Case Study:
Christiansburg Bluff
Apartments, Christiansburg, VA

Community Housing Partners (CHP) Energy Solutions, Program Administrator
Appalachian Power TakeCharge Virginia Low-Income Multifamily Program
Quick AC Quote, subcontractor
Trane, equipment partner

<table>
<thead>
<tr>
<th>$506,846</th>
<th>$65,282</th>
<th>592,392</th>
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<tbody>
<tr>
<td>Total Value of Upgrades</td>
<td>Estimated Annual Savings</td>
<td>Annual kWh Savings</td>
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The Property

Christiansburg Bluff Apartments is a 120-unit low-rise, garden-style, income-qualifying multifamily property in Christiansburg, Virginia. The low-income, elderly, and special needs residents qualify for HUD Section 8 project-based rental assistance. The complex, built in 1978, is spread across 12 wood frame buildings with a designated heat pump for each individually metered unit and electric resistance water heaters. Residents receive utility allowances and pay approximately 30% their adjusted income on rent and utilities. The property is owned and managed by City Renewal Management.

High Efficiency Heat Pumps key to Big Energy Savings

CHP Energy Solutions installed insulation and performed air sealing at Christiansburg Bluff through the federal Weatherization Assistance Program in 2012. While this weatherization work resulted in significant energy savings, the property had heat pumps with an average age of 17 years, and some as old as 42 years. These aging heat pumps were not only not working at their peak efficiency anymore, heat pump technology itself is continually improving. It was time to realize even more energy savings by updating the old 11 SEER heat pumps with new high-efficiency 16 SEER units.

84 units were replaced and an additional 36 newer units were cleaned and tuned up through the Appalachian Power TakeCharge Virginia Low-Income Multifamily Program which allows for HVAC replacement and maintenance. We partnered with Trane to procure the heat pumps in bulk and contracted with Quick AC Quote for installation.

In addition to the heat pumps, Appalachian Power’s TakeCharge Virginia Low-Income Multifamily Program also covered replacement of all failing water heaters, water heater and pipe insulation, LED bulbs and low-flow faucet aerators and showerheads.

"Thank you for all the upgrades and please know the staff selected for this project were all friendly, courteous, and here to get the job done quickly. It’s so appreciated! As a retiree, I will be here a long time.”

— Diane, Christiansburg Bluff resident
All of these upgrades combined resulted in an overall annual savings of 592,392 kWh worth $65,282. In a HUD property like Christiansburg Bluff where residents pay a fixed amount of their adjusted income on rent and utilities, this savings means more funds for deferred maintenance and resident services, contributing to the long term sustainability and quality of life at the property.

Scope of Work

Heating & Cooling

Heat Pump Replacements
- 84 units older than 10 years, or less than 11 SEER, were upgraded to Trane 16 SEER, 9.6 HSPF units.

Heat Pump Clean and Tune
- 36 units were cleaned and tested and refrigerant was recharged.

Baseload

Water Heater Replacements – failing units
Water Heater Insulation Blankets – all units
Hot Water Pipe Insulation
LED Lightbulbs
Low-Flow Faucet Aerators
Low-Flow Showerheads

Health & Safety

All 120 units were assessed for health and safety, including indoor air quality issues and other hazards.

The Process

All CHP Energy Solutions projects start with a 12-point Health & Safety Assessment. Assessments were conducted on all 120 units to ensure no hazards were present and to identify other issues that can affect indoor air quality like broken exhaust fans. CHP Energy Solutions then conducted diagnostic energy audits on 14 units, representing a sampling of 10% of each unit type. After assessments and diagnostics, the installation work began in phases that allowed for minimal disruption to residents. CHP Energy Solutions crews organized their pipe insulation, bulb, and low-flow fixture work so that for almost all households they only needed to access the apartment once. CHP and Quick AC Quote worked to meet the specific aesthetic and landscaping needs of the property regarding the spacing of the outdoor heat pump units. The property manager and residents were fully informed every step of the way from the first day of crews on the ground to final inspection.

“I have been in property management for 26 years and have dealt with hundreds of contractors for major renovations, restorations and even new construction and I have to say the Energy Solutions crew made this process seamless. This community needed and appreciates these upgrades more than any of you will ever know!”

— Victoria Lytton, Christiansburg Bluff Property Manager