

Garage DCV System Case Study: 1300 S. El Camino Real, San Mateo

97% Garage Energy Savings Amounts to 12% Drop in Entire Property's Annual Utility Bill



1300 S. El Camino Real, San Mateo

The Property

1300 South El Camino Real is a six-story office building located on in San Mateo, CA. The property sits above a two-story, below-grade parking garage that houses 300-plus vehicles. The garage is open to tenants and visitors Monday through Friday.

The Savings Opportunity

The garage at 1300 South El Camino Real is ventilated by four (4), 10-horsepower exhaust fans, which prior to retrofit by Nagle Energy Solutions (NES), were each run 14 hours a day, Monday thru Friday. That amounts to 70 hours per fan, per week.

Power measurements, which NES routinely employs, showed the garage fans' combined energy consumption to be 113,546 kilowatt-hours (kWh) per year, with a correlating power demand of 36.3 kilowatts (kW). Based on the property's electric utility

rate – \$0.17/kWh – the annual cost to ventilate the garage amounted to \$19,303.

Initially, due to low building-occupancy, there was some hesitance in retaining NES to install our innovative carbon monoxide (CO) sensor-based, demand-control ventilation (DCV) system for parking garages. Property management (CBRE at the time) was required to strike a balance between the harsh economic reality of low-building occupancy and the need to ventilate the garage in accordance with Mechanical Code and ASHRAE requirements and thus ensure the health and safety of building occupants.

The NES Solution

The system installed NES by “syncs” variable frequency drive (VFD) technology to a proprietary, smart-control logic that detects and measures vehicle fumes and modulates fan motor speeds to prevent CO levels from exceeding 10 parts per million (ppm) for extended periods of time. The result is to enable property owners to continuously ventilate their garages in an energy efficient manner while ensuring the health and safety of building occupants and visitors.

NES asserted that our system would dramatically reduce building-operating expenses while meeting the requirement to ventilate the garage during business hours. Based on measured fan motor efficiency, the physical design of the garage and occupancy / traffic trends, NES calculated that the combination of our project design, ventilation strategy and system would result in kWh savings amounting to **at least** 90% while reducing peak kW demand by the same percentage – or greater.

The Results

NES collaborated with engineers for PG&E throughout the inspection process, sharing pre- and post-installation measurement and verification (M&V) data. Post-installation measurements showed we easily surpassed the initial energy savings estimate.

Energy Use	Pre Installation	Post Installation	\$ Savings	% Savings
Total kWh	113,546	3,436	110,100	97.0%
Total Cost @ \$0.17/kWh	\$ 19,303	\$ 584	\$ 18,717	97.0%
Total kW Demand	36.3	1.1	35.2	97.0%

In fact, our garage DCV system reduced the entire office building's electric bill by 12% and the garage electric bill by 97%. The garage fan motors' kWh consumption was decreased by 110,100 kWh, lowering the cost to ventilate the garage by more than \$18,700 – to just \$584 per year. Annual peak demand was reduced by 97% – from 36.3 kW to 1.1 kW.

The system will pay for itself in just 27 months – not including a \$10,000-plus rebate from PG&E.

About Nagle Energy Solutions (NES)

Nagle Energy Solutions, LLC (www.nagle-energy.com) is a manufacturer, distributor and installer of an innovative demand-control ventilation (DCV) system for commercial garages that reduces energy consumption by an average of 93%.

Our sales and service capabilities extend nationally and internationally.

NES digital controllers and peripherals are scalable and conform to several building management system (BMS) and energy management system (EMS) communication platforms, as well as monitor / report on energy consumption/savings.

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