Belmont Village - Methodology for Carbon Emissions Estimates
Albany, California

Emission values are based upon building electricity and natural gas values calculated from the energy model using EnergyPro v5.1 software. Baseline energy use assumes the building is built to 2008 Title 24 code. Energy use for the proposed case is based upon the current design of the building, which is 21% better than code.

Improvements above and beyond code include:

- High efficiency heating and cooling equipment for both apartments and commercial spaces on the first floor
- High efficiency gas boiler for water heating and centralized solar water heating to provide 50% of the building's annual hot water loads.
- High efficiency lighting in both apartments and commercial spaces
- EnergyStar appliances in all apartments
- Rooftop PV system to offset 1% of the building's electricity use

To estimate operational emissions from electrical consumption, annual building electricity was converted to CO_2 per year using *0.713 lbs. CO_2 per kWh* (0.66868 lbs. CO_2 per kWh plus 8.21% assumption for grid loss). These values came from U.S. EPA, using EPA's eGRID2009 GHG annual output emissions rate for California electric power[1].

To estimate operational emissions from natural gas consumption, annual building gas use was converted to CO_2 per year using *11.7 lbs. CO_2 per therm*, as reported by the U.S. Energy Information Administration for the emissions rate for natural gas combustion (EIA 2011).

Pounds CO2 was converted to metric tons CO2 (MTons) using the following equivalency.

1 MTon = 2,204.623 lbs (to convert to metric tons)

[1] http://www.epa.gov/cleanenergy/documents/egridzips/eGRID2012V1_0_year09_SummaryTables.pdf