

Garage DCV System Case Study: Parc Pointe Apartments, Burbank

NES Garage Retrofit Cuts Entire, Annual Energy Bill for Apartment Complex by 38%

The Property

Owned and operated by Anchor Pacifica Group, Parc Pointe Apartments is one of Burbank's preeminent and popular apartment complexes. The property houses two (2) split-level garages, which are adjacent to each other. The upper level of each garage is at ground level, and it is provided with ample natural ventilation. The lower level of each garage is below grade, and they are served by two (2), separate garage ventilation systems. The total, combined square footage of the lower-level garages is 71,500 square feet, with one garage measuring at 37,000 square feet and the other measuring at 34,500 square feet. Combined, the garages accommodate approximately 240 cars.



Parc Pointe Apartments, Burbank, CA

"I appreciate the ingenuity NES demonstrated in helping us drastically reduce our energy costs while holding installation costs to a minimum. The net present value (NPV) on a project price of \$69,700 exceeds \$490,000 and the minimum cash inflow it will provide surpasses \$600,000 over the life of the system. This was truly a no brainer."

Brian Botsford, Asset Manager, Anchor Pacifica Group

The Challenge

Each garage possesses nine (9) small motors – with horsepower (HP) ranging from 2 HP up to 7.5 HP – for a total of 18 motors. The challenge was to minimize the bill of material (BOM) while accounting for the need to incorporate variable frequency drives (VFDs) in our garage ventilation strategy / solution.

On-site inspection(s) of the garages' respective electrical systems confirmed it was possible to reduce the total number of VFDs by a half – from 18 (or one [1] VFD per motor) to nine (9) – by combining two (2) and, in some instances, three (3) low-HP motors on to one (1) VFD. The result was to reduce the entire BOM such that, based on the energy savings captured by our system, the project paid for itself in just 18.5 months.

The Savings Opportunity

The total, combined horsepower ventilating both garages is 71 HP running on a 24/7 basis, which equates to 8,760 hours of runtime per year, per motor. NES determined the baseline of energy consumption to be 326,837 kilowatt-hours (kWh) per year, with a correlating power demand of 37.31 kilowatts (kW), by measuring each garage fan motor's true power (kW) consumption, plus their voltage and current (amperage) output and actual (versus rated) power factor (PF).

Based on an electric utility rate of \$0.1471/kWh and accounting for additional charges incurred by running the garage fans during peak demand periods each day, Anchor Pacifica Group's annual cost to ventilate the Parc Pointe Apartments garages is \$48,080.

After factoring for the impact(s) of the respective motor loads on our sensor-based, demand-control ventilation (DCV) system – some of which fell below the Department of Energy's minimum standard for three-phase motors of 50% – NES calculated we'd reduce Parc Pointe Apartments' annual energy (kWh) consumption and peak kW demand by 92% or greater. Our calculations accounted for in daily traffic patterns in each garage, as well as their physical design and layout.

The Results

NES retrofitted the garage ventilation system for each of Parc Pointe Apartments' garages in March 2013. One week's worth of post-installation data logging – measuring kW consumption, voltage and current (amperage) output and power factor at intervals of one (1) per minute, 24 hours per day – showed our garage DCV system will reduce the garage fan motors' combined kWh consumption by 307,891 kWh a year – a 94.2% savings. Peak kW demand is reduced by 35.15 kW, which also equates to a 94.2% savings.

Energy Use	Pre Installation	Post Installation	\$ Savings	% Savings
Total kWh	326,837	18,946	307,891	94.2%
Total Cost @ \$0.147/kWh	\$ 48,080	\$ 2,787	\$ 45,293	94.2%
Total kW Demand	37.3	1.9	35.2	94.2%

Lastly, the annual cost savings amounts to approximately \$45,300 – a 94.2% savings. Our system will lower Anchor Pacifica Group’s cost to ventilate its garages from \$4,000-plus per month to just \$230 per month.

According to Anchor Pacifica Group, our system reduced the annual energy bill for the entire property by 38%.

Our Solution

NES installed an innovative, “variable flow” DCV system for garages, “syncing” variable frequency drive (VFD) technology with 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. This enables property owners to continuously ventilate their garages in an energy efficient manner while ensuring the health and safety of building occupants and visitors.

As previously noted, the system paid for itself at Parc Pointe Apartments Village in **18.5 months** – not including a \$15,500-plus rebate from Burbank Water and Power.

NES collaborated with engineers for Burbank Water and Power throughout the entire retrofit process, sharing pre- and post-installation measurement and verification (M&V) data. Burbank Water and Power issued its formal approval of the project within one day of receiving post-retrofit M&V data.

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% – with quantifiable savings as high as 97% achieved.

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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