## 9.4.1 Case Study, The Adam Joseph Lewis Center for Environmental Studies, Oberlin College, Oberlin, Ohio (Education)

**Building Design** 

Floor Area: 13,600 SF Floors: 2 Footprint: 140 ft. x 45 ft. with attached 100-seat auditorium

3 Classrooms (1) 1 Conference Room 1 Adminstration Office

Auditorium, 100 seats 6 Small Offices Atrium

Wastewater Treatment Facility

<u>Shell</u>

Windows Material: Green Tint Triple Pane Argon Fill Insulating Glass

Grey Tint Double Pane Argon Fill Insulating Glass

Fenestration(square feet)

	Window	<u>Wall (2)</u>	window/wall	1	Atrium, Triple Pane (3)		Building, Double Pane	
North	1,675	4,372	38%	1	U-Factor	0.34	U-Factor	0.46
South	2,553	4,498	58%	1	SHGC	0.26	SHGC	0.46
East	1,084	2,371	46%	- 1				
West	350	2,512	14%	- 1				
Overall	6,063	14,153	43%	I				

Wall/Roof

Main MaterialR-ValueWall :Face Brink19

Roof: Steel/Stone Ballast 30

**HVAC** 

Offices/Classrooms: Individual GSHPs (5) 3.9-4.6

1 Large GSHP for ventilation 3.8

Atrium: Radiant Flooring Hydronic Heating System

Auditorium: 1 Standard Range Water Heat Pump 4.2

**Lighting Power Densities (W/SF)** 

Offices: 0.88 Corridors/Others: 0.45 Total Building: 0.79

Classroom/Lecture Halls: 1.18 Atrium: 0.93

**Energy/Power** 

PV System: 60 kW grid-tie roof system

Net Annual Energy Usage (thousand Btu/SF\*year): 16.4

Note(s): 1) Two classrooms seat 36 and one seats 18. 2) Wall total area includes window area. 3) Atrium has only south, north, and east facing windows. 4) Coefficient of performance ranges due to various sizes; GSHPs have the greatest COP 5) GSHP is Ground water Source Heat

Pump.

Source(s): NREL, Energy Performance Evaluation of an Educational Facility: The Adam Joseph Lewis Center for Environmental Studies, Oberlin College, Oberlin, Ohio, November 2004, Table 4.1 p. 10 Table 4.2 p.12 and Table 6.5 p. 94; NREL, Lessons Learned from Case Studies of Six High-Performance Buildings, June

2006, p. 5 Table A-2 p. 130