

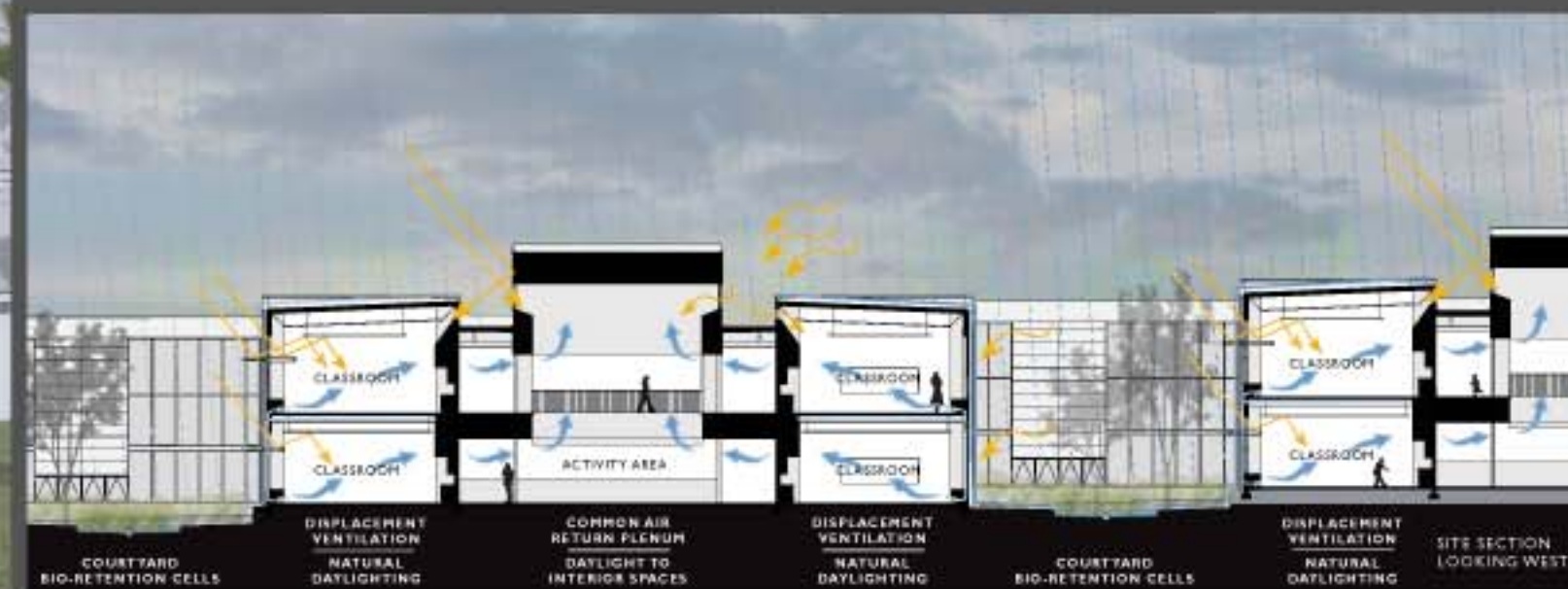
# Gray Middle School | Tacoma, Washington

Gray Middle School will benefit from a fully integrated, high performance design following principals of resource management and sustainability. Given the significant impact school facilities can have on student achievement, the school is designed so students and staff can focus on their educational objectives in a comfortable and healthy environment.

In addition, a school whose unique identity and character are inextricably associated with material and energy conservation through sustainable features like the salvaged glu-lam beams, and a strong physical and visual connection to the outdoors, will instill a sense of pride and responsibility in the users toward their environment.



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**Ground source heat exchanger piping loops** buried under the new field provides both heating and cooling to the library, administration areas, and computer classrooms.

**Automatic electric lighting** controls provide energy saving benefits from the natural daylighting throughout the building.

**Natural daylighting** is achieved through major glazing on the north and south elevations. Models were analyzed to ensure appropriate configuration of windows and the extent of shading devices to control heat gain on the south and west elevations.

**Operable windows** allow users to adjust their own environment to a comfortable level.

**High efficiency condensing boilers** supplement the ground source heat pump system.

**Non-air conditioned displacement ventilation system** located at the core of the classroom clusters optimizes indoor air quality with 100% outside air tempered by a flat plate heat recovery unit.

**Economizers** can be used for temperatures up to 70° Fahrenheit, reducing the cooling requirement for the space.

**CO<sub>2</sub> sensors** are used in the large commons area, library, and gym to minimize heating and cooling when unoccupied.

**Radiant floor heating system** in the large volume gallery and commons spaces connects to the ground source system through high efficiency water to water heat pumps.

Energy Use Intensity (EUI): **78.6 kBtu/sf/yr**  
 Percent CO<sub>2</sub> reduction: **22%**  
 ENERGY STAR design rating: **76**  
 Total Annual Site Energy: **4,256,148 kBtu**  
 Total Annual Energy Cost: **\$57,413**

**Savings Statistics** (compared to an average bldg EPA rating of 50):  
 Energy savings: **2,640,111 kBtu**  
 CO<sub>2</sub> savings: **306,800 lbs CO<sub>2</sub>**

Space Type: **K-12 school**  
 Total Gross Floor Area: **116,820 sf**

