3	> 30
• 4	> 15
• 6	> 10
• 8 or larger	Any length

Inert Gas

- Placing in operation. Where gas piping containing air and meeting the criteria of Table 8.3.1.1 is placed in operation, the air in the piping shall first be displaced with an inert gas.
- It is recommended that the oxygen levels in the piping be monitored during the purging process to determine when sufficient inert gas has been introduced. The manufacturer's instructions for monitoring instruments must be followed when performing purge operations

Outdoor Discharge of Purged Gases

- The open end of a piping system being pressure vented or purged shall discharge directly to an outdoor location and shall comply with all of the following requirements:
- The point of discharge shall be controlled with a shutoff valve.
- The point of discharge shall be located at least 10 feet from sources of ignition, at least 10 feet from building openings and at least 25 feet from mechanical air intake openings.
- During discharge, the open point of discharge shall be continuously attended and monitored with a combustible gas indicator that complies with Section 8.3.1.4.
- Purging operations introducing fuel gas shall be stopped when 90% fuel gas by volume is detected within the pipe.
- Persons not involved in the purging operations shall be evacuated from all areas within 10 ft of the point of discharge.

Piping systems allowed to be purged indoors or outdoors

- The design operating pressure is 2 psig or less

AND

The piping being purged is constructed entirely from pipe or tubing of 2 inch nominal size or smaller, or larger pipe or tubing with lengths shorter than specified in Table 8.3.1.1.

Piping systems allowed to be purged indoors or outdoors

The piping system shall be purged in accordance with one or more of the following:

- The piping shall be purged with fuel gas and shall discharge to the outdoors.
- The piping shall be purged with fuel gas and shall discharge to the indoors or outdoors through an appliance burner not located in a combustion chamber. Such burner shall be provided with a continuous source of ignition.
- The piping shall be purged with fuel gas and shall discharge to the indoors or outdoors through a burner that has a continuous source of ignition and that is designed for such purpose.
- The piping shall be purged with fuel gas that is discharged to the indoors or outdoors, and the point of discharge shall be monitored with a listed combustible gas detector in accordance with 8.3.2.2. Purging shall be stopped when fuel gas is detected.
- The piping shall be purged by the gas supplier in accordance with written procedures.

Combustible Gas Indicator

- A Listed combustible gas indicator shall be used during **All** purging operations and shall be listed and calibrated in accordance with the manufacturer's instructions and recommended schedule. The combustible gas indicator used for pipe discharge monitoring shall numerically display a volume scale from 0% to 100% with a resolution of not greater than 1% increments

Purging appliances and equipment

- After the piping system has been placed in operation, appliances and equipment shall be purged before being placed into operation
- For full text of the ANZI Z223 Addenda and the NFPA 54 Tentative Interim Amendment please check their respective web sites @

<http://AGA.org> or <http://NFPA.org>

New Purging Procedure – Impact to NYC ?

- NYC adopts the ICC Codes (IFGC / extract)
- Agenda item for ICC Board of Directors meeting
- If BOD passes amendment, must be ratified by ICC membership business meeting, Oct'2010 ?
- If approved, subject to NYC amendment process

Questions ?



thank you !

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For a copy of this presentation, please check the Master Plumbers Council web site @ <http://nycmpc.org/>