

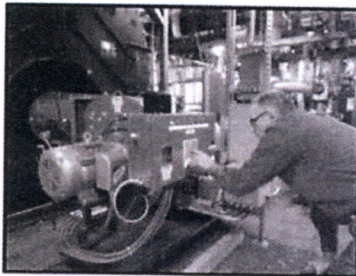


**United
Technologies**

Climate | Controls | Security



Number of years in the Energy Business – 16 years of improving efficiency and saving energy



FIREYE Inc.
3 Manchester Road
Derry, NH 03038
USA
Tel: (603) 432-4100
Fax: (603) 432-1570

>\$50m in sales and installation of efficiency controls and related products

1000's of burners, boilers and contracts supplied since the introduction of the NEXUS efficiency product line, in 2000

- Headquartered and manufacturing facility in Derry NH
- Operating company within United Technologies CCS division
- 67,000 sq. foot (owned) facility
- 125 Full Time Employees
- ISO9001/ ACE Silver Site
- ATEX/FM/UL test site certified
- Product Sold Globally
- Multinational Approvals

RETROFIT RFP – 18PSX0104

1.) Proposer's Qualifications and Capability

U.S. Energy Systems, LLC (U.S.E.S.) is a direct sales and marketing distributor of energy efficiency technologies to all levels of government and commercial customers.

U.S.E.S. has been in the energy efficiency business in CT for 25 years. First distributor assignment was USES Mfg, Inc., (CT Co.) in 1992.

U.S.E.S. has developed hundreds of energy savings contracts partnerships with engineering companies, consultants for direct sales to commercial accounts in the northeast U.S. and across eastern Canada; with contracts ranging from < \$10,000 up to > \$300,000 per project.

U.S.E.S. has two (2) principal full time personnel and more than a dozen sales consultants and contractors to service a wide range of energy projects.

U.S.E.S. is a Fireye, Inc. direct sales distributor. Fireye has assigned U.S.E.S. distributorship for direct sales and marketing of its uniquely patented boiler control technology : the Intelligent Boiler Controller - NXM2G.

Fireye, as a division of UTC, Inc., is an integral part of the UTC Building & Industrial Systems. Fireye, Inc. has been major force in the boiler energy efficiency business for over 75 years, and Fireye sales reach all levels of U.S. and International Governments and major commercial and industrial customers worldwide. The Fireye NXM2G has won recognition from major U.S. boiler OEMs, as well as the U.S. DOE and GSA, as a High Impact Technology that significantly reduces inherent firing cycle energy losses and saves natural gas, or fuel oil energy for all hydronic heating systems.

2.) Proposer's Experience

U.S. Energy Systems, LLC (U.S.E.S.) has developed and executed Energy Efficiency Programs with industry accepted Measure & Verification methodology practices for residential, commercial and government clients over the past 25 years. These projects management that include all of the necessary oversight of EE technology (from site visits, degree day adjusted baseline analysis, proper OEM installations, tracking & monitoring of M&V data, and Pre & Post energy savings analysis, through to final project case study reports, with payback & ROI analysis).

a.) Projects managed – Statewide energy efficiency upgrade programs in the CT and RI. These EE programs started with the execution of focused Pilot Projects that would be detailed representatives of all installations to follow for all (hydronic) - hot water boiler applications. The Pilot Project are slightly different than standard installations in the full Save Mode. The Pilot Projects focused on the M&V tracking and monitoring with ... “Day On (Save Mode) versus Day Off (Off Line)” that are then adjusted for Heating Degree Day - HDD heating variations. This could lead to a much broader roll out for similar boiler applications, with all installations performed under the same OEM installation guidelines.

b.) State of CT EE Boiler Program, Pilot Project, to Phase One roll out of 500 boilers, represents (500 @ \$7,000, with Data Logger \$3,000 option – Project range \$3.5 to \$5.0 MM)

North Providence Public School EE Boiler Program (two school, 3 NXM2G controls, or \$19.5M)

The size and scope of each program was directly determined by the number of boilers and the NXM2G package selected, per boiler. Ex: A school with 2 boilers runs \$15M to \$22M per bldg.

c.) Size of each, again is relative to the Numbers of Boiler being retrofitted. Approximately \$10M per boiler. The Connecticut Conference of Municipalities (CCM) started with two municipalities. If we reach all 169 cities and towns with 2 – 3 buildings each, with 2 boilers (or 4-6 in total, per muni) the CCM Program, and assuming a 10% member participation equates to approximately Low of 68 units – a 10% Hi of 102 NXM2G Controller units. The total projected cost with lowest cost of (no M&V data loggers) \$7M = \$476,000, or that 10% participation could reach \$1,020,000 (\$10M cost w/ M&V).

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3.) Pricing and Fees

Retrofit price structure for Fireye NXM2G Boiler Controller System:

g.) The Fireye NXM2G Intelligent Controller is a unique patented one size fits all hot water (hydronic) boilers, to eliminate wasteful and unnecessary no heat firing cycles losses.

> \$7,795.00 is the Fireye MSRP for a single NXM2G Boiler Package

> \$7,400.00 is the standard government base price, for a single NXM2G Boiler Package (base price includes NXM2G installation with all necessary parts and supplies)

This one of a kind boiler control system can be applied to all hot water boiler systems over 300M BTUs. The NXM2G one size fits all would allow State Departments and agencies to purchase NXM2G control systems in bulk quantities that match the number of hot water boilers. The above pricing does not include quantity discounts or any natural gas utility rebates or incentives. In the Northeast the NXM2G is considered a “Custom Controls Retrofit” and may receive up to 50% rebate of the total project cost as a upon completion.

New 2018 NXM2G Quantity Discounts:

> \$7,400.00 - for purchases of 1 to 9 NXM2G control systems

> \$7,000.00 - for purchases of 10 –to 29 NXM2G control systems

> \$6,595.00* - for purchases of 30 or more NXM2G control systems

*Special – State of CT – NXM2G Unit Pricing per RFP 18PSX01034 (single unit purchases)

Note: Data Loggers net \$3,095.00 per unit for seasonal and long term M&V data tracking

Procurement Options:

Outright Purchase, Leasing, or Rental Programs are available to meet client ROI objectives

- Variable cost savings may be available based on the total number of NXM2G installations required, and, or for short term leasing of separate M&V Data Loggers
- No up front capital cost outlays are required for any NXM2G installation, however, some installation fees to State approved Mechanical Contractors [@ \$125 per hr] may be required
- The NXM2G does not require any additional routine monitoring, or servicing maintenance
- Fireye’s NXM2G has typically received natural gas utility incentives - up to 50% of Project Cost as a Custom Rebate, or paid \$ XX per Therm, or CCF saved, as a Prescriptive Incentive.

d.) Operational Improvements

- 1.) Immediate Reduction of Wasteful & Unnecessary (non-heat) Boiler Firing Cycles**
- 2.) Immediate Verified Boiler Energy Savings, and Electrical Motor Energy Savings**
- 3.) Immediate 1 to 1 Reduction of CO₂ & Other GHG s (Reduction in Carbon Footprint)**
- 4.) Cleaner Indoor Air Quality**
- 5.) No Additional Routine Maintenance Required**
- 6.) Reduction of Wasteful Boiler Firing Cycles, Helps to Extend Useful Boiler Life**
- 7.) Useful and Sustainable M&V Data / Verify Total Aggregated Carbon Credits**
- 8.) Short Term Payback / Positive ROI**
- 9.) Annual Building Heating Energy Savings of 10 – 25%**

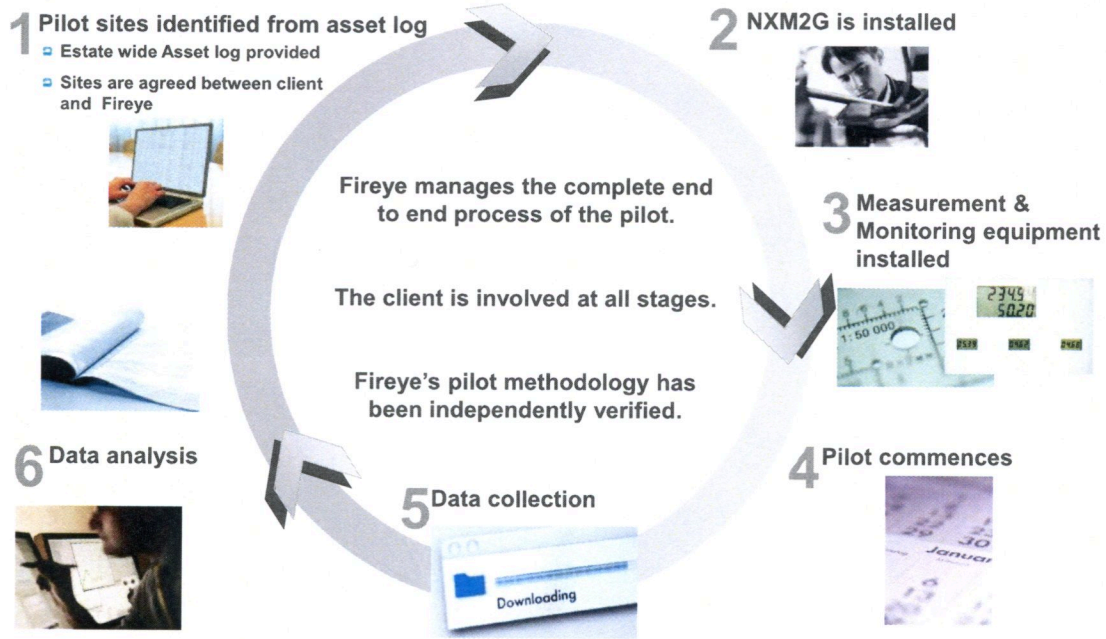
e.) Audit, monitoring, and savings verification methodologies

Fireye NXM2G Intelligent Boiler Controller System provides real time data for Pre vs Post energy tracking. Standard industry data loggers can provide the monitored and verified energy savings data on a daily/weekly/or monthly basis. Fireye has adopted the U.S. DOE's Gold Standard - IPMVP methodology for NXM2G net energy savings analysis, then it is adjusted to reflect the impact of NOAA's local variable Heating Degree Day (HDD) data. The annual energy saving dollars realized is directly proportional to the cost and volume of the Natural Gas or Fuel Oil that is consumed by the boiler (heating) system. The NXM2G has routinely deliver 10–25% in savings, as confirmed with monthly utility seasonal heating billing and verified for myriad commercial hot water (hydronic) boiler applications.

f.) References for work performed, including contacts

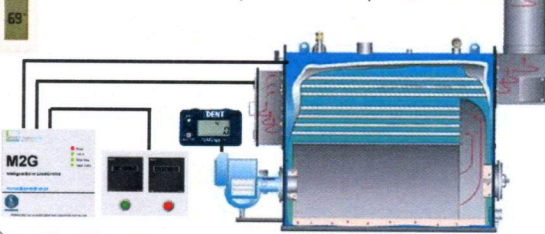
Fireye, Inc. has supplied the detailed tracking and monitoring information of NXM2G Pilot Projects, just like the (DAS) PURA Building Pilot in New Britain, CT. The State Contractor, Solo Mechanical performed the NXM2G installations in Connecticut. Fireye has also shared similar case studies and Pilot Project Reports, that led to additional NXM2G boilers installations for additional facility boilers, i.e. the Albuquerque School Systems, where a four school Pilot Project Study has been expanded to over 125 schools with net average savings of 11 to 13%. Confirmation of the natural gas savings have warranted natural gas rebate and incentive support and tracking data information supplied by New Mexico Power (NMP). This and other Fireye NXM2G EE Program results are available upon request.

NXM2G M&V - Customer Journey



NXM2G M&V Methodology - at a glance

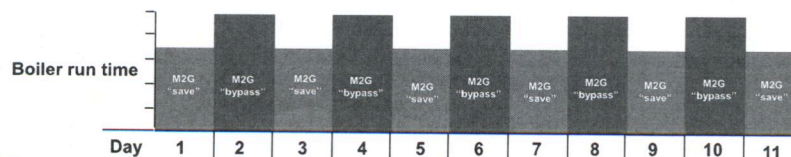
- A**
- Installation includes – NXM2G, independent measuring and monitoring (M&M) equipment, and temperature logger.
 - The NXM2G is set to pilot mode. The pilot commences



C Example:

- After analysis the boiler runtime has been reduced by 18%
 - 634 hours in "Bypass" mode
 - 520 hours in "Save" mode
 - Boiler run time has been reduced by 18%
- The data collected from the on site temperature logger(s) is analysed and Degree Day analysis is completed.
- The saving is weather compensated by applying the calculated Degree Day factor.
- Sabien's methodology has been independently verified and has been used with some of the UK's largest organisations.

- B**
- In pilot mode the NXM2G toggles between "save" mode and "bypass" mode every 24 hours for all NXM2G units installed.
 - The M&M equipment monitors and records the boiler's hours run i.e. how long the boiler has fired for. The temperature logger records the outside ambient temperature.





Hydronic Heating Standby Optimization

What is this Technology?

Hydronic boilers heat fluid that is then circulated throughout a building to provide heat. In "standby" mode, these boilers often cycle on as a result of the fluid losing heat to its surroundings, rather than in response to genuine demand for additional space heating. Using sensors to measure the temperature of fluid as it leaves the boiler and again when it returns, this hydronic heating standby optimization technology distinguishes natural heat loss from system demand to effectively reduce the number of times the boiler fires each day, thus conserving energy without compromising occupant comfort. The technology is simple, installation is fast, and the system is compatible with building automation systems.

Why is GSA Interested?

GSA spends \$15 million on heating each year. A significant portion of that heat is provided by hydronic boilers. By eliminating needless standby cycling in hydronic systems, this technology minimizes boiler run time and can save between 10% and 25% of heating energy consumption.



ENERGY EFFICIENCY The manufacturer estimates at least 10% heating savings for non-condensing boilers and at least 7% savings for condensing boilers. The greatest savings should be experienced during shoulder months.



COST-EFFECTIVENESS Payback is estimated to be less than three years.



OPERATIONS & MAINTENANCE The technology is maintenance free. By reducing boiler cycling the technology reduces mechanical wear and tear and has the potential to extend boiler life.



DEPLOYMENT POTENTIAL The technology is retrofit-friendly and broadly applicable to hydronic heating systems across the portfolio.

The Green Proving Ground program, in association with a federal laboratory, is subjecting hydronic heating standby optimization to real-world measurement and verification in GSA buildings. Results will be published on the GPG website, www.gsa.gov/gpg.



The Green Proving Ground program leverages GSA's real estate portfolio to test innovative building technologies. The program helps GSA meet its sustainability goals by providing actionable data that informs investment decisions targeted at energy-use reduction.



Six Emerging Building Technologies Selected for Evaluation by the Green Proving Ground Program

September 27, 2016 –

Kevin Powell, Green Proving Ground Program Director, Public Buildings Service

Post filed in: [Green Buildings](#) | [Green Proving Ground](#) | [Technology](#) |

Yesterday, GSA and DOE asked for this year's innovative technologies to improve federal and commercial buildings in the GSA Blog. Today, the Green Proving Ground (GPG) program is excited to announce six technologies selected for testing in GSA facilities through last year's GSA/DOE Request for Information (RFI), and the publication of this year's joint RFI seeking emerging building technologies for evaluation in federal and commercial buildings.

GPG's Six Selected Technologies

GPG would like to introduce and congratulate the following six technologies selected for evaluation in GSA facilities from last year's RFI:

Hydronic Heating Standby Optimization: This technology uses temperature sensors and advanced algorithms to distinguish between boiler standby losses and actual demand for space heating, in order to conserve energy by reducing boiler "false starts" without compromising occupant comfort.

Technology provided by Fireye, Inc. NXM2G Boiler Controller; To be evaluated in coordination with HIT Catalyst.

Dual-Zone Indoor Shades: This window attachment balances glare control and availability of natural light by integrating two separate daylight control strategies into a single unit—a motorized upper louvered blind that maximizes daylight harvesting, and a lower translucent roller shade that reduces glare and heat.

Technology provided by LouverShade, LLC; To be evaluated in coordination with HIT Catalyst.