

PROJECT OVERVIEW

The seemingly incomprehensible issues humanity faces, such as climate change, must be taught to children as they become the next stewards of the environment.

Little Dipper Elementary is an interactive climate exploratorium. These complex challenges are symbolized and broken down into kid-sized interactive exercises, through the school's design.

As architecture and form take a back seat, climate systems and interactive objects become the drivers of students' education. This relationship of focused learning moments exists at all scales throughout the school.



Fig #2 : view of entry pavilion

GENERAL PROJECT INFORMATION

location	Tecate, California
elevation	2,293 ft
lot size	2.3 acres
classrooms	790sf x 12 = 9,480sf
restrooms	270sf x 4 = 1,080sf
gym	4,400sf
library	2,950sf
mechanical	112sf x 5 = 560sf
total enclosed	17,910sf
covered exterior circulation	8,000 sf
pavilions	1,700sf
total covered	27,160sf
stories	1
occupancy count	360

table #1 : general project information

EUI TARGET

competition requirement	57 kBtu/ft ² per yr
max target site energy	17.5 EUI
estimated school site energy	13 EUI **
estimated produced site energy	23 EUI
estimated total energy	+10 EUI **

Table #2 : EUI target

** based on IESVE estimations with a radiant floor heating system and passive chilled beams.

GENERAL SPECIFICATIONS

wall assembly	R-28
slab assembly	R-16
roof assembly	R-60
heating load	129.6 kBtu/h
cooling load	337.6 kBtu/h
peak heating load	7.85 Btu/ ft ² /h
peak cooling load	17.01 Btu/ ft ² /h
ventilation load	1085.1 cfm
PV electricity annual	598,703 kBtu (PV Watts)

Table #3 : general specifications

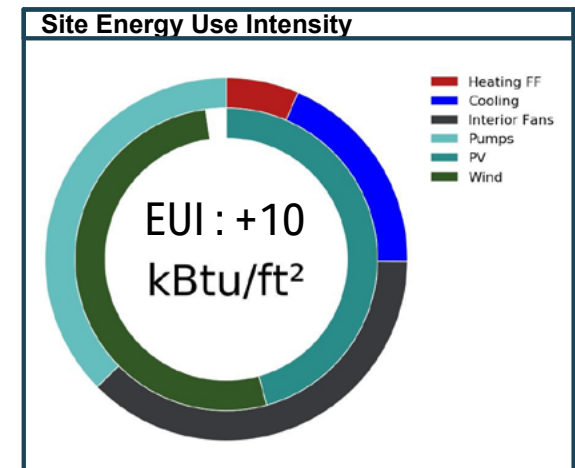


Fig #3 : site energy use intensity

ANALYSIS TOOLS:

- Mechanical and Electrical Equipment for Buildings
- IESVE
- Climate Consultant
- Zero Tool
- <https://www.hpac.com/archivearticle/20925052/making-a-case-for-reduced-classroom-ventilation>
- PV Watts
- Building Science Training
- OneClick LCA
- REM/Rate

CONTEXT SOURCES:

- <https://cal-adapt.org/tools/degree-days/#climatevar=cdd&start=01-01&end=12-31&scenario=rcp45&lat=37.28125&lng=-120.46875&boundary=locagrid&units=fahrenheit>
- <https://www.point2homes.com/US/Neighborhood/CA/Tecate-Demographics.html>
- <https://www.sandiegouniontribune.com/lifestyle/travel/sdut-just-across-the-border-treasures-of-tecate-2012apr19-htmlstory.html>
- <https://thediggings.com/places/ca073-99937846/mines>
- <https://www.privateschoolreview.com/tecate-christian-school-profile>
- ASHRAE Advanced Energy Design Guide for K-12 School Buildings: Achieving Zero Energy

This report is created in ADOBE InDesign using a Aktiv Grotesk 11pt font text with 13.2 pt leading