



ENERGY
SOLUTIONS



Case Study: Lam Family Home in Elkton, VA

Community Housing Partners, Project Manager

Dominion Energy Virginia EnergyShare
Virginia Department of Housing and Community Development
United Way of Harrisonburg and Rockingham County
The Carpenter's Guild

\$19,268

Total value of
upgrades

\$1,519

Expected Annual
Savings

13,206

Projected Annual
kWh Savings*

*mixed electric & propane

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-Nancy Lam, Elkton, Virginia

The Client and Her Home

When Nancy Lam found her way to Community Housing Partners (CHP) in July of 2019, no one expected that the journey to the home repairs and weatherization that would allow her to stay in her home of 64 years would span multiple years. Through partnership and perseverance in the face of the worldwide COVID pandemic, Nancy is now safe and comfortable in the home she shared with her husband, Orbin, before his passing in 2019.

Nancy's home is a farmhouse-style 3-bedroom, one-bath, vinyl-sided wood-frame home with tin roofing. It is situated on over four acres in rural Elkton, Virginia just outside of Harrisonburg in Rockingham County. Nancy has lived in Elkton her entire life. She and her husband bought the home from her uncle in 1957, the same year they were married. Nancy and Orbin, a Marine Corps veteran of the Korean War, raised their family in the house and the property remains a multi-generational home with her son and grandson living in their own home behind Nancy's house.

Nancy credits the nurse who cared for her husband during his illness with connecting her with the United Way, who in turn connected with CHP and Dominion Energy. "It means everything to have this work done. It is the difference between me having to leave my home and being able to stay. I get to stay at home," says Nancy.

Scope of Work

All CHP energy efficiency projects start with a comprehensive energy and safety inspection or audit of the home. Upon inspection of Nancy's home, three key issues emerged that prevented weatherization work from proceeding: drainage issues at the back of the house with resulting water damage to floors and walls, leaky Quest-style water pipes in the attic, and a damaged woodstove that struggled to heat the home adequately and safely. Through a combination of funding sources and partners, these issues and more were addressed before energy efficiency upgrades were installed.



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A French drain was installed to route water away from the back of the house and the damaged floors and walls were repaired. The Quest-style pipes were replaced with PEX piping to allow for blown insulation in the attic. A Rinnai LP Space Heater, fueled by propane gas, was installed and broken fire brick in the woodstove was repaired. The flue was then cleaned to allow the home to be heated safely.

After these major repairs, the weatherization work could proceed. Blower door guided air sealing was performed throughout the house including accessible plumbing and wiring penetrations, and weather stripping and door sweeps were installed at all exterior doors. The result was a 20% reduction in air leakage. Loose-fill blown fiberglass insulation was added to all three attic spaces bringing the previously uninsulated attics up to the recommended R-38. A retaining dam was installed around the chimney and stove pipe in the main attic to keep the loose-fill insulation in its intended location and clear of heat sources. Exposed and accessible hot water pipes, as well as the water heater, were insulated. Densely packed blown fiberglass insulation was added to four walls. Ten LED lightbulbs were installed throughout the house.

Other smaller repairs and safety issues were also addressed, including a broken kitchen window, leaking kitchen sink pipes, two improperly vented bathroom fans, and a broken dryer vent. A carbon monoxide detector and smoke alarms were also installed.

"This complex project in the face of adversity is really what CHP Energy Solutions is all about. The commitment of our partners Dominion Energy, Virginia DHCD, United Way, and the trust of the client resulted in a safer, more comfortable and affordable home for a senior resident — that's the best result."

-Mark Jackson, Vice President, Energy Solutions, CHP

Partnership and Perseverance

When her husband was ill, the nurse caring for him helped Nancy connect with the United Way for help to address the problems in her home. United Way, in turn, reached out to Dominion Energy Virginia about including Nancy's home in their Day of Caring volunteer event. Due to the extent of the repairs the project was not feasible for volunteers, so Dominion brought in CHP, one of their Weatherization Service Providers. CHP was able to braid its federal weatherization funds from the Virginia Department of Housing and Community Development (DHCD) with Dominion's EnergyShare program for the energy efficiency upgrades. The United Way funded the French drain and the local Carpenters Guild stepped up to provide free skill and labor for the floor and structural repairs. Through this extensive partnership, Nancy was able to get the help she needed to make her home safe and comfortable and reduce her energy burden.

With the complexity of the repairs and the coordination required among partners, the timeline for the project was longer than usual. The initial energy audit was done in August 2019 and the drainage work was completed by winter of the same year. A revised scope of work and timeline was completed in

February 2020 just before the COVID pandemic hit causing all work to stop. As the early months of the pandemic went by, CHP stayed connected with Nancy, monitored conditions, trained crews in new COVID protocols, and resumed on-site work when it was safe to do so. Nancy persevered too, keeping faith that her home would be fully repaired and weatherized as soon as possible.

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The Impact Continues

Weatherization clients most often find their way to CHP through word-of-mouth contact like Nancy did with the nurse caring for her husband. CHP's work and positive impact for Nancy and the local community continues as her son has now been approved for weatherization work on his mobile home. This multi-year effort continues and grows with multi-generational impact reducing energy burden and improving health, safety, and comfort for the entire family.

Installed Upgrades

Building Envelope

- Attic insulation
- Attic access hatch
- Wall insulation
- Insulation dam
- Air sealing

Baseload

- LED lightbulbs
- Hot water pipe insulation
- Hot water tank insulation

General repairs

- Electrical
- Wood stove
- Floors & walls

Heating

- Rinnai LP Space Heater

Water Management & Plumbing

- French drain
- Quest pipe replacement/rerouting
- Kitchen sink repair

Health & Safety

- Carbon monoxide alarm
- Dryer venting
- Exhaust fan venting
- Fire extinguisher
- Smoke alarms
- Lead remediation

