



Energy Saving Performance Contract Program

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Overview

- To date, LCPS in partnership with their Energy Service Contractor (ESCO), has implemented energy conservation measures (ECMs) at 51 schools:
 - \$162M in work over 12 Phases
 - 7 MW of photovoltaic solar arrays at 17 schools
 - LED lighting and lighting controls installed at 35 buildings
 - Ground source heat pump well fields installed at three schools
 - Retro-commissioning completed at 37 schools
- Investing to produce guaranteed savings while:
 - Enhancing indoor air quality (IAQ) and increasing outside air introduction
 - Maximizing energy efficiency during life-cycle equipment replacement
- Leveraged \$16.9M in grant funding
- Facilitated component-level operations and maintenance (O&M) repairs



Background

- In 2019, utilizing a VA Dept of Energy contract, LCPS solicited for Back of Envelope (BOE) audits/proposals from pre-qualified Energy Service Companies (ESCO) from 15 pre-qualified ESCOs
- Four vendors completed facility audits and provided proposals for ECM development and implementation
- Vendors were rated based on Proposed staffing, Implementation plans, Energy Savings, Training/Support, and References
- LCPS awarded a Master Agreement to the selected ESCO (Base year w/ four options) to conduct Energy Performance improvements across the division
- In 2025, LCPS will award Master Agreements to two ESCOs (base year plus nine options).



Program Approach

- Energy Performance Upgrades (Capital Funded)
 - LED Lighting, BAS Upgrades, Retro-Commissioning, Envelope Improvements, Solar Arrays, Transformer Upgrades, Plumbing System Improvements, Analytics, Power Monitoring, Demand Limiting, Utility Rate Analysis
 - Goal: Upgrades pay for themselves
- Critical Systems Renewals (Capital Funded)
 - Whole building end-of-service-life replacement of MEP systems
 - Goal: Extend building life while improving energy efficiency
- Component Replacements (Capital and O&M Funded)
 - Lifecycle replacement of MEP equipment
 - Goal: Extend building life while improving energy efficiency



Ph 1 (2020): JL Simpson Middle School Energy Savings

Cost: \$1.95M

20 Yr. Guaranteed Savings: \$2.45M

- Full-Scope ECM implementation
 - 593 kW Solar Array - LED Lighting
 - HVAC Building Controls Upgrades
 - Retro-commissioning
 - Transformer Replacements
 - Elimination of propane consumption
 - Building envelope upgrades
- Energy Use Intensity (EUI): 15.2 kBTU/sf
- CO2 Reduction: 326 tons/yr
- Actual Savings: \$394K (\$336K guaranteed)



Ph 2 (2021): HVAC Upgrades and Energy Savings

Cost: \$20.8M

20 Yr. Guaranteed Savings: \$1.7M

- HVAC renovations (\$17.6M)
 - Upgrades to introduce code required outside air to support return-to-school during COVID
 - Ground Source Heat Pumps
- ECMs implemented
 - 244 kW Solar Array
 - Building Automation
 - LED lighting/controls
 - Envelope repairs and window replacements
- Fire Suppression installation
- CO2 Reduction: 288 tons/yr
- Actual savings: \$263K (\$144K guaranteed)



Ph 6 (2023): Critical Systems Renewals

Cost: \$19.5M (\$8.2M Grant) 20 Yr. Guaranteed Savings: \$1.2M

- Life cycle replacement of MEP systems
 - LED lighting/controls
 - Fire sprinkler system installations
 - Building Envelope repairs
 - Ceiling replacements
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- CO2 Reduction: 123 tons/yr (*est*)
 - 1st year savings: \$52k (*est*)



Ph 8 (2024): Critical Systems Renewal

Cost: \$14.5M (\$4.4M Grant) 20 Yr. Guaranteed Savings: \$2M

- Life cycle replacement of MEP systems
- Installation of Ground Source Heat Pumps
- 505 kW Solar Array - LED lighting/controls
- Indoor Air Quality improvements
- *Designed to achieve the Zero Energy designation, a first for Loudoun County*
- *First known Zero Energy ESPC renovation project*
- \$4.5M in IRA Tax Credits anticipated in 2025
- Projected EUI: **-6.3 kBTU/sf**
- CO2 Reduction: 247 tons/yr (est)
- First year savings: \$88K (est)





Thank You

Questions?