

MSAD #6 / Bonny Eagle School District

Proposed Bond Projects — Scope of Work

Bond Warrant: \$8,205,023

H.B. Emery School — Buxton — \$1,113,627

VRF System — \$649,000 (Potential Rebates: \$320,000)

H.B. Emery's heating system relies on aging Weil McLain dual-fuel boilers feeding pneumatic-controlled terminal units throughout the building. The pneumatic controls are original to the building, use compressed air actuators that are increasingly unreliable, and offer no remote monitoring or scheduling capability. The building has no air conditioning — during warm weather months, classroom temperatures regularly exceed comfortable learning conditions, limiting the district's ability to use the facility for summer programming, professional development, or community events.

This project installs a new Variable Refrigerant Flow (VRF) heat pump system to provide modern, energy-efficient heating and cooling to all served zones. VRF technology uses refrigerant-based heat transfer to deliver precise zone-level temperature control — each classroom and office space can be independently conditioned based on occupancy and load. The system provides both heating and cooling from a single platform, eliminating the building's complete dependence on fossil-fuel heating and adding cooling capability that does not currently exist.

Scope includes outdoor condensing units, indoor fan coil units across all served zones, refrigerant piping rough-in, electrical connections, BACnet integration with the district's centralized Niagara/Distech building automation server, new graphics development for remote monitoring and scheduling, and full system commissioning. The VRF system qualifies for Efficiency Maine heat pump incentives estimated at \$320,000, significantly reducing the net cost to the district.

Upon completion, H.B. Emery will have year-round climate control, reduced fossil fuel consumption, lower operating costs, remote monitoring capability from the district's central BAS platform, and the ability to support summer and extended-day programming.

Boiler Upgrade — \$464,627

The existing boiler plant at H.B. Emery consists of two Weil McLain 78 series dual-fuel boilers that have reached end of useful life. These units are no longer manufactured, replacement parts are increasingly difficult to source, and the boilers operate at significantly lower efficiency than modern equipment. The boiler room controls are pneumatic — the same compressed-air system that controls the building's terminal units — offering no diagnostic capability, no remote access, and no ability to optimize plant operation based on outdoor conditions or building

demand. A boiler failure during the heating season would leave the building without heat and force emergency measures to maintain occupancy.

This project removes the existing boilers and all associated pneumatic controls in the boiler room and installs new high-efficiency condensing boilers capable of achieving 95%+ thermal efficiency. Condensing boilers extract additional heat from flue gases that conventional boilers waste, significantly reducing fuel consumption per unit of heat delivered. The boiler room will be equipped with modern DDC (Direct Digital Control) controls integrated into the district's centralized Niagara/Distech building automation platform, enabling remote monitoring, alarm notification, automated scheduling, and optimized plant sequencing.

Scope includes demolition of existing boilers and pneumatic controls, installation of new condensing boilers, flue and venting modifications for condensing operation, hot water piping modifications, domestic hot water integration, DDC controller installation, programming of boiler plant sequences, BACnet integration with the district BAS, graphics development, and full system commissioning and startup.

Note: DDC upgrades under this scope address boiler room and plant-level controls only. Existing pneumatic end devices at terminal units (unit ventilators, cabinet heaters, etc.) will remain active and functional. This project establishes the digital controls backbone in the mechanical room and positions the building for a future 100% DDC conversion at the terminal unit level.

The VRF and boiler projects are complementary — together they transform H.B. Emery's entire heating infrastructure from end-of-life equipment with no monitoring capability to a modern, efficient, remotely managed system. The VRF handles primary zone-level heating and cooling while the new boiler plant provides reliable hydronic backup heat and domestic hot water.

Hollis Elementary School — Hollis — \$1,371,087

Boilers & DHW Heater — \$667,330

Hollis Elementary's heating plant consists of aging oil-fired boilers and a domestic hot water system that are approaching or have exceeded their expected service life. The boilers operate on #2 fuel oil at conventional (non-condensing) efficiency, consuming significantly more fuel per unit of heat output than modern equipment. The boiler room controls are pneumatic, providing no remote monitoring, no diagnostic capability, and no ability to optimize operation based on real-time building demand or weather conditions. The domestic hot water system is similarly aged and serves the building's restrooms, kitchen, and custodial needs. Failure of either system during the heating season would require emergency response to maintain building occupancy.

This project replaces the entire boiler plant and domestic hot water system with new high-efficiency condensing boilers and a modern DHW heater. The new boilers achieve 95%+ thermal efficiency by recovering heat from flue gases, substantially reducing annual fuel consumption and operating costs. All pneumatic controls in the boiler room are replaced with DDC controls integrated into the district's centralized Niagara/Distech building automation platform,

providing remote monitoring, alarm notification, automated scheduling, and optimized plant sequencing from any networked device.

Scope includes demolition of existing boilers, DHW heater, and pneumatic boiler room controls; installation of new condensing boilers and DHW heater; flue and venting modifications; hot water piping modifications; DDC controller installation and programming; BACnet integration with the district BAS; graphics development; and full system commissioning.

Note: DDC upgrades under this scope address boiler room and plant-level controls only. Existing pneumatic end devices at terminal units remain active. This project positions the building for 100% DDC integration in the future.

AHU / HRU Replacement — \$604,007

Hollis Elementary's ventilation system currently relies on two separate pieces of equipment working in tandem: a heat recovery unit (HRU) mounted on the roof and an oil-fired air handling unit (AHU) located in the mechanical room. The roof-mounted HRU has failed and is no longer operational — the building is not receiving the ventilation air recovery that the original design intended. The mechanical room AHU is oil-fired, meaning it burns fuel oil directly to condition ventilation air rather than using the building's hydronic heating loop. This split configuration is inefficient, difficult to maintain, and with the HRU failure, is not delivering adequate ventilation to the pitched-roof classroom wing it serves.

This project removes both the failed roof-mounted HRU and the oil-fired mechanical room AHU and replaces them with a single new hot water heat recovery unit installed in the mechanical room in the footprint of the existing AHU. The new HRU features an energy recovery core to reclaim heat from exhaust air, and a hot water heating coil connected directly to the new boiler plant (see Boilers & DHW scope above). This consolidates two pieces of failing equipment into one modern, efficient unit — eliminates the problematic roof penetration, removes the direct-fired oil burner from the ventilation system, and connects the ventilation heating load to the new high-efficiency boiler plant.

The HRU and boiler projects are an integrated system — the new HRU's hot water coil connects directly to the new boiler plant. Piping integration cannot begin until both systems are physically installed. Together, these projects completely modernize Hollis Elementary's heating and ventilation infrastructure.

Scope includes demolition and removal of the failed roof-mounted HRU (including roof penetration repair), demolition of the existing oil-fired AHU, installation of the new hot water HRU in the mechanical room, hot water piping connections to the new boiler plant, ductwork modifications, electrical connections, controls integration with the new DDC system, and full commissioning.

Controls Takeover — \$99,750

Hollis Elementary's existing building automation system operates on a legacy controls platform that is not connected to the district's centralized monitoring infrastructure. Building operators must be physically present or use a separate, standalone interface to view system status, adjust schedules, or respond to alarms. This limits the district's ability to manage energy use, identify equipment faults early, and coordinate operations across its building portfolio.

This project installs a Tridium JACE controller to migrate all existing BACnet-accessible points to the district's centralized Niagara/Distech virtual server. The JACE serves as a site-level gateway, translating and forwarding data from the building's existing controllers to the district platform. New graphics are developed to provide intuitive visualization of system status, operating schedules, alarm conditions, and trend data — all accessible from the district's central BAS interface.

Scope includes JACE controller procurement and installation, BACnet point discovery and migration, new graphics development, alarm configuration, and commissioning. Upon completion, Hollis Elementary will be fully visible on the district's centralized BAS platform alongside all other integrated buildings.

Buxton Center Elementary School — Buxton — \$828,510

Repairs to Roofing — \$634,500

Buxton Center Elementary's flat roof system consists of multiple sections at varying elevations, with a membrane roofing assembly that has deteriorated beyond routine maintenance. Active water infiltration has been documented at several locations, particularly at membrane seams, roof-to-wall transitions, and penetration flashings around mechanical equipment and plumbing vents. Left unaddressed, continued water intrusion will damage insulation, ceiling systems, and structural decking, and creates conditions for mold growth that can affect indoor air quality and building occupancy.

This project performs targeted roof repairs addressing the most critical failure points across the building's multiple flat roof sections. Scope includes removal and replacement of failing membrane sections, repair of compromised transition details where roof planes meet parapet walls and elevation changes, replacement of deteriorated penetration flashings, and localized insulation replacement where existing insulation has been saturated. This is a targeted repair scope — not a full roof replacement — focused on the highest-risk sections to stop active water infiltration, protect building systems and finishes below, and extend the roof's serviceable life.

Scope includes mobilization, selective membrane demolition, surface preparation, new membrane installation at repair areas, transition and flashing detail work, insulation replacement as needed, and quality assurance testing.

Boiler Retrocommissioning & Plant Improvements — \$125,000

Buxton Center Elementary's boiler plant is approximately 15 years old and has already experienced one boiler failure. The remaining condensing boiler is not operating correctly — it is not achieving the condensing efficiency it was designed for, resulting in higher fuel consumption and accelerated wear on the equipment. The existing boiler controller and sequences are not optimized for the building's current heating load profile, and the plant lacks the monitoring capability needed to diagnose and correct operational issues remotely.

Rather than full boiler replacement, this project performs a comprehensive retrocommissioning of the existing boiler plant to restore designed operating efficiency. Scope includes installation of a new boiler controller, reprogramming of boiler plant sequences (including lead/lag logic, reset schedules, and staging), sensor calibration, safety device verification, and full recommissioning of the boiler room. The goal is to address the immediate reliability and efficiency issues, extend the remaining service life of the existing equipment, and bring the plant back to its designed operating parameters.

Note: This scope addresses plant-level controls and boiler operation only. Existing pneumatic end devices at terminal units (unit ventilators, cabinet heaters, etc.) will remain active. This project positions the building for 100% DDC integration in the future.

Controls Takeover — \$69,010

Buxton Center Elementary's existing building automation system operates on a standalone controls platform with no connection to the district's centralized monitoring infrastructure. System status, scheduling, and alarm response require on-site access or a building-specific interface, preventing the district from managing this building alongside its other integrated facilities.

This project installs a Tridium JACE controller to migrate all existing BACnet-accessible points to the district's centralized Niagara/Distech virtual server. New graphics are developed to provide intuitive visualization of system status, operating schedules, alarm conditions, and trend data from the district's central BAS interface.

Scope includes JACE controller procurement and installation, BACnet point discovery and migration, new graphics development, alarm configuration, and commissioning.

George E. Jack School — Standish — \$534,590

Bond-Funded Portion of HVAC Upgrades — \$488,040

George E. Jack School requires replacement of three failed rooftop units (RTUs) serving classroom wings, the cafetorium, and common areas. The total project cost is \$1,042,615 — the State Revolving Renewal Fund (SRRF) provides \$554,575 toward this project through a separate warrant article, and this bond warrant covers the remaining \$488,040.

Two classroom wing Carrier RTUs (manufactured in 2000) and one Sterling cafetorium unit (30+ years old) are no longer operating as designed. CO₂ data loggers installed in occupied

classrooms documented concentrations up to 1,656 ppm — well above the 1,000 ppm threshold established by ASHRAE Standard 62.1 for acceptable indoor air quality. At these levels, occupants experience drowsiness, difficulty concentrating, and headaches — directly impacting student learning and staff productivity. The existing units lack energy recovery capability, meaning 100% of the energy used to condition ventilation air is exhausted and lost.

This project replaces all three RTUs with new, properly sized units equipped with energy recovery ventilators (ERVs). ERV technology reclaims heat from exhaust air and transfers it to incoming fresh air, significantly reducing the energy required to ventilate the building. The new units restore ventilation rates to ASHRAE 62.1 compliance, eliminate the indoor air quality deficiencies documented by CO₂ monitoring, and provide reliable heating and cooling to the served zones.

The 22-week RTU lead time pushes major installation into the occupied fall semester, requiring temporary HVAC provisions and enhanced safety and communication protocols to maintain building operations during construction.

Note: This bond warrant article funds the balance of the RTU replacement project not covered by the SRRF warrant. Both warrant articles fund a single, unified construction project — the work cannot be divided between the two funding sources. See the separate SRRF warrant document for the full project description.

Controls Takeover — \$46,550

George E. Jack School's existing building automation system operates on a standalone controls platform with no connection to the district's centralized monitoring infrastructure.

This project installs a Tridium JACE controller to migrate all existing BACnet-accessible points to the district's centralized Niagara/Distech virtual server. New RTU controls points from the replacement units above are integrated into the same platform. New graphics are developed to provide intuitive visualization of system status, operating schedules, alarm conditions, and trend data from the district's central BAS interface.

Scope includes JACE controller procurement and installation, BACnet point discovery and migration, new graphics development including RTU monitoring pages, alarm configuration, and commissioning.

Steep Falls Elementary — Standish — \$525,000

VRF System — \$525,000 (Potential Rebates: \$265,000)

Steep Falls Elementary is currently heated by an aging oil-fired boiler system with limited zone-level temperature control. The building has no air conditioning — classroom temperatures during warm weather months exceed comfortable learning conditions, restricting the district's ability to use the facility for summer programming. The existing heating system relies entirely on fossil fuel, with no heat pump or electric heating alternative, and offers no cooling capability whatsoever.

This project installs a new Variable Refrigerant Flow (VRF) heat pump system to provide modern, energy-efficient heating and cooling capability throughout the building. VRF technology delivers precise zone-level temperature control — each classroom and office space can be independently conditioned based on occupancy and load. The system provides both heating and cooling from a single platform, dramatically reducing the building's dependence on fossil-fuel heating and adding cooling capability that does not currently exist. The existing oil boiler remains in service as backup heat for extreme cold conditions, providing redundancy during the transition.

Scope includes outdoor condensing units, indoor fan coil units across all served zones, refrigerant piping rough-in, electrical connections, BACnet integration with the district's centralized Niagara/Distech building automation server, new graphics development for remote monitoring and scheduling, and full system commissioning. The VRF system qualifies for Efficiency Maine heat pump incentives estimated at \$265,000, significantly reducing the net cost to the district.

Upon completion, Steep Falls Elementary will have year-round climate control, substantially reduced fossil fuel consumption, lower operating costs, remote monitoring from the district's central BAS platform, and the ability to support summer and extended-day programming.

Bonny Eagle High School — Buxton — \$3,812,124

Controls Takeover — \$35,275

Bonny Eagle High School's existing building automation system operates on a legacy controls platform that is not connected to the district's centralized monitoring infrastructure. As the district's largest and most complex building, the inability to monitor and manage BEHS remotely represents a significant gap in the district's operational visibility. Equipment faults, scheduling errors, and energy waste go undetected until reported by building occupants or discovered during on-site visits.

This project installs a Tridium JACE controller to migrate all existing BACnet-accessible points to the district's centralized Niagara/Distech virtual server. New graphics are developed to provide intuitive visualization of system status, operating schedules, alarm conditions, and trend data from the district's central BAS interface.

Scope includes JACE controller procurement and installation, BACnet point discovery and migration, new graphics development, alarm configuration, and commissioning.

Stadium & Track Renovation — \$3,776,849

The existing stadium and track complex at Bonny Eagle High School has deteriorated to the point where both facilities require comprehensive renovation. The natural grass stadium field requires significant ongoing maintenance, is unusable during and after wet weather, and cannot support the volume of athletic events, practices, and community use the district needs. Field

conditions deteriorate rapidly during fall sports season, creating safety concerns for athletes and limiting scheduling flexibility — the natural turf surface restricts use to approximately 200–300 hours per year before requiring rest and recovery periods. The surrounding track surface shows significant wear, cracking, and delamination, the base course has settled unevenly in several areas creating drainage issues and trip hazards, and the facility no longer meets competitive standards. Both facilities serve the high school and middle school athletic programs as well as community use.

This project converts the stadium field from natural grass to a modern artificial turf system and performs a full renovation of the surrounding track. Artificial turf can support 2,000+ hours of annual use regardless of weather conditions — a dramatic increase in field availability for athletics, physical education, marching band, community events, and youth sports programs. The all-weather surface eliminates game cancellations due to field conditions, reduces ongoing grounds maintenance costs, and provides a consistent, safe playing surface throughout the season. The track renovation restores the facility to current NFHS competition standards with a new synthetic surface, proper drainage, and uniform base course.

Scope includes excavation of existing turf and subgrade, subgrade preparation and compaction, engineered drainage system installation, aggregate base layers, shock-absorbing pad installation, synthetic turf installation with infill, permanent field markings for football and soccer, removal of the existing synthetic track surface, base course repair and regrading, installation of a new synthetic track surface with lane striping and event markings, and associated site restoration.

Bonny Eagle Middle School — Buxton — \$20,085

Controls Takeover — \$20,085

Bonny Eagle Middle School's existing building automation system operates on a standalone controls platform with no connection to the district's centralized monitoring infrastructure. As with the other non-integrated buildings in the district, system monitoring, scheduling, and alarm response require on-site access.

This project installs a Tridium JACE controller to migrate all existing BACnet-accessible points to the district's centralized Niagara/Distech virtual server. New graphics are developed for intuitive visualization of system status, operating schedules, alarm conditions, and trend data.

Scope includes JACE controller procurement and installation, BACnet point discovery and migration, new graphics development, alarm configuration, and commissioning.

District-Wide Controls Integration

The controls takeover projects at Hollis Elementary, Buxton Center Elementary, George E. Jack School, Bonny Eagle High School, and Bonny Eagle Middle School are part of a unified building

automation system (BAS) integration program. Each school receives a Tridium JACE controller that migrates existing BACnet points to a centralized Niagara/Distech virtual server hosted at the district level. New VRF systems at H.B. Emery and Steep Falls are also integrated via BACnet with full graphics on the district server.

Upon completion of this bond program, every school in MSAD #6 will be visible on a single centralized BAS platform — enabling district-wide monitoring, energy management, scheduling, alarm notification, and fault detection from any networked device. This is a significant operational improvement over the current fragmented, building-by-building approach, and positions the district for long-term energy cost reduction through coordinated operations and data-driven maintenance.

Program Summary

School	Town	Bond Cost
H.B. Emery	Buxton	\$1,113,627
Hollis Elementary	Hollis	\$1,371,087
Buxton Center Elementary	Buxton	\$828,510
George E. Jack	Standish	\$534,590
Steep Falls Elementary	Standish	\$525,000
Bonny Eagle High School	Buxton	\$3,812,124
Bonny Eagle Middle School	Buxton	\$20,085
Bond Warrant Total		\$8,205,023

Total Potential Rebates (Bond projects): \$585,000

H.B. Emery VRF: \$320,000

Steep Falls VRF: \$265,000

Prepared by: Dallas Menard, Manager, M&V / Analytics

Organization: Energy Efficient Investments, Inc.

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