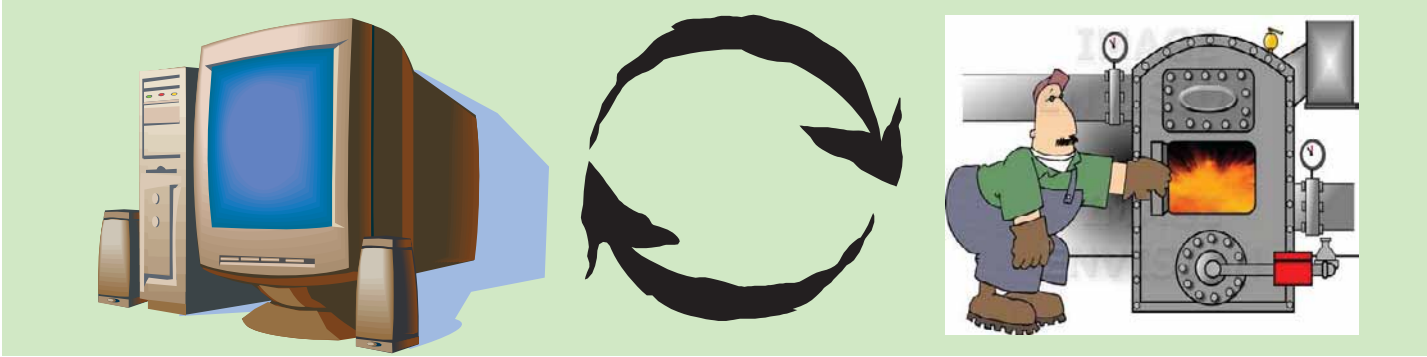
AEA Multifamily Buildings 2008 Conference
July 23, 2008

New York City Housing Authority's Computerized Heating Automation System



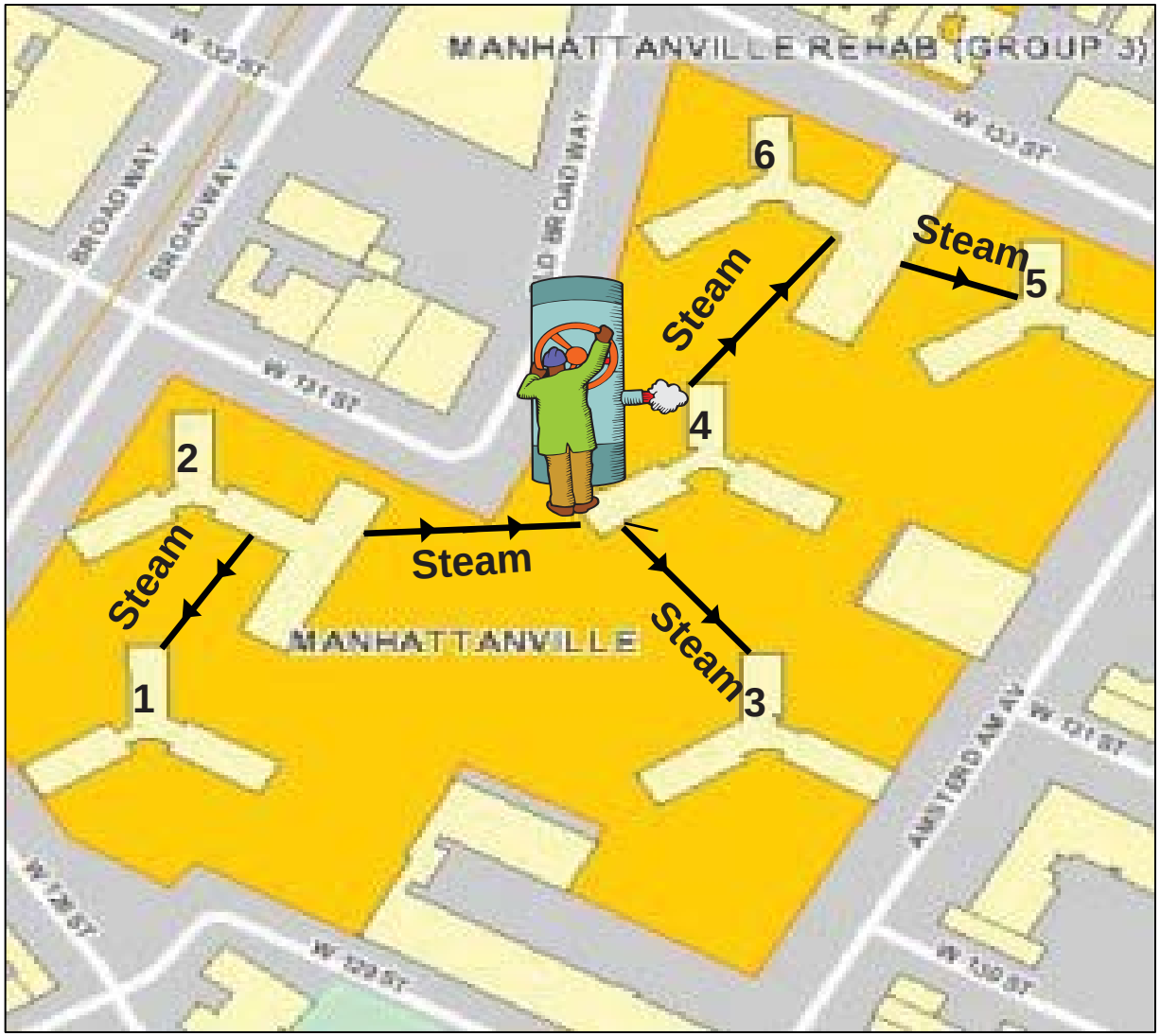
Lloyd Kass
Director, Energy Department

NEW YORK CITY HOUSING AUTHORITY

Presentation Outline

- Infrastructure overview and business challenges
- Solution functionality, screen-shots, reports and configuration
- Benefits and ROI

Typical NYCHA Heating Plant: Manhattanville



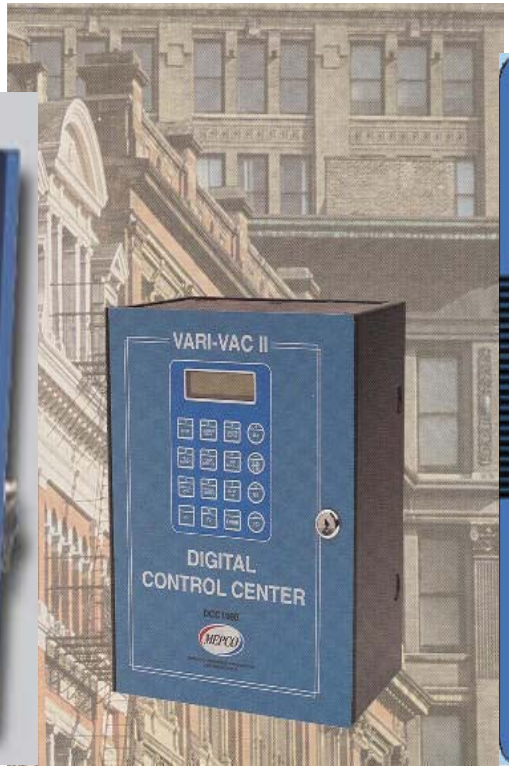
- **Central, multi-boiler plant with "lead-lag" modulation sequencing controls**
- **Steam distributed underground to buildings for heat and hot water – through automated, temperature-sensing zone valves/controls**

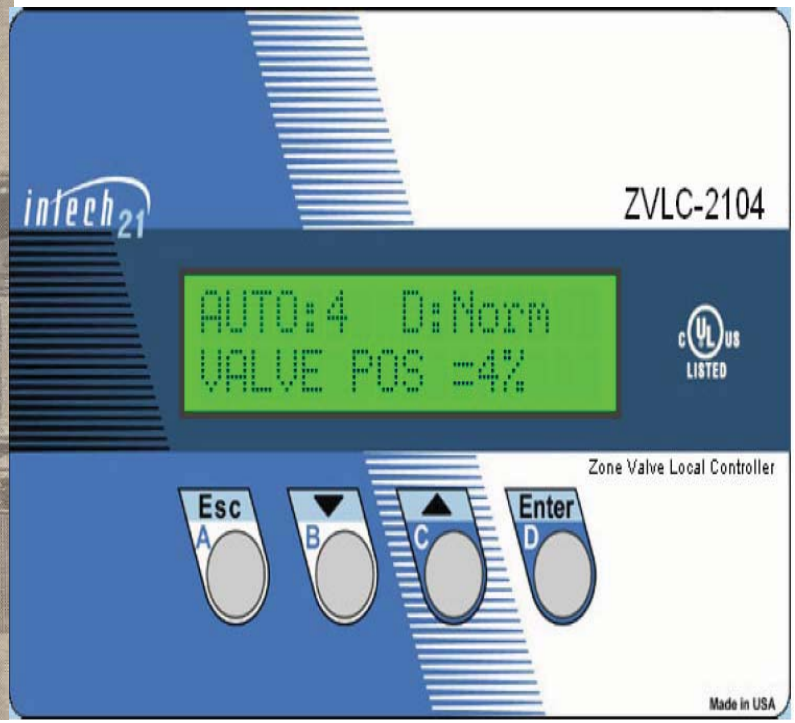
Heating System / Sustainability Challenges

- **Aging infrastructure: more than 70% of NYC public housing complexes are 40+ years old**
- **Utility costs rising at a rate far greater than revenues**
- **Staffing quandary: affordable, skilled technical personnel harder to come by as equipment becomes more complex…**
- **…Same staff now serving as "soldiers in green army"**

Defining CHAS

The Computerized Heating Automated System, or “CHAS”, makes automated boiler-room / building control panels from multiple manufacturers accessible through a web-based software tool….

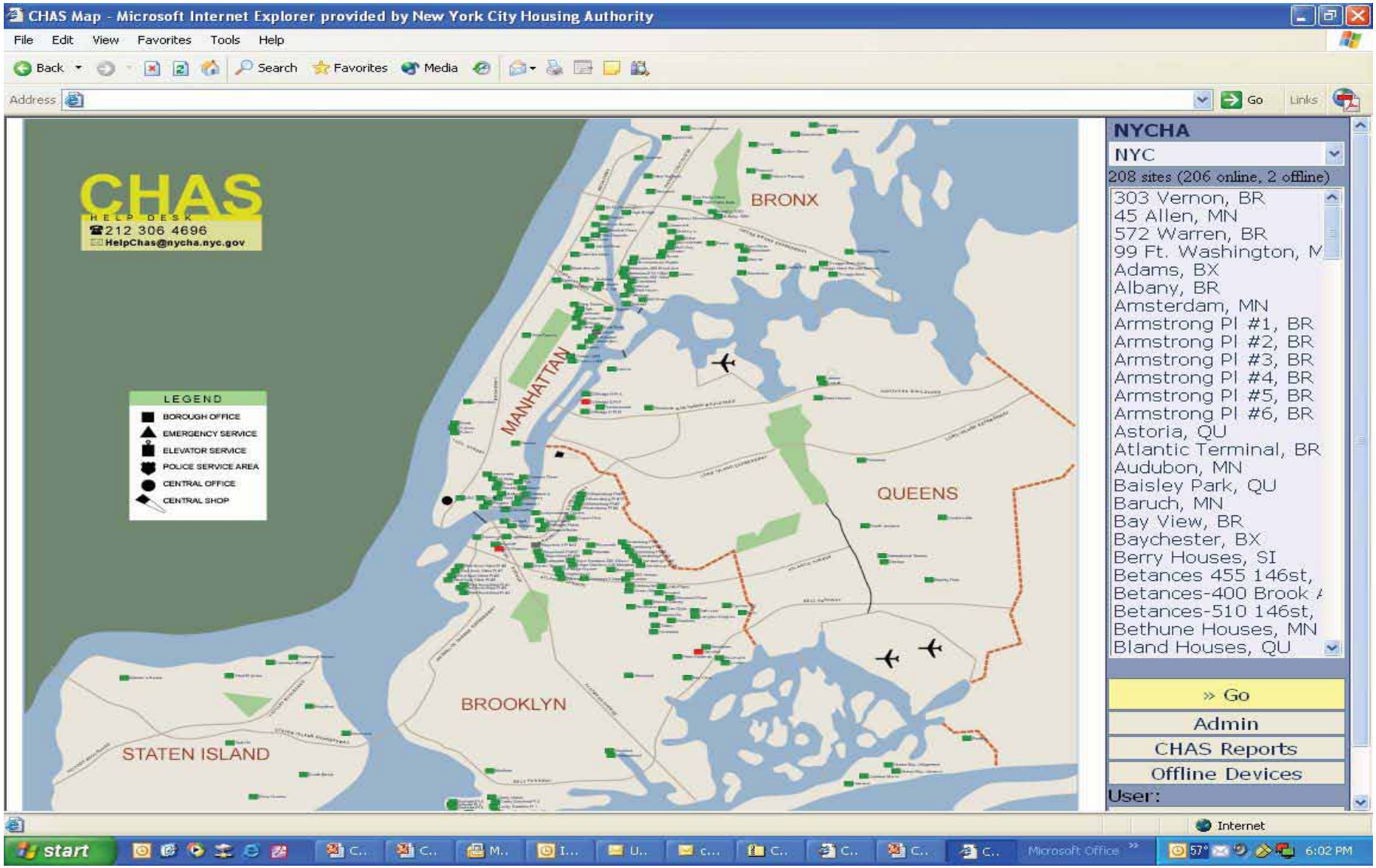




CHAS Functionality

- **Facilitates remote monitoring and management of NYCHA's largest centralized heating plants**
  - **Drill-down into individual locations / history**
  - **Heating plan settings may be modified remotely**
  - **Aggregated exception reports**
- **Features 24-hour boiler room alarms for emergencies and outages (flood, loss of power, low pressure) – with "map alerts" and email notifications to key personnel**
- **Broad coverage: 210 boiler rooms, more than 1,700 buildings (zone valves), 1,500 end-users and more than 150,000 households served**

CHAS Map


CHAS Map - Microsoft Internet Explorer provided by New York City Housing Authority
File Edit View Favorites Tools Help
Back Search Favorites Media
Address
Go Links
CHAS
HELP DESK
212 306 4696
HelpChas@nycha.nyc.gov
LEGEND
BOROUGH OFFICE
EMERGENCY SERVICE
ELEVATOR SERVICE
POLICE SERVICE AREA
CENTRAL OFFICE
CENTRAL SHOP
BRONX
MANHATTAN
QUEENS
BROOKLYN
STATEN ISLAND
NYCHA
NYC
208 sites (206 online, 2 offline)
303 Vernon, BR
45 Allen, MN
572 Warren, BR
99 Ft. Washington, M
Adams, BX
Albany, BR
Amsterdam, MN
Armstrong Pl #1, BR
Armstrong Pl #2, BR
Armstrong Pl #3, BR
Armstrong Pl #4, BR
Armstrong Pl #5, BR
Armstrong Pl #6, BR
Astoria, QU
Atlantic Terminal, BR
Audubon, MN
Baisley Park, QU
Baruch, MN
Bay View, BR
Baychester, BX
Berry Houses, SI
Betances 455 146st,
Betances-400 Brook
Betances-510 146st,
Bethune Houses, MN
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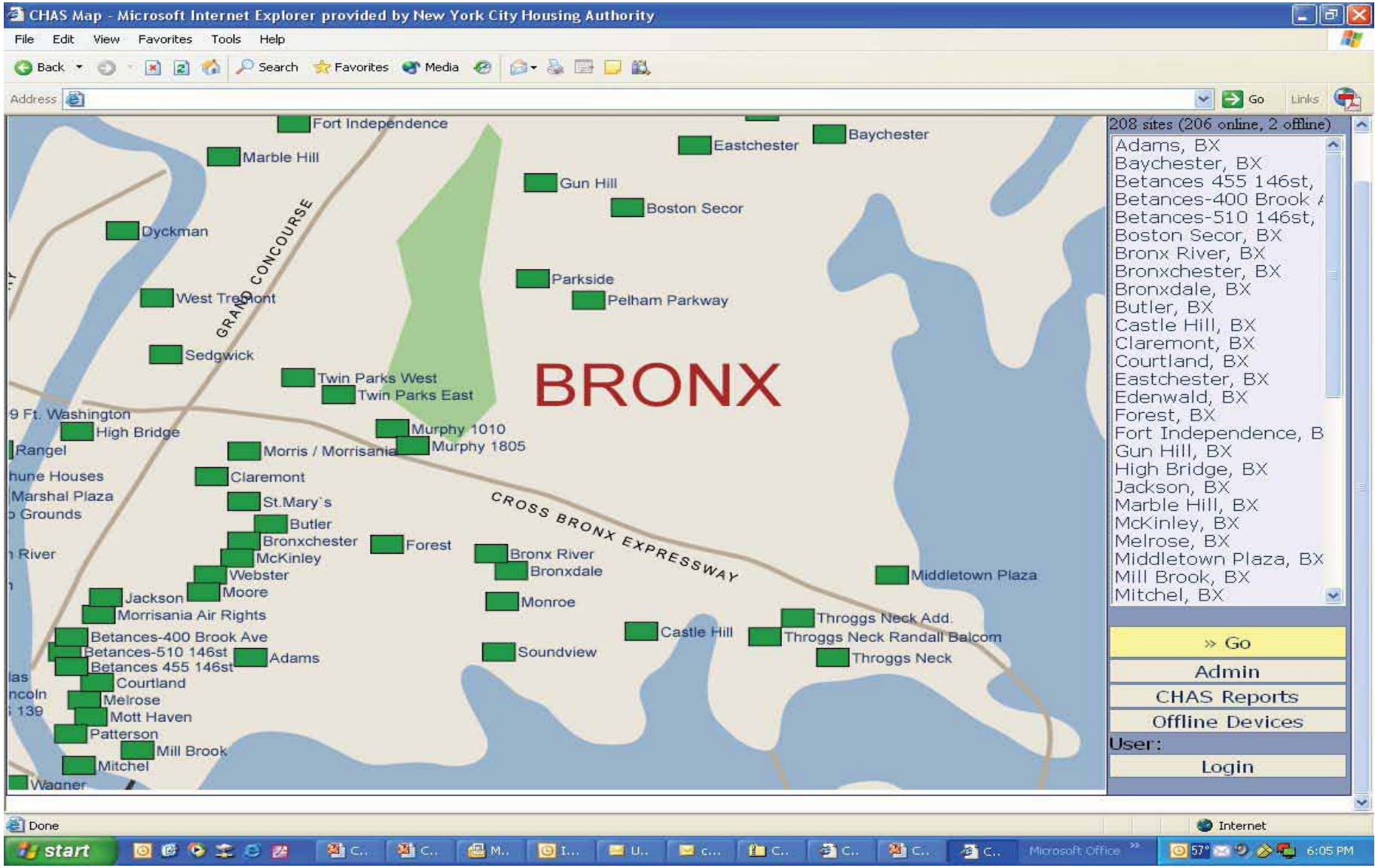
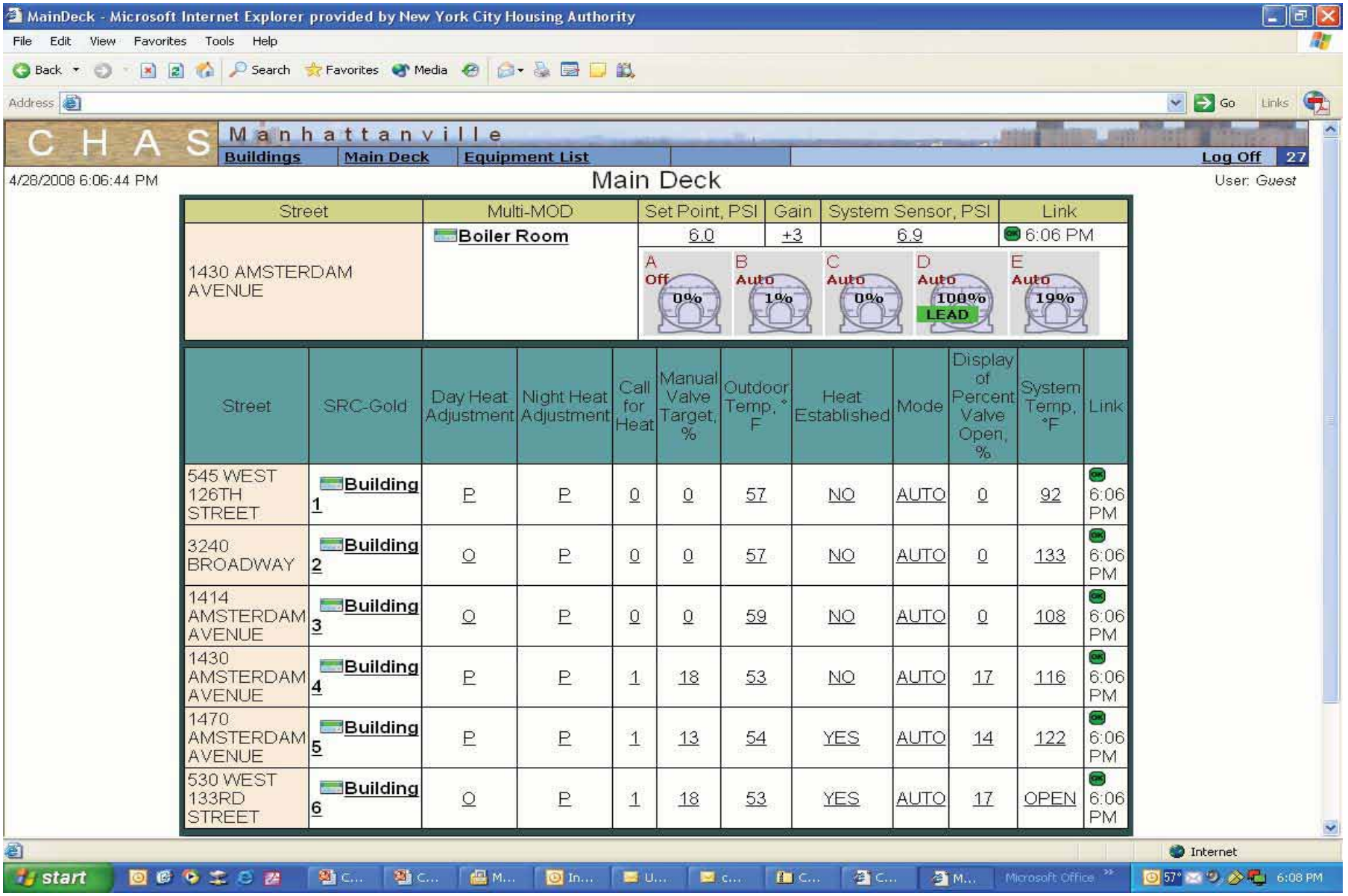
» Go
Admin
CHAS Reports
Offline Devices
User:
Internet
start
Microsoft Office
6:02 PM

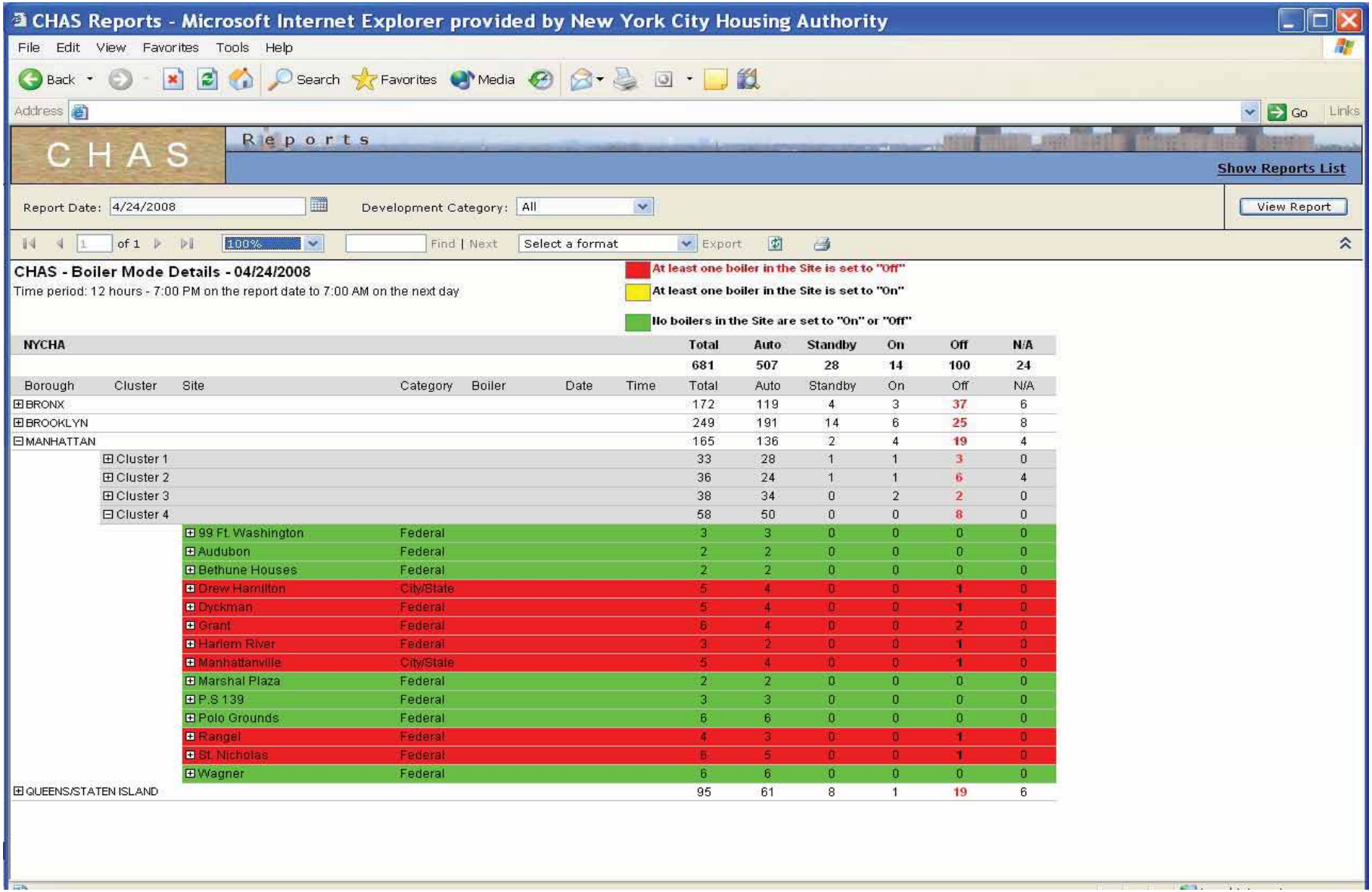
CHAS Map


CHAS Map - Microsoft Internet Explorer provided by New York City Housing Authority
File Edit View Favorites Tools Help
Back Search Favorites Media
Address
Go Links
Fort Independence
Marble Hill
Eastchester
Baychester
Gun Hill
Boston Secor
Dyckman
GRAND CONCOURSE
Parkside
Pelham Parkway
West Tremont
Sedgwick
Twin Parks West
Twin Parks East
BRONX
Ft. Washington
High Bridge
Murphy 1010
Murphy 1805
Rangel
Morris / Morrisania
Claremont
Marshal Plaza
St.Mary`s
Grounds
Butler
Bronxchester
Forest
Bronx River
Bronxdale
McKinley
Webster
Moore
Middletown Plaza
Jackson
Morrisania Air Rights
Monroe
Throggs Neck Add.
Throggs Neck Randall Balcom
Throggs Neck
Castle Hill
Soundview
Betances-400 Brook Ave
Betances-510 146st
Betances 455 146st
Adams
Courtland
Melrose
Mott Haven
Patterson
Mill Brook
Mitchel
Wagner
CROSS BRONX EXPRESSWAY
208 sites (206 online, 2 offline)
Adams, BX
Baychester, BX
Betances 455 146st,
Betances-400 Brook
Betances-510 146st,
Boston Secor, BX
Bronx River, BX
Bronxchester, BX
Bronxdale, BX
Butler, BX
Castle Hill, BX
Claremont, BX
Courtland, BX
Eastchester, BX
Edenwald, BX
Forest, BX
Fort Independence, B
Gun Hill, BX
High Bridge, BX
Jackson, BX
Marble Hill, BX
McKinley, BX
Melrose, BX
Middletown Plaza, BX
Mill Brook, BX
Mitchel, BX
» Go
Admin
CHAS Reports
Offline Devices
User:
Login
Done
Internet
start
6:05 PM

Virtual Boiler Room

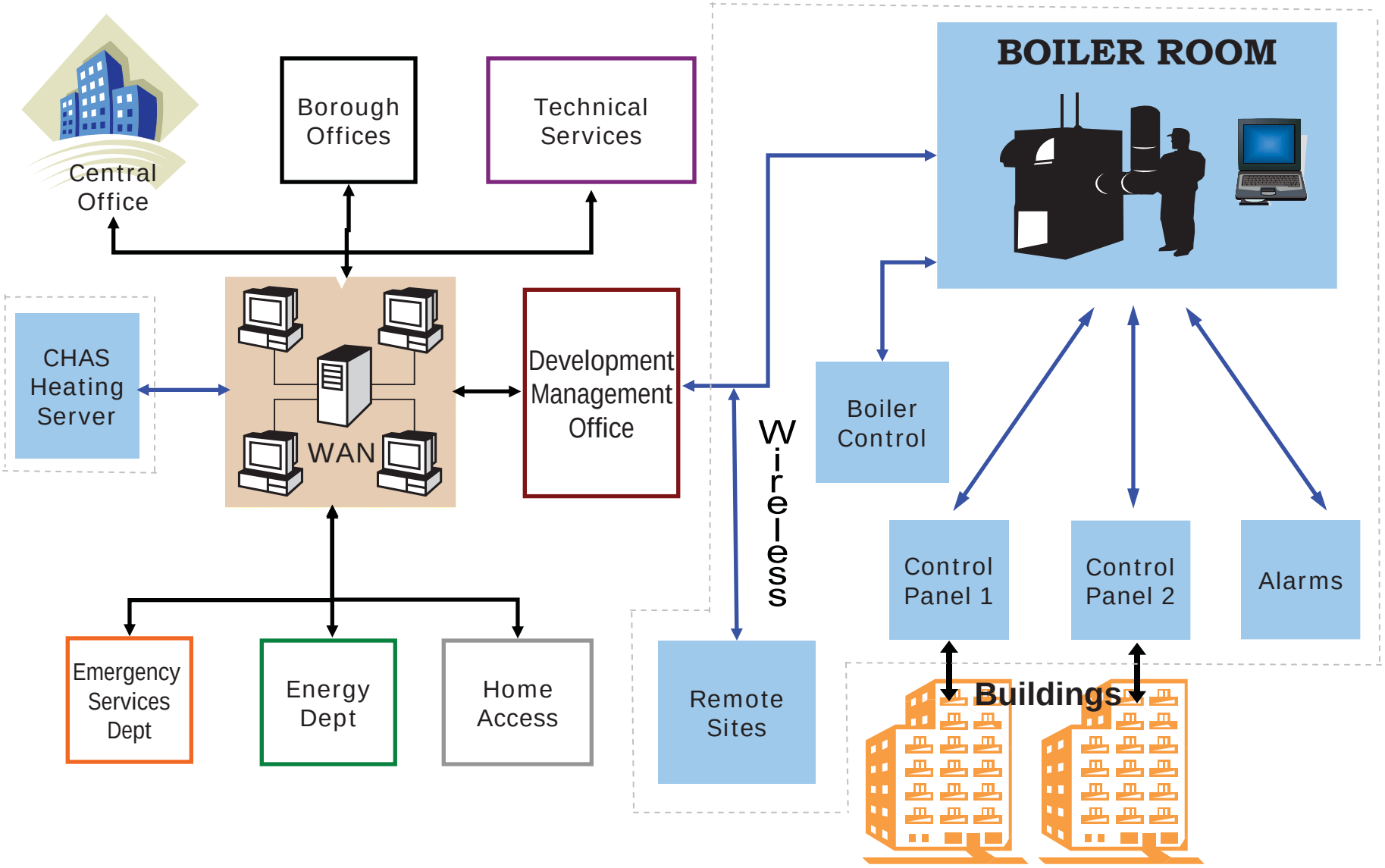


Boiler Mode Detail Report



NYCHA							Total	Auto	Standby	On	Off	N/A
							681	507	28	14	100	24
Borough	Cluster	Site	Category	Boiler	Date	Time	Total	Auto	Standby	On	Off	N/A
⊞BRONX							172	119	4	3	37	6
⊞BROOKLYN							249	191	14	6	25	8
⊟MANHATTAN							165	136	2	4	19	4
	⊞Cluster 1						33	28	1	1	3	0
	⊞Cluster 2						36	24	1	1	6	4
	⊞Cluster 3						38	34	0	2	2	0
	⊟Cluster 4						58	50	0	0	8	0
		⊞99 Ft. Washington	Federal				3	3	0	0	0	0
		⊞Audubon	Federal				2	2	0	0	0	0
		⊞Bethune Houses	Federal				2	2	0	0	0	0
		⊞Drew Hamilton	City/State				5	4	0	0	1	0
		⊞Dyckman	Federal				5	4	0	0	1	0
		⊞Grant	Federal				6	4	0	0	2	0
		⊞Harlem River	Federal				3	2	0	0	1	0
		⊞Manhattanville	City/State				5	4	0	0	1	0
		⊞Marshal Plaza	Federal				2	2	0	0	0	0
		⊞P.S 139	Federal				3	3	0	0	0	0
		⊞Polo Grounds	Federal				6	6	0	0	0	0
		⊞Rangel	Federal				4	3	0	0	1	0
		⊞St. Nicholas	Federal				6	5	0	0	1	0
		⊞Wagner	Federal				6	6	0	0	0	0
⊞QUEENS/STATEN ISLAND							95	61	8	1	19	6

CHAS Network



CHAS Benefits

- **Reduces fuel costs through boiler and zone-valve automation – and "management by exception"**
- **Supports streamlined, Borough-based heating maintenance model, with "roving crews" assigned to monitor neighborhood "clusters"**
- **Permits managers to more effectively and efficiently deploy technical personnel where warranted**

CHAS Benefits (cont'd)

- **Increases transparency of heating operations, enhances supervision and compliance with maintenance procedures**
- **Improves response time when heating plant emergencies arise**
- **Prevents service downtime and promotes more reliable heat and hot water to residents**

Returns on Investment

- **Energy savings expected to reach 7.5% of baseline heating fuel costs going into the October 2008 heating season, which equates to…**

  ….13 million therms of natural gas per year

  ….$20 million in fuel cost savings per year ($1.50/therm)

  ….a 75,000 tons of C02 in curtailed emissions

- **Elimination of heating plant "morning/evening watch" shifts allowed reinvestment of staff hours into preventative maintenance and troubleshooting**

- **Improved service to residents with more reliable comfortable indoor temperatures and reduced heating and hot water downtime**