9.4.6 Case Study, The Solaire, New York, New York (Apartments/Multi-Family)

Building Design

Floor Area:	357,000 SF	Units:	293	Maximum Occupancy:	700
Floors:	27	Site Size:	0.38 Acres	Typical Occupancy(1):	578

Black-Water Treatment Facility (2)

Shell

Windows

Material: Double Glazed, Low-e, Thermal Breaks with Insulated Spacers

	Operable Windows	Fixed Windows
Visual Transminttance	0.68	0.68
Solar Heat Gain Coefficient	0.35	0.35
U-Factor	0.47	0.41

Wall/Roof

	Material	R-Value
Exterior Walls:	Insulated brick and concrete block	8.4
Roof:	Roof top garden(green roof)	22.7

HVAC

Two direct-fired natural gas absorption chillers
4-Pipe fan-coil units in individual aparments

Power/Energy(3)

PV System(4): 1,300 SF (76 custom panels) of west facing PV rated for 11 kW . These panels are integrated into the building facade.
151 SF PV located in the entrance canopy. Rated for 662 W.
286 standard PV modules mounted on the south and west walls. Rated for 21 kW.

Unit Average Electricity Consumption(5):	15,681	kBtu/year
Building Natural Gas Consumption(6):	104.1	kBtu/SF*year

Predicted End-Use Consumption(kBtu/SF*year)

Heating	60.8	Plug Loads and Equipment	6.7
Cooling	20.7	Domestic Hot Water	7.9
Lighting	7.4	Cooking, Vertical Transportation, and Other	6.8
Fans/Pumps	11.4	**Total**	**121.7**

Note(s): 1) 84 hours per person weekly, 89 visitors weekly, 8 hours per visitor weekly. 2)30,000 gallon storage tank. Water is used for toilets and cooling tower. 3) Appliances in units are ENERGY STAR qualified. (4) PV system designed to handle 5% of building peak non-residential electrical load (i.e. corridor lighting). 5) Includes only electric that was submetered to each apartment. 6) 2007 building consumption.

Source(s): ASHRAE, High Peformance Buildings, NYC's Living Lesson, p. 56-65, Summer 2008; USGBC, LEED Case Studies, The Solaire, http://leedcasestudies.usgbc.org/overview.cfm?ProjectID=273.