BUILDING ENERGY 15

MARCH 3-5, 2015 AT THE SEAPORT WORLD TRADE CENTER

AIA Provider: Northeast Sustainable Energy Association

Provider Number: G338

Presentation:

Close the Windows!

Changing Occupant Behavior with Heat Pumps and Individual Metering

Advances in building envelopes and HVAC equipment enable widespread use of air source heat pumps by many in the "Net Zero Energy" and "Passive House" movements.

Steven Bluestone

The Bluestone Organization

90-11 160th Street, Suite 100
Jamaica, NY 11432
Phone: 347-572-6306
Email: sb@bluestoneorg.com

Thursday, March 5th, 2015 [10:30 to 12pm]

Credit(s) earned on completion of this course will be reported to AIA CES or AIA members. Certificates of Completion for both AIA members and non-AIA members are available upon request.

This course is registered with AIA CES for continuing professional education. As such, it does not include content that may be deemed or construed to be an approval or endorsement by the AIA of any material of construction or any method or manner of handling, using, distributing, or dealing in any material or product.

Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

Steven Bluestone

The Bluestone Organization
90-11 160th Street, Suite 100
Jamaica, NY 11432
Phone: 347-572-6306

Email: sb@bluestoneorg.com

THE BLUESTONE ORGANIZATION | BUILDING ON GENERATIONS OF EXPERIENCE

Course Description

Steve Bluestone reports on two related items:
A three year performance study of an air source heat pump system using hourly measurements (done with Henry Gifford and built above his garage) and the design and construction of his new 101 unit high performance rental building in NYC utilizing the same technology. Energy consumption, impacts of individual metering, and regulatory hurdles will be covered.

The goal?

To get tenants to pay for their own heat, have their rents downwardly adjusted by a fair value, and see the windows stay closed throughout the winter.

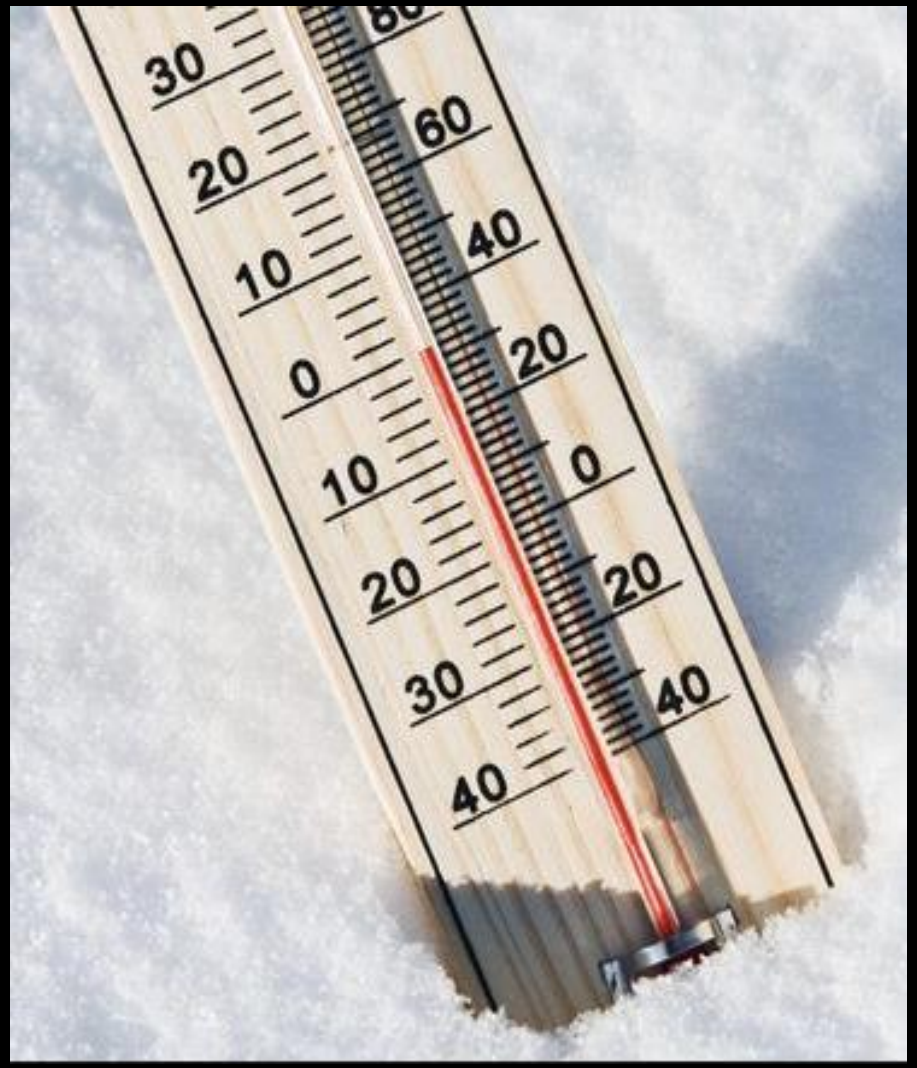
Learning Objectives

At the end of the course, participants will be able to:

1. Understand the impact of heating & cooling with heat pumps in large-scale affordable housing projects
2. Innovatively navigate regulatory hurdles
3. Understand the impacts of sub-metering
4. Figure out how to get your tenants to keep their windows shut during the winter!

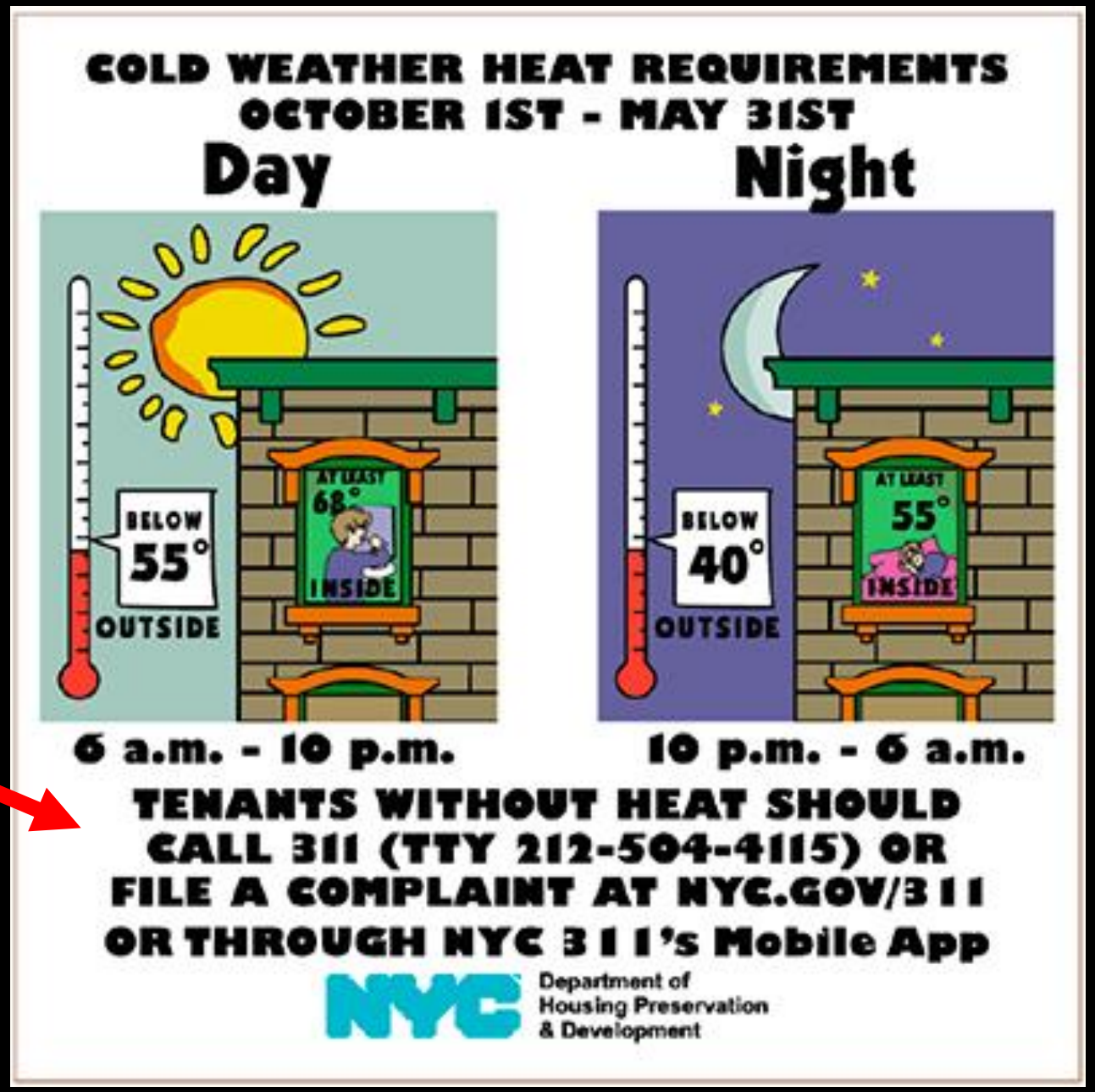
Advances in building envelopes and HVAC equipment enable widespread use of air source heat pumps by many in the "Net Zero Energy" and "Passive House" movements. Steve Bluestone will report on two related items: a three year performance study of an air source heat pump system using hourly measurements (done with Henry Gifford and built above his garage) and the design and construction of his new 101 unit high performance rental building in NYC utilizing the same technology. Each apartment has individual electric metering of each heat pump and will provide minute by minute consumption data in perpetuity. Electricity sub-metering, who pays for the heat, energy consumption data and the regulatory hurdles will be covered in this session. In the end, the goal is to have tenants pay for their own heat, have their rents downwardly adjusted by a fair value, and ultimately, to see the windows stay closed throughout the heating season.


open windows during snowstorm


30
20
10
0
10
20
30
40
60
40
20
0
20
40

If a tenant in a NYC apartment is too cold during the heating season, they often don't consider adding more layers of clothing. They usually ask the landlord to turn up the heat.

If the landlord doesn't respond to their satisfaction, they are instructed by the city to dial 311 in order to file a complaint.



Heating:

process and system of raising the temperature of an enclosed space for the primary purpose of ensuring the comfort of the occupants

(per the Encyclopaedia Brittanica)

A thermostat is a component of a control system which senses the temperature of a system so that the system's temperature is maintained near a desired setpoint. The thermostat does this by switching heating or cooling devices on or off, or regulating the flow of a heat transfer fluid as needed, to maintain the correct temperature.

The first electric room thermostat was invented in 1883 by Warren S. Johnson of Wisconsin.

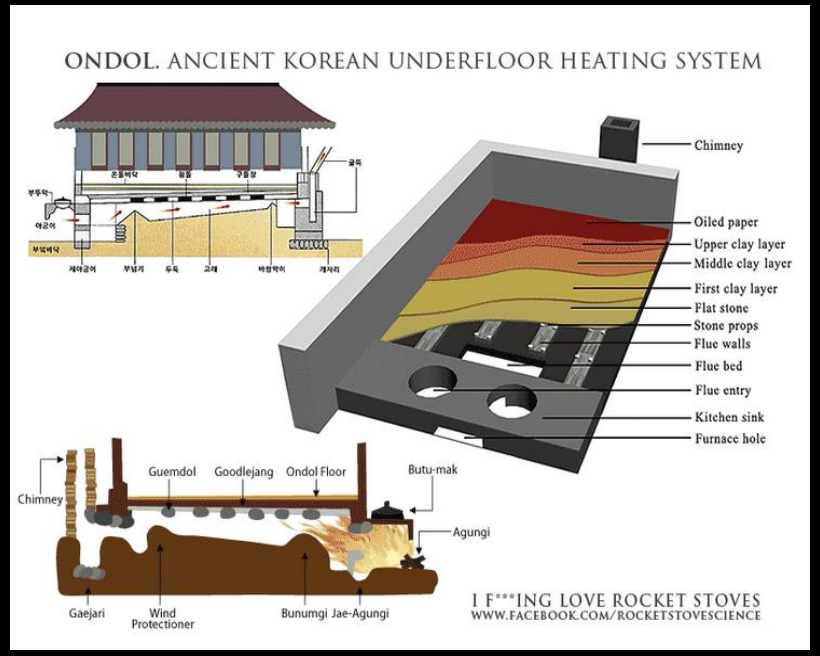
(per Wikipedia)

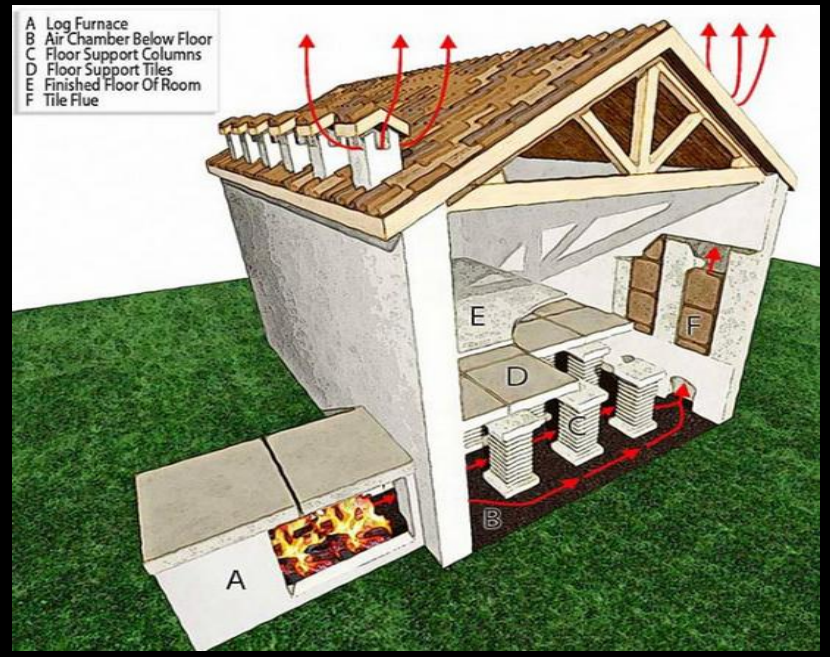
Blondie By Dean Young


50
60
70
80
90
White
Rodgers
50 60 70 80 90

A very brief
history of heating…….


King Arzawa's palace at
Beycesutan, Turkey about 1,300 B.C.


ONDOL. ANCIENT KOREAN UNDERFLOOR HEATING SYSTEM
Chimney
Oiled paper
Upper clay layer
Middle clay layer
First clay layer
Flat stone
Stone props
Flue walls
Flue bed
Flue entry
Kitchen sink
Furnace hole
Chimney
Guemdol
Goodlejang
Ondol Floor
Butu-mak
Agungi
Gaejari
Wind Protectioner
Bunumgi
Jae-Agungi
I F***ING LOVE ROCKET STOVES
WWW.FACEBOOK.COM/ROCKETSTOVESCIENCE

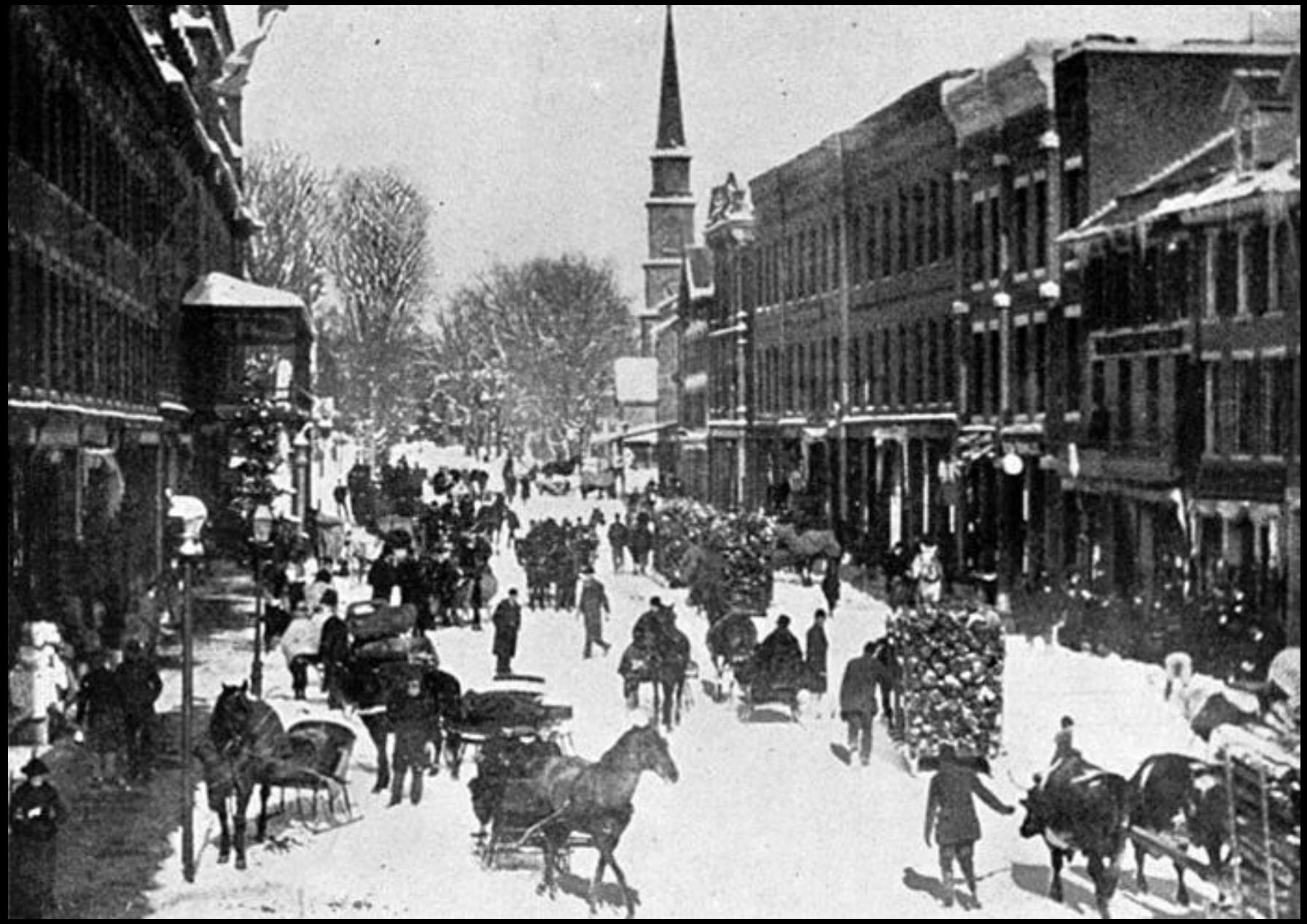

A Log Furnace
B Air Chamber Below Floor
C Floor Support Columns
D Floor Support Tiles
E Finished Floor Of Room
F Tile Flue
A
B
D
E
F

Enclosed stoves appear to have been
Used first by the Chinese about 600 BC.


1866.


CONSUMERS

Firewood delivered via sled Brattleboro Vt. late 1800's



- “Modern” central heating systems using hot air, steam, and hot water were developed in the late 18th to mid 19th centuries.

- In much of the temperate climate zone, most new housing has come with central heating systems installed.

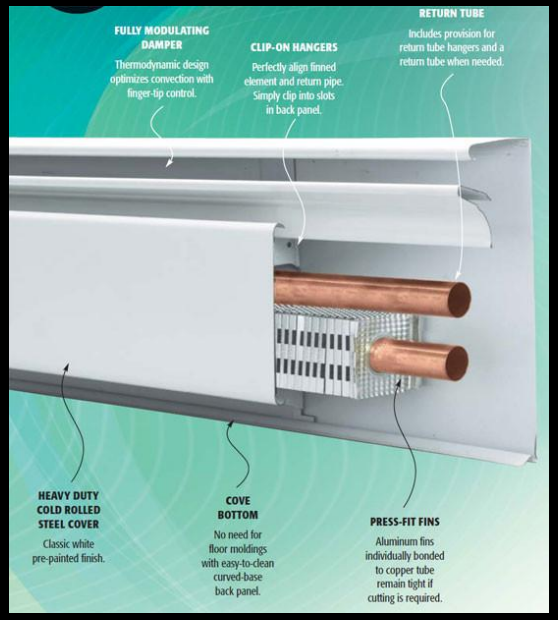
- Most of the systems were fueled by coal, oil, or gas.

Coal delivery Washington D.C. 1915

Vintage oil delivery truck

Utility lines (including natural gas) beneath a typical urban street

Natural gas explosion - 8 people dead
Park Avenue/116th Street, Harlem – March 12, 2014


FULLY MODULATING DAMPER
Thermodynamic design optimizes convection with finger-tip control.
CLIP-ON HANGERS
Perfectly align finned element and return pipe. Simply clip into slots in back panel.
RETURN TUBE
Includes provision for return tube hangers and a return tube when needed.
HEAVY DUTY COLD ROLLED STEEL COVER
Classic white pre-painted finish.
COVE BOTTOM
No need for floor moldings with easy-to-clean curved-base back panel.
PRESS-FIT FINS
Aluminum fins individually bonded to copper tube remain tight if cutting is required.







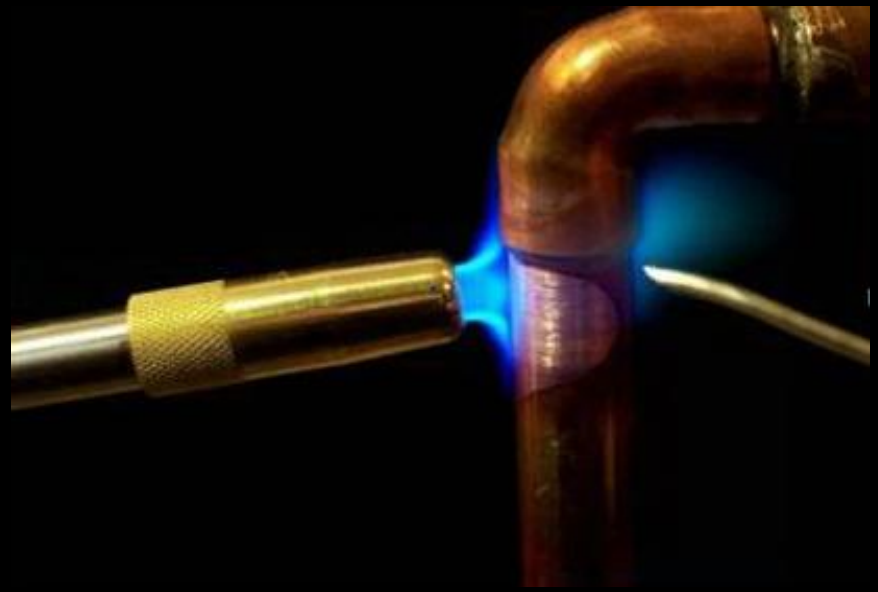












Leaks from hydronic heating systems caused damages well into the six figures on some projects.

Tuesday Workshop - PV and Heat Pumps: An Affordable Net Zero Heating Solution

Tuesday, March 03, 2015

2:00 pm to 5:00 pm

BuildingEnergy 15 Workshops

As solar prices plummet and heat pump performance continues to improve, the combination of grid tied solar electric systems and cold climate heat pumps presents a remarkable opportunity on the mechanical side of net zero building performance. Participants will learn how heat pump technology works, to perform a basic load analysis, to estimate annual electric consumption using heat pump performance specs, and to estimate a solar system size in order to achieve zero carbon heat. Actual results will also be compared to design phase modeling projections.

CEU Information:

3 AIA, BPI, GBCI Continuing Education Units Available

BuildingEnergy 15

Session Speaker(s):
Fortunat Mueller

Room / Location:
Waterfront 2

$$\text{COP} = \frac{\text{power output}}{\text{power input}}$$

In a very simple electric heater, all of the electricity

that is input to the heater is converted to heat.

There is no waste, and the power output (in heat)

equals the power input (in electricity),

so the COP equals one.

“A high efficiency heat pump can provide up to four times as much heat as an electric heater using the same energy.”

Source: http://en.wikipedia.org/wiki/Air_source_heat_pumps

New York City Utility Allowance Table

Low Income Housing Tax Credit - Rent and Income Limits for New York City for 2013
For all Projects - effective 12/11/2012

For All Buildings Regardless of Placed In Service Date

For 2013 Effective 12/04/2012

2013 Maximum Rent by Apt. Size
30% of 40%

Apt. Size	Max Gross Tenant Pays No Utilities	Max Contract Tenant Pays Electric	Max Contract Tenant Pays Gas & Electric	Avg. HH Size	40%
0 BR	602	$546	$530	1	$ 24,080
1 BR	645	$587	$571	1.5	$ 25,800
2 BR	774	$714	$698	3	$ 30,960
3 BR	893	$816	$799	4.5	$ 35,740
4 BR	997	$918	$900	6	$ 39,880
5 BR	1,100	$1,008	$989	7.5	$ 44,000

2013 Maximum Rent by Apt. Size
30% of 50%

Apt. Size	Max Gross Tenant Pays No Utilities	Max Contract Tenant Pays Electric	Max Contract Tenant Pays Gas & Electric	Avg. HH Size	50%
0 BR	752	$696	$680	1	$ 30,100
1 BR	806	$748	$732	1.5	$ 32,250
2 BR	967	$907	$891	3	$ 38,700
3 BR	1,116	$1,039	$1,022	4.5	$ 44,675
4 BR	1,246	$1,167	$1,149	6	$ 49,850
5 BR	1,375	$1,283	$1,264	7.5	$ 55,000

HPD LIHTC Utility Allowances

Utility allowances generally change each October. These figures were effective October 1, 2012.

# of Bedrooms	Gas	Electric	Gas & Electric	Gas heat only	Gas Hot Water Only	Gas Heat and & Gas Hot Water	Oil heat only	Oil Hot Water Only	Oil heat & Oil Hot Water	Electric Heat Only	Electric Hot Water Only	Electric Heat and & Electric Hot Water
SRO	$16	$56	$72	$39	$22	$61	$57	$32	$89	$105	$59	$164
Studio	$16	$56	$72	$39	$22	$61	$57	$32	$89	$105	$59	$164
1	$16	$58	$74	$51	$29	$80	$82	$46	$128	$145	$81	$226
2	$16	$60	$76	$59	$34	$93	$98	$55	$153	$172		
3	$17	$77	$94	$67	$38	$105	$114	$64	$178	$199	$111	$310
4	$18	$79	$97	$75	$43	$118	$130	$73	$203	$225	$127	$352
5	$19	$92	$111	$84	$47	$131	$146	$83	$229	$252	$142	$394
6 or more	$19	$92	$111	$84	$47	$131	$146	$83	$229	$252	$142	$394

NOTE: HPD posts the rent and income limits as a courtesy. However, it is the owner's responsibility to use the correct income limit and to not charge more than the maximum allowed by the tax credit program.

2 of 2

Electric Heat Only (Monthly)	Electric Heat Only (Annual)	# of bedrooms
$105	$1,260	SRO
$105	$1,260	Studio
$145	$1,740	1
$172	$2,064	2
$199	$2,388	3
$225	$2,700	4
$252	$3,024	5
$252	$3,024	6 or more

Example A

Regular market rate building (non-subsidized)

A tenant rents a one bedroom apartment in a building where the heat is included in the rent. The rent in the apartment is $1,000 per month. The tenant is expected to pay $12,000 for the year, and not be charged anything additional for heat.

$1,000 x 12 months = $12,000 / year

Example B
Subsidized rental building

A tenant rents a one bedroom apartment in a subsidized building for $1,000 per month, but the units are heated with regular electric baseboard heaters and the tenants are responsible for paying for their own heat. A public housing authority (PHA) stipulates a specific monthly rent decrease (spread out evenly across 12 months) to offset the cost of heating the unit in the winter. In NYC, this monthly rent reduction would equal $145.

$1,000 / month - $145 / month = $855 / month

$855 x 12 months = $10,260 / year

Example A: $12.000 / year (includes heat)

Example B: $10,260 / year (heat not included)

$ 1,740 / year difference

If the building in example B had 100 apartments in it, the landlord would collect $174,000 less in rent per year (but of course also wouldn’t have any costs to incur for heating the apartments).

Meeting: Late 2009
New York City Housing Development Corporation
Lender w/ portfolio in excess of $12 billion


WEB Energy Logger 4.0

	A	B	C	D	E	F	G	H
1	Date	Time	Hours	Temp_Int48AFF	Temp_ExteriorN	MechSystem_Load	MechSystem_Load_D	RHtr_On_Off
2	4/1/2012	0:00:30	0	67.44	41.56	0	13.25	0
3	4/1/2012	0:01:30	0	67.44	41.56	0	0	0
4	4/1/2012	0:02:30	0	67.44	41.56	0	0	0
5	4/1/2012	0:03:30	0	67.44	41.56	0	0	0
6	4/1/2012	0:04:30	0	67.41	41.56	12	0	0
7	4/1/2012	0:05:30	0	67.44	41.56	23	0	0
8	4/1/2012	0:06:30	0	67.44	41.55	23	0	0
9	4/1/2012	0:07:30	0	67.44	41.5	34	0	0
10	4/1/2012	0:08:30	0	67.44	41.45	232	0.01	0
11	4/1/2012	0:09:30	0	67.44	41.45	307	0.01	0
12	4/1/2012	0:10:30	0	67.44	41.45	327	0.02	0
13	4/1/2012	0:11:30	0	67.44	41.45	367	0.02	0
14	4/1/2012	0:12:30	0	67.43	41.45	521	0.03	0
15	4/1/2012	0:13:30	0	67.41	41.45	600	0.04	0
16	4/1/2012	0:14:30	0	67.44	41.39	626	0.05	0
17	4/1/2012	0:15:30	0	67.52	41.34	650	0.06	0
18	4/1/2012	0:16:30	0	67.65	41.34	610	0.07	0
19	4/1/2012	0:17:30	0	67.77	41.23	620	0.08	0
20	4/1/2012	0:18:30	0	67.96	41.26	634	0.09	0
21	4/1/2012	0:19:30	0	68.1	41.33	648	0.1	0
22	4/1/2012	0:20:30	0	68.33	41.33	169	0.11	0
23	4/1/2012	0:21:30	0	68.34	41.3	26	0.11	0
24	4/1/2012	0:22:30	0	68.34	41.23	25	0.11	0
25	4/1/2012	0:23:30	0	68.24	41.2	25	0.11	0

Sheet1 Sheet2 Sheet3

Coefficient of Performance (COP)

2.45

Meeting: Late 2009
New York City Housing Development Corporation
Lender w/ portfolio in excess of $12 billion

Low Income Housing Tax Credit - Rent and Income Limits for New York City for 2013
For all Projects - effective 12/11/2012

For All Buildings Regardless of Placed In Service Date

For 2013 Effective 12/04/2012

2013 Maximum Rent by Apt. Size
30% of 40%

Apt. Size	Max Gross Tenant Pays No Utilities	Max Contract Tenant Pays Electric	Max Contract Tenant Pays Gas & Electric	Avg. HH Size	40%
0 BR	602	$546	$530	1	$ 24,080
1 BR	645	$587	$571	1.5	$ 25,800
2 BR	774	$714	$698	3	$ 30,960
3 BR	893	$816	$799	4.5	$ 35,740
4 BR	997	$918	$900	6	$ 39,880
5 BR	1,100	$1,008	$989	7.5	$ 44,000

2013 Maximum Rent by Apt. Size
30% of 50%

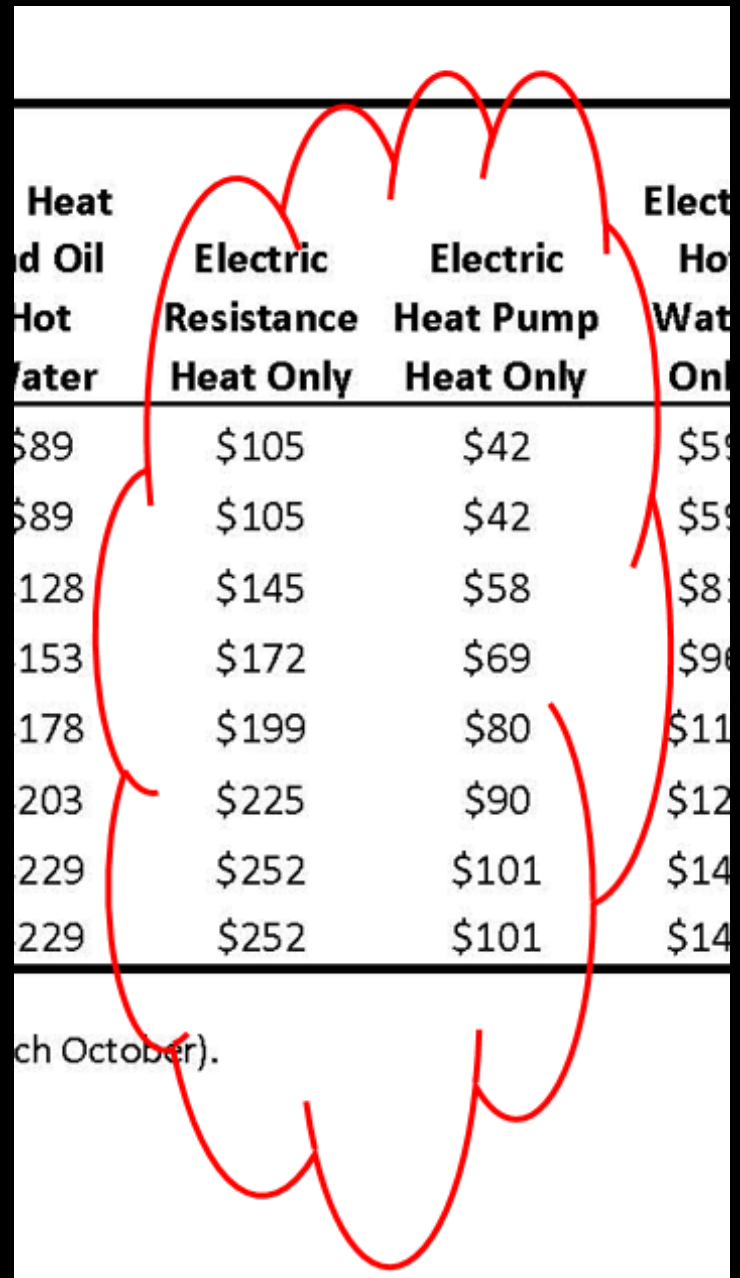
Apt. Size	Max Gross Tenant Pays No Utilities	Max Contract Tenant Pays Electric	Max Contract Tenant Pays Gas & Electric	Avg. HH Size	50%
0 BR	752	$896	$680	1	$ 30,100
1 BR	806	$748	$732	1.5	$ 32,250
2 BR	967	$907	$891	3	$ 38,700
3 BR	1,116	$1,039	$1,022	4.5	$ 44,675
4 BR	1,246	$1,167	$1,149	6	$ 49,850
5 BR	1,375	$1,283	$1,264	7.5	$ 55,000

HPD LIHTC Utility Allowances

Utility allowances generally change each October. These figures were effective October 1, 2012.

# of Bedrooms	Gas	Electric	Gas & Electric	Gas heat only	Gas Hot Water Only	Gas Heat and & Gas Hot Water	Oil heat only	Oil Hot Water Only	Oil heat & Oil Hot Water	Electric Heat Only	Electric Hot Water Only	Electric Heat and & Electric Hot Water
SRO	$16	$56	$72	$39	$22	$61	$57	$32	$89	$105	$59	$164
Studio	$16	$56	$72	$39	$22	$61	$57	$32	$89	$105	$59	$164
1	$16	$58	$74	$51	$29	$80	$82	$46	$128	$145	$81	$226
2	$16	$60	$76	$59	$34	$93	$98	$55	$153	$172	$96	$268
3	$17	$77	$94	$67	$38	$105	$114	$64	$178	$199	$111	$310
4	$18	$79	$97	$75	$43	$118	$130	$73	$203	$225	$127	$352
5	$19	$92	$111	$84	$47	$131	$146	$83	$229	$252	$142	$394
6 or more	$19	$92	$111	$84	$47	$131	$146	$83	$229	$252	$142	$394

NOTE: HPD posts the rent and income limits as a courtesy. However, it is the owner's responsibility to use the correct income limit and to not charge more than the maximum allowed by the tax credit program.



Heat d Oil Hot ater	Electric Resistance Heat Only	Electric Heat Pump Heat Only	Elect Ho Wat Onl
$89	$105	$42	$5
$89	$105	$42	$5
128	$145	$58	$8
153	$172	$69	$9
178	$199	$80	$11
203	$225	$90	$12
229	$252	$101	$14
229	$252	$101	$14

ch October).

161ST STREET MIXED-USE INCLUSIONARY HOUSING DEVELOPMENT

DOB FILING
MARCH 9, 2012

OWNER:
BLUESTONE JAMAICA I, LLC
193-04 HARDING EXPY,
FRESH MEADOWS, NY 11365
T.347.572.6326
F. 34.572.6327

EXPEDITOR:
WILLIAM VITACCO
ASSOCIATES LTD.
299 BROADWAY 5TH FL.
NEW YORK, NY 10007
T. 212.791.4578
F. 212.517.0637

ARCHITECTS:
GF55 PARTNERS
19 WEST 21ST STREET
NEW YORK, NY 10010
T.212.352.3099
F.212.352.3098
DAVID E. GROSS

STRUCTURAL ENGINEER:
MURRAY ENGINEERING, PC
307 SEVENTH AVENUE #1001
NEW YORK, NY 10001
T.212.741.1102
F.212.741.1104

MEP ENGINEERS:
RODKIN CARDINALE
CONSULTING ENGINEERS
214 WEST 29TH STREET, SUITE 601
NEW YORK, NY 10001
T.212.239.1892
F.212.239.6412

DRAWING INDEX

ARCHITECTURAL

A-000.00 COVER
Z-001.00 ZONING DATA
A-002.00 SITE INFORMATION
A-003.00 ADA NOTES
A-004.00 GENERAL NOTES, SYMBOLS & LEGENDS
A-005.00 FIRE PROTECTION
A-006.00 AREA DEDUCTIONS
A-007.00 AREA DEDUCTIONS
A-008.00 AREA DEDUCTIONS
A-009.00 AREA DEDUCTIONS
A-010.00 AREA DEDUCTIONS
A-011.00 AREA DEDUCTIONS
A-100.00 SITE PLAN
A-101.00 CELLAR PLAN
A-102.00 1ST FLOOR PLAN
A-103.00 2ND FLOOR PLAN
A-104.00 3RD FLOOR PLAN
A-105.00 4TH-8TH FLOOR PLAN
A-106.00 9TH FLOOR PLAN
A-107.00 ROOF PLAN
A-251.00 BUILDING SECTION
A-300.00 BUILDING A STREET ELEV.
A-301.00 BUILDING A COURTYARD ELEV.
A-302.00 BUILDING B STREET ELEV.
A-303.00 BUILDING B COURTYARD ELEV.
A-401.00 BLDG. A WALL SECTIONS
A-402.00 BLDG. A WALL SECTIONS
A-403.00 BLDG. B WALL SECTIONS
A-404.00 BLDG. B WALL SECTIONS
A-431.00 STAIR DETAILS BUILDING A
A-432.00 STAIR DETAILS BUILDING B
A-432.00 ELEVATOR DETAILS
A-501.00 KITCHEN DETAILS
A-503.00 BATHROOM DETAILS
A-601.00 DOOR SCHEDULE
A-602.00 WINDOW SCHEDULE
A-603.00 STOREFRONT DETAILS
A-605.00 PARTITION TYPES

GF55
PARTNERS
19 W. 21ST STREET
NEW YORK, N Y 10010
212 352 3099

161ST STREET MIXED-USE
INCLUSIONARY HOUSING
DEVELOPMENT
QUEENS, NY

BLOCK: 9757, LOTS: 18, 20, 22 & 29
PROJECT #1451.00

DEVELOPER
BLUESTONE JAMAICA I, LLC

STRUCTURAL ENGINEER
MURRAY ENGINEERING, PC

MECHANICAL ENGINEER
RODKIN CARDINALE CONSULTING ENGINEERS

OWNER
BLUESTONE JAMAICA I, LLC

ISSUE
DOB - 3.9.2012

SCALE
NTS

DOB

Donovan Hasken
APPROVED
NYC Development Hub

DRAWING
COVER

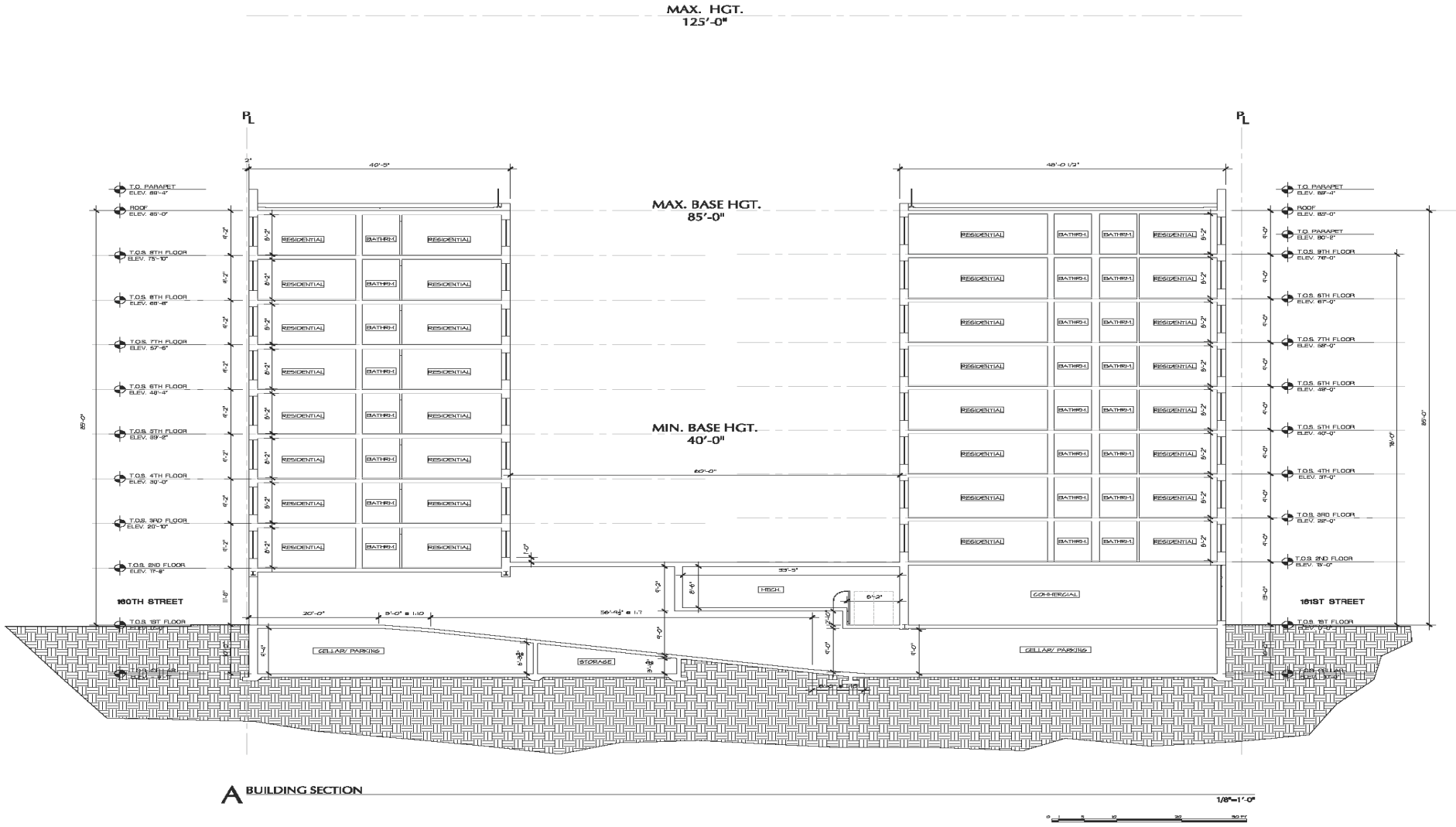
SEAL AND SIGNATURE

DATE:
PROJECT NO:
DRAWING BY:
CHK BY:
DWG NO:

A-000.00

CADD FILE NO: 1 OF 38

- 2 nine story, back to back high rise towers
- Parking in garage under entire site
- 101 apartments
- 10,000 SF retail/commercial space



A BUILDING SECTION

1/8"=1'-0"

0 1 5 10 20 30 FT

DEPT OF BLDGS 420002823 Job Number

E342426915 Scan Code

GF55 PARTNERS
19 W. 21ST STREET
NEW YORK, NY 10010
212 352 3099

161ST STREET MIXED-USE INCLUSIONARY HOUSING DEVELOPMENT QUEENS, NY

BLOCK: 9757, LOTS: 18, 20, 22 & 29
PROJECT #1451.00

DEVELOPER
BLUESTONE JAMAICA I, LLC

STRUCTURAL ENGINEER
MURRAY ENGINEERING, PC

MECHANICAL ENGINEER
RODKIN CARDINALE CONSULTING ENGINEERS

OWNER
BLUESTONE JAMAICA I, LLC

ISSUE
DOB - 3.9.2012

SCALE
1/8"=1'-0"

DOB

Donovan Haslam
APPROVED
Under Directive 1 of 1975
Date/Time: Oct 25, 2012 - 4:15 PM
NYC Development Hub

DRAWING
BUILDING SECTION
BUILDINGS A & B

SEAL AND SIGNATURE

REGISTERED ARCHITECT
DAVID EARL GRACE
028615
STATE OF NEW YORK

DATE:
PROJECT NO:
DRAWING BY:
CHK. BY:
DWG NO:

A-251.00

CADD FILE NO: 21 OF 38

Benefits derived from building with insulated concrete forms:

- Very strong structure
- Air barrier not needed
- Vapor barrier not needed
- Water barrier not needed
- High STC rating
- Fireproof
- Vermin proof
- Theft proof
- Cleaner construction site
- Little to no thermal bridging
- High “true” R value
- Relatively inexpensive
- Hard (but not impossible) to screw up


COVA CONCRETE PUMPING


ONE WAY
DO NOT
ENTER
DO NOT
ENTER

— ALL DUCTS BETWEEN ENERGY RECOVERY VENTILATOR (IN RECYCLING CLOSETS, LOBBY, ETC.) AND OUTDOORS (BOTH SUPPLY AND RETURN DUCTS) ARE INSULATED WITH 1.5" WALL THICKNESS FIBERGLASS INSULATION WITH CONTINUOUS VAPOR BARRIER.

— ALL JOINTS AND SEAMS INCLUDING LENGTHWISE SEAMS ON ALL DUCTS ARE SEALED WITH A COAT OF WATER BASED DUCT MASTIC AND THEN A LAYER OF FIBERGLASS MESH AND THEN A SECOND LAYER OF WATER BASED DUCT MASTIC.

— EACH SUPPLY (IN HALLWAYS) AND RETURN VENTILATION TERMINATION AT EACH ROOM SETS ONE AMERICAN ALDES BRAND WALL OR CEILING BOX WITH 4" ROUND DUCT CONNECTION AND WITH SELECT-IN CONSTANT AIRFLOW REGULATOR DAMPER, AND ONE SUPPLY OR RETURN GRILL.

— NO WIRE DAMPERS UNLESS OTHERWISE NOTED.

— NO MOTORIZED DAMPERS UNLESS NOTED.

— NO FLEX DUCT UNLESS OTHERWISE NOTED.

— HEATING AND COOLING AIR HANDLERS ARE MOUNTED TOUCHING CEILING PLANE. HEATING AND COOLING DUCTS ARE MOUNTED WITH TOP OF DUCT APPROXIMATELY ONE INCH BELOW CEILING PLANE.

— EACH HEATING AND COOLING DUCT TERMINATION GETS ONE TITUS BRAND GRILL, MODEL 300RL, [WIDTH]x6, 1.25, AG—13. HEIGHT FOR ALL GRILLS IS 6", "WIDTH" IS AS PER DUCT ON DRAWING.

— SOME HEATING AND COOLING AIR HANDLERS ARE CONNECTED TO A PLENUM AS SHOWN ON DRAWING. FABRICATED AND SUPPLIED AND INSTALLED BY CONTRACTOR, SOME DO NOT.

— ALL HEATING AND COOLING ELBOWS GET TURNING VANES. ALL HEATING AND COOLING ELBOWS ARE MINIMUM 1.5R RADIUS, NO VENTILATION ELBOWS GET TURNING VANES.

— USE 10INCH ROUND LOUVERS ON ALL VENTILATION SYSTEM EXTERIOR INLETS AND OUTLETS.

— VENTILATION DUCTS ARE ROUND GALVANIZED STEEL EXCEPT FOR 8' OF FLEX DUCT UPSTREAM OF EACH FAN. CONTRACTOR TO SUBMIT SAMPLE OF DUCT AND CONNECTIONS.

— CONTRACTOR TO PLACE 4" SQUARE PIECE OF "FIBEL A STICK" OR "ES AND WATER SHIELD" BETWEEN ANY VENTILATION DUCTS AND HEATING/COOLING DUCTS THAT TOUCH EACH OTHER. SUBMIT SAMPLE.

— AIR FROM ALL BALLWAY RMS (ON COMPACTOR ROOM CEILINGS) TO BE TEMPERED WITH ONE RECTANGULAR BRAND ELECTRIC DUCT HEATER

MODEL # DRR002—8010—0

1.0 Kw heating element, 240 VAC, 8 inch duct connection, NEMA 1 — Includes STC8—12 duct sensor and internal setpoint dial for discharge air control.

$322.00 FROM HVACDIRECT.COM

— ALL HEATING AND COOLING EQUIPMENT IS BY MITSUBISHI.

— EACH APARTMENT GETS ONE MITSUBISHI WOOD WHITE WIRELESS WALL CONTROL (THERMOSTAT) MOUNTED BY THE CONTRACTOR ON THE WALL IN THE LOCATION SHOWN ON THE PLANS WITH A "T", AND ONE MITSUBISHI SUPPLY RECEIVER.

— MANS INDOOR HEATING AND COOLING UNIT LEVEL. CHECK WITH PLUMBLE LEVEL. INSTALL BUTTON RETURN KIT (PART #SW7—1) ON INDOOR UNIT. INSTALL AIR FILTER ON INDOOR UNIT. RUN CONDENSATE DRAIN TO NEAREST BATHROOM OR KITCHEN SINK, CONNECT UPSTREAM OF TRAP.

— MOUNT OUTDOOR UNIT. CHECK FOR REQUIRED CLEARANCES AROUND OUTDOOR UNIT.

— RUN REFRIGERANT LINES. ALL BRAZED JOINTS MUST BE MADE WHILE BLOWING DRY NITROGEN IN PIPING. WHEN THE TORCH IS LIT, THE NITROGEN IS FLOWING.

— MINIMUM BEND RADIUS ALLOWED IN REFRIGERANT PIPING (BOTH PIPES) IS 4".

— FLARE TUBING ACCORDING TO FACTORY INSTRUCTIONS.

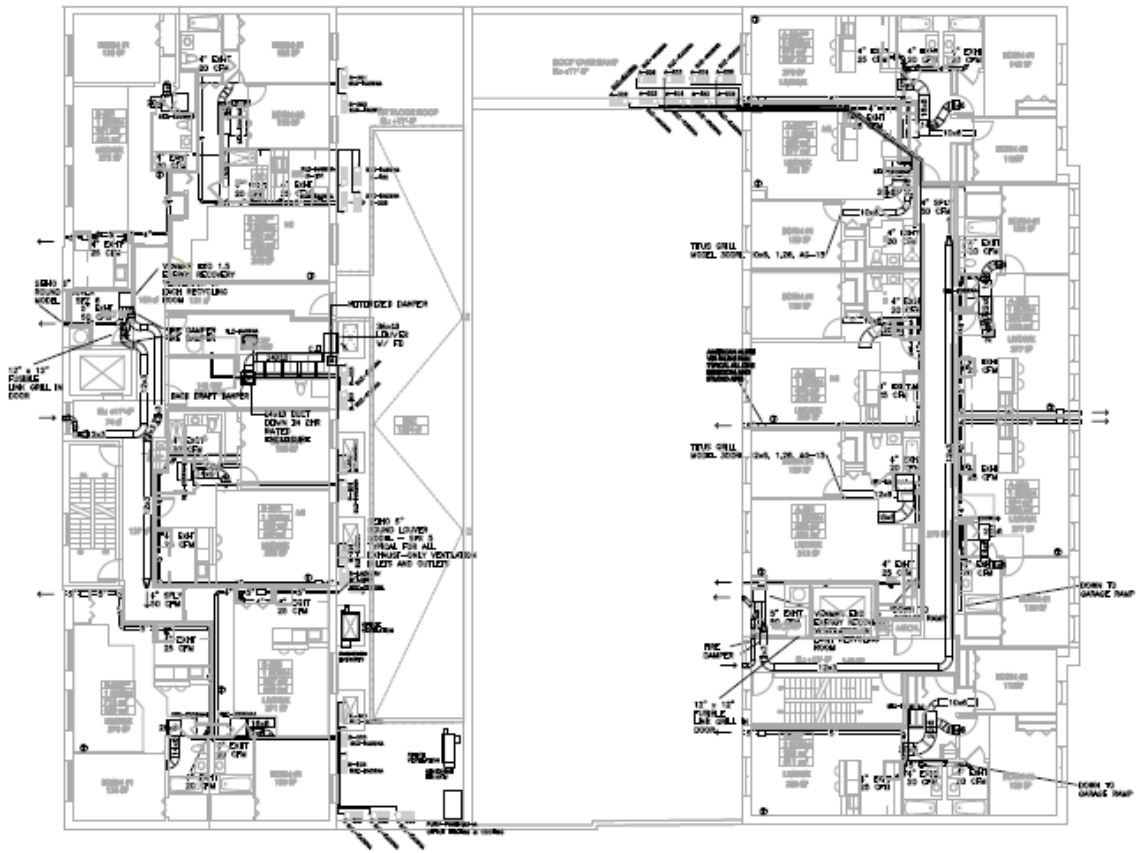
— LUBRICATE FLARE NUT THREADS WITH A FEW DROPS OF REFRIGERANT OIL BEFORE TIGHTENING FLARE NUT ONTO FITTING. TORQUE FLARE NUT AS PER FACTORY INSTRUCTIONS.

— PRESSURE TEST REFRIGERANT TUBING TO 300PSI WITH DRY NITROGEN AND SEE IF ZERO PRESSURE DROP FOR 12 HOURS. VACUUM REFRIGERANT LINES TO —755MMHG (—0.101MPA). ADD ADDITIONAL REFRIGERANT (SAMPLE FOR UNITS WHOSE REFRIGERANT TUBING EXCEEDS 23 FEET.

— INSULATE ALL REFRIGERANT LINES, WITH LINES, WITH 1.5" THICK ARMAFLEX INSULATION OUTDOORS, 0.5" THICK ARMAFLEX INSULATION INDOORS.

1

— ALL RETURNS TO ALL APARTMENT AIR HANDLERS TO BE MODIFIED BY CONTRACTOR BY REMOVING THE EXIST. RETURN FILTER HOLDER AND REPLACING IT WITH A NEW RETURN FILTER HOLDER PROVIDED BY OWNER THAT POSITIONS THE FILTER AND THE RETURN ON THE BOTTOM. FLOOR AND ALL APARTMENT GETS DRY BOTTOM RETURN FILTER HOLDERS WITH SELECT-IN STUB DUCTS TO RETURN GRILL ALSO PROVIDED BY OWNER. ALL OTHER APARTMENTS GET BOTTOM RETURN FILTER HOLDERS THAT STAY EXPOSED IN CLOSET CEILINGS.



2ND FLOOR

DOB # 420602823

GF55 PARTNERS
19 W. 21ST STREET
NEW YORK, NY 10010
212 352 3929
©GF55Partners, LLP 2012

161ST STREET MIXED-USE INCLUSIONARY HOUSING DEVELOPMENT QUEENS, NY

BLOCK: 9757, LOTS: 18, 20, 22 & 29
PROJECT #1451.00

DEVELOPER
BLUESTONE JAMAICA I, LLC

STRUCTURAL ENGINEER
MURRAY ENGINEERING, PC

MECHANICAL ENGINEER
RODKIN CARDINALE CONSULTING ENGINEERS

HVAC DESIGNER
HENRY GIFFORD

ISSUE
12.21.2012

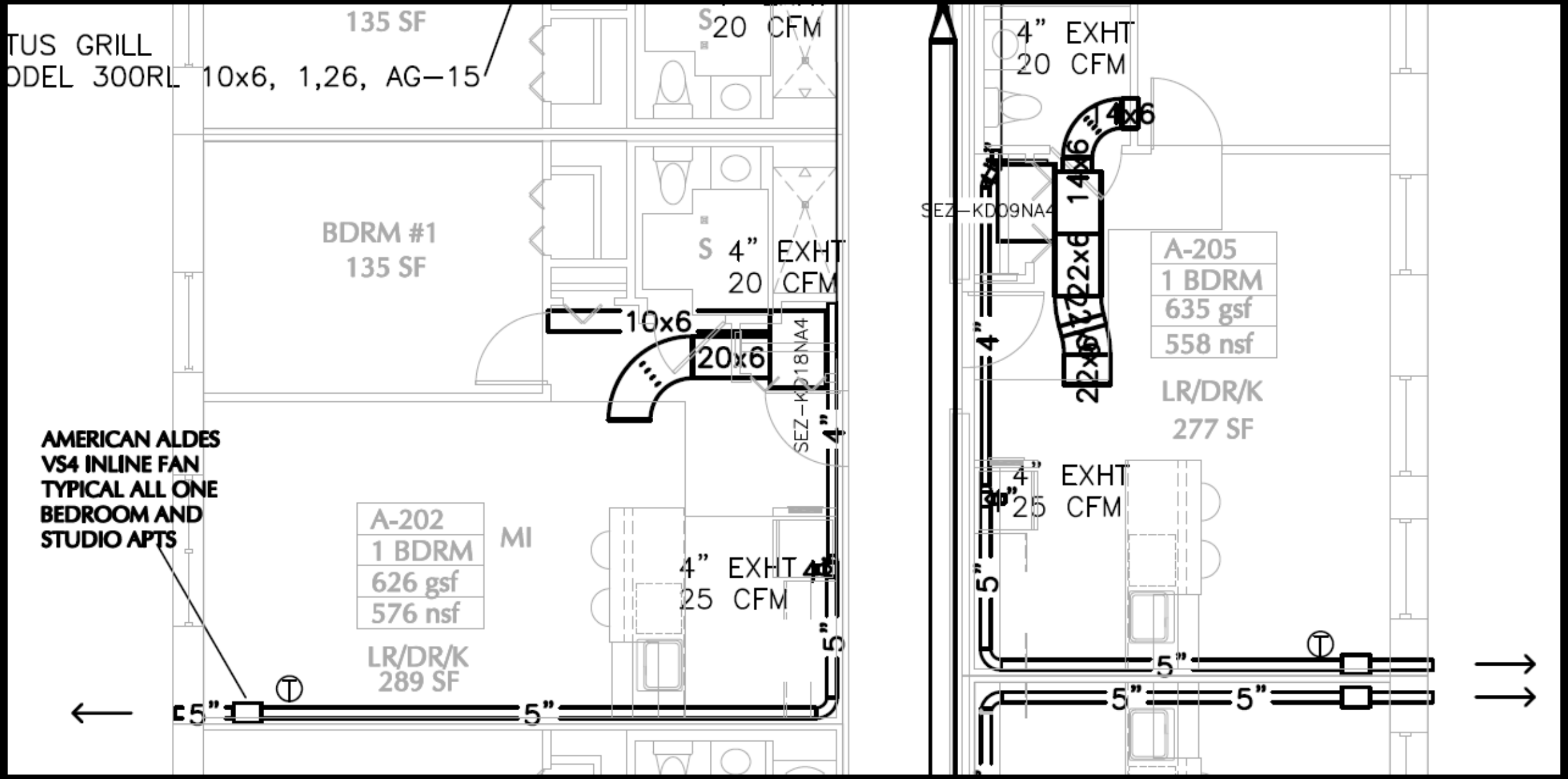
SCALE
1/8" PER FOOT

DOB

DRAWING
2ND FLOOR
HEATING, COOLING, VENTILATION EXHAUST ONLY

SEAL AND SIGNATURE

DATE
PROJECT NO.
DRAWN BY
CHECK
DWG NO.
M-003.00
CHECKED NO.

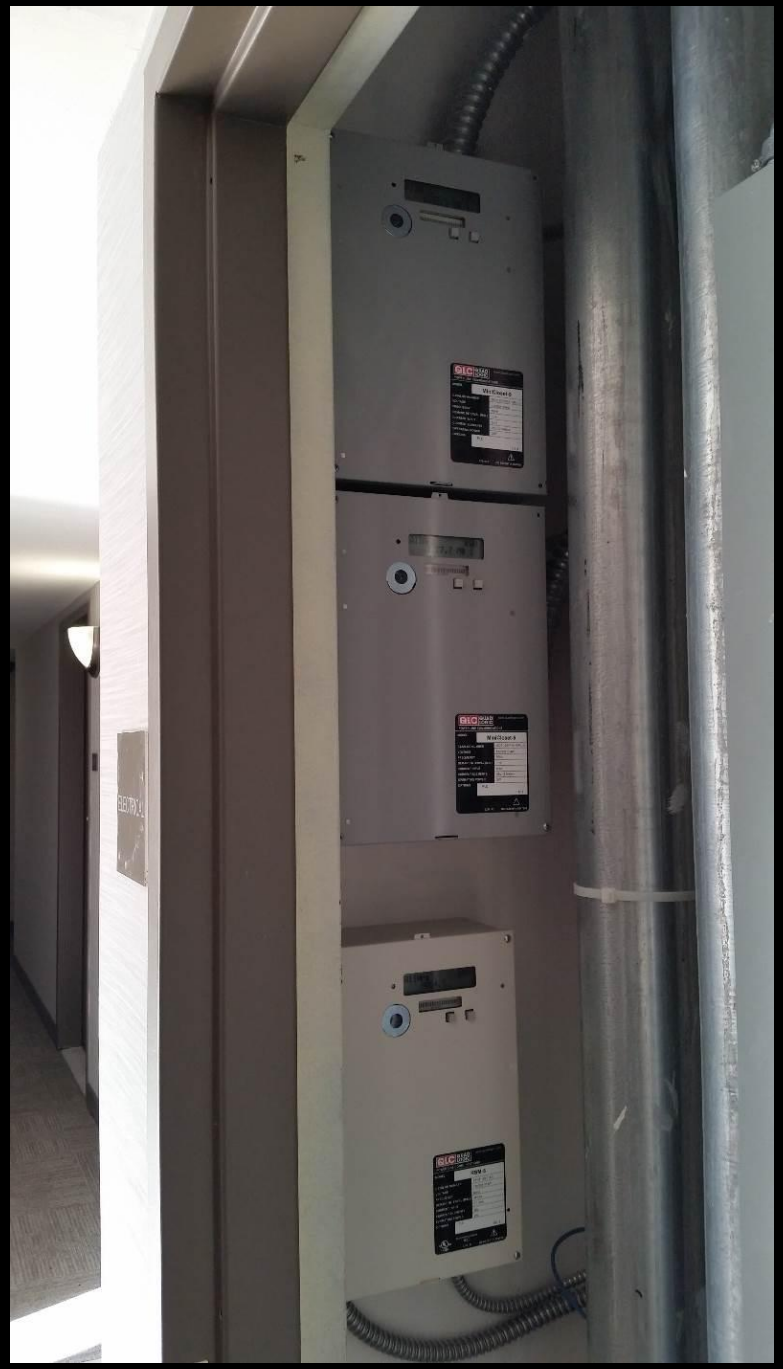

TUS GRILL
ODEL 300RL 10x6, 1,26, AG-15
135 SF
S 20 CFM
BDRM #1
135 SF
S 4" EXHT
20 CFM
10x6
20x6
SEZ-KD18NA4
4"
5"
AMERICAN ALDES
VS4 INLINE FAN
TYPICAL ALL ONE
BEDROOM AND
STUDIO APTS
A-202
1 BDRM
626 gsf
576 nsf
LR/DR/K
289 SF
MI
4" EXHT
25 CFM
5"
5"
4" EXHT
20 CFM
SEZ-KD09NA4
14x6
22x6
A-205
1 BDRM
635 gsf
558 nsf
LR/DR/K
277 SF
4" EXHT
25 CFM
5"
5"
5"


USA CHARLOTTE PIPE®
NO HUB

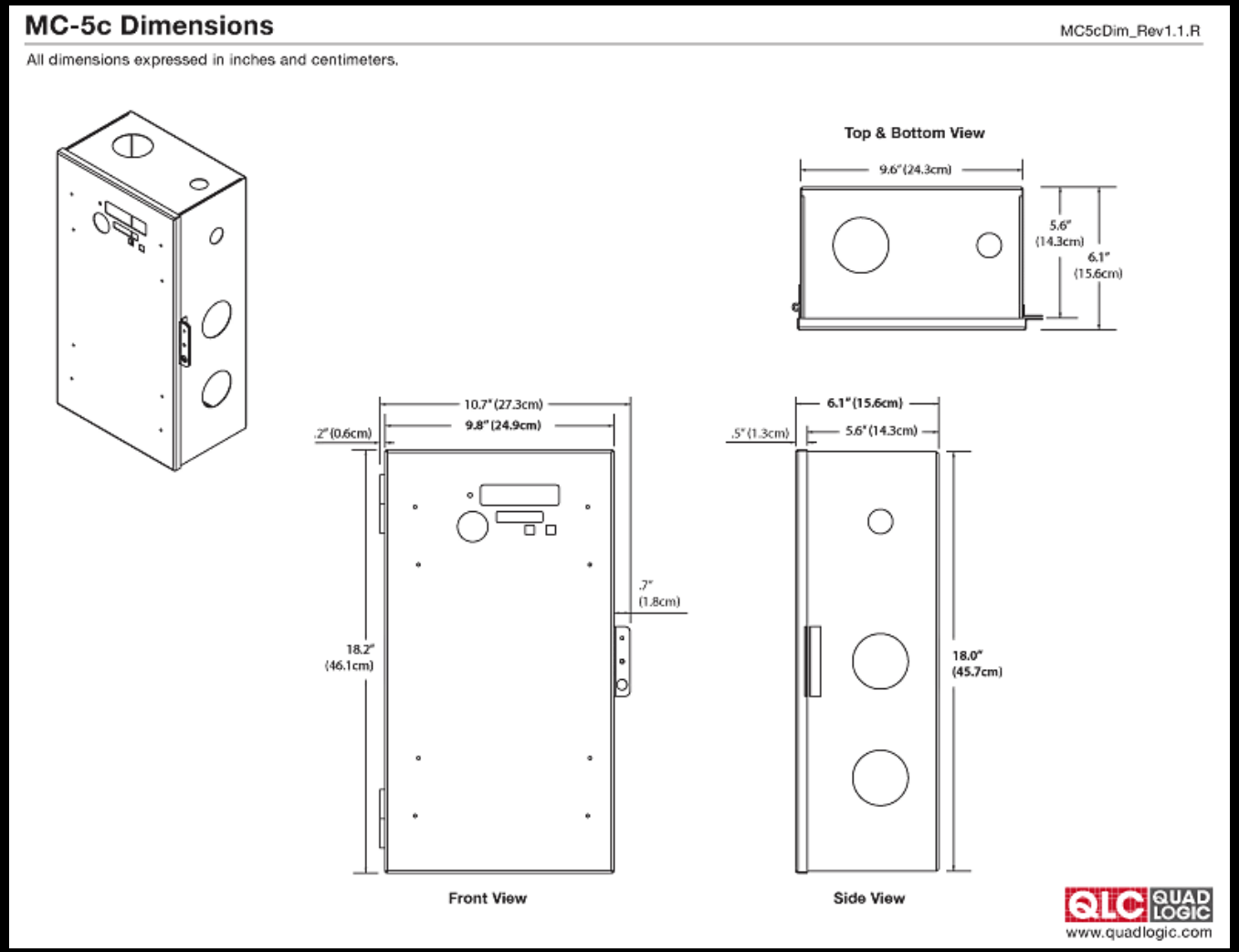
- $27,910 = cost for entire heating season
  (based upon actual invoices for the first half of this winter)
- $ 276 = cost to heat an average apt. for one year at Norman Towers
- $ 200 = cost to heat an average apt./year in another ICF building
  with typical natural gas fired hydronic heating system
- $ 650 = cost to heat an average apt./year in “regular” buildings in our portfolio (all in the NYC metropolitan area)
- 130,000 kWh = estimated annual space heating load
- 33,000 kWh = estimated annual photovoltaic system production

Path to net zero?

- LED’s vs. CFL’s
- More rooftop PV
- Addition of BIPV
- ERV’s
- More insulation
- Higher performance windows
- Solar thermal
- Wind
- Other?
- All of the above?



Electricity sub-metering



About the PSC
Agendas and Calendars
Complaint Filing & Dispute Resolution
Consumer Information
Forms
Language Access Policy
Press Releases
PSC Webcast Schedule
Public Notices
Search
What's New
Translation Disclaimer

Select Language

Electric Submetering Documents

Case 11-M-0710 - In the Matter of Reviewing and Amending the Electric Submetering Regulations, 16 NYCRR Part 96..

On December 18, 2012, the New York State Public Service Commission adopted a resolution to amend 16 NYCRR (Public Service Law) Part 96, the Residential Electric Submetering regulations. The submetering regulations have been updated to reflect changes in Commission policy, the changes in the energy market, new technologies to promote energy efficiency, and additional consumer policies that have been implemented since 1988, when the submetering regulations were last revised.

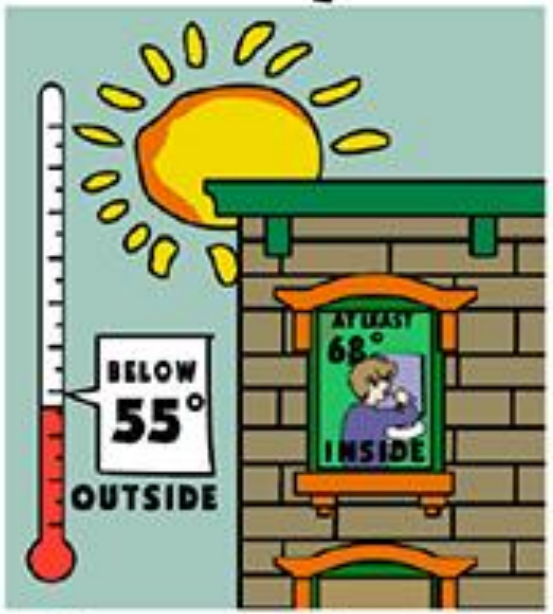
The amendments affect how submeterers sell electricity and afford consumer protections to submetered residents in a residential building (including condominiums, cooperatives and rental buildings). Several of the new submetering requirements relate to the initial application process a submeterer must follow prior to providing submetered electricity, while others apply to existing submetered buildings.

- Commission's Memorandum and Resolution (181kb PDF)
- NYCRR Part 96 - Residential Submetering Regulations (213kb PDF)
- Utility Contacts - Electric Submetering (17kb PDF)
- Submeter Service Provider Contact Information (45kb PDF)
- HEFPA Compliance Guide for Submeter Service Providers (61kb PDF)
- Home Energy Fair Practices Act (HEFPA) Note: Submeter service providers are required to comply with the Public Service Law and all applicable Commission rules and regulations. Under the Public Service Law, residential consumer protections are, for the most part, found in Article 2, Sections 30 through 53, which is identified generically as the Home Energy Practices Act or HEFPA. With the enactment of Public Service Law Section 53 in 2003, the Commission was authorized to enforce the same HEFPA protections for submetered residential customers as exist for their direct metered utility counterparts. A submeter service provider must look to HEFPA and its implementing regulations, 16 NYCRR Parts 11 and 12 to ensure that its residential submetered tenants are protected in similar fashion to residential direct metered customers. The information provided herein on HEFPA is for generic use and applicability to all residential utility

The public service commission expressed a concern that it is possible that the tenant might be required to pay for the heat pump electricity to provide themselves with heat in the summer months if after June 1 there was a cold day.

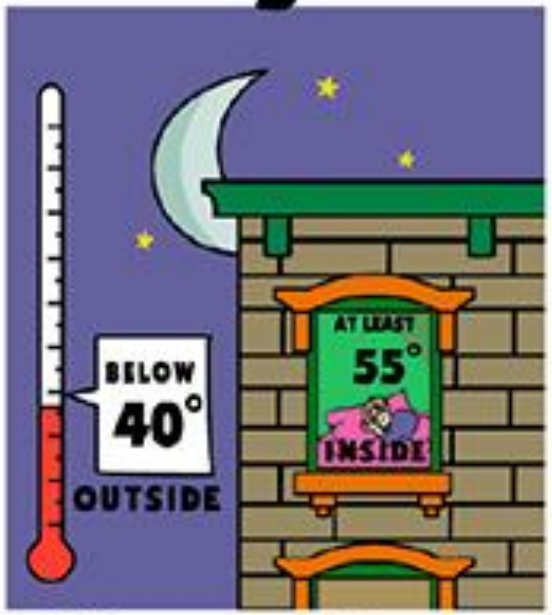
COLD WEATHER HEAT REQUIREMENTS
OCTOBER 1ST - MAY 31ST

Day



6 a.m. - 10 p.m.

Night



10 p.m. - 6 a.m.

TENANTS WITHOUT HEAT SHOULD CALL 311 (TTY 212-504-4115) OR FILE A COMPLAINT AT NYC.GOV/311 OR THROUGH NYC 311's Mobile App

NYC Department of Housing Preservation & Development

HARRIS BEACH PLLC
ATTORNEYS AT LAW

OFFICES | EVE

About the Firm | Pe

People

John T. McManus

Member

Email John
Add to Contacts
LinkedIn Profile

Albany Office
677 Broadway, Suite 1101
Albany, NY 12207
phone: (518) 701-2734
fax: (518) 427-0235

Profile | News + Publications

Mr. McManus is a member of the
Industry Teams and Environmenta
Groups. He also serves on the Re

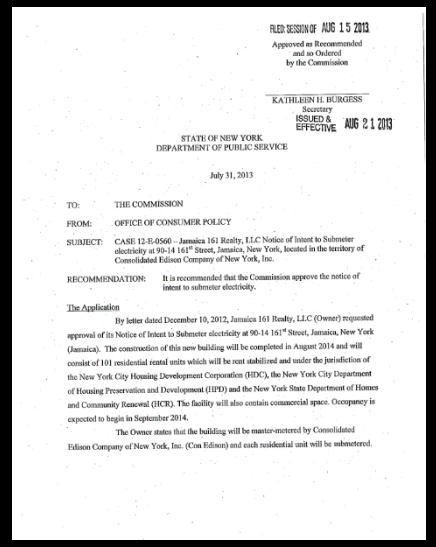
As part of the Energy and Telecor
clients on various legal and regul
a major public utility holding com
Commission (PSC) in connection
power generation company. Addi
carrier in a dispute with a compet
before the PSC over a termination

$ 375 / hour

$13,000 legal
+
$3,000 misc.
filing fees

“The Owner, pursuant to New York State Multiple Dwelling Law 79 will be Responsible for the cost of electric heating and cooling charges from October 1 Through May 31.

Residents who may opt to use heating and cooling during June 1 Through September 30 would be responsible for those electric charges.”



FILED SESSION OF AUG 15 2013
Approved as Recommended and so Ordered by the Commission

KATHLEEN H. BURGESS
Secretary
ISSUED & EFFECTIVE AUG 21 2013

STATE OF NEW YORK
DEPARTMENT OF PUBLIC SERVICE

July 31, 2013

TO: THE COMMISSION

FROM: OFFICE OF CONSUMER POLICY

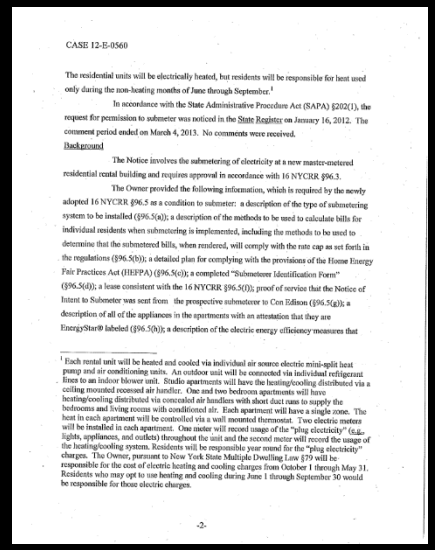
SUBJECT: CASE 12-E-0560 – Jamaica 161 Realty, LLC Notice of Intent to Submeter electricity at 90-14 161st Street, Jamaica, New York, located in the territory of Consolidated Edison Company of New York, Inc.

RECOMMENDATION: It is recommended that the Commission approve the notice of intent to submeter electricity.

The Application

By letter dated December 10, 2012, Jamaica 161 Realty, LLC (Owner) requested approval of its Notice of Intent to Submeter electricity at 90-14 161st Street, Jamaica, New York (Jamaica). The construction of this new building will be completed in August 2014 and will consist of 101 residential rental units which will be rent stabilized and under the jurisdiction of the New York City Housing Development Corporation (HDC), the New York City Department of Housing Preservation and Development (HPD) and the New York State Department of Homes and Community Renewal (HCR). The facility will also contain commercial space. Occupancy is expected to begin in September 2014.

The Owner states that the building will be master-metered by Consolidated Edison Company of New York, Inc. (Con Edison) and each residential unit will be submetered.



CASE 12-E-0560

The residential units will be electrically heated, but residents will be responsible for heat used only during the non-heating months of June through September.[1]

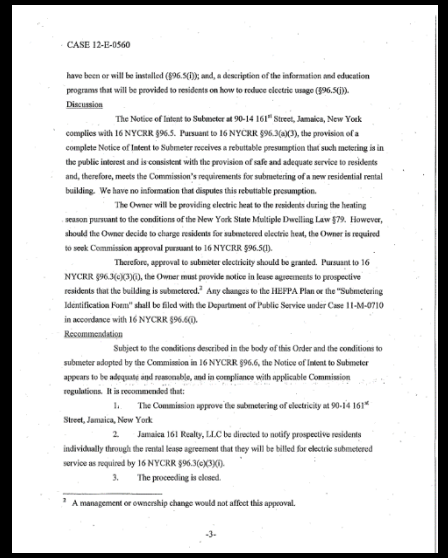
In accordance with the State Administrative Procedure Act (SAPA) §202(1), the request for permission to submeter was noticed in the State Register on January 16, 2012. The comment period ended on March 4, 2013. No comments were received.

Background

The Notice involves the submetering of electricity at a new master-metered residential rental building and requires approval in accordance with 16 NYCRR §96.3.

The Owner provided the following information, which is required by the newly adopted 16 NYCRR §96.5 as a condition to submeter: a description of the type of submetering system to be installed (§96.5(a)); a description of the methods to be used to calculate bills for individual residents when submetering is implemented, including the methods to be used to determine that the submetered bills, when rendered, will comply with the rate cap as set forth in the regulations (§96.5(b)); a detailed plan for complying with the provisions of the Home Energy Fair Practices Act (HEFPA) (§96.5(c)); a completed "Submeterer Identification Form" (§96.5(d)); a lease consistent with the 16 NYCRR §96.5(f)); proof of service that the Notice of Intent to Submeter was sent from the prospective submeterer to Con Edison (§96.5(g)); a description of all of the appliances in the apartments with an attestation that they are EnergyStar® labeled (§96.5(h)); a description of the electric energy efficiency measures that

[1] Each rental unit will be heated and cooled via individual air source electric mini-split heat pump and air conditioning units. An outdoor unit will be connected via individual refrigerant lines to an indoor blower unit. Studio apartments will have the heating/cooling distributed via a ceiling mounted recessed air handler. One and two bedroom apartments will have heating/cooling distributed via concealed air handlers with short duct runs to supply the bedrooms and living rooms with conditioned air. Each apartment will have a single zone. The heat in each apartment will be controlled via a wall mounted thermostat. Two electric meters will be installed in each apartment. One meter will record usage of the "plug electricity" (e.g., lights, appliances, and outlets) throughout the unit and the second meter will record the usage of the heating/cooling system. Residents will be responsible year round for the "plug electricity" charges. The Owner, pursuant to New York State Multiple Dwelling Law §79 will be responsible for the cost of electric heating and cooling charges from October 1 through May 31. Residents who may opt to use heating and cooling during June 1 through September 30 would be responsible for those electric charges.



CASE 12-E-0560

have been or will be installed (§96.5(i)); and, a description of the information and education programs that will be provided to residents on how to reduce electric usage (§96.5(j)).

Discussion

The Notice of Intent to Submeter at 90-14 161st Street, Jamaica, New York complies with 16 NYCRR §96.5. Pursuant to 16 NYCRR §96.3(a)(3), the provision of a complete Notice of Intent to Submeter receives a rebuttable presumption that such metering is in the public interest and is consistent with the provision of safe and adequate service to residents and, therefore, meets the Commission's requirements for submetering of a new residential rental building. We have no information that disputes this rebuttable presumption.

The Owner will be providing electric heat to the residents during the heating season pursuant to the conditions of the New York State Multiple Dwelling Law §79. However, should the Owner decide to charge residents for submetered electric heat, the Owner is required to seek Commission approval pursuant to 16 NYCRR §96.5(l).

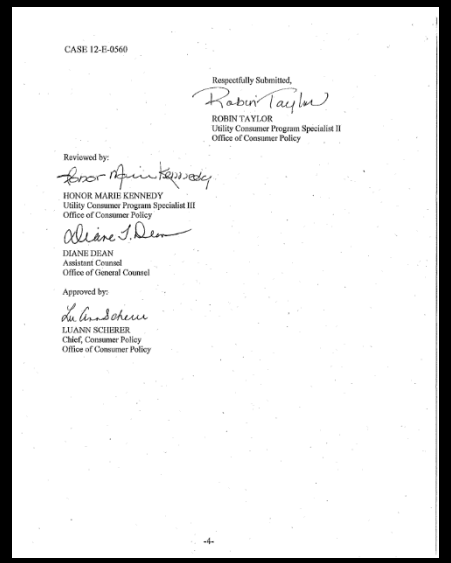
Therefore, approval to submeter electricity should be granted. Pursuant to 16 NYCRR §96.3(c)(3)(i), the Owner must provide notice in lease agreements to prospective residents that the building is submetered.[2] Any changes to the HEFPA Plan or the "Submetering Identification Form" shall be filed with the Department of Public Service under Case 11-M-0710 in accordance with 16 NYCRR §96.6(i).

Recommendation

Subject to the conditions described in the body of this Order and the conditions to submeter adopted by the Commission in 16 NYCRR §96.6, the Notice of Intent to Submeter appears to be adequate and reasonable, and in compliance with applicable Commission regulations. It is recommended that:

1. The Commission approve the submetering of electricity at 90-14 161st Street, Jamaica, New York
2. Jamaica 161 Realty, LLC be directed to notify prospective residents individually through the rental lease agreement that they will be billed for electric submetered service as required by 16 NYCRR §96.3(c)(3)(i).
3. The proceeding is closed.

[2] A management or ownership change would not affect this approval.



CASE 12-E-0560

Respectfully Submitted,

ROBIN TAYLOR
Utility Consumer Program Specialist II
Office of Consumer Policy

Reviewed by:

HONOR MARIE KENNEDY
Utility Consumer Program Specialist III
Office of Consumer Policy

DIANE DEAN
Assistant Counsel
Office of General Counsel

Approved by:

LUANN SCHERER
Chief, Consumer Policy
Office of Consumer Policy

Utility Allowance Tables (with heat pumps recognized!)

Denver, CO

HOUSING AUTHORITY OF THE CITY AND COUNTY OF DENVER
SECTION 8 DEPARTMENT UTILITY ALLOWANCE SCHEDULE
FOR THE DENVER METRO AREA – JANUARY 1, 2013

ENERGY USE	NUMBER OF BEDROOMS						
	0	1	2	3	4	5	6
(Structure Type: Single Family Detached)							
Gas Heat	27	32	38	44	53	59	65
Electric Heat	32	45	58	71	91	104	119
Heat Pump	16	23	29	36	45	52	60
Gas Hot Water	6	8	10	12	16	18	21
Electric Hot Water	14	20	26	32	41	46	53
Gas Range	2	3	4	5	7	8	9
Electric Range/Microwave	12	14	16	19	22	24	26
Electric (Lights/Refrigerator)	27	32	38	45	54	59	66
Other Elec/Lights/Refrig/Mixed Gas/Electric)	27	32	37	42	49	54	60
Water and Sewer (W/Out Septic)	21	25	36	55	78	106	133
Water and Sewer (With Septic)	12	16	21	32	46	65	83
(Structure Types: Semi-Detached, Condo, Townhouse, Garden/Walkup, Low-Rise, Row-House, Duplex, Triplex, and Fourplex)							
Gas Heat	26	31	36	42	50	55	62
Electric Heat	30	42	54	66	84	97	111
Heat Pump	15	21	27	33	42	48	56
Gas Hot Water	6	8	10	12	16	18	21
Electric Hot Water	14	20	26	32	41	46	53
Gas Range	2	3	4	5	7	8	9
Electric Range/Microwave	12	14	16	19	22	24	26
Electric (Lights/Refrigerator)	27	32	38	45	54	59	66
Other Elec/Lights/Refrig/Mixed Gas/Electric)	27	32	37	42	49	54	60
Water and Sewer (W/Out Septic)	20	22	33	48	64	84	107
Water and Sewer (With Septic)	11	13	18	25	32	43	57
(Structure Types: High-Rise (Elevator, or 5+ Stories))							
Gas Heat	24	28	33	38	45	49	55
Electric Heat	26	36	47	57	73	83	96
Heat Pump	13	18	23	29	36	42	48
Gas Hot Water	6	8	10	12	16	18	21
Electric Hot Water	14	20	26	32	41	46	53
Gas Range	2	3	4	5	7	8	9
Electric Range/Microwave	12	14	16	19	22	24	26
Electric (Lights/Refrigerator)	27	32	38	45	54	59	66
Other Elec/Lights/Refrig/Mixed Gas/Electric)	27	32	37	42	49	54	60
Water and Sewer (W/Out Septic)	20	22	33	48	64	84	107
Water and Sewer (With Septic)	11	13	18	25	32	43	57

Trash Collection (Where Applicable): $5.00

* * * *

Fair Market and Payment Standards
Effective January 1, 2013

Bedroom Size:	0	1	2	3	4	5	6
Voucher:	617	762	987	1448	1679	1931	2183

Stamford, CT

Allowances for Tenant-Furnished Utilities And Other Services

U.S. Department of Housing and Urban Development
Office of Public and Indian Housing

Locality:		Unit Type: (1-2 Exposed Walls)								Date:
Stamford, CT		Apartment, High Rise								3/1/2014
		Monthly Dollar Allowances; Number of Bedrooms								
Utility or Service		0 BR	1 BR	2 BR	3 BR	4 BR	5 BR	6 BR	7 BR	8 BR
Heating	a. Natural Gas	24	31	39	46	58	67	77	88	101
	b1. Electric	37	52	67	82	105	120	138	158	182
	b2. Heat Pump	19	26	34	41	52	60	69	79	91
	c. Oil	57	80	103	126	161	183	211	242	279
Cooking	a. Natural Gas	6	8	11	13	16	19	22	25	29
	b. Electric	9	12	15	19	24	27	32	36	42
Other Electric/Lighting		35	43	51	59	71	78	88	98	111
Air Conditioning		5	7	9	11	14	16	19	21	25
Water Heating	a. Natural Gas	13	18	24	29	37	42	49	56	64
	b. Electric	23	32	41	50	64	73	83	96	110
	c. Oil	29	40	52	63	80	92	106	121	140
Water and Sewer		30	35	47	75	103	131	159	187	215
Subtract for Septic		-11	-16	-26	-42	-58	-74	-90	-106	-122
Trash Collection		0	0	0	0	0	0	0	0	0
Range/Microwave		7	7	7	7	7	7	7	7	7
Refrigerator		7	7	7	7	7	7	7	7	7
Other: Gas Fixed Charge		15	15	15	15	15	15	15	15	15

Actual Family Allowances To be used by the family to compute allowance.
Complete below for the actual unit rented.

Name of Family	
Address of Unit	
Number of Bedrooms	

Utility or Service	Monthly Cost
Heating	
Cooking	
Other Electric	
Air Conditioning	
Water Heating	
Water & Sewer	
Trash Collection	
Range/Microwave	
Refrigerator	
Other: gas fixed chg	
Total	$

Franklin City, PA

Allowances for Tenant-Furnished Utilities and Other Services

U.S. Department of Housing and Urban Development
Office of Public and Indian Housing

Locality	ENERGY STAR	Unit Type	Date (mm/dd/yyyy)
Franklin City Housing Authorit	No	Single Family House	7/1/2014

Utility or Service		Monthly Dollar Allowances 0 BR	1 BR	2 BR	3 BR	4 BR	5 BR
Space Heating	a. Natural Gas	39	46	53	60	68	75
	b. Bottle Gas	0	0	0	0	0	0
	c. Electric Resistance	31	36	42	48	55	61
	c. Electric Heat Pump	16	19	22	26	29	32
	e. Oil / Coal / Other	0	0	0	0	0	0
Cooking	a. Natural Gas	15	16	17	18	18	19
	b. Bottle Gas	0	0	0	0	0	0
	c. Electric	4	5	6	7	8	9
	d. Other	0	0	0	0	0	0
Other Electric		27	30	37	44	51	58
Air Conditioning		2	2	3	4	6	7
Water Heating	a. Natural Gas	9	10	15	18	21	23
	b. Bottle Gas	0	0	0	0	0	0
	c. Electric	9	11	16	20	23	25
	d. Oil / Coal / Other	0	0	0	0	0	0
Water		37	37	37	37	37	37
Sewer		47	47	47	47	47	47
Trash Collection		12	12	12	12	12	12
Range/Microwave		6	6	6	6	6	6
Refrigerator		6	6	6	6	6	6
Other - specify		0	0	0	0	0	0

Actual Family Allowances To be used by the family to compute allowance.
Unit size: 2 bedrm

Utility or Service	Fuel Source	Monthly Allowance Example
Space Heating	Electric Resistance	$42
Cooking	Natural Gas	$17
Other Electric	Electric	$37
Air Conditioning	Electric	$3
Water Heating	Electric	$16
Water	Tenant pays	$37
Sewer	Tenant pays	$47
Trash Collection	Tenant pays	$12
Range/Microwave	Tenant does not pay	$0
Refrigerator	Tenant does not pay	$0
Other	Tenant does not pay	$0
Total		$211

Spreadsheet (ver13) based on form HUD-52667 (12/97).
Previous editions are obsolete ref. Handbook 7420.8

Coefficient of Performance (COP) 2.00

Locality: **Stamford, CT**		Unit Type: **(1-2 Exposed Walls) Apartment, High Rise**								Date: **3/1/2014**
		Monthly Dollar Allowances; Number of Bedrooms								
Utility or Service		0 BR	1 BR	2 BR	3 BR	4 BR	5 BR	6 BR	7 BR	8 BR
Heating	a. Natural Gas	24	31	39	46	58	67	77	88	101
	b1. Electric	37	52	67	82	105	120	138	158	182
	b2. Heat Pump	19	26	34	41	52	60	69	79	91
	c. Oil	57	80	103	126	161	183	211	242	279


RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL / COM. FACILITY
CHURCH / COM. FACILITY

What's our next challenge? Water sub-metering.

Water/sewer charges are twice that of our heating fuel cost annually.

THANK YOU!

Steven Bluestone

The Bluestone Organization

sb@bluestoneorg.com

Direct: (347) 572-6306

THE BLUESTONE ORGANIZATION | BUILDING ON GENERATIONS OF EXPERIENCE