

Electrification at Monsignor Lyne

When it comes to decarbonization, solar panels get quite a bit of flash and marketing – and rightfully so. They save people a lot of money while reducing our reliance on a power grid that burns fossil fuels. Solar’s sibling in decarbonization tends to be overlooked: electrification.

Electrification, or exchanging appliances powered by natural gas to electric-powered ones, is essential for a property’s ability to decarbonize. Simple changes in machinery can drastically reduce a community’s Scope 1 Emissions, or emissions that a property owns/controls.

Monsignor Lyne, a 20-unit property in San Francisco’s Castro District, is a shining example of a large-scale electrification project that improved on energy efficiency, carbon emissions, and the quality of life for its senior residents.

Working directly with Carbon Zero Buildings, Mercy Housing implemented the following measures at Monsignor Lyne:

- Replacing the gas boiler with a high-efficiency central heat pump water heater
- Installing a common area HVAC system
- Upgrading apartment and common area lighting to LEDs
- Replacing gas dryers with electric models
- Installing low-flow faucet aerators and showerheads

By electrifying its water heating, cooling, and laundry, the property can protect itself from the volatility of California’s natural gas prices, while taking advantage of available incentives before California’s imminent ban on the purchase of new gas water heaters. The property’s fixed-income senior population will also see some benefits, as the lighting upgrades show slight reduction to their energy bills. The property will avoid over 10.1 metric tons of Carbon Dioxide emissions a year, which is equal to over 5.5 tons of coal burned per year. This is no small feat. Despite the size of the property, it would have taken 12 acres of U.S. forests every year to properly sequester the Carbon Dioxide that it was responsible for annually. Being able to remove that allows our forests to sequester other Carbon Emissions. Every property that gets such a retrofit aids in meeting Mercy’s Better Climate Challenge goal, which is to reduce Greenhouse Gas Emissions throughout the national portfolio by 50% over a ten-year span.

Electrification is not a cost-friendly measure. Affordable Housing does not have the same financial resources as its for-profit counterparts do for such an investment. Mercy Housing’s Green Hope team has leveraged various state and local incentive programs to reduce the property’s net investment by 82%. Such incentive programs increase access to such decarbonization measures and allow for a more sustainable future in our existing buildings.

Looking forward, Monsignor Lyne will replace its in-unit HVAC with a mini-split heat pump systems and replace the washers in the laundry room with Energy Star certified front-loading washers. Outside of Monsignor Lyne, Mercy Housing’s Green Hope team is in various stages of development for electrification and energy efficiency projects spanning nine properties and over 500 units, leveraging about \$4.5 million in state and local incentives. Doing so will dramatically reduce Scope 1 Emissions at all nine properties while providing low-income tenants with utility savings.



2024 Green Hope Highlights

PV & Battery Storage at Grace & Willow Street Apartments



This past year we celebrated the successful installation of rooftop solar systems for two Denver properties, Grace Apartments and Willow Street Apartments. The solar panels were fully funded by a grant from the City and County of Denver's Renewables & Resilience Incentive Program. This grant also fully funded the construction of battery storage at Willow Street. The battery system at Willow Street will support critical load needs for residents that rely on powered medical equipment. We partnered with Grid Alternatives to install the panels and battery storage at both properties.

Once complete, the panels will produce 140,508 kWh of energy comparable to the annual electricity use of 14 homes in Denver and offset 68,300 lbs. of CO₂ equivalent to 36.9 acres of U.S. forests in one year. The rooftop solar will further increase financial resilience by saving the properties \$9,000 in the first year and provide a pathway for the properties to meet Denver's Building Performance Standards.

Weatherization at Wentworth & Schiff Residences

In 2024 Green Hope reached our goal of prioritizing weatherization retrofits for properties in regions with colder climates. In addition to reducing energy use and costs, weatherization makes residents living spaces more comfortable by reducing drafts and improving air quality. Wentworth Commons and Schiff Residences residential units were treated with air sealing, weatherstrips, and door sweeps at no cost through the Multi-Family Energy Savings program in partnership with Elevate Energy. The units were also treated with free low flow fixtures, LED lights, and 210 TLED lights were installed in the common area of Schiff Residences. These improvements are estimated to reduce electricity use by 20,279 kWh and gas use by 2,683 therms.



Central Heat Pump Water Heating at Boulevard Court

The best fossil fuel water heaters available are close to 99% efficient. That means that about 99% of gas's potential is used to raise the temperature of the water. What if it were possible to be more than 100% efficient? That is the beauty of heat pump technology. Rather than converting gas or electric energy into heat, like in an oven or on a stove, heat pumps use electricity to move existing heat energy using refrigerants. This gives heat pumps the ability to exceed 300% efficiency.



While heat pumps technology has been around for over 100 years, it has really started to shine as a water heating technology over the past decade. It has become more reliable and less costly to install. While natural gas may be less expensive than electricity, the efficiency of the system translates to monetary savings. Better efficiency and all-electric also means less greenhouse gases are produced, especially in California, as the state reduces the amount of fossil fuel used in electricity production.

A central heat pump water heating system was the center of a 2024 retrofit at Boulevard Court in Sacramento, California. The old central boiler system was replaced with 16 SanCo2 heat pump water heaters. To further save on water heating energy, low flow aerators and showerheads were installed in each of the dwelling units. Dwelling units were also retrofitted with LED lighting throughout. A new astronomical timeclock was added to ensure that outdoor lighting was only after sunset and before sunrise each day.

11 months of utility data shows a dramatic decrease in total energy consumption and emissions. Boulevard Court is anticipated to avoid 37 metric tons of Carbon Dioxide emissions in 2025 – the equivalent of 41,000 pounds of coal burned, or avoiding the amount of CO₂ offset by 37 acres of forests. Utility bill data has estimated that the project will save over \$10,000 on natural gas each year.

The installation of these SanCo2 systems at Boulevard Court mirrors successful heat pump water heater installations at Monsignor Lyne and Junipero Serra in 2024, with more at Notre Dame, Dorothy Day, and Mercy Terrace expected to complete and provide emissions and utility savings in 2025.