

**EXAMPLE OF A DESIGN DEVELOPMENT PHASE ENERGY ANALYSIS:**

**6 April 2007**

**DHS New Family Intake Center  
Design Development Phase**

*completed by*  
**Viridian Energy and Environmental, LLC.**  
*(performing the work under subcontract to Steven Winter Design, Inc.)*

*for*  
**Polshek Partnership Architects, LLP**

**DHS New Family Intake Center  
Bronx, NY**

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## PROJECT CONTACT LIST

Guy Maxwell, Associate Partner  
Steven Chang, Associate  
**Polshek Partnership Architects, LLP**  
320 West 13th Street  
New York, NY 10014  
Phone: 212-807-7171  
Fax: 212-807-5157  
Email: [gmaxwell@polshek.com](mailto:gmaxwell@polshek.com)  
Email: [schang@polshek.com](mailto:schang@polshek.com)

Frank J. Tierno, PE, Principal  
Peter Henehan  
**FLACK + KURTZ**  
475 Fifth Ave  
New York, NY 10017  
Phone: 212.532.9600 Main  
Phone: 212.951.2791 Direct  
Fax: 212.689.7489  
Email: [Frank.Tierno@ny.fk.com](mailto:Frank.Tierno@ny.fk.com)  
Email: [Peter.Hemehan@ny.fk.com](mailto:Peter.Hemehan@ny.fk.com)

Scott Matthews  
**Brandston Partnership**  
122 West 26th Street, 5th Floor  
New York, NY 10001  
Phone: 212.924.4050 ext 245  
Fax: 212.691.5418  
Email: [matthews@Brandston.com](mailto:matthews@Brandston.com)

Diane Smith; Project Director  
Mathew Park; Sustainable Design Representative  
**New York City Department of Design and Construction**  
Email: [SmithD@ddc.nyc.gov](mailto:SmithD@ddc.nyc.gov)  
Email: [ParkM@ddc.nyc.gov](mailto:ParkM@ddc.nyc.gov)

Adrian Tuluca  
**Viridian Energy and Environmental, LLC**  
50 Washington St  
Norwalk, CT 06854  
Phone: 203-299-1411 x238  
Fax: 203-299-1656  
Email: [atuluca@viridianee.com](mailto:atuluca@viridianee.com)

*This design development analysis is intended to inform the final phase of design. Analysis data and Local Law 86 reporting data will be updated at 75% and 100% final design to reflect adjustments made in the course of the final design phase.*

## **EXECUTIVE SUMMARY**

Viridian Energy and Environmental, LLC (Viridian), under subcontract to Steven Winter Design, Inc., analyzed the energy use of the new DHS Family Intake Center in Bronx, New York. The Center is essentially an office building with client reception areas and encompasses approximately 77,000 ft<sup>2</sup> of conditioned space.

Viridian performed the energy analyses using the computer program DOE-2.1 E. The goals of the study were as follows:

- Identify the most cost-effective energy efficiency measures appropriate to the project
- Verify compliance with the New York City Local Law 86 (LL86) energy cost reduction requirements and develop the energy related data required for LL86 reporting
- Calculate the number of energy-related LEED 2.2 New Construction (LEED 2.2 NC) points that can contribute to meeting the Local Law 86 LEED Silver requirement

Local Law 86 requires a project with a construction value greater than \$30 million to save at least 25% in regulated energy cost when compared with the NYS Energy Conservation Construction Code baseline or the energy cost budget method of ASHRAE/IESNA Standard 90.1-1999, whichever is more stringent. Since the latter is more stringent, the baseline is modeled as a building which has the same massing, function and operating schedules as the design, but complies with the Energy Cost Budget Method of the ASHRAE/IESNA Standard 90.1-1999<sup>1</sup>.

Note: Regulated energy excludes the energy consumed by equipment that is typically plugged into receptacles: computers, printers, copiers, TVs, radios, electric clocks, etc. It also excludes energy used by elevators and escalators, cooking equipment, washing and drying equipment, potable water pumps and process equipment (such as industrial or laboratory equipment).

[Note that the baseline of ASHRAE 90.1-1999 for LL86 energy cost reduction requirements is only appropriate for projects over \$12M that apply to the New York City Department of Buildings (DOB) prior to the State's expected adoption of the ASHRAE 90.1-2004 standard in December, 2007. In accordance with the LEED NC 2.1 methodology cited in the LL86 Rules, projects that apply to the DOB after the December date must use the more stringent local code baseline of ASHRAE 90.1 2004.]

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<sup>1</sup> To fully comply with the Chapter 11 - Energy Cost Budget Method of ASHRAE/IESNA Standard 90.1-1999, the design must also meet the requirements of Section 11.1.2a. This section requires that the design comply with all mandatory provisions of ASHRAE/IESNA Standard 90.1-1999, Sections 5.2, 6.2, 7.2, 8.2, 9.2 and 10.2. Typically, this compliance was certified by the Architect (Section 5.2) and the HVAC Engineer (the remaining sections).

LEED 2.2 NC awards points under Energy and Atmosphere Credit 1 - Optimize Energy Performance for decreasing the total energy cost (not just the regulated energy cost) by comparison with a baseline set by the ASHRAE/IESNA Standard 90.1-2004 Appendix G<sup>2</sup>. The points for new construction and major renovation are as follows:

| Number of Points | Total Energy Cost Savings (%) |                  |
|------------------|-------------------------------|------------------|
|                  | New Construction              | Major Renovation |
| 1                | 10.5                          | 3.5              |
| 2                | 14.0                          | 7.0              |
| 3                | 17.5                          | 10.5             |
| 4                | 21.0                          | 14.0             |
| 5                | 24.5                          | 17.5             |
| 6                | 28.0                          | 21.0             |
| 7                | 31.5                          | 24.5             |
| 8                | 35.0                          | 28.0             |
| 9                | 38.5                          | 31.5             |
| 10               | 42.0                          | 35.0             |

**ENERGY EFFICIENCY OF THE DESIGN WITH RESPECT TO NYC LOCAL LAW 86 OF 2005 (LL86) 25% -30% ENERGY COST REDUCTION REQUIREMENT**

Using the LEED-NC 2.1 Methodology referenced in LL86, the design must be at least 25% more efficient than ASHRAE/IESNA Standard 90.1 1999 or the NYS Energy Conservation Construction Code, whichever is more stringent. Once the 25% reduction requirement has been met, additional efficiency measures must be implemented to achieve 30% reduction if the incremental cost of these measures has a payback of no greater than 7 years.

The ASHRAE/IESNA Standard 90.1-1999 Baseline is utilized here as it is more stringent than the NYS Energy Conservation Construction Code (2002), the version expected to govern when this New Building Application is approved by the NYC Department of Buildings.

The following chart summarizes the energy use reduction achieved by the energy efficiency measures adopted in the design. The cost, percentage, and payback, of the energy reduction are expressed in terms of regulated with non-regulated loads as well as in terms of regulated loads only.

| DOE-2 Code | Model Description                        | Total (Regulated and Non-Regulated Loads) Annual Energy Cost (\$) | Regulated Annual Energy Cost (\$) | Regulated Annual Energy Cost Reduction Over ASHRAE 90.1-1999 (\$) | Regulated Annual Energy Cost Reduction Over ASHRAE 90.1-1999 (%) | Incremental Cost (\$) | Payback (yrs) |
|------------|--|---|-----------------------------------|---|--|-----------------------|---------------|
| AS99A      | ASHRAE/IESNA Standard 90.1-1999 Baseline | 186,126   | 158,696                           | n/a   | n/a  | n/a                   | n/a           |
|            | Design Case                              | 140,765   | 111,577                           | 46,124  | 29.69%   | 378,900               | 8.2           |

<sup>2</sup> To fully comply with Appendix G of ASHRAE/IESNA Standard 90.1-2004, the design must also meet the requirements of Section G1.2. This section requires that the design comply with all mandatory provisions of ASHRAE/IESNA Standard 90.1-2004, Sections 5.4, 6.4, 7.4, 8.4, 9.4 and 10.4. Typically, this compliance is certified by the Architect (Section 5.4) and the HVAC Engineer (the remaining sections).

The regulated energy cost reductions of 29.69% satisfies the 25% minimum energy cost reduction requirement of Local Law 86.

To evaluate each measure, first the Design Case with all measures proposed is modeled. Then each measure is removed from the Design Case model, one at a time, and the model is run each time to arrive at the energy increase that the removal of this measure has on the overall energy performance of the designed building. This number is then entered into the table as its contribution to the overall energy reduction. The printout for each of these runs as well as the combined runs and the baselines are attached as an appendix to this report.

The modeled reductions by measure are as follows:

| DOE-2 Code | Energy Efficiency Measure  | Total Annual Energy Cost (\$) | Total Annual Energy Cost Reduction Over the Design Case (\$) | Incremental Cost (\$) | Payback (yrs) |
|------------|--|-------------------------------|--|-----------------------|---------------|
|            | <b>Design Case</b>   | <b>140,002</b>                | <b>n/a</b>   | <b>n/a</b>            | <b>n/a</b>    |
|            | <b>Envelope</b>  |                               |  |                       |               |
| AlxEW      | Design wall assembly (R-14.5), instead of ASHRAE/IESNA Standard 90.1-1999 wall assembly (R-8.13)   | N/A                           | 4,640  | 44,000                | 9.5           |
| AlxGL      | Viracon VE-1-2M glass (SHGC=0.38) and Solera L glass (SHGC=0.33) within thermally-improved mullions (U-0.47 for entire unit), instead of ASHRAE/IESNA Standard 90.1 glazing, with SHGC=0.39 and (U-0.57 for entire unit) | N/A                           | 3,461  | TBD                   | n/a           |
| AlxRF      | Design roof assembly (R-31), instead of ASHRAE/IESNA Standard 90.1-1999 roof assembly (R-15.87)  | N/A                           | 725  | 21,600                | 29.8          |
|            | <b>Lighting</b>  |                               |  |                       |               |
| AlxL2      | Design lighting densities, instead of ASHRAE/IESNA Standard 90.1-1999 lighting power densities   | N/A                           | 4,685  | 0                     | Immediate     |
| AlxDL      | Daylight dimming controls in perimeter office spaces   | N/A                           | 4,763  | 62,000                | 13.0          |
| AlxOC      | Occupancy sensors in enclosed offices  | N/A                           | 2,092  | 8,400 <sup>3</sup>    | 4.0           |
|            | <b>HVAC controls and distribution</b>  |                               |  |                       |               |
| Als01      | Outside air modulation with CO <sub>2</sub> sensors  | N/A                           | 1,801  | 12,000 <sup>4</sup>   | 6.7           |
| Als04      | Heat recovery with glycol loop (50% efficiency)  | N/A                           | 7,776  | 207,000               | 26.6          |
| Als05      | Premium efficiency motors, instead of standard efficiency motors   | N/A                           | 335  | 1,300 <sup>5</sup>    | 3.9           |
| Als06      | Heating boilers with 85% efficiency, instead of boilers with 80% efficiency and on/off controls, per ASHRAE/IESNA Standard 90.1-1999   | N/A                           | 5,434  | 3,000                 | 0.6           |

<sup>3</sup> The incremental cost for the occupancy sensors is \$8,400 (\$200/sensor x 42 sensors).

<sup>4</sup> The incremental cost for the CO<sub>2</sub> sensors is \$12,000 (\$1,000/sensor x 4 sensors/AHU x 3 air handling units).

<sup>5</sup> The incremental cost for the premium efficiency motors is \$1,300 (\$100/motor x 13 motors).

| <b>DOE-2 Code</b> | <b>Energy Efficiency Measure</b>   | <b>Total Annual Energy Cost (\$)</b> | <b>Total Annual Energy Cost Reduction Over the Design Case (\$)</b> | <b>Incremental Cost (\$)</b> | <b>Payback (yrs)</b> |
|-------------------|--|--------------------------------------|---|------------------------------|----------------------|
| Als07             | VFD on hot water circulation pumps with 30% turndown ratio, instead of fixed speed, per ASHRAE/IESNA Standard 90.1-1999 for motors below 20 hp | N/A                                  | 3,536   | 19,600                       | 5.5                  |

Additional EEMS beyond Design Case

The design team is considering (or considered) additional EEMs beyond the design case EEMs above to meet 30% reduction requirements under Local Law 86. The following is a list of EEMs, with simple payback data, that will increase the energy efficiency of the building.

| <b>DOE-2 Code</b> | <b>Additional Energy Efficiency Measures</b>  | <b>Total Annual Energy Cost (\$)</b> | <b>Total Annual Energy Cost Reduction Over the Design Case (\$)</b> | <b>Incremental Cost (\$)</b> | <b>Payback (yrs)</b> |
|-------------------|---|--------------------------------------|---|------------------------------|----------------------|
|                   | <b>Design Case</b>  | <b>129,729</b>                       | <b>n/a</b>  | <b>n/a</b>                   | <b>n/a</b>           |
| AltCB             | Condensing boilers (at 93% efficiency), instead of condensing boilers (at 85% efficiency) | N/A                                  | 2,142   | 13,000 <sup>6</sup>          | 6.1                  |
| AIOC2             | Occupancy sensors in conference rooms, toilets and janitors closets                       | N/A                                  | 981   | 10,000 <sup>7</sup>          | 10.2                 |

<sup>6</sup> The incremental cost of the condensing boiler is \$8,000. The domestic hot water preheat system is estimated to cost an additional \$5,000.

<sup>7</sup> The incremental cost for the occupancy sensors is \$10,000 (\$200/sensor x 50 sensors).



The building with the additional EEMs with a payback of less than 7 years would compare against ASHRAE/IESNA Standard 90.1-1999 as follows:

| DOE-2 Code | Model Description   | Total (Regulated and Non-Regulated Loads) Annual Energy Cost (\$) | Regulated Annual Energy Cost (\$) | Regulated Annual Energy Cost Reduction Over ASHRAE 90.1-1999 (\$) | Regulated Annual Energy Cost Reduction Over ASHRAE 90.1-1999 (%) | Incremental Cost (\$) | Payback (yrs) |
|------------|---|---|-----------------------------------|---|--|-----------------------|---------------|
| AS99A      | ASHRAE/IESNA Standard 90.1-1999   | 186,126   | 158,696                           | n/a   | n/a  | n/a                   | n/a           |
| AltCB      | Condensing boilers (at 93% efficiency), instead of condensing boilers (at 85% efficiency) | 137,860   | 109,434                           | 48,262  | 31.0%  | 391,900               | 8.1           |

### **ENERGY EFFICIENCY OF THE DESIGN WITH RESPECT TO LEED NC 2.2**

The LEED NC 2.2 baseline for the Energy & Atmosphere Credit 1 (Optimize Energy Performance) is created as follows:

1. The ASHRAE/IESNA Standard 90.1-2004 Appendix G case is modeled according to the requirements of the ASHRAE/IESNA Standard 90.1-2004 Appendix G, using the building as positioned on site. A run is performed.
2. The building is then rotated by 90, 180 and 270 degrees, and a new run is performed each time.
3. The results of the four runs are averaged to produce the ASHRAE/IESNA Standard 90.1-2004 Appendix G case.

Using the LEED-NC 2.2 methodology, the design saves approximately 23.27% over the ASHRAE/IESNA Standard 90.1-2004 Appendix G case and is eligible for 4 LEED points under EA Credit 1: Optimize Energy Performance. Please refer to the table below.

| DOE-2 Code | Model Description  | Total Annual Energy Cost (\$) | Total Annual Energy Cost Reduction (\$) | Total Annual Energy Cost Reduction (%) | LEED 2.2 EA Credit 1 |
|------------|--|-------------------------------|---|--|----------------------|
| AZ000      | ASHRAE/IESNA Standard 90.1-2004 Appendix G Rotation 0°   | 183,737                       | n/a                                     | n/a                                    | n/a                  |
| AZ090      | ASHRAE/IESNA Standard 90.1-2004 Appendix G Rotation 90°  | 181,586                       | n/a                                     | n/a                                    | n/a                  |
| AZ180      | ASHRAE/IESNA Standard 90.1-2004 Appendix G Rotation 180° | 183,635                       | n/a                                     | n/a                                    | n/a                  |
| AZ270      | ASHRAE/IESNA Standard 90.1-2004 Appendix G Rotation 270° | 180,922                       | n/a                                     | n/a                                    | n/a                  |
|            | ASHRAE/IESNA Standard 90.1-2004 Appendix G (average)     | 182,470                       | n/a                                     | n/a                                    | n/a                  |
|            | Design Case  | 140,002                       | 42,468                                  | 23.27%                                 | 4                    |

**SUMMARY OF ENERGY RELATED DATA REQUIRED FOR LOCAL LAW 86 REPORTING WORKSHEET:**

**Energy Providers and Rate Plans:**

- Electricity Provider (line 50): NYPA
- Electricity Rate Plan (line 51): Conventional
- Natural Gas Provider (line 52): Con-Ed
- Natural Gas Rate Plan (line 53): Firm

**Baseline LEED-NC 2.1** (Regulated Loads Only)

- Electricity Use, kWh/yr (line 58): 805,654
- Electricity Sum of Monthly Peak Demand, kW/yr (line 59): 2,325
- Natural Gas Use, MBtu/yr (line 70): 4,265

**Baseline LEED-NC 2.2** (Regulated and Non-Regulated Loads)

- Electricity Use, kWh/yr (line 76): 963,397
- Electricity Sum of Monthly Peak Demand, kW/yr (line 77): 2,696
- Natural Gas Use, MBtu/yr (line 88): 4,701

**Design Case** (Regulated and Non-Regulated Loads)

- Electricity Use, kWh/yr (line 95): 838,680
- Electricity Sum of Monthly Peak Demand, kW/yr (line 96): 2,581
- Natural Gas Use, MBtu/yr (line 107): 2,573

**Design Case** (Regulated Loads Only)

- Electricity Use, kWh/yr (line 113): 600,930
- Electricity Sum of Monthly Peak Demand, kW/yr (line 114): 1,849
- Natural Gas Use, MBtu/yr (line 125): 2,573

**Incremental Construction Cost Indicators**

- Incremental Construction Cost for LEED Project Energy Cost Reduction Requirement (line 155): 378,900

## 1. DESCRIPTION OF BUILDING OPERATION FACTORS

This section summarizes important parameters used in the simulation, including envelope thermal properties, internal loads and schedules, and HVAC system operation schedules and specifications. The analysis is based on Design Development drawings and specification (dated October 25, 2006) provided to Viridian.

### 1.1. Location, size and weather

The DHS New Family Intake Center is approximately 77,000 ft<sup>2</sup>. The proposed office building will be located in Bronx, NY

Weather file: New York, NY TMY2

### 1.2. Internal Load Patterns

Daily schedules of operation will vary with different space types.

In general, the basement and first floor will operate 24 hours a day. The rest of the building will operate between 9:00 am to 5:00 pm, Monday - Friday.

### 1.3. Building Occupancy Patterns

Heat gains resulting from people were modeled in the simulations. The number of occupants and the occupancy schedules assumed in the energy analysis are listed below by function. The number of occupants is not the maximum allowed by code; rather, it is the maximum assumed for energy use analyses.

Office, lounge and medical suite - 255 Btu/h sensible and 200 Btu/h latent

Conference - 245 Btu/h sensible and 155 Btu/h latent

Lobby, corridors and stair - 250 Btu/h sensible and 250 Btu/h latent

#### Basement, First and Second Floors

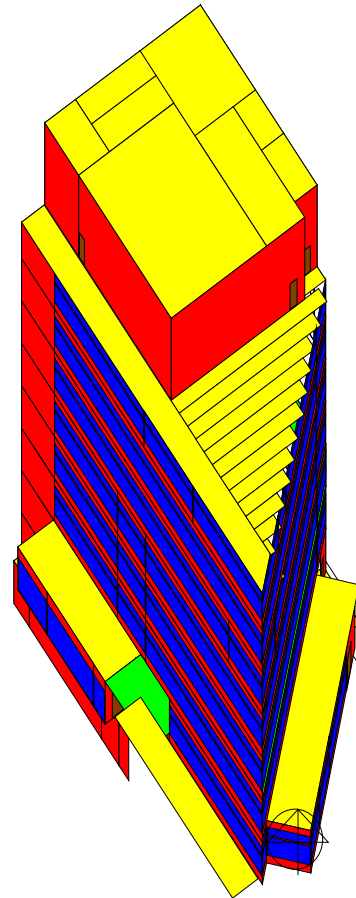
All Year

|          |                    |     |
|----------|--------------------|-----|
| Weekdays | 12:00 am - 8:00 am | 20% |
|          | 8:00 am - 9:00 am  | 70% |
|          | 9:00 am - 11:00 am | 90% |
|          | 11:00 am - 1:00 pm | 50% |
|          | 1:00 pm - 5:00 pm  | 90% |
|          | 5:00 pm - 8:00 pm  | 70% |
|          | 8:00 pm - 12:00 am | 20% |
| Weekends | 12:00 am - 8:00 am | 10% |
|          | 8:00 am - 9:00 am  | 35% |
|          | 9:00 am - 11:00 am | 45% |
|          | 11:00 am - 1:00 pm | 25% |
|          | 1:00 pm - 5:00 pm  | 45% |
|          | 5:00 pm - 6:00 pm  | 35% |
|          | 6:00 pm - 12:00 am | 10% |

#### Third - Seventh Floors

All Year

|          |                    |     |
|----------|--------------------|-----|
| Weekdays | 12:00 am - 8:00 am | 0%  |
|          | 8:00 am - 9:00 am  | 70% |
|          | 9:00 am - 11:00 am | 90% |
|          | 11:00 am - 1:00 pm | 50% |
|          | 1:00 pm - 5:00 pm  | 90% |



|          |                    |     |
|----------|--------------------|-----|
|          | 5:00 pm - 6:00 pm  | 70% |
|          | 6:00 pm - 12:00 am | 0%  |
| Weekends | All hours          | 0%  |

#### **1.4. Building Lighting Usage Patterns**

The lighting schedules follow the occupancy schedules, except for spaces with occupancy sensors.

#### **1.5. Building Equipment Usage Patterns**

Equipment schedules are based on occupancy schedules; 100% during occupied hours and 10% during unoccupied hours. Though occupancy varies throughout the day, equipment will remain fully ON during occupied hours.

##### *Equipment Power Densities*

Office - 1.25 W/ft<sup>2</sup>

Conference - 1.0 W/ft<sup>2</sup>

Medical Suite - 1.5 W/ft<sup>2</sup>

Pantry - 3.0 W/ft<sup>2</sup>

Lounge - 0.5 W/ft<sup>2</sup>

#### **1.6. Building Environmental Conditions**

Heating and cooling use are assumed to follow occupancy patterns. Heating or cooling is assumed to be ON seasonally during occupied hours.

#### **1.7. Heating Schedule**

Heating temperature is set for 72°F during the hours of operation with a 2°F setback (setpoint: 70°F) during unoccupied hours. Heating is on between January 1 and May 15 and September 15 through December 31.

#### **1.8. Cooling Schedule**

Cooling temperature is set for 75°F during the hours of operation with a 10°F setup (setpoint: 85°F) during unoccupied hours between April 1 - September 30.

## 2. DESIGN CASE: BUILDING ENVELOPE AND INTERNAL MATERIALS CONSTRUCTION

### 2.1. Exterior Wall Construction

#### Typical Wall Construction

- Terra cotta
- Air space
- 4" Semi-rigid mineral fiber
- Sheathing
- Metal studs
- 5/8" Gypsum wallboard
- U-factor = U-0.069

The fenestration is a curtain wall with double pane, low-e glass with thermally broken aluminum frames.

#### Viracon VE-1-2M (general, unless otherwise noted)

- Solar Heat Gain Coefficient (SHGC) = 0.38
- U-factor = U-0.29 (center of glass)
- U-factor = U-0.47 (unit)
- Visible Transmittance = 0.7

#### Solera L (approximately top 2' of window; bottom of windows on first floor)

- Shading Coefficient = 0.32
- Solar Heat Gain Coefficient (SHGC)= 0.33
- U-factor = 0.45 (center of glass)
- U-factor = U-0.47 (unit)
- Visible Transmittance = 0.35

### 2.2. Floor Construction (exposed to exterior conditions)

The underground floor construction is a 6" concrete slab with floor surface.

### 2.3. Roof/Ceiling Construction

#### Typical Roof Construction

- Membrane
- 6" Extruded polystyrene
- Concrete
- Metal deck
- U-factor = U-0.032

#### Green Roof Construction

- Soil
- Membrane
- 6" Extruded polystyrene
- Concrete
- Metal deck
- U-factor = U-0.032

### 2.4. Interior Construction

The interior wall construction is as follows:

- 5/8" Gypsum wallboard
- 3-1/2" Steel studs
- 5/8" Gypsum wallboard

The interior floor construction is a 6" concrete slab on metal deck with floor surface.

The ceiling is 5/8" gypsum wallboard or acoustic tile.

### 3. DESIGN CASE: MECHANICAL SYSTEMS

The following Design Case central plant and distribution systems were selected at the end of schematic design based on an analysis of three alternative approaches. These three alternatives were identified in the energy analysis plan that was developed and approved by the DDC AE Division at the beginning of design.

#### 3.1. Packaged, Water-cooled Air Conditioning Units (AC)

The three units serve all floors, cycling on and off as the cooling needs vary. The first floor and other adjacent areas are continually occupied, 7 days/week and 24 hrs/day. These areas need continuously outside air, while the others do not need outside air during nights, weekends and holidays. The outside air is delivered to all floors, at all times, since the three air handling units serve the entire building. To avoid unnecessarily delivering outside air to unoccupied spaces, the VAV boxes are shutoff type; they close completely during unoccupied hours for the areas where the building occupants leave at night and during weekends/holidays.

Condenser water is supplied to these units from roof-mounted cooling towers. Each unit consists of supply and return fans, evaporator coil, condenser coil, hot water coil, filter section, and mixing box. Hot water to these units is supplied from the heating plant. The following table describes the operating characteristics of these units:

|                                |  |
|--------------------------------|--|
| Heating air supply temperature | 98.8F (AC-1-2-3)                       |
| Cooling air supply temperature | 53.6°F (AC-1-2-3)                      |
| Economizer control             | Based on outdoor air enthalpy          |
| Outside air ratio              | 42% (AC-1-2-3)                         |
| Cooling Efficiency             | 15 hp / 80 ton; 0.839 kW/ton; EER 14.3 |
| Condenser type                 | Water-cooled                           |
| Fan motor control              | Variable speed                         |
| Energy recovery efficiency     | 50%                                    |
| Supply air-flow                | 20,000 CFM (AC-1-2-3)                  |
| Fan supply-static              | 3.98" H2O (AC-1-2-3)                   |
| Supply fan motor power         | 25 HP (AC-1-2-3)                       |
| Return fan motor power         | 10 HP (AC-1-2-3)                       |

The perimeter area has hot water supplied fin tube radiators and radiant ceiling panels to pick up the facade load.

#### 3.2. Cabinet Unit Heaters

The cabinet unit heaters are supplied with hot water from the heating plant. These are used for heating in the penthouse mechanical room and have the following operating characteristics:

|                                |         |
|--------------------------------|---------|
| Airflow                        | 750 CFM |
| Entering hot water temperature | 180°F   |
| Leaving hot water temperature  | 150°F   |

#### 3.3. Exhaust Fans

Exhaust fans are located in the toilets, locker rooms, trash rooms, and mechanical rooms. The following table lists the exhaust fans in the building:

| ID   | Service area            | Air flow | Motor HP |
|------|-------------------------|----------|----------|
| TX1  | Toilets                 | 1950     | 0.33     |
| TX2  | Toilets                 | 1200     | 0.25     |
| TX3  | Toilets/Janitors closet | 1750     | 0.75     |
| PX1  | Plumbing rooms          | 625      | 0.25     |
| LX1  | Lockers                 | 1185     | 0.25     |
| TRX1 | Trash room              | 550      | 0.25     |
| MX1  | Toilet                  | 500      | 0.25     |
| FX1  | Fuel oil room           | 440      | 0.04     |
| GMX1 | Gas meter room          | 148      | 0.05     |

### 3.4. Heating Plant

Three modular condensing boilers and associated hot water circulation pumps form the heating plant. These supply hot water to the AC's and to the perimeter fin tube radiators and ceiling radiant panels. The following are the characteristics of the plant:

|                               |                      |
|-------------------------------|----------------------|
| Boiler thermal efficiency     | 85%                  |
| Fuel                          | Natural gas          |
| Heating loop temperature drop | 30°F (180°F -150°F)  |
| Pumps                         | 4 pumps (1 stand-by) |
| Pump head                     | 40 ft                |
| Pump minimum flow             | 30%                  |
| Pump motor control            | VFD                  |
| Pump motor efficiency         | 88%                  |

### 3.5. Cooling Plant

Two cooling towers supply condenser water to the packaged AC's. There are two condenser pumps that are used to supply water to the water-cooled AC's. The cooling towers are located in the penthouse mechanical room and have the following operating characteristics:

|                           |                      |
|---------------------------|----------------------|
| Leaving water temperature | 85°F                 |
| Fan motor power           | 7.5 HP               |
| Pumps                     | 3 pumps (1 stand-by) |
| Condenser pump head       | 20 ft                |
| Motor power               | 3 HP                 |

### 3.6. Domestic Hot Water

The domestic hot water load is estimated have a peak flow rate of 16.7 gpm based of 913 people.

The domestic hot water boiler is a natural gas fired boiler with 80% thermal efficiency.

#### **4. DESIGN CASE: LIGHTING SYSTEMS**

The lighting power density for the entire building is approximately 1 W/ft<sup>2</sup>. The lighting power density is based on the power density calculations provided by the lighting engineers (12/18/2006).

Occupancy sensors are installed in enclosed offices.

Daylight dimming controls are installed in perimeter spaces, except for waiting rooms.



## 5. UTILITY RATES

The DHS New Family Intake Center will have electricity provided by NYPA and gas from Con-Ed utilities. The rates are provided by the Director of the NYC Mayor's Office of Environmental Coordination.

Rates may be updated at the end of Construction Documents and analysis may need to be updated accordingly.

### 5.1. Electricity Rate

|                         |           |
|-------------------------|-----------|
| Conventional NYPA rates |           |
| Demand Charge (per kW)  | \$ 21.82  |
| Energy Charge (per kWh) | \$ 0.0523 |

### 5.2. Gas Rate

|                         |         |
|-------------------------|---------|
| Energy Charge (per CCF) | \$ 1.58 |
|-------------------------|---------|

## 6. DESIGN CASE/ BASE CASE COMPARISON

### 6.1. Design Case

The Design Case is modeled with the energy efficiency of the building envelope construction, lighting, plug loads, and HVAC systems as described previously. The entire building is modeled with overhead air delivery.

### 6.2. AS99A: ASHRAE/IESNA Standard 90.1-1999/LEED NC 2.1

Same as Design Case, except the building is modeled to achieve compliance with ASHRAE/IESNA Standard 90.1-1999 - Chapter 11 - Energy Cost Budget Method.<sup>8</sup>

### 6.3. ASHG4: ASHRAE/IESNA Standard 90.1-2004 - Appendix G/LEED NC 2.2

Same as Design Case, except the building is modeled to achieve compliance with ASHRAE/IESNA Standard 90.1-2004 - Appendix G<sup>9</sup>.

| Design Case   | LEED NC 2.1 Base Case:<br>ASHRAE/IESNA Standard 90.1 -<br>1999                           | LEED NC 2.2 Base Case:<br>ASHRAE/IESNA Standard 90.1 -<br>2004 Appendix G                |
|---|--|--|
| Typical Wall Construction <ul style="list-style-type: none"> <li>• Terra cotta</li> <li>• Air space</li> <li>• 4" Semi-rigid mineral fiber</li> <li>• Sheathing</li> <li>• Metal studs</li> <li>• 5/8" Gypsum wallboard (two layers)</li> <li>• U-factor = U-0.069</li> </ul> | Wall Construction <ul style="list-style-type: none"> <li>• U-factor = U-0.123</li> </ul> | Wall Construction <ul style="list-style-type: none"> <li>• U-factor = U-0.123</li> </ul> |

<sup>8</sup> To fully comply with the Chapter 11 - Energy Cost Budget Method of ASHRAE/IESNA Standard 90.1-1999, the design must also meet the requirements of Section 11.1.2a. This section requires that the design comply with all mandatory provisions of ASHRAE/IESNA Standard 90.1-1999, Sections 5.2, 6.2, 7.2, 8.2, 9.2 and 10.2. Typically, this compliance is certified by the Architect (Section 5.2) and the HVAC Engineer (the remaining sections).

<sup>9</sup> To fully comply with Appendix G of ASHRAE/IESNA Standard 90.1-2004, the design must also meet the requirements of Section G1.2. This section requires that the design comply with all mandatory provisions of ASHRAE/IESNA Standard 90.1-2004, Sections 5.4, 6.4, 7.4, 8.4, 9.4 and 10.4. Typically, this compliance is certified by the Architect (Section 5.4) and the HVAC Engineer (the remaining sections).

| <b>Design Case</b>   | <b>LEED NC 2.1 Base Case:<br/>ASHRAE/IESNA Standard 90.1 -<br/>1999</b>  | <b>LEED NC 2.2 Base Case:<br/>ASHRAE/IESNA Standard 90.1 -<br/>2004 Appendix G</b>   |
|--|--|--|
| <p>Windows (27% fenestration to gross wall area)</p> <p>The fenestration is a curtain wall with double pane, low-e glass with thermally broken aluminum frames.</p> <p>Viracon VE-1-2M (general, unless otherwise noted)</p> <ul style="list-style-type: none"> <li>• Solar Heat Gain Coefficient (SHGC) = 0.38</li> <li>• U-factor = U-0.29 (center of glass)</li> <li>• U-factor = U-0.47 (unit)</li> </ul> <p>Solera L (approximately top 2' of window; bottom of windows on first floor)</p> <ul style="list-style-type: none"> <li>• Shading Coefficient = 0.32</li> <li>• Solar Heat Gain Coefficient (SHGC)= 0.33</li> <li>• U-factor = 0.45 (center of glass)</li> <li>• Visible Transmittance = 0.35</li> </ul> | <p>Windows (10-40%)</p> <ul style="list-style-type: none"> <li>• Solar Heat Gain Coefficient (SHGC) = 0.39 (east, south and west orientations); 0.49 (north orientation)</li> <li>• U-factor = <math>U_{\text{fixed}}-0.57</math> (unit)</li> </ul>  | <p>Windows (10-40%)</p> <ul style="list-style-type: none"> <li>• Solar Heat Gain Coefficient (SHGC) = 0.39</li> <li>• U-factor = <math>U_{\text{fixed}}-0.57</math> (unit)</li> </ul>  |
| <p>Typical Roof Construction</p> <ul style="list-style-type: none"> <li>• Membrane</li> <li>• 6" Extruded polystyrene</li> <li>• Concrete</li> <li>• Metal deck</li> <li>• U-factor = U-0.032</li> </ul> <p>Green Roof Construction</p> <ul style="list-style-type: none"> <li>• Soil</li> <li>• Membrane</li> <li>• 6" Extruded polystyrene</li> <li>• Concrete</li> <li>• Metal deck</li> <li>• U-factor = U-0.032</li> </ul>  | <p>Roof Construction</p> <ul style="list-style-type: none"> <li>• U-factor = U-0.063</li> </ul>  | <p>Roof Construction</p> <ul style="list-style-type: none"> <li>• U-factor = U-0.063</li> </ul>  |
| <p>Lighting</p> <ul style="list-style-type: none"> <li>• Approximately 1 W/ft<sup>2</sup> (for the entire building)</li> </ul>   | <p>Lighting</p> <ul style="list-style-type: none"> <li>• Office (Open) - 1.5 W/ft<sup>2</sup></li> <li>• Office (Enclosed) - 1.3 W/ft<sup>2</sup></li> <li>• Conference Room - 1.5 W/ft<sup>2</sup></li> <li>• Corridors - 0.7 W/ft<sup>2</sup></li> <li>• Lobby - 1.8 W/ft<sup>2</sup></li> <li>• Pantry - 2.2 W/ft<sup>2</sup></li> <li>• Mechanical Room - 1.3 W/ft<sup>2</sup></li> <li>• Locker - 0.8 W/ft<sup>2</sup></li> <li>• Lounge - 1.4 W/ft<sup>2</sup></li> <li>• Waiting Room - 1.6 W/ft<sup>2</sup></li> <li>• Storage - 1.1 W/ft<sup>2</sup></li> </ul> | <p>Lighting</p> <ul style="list-style-type: none"> <li>• Office (Open) - 1.1 W/ft<sup>2</sup></li> <li>• Office (Enclosed) - 1.1 W/ft<sup>2</sup></li> <li>• Conference Room - 1.3 W/ft<sup>2</sup></li> <li>• Corridors - 0.5 W/ft<sup>2</sup></li> <li>• Lobby - 1.3 W/ft<sup>2</sup></li> <li>• Pantry - 1.2 W/ft<sup>2</sup></li> <li>• Mechanical Room - 1.5 W/ft<sup>2</sup></li> <li>• Locker - 0.6 W/ft<sup>2</sup></li> <li>• Lounge - 1.2 W/ft<sup>2</sup></li> <li>• Waiting Room - 0.9 W/ft<sup>2</sup></li> <li>• Storage - 0.8 W/ft<sup>2</sup></li> </ul> |

| <b>Design Case</b>  | <b>LEED NC 2.1 Base Case:<br/>ASHRAE/IESNA Standard 90.1 -<br/>1999</b>   | <b>LEED NC 2.2 Base Case:<br/>ASHRAE/IESNA Standard 90.1 -<br/>2004 Appendix G</b>  |
|---|---|---|
| Daylight dimming controls are installed in perimeter spaces, except for waiting rooms   | No daylight dimming controls  | No daylight dimming controls  |
| Occupancy sensors are installed in enclosed offices   | No occupancy sensors  | No occupancy sensors  |
| CO <sub>2</sub> sensors for outside air modulation  | No CO <sub>2</sub> sensors  | No CO <sub>2</sub> sensors  |
| Packaged water-cooled VAV air handling units (0.869 kW/ton)<br><br>Condenser water supplied from cooling tower  | Variable air volume air handling unit with chilled water supplied from chiller (COP-4.9)  | Variable air volume air handling unit with chilled water supplied from chiller (COP-4.9)  |
| Cooling supply temperature - 53.6°F   | Cooling supply temperature - 55°F   | Cooling supply temperature - 55°F   |
| Economizers <ul style="list-style-type: none"> <li>• Enthalpy</li> </ul>  | Economizers <ul style="list-style-type: none"> <li>• Outdoor air temperature</li> </ul>   | Economizers <ul style="list-style-type: none"> <li>• Outdoor air temperature</li> </ul>   |
| Heat recovery (including sensible) <ul style="list-style-type: none"> <li>• 50% efficiency</li> </ul>   | No heat recovery  | No heat recovery  |
| Air handling units fan static's<br>Supply Static 3.98" H2O<br>Return Static 2.0" H2O  | Air handling units fan static's<br>Supply Static 2.72" H2O<br>Return Static 1.46" H2O   | Air handling units fan static's<br>Supply Static 2.99" H2O<br>Return Static 1.46" H2O   |
| Boilers <ul style="list-style-type: none"> <li>• 85% efficiency</li> <li>• Modulating flame</li> </ul>  | Boilers <ul style="list-style-type: none"> <li>• 80% efficiency</li> <li>• On/off controls</li> </ul>   | Boilers <ul style="list-style-type: none"> <li>• 80% efficiency</li> <li>• On/off controls</li> </ul>   |
| Hot water circulation pumps <ul style="list-style-type: none"> <li>• Minimum flow - 30%</li> <li>• 30°F temperature drop</li> <li>• 40 ft. head</li> </ul>  | Hot water circulation pumps <ul style="list-style-type: none"> <li>• Constant flow</li> <li>• 50°F temperature drop</li> <li>• 40 ft. head</li> </ul> | Hot water circulation pumps <ul style="list-style-type: none"> <li>• Constant flow</li> <li>• 50°F temperature drop</li> <li>• 69.9 ft. head</li> </ul> |
| Cooling towers <ul style="list-style-type: none"> <li>• VFD with 30% minimum speed</li> <li>• Tower set point - 85°F</li> </ul>   | Cooling towers <ul style="list-style-type: none"> <li>• Two speed control with 67% minimum speed</li> <li>• Tower set point - 70°F</li> </ul>         | Cooling towers <ul style="list-style-type: none"> <li>• Two speed control with 67% minimum speed</li> <li>• Tower set point - 70°F</li> </ul>           |
| Premium efficiency motors - see section 6.14 <ul style="list-style-type: none"> <li>• AHU supply and return fans (AC-PH-1 to AC-PH-3)</li> <li>• Circulation pumps (CHW-1 to CHW-3 and HWP-1 to HWP-4)</li> </ul> | Standard efficiency motors  | Standard efficiency motors  |

## **7. DETAILED DESCRIPTION OF ENERGY EFFICIENCY MEASURES**

### **7.1. AlxEW: ASHRAE/IESNA Standard 90.1 wall assembly (R-8.13)**

Same as Design Case, except the wall construction assembly is U-0.123.

### **7.2. AlxGL: ASHRAE/IESNA Standard 90.1 glass (SHGC=0.39 and U-0.57)**

Same as Design Case, except the glazing solar heat gain coefficient is 0.39 (east, south and west orientations) and 0.49 (north orientation) and the U-factor is U-0.57 (unit)

### **7.3. AlxRF: ASHRAE/IESNA Standard 90.1 roof assembly (R-15.87)**

Same as Design Case, except roof construction assembly is U-0.063.

### **7.4. AlxLT: ASHRAE/IESNA Standard 90.1-2004 lighting power densities**

Same as Design Case, except the lighting power densities are as follows,

- Office (Open) - 1.1 W/ft<sup>2</sup>
- Office (Enclosed) - 1.1 W/ft<sup>2</sup>
- Conference Room - 1.3 W/ft<sup>2</sup>
- Corridors - 0.5 W/ft<sup>2</sup>
- Lobby - 1.3 W/ft<sup>2</sup>
- Pantry - 1.2 W/ft<sup>2</sup>
- Mechanical Room - 1.5 W/ft<sup>2</sup>
- Locker - 0.6 W/ft<sup>2</sup>
- Lounge - 1.2 W/ft<sup>2</sup>
- Waiting Room - 0.9 W/ft<sup>2</sup>
- Storage - 0.8 W/ft<sup>2</sup>

### **7.5. AlxL2: ASHRAE/IESNA Standard 90.1-1999 lighting power densities**

Same as Design Case, except the lighting power densities are as follows,

- Office (Open) - 1.5 W/ft<sup>2</sup>
- Office (Enclosed) - 1.3 W/ft<sup>2</sup>
- Conference Room - 1.5 W/ft<sup>2</sup>
- Corridors - 0.7 W/ft<sup>2</sup>
- Lobby - 1.8 W/ft<sup>2</sup>
- Pantry - 2.2 W/ft<sup>2</sup>
- Mechanical Room - 1.3 W/ft<sup>2</sup>
- Locker - 0.8 W/ft<sup>2</sup>
- Lounge - 1.4 W/ft<sup>2</sup>
- Waiting Room - 1.6 W/ft<sup>2</sup>
- Storage - 1.1 W/ft<sup>2</sup>

### **7.6. AlxDL: No daylight dimming controls**

Same as Design Case, except daylight dimming controls are not installed in any perimeter spaces.

### **7.7. AlxOC: No occupancy sensors**

Same as Design Case, except occupancy sensors are not installed in enclosed offices (approximately 42 sensors).

### **7.8. Als01: No CO<sub>2</sub> sensors for outside air modulation**

Same as Design Case, except the CO<sub>2</sub> sensors for outside air modulation are not installed.

### **7.9. Als03: Economizers based on outside air temperature**

Same as Design Case, except the economizers based on outside air temperature, instead of enthalpy.

### **7.10. Als04: No heat recovery system with glycol loop (50% efficiency)**

Same as Design Case, except the heat recovery system with glycol loop (50% efficiency) is not installed.

**7.11. Als05: No premium efficiency motors**

Same as Design Case, except the 13 motors of AHU supply and return fans (AC-PH-1 to AC-PH-3) and circulation pumps (CHW-1 to CHW-3 and HWP-1 to HWP-4) are standard efficiency motors.

| <b>Horsepower</b> | <b>Standard efficiency<br/>motors</b> | <b>Premium efficiency<br/>motors</b> |
|-------------------|---------------------------------------|--------------------------------------|
| 1                 | 82.5%                                 | 85.5%                                |
| 1.5               | 84.0%                                 | 86.5%                                |
| 2                 | 84.0%                                 | 86.5%                                |
| 3                 | 86.5%                                 | 89.5%                                |
| 5                 | 87.5%                                 | 89.5%                                |
| 7.5               | 88.5%                                 | 91.0%                                |
| 10                | 89.5%                                 | 91.7%                                |
| 15                | 91.0%                                 | 93.0%                                |
| 20                | 91.0%                                 | 93.0%                                |
| 25                | 91.7%                                 | 93.6%                                |
| 30                | 92.4%                                 | 94.1%                                |
| 40                | 93.0%                                 | 94.1%                                |
| 50                | 93.0%                                 | 94.5%                                |
| 60                | 93.6%                                 | 95.0%                                |
| 75                | 94.1%                                 | 95.0%                                |
| 100               | 94.1%                                 | 95.4%                                |
| 125               | 94.5%                                 | 95.4%                                |
| 150               | 95.0%                                 | 95.8%                                |
| 200               | 95.0%                                 | 95.8%                                |

**7.12. Als06: No condensing boilers**

Same as Design Case, except code-compliant boilers (at 80% efficiency, on/off controls) are installed, instead of condensing boilers operating at 85% efficiency (modulating flame).

**7.13. Als07: No VFD on hot water circulation pumps**

Same as Design Case, except no VFD on four hot water circulation pumps (HWP-1 to HWP-4).

**7.14. AltCB: Condensing boilers (at 93% efficiency)**

Same as Design Case, except the condensing boilers operate at 93% efficiency (modulating flame). The increase in efficiency is due to the domestic hot water preheat system which will allow the hot water return temperature to be at a lower temperature.

**7.15. AIOC2: Occupancy sensors in conference rooms**

Same as Design Case, except occupancy sensors are installed in conference rooms, toilets, and janitor closets (approximately 50 sensors).

The incremental cost for the occupancy sensors is \$10,000 (\$200/sensor x 50 sensors) and based on Viridian past experiences.

**7.16. AS99B: ASHRAE/IESNA Standard 90.1-1999 (for Als12 alternate)**

Same as Design Case, except the Als12 alternate is modeled to achieve compliance with ASHRAE/IESNA Standard 90.1-1999 - Chapter 11 - Energy Cost Budget Method.

## **Appendix A: DOE-2.1E Simulation Summaries**

SUMMARY REPORTS OF ENERGY USE AND FUEL BILL

NAME OF BUILDING : BRONX DHS NEW FAMILY INTAKE CENTER, BRONX, NY  
 MODEL DESCRIPTION : DESIGN CASE:

REPORT-1: ANNUAL ENERGY USE STATISTICS \*\*\*\*\*

| FUEL TYPE         | HEATING EQUIP. | COOLING EQUIP. | COOLING TWR/CNDSR | FANS  | PUMPS | DOMESTIC WATER | LIGHTING | MISC. EQUIP. | VERTICAL TRANS. | TOTAL FUEL USE |
|-------------------|----------------|----------------|-------------------|-------|-------|----------------|----------|--------------|-----------------|----------------|
| ELECTRICITY (KWH) | 4048           | 157753         | 0                 | 60693 | 47489 | 0              | 330946   | 230450       | 7300            | 838680         |
| NATURAL GAS (CCF) | 16546          | 0              | 0                 | 0     | 0     | 8509           | 0        | 0            | 0               | 25054          |

REPORT-2: MONTHLY AND ANNUAL FUEL BILLS \*\*\*\*\*

| MONTH | ELECTRIC KWH | ELECTRIC KW | ELECTRIC BILL (\$) | NAT. GAS CCF | NAT. GAS BILL (\$) | FUEL OIL GALLONS | FUEL OIL BILL (\$) | STEAM MBTU | STEAM MBTU/HR | STEAM BILL (\$) | TOTAL FUEL BILL (\$) |
|-------|--------------|-------------|--------------------|--------------|--------------------|------------------|--------------------|------------|---------------|-----------------|----------------------|
| JAN   | 52941        | 127         | 5545               | 4662         | 7378               | 0                | 0                  | 0          | 0             | 0               | 12923                |
| FEB   | 48892        | 176         | 6402               | 4765         | 7540               | 0                | 0                  | 0          | 0             | 0               | 13942                |
| MAR   | 54407        | 120         | 5468               | 3705         | 5866               | 0                | 0                  | 0          | 0             | 0               | 11334                |
| APR   | 51851        | 137         | 5705               | 1420         | 2256               | 0                | 0                  | 0          | 0             | 0               | 7961                 |
| MAY   | 81643        | 242         | 9550               | 873          | 1391               | 0                | 0                  | 0          | 0             | 0               | 10941                |
| JUN   | 90815        | 314         | 11613              | 699          | 1116               | 0                | 0                  | 0          | 0             | 0               | 12729                |
| JUL   | 100106       | 340         | 12664              | 637          | 1019               | 0                | 0                  | 0          | 0             | 0               | 13683                |
| AUG   | 99858        | 336         | 12571              | 644          | 1030               | 0                | 0                  | 0          | 0             | 0               | 13601                |
| SEP   | 87371        | 289         | 10893              | 752          | 1200               | 0                | 0                  | 0          | 0             | 0               | 12093                |
| OCT   | 65897        | 246         | 8826               | 1068         | 1700               | 0                | 0                  | 0          | 0             | 0               | 10526                |
| NOV   | 51361        | 127         | 5459               | 2509         | 3976               | 0                | 0                  | 0          | 0             | 0               | 9435                 |
| DEC   | 53526        | 127         | 5579               | 3316         | 5251               | 0                | 0                  | 0          | 0             | 0               | 10830                |
| TOTAL | 838680       | 340         | 100276             | 25054        | 39726              | 0                | 0                  | 0          | 0             | 0               | 140002               |



SUMMARY REPORTS OF ENERGY USE AND FUEL BILL

NAME OF BUILDING : BRONX DHS NEW FAMILY INTAKE CENTER, BRONX, NY  
 MODEL DESCRIPTION : ASHRAE 90.1 Case:1999 FOR DESIGN CASE

REPORT-1: ANNUAL ENERGY USE STATISTICS \*\*\*\*\*

| FUEL TYPE         | HEATING EQUIP. | COOLING EQUIP. | COOLING TWR/CNDSR | FANS   | PUMPS | DOMESTIC WATER | LIGHTING | MISC. EQUIP. | VERTICAL TRANS. | TOTAL FUEL USE |
|-------------------|----------------|----------------|-------------------|--------|-------|----------------|----------|--------------|-----------------|----------------|
| ELECTRICITY (KWH) | 5761           | 141354         | 66410             | 106865 | 25275 | 0              | 459988   | 230450       | 7300            | 1043404        |
| NATURAL GAS (CCF) | 33015          | 0              | 0                 | 0      | 0     | 8509           | 0        | 0            | 0               | 41524          |

REPORT-2: MONTHLY AND ANNUAL FUEL BILLS \*\*\*\*\*

| MONTH | ELECTRIC KWH | ELECTRIC KW | ELECTRIC BILL (\$) | NAT. GAS CCF | NAT. GAS BILL (\$) | FUEL OIL GALLONS | FUEL OIL BILL (\$) | STEAM MBTU | STEAM MBTU/HR | STEAM BILL (\$) | TOTAL FUEL BILL (\$) |
|-------|--------------|-------------|--------------------|--------------|--------------------|------------------|--------------------|------------|---------------|-----------------|----------------------|
| JAN   | 66792        | 150         | 6786               | 7513         | 11882              | 0                | 0                  | 0          | 0             | 0               | 18668                |
| FEB   | 61263        | 152         | 6526               | 7117         | 11258              | 0                | 0                  | 0          | 0             | 0               | 17784                |
| MAR   | 69331        | 150         | 6910               | 5929         | 9381               | 0                | 0                  | 0          | 0             | 0               | 16291                |
| APR   | 66814        | 193         | 7716               | 2463         | 3904               | 0                | 0                  | 0          | 0             | 0               | 11620                |
| MAY   | 93206        | 306         | 11560              | 1261         | 2004               | 0                | 0                  | 0          | 0             | 0               | 13564                |
| JUN   | 111688       | 360         | 13699              | 699          | 1116               | 0                | 0                  | 0          | 0             | 0               | 14815                |
| JUL   | 128179       | 373         | 14845              | 637          | 1019               | 0                | 0                  | 0          | 0             | 0               | 15864                |
| AUG   | 127249       | 373         | 14810              | 644          | 1030               | 0                | 0                  | 0          | 0             | 0               | 15840                |
| SEP   | 107078       | 348         | 13197              | 1096         | 1744               | 0                | 0                  | 0          | 0             | 0               | 14941                |
| OCT   | 79246        | 306         | 10839              | 1949         | 3093               | 0                | 0                  | 0          | 0             | 0               | 13932                |
| NOV   | 64972        | 150         | 6671               | 5177         | 8191               | 0                | 0                  | 0          | 0             | 0               | 14862                |
| DEC   | 67618        | 150         | 6820               | 7032         | 11123              | 0                | 0                  | 0          | 0             | 0               | 17943                |
| TOTAL | 1043404      | 373         | 120379             | 41524        | 65747              | 0                | 0                  | 0          | 0             | 0               | 186126               |

SUMMARY REPORTS OF ENERGY USE AND FUEL BILL

NAME OF BUILDING : BRONX DHS NEW FAMILY INTAKE CENTER, BRONX, NY  
 MODEL DESCRIPTION : ALXEW: ASHRAE WALL ASSEMBLY

REPORT-1: ANNUAL ENERGY USE STATISTICS \*\*\*\*\*

| FUEL TYPE         | HEATING EQUIP. | COOLING EQUIP. | COOLING TWR/CNDSR | FANS  | PUMPS | DOMESTIC WATER | LIGHTING | MISC. EQUIP. | VERTICAL TRANS. | TOTAL FUEL USE |
|-------------------|----------------|----------------|-------------------|-------|-------|----------------|----------|--------------|-----------------|----------------|
| ELECTRICITY (KWH) | 4895           | 159270         | 0                 | 61381 | 48748 | 0              | 330946   | 230450       | 7300            | 842991         |
| NATURAL GAS (CCF) | 18651          | 0              | 0                 | 0     | 0     | 8509           | 0        | 0            | 0               | 27160          |

REPORT-2: MONTHLY AND ANNUAL FUEL BILLS \*\*\*\*\*

| MONTH | ELECTRIC KWH | ELECTRIC KW | ELECTRIC BILL (\$) | NAT. GAS CCF | NAT. GAS BILL (\$) | FUEL OIL GALLONS | FUEL OIL BILL (\$) | STEAM MBTU | STEAM MBTU/HR | STEAM BILL (\$) | TOTAL FUEL BILL (\$) |
|-------|--------------|-------------|--------------------|--------------|--------------------|------------------|--------------------|------------|---------------|-----------------|----------------------|
| JAN   | 53278        | 127         | 5575               | 5082         | 8042               | 0                | 0                  | 0          | 0             | 0               | 13617                |
| FEB   | 49191        | 190         | 6739               | 5155         | 8157               | 0                | 0                  | 0          | 0             | 0               | 14896                |
| MAR   | 54708        | 120         | 5497               | 4028         | 6376               | 0                | 0                  | 0          | 0             | 0               | 11873                |
| APR   | 52045        | 137         | 5711               | 1565         | 2485               | 0                | 0                  | 0          | 0             | 0               | 8196                 |
| MAY   | 81768        | 243         | 9591               | 903          | 1440               | 0                | 0                  | 0          | 0             | 0               | 11031                |
| JUN   | 91220        | 323         | 11832              | 699          | 1116               | 0                | 0                  | 0          | 0             | 0               | 12948                |
| JUL   | 100989       | 349         | 12916              | 637          | 1019               | 0                | 0                  | 0          | 0             | 0               | 13935                |
| AUG   | 100587       | 344         | 12773              | 644          | 1030               | 0                | 0                  | 0          | 0             | 0               | 13803                |
| SEP   | 87609        | 293         | 10985              | 768          | 1226               | 0                | 0                  | 0          | 0             | 0               | 12211                |
| OCT   | 66119        | 248         | 8879               | 1163         | 1850               | 0                | 0                  | 0          | 0             | 0               | 10729                |
| NOV   | 51633        | 127         | 5483               | 2811         | 4454               | 0                | 0                  | 0          | 0             | 0               | 9937                 |
| DEC   | 53838        | 128         | 5609               | 3699         | 5857               | 0                | 0                  | 0          | 0             | 0               | 11466                |
| TOTAL | 842991       | 349         | 101590             | 27160        | 43052              | 0                | 0                  | 0          | 0             | 0               | 144642               |

SUMMARY REPORTS OF ENERGY USE AND FUEL BILL

NAME OF BUILDING : BRONX DHS NEW FAMILY INTAKE CENTER, BRONX, NY  
 MODEL DESCRIPTION : AlxGL: ASHRAE GLAZING PERFORMANCE

REPORT-1: ANNUAL ENERGY USE STATISTICS \*\*\*\*\*

| FUEL TYPE         | HEATING EQUIP. | COOLING EQUIP. | COOLING TWR/CNDSR | FANS  | PUMPS | DOMESTIC WATER | LIGHTING | MISC. EQUIP. | VERTICAL TRANS. | TOTAL FUEL USE |
|-------------------|----------------|----------------|-------------------|-------|-------|----------------|----------|--------------|-----------------|----------------|
| ELECTRICITY (KWH) | 4300           | 162731         | 0                 | 63441 | 48696 | 0              | 330315   | 230450       | 7300            | 847233         |
| NATURAL GAS (CCF) | 17315          | 0              | 0                 | 0     | 0     | 8509           | 0        | 0            | 0               | 25823          |

REPORT-2: MONTHLY AND ANNUAL FUEL BILLS \*\*\*\*\*

| MONTH | ELECTRIC KWH | ELECTRIC KW | ELECTRIC BILL (\$) | NAT. GAS CCF | NAT. GAS BILL (\$) | FUEL OIL GALLONS | FUEL OIL BILL (\$) | STEAM MBTU | STEAM MBTU/HR | STEAM BILL (\$) | TOTAL FUEL BILL (\$) |
|-------|--------------|-------------|--------------------|--------------|--------------------|------------------|--------------------|------------|---------------|-----------------|----------------------|
| JAN   | 53026        | 127         | 5552               | 4845         | 7668               | 0                | 0                  | 0          | 0             | 0               | 13220                |
| FEB   | 48987        | 184         | 6577               | 4918         | 7783               | 0                | 0                  | 0          | 0             | 0               | 14360                |
| MAR   | 54494        | 120         | 5473               | 3809         | 6031               | 0                | 0                  | 0          | 0             | 0               | 11504                |
| APR   | 51965        | 141         | 5802               | 1445         | 2296               | 0                | 0                  | 0          | 0             | 0               | 8098                 |
| MAY   | 82587        | 251         | 9803               | 878          | 1400               | 0                | 0                  | 0          | 0             | 0               | 11203                |
| JUN   | 92306        | 327         | 11975              | 699          | 1116               | 0                | 0                  | 0          | 0             | 0               | 13091                |
| JUL   | 102101       | 355         | 13086              | 637          | 1019               | 0                | 0                  | 0          | 0             | 0               | 14105                |
| AUG   | 101795       | 351         | 12996              | 644          | 1030               | 0                | 0                  | 0          | 0             | 0               | 14026                |
| SEP   | 88627        | 301         | 11216              | 756          | 1207               | 0                | 0                  | 0          | 0             | 0               | 12423                |
| OCT   | 66302        | 252         | 8984               | 1097         | 1746               | 0                | 0                  | 0          | 0             | 0               | 10730                |
| NOV   | 51428        | 127         | 5469               | 2618         | 4149               | 0                | 0                  | 0          | 0             | 0               | 9618                 |
| DEC   | 53608        | 127         | 5590               | 3470         | 5494               | 0                | 0                  | 0          | 0             | 0               | 11084                |
| TOTAL | 847233       | 355         | 102522             | 25823        | 40941              | 0                | 0                  | 0          | 0             | 0               | 143463               |

SUMMARY REPORTS OF ENERGY USE AND FUEL BILL

NAME OF BUILDING : BRONX DHS NEW FAMILY INTAKE CENTER, BRONX, NY  
 MODEL DESCRIPTION : ALXRF: ASHRAE ROOF ASSEMBLY

REPORT-1: ANNUAL ENERGY USE STATISTICS \*\*\*\*\*

| FUEL TYPE         | HEATING EQUIP. | COOLING EQUIP. | COOLING TWR/CNDSR | FANS  | PUMPS | DOMESTIC WATER | LIGHTING | MISC. EQUIP. | VERTICAL TRANS. | TOTAL FUEL USE |
|-------------------|----------------|----------------|-------------------|-------|-------|----------------|----------|--------------|-----------------|----------------|
| ELECTRICITY (KWH) | 4118           | 158096         | 0                 | 60878 | 47539 | 0              | 330946   | 230450       | 7300            | 839328         |
| NATURAL GAS (CCF) | 16931          | 0              | 0                 | 0     | 0     | 8509           | 0        | 0            | 0               | 25439          |

REPORT-2: MONTHLY AND ANNUAL FUEL BILLS \*\*\*\*\*

| MONTH | ELECTRIC KWH | ELECTRIC KW | ELECTRIC BILL (\$) | NAT. GAS CCF | NAT. GAS BILL (\$) | FUEL OIL GALLONS | FUEL OIL BILL (\$) | STEAM MBTU | STEAM MBTU/HR | STEAM BILL (\$) | TOTAL FUEL BILL (\$) |
|-------|--------------|-------------|--------------------|--------------|--------------------|------------------|--------------------|------------|---------------|-----------------|----------------------|
| JAN   | 52961        | 127         | 5546               | 4742         | 7505               | 0                | 0                  | 0          | 0             | 0               | 13051                |
| FEB   | 48920        | 176         | 6404               | 4841         | 7661               | 0                | 0                  | 0          | 0             | 0               | 14065                |
| MAR   | 54426        | 120         | 5470               | 3763         | 5958               | 0                | 0                  | 0          | 0             | 0               | 11428                |
| APR   | 51866        | 136         | 5699               | 1440         | 2288               | 0                | 0                  | 0          | 0             | 0               | 7987                 |
| MAY   | 81652        | 242         | 9561               | 875          | 1395               | 0                | 0                  | 0          | 0             | 0               | 10956                |
| JUN   | 90938        | 315         | 11641              | 699          | 1116               | 0                | 0                  | 0          | 0             | 0               | 12757                |
| JUL   | 100292       | 341         | 12700              | 637          | 1019               | 0                | 0                  | 0          | 0             | 0               | 13719                |
| AUG   | 100024       | 337         | 12601              | 644          | 1030               | 0                | 0                  | 0          | 0             | 0               | 13631                |
| SEP   | 87406        | 290         | 10905              | 752          | 1201               | 0                | 0                  | 0          | 0             | 0               | 12106                |
| OCT   | 65908        | 246         | 8824               | 1082         | 1722               | 0                | 0                  | 0          | 0             | 0               | 10546                |
| NOV   | 51379        | 127         | 5461               | 2566         | 4066               | 0                | 0                  | 0          | 0             | 0               | 9527                 |
| DEC   | 53547        | 127         | 5581               | 3392         | 5372               | 0                | 0                  | 0          | 0             | 0               | 10953                |
| TOTAL | 839328       | 341         | 100393             | 25439        | 40334              | 0                | 0                  | 0          | 0             | 0               | 140727               |

SUMMARY REPORTS OF ENERGY USE AND FUEL BILL

NAME OF BUILDING : BRONX DHS NEW FAMILY INTAKE CENTER, BRONX, NY  
 MODEL DESCRIPTION : AlxLT: ASHRAE 90.1-2004 LPD

REPORT-1: ANNUAL ENERGY USE STATISTICS \*\*\*\*\*

| FUEL TYPE         | HEATING EQUIP. | COOLING EQUIP. | COOLING TWR/CNDSR | FANS  | PUMPS | DOMESTIC WATER | LIGHTING | MISC. EQUIP. | VERTICAL TRANS. | TOTAL FUEL USE |
|-------------------|----------------|----------------|-------------------|-------|-------|----------------|----------|--------------|-----------------|----------------|
| ELECTRICITY (KWH) | 4299           | 154005         | 0                 | 58430 | 47401 | 0              | 282652   | 230450       | 7300            | 784537         |
| NATURAL GAS (CCF) | 17471          | 0              | 0                 | 0     | 0     | 8509           | 0        | 0            | 0               | 25980          |

REPORT-2: MONTHLY AND ANNUAL FUEL BILLS \*\*\*\*\*

| MONTH | ELECTRIC KWH | ELECTRIC KW | ELECTRIC BILL (\$) | NAT. GAS CCF | NAT. GAS BILL (\$) | FUEL OIL GALLONS | FUEL OIL BILL (\$) | STEAM MBTU | STEAM MBTU/HR | STEAM BILL (\$) | TOTAL FUEL BILL (\$) |
|-------|--------------|-------------|--------------------|--------------|--------------------|------------------|--------------------|------------|---------------|-----------------|----------------------|
| JAN   | 48887        | 120         | 5182               | 4812         | 7615               | 0                | 0                  | 0          | 0             | 0               | 12797                |
| FEB   | 45231        | 171         | 6112               | 4907         | 7765               | 0                | 0                  | 0          | 0             | 0               | 13877                |
| MAR   | 50315        | 113         | 5098               | 3848         | 6092               | 0                | 0                  | 0          | 0             | 0               | 11190                |
| APR   | 47883        | 129         | 5321               | 1512         | 2402               | 0                | 0                  | 0          | 0             | 0               | 7723                 |
| MAY   | 77063        | 229         | 9046               | 903          | 1439               | 0                | 0                  | 0          | 0             | 0               | 10485                |
| JUN   | 85699        | 300         | 11044              | 699          | 1116               | 0                | 0                  | 0          | 0             | 0               | 12160                |
| JUL   | 94325        | 327         | 12087              | 637          | 1019               | 0                | 0                  | 0          | 0             | 0               | 13106                |
| AUG   | 94194        | 323         | 11983              | 644          | 1030               | 0                | 0                  | 0          | 0             | 0               | 13013                |
| SEP   | 82425        | 274         | 10308              | 773          | 1234               | 0                | 0                  | 0          | 0             | 0               | 11542                |
| OCT   | 61634        | 235         | 8363               | 1136         | 1808               | 0                | 0                  | 0          | 0             | 0               | 10171                |
| NOV   | 47432        | 120         | 5104               | 2645         | 4192               | 0                | 0                  | 0          | 0             | 0               | 9296                 |
| DEC   | 49454        | 120         | 5216               | 3457         | 5475               | 0                | 0                  | 0          | 0             | 0               | 10691                |
| TOTAL | 784537       | 327         | 94863              | 25980        | 41188              | 0                | 0                  | 0          | 0             | 0               | 136051               |

SUMMARY REPORTS OF ENERGY USE AND FUEL BILL

NAME OF BUILDING : BRONX DHS NEW FAMILY INTAKE CENTER, BRONX, NY  
 MODEL DESCRIPTION : AlxDL: NO DAYLIGHT DIMMING CONTROLS

REPORT-1: ANNUAL ENERGY USE STATISTICS \*\*\*\*\*

| FUEL TYPE         | HEATING EQUIP. | COOLING EQUIP. | COOLING TWR/CNDSR | FANS  | PUMPS | DOMESTIC WATER | LIGHTING | MISC. EQUIP. | VERTICAL TRANS. | TOTAL FUEL USE |
|-------------------|----------------|----------------|-------------------|-------|-------|----------------|----------|--------------|-----------------|----------------|
| ELECTRICITY (KWH) | 4039           | 161139         | 0                 | 62991 | 47961 | 0              | 363036   | 230450       | 7300            | 876916         |
| NATURAL GAS (CCF) | 16081          | 0              | 0                 | 0     | 0     | 8509           | 0        | 0            | 0               | 24590          |

REPORT-2: MONTHLY AND ANNUAL FUEL BILLS \*\*\*\*\*

| MONTH | ELECTRIC KWH | ELECTRIC KW | ELECTRIC BILL (\$) | NAT. GAS CCF | NAT. GAS BILL (\$) | FUEL OIL GALLONS | FUEL OIL BILL (\$) | STEAM MBTU | STEAM MBTU/HR | STEAM BILL (\$) | TOTAL FUEL BILL (\$) |
|-------|--------------|-------------|--------------------|--------------|--------------------|------------------|--------------------|------------|---------------|-----------------|----------------------|
| JAN   | 55152        | 129         | 5709               | 4593         | 7269               | 0                | 0                  | 0          | 0             | 0               | 12978                |
| FEB   | 51201        | 189         | 6805               | 4696         | 7432               | 0                | 0                  | 0          | 0             | 0               | 14237                |
| MAR   | 57367        | 127         | 5791               | 3612         | 5719               | 0                | 0                  | 0          | 0             | 0               | 11510                |
| APR   | 54887        | 152         | 6204               | 1367         | 2173               | 0                | 0                  | 0          | 0             | 0               | 8377                 |
| MAY   | 85051        | 261         | 10142              | 863          | 1376               | 0                | 0                  | 0          | 0             | 0               | 11518                |
| JUN   | 95066        | 336         | 12303              | 699          | 1116               | 0                | 0                  | 0          | 0             | 0               | 13419                |
| JUL   | 104681       | 360         | 13330              | 637          | 1019               | 0                | 0                  | 0          | 0             | 0               | 14349                |
| AUG   | 104368       | 356         | 13237              | 644          | 1030               | 0                | 0                  | 0          | 0             | 0               | 14267                |
| SEP   | 91156        | 311         | 11554              | 748          | 1194               | 0                | 0                  | 0          | 0             | 0               | 12748                |
| OCT   | 68736        | 266         | 9411               | 1038         | 1652               | 0                | 0                  | 0          | 0             | 0               | 11063                |
| NOV   | 53537        | 127         | 5586               | 2439         | 3867               | 0                | 0                  | 0          | 0             | 0               | 9453                 |
| DEC   | 55702        | 127         | 5702               | 3248         | 5144               | 0                | 0                  | 0          | 0             | 0               | 10846                |
| TOTAL | 876916       | 360         | 105774             | 24590        | 38991              | 0                | 0                  | 0          | 0             | 0               | 144765               |

SUMMARY REPORTS OF ENERGY USE AND FUEL BILL

NAME OF BUILDING : BRONX DHS NEW FAMILY INTAKE CENTER, BRONX, NY  
 MODEL DESCRIPTION : AlxOC: NO OCCUPANCY SENSORS IN ENCLOSED OFFICE

REPORT-1: ANNUAL ENERGY USE STATISTICS \*\*\*\*\*

| FUEL TYPE         | HEATING EQUIP. | COOLING EQUIP. | COOLING TWR/CNDSR | FANS  | PUMPS | DOMESTIC WATER | LIGHTING | MISC. EQUIP. | VERTICAL TRANS. | TOTAL FUEL USE |
|-------------------|----------------|----------------|-------------------|-------|-------|----------------|----------|--------------|-----------------|----------------|
| ELECTRICITY (KWH) | 3935           | 160301         | 0                 | 61980 | 47508 | 0              | 360895   | 230450       | 7300            | 872369         |
| NATURAL GAS (CCF) | 15976          | 0              | 0                 | 0     | 0     | 8509           | 0        | 0            | 0               | 24485          |

REPORT-2: MONTHLY AND ANNUAL FUEL BILLS \*\*\*\*\*

| MONTH | ELECTRIC KWH | ELECTRIC KW | ELECTRIC BILL (\$) | NAT. GAS CCF | NAT. GAS BILL (\$) | FUEL OIL GALLONS | FUEL OIL BILL (\$) | STEAM MBTU | STEAM MBTU/HR | STEAM BILL (\$) | TOTAL FUEL BILL (\$) |
|-------|--------------|-------------|--------------------|--------------|--------------------|------------------|--------------------|------------|---------------|-----------------|----------------------|
| JAN   | 55507        | 130         | 5739               | 4562         | 7220               | 0                | 0                  | 0          | 0             | 0               | 12959                |
| FEB   | 51195        | 179         | 6583               | 4681         | 7409               | 0                | 0                  | 0          | 0             | 0               | 13992                |
| MAR   | 56912        | 122         | 5659               | 3612         | 5719               | 0                | 0                  | 0          | 0             | 0               | 11378                |
| APR   | 54284        | 141         | 5932               | 1367         | 2172               | 0                | 0                  | 0          | 0             | 0               | 8104                 |
| MAY   | 84578        | 248         | 9839               | 860          | 1372               | 0                | 0                  | 0          | 0             | 0               | 11211                |
| JUN   | 94007        | 320         | 11911              | 699          | 1116               | 0                | 0                  | 0          | 0             | 0               | 13027                |
| JUL   | 103655       | 346         | 12975              | 637          | 1019               | 0                | 0                  | 0          | 0             | 0               | 13994                |
| AUG   | 103383       | 343         | 12909              | 644          | 1030               | 0                | 0                  | 0          | 0             | 0               | 13939                |
| SEP   | 90392        | 297         | 11222              | 741          | 1184               | 0                | 0                  | 0          | 0             | 0               | 12406                |
| OCT   | 68541        | 251         | 9079               | 1031         | 1641               | 0                | 0                  | 0          | 0             | 0               | 10720                |
| NOV   | 53824        | 129         | 5648               | 2418         | 3833               | 0                | 0                  | 0          | 0             | 0               | 9481                 |
| DEC   | 56083        | 130         | 5773               | 3227         | 5111               | 0                | 0                  | 0          | 0             | 0               | 10884                |
| TOTAL | 872369       | 346         | 103268             | 24485        | 38826              | 0                | 0                  | 0          | 0             | 0               | 142094               |

SUMMARY REPORTS OF ENERGY USE AND FUEL BILL

NAME OF BUILDING : BRONX DHS NEW FAMILY INTAKE CENTER, BRONX, NY  
 MODEL DESCRIPTION : ALOC2: OCCUPANCY SENSORS CONFERENCE, TOILET

REPORT-1: ANNUAL ENERGY USE STATISTICS \*\*\*\*\*

| FUEL TYPE         | HEATING EQUIP. | COOLING EQUIP. | COOLING TWR/CNDSR | FANS  | PUMPS | DOMESTIC WATER | LIGHTING | MISC. EQUIP. | VERTICAL TRANS. | TOTAL FUEL USE |
|-------------------|----------------|----------------|-------------------|-------|-------|----------------|----------|--------------|-----------------|----------------|
| ELECTRICITY (KWH) | 4139           | 156570         | 0                 | 59962 | 47477 | 0              | 312483   | 230450       | 7300            | 818381         |
| NATURAL GAS (CCF) | 16937          | 0              | 0                 | 0     | 0     | 8509           | 0        | 0            | 0               | 25446          |

REPORT-2: MONTHLY AND ANNUAL FUEL BILLS \*\*\*\*\*

| MONTH | ELECTRIC KWH | ELECTRIC KW | ELECTRIC BILL (\$) | NAT. GAS CCF | NAT. GAS BILL (\$) | FUEL OIL GALLONS | FUEL OIL BILL (\$) | STEAM MBTU | STEAM MBTU/HR | STEAM BILL (\$) | TOTAL FUEL BILL (\$) |
|-------|--------------|-------------|--------------------|--------------|--------------------|------------------|--------------------|------------|---------------|-----------------|----------------------|
| JAN   | 51351        | 125         | 5427               | 4725         | 7477               | 0                | 0                  | 0          | 0             | 0               | 12904                |
| FEB   | 47484        | 176         | 6323               | 4821         | 7629               | 0                | 0                  | 0          | 0             | 0               | 13952                |
| MAR   | 52882        | 120         | 5383               | 3764         | 5959               | 0                | 0                  | 0          | 0             | 0               | 11342                |
| APR   | 50377        | 136         | 5612               | 1460         | 2319               | 0                | 0                  | 0          | 0             | 0               | 7931                 |
| MAY   | 79921        | 239         | 9397               | 887          | 1414               | 0                | 0                  | 0          | 0             | 0               | 10811                |
| JUN   | 88960        | 311         | 11448              | 699          | 1116               | 0                | 0                  | 0          | 0             | 0               | 12564                |
| JUL   | 98014        | 337         | 12493              | 637          | 1019               | 0                | 0                  | 0          | 0             | 0               | 13512                |
| AUG   | 97792        | 333         | 12388              | 644          | 1030               | 0                | 0                  | 0          | 0             | 0               | 13418                |
| SEP   | 85520        | 285         | 10707              | 762          | 1216               | 0                | 0                  | 0          | 0             | 0               | 11923                |
| OCT   | 64274        | 244         | 8692               | 1100         | 1750               | 0                | 0                  | 0          | 0             | 0               | 10442                |
| NOV   | 49841        | 125         | 5345               | 2567         | 4069               | 0                | 0                  | 0          | 0             | 0               | 9414                 |
| DEC   | 51955        | 125         | 5462               | 3375         | 5346               | 0                | 0                  | 0          | 0             | 0               | 10808                |
| TOTAL | 818381       | 337         | 98677              | 25446        | 40344              | 0                | 0                  | 0          | 0             | 0               | 139021               |



SUMMARY REPORTS OF ENERGY USE AND FUEL BILL

NAME OF BUILDING : BRONX DHS NEW FAMILY INTAKE CENTER, BRONX, NY  
 MODEL DESCRIPTION : ALS01: NO CO2 SENSORS

REPORT-1: ANNUAL ENERGY USE STATISTICS \*\*\*\*\*

| FUEL TYPE         | HEATING EQUIP. | COOLING EQUIP. | COOLING TWR/CNDSR | FANS  | PUMPS | DOMESTIC WATER | LIGHTING | MISC. EQUIP. | VERTICAL TRANS. | TOTAL FUEL USE |
|-------------------|----------------|----------------|-------------------|-------|-------|----------------|----------|--------------|-----------------|----------------|
| ELECTRICITY (KWH) | 4559           | 161551         | 0                 | 61188 | 48509 | 0              | 330946   | 230450       | 7300            | 844504         |
| NATURAL GAS (CCF) | 16835          | 0              | 0                 | 0     | 0     | 8509           | 0        | 0            | 0               | 25344          |

REPORT-2: MONTHLY AND ANNUAL FUEL BILLS \*\*\*\*\*

| MONTH | ELECTRIC KWH | ELECTRIC KW | ELECTRIC BILL (\$) | NAT. GAS CCF | NAT. GAS BILL (\$) | FUEL OIL GALLONS | FUEL OIL BILL (\$) | STEAM MBTU | STEAM MBTU/HR | STEAM BILL (\$) | TOTAL FUEL BILL (\$) |
|-------|--------------|-------------|--------------------|--------------|--------------------|------------------|--------------------|------------|---------------|-----------------|----------------------|
| JAN   | 53374        | 127         | 5578               | 4853         | 7681               | 0                | 0                  | 0          | 0             | 0               | 13259                |
| FEB   | 49227        | 190         | 6728               | 4873         | 7711               | 0                | 0                  | 0          | 0             | 0               | 14439                |
| MAR   | 54634        | 120         | 5490               | 3739         | 5919               | 0                | 0                  | 0          | 0             | 0               | 11409                |
| APR   | 51990        | 137         | 5719               | 1443         | 2292               | 0                | 0                  | 0          | 0             | 0               | 8011                 |
| MAY   | 81817        | 242         | 9580               | 861          | 1372               | 0                | 0                  | 0          | 0             | 0               | 10952                |
| JUN   | 91401        | 321         | 11796              | 699          | 1116               | 0                | 0                  | 0          | 0             | 0               | 12912                |
| JUL   | 101655       | 347         | 12897              | 637          | 1019               | 0                | 0                  | 0          | 0             | 0               | 13916                |
| AUG   | 101361       | 344         | 12822              | 644          | 1030               | 0                | 0                  | 0          | 0             | 0               | 13852                |
| SEP   | 87722        | 295         | 11041              | 743          | 1187               | 0                | 0                  | 0          | 0             | 0               | 12228                |
| OCT   | 66049        | 249         | 8896               | 1058         | 1685               | 0                | 0                  | 0          | 0             | 0               | 10581                |
| NOV   | 51529        | 127         | 5475               | 2490         | 3946               | 0                | 0                  | 0          | 0             | 0               | 9421                 |
| DEC   | 53732        | 127         | 5600               | 3299         | 5224               | 0                | 0                  | 0          | 0             | 0               | 10824                |
| TOTAL | 844504       | 347         | 101621             | 25344        | 40182              | 0                | 0                  | 0          | 0             | 0               | 141803               |

SUMMARY REPORTS OF ENERGY USE AND FUEL BILL

NAME OF BUILDING : BRONX DHS NEW FAMILY INTAKE CENTER, BRONX, NY  
 MODEL DESCRIPTION : ALS03: TEMPERATURE INSTEAD OF ENTHALPY ECONONOMIZER

REPORT-1: ANNUAL ENERGY USE STATISTICS \*\*\*\*\*

| FUEL TYPE         | HEATING EQUIP. | COOLING EQUIP. | COOLING TWR/CNDSR | FANS  | PUMPS | DOMESTIC WATER | LIGHTING | MISC. EQUIP. | VERTICAL TRANS. | TOTAL FUEL USE |
|-------------------|----------------|----------------|-------------------|-------|-------|----------------|----------|--------------|-----------------|----------------|
| ELECTRICITY (KWH) | 4050           | 158143         | 0                 | 60738 | 47507 | 0              | 330946   | 230450       | 7300            | 839134         |
| NATURAL GAS (CCF) | 16544          | 0              | 0                 | 0     | 0     | 8509           | 0        | 0            | 0               | 25053          |

REPORT-2: MONTHLY AND ANNUAL FUEL BILLS \*\*\*\*\*

| MONTH | ELECTRIC KWH | ELECTRIC KW | ELECTRIC BILL (\$) | NAT. GAS CCF | NAT. GAS BILL (\$) | FUEL OIL GALLONS | FUEL OIL BILL (\$) | STEAM MBTU | STEAM MBTU/HR | STEAM BILL (\$) | TOTAL FUEL BILL (\$) |
|-------|--------------|-------------|--------------------|--------------|--------------------|------------------|--------------------|------------|---------------|-----------------|----------------------|
| JAN   | 52942        | 127         | 5545               | 4662         | 7378               | 0                | 0                  | 0          | 0             | 0               | 12923                |
| FEB   | 48892        | 176         | 6402               | 4764         | 7539               | 0                | 0                  | 0          | 0             | 0               | 13941                |
| MAR   | 54408        | 120         | 5468               | 3705         | 5866               | 0                | 0                  | 0          | 0             | 0               | 11334                |
| APR   | 51857        | 135         | 5671               | 1420         | 2256               | 0                | 0                  | 0          | 0             | 0               | 7927                 |
| MAY   | 81670        | 242         | 9552               | 872          | 1390               | 0                | 0                  | 0          | 0             | 0               | 10942                |
| JUN   | 90909        | 314         | 11618              | 699          | 1116               | 0                | 0                  | 0          | 0             | 0               | 12734                |
| JUL   | 100180       | 340         | 12668              | 637          | 1019               | 0                | 0                  | 0          | 0             | 0               | 13687                |
| AUG   | 100025       | 336         | 12582              | 644          | 1030               | 0                | 0                  | 0          | 0             | 0               | 13612                |
| SEP   | 87437        | 289         | 10897              | 751          | 1200               | 0                | 0                  | 0          | 0             | 0               | 12097                |
| OCT   | 65916        | 246         | 8828               | 1068         | 1700               | 0                | 0                  | 0          | 0             | 0               | 10528                |
| NOV   | 51361        | 127         | 5459               | 2509         | 3976               | 0                | 0                  | 0          | 0             | 0               | 9435                 |
| DEC   | 53527        | 127         | 5579               | 3316         | 5251               | 0                | 0                  | 0          | 0             | 0               | 10830                |
| TOTAL | 839134       | 340         | 100269             | 25053        | 39723              | 0                | 0                  | 0          | 0             | 0               | 139992               |

SUMMARY REPORTS OF ENERGY USE AND FUEL BILL

NAME OF BUILDING : BRONX DHS NEW FAMILY INTAKE CENTER, BRONX, NY  
 MODEL DESCRIPTION : ALS04: NO HEAT RECOVERY

REPORT-1: ANNUAL ENERGY USE STATISTICS \*\*\*\*\*

| FUEL TYPE         | HEATING EQUIP. | COOLING EQUIP. | COOLING TWR/CNDSR | FANS  | PUMPS | DOMESTIC WATER | LIGHTING | MISC. EQUIP. | VERTICAL TRANS. | TOTAL FUEL USE |
|-------------------|----------------|----------------|-------------------|-------|-------|----------------|----------|--------------|-----------------|----------------|
| ELECTRICITY (KWH) | 4528           | 157751         | 0                 | 60693 | 47957 | 0              | 330946   | 230450       | 7300            | 839626         |
| NATURAL GAS (CCF) | 18928          | 0              | 0                 | 0     | 0     | 8509           | 0        | 0            | 0               | 27437          |

REPORT-2: MONTHLY AND ANNUAL FUEL BILLS \*\*\*\*\*

| MONTH | ELECTRIC KWH | ELECTRIC KW | ELECTRIC BILL (\$) | NAT. GAS CCF | NAT. GAS BILL (\$) | FUEL OIL GALLONS | FUEL OIL BILL (\$) | STEAM MBTU | STEAM MBTU/HR | STEAM BILL (\$) | TOTAL FUEL BILL (\$) |
|-------|--------------|-------------|--------------------|--------------|--------------------|------------------|--------------------|------------|---------------|-----------------|----------------------|
| JAN   | 53062        | 127         | 5555               | 4798         | 7593               | 0                | 0                  | 0          | 0             | 0               | 13148                |
| FEB   | 49031        | 178         | 6464               | 5005         | 7920               | 0                | 0                  | 0          | 0             | 0               | 14384                |
| MAR   | 54510        | 120         | 5478               | 3824         | 6054               | 0                | 0                  | 0          | 0             | 0               | 11532                |
| APR   | 51931        | 137         | 5705               | 1480         | 2351               | 0                | 0                  | 0          | 0             | 0               | 8056                 |
| MAY   | 81673        | 242         | 9551               | 889          | 1416               | 0                | 0                  | 0          | 0             | 0               | 10967                |
| JUN   | 90814        | 314         | 11613              | 699          | 1116               | 0                | 0                  | 0          | 0             | 0               | 12729                |
| JUL   | 100106       | 340         | 12664              | 637          | 1019               | 0                | 0                  | 0          | 0             | 0               | 13683                |
| AUG   | 99857        | 336         | 12571              | 644          | 1030               | 0                | 0                  | 0          | 0             | 0               | 13601                |
| SEP   | 87404        | 289         | 10895              | 762          | 1216               | 0                | 0                  | 0          | 0             | 0               | 12111                |
| OCT   | 65979        | 246         | 8832               | 1113         | 1771               | 0                | 0                  | 0          | 0             | 0               | 10603                |
| NOV   | 51530        | 127         | 5477               | 3158         | 5002               | 0                | 0                  | 0          | 0             | 0               | 10479                |
| DEC   | 53722        | 127         | 5594               | 4422         | 7000               | 0                | 0                  | 0          | 0             | 0               | 12594                |
| TOTAL | 839626       | 340         | 100400             | 27437        | 43490              | 0                | 0                  | 0          | 0             | 0               | 143890               |

SUMMARY REPORTS OF ENERGY USE AND FUEL BILL

NAME OF BUILDING : BRONX DHS NEW FAMILY INTAKE CENTER, BRONX, NY  
 MODEL DESCRIPTION : Als05: NO PREMIMUM EFFICENCY MOTORS

REPORT-1: ANNUAL ENERGY USE STATISTICS \*\*\*\*\*

| FUEL TYPE         | HEATING EQUIP. | COOLING EQUIP. | COOLING TWR/CNDSR | FANS  | PUMPS | DOMESTIC WATER | LIGHTING | MISC. EQUIP. | VERTICAL TRANS. | TOTAL FUEL USE |
|-------------------|----------------|----------------|-------------------|-------|-------|----------------|----------|--------------|-----------------|----------------|
| ELECTRICITY (KWH) | 4075           | 158028         | 0                 | 61863 | 48114 | 0              | 330946   | 230450       | 7300            | 840778         |
| NATURAL GAS (CCF) | 16537          | 0              | 0                 | 0     | 0     | 8509           | 0        | 0            | 0               | 25046          |

REPORT-2: MONTHLY AND ANNUAL FUEL BILLS \*\*\*\*\*

| MONTH | ELECTRIC KWH | ELECTRIC KW | ELECTRIC BILL (\$) | NAT. GAS CCF | NAT. GAS BILL (\$) | FUEL OIL GALLONS | FUEL OIL BILL (\$) | STEAM MBTU | STEAM MBTU/HR | STEAM BILL (\$) | TOTAL FUEL BILL (\$) |
|-------|--------------|-------------|--------------------|--------------|--------------------|------------------|--------------------|------------|---------------|-----------------|----------------------|
| JAN   | 53036        | 127         | 5554               | 4661         | 7377               | 0                | 0                  | 0          | 0             | 0               | 12931                |
| FEB   | 48981        | 179         | 6477               | 4760         | 7533               | 0                | 0                  | 0          | 0             | 0               | 14010                |
| MAR   | 54506        | 120         | 5478               | 3704         | 5864               | 0                | 0                  | 0          | 0             | 0               | 11342                |
| APR   | 51942        | 137         | 5726               | 1419         | 2254               | 0                | 0                  | 0          | 0             | 0               | 7980                 |
| MAY   | 81879        | 242         | 9580               | 872          | 1391               | 0                | 0                  | 0          | 0             | 0               | 10971                |
| JUN   | 91082        | 315         | 11650              | 699          | 1116               | 0                | 0                  | 0          | 0             | 0               | 12766                |
| JUL   | 100418       | 341         | 12709              | 637          | 1019               | 0                | 0                  | 0          | 0             | 0               | 13728                |
| AUG   | 100163       | 338         | 12615              | 644          | 1030               | 0                | 0                  | 0          | 0             | 0               | 13645                |
| SEP   | 87635        | 290         | 10927              | 752          | 1200               | 0                | 0                  | 0          | 0             | 0               | 12127                |
| OCT   | 66055        | 247         | 8851               | 1068         | 1700               | 0                | 0                  | 0          | 0             | 0               | 10551                |
| NOV   | 51450        | 127         | 5468               | 2508         | 3976               | 0                | 0                  | 0          | 0             | 0               | 9444                 |
| DEC   | 53621        | 127         | 5589               | 3316         | 5251               | 0                | 0                  | 0          | 0             | 0               | 10840                |
| TOTAL | 840778       | 341         | 100625             | 25046        | 39712              | 0                | 0                  | 0          | 0             | 0               | 140337               |

SUMMARY REPORTS OF ENERGY USE AND FUEL BILL

NAME OF BUILDING : BRONX DHS NEW FAMILY INTAKE CENTER, BRONX, NY  
 MODEL DESCRIPTION : ALS06: 80% EFFICENCY BOILERS (ON/OFF CONTROLS)

REPORT-1: ANNUAL ENERGY USE STATISTICS \*\*\*\*\*

| FUEL TYPE         | HEATING EQUIP. | COOLING EQUIP. | COOLING TWR/CNDSR | FANS  | PUMPS | DOMESTIC WATER | LIGHTING | MISC. EQUIP. | VERTICAL TRANS. | TOTAL FUEL USE |
|-------------------|----------------|----------------|-------------------|-------|-------|----------------|----------|--------------|-----------------|----------------|
| ELECTRICITY (KWH) | 4048           | 157753         | 0                 | 60693 | 47489 | 0              | 330946   | 230450       | 7300            | 838680         |
| NATURAL GAS (CCF) | 19985          | 0              | 0                 | 0     | 0     | 8509           | 0        | 0            | 0               | 28494          |

REPORT-2: MONTHLY AND ANNUAL FUEL BILLS \*\*\*\*\*

| MONTH | ELECTRIC KWH | ELECTRIC KW | ELECTRIC BILL (\$) | NAT. GAS CCF | NAT. GAS BILL (\$) | FUEL OIL GALLONS | FUEL OIL BILL (\$) | STEAM MBTU | STEAM MBTU/HR | STEAM BILL (\$) | TOTAL FUEL BILL (\$) |
|-------|--------------|-------------|--------------------|--------------|--------------------|------------------|--------------------|------------|---------------|-----------------|----------------------|
| JAN   | 52941        | 127         | 5545               | 5383         | 8518               | 0                | 0                  | 0          | 0             | 0               | 14063                |
| FEB   | 48892        | 176         | 6402               | 5411         | 8562               | 0                | 0                  | 0          | 0             | 0               | 14964                |
| MAR   | 54407        | 120         | 5468               | 4316         | 6832               | 0                | 0                  | 0          | 0             | 0               | 12300                |
| APR   | 51851        | 137         | 5705               | 1608         | 2553               | 0                | 0                  | 0          | 0             | 0               | 8258                 |
| MAY   | 81643        | 242         | 9550               | 928          | 1479               | 0                | 0                  | 0          | 0             | 0               | 11029                |
| JUN   | 90815        | 314         | 11613              | 699          | 1116               | 0                | 0                  | 0          | 0             | 0               | 12729                |
| JUL   | 100106       | 340         | 12664              | 637          | 1019               | 0                | 0                  | 0          | 0             | 0               | 13683                |
| AUG   | 99858        | 336         | 12571              | 644          | 1030               | 0                | 0                  | 0          | 0             | 0               | 13601                |
| SEP   | 87371        | 289         | 10893              | 792          | 1263               | 0                | 0                  | 0          | 0             | 0               | 12156                |
| OCT   | 65897        | 246         | 8826               | 1204         | 1915               | 0                | 0                  | 0          | 0             | 0               | 10741                |
| NOV   | 51361        | 127         | 5459               | 2990         | 4736               | 0                | 0                  | 0          | 0             | 0               | 10195                |
| DEC   | 53526        | 127         | 5579               | 3876         | 6136               | 0                | 0                  | 0          | 0             | 0               | 11715                |
| TOTAL | 838680       | 340         | 100276             | 28494        | 45160              | 0                | 0                  | 0          | 0             | 0               | 145436               |

SUMMARY REPORTS OF ENERGY USE AND FUEL BILL

NAME OF BUILDING : BRONX DHS NEW FAMILY INTAKE CENTER, BRONX, NY  
 MODEL DESCRIPTION : ALS07: NO VSD ON HOT WATER CIRCULATION PUMPS

REPORT-1: ANNUAL ENERGY USE STATISTICS \*\*\*\*\*

| FUEL TYPE         | HEATING EQUIP. | COOLING EQUIP. | COOLING TWR/CNDSR | FANS  | PUMPS | DOMESTIC WATER | LIGHTING | MISC. EQUIP. | VERTICAL TRANS. | TOTAL FUEL USE |
|-------------------|----------------|----------------|-------------------|-------|-------|----------------|----------|--------------|-----------------|----------------|
| ELECTRICITY (KWH) | 4511           | 157753         | 0                 | 60693 | 57159 | 0              | 330946   | 230450       | 7300            | 848813         |
| NATURAL GAS (CCF) | 18325          | 0              | 0                 | 0     | 0     | 8509           | 0        | 0            | 0               | 26834          |

REPORT-2: MONTHLY AND ANNUAL FUEL BILLS \*\*\*\*\*

| MONTH | ELECTRIC KWH | ELECTRIC KW | ELECTRIC BILL (\$) | NAT. GAS CCF | NAT. GAS BILL (\$) | FUEL OIL GALLONS | FUEL OIL BILL (\$) | STEAM MBTU | STEAM MBTU/HR | STEAM BILL (\$) | TOTAL FUEL BILL (\$) |
|-------|--------------|-------------|--------------------|--------------|--------------------|------------------|--------------------|------------|---------------|-----------------|----------------------|
| JAN   | 54261        | 128         | 5652               | 4886         | 7732               | 0                | 0                  | 0          | 0             | 0               | 13384                |
| FEB   | 50069        | 176         | 6464               | 4962         | 7852               | 0                | 0                  | 0          | 0             | 0               | 14316                |
| MAR   | 55749        | 121         | 5576               | 3939         | 6236               | 0                | 0                  | 0          | 0             | 0               | 11812                |
| APR   | 53002        | 137         | 5765               | 1627         | 2583               | 0                | 0                  | 0          | 0             | 0               | 8348                 |
| MAY   | 82301        | 242         | 9584               | 991          | 1578               | 0                | 0                  | 0          | 0             | 0               | 11162                |
| JUN   | 90815        | 314         | 11613              | 699          | 1116               | 0                | 0                  | 0          | 0             | 0               | 12729                |
| JUL   | 100106       | 340         | 12664              | 637          | 1019               | 0                | 0                  | 0          | 0             | 0               | 13683                |
| AUG   | 99858        | 336         | 12571              | 644          | 1030               | 0                | 0                  | 0          | 0             | 0               | 13601                |
| SEP   | 88085        | 289         | 10930              | 880          | 1403               | 0                | 0                  | 0          | 0             | 0               | 12333                |
| OCT   | 67027        | 248         | 8926               | 1272         | 2022               | 0                | 0                  | 0          | 0             | 0               | 10948                |
| NOV   | 52664        | 129         | 5568               | 2741         | 4343               | 0                | 0                  | 0          | 0             | 0               | 9911                 |
| DEC   | 54866        | 129         | 5687               | 3551         | 5622               | 0                | 0                  | 0          | 0             | 0               | 11309                |
| TOTAL | 848813       | 340         | 101001             | 26834        | 42537              | 0                | 0                  | 0          | 0             | 0               | 143538               |

SUMMARY REPORTS OF ENERGY USE AND FUEL BILL

NAME OF BUILDING : BRONX DHS NEW FAMILY INTAKE CENTER, BRONX, NY  
 MODEL DESCRIPTION : AltCB: CONDENSING BOILER

REPORT-1: ANNUAL ENERGY USE STATISTICS \*\*\*\*\*

| FUEL TYPE         | HEATING EQUIP. | COOLING EQUIP. | COOLING TWR/CNDSR | FANS  | PUMPS | DOMESTIC WATER | LIGHTING | MISC. EQUIP. | VERTICAL TRANS. | TOTAL FUEL USE |
|-------------------|----------------|----------------|-------------------|-------|-------|----------------|----------|--------------|-----------------|----------------|
| ELECTRICITY (KWH) | 4048           | 157753         | 0                 | 60693 | 47489 | 0              | 330946   | 230450       | 7300            | 838680         |
| NATURAL GAS (CCF) | 15190          | 0              | 0                 | 0     | 0     | 8509           | 0        | 0            | 0               | 23699          |

REPORT-2: MONTHLY AND ANNUAL FUEL BILLS \*\*\*\*\*

| MONTH | ELECTRIC KWH | ELECTRIC KW | ELECTRIC BILL (\$) | NAT. GAS CCF | NAT. GAS BILL (\$) | FUEL OIL GALLONS | FUEL OIL BILL (\$) | STEAM MBTU | STEAM MBTU/HR | STEAM BILL (\$) | TOTAL FUEL BILL (\$) |
|-------|--------------|-------------|--------------------|--------------|--------------------|------------------|--------------------|------------|---------------|-----------------|----------------------|
| JAN   | 52941        | 127         | 5545               | 4356         | 6895               | 0                | 0                  | 0          | 0             | 0               | 12440                |
| FEB   | 48892        | 176         | 6402               | 4479         | 7090               | 0                | 0                  | 0          | 0             | 0               | 13492                |
| MAR   | 54407        | 120         | 5468               | 3466         | 5489               | 0                | 0                  | 0          | 0             | 0               | 10957                |
| APR   | 51851        | 137         | 5705               | 1358         | 2159               | 0                | 0                  | 0          | 0             | 0               | 7864                 |
| MAY   | 81643        | 242         | 9550               | 855          | 1363               | 0                | 0                  | 0          | 0             | 0               | 10913                |
| JUN   | 90815        | 314         | 11613              | 699          | 1116               | 0                | 0                  | 0          | 0             | 0               | 12729                |
| JUL   | 100106       | 340         | 12664              | 637          | 1019               | 0                | 0                  | 0          | 0             | 0               | 13683                |
| AUG   | 99858        | 336         | 12571              | 644          | 1030               | 0                | 0                  | 0          | 0             | 0               | 13601                |
| SEP   | 87371        | 289         | 10893              | 739          | 1180               | 0                | 0                  | 0          | 0             | 0               | 12073                |
| OCT   | 65897        | 246         | 8826               | 1025         | 1631               | 0                | 0                  | 0          | 0             | 0               | 10457                |
| NOV   | 51361        | 127         | 5459               | 2337         | 3705               | 0                | 0                  | 0          | 0             | 0               | 9164                 |
| DEC   | 53526        | 127         | 5579               | 3097         | 4905               | 0                | 0                  | 0          | 0             | 0               | 10484                |
| TOTAL | 838680       | 340         | 100276             | 23699        | 37584              | 0                | 0                  | 0          | 0             | 0               | 137860               |

SUMMARY REPORTS OF ENERGY USE AND FUEL BILL

NAME OF BUILDING : BRONX DHS NEW FAMILY INTAKE CENTER, BRONX, NY  
 MODEL DESCRIPTION : AlxL2: ASHRAE 90.1-1999 LPD

REPORT-1: ANNUAL ENERGY USE STATISTICS \*\*\*\*\*

| FUEL TYPE         | HEATING EQUIP. | COOLING EQUIP. | COOLING TWR/CNDSR | FANS  | PUMPS | DOMESTIC WATER | LIGHTING | MISC. EQUIP. | VERTICAL TRANS. | TOTAL FUEL USE |
|-------------------|----------------|----------------|-------------------|-------|-------|----------------|----------|--------------|-----------------|----------------|
| ELECTRICITY (KWH) | 3832           | 161723         | 0                 | 63292 | 47576 | 0              | 382756   | 230450       | 7300            | 896929         |
| NATURAL GAS (CCF) | 15552          | 0              | 0                 | 0     | 0     | 8509           | 0        | 0            | 0               | 24061          |

REPORT-2: MONTHLY AND ANNUAL FUEL BILLS \*\*\*\*\*

| MONTH | ELECTRIC KWH | ELECTRIC KW | ELECTRIC BILL (\$) | NAT. GAS CCF | NAT. GAS BILL (\$) | FUEL OIL GALLONS | FUEL OIL BILL (\$) | STEAM MBTU | STEAM MBTU/HR | STEAM BILL (\$) | TOTAL FUEL BILL (\$) |
|-------|--------------|-------------|--------------------|--------------|--------------------|------------------|--------------------|------------|---------------|-----------------|----------------------|
| JAN   | 57348        | 136         | 5987               | 4497         | 7118               | 0                | 0                  | 0          | 0             | 0               | 13105                |
| FEB   | 52856        | 186         | 6823               | 4615         | 7304               | 0                | 0                  | 0          | 0             | 0               | 14127                |
| MAR   | 58820        | 128         | 5884               | 3546         | 5616               | 0                | 0                  | 0          | 0             | 0               | 11500                |
| APR   | 56112        | 147         | 6159               | 1323         | 2103               | 0                | 0                  | 0          | 0             | 0               | 8262                 |
| MAY   | 86511        | 255         | 10097              | 842          | 1342               | 0                | 0                  | 0          | 0             | 0               | 11439                |
| JUN   | 96388        | 330         | 12248              | 699          | 1116               | 0                | 0                  | 0          | 0             | 0               | 13364                |
| JUL   | 106327       | 355         | 13312              | 637          | 1019               | 0                | 0                  | 0          | 0             | 0               | 14331                |
| AUG   | 105998       | 352         | 13232              | 644          | 1030               | 0                | 0                  | 0          | 0             | 0               | 14262                |
| SEP   | 92528        | 306         | 11525              | 725          | 1157               | 0                | 0                  | 0          | 0             | 0               | 12682                |
| OCT   | 70441        | 259         | 9346               | 1002         | 1595               | 0                | 0                  | 0          | 0             | 0               | 10941                |
| NOV   | 55627        | 136         | 5893               | 2361         | 3742               | 0                | 0                  | 0          | 0             | 0               | 9635                 |
| DEC   | 57975        | 137         | 6025               | 3164         | 5012               | 0                | 0                  | 0          | 0             | 0               | 11037                |
| TOTAL | 896929       | 355         | 106531             | 24061        | 38156              | 0                | 0                  | 0          | 0             | 0               | 144687               |



SUMMARY REPORTS OF ENERGY USE AND FUEL BILL

NAME OF BUILDING : BRONX DHS NEW FAMILY INTAKE CENTER, BRONX, NY  
 MODEL DESCRIPTION : AZ00a: ASHRAE 90.1 APPENDIX G ROTATION 0 DESIGN CASE

REPORT-1: ANNUAL ENERGY USE STATISTICS \*\*\*\*\*

| FUEL TYPE         | HEATING EQUIP. | COOLING EQUIP. | COOLING TWR/CNDSR | FANS   | PUMPS | DOMESTIC WATER | LIGHTING | MISC. EQUIP. | VERTICAL TRANS. | TOTAL FUEL USE |
|-------------------|----------------|----------------|-------------------|--------|-------|----------------|----------|--------------|-----------------|----------------|
| ELECTRICITY (KWH) | 8024           | 141624         | 73982             | 135630 | 29208 | 0              | 343402   | 230450       | 7300            | 969621         |
| NATURAL GAS (CCF) | 37350          | 0              | 0                 | 0      | 0     | 8509           | 0        | 0            | 0               | 45859          |

REPORT-2: MONTHLY AND ANNUAL FUEL BILLS \*\*\*\*\*

| MONTH | ELECTRIC KWH | ELECTRIC KW | ELECTRIC BILL (\$) | NAT. GAS CCF | NAT. GAS BILL (\$) | FUEL OIL GALLONS | FUEL OIL BILL (\$) | STEAM MBTU | STEAM MBTU/HR | STEAM BILL (\$) | TOTAL FUEL BILL (\$) |
|-------|--------------|-------------|--------------------|--------------|--------------------|------------------|--------------------|------------|---------------|-----------------|----------------------|
| JAN   | 61248        | 141         | 6283               | 8378         | 13249              | 0                | 0                  | 0          | 0             | 0               | 19532                |
| FEB   | 56226        | 145         | 6104               | 7867         | 12442              | 0                | 0                  | 0          | 0             | 0               | 18546                |
| MAR   | 63738        | 140         | 6403               | 6690         | 10582              | 0                | 0                  | 0          | 0             | 0               | 16985                |
| APR   | 60857        | 163         | 6749               | 2708         | 4290               | 0                | 0                  | 0          | 0             | 0               | 11039                |
| MAY   | 88539        | 280         | 10753              | 1272         | 2022               | 0                | 0                  | 0          | 0             | 0               | 12775                |
| JUN   | 104588       | 332         | 12725              | 699          | 1116               | 0                | 0                  | 0          | 0             | 0               | 13841                |
| JUL   | 119730       | 344         | 13786              | 637          | 1019               | 0                | 0                  | 0          | 0             | 0               | 14805                |
| AUG   | 118764       | 342         | 13676              | 644          | 1030               | 0                | 0                  | 0          | 0             | 0               | 14706                |
| SEP   | 100256       | 313         | 12090              | 1150         | 1830               | 0                | 0                  | 0          | 0             | 0               | 13920                |
| OCT   | 74204        | 282         | 10043              | 2169         | 3440               | 0                | 0                  | 0          | 0             | 0               | 13483                |
| NOV   | 59532        | 140         | 6173               | 5913         | 9355               | 0                | 0                  | 0          | 0             | 0               | 15528                |
| DEC   | 61955        | 142         | 6355               | 7727         | 12220              | 0                | 0                  | 0          | 0             | 0               | 18575                |
| TOTAL | 969621       | 344         | 111140             | 45859        | 72597              | 0                | 0                  | 0          | 0             | 0               | 183737               |

SUMMARY REPORTS OF ENERGY USE AND FUEL BILL

NAME OF BUILDING : BRONX DHS NEW FAMILY INTAKE CENTER, BRONX, NY  
 MODEL DESCRIPTION : AZ90a: ASHRAE 90.1 APPENDIX G ROTATION 90 DESIGN CASE

REPORT-1: ANNUAL ENERGY USE STATISTICS \*\*\*\*\*

| FUEL TYPE         | HEATING EQUIP. | COOLING EQUIP. | COOLING TWR/CNDSR | FANS   | PUMPS | DOMESTIC WATER | LIGHTING | MISC. EQUIP. | VERTICAL TRANS. | TOTAL FUEL USE |
|-------------------|----------------|----------------|-------------------|--------|-------|----------------|----------|--------------|-----------------|----------------|
| ELECTRICITY (KWH) | 7989           | 135763         | 73826             | 131831 | 28454 | 0              | 343402   | 230450       | 7300            | 959016         |
| NATURAL GAS (CCF) | 37018          | 0              | 0                 | 0      | 0     | 8509           | 0        | 0            | 0               | 45526          |

REPORT-2: MONTHLY AND ANNUAL FUEL BILLS \*\*\*\*\*

| MONTH | ELECTRIC KWH | ELECTRIC KW | ELECTRIC BILL (\$) | NAT. GAS CCF | NAT. GAS BILL (\$) | FUEL OIL GALLONS | FUEL OIL BILL (\$) | STEAM MBTU | STEAM MBTU/HR | STEAM BILL (\$) | TOTAL FUEL BILL (\$) |
|-------|--------------|-------------|--------------------|--------------|--------------------|------------------|--------------------|------------|---------------|-----------------|----------------------|
| JAN   | 61138        | 141         | 6274               | 8237         | 13027              | 0                | 0                  | 0          | 0             | 0               | 19301                |
| FEB   | 56128        | 144         | 6093               | 7787         | 12316              | 0                | 0                  | 0          | 0             | 0               | 18409                |
| MAR   | 63648        | 140         | 6396               | 6738         | 10659              | 0                | 0                  | 0          | 0             | 0               | 17055                |
| APR   | 60698        | 161         | 6690               | 2798         | 4433               | 0                | 0                  | 0          | 0             | 0               | 11123                |
| MAY   | 87155        | 274         | 10540              | 1318         | 2095               | 0                | 0                  | 0          | 0             | 0               | 12635                |
| JUN   | 102598       | 319         | 12347              | 699          | 1116               | 0                | 0                  | 0          | 0             | 0               | 13463                |
| JUL   | 117266       | 335         | 13448              | 637          | 1019               | 0                | 0                  | 0          | 0             | 0               | 14467                |
| AUG   | 116376       | 335         | 13396              | 644          | 1030               | 0                | 0                  | 0          | 0             | 0               | 14426                |
| SEP   | 98977        | 308         | 11911              | 1155         | 1838               | 0                | 0                  | 0          | 0             | 0               | 13749                |
| OCT   | 73794        | 277         | 9912               | 2139         | 3393               | 0                | 0                  | 0          | 0             | 0               | 13305                |
| NOV   | 59414        | 140         | 6165               | 5781         | 9147               | 0                | 0                  | 0          | 0             | 0               | 15312                |
| DEC   | 61839        | 142         | 6346               | 7585         | 11997              | 0                | 0                  | 0          | 0             | 0               | 18343                |
| TOTAL | 959016       | 335         | 109515             | 45526        | 72071              | 0                | 0                  | 0          | 0             | 0               | 181586               |

SUMMARY REPORTS OF ENERGY USE AND FUEL BILL

NAME OF BUILDING : BRONX DHS NEW FAMILY INTAKE CENTER, BRONX, NY  
 MODEL DESCRIPTION : AZ18a: ASHRAE 90.1 APPENDIX G ROTATION 180 DESIGN CASE

REPORT-1: ANNUAL ENERGY USE STATISTICS \*\*\*\*\*

| FUEL TYPE         | HEATING EQUIP. | COOLING EQUIP. | COOLING TWR/CNDSR | FANS   | PUMPS | DOMESTIC WATER | LIGHTING | MISC. EQUIP. | VERTICAL TRANS. | TOTAL FUEL USE |
|-------------------|----------------|----------------|-------------------|--------|-------|----------------|----------|--------------|-----------------|----------------|
| ELECTRICITY (KWH) | 8066           | 139686         | 73925             | 134011 | 28954 | 0              | 343402   | 230450       | 7300            | 965795         |
| NATURAL GAS (CCF) | 37745          | 0              | 0                 | 0      | 0     | 8509           | 0        | 0            | 0               | 46254          |

REPORT-2: MONTHLY AND ANNUAL FUEL BILLS \*\*\*\*\*

| MONTH | ELECTRIC KWH | ELECTRIC KW | ELECTRIC BILL (\$) | NAT. GAS CCF | NAT. GAS BILL (\$) | FUEL OIL GALLONS | FUEL OIL BILL (\$) | STEAM MBTU | STEAM MBTU/HR | STEAM BILL (\$) | TOTAL FUEL BILL (\$) |
|-------|--------------|-------------|--------------------|--------------|--------------------|------------------|--------------------|------------|---------------|-----------------|----------------------|
| JAN   | 61235        | 143         | 6332               | 8450         | 13364              | 0                | 0                  | 0          | 0             | 0               | 19696                |
| FEB   | 56214        | 144         | 6100               | 7941         | 12559              | 0                | 0                  | 0          | 0             | 0               | 18659                |
| MAR   | 63727        | 140         | 6401               | 6759         | 10692              | 0                | 0                  | 0          | 0             | 0               | 17093                |
| APR   | 60771        | 161         | 6712               | 2728         | 4323               | 0                | 0                  | 0          | 0             | 0               | 11035                |
| MAY   | 88040        | 277         | 10661              | 1271         | 2021               | 0                | 0                  | 0          | 0             | 0               | 12682                |
| JUN   | 104179       | 328         | 12606              | 699          | 1116               | 0                | 0                  | 0          | 0             | 0               | 13722                |
| JUL   | 119242       | 341         | 13677              | 637          | 1019               | 0                | 0                  | 0          | 0             | 0               | 14696                |
| AUG   | 117912       | 340         | 13589              | 644          | 1030               | 0                | 0                  | 0          | 0             | 0               | 14619                |
| SEP   | 99250        | 306         | 11869              | 1153         | 1834               | 0                | 0                  | 0          | 0             | 0               | 13703                |
| OCT   | 73782        | 278         | 9942               | 2193         | 3477               | 0                | 0                  | 0          | 0             | 0               | 13419                |
| NOV   | 59520        | 140         | 6172               | 5990         | 9477               | 0                | 0                  | 0          | 0             | 0               | 15649                |
| DEC   | 61941        | 142         | 6353               | 7782         | 12308              | 0                | 0                  | 0          | 0             | 0               | 18661                |
| TOTAL | 965795       | 341         | 110415             | 46254        | 73220              | 0                | 0                  | 0          | 0             | 0               | 183635               |

SUMMARY REPORTS OF ENERGY USE AND FUEL BILL

NAME OF BUILDING : BRONX DHS NEW FAMILY INTAKE CENTER, BRONX, NY  
 MODEL DESCRIPTION : AZ27a: ASHRAE 90.1 APPENDIX G ROTATION 270 DESIGN CASE

REPORT-1: ANNUAL ENERGY USE STATISTICS \*\*\*\*\*

| FUEL TYPE         | HEATING EQUIP. | COOLING EQUIP. | COOLING TWR/CNDSR | FANS   | PUMPS | DOMESTIC WATER | LIGHTING | MISC. EQUIP. | VERTICAL TRANS. | TOTAL FUEL USE |
|-------------------|----------------|----------------|-------------------|--------|-------|----------------|----------|--------------|-----------------|----------------|
| ELECTRICITY (KWH) | 7991           | 135850         | 73829             | 131985 | 28345 | 0              | 343402   | 230450       | 7300            | 959154         |
| NATURAL GAS (CCF) | 36967          | 0              | 0                 | 0      | 0     | 8509           | 0        | 0            | 0               | 45475          |

REPORT-2: MONTHLY AND ANNUAL FUEL BILLS \*\*\*\*\*

| MONTH | ELECTRIC KWH | ELECTRIC KW | ELECTRIC BILL (\$) | NAT. GAS CCF | NAT. GAS BILL (\$) | FUEL OIL GALLONS | FUEL OIL BILL (\$) | STEAM MBTU | STEAM MBTU/HR | STEAM BILL (\$) | TOTAL FUEL BILL (\$) |
|-------|--------------|-------------|--------------------|--------------|--------------------|------------------|--------------------|------------|---------------|-----------------|----------------------|
| JAN   | 61100        | 140         | 6270               | 8236         | 13025              | 0                | 0                  | 0          | 0             | 0               | 19295                |
| FEB   | 56097        | 144         | 6093               | 7789         | 12320              | 0                | 0                  | 0          | 0             | 0               | 18413                |
| MAR   | 63610        | 140         | 6390               | 6726         | 10639              | 0                | 0                  | 0          | 0             | 0               | 17029                |
| APR   | 60608        | 145         | 6352               | 2772         | 4392               | 0                | 0                  | 0          | 0             | 0               | 10744                |
| MAY   | 87237        | 274         | 10551              | 1312         | 2085               | 0                | 0                  | 0          | 0             | 0               | 12636                |
| JUN   | 102520       | 317         | 12281              | 699          | 1116               | 0                | 0                  | 0          | 0             | 0               | 13397                |
| JUL   | 117291       | 336         | 13469              | 637          | 1019               | 0                | 0                  | 0          | 0             | 0               | 14488                |
| AUG   | 116508       | 332         | 13344              | 644          | 1030               | 0                | 0                  | 0          | 0             | 0               | 14374                |
| SEP   | 99232        | 304         | 11843              | 1154         | 1836               | 0                | 0                  | 0          | 0             | 0               | 13679                |
| OCT   | 73789        | 274         | 9837               | 2138         | 3391               | 0                | 0                  | 0          | 0             | 0               | 13228                |
| NOV   | 59380        | 140         | 6160               | 5778         | 9142               | 0                | 0                  | 0          | 0             | 0               | 15302                |
| DEC   | 61799        | 142         | 6342               | 7585         | 11997              | 0                | 0                  | 0          | 0             | 0               | 18339                |
| TOTAL | 959154       | 336         | 108931             | 45475        | 71991              | 0                | 0                  | 0          | 0             | 0               | 180922               |