TABLE OF CONTENTS

Introduction **1**
Experience **4**
1. Auditing and Identifying Projects 4
2. Matrix of Services Provided 5
3. M&V Experience 6
4. Design, Costing, and Managing Projects 9
5. Securing Utility Incentives 10
6. Staff Qualifications 10
7. Energy Star Portfolio Manager 13
8. Issues on Past Projects and How They Were Resolved 13
9. Geographic Makeup of Project Team 14

Management Approach **15**
10. Organizational Structure and Management Approach 15
11. Policies and Procedures for Managing and Delivering Work Products on Time 22
12. Approach to Marketing the DES Energy Program 23
13. Minimum Viable Project Size 23
14. Approach to Effective Communication with DES 23
15. Project Development – from Marketing to the ESP 24
16. Method of Contracting Installation and Delivering Competitive, Transparent Pricing 26
17. Procedures for Timely Closeout Document Delivery 30
18. Procedures for Timely Project Closeout Paperwork Delivery (DOR, L&I, etc) 30
19. Mitigating Project Risks for Client Agencies 31
20. EPACT Tax Credits 32
21. Experience and Approach to Meeting RCW 39.04.320 Apprenticeship Requirements 32
22. Utilization of Minority and Women Owned Businesses 32
23. Recycling Policies and Procedures 34
24. Management of Hazardous Materials 34

Computation of Energy Baseline and Post-Installation Energy Use **35**
25. Calculation Tools & Methodology 35
26. Modified Baselines 37
27. M&V Processes' Role in Baselines & Post-Installation Energy Use 38

Savings and Equipment Performance Guarantees **42**
28. Project Cost Guarantee Policies, Procedures, and Remedies 42
29. Energy Savings Guarantee Policies, Procedures, and Remedies 43
30. Equipment Performance Guarantee Policies, Procedures, and Remedies 44
31. Warranty Enforcement Role and Responsibility 45
32. Project Expense Carrying Ability, Financing Capabilities, Letters of Commitment 48

Appendix
1. Sample Performance Contracting Project Documents*
   Note: The selected project most suitable for this submittal skipped the preliminary audit step, so another project's is included
2. Resumes of Key Personnel
3. Completed and signed Federal Form 330

INTRODUCTION

Schneider Electric is pleased to present our statement of qualifications in response to RFP #2013-133. Throughout this document we have clearly laid out our expertise, capabilities, and identity for review and consideration by the Department of Enterprise Services' Energy Team (and your potential client organizations). Over the last 20 years we've worked hard to understand the challenges faced by building owners, carefully evaluate and develop the best possible solutions, and deliver our projects with complete satisfaction for everyone involved. **Our solutions stretch beyond energy savings to improve the operability of the building and occupant comfort, all while fitting the project within the financial criteria and specific requirements of our clients.** We understand the organizational impact and potential risks of pursuing energy saving performance contracting (ESPC) and are committed to successful projects by all definitions – with our extensive history of doing so as evidence to the value we deliver.

Schneider Electric views ESPC projects as a long term partnership lasting beyond just the implementation of some facility improvements. Our 1,000+ member Professional Services Division, offering comprehensive energy management services (including our ESCO team), is united in doing everything possible to ensure our clients enjoy maximum benefits from their partnership with us. We take great care to project and guarantee energy savings in dollars (so our clients have security to match their financial obligations), using a simulation of the actual utility rate (the first units saved are almost always the least expensive, so a blended average rate presents inflated savings), weather-normalized utility history, and details on the specific characteristics of the buildings to ensure our projected savings are the true budgetary impact of our savings.

Schneider Electric is passionately committed to delivering enduring performance, with the majority of our $1B ESPC portfolio carrying a guarantee measured using the utility bills that offers true accountability for our project performance. Our staff of performance assurance support specialists is available 24 hours a day to provide support for our completed projects and actively monitors the dollar savings of our projects to ensure our clients see the savings in their budgets we have projected (not just calculating that they likely have seen their savings based on brief equipment metering).

Schneider Electric has performed work with numerous small and large public entities across the country, with a portfolio including the entire Virginia Community College System (23 colleges), City of Houston, TX, Oregon Department of Corrections, Alabama MHMR, and North Carolina State University. We understand the unique needs of the public environment, including the very intricate scheduling required to perform work in continually occupied and sensitive areas with minimal impact. Our team is second to none in their ability to provide a streamlined construction process with no headaches, incidents, or issues that delivers fully functioning projects the operations staff can use with confidence.

Having building operators' support is a key requirement of upgrading existing facilities, and our unique process of startup and checkout combined with training allows building operators to understand the rationale behind each upgrade, how it is to perform, how it comes together, and how to operate it. More than typical classroom training, this *teaching* process is customized to each operator and is an integral part in the success of our projects. Successful energy savings upgrades require understanding and cooperation from the facilities staff, who take ownership of their systems and proactively monitor energy use. Training is crucial to this level of success.

Schneider Electric is differentiated from other players with similar offerings in that every facet of our organization is focused on energy distribution and use. Amongst dozens of world-class brands such as Square D, Pelco, and Schneider Electric Controls (including TAC, Invensys, Andover, I/Net, Satchwell, and more), Energy Solutions, the specific division of Schneider Electric represented in this response, is solely dedicated to successful performance contracts. Each and every project we have implemented has given us valuable experience and feedback from customers on how to perform better. Our ongoing focus is meeting our **clients' real needs** and implementing a project meeting our **clients' definition of success**. As a result of this approach, Schneider Electric has built a strong customer base and can provide excellent references and testimonials.

Corporate Information

Schneider Electric a respected leader in electricity and automation management across the globe. Through its world-class brands — Merlin Gerin, Square D, Telemecanique, PowerLogic, PowerLink, and TAC Controls — Schneider Electric anticipates and satisfies its clients' requirements in the residential, buildings, industry, energy, and infrastructure markets. Square D is perhaps the most well known brand in the U.S. for the North American Division of Schneider Electric. Square D is a market-leading brand of electrical distribution, industrial control and automation products, systems, and services. Square D products are found in all types of residential, commercial, and industrial construction, in a wide range of manufacturing and processing facilities, and in or on the products of other manufacturers.

As part of Schneider Electric Buildings Business, Energy Solutions' clients benefit from strong financial backing and years of industry expertise. Leveraging the best in industry standards and open system technology, Schneider Electric is able to offer our clients complete building solutions regardless of the installation — new buildings and retrofits alike. Schneider Electric Buildings Americas, Inc is comprised of three distinct divisions: Energy Solutions, Systems Integration, and Partners.

Schneider Electric formed its Energy Solutions division in 1992. Since then, we have grown exponentially into a well-respected, world-class provider of ESPC services. As an ESCO, Schneider Electric has extensive experience developing, implementing, and guaranteeing the results of energy conservation projects for facilities. Schneider Electric acts as a "design-build" contractor and bears sole responsibility for the design, plans and

specifications, project scheduling, equipment procurement, construction management, start-up, punch-list development, and final acceptance inspection. Schneider Electric also assists our clients in securing financing, grants, and rebates for these projects. Additionally, Schneider Electric provides a performance guarantee based on the actual financial performance of our projects (including but far beyond the system performance many ESCOs solely guarantee) that has been proven fair and reliable for nearly 20 years. Numerous clients have, at the conclusion of 10 and 15 year measurement and verification periods, made the choice to partner with Schneider Electric again for further upgrades as a direct result of our professionalism, honesty, and dedication throughout the life of our projects.

The most critical component of our process and approach is to completely understand our clients' needs, goals, and requirements for an ESPC project. Our mission is that our customers get what they actually need, not just a "sale" or win for Schneider Electric. There are countless occasions where we have advised prospective clients to NOT proceed with a performance contract because we have understood their needs to the point of realizing that this specialized process/procurement method is not their best option. This is notable because our teams, being solely focused on performance contracting, are willing to turn down revenue when it isn't the best fit for the customer. When it comes to equipment configurations and selection, we install what is the **best fit for the clients' needs** and **clearly communicate** the reasoning behind those conclusions.

EXPERIENCE

1. Auditing and Identifying Projects

The ESCO's experience in auditing and identifying energy efficiency projects. Provide a list of all energy performance contracting projects completed in the past two years (if the ESCO has completed more than 15 projects within Washington State in the past 2 years, the ESCO may list just the Washington State projects, in either case the list should be no longer than the most recent 30 projects), including contract value, client contact and client phone number.

Schneider Electric Energy Solutions' performance contracting process begins with a thorough analysis of facilities to qualify clients and identify energy conservation measures. Every project goes through rigorous auditing and energy modeling to identify potential conservation measures and develop a scope of work meeting our customer's goals, whether those are to monetize the energy savings from performing a capital project or to simply perform a suite of only cost-effective upgrades with no out of pocket expenses. As a result of our diligence in working with our clients to define and deliver to their goals, we have developed extensive expertise in identifying effective conservation projects. Following is a just a sample of Schneider Electric's project history the past two years:

Name	State	Project Value	Client Contact	Phone #
WA Projects				
Omak School District	WA	$609,235	Scott Haeberle, Superintendent	509-826-7685
Mount Baker School District	WA	$1,638,482	Dean Anderson, Facilities	360-383-2060
Fife School District	WA	$1,393,161	Kari Harris, Director of Business Services	253-517-1000
Colville School District #115	WA	$1,925,081	Jeff Wolfe, Facilities Director	509-675-1562
Odessa School District	WA	$768,573	Suellen White, Superintendent	509-982-2668
Ephrata School District	WA	$1,742,270	Rock Witte, Maintenance Director	509-754-2474
Wahluke School District	WA	$883,941	Clinton Sherman, Business Manager	509-932-4565
Columbia Basin College	WA	$4,275,480	Bill Saraceno, VP of Admin Services	509-542-4408
Royal SD	WA	$1,463,765	David Andra, Business Manager	509-346-2222
Granger SD	WA	$1,001,055	Margarita Lopez, Superintendent	509-854-1515
Methow Valley SD	WA	$1,983,980	Mark Wenzel, Superintendent	509-996-9205
Eatonville School District	WA	$1,975,216	Rich Stewart, Superintendent	360-879-1000
Other National PC Projects				
Santa Rosa ISD Phase 2	TX	$119,872	Heriberto Villareal, Superintendent	956-636-9800
Pleasant Valley School District	PA	$3,604,372	Chris Fisher, Assistant Superintendent	570-402-1000
City of Denison	TX	$3,576,058	Robert Hanna, City Manager	903-465-2720
Holly Springs School District	MS	$935,000	Adam Andrews, Director of Operations	662-252-2183
Susan B Allen Memorial Hospital	KS	$3,172,622	Jim Poffinbarger, Director of Enrivonmental Services	316-322-4527
Dallas County Phase 1B	TX	$11,247,717	Jesse Dillard, Project Engineer	214-670-3427
City of Denison Phase 2	TX	$4,367,689	Robert Hanna, City Manager	903-465-2720
Van Far ISD	TX	$1,387,336	David Goff, Director of Operations	903-963-8328
Susquehanna Community School District	PA	$1,355,324	Bronson Stone, Superintendent	570-853-4921
Panther Valley School District	PA	$3,242,501	Ken Marx, Business Manager	570-645-3176
VCCS - Piedmont Virginia CC Phase 2	VA	$1,402,642	Dan Jewett, Capital Outlay Manager	804-819-4914
Henry County School District	AL	$906,665	Dennis Coe, Superintendent	334-585-2206
City of Houston Phase II	TX	$23,148,172	Steve Giraldi, Assistant Director	832-393-8085
City of Houston Hobby Center	TX	$4,238,548	Steve Giraldi, Assistant Director	832-393-8085
Los Angelos Community College District	CA	$7,060,028	Blair Doane, Energy Program Director	818-701-2595
Mahanoy Area School District	PA	$2,235,977	Bob Pastucha, Facilities Director	570-773-3443
North Little Rock School District	AR	$8,077,422	Jerry Massay, Admin Director of Plant Services	501-771-8071
Bledsoe County Schools	TN	$952,774	Brian Osbourne, Transporation Director	423-447-2914

2. Matrix of Services Provided

Provide a matrix of the range of energy and utility management services provided by the ESCO, including the ESCO's capability to provide the following services: energy auditing, financing, design, general contracting, construction management/administration, testing and balancing, commissioning, warranty services, measurement and verification of savings, energy savings guarantees and facilitating utility participation to maximize utility rebates and incentives.

Menu Of Services & Areas of Expertise	
Design Services Mechanical Engineering Electrical Engineering Lighting Design Security/Fire Detection System Telecommunications Control Systems Emergency Power Generation Sustainable Design Approach Renewable Energy Generation Design/Build Consulting **Performance Contracting** **Facility Analysis** Mechanical Systems Options Electrical Systems Options Lighting Systems Options Communication Systems Options Water/Laundry Systems Options Construction Impact Planning **Financial Services** Guaranteed Savings Financing Options Review Utility Incentive Program Review Grant and Tax Credit Coordination Energy and Water Use Surveys Utility Billing Review **Turnkey Project Implementation** Energy and Resource Use Studies and Audits Construction Management Services Construction Partnering General Contracting for Facility Renovations Full Operations & Maintenance Manuals submitted at Project Installation Completion LEED EB Certification	**Performance Assurance** Facility Evaluation Mechanical, Electrical and Communication Systems Master Planning Indoor Air Quality Surveys Tenant Comfort Surveys Code Compliance Review Lighting Systems Review Power Conditioning Surveys Maintenance Effectiveness Review Control System Review Benchmarking **Commissioning Services** System Start-up and Performance Verification Design Review **Testing and Balancing Services** HVAC Testing and Balancing Duct Pressure/Leakage Testing Fume Hood Certification Sound and Vibration Testing Fan Performance Testing **Training Services** Controls System Training HVAC Maintenance Training Utility Cost Management Training **Ongoing Services** Energy Cost Monitoring and Verification Efficiency Review Program Warranty Review Maintenance Acquisition Specifications Remote Diagnostics Facility Documentation Utility Programs

3. M&V Experience

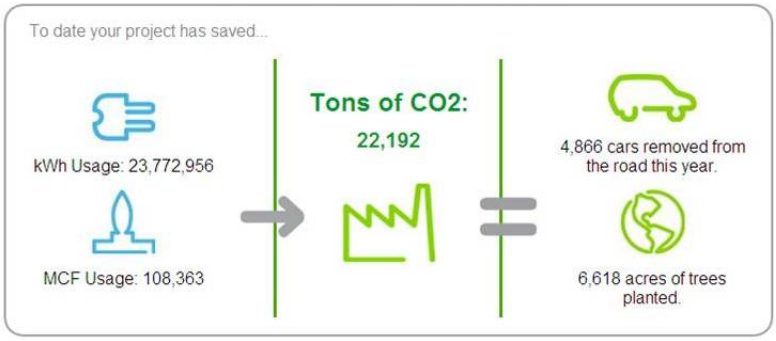
The ESCO's experience with measurement and verification (M&V) processes. The ESCO should describe its familiarity with M&V protocols and when each is most appropriately applied.

Our Energy Solutions team offers turnkey solutions which includes post-construction services to fit our clients' needs. The team responsible for these services is known as PASS – Performance Assurance Support Services. The PASS mission statement is:

> *To partner with our clients to provide customized, continuous improvement and sustainability services in an effort to verify and optimize the performance of energy efficiency and conservation measures.*

PASS (enhanced M&V) has helped clients achieve their energy savings goals on over 475 projects for the last 20 years. At the conclusion of the existing long-term contracts that are in place today, Schneider Electric will have saved our clients over $1 billion through the reduction in energy usage. Today, we continue to be involved with over 220 projects to support and deliver over $53 million in annual energy cost savings with more than **$45 million measured using the actual utility bills generated from the actual utility meter**. The PASS team has over 65 dedicated experts entirely focused on planning, implementation, monitoring, maintenance, and measuring services around managing and reducing energy usage resulting in saving money. The team has 23 Certified Energy Managers, 10 Certified Measurement and Verification (M&V) Professionals and 3 Professional Engineers. We can provide comprehensive or supporting solutions to cover every element in the spectrum of managing and optimizing facility energy usage and the systems that consume the energy.

Further, most clients wish to receive reports that demonstrate project performance over time. We are able to report our savings in a web-based platform called "e-savings" with energy savings and environmental figures shown at a high level (shown) down to the meter with unit savings at a very granular level. Our clients can receive written reports, but also have the flexibility of checking their energy savings progress online.



Project Status:	Active
Project Implemented:	March, 2009
Guaranteed Annual Savings:	$799,014
Total Energy Savings to Date:	$3,594,727 thru 02/2011
Total Guaranteed Savings to Date:	$2,233,613 thru 02/2011

Performance Assurance Support Services' Menu of Services (each client receives a customized program based on how we can not only deliver optimal energy savings, but also support their needs and expectations.

We will work with each facility's stakeholders to determine a customizable annual plan that meets your budgetary and staffing needs. All PASS services are annually renewable and are customizable each year. Some of our most frequently requested services include:

Solution	Description	Key Benefits
Measurement and verification*	Uses data from automation systems, meters, or utility bills to determine energy use	• Shows true cost of changing schedules, setpoint, etc. • Enables energy efficiency and budget friendly decisions • Allocates after hours energy costs to users
Remote system monitoring and optimization	Verifies operations to assure intended energy savings	• Regularly checks agree upon setpoints and schedules • Verifies automatic operations (not in override) • Reports abnormalities and, if prearranged, makes changes immediately
Remote energy management, training and technical support	Provides customized remote support based on specific needs	• Handles scheduling, system adjustments, etc. • Provides on-demand system training and support
On-site energy and sustainability planning	Proactively addresses changing needs to assure peak systems performance	• Summarizes annual performance with recommendations for following year • Identifies additional energy conservation measures or areas for improvement
On-site training	Provides initial and regularly scheduled refresher sessions	• Invests in employee retention • Promotes proper systems operation • Empowers and enables self-sufficiency
Re/Retro-commissioning	Identifies and tests performance objectives	• Tests, verifies, and documents performance for any building • Improves the performance of buildings outside the original project
Energy management system service	Provides a block of hours for on-site service	• Arranges regularly scheduled service • Provides emergency service during normal work hours • Handles new work requests
Extended warranty	Adds an additional year to the product warranty	• Applies to all Schneider Electric products installed as part of the project or additions

*Required to maintain active savings guarantee

Schneider Electric's Measurement & Verification plan will follow the established IPMVP methods of proving post-retrofit savings. Our savings projections and measurements are real, verifiable, and diligent – based on as much real data (instead of assumptions) as reasonably possible – because it DOES matter. We deliver enduring performance.

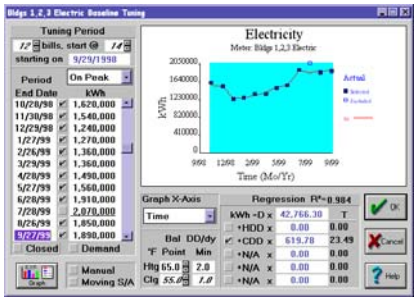
When determining the approach Schneider Electric considers where savings are generated and how systems and/or equipment work to generate savings.

The selection of the correct IPMVP option is based on the type of energy conservation measure (ECM), impact in dollar or units and the effective means of measuring that ECM, and whether it should be measured at the system/equipment or facility level.

Schneider Electric considers Option C "whole-meter" approach as the best option for the comprehensive retrofit projects we most often deliver. This method captures the interaction of all installed measures and provides feedback for continual improvement of the systems' energy performance. Schneider Electric prefers this method for guaranteeing savings because the utility bills are paid according to the meter readings. Obviously this won't be the best approach all of the time, and, when appropriate, Schneider Electric comfortably uses the other three IPMVP options. The following chart illustrates common Energy Conservation Measures that are measured and verified using each of the four approaches:

IPMVP Option	Typical ECMs/Application
Option A: Partial Retrofit Isolation (measure before & after)	Lighting retrofits, water conservation measures
Option B: Retrofit Isolation (measure before and annually after)	Renewable energy generation, chiller replacement, process improvement related ECMs such as laundry facilities where sub-metering was included
Option C: Whole Meter Measurement (actual utility bills)	Multiple interacting ECMs, ex. project that includes HVAC replacements, lighting retrofits, and building automation controls
Option D: Calibrated Simulation (computer-modeled savings compared to utility bills)	New construction performance contracting, ECMs implemented when significant historical data is unavailable

Schneider Electric uses accepted, duplicate-able utility accounting methods for determining energy savings and uses National Weather Service station data provided by the National Oceanic and Atmospheric Administration (NOAA) from the nearest North American Hourly/Special Surface Observation project to the project. Utilizing the utility-grade weather data maintained by our Telvent team of 20+ expert meteorologists is being considered, as it provides more stations of reference in more areas, which is a better fit for regions with many micro-climates (such as the WA).



The Schneider Electric Performance Assurance Support Services team includes Certified Measurement and Verification Professionals. The Association of Energy Engineers created this certification, in cooperation with the Efficiency Valuation Organization (EVO), the custodian of the IPMVP, to recognize the most qualified professionals in this area of the energy industry and to raise the professional standards within the Measurement and Verification community.

Schneider Electric tracks utility performance using MetrixTM Utility Accounting System from Silicon Energy, which is based on the IPMVP model. Schneider Electric performs all of our roles throughout a project with the perspective intentionally being the best partner possible to our customer, which in turn helps them have the best project possible. We provide our customers the tools and information needed to make financial decisions with confidence.

4. Design, Costing, and Managing Projects

The ESCO's experience designing, costing and managing the construction of heating plants(including steam), chilled water plants, heating ventilation and air conditioning systems, heat recovery, energy management and control systems, lighting and lighting control systems, water efficiency, and other utility system improvements including renewable.

All of these systems (and more) and have been upgraded/installed numerous times by our team, and Schneider Electric has developed substantial experience through the design and execution of our 450+ projects through our 20 years of providing more than a billion dollars worth of ESPC. Schneider Electric has a remarkable history in the analysis, design, construction, and ongoing performance of fundamental lighting systems to major central plant upgrades (including biomass, solar, and wind systems) and a broad base of experience lessons on how to deliver them with excellence. We have delivered ESPC central plant projects as large as 9,000 tons and as complex as the direct-bore installation of 6,000 feet of new piping around an existing college campus during the school year. Here are some highlights of other remarkable efforts.

At a state prison in Oregon, Schneider Electric de-rated a medium-pressure steam system to reduce the operational requirements of the system (for a savings of $300K annually) while freeing up funding then used improving the efficiency of the system and comfort/operability of the facilities. The amount of makeup water required by the system was also reduced from 30,000gal/mo to only 700gal/mo.

We removed a domestic hot water system from the central steam at a large hospital and delivered a 96% efficiency NG domestic water system, all without disrupting service to the hospital operations. This project also included a new service entrance for the electric utilities without a shut-down of any part of the hospital. At another hospital we provided a chiller plant upgrade, again, without any interruptions of service.

A state university was delivered more than $28M through multiple phases of infrastructure improvements, including replacement and installation of steam and condensate lines in buried utilidors around campus. We assisted in long term planning and coordination to ensure all required services were not disrupting the students and staff. Similarly, at a community college we recently built a complete chilled and hot water central plant (including the new building) without interruptions to the students and staff.

We have intentionally developed our design, estimate, negotiate, and project management processes and teams to be accurate, efficient, and mindful of our clients' goals and expectations.

5. Securing Utility Incentives

The ESCO's experience securing utility incentives for its customers. Discuss successful strategies implemented for maximizing utility incentives.

As part of any project we undertake, Schneider Electric makes a concerted effort to locate any and all rebates that are available for our clients to take advantage of. Nationwide, we've assisted clients in receiving over $50 million in grants and rebates to help defray the costs to them of our projects, and continue to invest in deepening our understanding of available programs (including hiring a 3rd party grant writer here in Washington to perform research on applicable federal and private programs) and how to streamline our interactions with programs we have worked with in the past.

Our rebate process begins with a member of our energy engineering team (assigned to the project) contacting the utilities (or visiting their website, in many cases) to gain an understanding of their available incentives. A site visit is then performed, specifically looking for opportunities in the spaces/systems that could fit the goal criteria of the client while maximizing incentive dollars. This site visit is not redundant, it is usually a component of the site visit needed to understand the energy use characteristics of the building for energy baseline calculation and energy modeling and to conceptualize scope – the perfect time to talk about adjustments or adaptations of the basic project scope concepts to maximize incentive dollars.

Schneider Electric has specific staff (the energy engineers who work on our projects here in Washington) responsible for monitoring the various grant and rebate programs in Washington and managing the application process. This allows us to provide our clients a working knowledge of the rebate programs they may qualify for (based on other experiences with the same utility or BPA). In one rare instance, Schneider Electric actually educated a utility's staff on how the BPA program they were subscribed to functioned and assisted in their coordination tasks as well as our own technical diligence. Needless to say, we know these programs very well. Schneider Electric is very clear with our clients when rebates are being applied for and their expected value.

6. Staff Qualifications

A description of the experience key staff have, who are responsible for administration of any potential work awarded thru this project. This is to include any sub-consultants routinely used for execution of performance contracting work. This is not to be the resumes or curriculum vitaes (CVs) of personnel. Resumes or CVs may be attached as an appendix. Please indicate if the experience was obtained at other than this ESCO. Please identify the responsible licensed P.E.

Below is an organizational chart of the key individuals that make up Schneider Electric's team. *Key personnel resumes are included in Section E of the SF330.* At this time we do not have any subconsultants as part of our team in a continual relationship. Subconsultants are utilized on a case by case basis when extra resources or specific expertise are required.

David Palmer & Harrison Eng - Program Managers

The Schneider Electric Program Manager:

- Acts as primary point of contact for our clients throughout the project
- Coordinates the contractual relationship between the client and Schneider Electric
- Acts as internal coordinator for the management and supervision of the project
- Identifies current and future resource requirements
- Manages preparation of, finalizes, and presents deliverables
- Develop the financial aspects of the project and assists in securing financing
- Manages and coordinates public relations team in collaboration with client (as desired)

Jordan Lerner - Director of Sales, Western Region

As management above the Program Managers (internally), Schneider Electric's Director of Sales for the Western Region:

- Coordinates internal and external technical resourcing
- Is responsible for negotiating and executing contracts with clients
- Represents Schneider Electric Management on project team
- Coordinates and navigates internal risk analysis and approval protocols

Meghann Ison, Brandon Bedford, Chris Klauss - Project Development Project Managers

The Schneider Electric Project Development Project Manager:

- Leads project team during engineering and design phases
- Develops and maintains project engineering and design budget and schedule
- Defines technical requirements
- Quantifies, obtains, and manages all technical resources required to produce contractually required engineering and design deliverables
- Facilitates engineering and design process and involvement of appropriate team members to ensure project is constructible, commissionable and operable
- Drives project team to solutions that fit project's constraints
- Manages the efforts of all development and design technical consultants

The Schneider Electric Energy Services team has 76 energy engineers and mechanical engineers/designers, 27 automation engineers/designers and 104 electrical engineers employed by Schneider Electric from which to assemble a project team. As required local or regional third-party consultants will augment Schneider Electric staff.

Jeff Coles – Senior Project Development Manager

As management above the Project Development Project Manager (internally), Schneider Electric's Senior Project Development for the Western Region:

- Coordinates internal and external technical resourcing
- Provides technical reviews and approvals
- Performs energy analysis review and approval

- Leads quality control processes

Martin Pape – Senior Engineering Manager

Electric's Senior Engineering Manager:

- Manages design engineering team
- Participates in mechanical and electrical conceptual, development, and design engineering and stamps/signs drawings
- Manages Reviewing/Approving Construction Submittals and RFI review/responses.
- Provides technical reviews and approvals
- **Is Schneider Electric's Responsible Washington-Licensed Professional Engineer**

Rami Nadershahi – Senior Estimator

Schneider Electric's Senior Estimator:

- Provides constructability feedback to team during design development
- Collaborates with engineering and design professionals to create detailed line item cost estimates for all scope
- Reviews permit/construction and subcontractor proposal documents to ensure alignment with cost estimates and verify contractor qualification for their work package

Brian Toce – Construction Services Manager

Schneider Electric's Construction Services Manager:

- Performs construction administration duties (contracting, schedule of values, invoicing)
- subcontractor qualification, subcontracts,
- Supports on-site project management staff
- Provides document/design feedback to team during design development and construction drawing development

Julio Rangel – Construction/Project Manager

Schneider Electric's Construction/Project Manager:

- Leads project team during project construction phase by quantifying, obtaining and managing resources and schedule documents required for successful execution
- During project's development, collaborates on project quality control/quality assurance through constructability reviews, value engineering, and safety reviews
- Qualifies subcontractors and manage contracts with subcontractors
- Manages Site Superintendent (assigned based on availability and specific experience) who:
    - Creates, maintains and enforces project-specific safety and health plan
    - Orchestrates regular meetings on site with subcontractors, DES, and clients
    - Coordinates construction issue resolution with appropriate team members, DES, and client

Robert Davidson & Fred McCandless- Performance Assurance Support Services

Schneider Electric's Performance Assurance M&V Engineer (Robert Davidson):

- Develops Measurement & Verification plan **based on IPMVP protocol**

Schneider Electric's Senior Performance Assurance Consultant (Fred McCandlesss):

- Engages with client during construction to understand project and designed function
- Supports training efforts and production of O&M Manuals and training documentation

- Orchestrates conclusion of construction/beginning of monitoring and verifying phase
- Ensure project performance relative to contractual guarantees
- Provides ongoing support and assistance for installed projects

7. Energy Star Portfolio Manager

A description of the ESCO's familiarity with EPA's Energy Star Portfolio Manager and other benchmarking tools.

Energy Star Portfolio Manager is used regularly by our team to provide our clients with scores for internal information, regulatory compliance, or Energy Star Certification. We also utilize the CBECs database for benchmarking in addition to our own projects in similar buildings in similar climates.

8. Issues on Past Projects and How They Were Resolved

A discussion of problems experienced on projects and the remedy for those problems.

Schneider Electric finds that most projects have some sort of issue that arises during the construction phase, although many times they are minor and only require minimal adjustment to the project's scope and key operating strategies in order to be addressed. Occassionally key details of a facility's operating requirements or site conditions are overlooked during project development, which can lead to substantial issues when it comes time to modify systems using engineering decisions made on incomplete or inaccurate information. Schneider Electric's process is intentionally configured to carefully document all requirements and deliver to them, but still errors can be made, and we "step up" to fix them if they are.

In three projects recently implemented in Washington, Schneider Electric (during construction) was alerted that our designed solution was not adequate to truly meet the needs of the spaces we were impacting – a major discrepancy, as our mission and intent is to support and enhance those spaces, not detract from their ability to serve our "clients' customers". The root causes of the issues were carefully analyzed, modifications to the design were identified, approved by our clients, and implemented, with Schneider Electric spent its own funds to remedy the deficiency. In one case, this design mistake cost Schneider Electric more than our profit margin, causing us to ultimately deliver the project at a loss. However, this did not change our attitude about getting the right solution identified and implemented **as this is our duty to our clients – we deliver the performance we promise, period.**

The client with this major issue has subsequently engaged Schneider Electric for a second phase of work, understandingly requesting a different designing engineer than who worked on Phase 1 – a decision already made within Schneider Electric on a broader scale, and this client has been extremely pleased with the engineering resources now assigned to the Washington team (and represented in this response).

9. Geographic Makeup of Project Team

What is the makeup of a typical project team with regards to local (WA, ID, OR) vs outside the region staffing.

The geographic makeup of our teams includes members both within and outside of the Pacific Northwest. Each project is staffed based on the characteristics of the project (type of client organization and type of systems to be included in the project). The members of the team responsible for regular client interaction and updates are located in Washington.

Our Seattle office boasts a full complement of staff in each key role required to deliver a project, however, we believe "best value" for our clients dictates that we provide staff as experienced as possible in their unique situation. As a result, we typically have a project team comprised of members located across the country. Our standardized development and delivery approach (which all regions of our ESCO team utilize) enables us to be very flexible in assembling teams with minimal down time for getting to know how everyone else works.

We recognize that technology readily allows these experts to participate fully in each and every interaction they would attend live if they were in the Northwest, while adding the value of their expertise otherwise unavailable because of geography. We are fluent in using conference calls and screen sharing technology to support full participation, and have the ability to utilize these technologies on a clients' site anywhere with our own self contained devices (we can meet where makes sense for our clients). In many parts of the state, regardless of origin of the staff, performing a site visit has roughly similar travel expenses, further equalizing the impact of our staff locations. As a footnote, to reduce unnecessary expenses for our clients we have diligently studied the art of effective site visits and have refined our ability to minimize the number of these visits while ensuring all details are comprehensively captured.

Regardless of whether or not some of our team is located far away, Schneider Electric believes firmly in the value of personal interactions. Whenever possible, our program managers (who act as an owner's representative embedded within our project team) are local, know our state and its nuances well, and will always be live and in person when conducting key meetings with DES and our mutual clients. Having subject matter experts join us from their desks, wherever they may be, simply augments our ability to shake your hand at the end of the meeting knowing we've brought all of our resources possible to make the project a success.

MANAGEMENT APPROACH

10. Organizational Structure and Management Approach

The ESCO's organizational structure and management approach to the project. Clearly describe the roles and responsibilities of typical ESCO staff who will be assigned to any project obtained under this selection and of any sub-consultants included on the ESCO's team. For sub-consultants, describe the ESCO's prior experience working with the sub-consultant.

Schneider Electric's approach to a project can be summarized into several questions:

- What are the ***real needs*** of this owner's buildings?
- How does the ***current financial situation*** allow these needs to be addressed?
- What is the ***best way*** to deliver enduring performance?
- What areas are ***most important to the owner***?
- Will the proposed solution ***truly be a benefit*** to the client?
- What needs to be done to ensure this project is implemented with ***minimal impact*** on occupants and staff?

The overriding focus and goal of every component of a Schneider Electric project is to deliver solutions to our clients that perform for the long term and solve real needs in a cost-effective manner.

The benefits from this approach are wide-reaching. Offering a full, turn-key solution, Schneider Electric brings the benefits of a robust, comprehensive project designed specifically at controlling operating costs and executed with careful attention to detail in implementation. Since we are responsible for a guaranteed maximum price and aiming for a positive, long-term partnership, every customer can be assured utmost attention will be given to a seamless and painless construction project. Most Schneider Electric clients have significant needs for careful jobsite coordination while being sensitive to building occupants and passers-by. Our understanding of the concerns and "pinch-points" of our clients, working with them to develop a solution for the best possible improvements to meet their goals, planning and coordinating construction, and ensuring they can be self-sustaining in the operation of the measures and realization of expected savings are some of the reasons Schneider Electric has seen such growth as a premier ESPC provider.

Mobilization schedules, construction staging, site access and noise control are second nature to Schneider Electric and hold high priority as your project is developed (we keep focus on how the developed project can actually be implemented as we design the improvements). On-site project management during installation allows us to deliver utmost quality in installation, while continuing communication with one continual point of contact, the program coordinator (the client representative), ensures throughout the

process minor pinch points and concerns are relayed to the entire team. The following information outlines the teams within Schneider Electric that work together to ensure the project is implemented on schedule and achieves guaranteed savings. Everything that is done is done with our customers' best interest in mind because it is our goal to have the most satisfied customers in our industry.

In the early stages of an Energy Saving Performance Contract, Schneider Electric's Sales Team is particularly visible and involved, as would be expected. *However, beyond the traditional steps of building a relationship and informing the customer as to their options and the benefits of a performance contract, this team is critical in facilitating communication between the different internal teams within Schneider Electric, the Dept of GA, and the customer throughout the project.* Since Schneider Electric approaches every project with a long term partnership in mind, these *client representatives* are critical in thoroughly understanding the client's organization and needs to ensure that the long-term results of the ESPC are exactly what are required and meeting the goals the building owner had in mind when beginning the ESPC process.

The Sales Team also assists in securing financing, grants, incentives, tax credits, and rebates for the project and is involved throughout the project by coordinating the following Schneider Electric groups. Unlike traditional design/bid/build projects, every Schneider Electric team involved in executing a performance contract has a vested interest in long term performance as *Schneider Electric is financially accountable to our customers for performance per the project's contract.*

Project Development and Engineering (PD&E) plays a vital role in the success of Schneider Electric's projects. During the development phase of a project PD&E defines the project's design intent (i.e. goals, objectives and requirements), conceptualizes Energy and Water Conservation Measures (EWCMs), and provides all of the engineering/design required to move the EWCMs from concept to implementation. PD&E's main goal is to develop EWCMs that enable the building owner's primary objectives (including efficient, comfortable operations) and perform long-term for the owner.

The primary services performed by Schneider Electric's PD&E group are:

1. **Project Management**

Schneider Electric's PD&E staff includes project development managers who plan, monitor, control, and closeout the development phase of each project, while enabling the collaboration required to define Scope, Schedule, Funding, and Performance for a project. The Schneider Electric project development manager overseeing projects in Washington, Jeff Coles, has many years of hands-on experience with engineering, design, construction management, and dynamic building systems.

2. **Development Engineering**

Schneider Electric's Washington PD&E team includes energy engineers, the majority of whom are Certified Energy Managers (CEMs). These engineers provide the utility and energy analysis required to quantify savings associated with each EWCM. They also collaborate with design engineers to provide conceptual and detailed engineering/design for each EWCM.

3. **Design Engineering**

Schneider Electric's PD&E team also includes mechanical and electrical design managers, all of whom have professional engineer licenses and multiple years of hands on experience with dynamic building systems. They provide the detailed engineering/design required to finalize each EWCM's concept, ensure EWCM compliance with all applicable codes, and quantify scope of work for all subcontractors. In the rare event that Schneider Electric doesn't have the internal expertise to provide detailed engineering/design for a particular EWCM, Schneider Electric hires a design professional with the required expertise. Schneider Electric currently has numerous WA licensed Professional Engineers in both Mechanical and Electrical Engineering.

4. **Estimating and Cost Control**

Schneider Electric's PD&E team also includes professional cost estimators. At the beginning of a project's development phase, these professionals provide conceptual cost estimates based on conceptual engineering/design deliverables, historical data and rules of thumb. As development of the project progresses, detailed line item cost estimates based on 30% engineering/design deliverables, vendor equipment quotes, and Davis Bacon wage rates are created. Detailed line item cost estimates are updated based on engineering/design deliverables, vendor equipment quotes, and Davis Bacon wage rates as designs for each EWCM are finalized. Subcontractor quotes for all scope are obtained and then qualified utilizing detailed line item cost estimates.

The **Installation Team** executes another critical component in the success of Schneider Electric's projects. During the construction phase of a project, Installation delivers the project scope, on time, within budget, and performing as required to meet the project's design intent while coordinating with the building owner to ensure smooth implementation. Installation's main goal is to implement EWCMs with the least amount of disruption to the buildings occupants and staff and deliver enduring performance for the owner.

The primary services performed by Schneider Electric's Installation Team are:

1. **Construction Management and Administration**

Schneider Electric's installation team for this project includes a construction manager who will plan, monitor, control, and closeout the construction phase of each project. Microsoft Project is the primary scheduling tool utilized by Schneider Electric construction managers. Prolog is the primary tool utilized for construction administration work products such as meeting minutes, submittal logs, requests for information logs, change orders, punch lists, etc.

2. Site Supervision

Schneider Electric's installation team for this project will include an on-site project manager who will plan, monitor, and control daily subcontractor activities at the project site. Due to the current fluid state of timelines and scheduling, the project manager is determined as the project reaches final development.

3. Commissioning

A project specific commissioning plan will be developed and executed by Schneider Electric project engineers. The commissioning plan is organized by phase or block of construction and systems. It summarizes commissioning scope on a system by system basis, but it is not intended to communicate a sequence for commissioning. Schneider Electric incorporates commissioning sequencing into the project's construction schedule. Each phase is designed to be executed sequentially, but commissioning by nature is dependent on project progress, and the sequencing of each test within a phase will be driven by the project's construction schedule and determined through collaboration between Schneider Electric and its subcontractors.

When providing performance contracting services, Schneider Electric operates as a prime contractor. We subcontract electrical work and mechanical equipment installation as needed with bonded and insured firms licensed in the state. These subcontractors are normally not selected until a scope of work has been decided on. See the following charts for a description of Schneider Electric's energy services in relationship to our capabilities use of subcontractors and Schneider Electric's subcontractor selection process.

Use of Subcontractors				
Key Role	*Number of Schneider Electric Personnel*	*Schneider Electric Years Of Experience*	*Performed With Schneider Electric staff*	*Services Performed With Subcontractors*
Engineering	21	50	√	None (unless an engineer is recommended by the client for extensive knowledge of their site/systems, a special case where we their engagement is added value and welcome them onto our team)
Auditing	21	16	√	None
Design	21	50	√	Schneider Electric occasionally utilizes MEP firms to provide design services after a solution is conceptualized/engineered
Energy and Water Systems	21	16	√	Schneider Electric utilizes specialist firms capable of audits and engineering of water and

				lighting systems. We have several potential partners in each category, and seek client/DES approval before engaging them on a project.
Equipment Selection	58	50	√	None
Installation	58	50	√	Schneider Electric utilizes subcontractors for specific technical trades, and prefers local firms where possible
Operations and Maintenance	58	16	√	Schneider Electric occasionally utilizes service firms to provide specific technical service
Commissioning	11	50	√	Schneider Electric occasionally utilizes TAMU-Energy Systems Laboratory for commissioning support
M & V	11	16	√	None
Training	11	50	√	Schneider Electric typically coordinates vendors and contractors to provide specific equipment and system training

Process of Subcontractor Selection		
1. Approach	*2. Procurement Plans*	*3. HUB Subcontractors and Suppliers*
• Establish a base of high quality and cost effective suppliers • Actively solicit the participation of HUB firms • Conduct competitions for material and services among the qualified suppliers • Establish and maintain real time communications • Monitor supplier performance: o Cost o Schedule o Quality • Ensure compliance with all client rules and regulations	• Identifies supplier requirements for each project • Contract requirements: o Client flow down requirements/ reporting • Admin. requirements: o Procurement policies o General terms/conditions o Bonding o Quality requirements o Reporting o Meetings • Statement of work • Schedule • Specifications • Budget • Material o Quantity/Schedule/ Delivery requirements	• Prepare and submit a HUB plan • Conduct outreach to recruit potential subcontractors and suppliers • Develop and maintain a bidder's list of HUB subcontractors and suppliers • Ensure that project procurement plans are structured to encourage the participation of HUBs • Flow down HUB provisions into applicable subcontractors • Monitor the attainment of client goals • Report the status of our program as required

System specific commissioning plans provide the framework for proving an individual or logical grouping of systems functions per the project's design intent. Each plan is comprised of the following phases: **Pre-Functional Testing (PFT) -** Verify and document the specified individual pieces of equipment are installed according to the intent documents and submittals, **Functional Performance Testing (FPT) –** Verify individual components function as expected individually and as a system at a point in time according to the intent documents, **Testing, Adjusting, & Balancing (TAB) –** Verify the measured dynamic performance of individual components and systems provide quantities, temperatures, and pressures at the time of testing according to the intent documents, **Acceptance Testing (AT) -** Verify the tested and balanced dynamic systems function holistically for a specified, extended period per intent documents, typically through seasonal changeover.

Performance Assurance Support Services (PASS) also contributes crucially to the success of Energy Solution's projects. After project development, construction, and commissioning, the project enters the "guarantee phase" and transfers to the PASS group. At that time, Fred McCandless will be responsible for the efficiency and effectiveness of the EWCMs put in place by Schneider Electric. The PASS team is

extremely skilled in HVAC service, engineering, operations, maintenance, and controls, and provides invaluable help for your facilities staff.

As the customer's primary point of contact for the term of the guarantee, PASS' primary services entail:

1. **Training**

PASS' priority will be to provide the proper training, support and monitoring needed to *ensure* that the EWCM's perform for the life of the guarantee. **PASS is *proactive*, not reactive** in the role of "energy manager" for your facilities. As PASS compares monthly utility bills with computer models and target consumption data, your PASS representative can anticipate "critical savings months", and work with campus staff to ensure all steps are taken to achieve savings goals. PASS will, in effect, **continuously fine-tune** the installed project to ensure success and maximize realized energy and cost savings.

2. **Support Services**

Schneider Electric's remote monitoring capabilities permit the PASS team to help troubleshoot your control system and identify difficulties before they occur. Through remote monitoring of your facilities and monthly utility data, we can solve problems quickly and help your staff perform effectively. Fred McCandless will provide technical assistance during business hours and most after hours needs. If Fred is immediately unavailable, one of our numerous PASS representatives is available 24 hours a day, 7 days a week through a toll free PASS Hotline. If a PASS representative is unable to troubleshoot a technical issue over the phone or on-line, an on-site visit may be necessary and will be done in a timely manner. PASS also performs annual on-site inspections of the installed measures and reports any issues and/or opportunities as a result.

3. **Measurement and Verification**

The **success** of a performance contract is measured both in customer satisfaction and in how well the "guarantee" actually protects the owner. One of PASS' main functions is to measure and verify utility savings resulting from the project. In the case that your guaranteed savings do not come to fruition, PASS will be responsible for reimbursing you the difference between the guaranteed annual savings and actual annual savings. In the event of a shortfall, the PASS department will take a closer look at the facilities' operation and determine if any efficiency improvements can be made, while continually keeping occupants and staff in mind.

4. **Monitoring and Reporting**

You will receive quarterly reports from your PASS representative detailing your facility's performance, including energy consumption and savings, potential additional savings, and possible problems. PASS quarterly performance reports keep you aware of how your project is paying off month-to-month and over the long term. Reports are posted on Schneider Electric's secure online reporting tool "eSavings", and can be accessed at **http://ion.tac.com/eSavings**. Using a custom username and password, the owner can

log in and view energy savings reports, download or print them easily in PDF format, and generally keep track of the project performance. We are in the process of transitioning to a more robust resource use and savings tracking platform that also enables effective carbon reporting and reduction tracking, visibility to stakeholders, and educational access – making our projects more valuable without increasing their costs. A preview of a product similar to our future reporting tool can be viewed here: http://www.summitenergy.com/support/Sustainability_RA_Video.mp4

11. Policies and Procedures for Managing and Delivering Work Products on Time

The ESCO's policies and procedures for managing and delivering its committed work products in a timely fashion within contractual obligations, including project development, construction, and post implementation verification.

Communication is critical to a project's success. A substantial part of delivering within contractual obligations is realistic consideration of all of the work that needs to be performed to meet such obligations and thoroughly mapping out when the team needs to meet the incremental milestones along the way to stay on course. Setting the right expectations, both in what obligations are laid out in the contract and in communicating those obligations clearly to the team, are the path to delivering a project on time and on budget.

Between the three distinct phases of a project (development, construction, and performance) Schneider Electric has three closely connected project managers, one for each phase, in addition to a single point of contact throughout the relationship – the program manager. The program manager is the client/DES facing member of the team at a high level, but specifically is the visible project manager during development because of the importance of developing the right project to hand off to the construction and performance teams later. The work in the development phase "sets the table" for the balance of the relationship, and is therefore critically important to delivering within obligations and expectations.

The project development project manager is responsible for identifying and securing needed resources, managing activities, confirming analysis, managing cost and time estimate generation, preparing the IGA and ESP, and more. Schneider Electric has developed this complementary role approach to make sure our clients are well represented and understood and that their expectations and needs are relayed correctly to the technical teams. The program manager's role is ensure that all of the members of the team understand the needs and goals of the client that drove the project to be developed into the scope contracted and moved into construction, how the obligation/expectations were set for the project, and what was mapped out as the path to deliver to those obligations.

During the construction and performance phases, the respective project managers will be the regular direct points of contact for the client and DES, as they will be intimately involved in on site/support activities while the project is in that phase. For these phases, the program manager remains involved and aware of the project's status, although in the background, providing accessibility to the client to an avenue of contact who knows the project in addition to the assigned project manager in the event issues arise needing comprehensive staffing to resolve.

Through communication, planning, and comprehensive project leadership, Schneider Electric is well equipped to deliver on all of our expectations.

12. Approach to Marketing the DES Energy Program

The ESCO's approach to marketing the DES Energy Program to potential client agencies in conjunction with DES personnel.

Schneider Electric's account executives are actively pursuing potential ESPC projects throughout the state. It is our current policy to provide an explanation of the GA's Energy Program to every prospective customer when they are considering progressing to a vendor selection and investment grade audit. After providing information on the procurement options, Schneider Electric account executives step back from the decision and allow the owner to make the best choice for their situation. In the future Schneider Electric looks forward to working with GA to establish a more refined marketing approach and strategy to the benefit of both organizations.

13. Minimum Viable Project Size

What is the minimum size project your firm would consider viable.

Schneider Electric finds that projects under $600,000 generally bear disproportionately high (and less than ideal) development and delivery costs compared to larger projects. We exist to serve our clients and will entertain smaller projects under certain circumstances, but recognize that our documented delivery process (that provides so much value on larger projects) is a hindrance to effectively delivering projects under this threshold.

14. Approach to Effective Communication with DES

The ESCO's approach to effectively communicate project information with the DES Energy Program prior to sharing with client agency.

Schneider Electric recognizes that on some previous projects our communication with DES was not given with adequate time for review and collaboration prior to sharing documents or information with the client agency. For that, we humbly apologize.

Going forward, we recognize the need to implement several changes to ensure that our communications with DES are acceptable and give adequate time for response before

sharing the information with our mutual client. Our project development schedules will include milestones of communicating key points to DES and soliciting feedback. For each DES project, we will ensure that the entire Schneider Electric team understands the role of DES and DES' expectations for what information is shared with them prior to the client.

We will begin each new project relationship with a DES-Schneider Electric kickoff meeting, defining what information and at what intervals should be communicated via regular teleconferences or update e-mails with the DES project manager during the project's development (especially) and subsequent phases. This intentional defining of expectations of the specific DES project manager assigned to each project (which we've found to vary widely) and commitment to integrating key communications with DES into our project program/schedules should enable excellent communication and a healthy, collaborative relationship with DES on each and every project.

15. Project Development – from Marketing to the ESP

The ESCO's approach to project development from marketing to delivering the ESP.

Schneider Electric's Program Managers are regularly actively pursuing and qualifying new opportunities across the state. Once potential client agencies have been identified and preliminarily qualified, they elect the formal procurement path they will follow (DES or RFQ), and our team begins the process of facilitating the documentation of their goals and expectations for a project and defining their constraints and expectations so we can begin the Investment-Grade Audit.

The Schneider Electric Program Manager is the single point of responsibility for the entire process, and the client's project manager through the development phase. A unified team with sole responsibility for our work enables thorough communication and ensures a mutually beneficial long-term relationship. Communication mitigates risk, and we believe providing opur clients and DES the opportunity to be involved throughout all phases of a project greatly enhances the success of each performance contract. Candid, open communication between DES, our client, and Schneider Electric characterizes every step of our process, while careful project management ensures your time is used prudently and productively.

The phases of Schneider Electric's Project Management Plan are outlined below. Schneider Electric's attention to detail and standardization of practices mitigates our clients' risk and maximizes value in every aspect of their project.

Phase I: Pre-Development

Before development of the project begins, a meeting is conducted with all key stakeholders within the client agency so that DES and Schneider Electric's team can understand the current operation of the facilities and/or infrastructure and the needs of the "customers" of those systems. With the information communicated in this meeting, all parties will jointly agree upon a plan for scheduling key meetings/milestones (and strategies to expedite the process, if necessary). Goals, expectations, and constraints for the project will begin to be documented at this time as the foundation for an effective and efficient investment-grade audit – the actual project development phase.

Phase II: Project Development

The investment grade audit can be separated into two stages: determining how a client's facilities and systems operate now and identifying how they could best operate in the future (best is defined by the client's goals and their core business – what is the system supposed to do and how can it best perform that duty). Understanding current operations helps ensure we know the facility's strengths and weaknesses/deficiencies and assists us in eliminating inefficiencies and wasted money while best supporting the client's business. On-site interviews help Schneider Electric understand the training needed for the operations staff to effectively and independently operate and maintain the project. Our vision of the future will involve a hassle-free, flexible system—we strive for complete ease-of-use and elimination of client risk. This vision, coupled with the client's priorities and long-term plans, is used to generate the scope of work for our project. The investment grade audit process is outlined in the following table.

Schneider Electric Investment Grade Audit Process		
Function	**Tools/Necessities**	**Outcome**
Initial Team Meeting	• Involvement of key players • Communication	• Key milestones scheduled • Client's subcontractor expectations understood • Control project quality • Schneider Electric understand client goals
Data Gathering	• 26 months of utility bills • Rate schedule information from local utilities • Blueprints, drawings • Square footages and construction materials information	• Preliminary impression of facilities' operating condition • Preliminary understanding of facilities' design, layout, and the location for potential energy conservation measures • Wealth of data to discuss with facility team players
On-site Audits	• Schneider Electric engineers and client maintenance staff • Building system interconnect requirements • Equipment functionality • Facility operation strategy	• Understanding of client's current system and facility layouts • Sufficient data to prepare computer model rate structures
Facility Modeling	• Industry-standard modeling software (DOE eQuest): Building modeling software to simulate facility rates and potential impact of ECMs	• Schneider Electric studies how potential energy conservation measures will integrate and react in client's facility
Final Recommendation Meeting	• Client, DES, and Schneider Electric key players • Project options and modeling results • Rebate plans finalized • Utility interconnection requirements finalized	• Finalize scope of work • Schneider Electric presents payback • Schneider Electric presents proposed savings verification methods • Discuss technologies, training plans, equipment preferences, and implementation strategy
Measurement & Verification Development/Operations and Maintenance Recommendations	• Industry-standard protocol: International Measurement and Verification Protocol (IPMVP) • Maintenance contract information for facility • Completion of utility rebate forms and	• Develop savings guarantee • Present savings guarantee • Documentation of greenhouse gas reductions

Schneider Electric Investment Grade Audit Process		
Function	**Tools/Necessities**	**Outcome**
	measurements	

At the conclusion of the IGA process, and with DES and client acceptance of the project, the Schneider Electric team prepares our Energy Services Proposal. This document includes the details of the final accepted project from the IGA and all conditions, assumptions, exclusions, etc typical in a project agreement. The ESP can be assembled and submitted to DES within a few weeks of the acceptance of the IGA.

16. Method of Contracting Installation and Delivering Competitive, Transparent Pricing

The method for contracting the installation of the measures, maintaining cost competitive pricing, and whether the ESCO uses open book pricing.

The implementation phase will begin as soon as the final project is approved and the necessary financing is in place. In the implementation phase of its contracts, Schneider Electric acts as a "design-build" contractor. Schneider Electric bears **sole responsibility to the client and DES** for:

- Design (completing the design based on the engineering developed in the IGA)
- Plans and specifications
- Construction and record drawings
- Project scheduling
- Equipment procurement
- Construction management
- Site management
- Start-up
- Acceptance inspections
- Punch-list development
- Final acceptance inspection

As part of our energy services contract and the agreements we enter into with subcontractors, Schneider Electric guarantees that the design and installation of the work complies with all current local, state, and federal construction codes and environmental regulations. As a successful turnkey organization, our construction staff adhere to the codes and standards required by all applicable local, state, and national governing bodies. The client's and DES/State of Washington's minimum standards and specifications for equipment, materials, and workmanship will be followed **except in the areas that Schneider Electric's standards are more rigorous.**

During the design period of implementation, Schneider Electric's energy analysts and engineers—specialists in energy management and optimal retrofit design—will finalize the design of the systems and improvements identified and quantified by Schneider Electric and approved by the client during the investment-grade audit. The Schneider Electric installation team will then visit the site to collect any additional information

necessary and review the design packages and, if necessary, request modifications prior to the designs being provided to prospective contractors. All design drawings will be provided to the client in paper and electronic formats.

Schneider Electric will use subcontractors to install the various improvements that will be proposed as part of this project. Under the law (RCW 39.35A&C), Schneider Electric does not need to select our contractors via "low bid". Therefore, the client can request Schneider Electric to sole-source work to preferred vendors/contractors where appropriate. Where this is not applicable, we will work with you to select several approved contractors and material suppliers for each scope package. Schneider Electric encourages qualified **local contractors** to be involved in the project in any way possible. In cases where the scope and complexity of a project exceeds the capabilities of local firms, we will work with larger regional contractors we have positive experience working with on prior projects to outline portions of the work that they can subcontract locally.

Once a prequalified list of potential bidders is formed, Schneider Electric offers Solicitations for Proposals (SFPs) for the scope of work defined and designed by Schneider Electric's engineers. The responses from potential subcontractors are then normalized (as they are encouraged to provide constructability feedback or suggested alternates in their bids, so not all are comparing the same identical work, hence a normalization process is required) and contractors are interviewed to evaluate which prospective partner **will provide the best value** to the client through this project.

The actual project implementation period is determined through coordination with the selected subcontractors, although a general phasing plan is developed during the investment-grade audit process. The contractors work for Schneider Electric and are managed wholly by Schneider Electric staff, whose policy is that our staff are on site at all times that any of our contractors is working. We deliver projects with the least impact on our clients businesses and staff possible.

Schneider Electric has provided construction management and administration for hundreds of diverse projects around the occupants' schedules in fully-occupied buildings (such as schools, universities, hospitals, etc). Schneider Electric's on-site project manager will be the client's main point of contact during the installation phase of the project, although the program manager will continue to interact with the project, be available if needed, and perform regular visits to ensure the client is fully comfortable with the progress to date. The project manager, with help from client staff, will determine how each aspect of the project will be scheduled and logistically organized as to **minimize disruption to the client's "customers".**

Regular inspections will be made to ensure that work conforms to our specification, acceptability of work quality, percent of total project completion, and what payment amount is justified. In brief, the project manager's responsibilities include:

- Manage the project to the requirements developed during the Investment Grade Audit
- Develop, distribute, and maintain the project schedule
- Approval of construction documentation
- Subcontractor evaluation and selection
- Pre-construction meeting
- Interim inspections/site presence (depending on scope of project and client needs)
- Review of monthly progress for invoices from subcontractors and to client
- Monitor building operator training required of subcontractors

Comprehensive Roles and Responsibilities of the Schneider Electric Project Manager	
Function	**Outcome**
Review plans and specifications	Quality management
Secure necessary bonds and permits	Cost control
Complete preliminary work for sales release meeting	Organized meeting
Attend sales release meeting	Communicate with client
Set completion date	Ensure timely completion
Complete preliminary long-term order entry	Mitigate risk and prevent manufacturing stalls
Meet with client to establish shipping/receiving methods and security measures	Ensure timely completion
Complete project scheduler software timeline	Ensure timely completion
Order materials and equipment	Protect project and client interests
Finalize subcontracts	Cost control, quality management
Organize meetings to familiarize project team with site	Quality management
Hold weekly meetings with subcontractors and client during the project	Constant communication of installation progress and goals
Inspect and validate completed work	Quality management and risk mitigation
Finalize Utility Rebate Reports	Ensure proper payment of rebates
Arrange for on-site client training	Develop customized training plan
Complete final punch list	Quality management
Introduce the client to Performance Assurance Support Services (PASS)	Ensure job quality and client satisfaction

Schneider Electric's project manager will also provide DES and our client with an estimated schedule for the project and develop a schedule for regular progress meetings. Project progress payments will begin during this phase, timed to function best within the client's budget month, and generated on a percent-of-completion basis for the work

performed since the previous invoice. Our construction administration procedure usually involves:

- Subcontractor pre-bid meeting, bid evaluation, and selection
- Issue of construction contract to subcontractors
- Pre-construction meeting
- Review of monthly progress payments due to subcontractors
- Generate and submit invoices to client

Equipment manuals will be created at the completion of each retrofit. Training manuals will be assembled throughout the implementation of the project and provided to the client. Warranty work responsibility will pass from the project manager to Schneider Electric's Performance Assurance Support Services (PASS) personnel at the completion of construction and will be coordinated with this group for the duration of the warranty period.

Schneider Electric follows standardized procedures for procurement within any project. Initially, Schneider Electric lays out specifications for the particular piece of equipment required for the project. This specification is based on the past experience our engineers have had with the type of retrofit, combined with the quality of equipment required for the work. Although Schneider Electric offers countless world-class product brands, and can typically provide the best support and cost savings from those systems, we leave it up to our ESCO customers to decide on specific equipment manufacturers and characteristics. If a client has a preference, Schneider Electric has no issues with installing other vendors' products, and does on a regular basis. We recommend what we feel is the best fit for the client's needs and clearly communicate the reasoning behind those conclusions, but the decision making is done by our clients.

We believe that best value is not always lowest cost (low-bid), but a careful combination of appropriate costs, responsiveness, dedication, integrity, quality, flexibility, and sustainability. We are committed to the performance of our projects and long-term partnership philosophy our project delivery is focused on. Schneider Electric's outstanding value in ESCO projects can be summarized through three key factors: our character, expertise, and approach.

To maintain cost competitiveness, we always have at least two diligent cost estimates for each scope package, and often more. These can be our internal estimation (performed by dedicated, full-time professional estimators) versus a preferred vendor bid or multiple contractors, but the purpose is the same – to make sure our clients are getting the best value. We believe that an adversarial relationship with subcontractors is not productive, and instead focus on helping our subcontractors reduce their prices by reducing unknowns or defining variables. If a contractor doesn't know something, they guess, and put a cushion on top of their guess. If you can give them an answer, they can give you a

solid price. That's but one example how we use our intimate knowledge of the contracting world to deliver best value for our clients.

We ask our bidders to consider if there are alternate approaches or configurations they've seen work better in the field than what we have designed and submit such change ideas as add/alternates with pricing and rationale. This enhances the overall value of our projects because we integrate "real world" knowledge from constructing systems into our project alongside the technical expertise and diligence of our engineering staff.

Schneider Electric utilizes open book pricing. An example is included in the sample energy audit. Our pricing is truly open book – we are not self-performing any of the work, nor do we offer in-house financing, so the figures we present to clients are realistic and transparent. We take pride in being open and honest in our relationships, and this philosophy extends into project financials as well.

17. Procedures for Timely Closeout Document Delivery

The ESCO's procedures for timely closeout of construction projects delivery of O&M manuals, commissioning reports and other pertinent paperwork to the DES Energy Program and the client agency.

Below is the outline of our procedures for timely closeout and document delivery.

a.) Establish definition of "timely" with the assigned DES project manager. Applies to warranty letters, O&Ms, Cx reports, CO processing.
b.) Create installation schedule with substantial completion milestones, per EEM.
c.) Conduct weekly construction meetings with subcontractors to discuss progress, issues, and schedule.
d.) Conduct weekly or bi-weekly meetings with DES and the client to discuss progress, issues, and schedule – including two-week look ahead schedule to enable advance coordination with building occupants.
e.) Upon substantial completion, establish deadlines for execution of punchlist items
f.) Integrate the commissioning party's schedule to the punchlist deadlines.
g.) Establish deadline for delivery of subcontractor O&Ms, upon completion of punchlist.
h.) Establish deadline for delivery of Commissioning Report, upon completion of field commissioning.
i.) Continue weekly coordination & construction meetings until all O&M manuals, Cx reports, and all other pertinent paperwork is generated and submitted.

18. Procedures for Timely Project Closeout Paperwork Delivery (DOR, L&I, etc)

The ESCO's procedures for timely submittal of required documentation to Departments of Revenue, Employment Security, and Labor and Industries.

Below is the outline of our procedures for timely closeout paperwork delivery.

a.) Establish definition of "timely" with the assigned DES project manager.

b.) Confirm L&I and other AHJ documentation requirements are understood and followed by all subcontractors immediately after subcontracts are awarded.
c.) Review L&I requirements during initial weekly coordination construction meeting.
d.) Conduct periodic L&I and other agency website reviews throughout installation phase, and follow up with subcontractors as necessary.
e.) Upon delivery of O&M documents, revisit AHJ requirements with subcontractors and persistently drive all parties to submit necessary documents to close out the project.

19. Mitigating Project Risks for Client Agencies

The ESCO's approach to mitigate risks associated with guaranteed cost, savings, and performance.

Schneider Electric is committed to making each of our projects a success. This means high-performance systems, that our clients' staff are comfortable operating and maintaining, actually delivering sustainable energy savings to your budget. Schneider Electric goes to great lengths to calculate and project verifiable energy savings, establish the best collection of improvement measures to meet your goals, and deliver them as inexpensively as possible through excellence in engineering, innovation, and regular review and collaboration. We deliver enduring performance.

We willingly and truthfully guarantee the energy savings from our projects. We minimize the use of major assumptions in the calculation of our savings, using actual measurements instead wherever possible. What this means to our clients is that rather than assuming the project is paying for itself as anticipated, they can truly hold Schneider Electric accountable to our promised results in real budgetary savings. Schneider Electric actually writes a check if actual savings do not meet planned savings, and we do so willingly. Our value is clear – we are a long-term partner to you.

Our projects can be very complex, especially inside existing and occupied buildings. There are portions of the system or building we don't have any way to inspect before we offer a contract to upgrade or revise systems passing through it. This is normal, but inherently risky. We are straight forward about our obligations – we will deliver the scope in our contract, fully operational (to our client's satisfaction), and delivering the energy performance we projected. If a new system doesn't work appropriately for the space or customers it is serving, we will remedy the problem with no cost to the owner. If we overlooked something in our design/estimating that causes the costs of our contracted scope to be higher than expected, we obviously do our best to minimize the financial impact of this new information, but do not reduce quality or features of other portions of the project to recover the difference. We stand by our commitments, and are wholly committed to our clients viewing each and every one of our projects as a shining success.

By working with Schneider Electric, you avoid the risks associated with multiple-point accountability, outdated techniques, cut corners, or unclear/unverifiable savings.

20. EPACT Tax Credits

The ESCO's approach to sharing EPACT tax credits with client agencies.

To date, Schneider Electric has not yet successfully facilitated the capturing of Section 179D or "EPACT" Tax Credits on one of our projects. We have had our corporate tax team working on how to integrate this into our ESPC offering for nearly 2 years, but are making little headway because of the overall turmoil surrounding US Federal Tax Rules and Regulations keeping our staff more than busy. However, when we are able to offer this, we will readily share this funding resource with our clients with extremely favorable terms.

21. Experience and Approach to Meeting RCW 39.04.320 Apprenticeship Requirements

The ESCO's experience and approach to meeting the public works requirements for apprenticeship training programs as directed by Chapter 39.04.320 RCW.

22. Utilization of Minority and Women Owned Businesses

How Minority and Women Owned Business (MWBE) enterprises will be utilized on the project.

Schneider Electric is strongly committed to assuring that MWBEs have knowledge, equal access and equal opportunity to compete for goods and services for any contract we undertake. Schneider Electric supports the development and enhancement of MWBEs through outreach programs that will promote their participation in contracts when possible. Schneider Electric has made and continues to make a "Good Faith Effort" to secure qualified MWBEs as subcontractors or subconsultants.

The "Good Faith Effort" is outlined below and is used by Schneider Electric to help the corporation determine whether a "Good Faith Effort" is being consistently achieved. A "Good Faith Effort" will be defined as:

- Attendance at the pre-bid/pre-proposal conference, if any.
- Efforts to follow up initial solicitation of interest by contacting MWBEs to determine with certainty whether these businesses are interested.
- Efforts to identify portions of the work that can be performed by MWBEs in order to increase participation. If possible, this should include the breakdown of subcontracts into economically feasible units to facilitate participation.
- Efforts that demonstrate that Schneider Electric effectively used the services of available organizations, contractor's groups, local, state and federal MWBEs assistance offices, and other organizations that provide assistance and placement to MWBEs.

As a socially-conscious and responsible firm, Schneider Electric must engage in outreach, recruitment or other race/gender neutral activities as part of our good faith

efforts to achieve the proper utilization of MWBEs. Schneider Electric takes several affirmative steps in this direction. The steps may include any one or combination of the following:

- Include qualified MWBEs on solicitation lists.
- Assure that MWBEs are solicited whenever they are potential sources.
- Divide total requirements, when economically feasible, into small tasks or quantities to permit maximum participation by MWBEs.
- Establish delivery schedules, where the requirements of the work permit, which will encourage the participation of MWBEs, if doing so will not affect the time-sensitive nature of a particular contract.
- Maintain a listing of qualified MWBEs that can be solicited for supplies, construction and/or services.
- Provide listings to all interested parties who request copies of the bidding or proposing documents.
- Utilize MBE listings.
- Conduct pre-bid, pre-solicitation and post-award conferences to ensure that consultants, suppliers and builders are aware of our goal to solicit to MWBEs.
- Provide bidders and offerors with listings of MWBEs if available.
- Provide interested MWBEs with adequate information about plans, specifications, timing and other requirements of the proposed projects.
- Notify MWBEs of future procurement opportunities so that they may establish bidding solicitations and procurement plans.
- Perform analysis to identify portions of work that can be performed by MWBEs.
- Scrutinize the elements of the total project to develop economically feasible units of work that are within the bonding range of MWBEs.
- Use the services of outreach programs sponsored by the Minority Business Development Agency and/or the Small Business Administration to recruit bonafide firms for placement on the MBE bidders' list to assist these firms in the development of bid packaging.

While we are not able to name subconsultants or subcontractors at this time, we have worked with the following firms with great success in the past:

The Greenbush Group	Acoustical/Mechanical Engineering	WBE
Keel Consulting	Structural Engineering	WBE
Roberts Engineering	Structural Engineering	DBE
Seven Sisters Electrical	Electrical Subcontractors	WBE
Streeter & Associates Architects	Architecture	MBE/DBE
Van Horne & Van Horne Architects	Architecture	WBE

23. Recycling Policies and Procedures

The ESCO's policies and procedures for recycling materials such as lamps, ballasts, fixtures, ceiling tiles, and other recyclable material.

As an element to our commitment to sound environmental policies, Schneider Electric makes every effort to reduce the amount of waste generated by our performance contracting projects. An important part of this waste reduction is the recovery of recyclable materials from the jobsite. In general, Schneider Electric takes responsibility for the disposal and recycling of any equipment or materials removed from the premises as part of our scope. It is obviously important to remove any unused equipment and/or material to maintain a clean and aesthetically-pleasing working and operating environment for our clients' customers and staff, and recycling just makes sense. If a client desires, Schneider Electric will provide removed equipment to them for spare parts, surplus, or other use. We have also willingly worked with local scrap collectors who our clients prefer process material removed during a project.

24. Management of Hazardous Materials

How potential hazardous materials encountered in the installation of energy efficiency measures will be managed; and whether the ESCO has been cited by the Washington Department of Ecology, Federal Environmental Protection Agency, or any other regulatory agency for inappropriate handling, transportation or disposal of hazardous materials. If cited what was the ESCOs remedy. Being cited does not automatically constitute disqualification as an ESCO.

Should hazardous materials be found on the project site, Schneider Electric will notify the client and assist in identifying an appropriate subcontractor for proper removal and disposal of these materials. Schneider Electric has never been cited by the Washington Department of Ecology, Federal Environmental Protection Agency, or any other regulatory agency for inappropriate handling, transportation or disposal of hazardous materials.

Computation of Energy Baseline and Post-Installation Energy Use

25. Calculation Tools & Methodology

Describe the methodology used to calculate baseline energy use and savings of different types of EEMs. This should include a description of various software tools that are utilized in the calculation process. Include the methodology used for campus settings that are master metered.

The answer to question 27 and this question are closely related and complementary. In an attempt to not be overly redundant, both questions are answered completely by the material in both sections and may not be fully answered in the section specific to their question.

Schneider Electric adheres to Section 4.3 of the International Performance Measurement and Verification Protocol (IPMVP) for energy monitoring, labeled "Option C: Whole-Facility or Main Meter Measurement Approach". This approach eliminates uncertainty in energy savings, because we simply look at energy use before vs. energy use after a project. **Metrix™ Utility Accounting System** is used to track data and generate savings reports. Furthermore, Schneider Electric has subscribed to Accu-Data®, the real-time, interactive total weather database from Accu-Weather, Inc., the world's leading commercial weather service. This provides weather information from the closest North American Hourly/Special Surface Observation Site.

Schneider Electric accounts for two types of savings during a performance contract: *energy* and *dollar* savings. The energy savings realized by our clients during a given month are calculated by subtracting the current month's amount of energy consumption from the corresponding baseline month's energy consumption.

The dollar savings are calculated by first applying the current utility rate to the current month's energy usage. The same rate is then applied to the base month's energy. Finally, savings figures are obtained by subtracting current dollars from base dollars. It is extremely important to note that calculations are based on ***real rates*** that you pay to your electric and gas company. Our clients are charged a different electrical service rate in different facilities - Schneider Electric's savings calculations take this into account to protect the client against inflated savings reports. Savings calculations are performed separately for natural gas and electricity, and are added together to give the total energy cost savings during that month.

Baseline adjustments account for factors out of Schneider Electric's control, such as weather, days occupied, building area, and equipment type. Our clients might experience a

Schneider Electric:

- **Offers the Metrix Utility Accounting System**
- **Calculates savings with *actual* utility rates**
- **Adjusts the baseline for changing weather conditions**

mild winter and use less gas; Schneider Electric could not assume additional savings occurred, so adjustments are made. Perhaps the most significant adjustment involves actual operational days, because rarely do holidays and weekends exactly match the baseline year. For instance, this year's September electric bill may include 28 days, whereas last year it spanned 33 days because of Labor Day. Needless to say, accurate, consistent accounting is crucial to minimize risk to both the client and Schneider Electric.

Establishing the Baseline Cost

One of the most significant impacts on savings for the energy savings performance contract is how converting the energy usage to meaningful and accurate cost savings is conducted. This is important to consider during the baseline, because this is the opportunity to understand the relative impact the selected approach would have during the savings calculations. Generally there are three approaches to select from, which include blended rates, marginal rates, and rate tariff simulation.

Blended rates are simple calculation taking total cost over total energy spend. Typically this is done on an annual average basis, but could be isolated to a particular bill. Its advantages are a simplified approach to often time complex calculations for determining how your energy is charged. The disadvantage of it is that many times utility rates have complex structures, separate charges for consumption and demand, tiered block charges, seasonal charges, and static charges that all get incorporated into this methodology. This often times causes a significant amount of uncertainty to the real cost of energy.

Marginal rates are more evolved in that it answers the question, what would be the impact of using 1 more unit of consumption, and one more unit of demand. The advantage to this approach is that it accounts for more complex utility rates, and decouples demand from consumption to more accurately reflect the real cost of energy. A disadvantage to this approach is on big retrofit projects, it does not accurately account for changes in tiered rates, particularly when savings are calculated.

Lastly, rate tariff simulation is the most comprehensive approach in that a complex simulation is built and calibrated to match the utility billing structure to accurate reflect all components of how charges are made. This is the most accurate approach. The disadvantage to this approach, however, is that some rate structures are complex, and it makes contract parameters equally complex. Rate tariff simulation is Schneider Electric's main approach to quantifying utility costs.

For "master metered" projects, ideally temporary metering can be installed for a long enough period to calibrate energy models built off of utility history of the main meter. When this cannot be done, the energy models are carefully generated and refined to represent the individual buildings in as rational of an assignment of the energy passing through the meter as possible. Our project is then Measured and Verified through IPMVP Option D, where our savings are verified by the 12 months of utility data immediately

following the project entering the guarantee period. This data set is compared to the projected figures produced by the model, and, if necessary, a single shortfall check is issued for an annual shortfall spanning all of the years of the guarantee (typically 15) **with interest**.

Benefit to Client: Schneider Electric's has an extensive utility rate library that enables us to identify the best method to utilize in our performance guarantee to instill confidence in the identified approach and realize the accuracy. It also enables us to discover more opportunities through rate changes and billing errors, which is very common.

26. Modified Baselines

Describe potential scenarios where a modified baseline may be proposed.

Facilities are not stagnant; rather, they are evolving and continuously changing. Whether it is change in operation, improvement of equipment, or addition of new loads, many things will impact the realization of savings, some of which are beyond the control of anyone, for example weather and utility costs. Some parameters are easy to adjust for, however others are not. Baseline adjustments account for factors beyond Schneider Electric's control, such as weather, days occupied, building area, and equipment type, and are an attempt to establish what the savings would be in the absence of those changes that ultimately impact performance.

In addition to weather and operational day adjustments which are part of the baseline formula, other situations may require an adjustment to the contract baseline. Situations might include:

- Changes in the amount of space being air conditioned/heated
- Renovation of existing buildings and systems
- Changes in auxiliary systems (cooling towers, pumps, etc.)
- Changes in occupancy, schedule, operation or setpoints

If the baseline conditions for these factors are not adequately documented, it becomes difficult, if not impossible, to properly adjust them when they change and require changes to payment calculations. For example, if a chiller retrofit takes place in a building with 100,000 sf of conditioned space, and later (during the guarantee phase) the building's conditioned space is reduced to 75,000 sf, post-installation energy use would be lower and calculated savings would be higher, perhaps inappropriately higher, depending on the terms of the contract. However, if records existed showing how much space was originally conditioned; the baseline could be adjusted to properly reflect "true" savings.

Schneider Electric goes to great lengths to clarify the potential scenarios for baseline adjustment to prevent confusion following project implementation. Notably, Schneider Electric believes these procedures regarding baseline development and adjustment

should be stated in the contract documents (ESP) for all parties to have discussed and understood.

27. M&V Processes' Role in Baselines & Post-Installation Energy Use

Describe the ESCO's utilization of M&V processes in the establishment of baseline energy use and the post installation energy use.

Performance Guarantee Energy Baseline Overview

From the International Performance Measurement and Verification Protocol, Measurement and Verification (M&V) is the process of using measurement to reliably determine actual savings created within an individual facility by an energy management program. Savings cannot be directly measured, since they represent the absence of energy use. Instead, savings are determined by comparing measured use before and after implementation of a project, making appropriate adjustments for changes in conditions. Hence, establishing the pre implementation parameters, also called the baseline, is a key component to any measurement of savings, and any performance guarantee.

The intent of this section is to describe the following:

1. How baseline energy usage is established
2. How baseline energy costs are established
3. Explain the use of baseline during the performance period
4. Articulate how the baseline is communicated

Establishing the Baseline Energy

In general, the baseline is developed by determining the initial values used to compare actual future data. To establish an energy baseline, Schneider Electric utilizes several different sources of data, all of which are directly relevant to the respective facilities, the proposed scope of work, and the measurement and verification plan proposed. The baseline period parameters are identified with at least one consecutive 12-month period selected by Schneider Electric and the Department of Energy, and used to compare "before and after" energy consumption to determine the actual savings. An overview of how the baselines are established can be broken into the two major M&V approaches:

- Retrofit Isolation (Option A and Option B)
- Whole Facility (Option C and Option D)

However, no matter the approach to M&V, Schneider Electric's engineering capabilities and our thorough energy analysis, are key differentiators in having confidence in the established baselines and their relevancy to your operations.

Retrofit Isolation

The purpose of this M&V approach is to understand the energy saved from the work completed, directly at the energy conservation measure. To ensure an accurate baseline for the basis of existing operation, key parameters are identified for a particular retrofit

that define the energy usage of the existing equipment. Generally, it is not feasible to measure all parameters that drive energy usage, so often times educated assumptions are made that include site observations, measurements, and interviews. This approach is often undertaken when an energy project is simple, and there is little variance in various operating parameters on the systems where the work is being completed. A simple example is a lighting retrofit, where field measurements are taken on the existing fixtures to represent the energy demand of the equipment. However, long term measurements of operation are costly and time consuming, so detailed discussions on existing lighting usage, or a period of logger data will be used to define the operation of and the energy usage of the lighting fixture to the entire baseline period.

Provided below is more detailed example of calculating a baseline for a water retrofit. The following information is needed in order to calculate water savings.

Data supplied by the client:
- Occupancy numbers
- Schedules

Established Usage Assumptions:
- Restroom visits / fixture operations per day
- Minutes of operation – faucets & showers

Data gathered during facility audit:
- Number of toilets, urinals, and faucets
- Gallons per flush for toilets and urinals
- Gallons per minute for faucets

Utility rates:
- Energy: $/kWh , $/therm
- Water and Sewer: $/gallon

Baseline water usage will be determined by the following equations:

Toilets and urinals

$$WSBT = Occ * WD * OPD * GPFB$$

$$WSBU = Occ * WD * OPD * GPFB$$

Faucets

$$WSBF = Occ * WD * OPD * (1/6* GPMB)$$

Total: $$WSB = WSBT + WSBU + WSBF$$

Where,

WSBT = Water and Sewer Baseline consumption for Toilets (gallons)
WSBU = Water and Sewer Baseline consumption for Urinals (gallons)
WSBF = Water and Sewer Baseline consumption for Faucets (gallons)
WSB = Water and Sewer Baseline consumption (gallons)
Occ = Number of Occupants
WD = Water Days (Average Annual Days of Use)
OPD = Operations Per Day
GPFB = Gallons Per Flush Baseline
GPMB = Gallons Per Minute Baseline

Key assumptions:
Male occupants are assumed to use toilets for 1/3 of their restroom visits and urinals for 2/3 of their restroom visits. For each restroom visit, all occupants are assumed to operate the faucet for 10 seconds (1/6 minute).

Schneider Electric differentiates itself by being open and transparent on the strategies used to develop the baseline conditions and the risks associated with doing so. This is always articulated in our Measurement and Verification Plan that is a part of our contract for the performance guarantee.

Benefit to Client: Our analysis techniques and data collection methods ensure an accurate baseline that properly reflects current utility usage which is critical in ensure savings are realized.

Whole Facility

The purpose of this M&V approach is to understand the energy saved from the work completed, by including all parts of the facility. To ensure an accurate baseline for the basis of existing operation, utility bills are utilized for the baseline period, along with details accumulated throughout the energy audit process. This approach is often undertaken when an energy project is more complex, with several different scopes of work, and interactivity of measures and affected systems are difficult to isolate. A simple example is a performance contract where lighting, an energy management system, and mechanical retrofits work are being completed. This method still requires measurements of operational conditions, as well as key parameters, but it is the responsibility of the energy services company to validate and document the details, and assumptions made.

Provided below is an example of how Schneider Electric' approaches a whole meter guarantee of Option C, which relies on the measurements and invoices of the utility meters.

Schneider Electric uses a system for baseline calculations that runs a regression analysis based on at least twelve months of actual utility data. Tuning a meter involves correlating its time history with time histories of heating and/or cooling degree-days and other independent variables which are time-shifted. Since the system stores weather data in

the form of daily temperature extremes, the time histories of heating and cooling degree-days are calculated in real time to conform to the time series of the meter to be tuned.

The time history of degree-days used for a regression is therefore a function of the:

balance point for the meter
time series of the meter.
Other relevant dependent variables of the meter

For a simple, “single-column” meter (such as a simple electric meter without demand), the system correlates the meter's time history with the relevant variables including heating or cooling degree-days calculated for the meter's time series, or additional independent variables that have been time-shifted to conform with the meter's time series.

The approach uses the following equation to fit a quantitative meter reading quantity (Qi) to degree-days and independent variables is:

$$\hat{}Q_i = B \times (T_i - T_{i-1}) + C_H \times HDD_{BH,i} + C_C \times CDD_{BC,i} + C_1 \times U_{1,i} + C_2 \times U_{2,i} + C_3 \times U_{3,i}$$

and: $Q_i = \hat{}Q_i + \varepsilon_i$

where:

i = index for N meter readings (i=1..N);
Qi = Energy time history through meter [Utility Units];
^Qi= Linear Fit to meter time history [Utility Units];
i = Time history of Error;
B = Baseload consumption per unit time (Utility Units/day);
Ti-Ti-1 = time interval between date Ti and Ti-1 (days);
CH,CC = Coefficients for Heating and Cooling Degree-days (Utility units/deg-day);
HDDBH,i = Time history of Heating degree-days (ºF-day or ºC-day);
CDDBC,i = Time history of Cooling degree-days (ºF-day or ºC-day);
BH, BC = Heating and Cooling degree-day base temperatures (ºF or ºC);
C1,C2,C3 = Coefficients for user variables 1,2,3;
U1,i,U2,i,U3,i = Time histories of independent user variables 1,2,3.

To ensure relevancy and accuracy of the regression model for future savings calculation, schneider electric’s Performance Assurance Support Services follow Six Tuning Rules :

1. The value of R^2 should never be less than 0.75.
2. The absolute value of T-statistics must be greater than 2.0.
3. When in doubt, include fewer Variables.
5. Variables should be independent of each other.

6. Highs and lows of a variable should span at least 2 to 1.
7. Exclude as few bills from the tuning period as possible.

By following these rules, the key parameters of the energy analysis are documented in a meter tuning summary to provide open and transparent perspective on how the baseline was established in order to perform savings calculations throughout the performance period of the project.

Benefit to Client: Our main strategy to M&V is typically to utilize Option C guarantee, a key differentiator to our competitors. This requires use to measure and verify how savings are calculated based on the same methods and data used to set your energy budget, through utility invoices.

Savings and Equipment Performance Guarantees

28. Project Cost Guarantee Policies, Procedures, and Remedies

The ESCO's project cost guarantee policies and procedures; including remedies when project costs exceed ESCO estimates.

Schneider Electric believes the only way to effectively meet deadlines and budgets is to follow defined processes and instill a strong project management team and plan. Schneider Electric's approach and experience with performance contracts provides our clients a guaranteed project outcome – around scope, schedule and budget.

Should the construction be completed over the Maximum Project Price (assuming no owner-approved changes in design scope or materials), Schneider Electric would pay from its own project fees to make up the difference.

Schneider Electric understands long-term building operations and their impact on cost because we guarantee it. Schneider Electric provides guarantees for the maximum cost, savings, and other parameters presented in the detailed or investment-grade audit.

Due to the nature of the performance contracting business, Schneider Electric is required to give a fixed price and a firm completion date of construction for the scope of work proposed in the contract. While there are provisions for client-initiated scope of work changes, there are not provisions for Schneider Electric to increase the cost of the project to the client for the scope of work included as part of the contract. As a result, there have been several cases where Schneider Electric has lost margin/profit dollars because of a calculation error made during development, much to the surprise of our customers (who typically would expect a change order or some other way to recoup the mistake cost).

Schneider Electric stands by our commitments to offer true guarantees and deliver on our promises.

29. Energy Savings Guarantee Policies, Procedures, and Remedies

The ESCO's energy savings guarantee policies and procedures, including remedies when actual savings are lower than the ESCO's estimates and guarantees, and the length of the savings guarantees.

The premise of energy saving performance contracting is that it allows funds to be diverted from energy bills into investments in building assets. This means limited budgets can stretch further and clients can tackle energy efficiency facility improvements projects now, even if no funds are available or when faced with budget cuts or competing priorities. Therefore, our clients count on Schneider Electric and the implemented energy conservation measures (ECMs) in the performance contract to meet or exceed the guarantee. Any excess savings during the performance contract term (typically 15 years) and all of the savings once the project is paid off goes directly to client's bottom line.

Capabilities to Monitor Energy Usage

Schneider Electric's Performance Assurance Support Services (PASS) department is one of the most significant benefits of contracting with Schneider Electric to implement a buildings' utility improvements. After installation is completed, our PASS team will support client personnel to operate their energy system at its maximum efficiency. The PASS team is available 24 hours a day, 7 days a week to assist client staff throughout the guarantee period.

PASS consultants are trained to enhance utility conservation projects. Our staff members have backgrounds in heating, ventilation, and air-conditioning systems, engineering, operations, maintenance, and control systems. They serve as an extension of the client's staff, interpreting the data they receive from their systems to help manage the buildings. By including the PASS team in our projects, Schneider Electric ensures that our clients have a dedicated person with a vested interest in making their buildings work for them. The PASS team's goal is to maximize a project's performance and ensure savings guarantees are met.

PASS contributes ongoing operational benefits to client staff and facilities—a contrast to maintenance services that generally restrict assistance to planned maintenance or affecting repairs on specific pieces of equipment.

Schneider Electric's remote monitoring capabilities permit the PASS team to monitor the system and identify difficulties before they are apparent to staff and occupants. Through remote monitoring of facilities, we can identify problems quickly and help client staff perform more effectively. While PASS monitors project savings on a monthly basis, our clients will receive quarterly reports from their PASS consultants detailing their facility's performance, including utility consumption and possible problems. PASS quarterly

performance reports keep our clients aware of the performance of their project month to month and over the long term. Our experience shows that client feedback is an essential part of our PASS program. We take client suggestions and concerns very seriously—we are constantly striving to provide the best client service in the energy services industry.

Schneider Electric's guaranteed savings program assures the investment in a performance contract does not interfere with the dollars budgeted for the learning and work that happens in the facilities.

30. Equipment Performance Guarantee Policies, Procedures, and Remedies

The ESCO's equipment performance guarantee policies and procedures, including remedies when performance of equipment is not met.

Schneider Electric will work to provide each facility with the best warranties in the industry for labor and materials required to resolve any equipment deficiencies. At a minimum, all workmanship will be guaranteed for one year. Written information on any extended equipment warranties by manufacturers would be included in the O&M manuals. Equipment warranties, both standard and extended, are integrated into the construction cost.

Typically in Washington State public sector work, the owner has elected to retain ownership of the energy equipment. In these cases, the owner is responsible for equipment operation and maintenance. Schneider Electric is, of course, responsible for all equipment throughout the warranty period.

Schneider Electric works with our clients' facilities department to select equipment (through specification and submittal reviews) that meets the project performance criteria and which meets their criteria for quality, longevity and maintainability. Schneider Electric will then go to great lengths to assure that they know how to properly operate and maintain not just the new equipment but the entire facility.

During the first two years of the project, Schneider Electric will work with the owner at each facility to develop system operations procedures for all mechanical/electrical systems on campus. We will document these procedures, help train facility people, and closely monitor performance. Then, over the life of our agreement (which may be 10 to 15 years), Schneider Electric will be there to help evaluate performance, revise procedures, provide additional training, and constantly help our clients continue to improve quality and efficiency.

In the case of equipment failure beyond the specified warranty period and outside of any specific warranty agreement, Schneider Electric will work with State of Washington and our client to determine the most equitable solution for repair or replacement of failed equipment.

Schneider Electric is also willing and able to assume full ownership of the energy systems and provide comprehensive operation and maintenance services. This option is available to our clients who have no in-house facilities operation or maintenance capabilities.

31. Warranty Enforcement Role and Responsibility

Provide information on the ESCO's warranty enforcement role and the ESCO's responsibility, if any, when there is an equipment failure beyond the warranty period when the client agency has financed the project and assumed ownership of the installed equipment.

Schneider Electric understands the impact of an appropriate equipment maintenance plan on the performance of new systems and equipment and the resources of the facility – namely time and money. With input from the facility operators and staff, Schneider Electric prepares an appropriate equipment maintenance plan that keeps equipment and systems functioning in a manner that continues to meet savings guarantees, maximizes equipment life and is considerate of the time and monetary resources that can be allocated by an owner. Schneider Electric is positioned to provide a custom-tailored maintenance program which involves, rather than replaces, the in-house resources of the owner.

Summary

- The Schneider Electric savings guarantee does not require a third-party maintenance contract. All maintenance can be accomplished in-house. Our maintenance plan is intended to enhance, rather than replace, the existing maintenance staff.
- No major changes in operations or maintenance functions are anticipated with this project.
- Our Performance Assurance Support Services (PASS) group provides 24-hour support services to aid customers in optimizing the performance of their facilities as well as technical assistance specific to the systems in your facility. These services are typically part of the Measurement and Verification process.
- All warranty start dates will be documented in the O&M manuals and will correspond to project completion dates, by building. Equipment manufacturer's warranties beyond a one-year period will be in force for the duration as documented. The standard equipment warranty for installed equipment is one year from project completion.

Overview and Philosophy

The Schneider Electric equipment maintenance approach is set apart from others in three distinct ways: availability of provider choices for the facility; program flexibility; and the availability of professional maintenance support. We will work to establish the most efficient maintenance support procedures for the upgraded facility and allow the facilities staff to decide how to best implement the recommended procedures. In-house staff, outside subcontractors or a blend of the two resources can be used. The facility decision

makers can decide to take a more or less active role in maintenance responsibility during the guarantee period of a Schneider Electric performance contract with no effect on the savings guarantee. Our team provides engineering expertise to develop a strong energy savings program, yet our staff also includes extensive operations and maintenance experience to assure that we provide the services required for the life of the contract. Our Performance Assurance Support Services (PASS) group can provide 24-hour technical support to be utilized to allow the onsite facilities staff to be more efficient and self perform many maintenance or trouble shooting functions.

While some new equipment will be installed, all the suggested changes include equipment and theory that is familiar to the existing facilities staff. The key to proper maintenance and operation of the expanded systems will be for Schneider Electric to provide complete and clear training, not only on the system itself but in the theory behind the set points and schedules that are integral to providing the intended energy savings and comfort standards.

The primary responsibility of the ESCO regarding equipment maintenance is to provide basic preventive maintenance schedules for each piece of equipment installed where preventive maintenance is recommended. These tasks are intended to provide a minimum guideline to assure that savings will continue. The responsibility to perform these services presently rests with the facilities' staff. If service is requested through Schneider Electric, a service contract price will be established at that time.

While there is no requirement to purchase maintenance services from Schneider Electric in order to maintain the energy savings guarantee, the customer should be aware of the responsibilities of the proposed minimal preventive maintenance tasks. Documentation must be provided by the executor to assure that the equipment is being maintained and operated properly. This requirement is not intended to be onerous, but simply to assure that equipment maintenance and repair history is maintained. These maintenance checklists are intentionally kept brief and minimal in that the goal is not to establish grounds for non-performance, but rather to establish a minimal baseline of service to assure that the equipment will remain functional.

Schneider Electric is able to provide maintenance engineering abilities that can help to improve the productivity of the facilities' operations staff. While effective preventive maintenance is the minimum requirement for the energy savings guarantee, predictive maintenance can provide monetary savings through reduced down time and fewer emergency repairs. Our PASS team presently employs people whose sole responsibility is to assist customers in optimizing their facility operations. Maintenance engineering through Schneider Electric can provide the building automation system data interpretation required to implement predictive maintenance functions as well as technical consulting regarding material changes in building function and scheduling or equipment interactions over the life of the energy guarantee. Scope and pricing for some of these services are often included in our M&V fees, depending upon the method chosen by the customer.

The final scope of services from our PASS department will be established during the Investment Grade Audit to assure that the customer receives the level of service they deem appropriate.

Maintenance Contracts
Again, no maintenance contracts are required by Schneider Electric. However, some clients prefer to seek the services of an external firm to periodically service and maintain equipment. These services can be included nearer to completion of the Comprehensive Energy Audit.

ESCO Warranty
Schneider Electric believes that proper maintenance, warranty management and documentation go hand-in-hand, especially where manufacturer's extended warranties are involved. The ESCO will provide documentation in each Operation and Maintenance Manual to clearly identify warranty start and end dates. The ESCO will work with the owner to resolve any warranty issues related to ESCO installed equipment. Efficient repair and root cause analysis (finding the cause of the problem rather than simply addressing the symptom) of system non-performance will be provided using Schneider Electric's warranty management process. An efficient warranty process is achieved through implementation of the following:

- Clear documentation of warranty dates and responsibility.
- Clear documentation of every step taken towards each claim's resolution to eliminate repeat efforts.

Warranty Summary
All equipment installed as part of your performance contract will be covered by a **one-year warranty from the date of project completion** as opposed to forcing the customer to maintain records as to the date a piece of equipment was placed into service. Where new equipment is added to existing equipment, only the new equipment will carry this one-year warranty. An equipment list will be prepared at project closeout for each building which will detail all warranty dates including any manufacturer's warranties which exceed this one-year period. This document will also include any specific service requirement details which might be required by the manufacturer to keep these warranties in force.

Warranty Claims
The warranty claim process will emphasize prompt repair of critical systems and proper documentation of the circumstances surrounding the warranty issue. The ESCO will work with the owner to establish a warranty claim procedure which utilizes the present service contractors or the installing contractor to provide the most prompt reaction to warranty issues for critical systems.

FINANCING ABILITY

32. Project Expense Carrying Ability, Financing Capabilities, Letters of Commitment

The ESCO's project financing ability. Describe capability for carrying costs until completion of the installation of energy efficiency measures. Describe capability and willingness to fully finance project over a financing term including how the interest rate the ESCO would use is determined. Provide letters of commitment from funding sources or from ESCO's Chief Financial Officer if self-funded. Tax-exempt municipal lease financing does not qualify for ESCO financing ability.

Schneider Electric, as a large company with over $40B in assets, has substantial capacity to carry project costs until completion of the installation of energy measures. We regularly carry these costs and are paid as work is completed.

The financing aspect of a performance contract is separate from the actual performance contract. While securing an attractive interest rate and any accompanying services are the sole responsibility of the customer, Schneider Electric maintains relationships with a wide variety of potential financiers and will help qualify financiers for each specific project situation and facilitate/negotiate getting the very best terms for each of our projects. We have found that this arrangement is far more advantageous for our clients than if we offered financing in house, as we have no ties to one particular lender or structure.

One of our unique traits is the depth of our relationships with financial partners. As a large, healthy, **stable**, publicly-traded company, Schneider Electric itself is very attractive to potential lenders and partners. Additionally, financial firms capable of all sizes (and ownership structures) of any energy conservation or renewable energy endeavor know that if we stand behind a project their investment is secure. We've leveraged these relationships from massive 3rd party owned renewable energy systems (3.5MW of photovoltaic solar for the US Coast Guard) to small rural school district lighting and HVAC projects. If there is a chance of **finding financing**, we know how and who to approach to get it for you on the terms you need. We also have recently begun to utilize a **grant writer** on NW projects, who has helped us identify several lesser-known but viable grant programs that we will help you pursue/write within our partnership.

Letter of Commitment from a Funding Source

Based on the performance of our prior projects, various financing groups are very interested in supporting Schneider Electric Energy Solutions (Formerly TAC Energy Solutions) projects. They are confident that our projects will meet debt service. Please see the letter on the following page to gain further perspective of our relationship with one such financing group.

GOVERNMENT CAPITAL
CORPORATION

CORPORATE OFFICE
345 Miron Drive
Southlake, TX 76092
800 883-1199
817 488-8477 fax

SOUTH CENTRAL REGION
3914 Rockledge Drive
Austin, TX 78731
512 346-9980
512 346-6565 fax

4842 Sunshine Drive
Sugar Land, TX 77479
281 565-6545
281 491-7820 fax

2384 Highway 59 East
Beeville, TX 78102
361 362-2760
361 362-2763 fax

SOUTHEAST REGION
629 Virginia Ave NE
Brookhaven, MS 39601
800 561-0461
601 823-6009

February 22, 2013

Washington State Department of Enterprise Services, Engineering & Architectural Services, Energy Program
1500 Jefferson
PO Box 41012
Olympia, WA 98504-1012

Gentlemen and Ladies:

It is our understanding that Schneider Electric is being considered as the Performance Contractor for your energy services conservation projects. We have provided financings for Schneider Electric's projects nationwide and have found them to be very professional and ethical in their business dealings.

I would like to take this opportunity to express our willingness to provide financing for energy services conservation projects involving Schneider Electric.

We are ready and able to provide any assistance these projects would require. We look forward to the opportunity to serve your organization in this capacity. If we may be of further assistance, please do not hesitate to call us.

Sincerely,

Stewart

Stewart Shirey
Senior Vice President

APPENDIX 1 – SAMPLE PROJECT DOCUMENTS

The project deemed most suitable to represent our ability to produce the documents required by DES for a client did not have Schneider Electric perform a preliminary energy audit, so an audit from an alternate project (not yet in construction) has been included instead.

Columbia Basin College – Phase 2

Preliminary Energy Analysis Report

July 25, 2012

95 South Jackson St. Suite 300
Seattle, WA 98104
www.schneider-electric.com/buildings

TABLE OF CONTENTS

Executive Summary 2
Project Overview 4
Energy Summary 5
Energy Savings Potential 6
Environmental Impact 7
Building Summary 8
Energy Efficiency Measures 9
Utility Rate Summary 12
Building Descriptions 15
Glossary of Terms 18

EXECUTIVE SUMMARY

Introduction
Schneider Electric's Professional Engineers (PEs) performed a Preliminary Energy Audit of Columbia Basin College, specifically the Health Sciences Center (HSC) and the CH2M Hill Workforce Center (W). This analysis was offered as part of the no-charge, no-obligation qualification process to determine eligibility for a beneficial energy savings performance contract (ESPC) and the utilization of the associated Washington Department of Commerce Jobs Act Grants.

Through a typical ESPC agreement, Schneider Electric collaborates with customers to develop projects that meet their current financial, environmental, facility improvement, and operational goals. The project is then delivered turn-key (fully operational) to the College along with a guarantee of annual energy savings that will materialize from the implementation of the project. In the event the project does not perform, as identified in the monthly tracking of the utility bills post-project, Schneider Electric will be contractually responsible to reimburse the College for the savings not realized.

The third party security of an ESPC relationship with Schneider Electric allows the College to utilize specialized legislation and financing vehicles to reallocate the energy savings amount as all, or part, of an annual payment on debt service, which funded the required construction up front. Through this financing, the College can leverage funds currently going to waste in the form of excess energy usage and minimize the capital cost of facility and infrastructure improvements.

Project Summary
As part of this audit, Schneider Electric analyzed nine of Columbia Basin College's buildings. A total area of 133,550 ft^2 was evaluated. Schneider Electric has identified the following needs:

- **Retrofit indoor lighting and add occupancy sensors**
- **Retrofit parking lot lighting at the Health Science Center**
- **Replace W Building multi-zone units with water source heat pumps**

Based on the site investigation, Schneider Electric has recommended Energy and Efficiency Measures (EEMs) for Columbia Basin College that will reduce energy costs by **$12,460**/year or **9%** of current expenditures, making the College a viable candidate for an ESPC solution **only if funds in addition to energy savings are available.**

Energy Cost Savings

Energy and Water Indices		
	Energy	Cost
	kBtu/ft2	*$/ft2*
Baseline	66.4	$1.03
Post Project	58.0	$0.94
% Savings	**12.6%**	**9.0%**

Project Summary				
	Electricity		Fossil Fuels	Energy
	Energy	Actual	Energy	Total
Project	Use	Demand	Use	Cost
Phase	*kWh*	*kW*	*Mbtu*	*$*
Baseline	1,959,538	6,059	2,178	$137,719
Post Project	1,886,865	5,755	1,307	$125,259
Projected Savings, Units	**72,672**	**304**	**871**	**$12,460**
Projected Savings, %	**3.7%**	**5.0%**	**40.0%**	**9.0%**

Project Solutions

The proposed project will help Columbia Basin College address some of the issues throughout their facilities. Specifically, replacing HVAC equipment that has reached the end of its useful life will provide better comfort in the buildings and will reduce maintenance time associated with working on old equipment. In addition, by upgrading to a more efficient lighting system, the College will not only save energy, but will have better light levels and color rendering index (CRI), improving the learning and working environments.

Potential measures to investigate further in an Investment Grade Audit (IGA) include:

- Control Upgrades at the N and I1 buildings (and integrate into campus-wide ALC system)

Performance Contracting Benefits

The performance contracting method of energy project delivery in an ideal solution for Colleges and can address many of the concerns that Columbia Basin College has at their College. By utilizing performance contracting as a vehicle to meet these needs, the College will benefit from:

- Leveraging Schneider Electric's expertise as a leader in global energy solutions to design and install the best solution for the facilities at Columbia Basin College.
- *Guaranteed* energy savings enabling the buy down of improvements
- The ability to be involved in choosing quality subcontractors and equipment
- Quick installation and realization of energy savings
- Several financing options and incentive opportunities tailored to meet the College's requirements

Next Steps

Schneider Electric selected the recommended EEMs to meet the goals of Columbia Basin College. The complete and final scope, cost, and savings amount will be determined as part of an Investment Grade Audit (IGA). The IGA is the next step in the performance contracting process after Columbia Basin College formally selects an ESCO.

Conclusion

Schneider Electric appreciates this opportunity to continue to work with Columbia Basin College and looks forward to performing a comprehensive analysis with an IGA. We feel we are the best partner to provide cost effective and sustainable environmental solutions to Columbia Basin College. Schneider Electric trusts that our findings will provide enough information to enable the decision whether or not to move forward with another ESPC to address your performance contracting needs.

Sincerely,

David Palmer
Schneider Electric

PROJECT OVERVIEW

Through the implementation of this project, Columbia Basin College will enjoy the following benefits of continuing the partnership with Schneider Electric:

Energy Consultant: Schneider Electric will act as an "Energy Consultant" for the Columbia Basin College project for the term of the guarantee (up to 15 years). In this role, Schneider Electric will provide additional training and support for Columbia Basin College staff and assist in fulfilling the College's reporting requirements, including the long term environmental impact of the project.

Comprehensive Project: The proposed project will leverage the annual energy savings to minimize the capital required to improve the College's infrastructure. The project will also provide new and revitalized building systems, which will reduce maintenance expenditures. Additionally, the project shall lessen the environmental impact of the College's operations while simultaneously increasing comfort and the reliability of the building systems, providing an enhanced learning and working environment.

High Priority Needs Addressed: Schneider Electric evaluated the facilities and made recommendations based on the following goals and objectives of Columbia Basin College:

- Retrofit indoor lighting and add occupancy sensors (a continuation of Phase 1)
- Retrofit parking lot lighting at the Health Science Center
- Replace W Building multi-zone units with water source heat pumps (current repair or replacement needed for multi-zone units)

No Change Orders: Schneider Electric takes responsibility for all cost overruns brought on by delays or price fluctuations. The process allows for change orders at Columbia Basin College's request, but will not be initiated by Schneider Electric. Through this security, all cash flow calculations for the project can be analyzed before entering the construction phase.

Hedged Utility Rate Risk: The recommended project will allow Columbia Basin College to reduce its annual energy consumption by 12%, which will reduces the long-term impact of energy cost inflation.

Project Benefits: The scope identified in this audit will result in a combination of benefits, including energy savings, operational improvements, and infrastructure improvements. These benefits include the following:

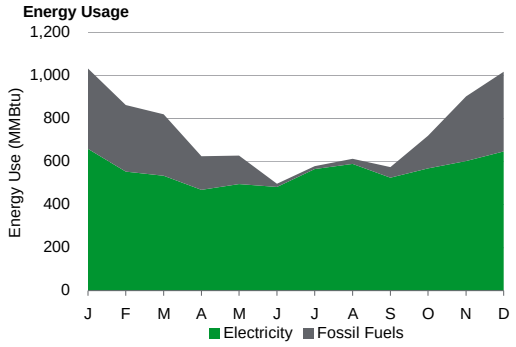
- Upgrade lighting to T8 lamps and electronic ballasts.
- Upgrade parking lot lighting to T5 lamps.
- Replace HVAC equipment that has reached the end of its useful life and such is presenting both comfort and operational deficiencies.

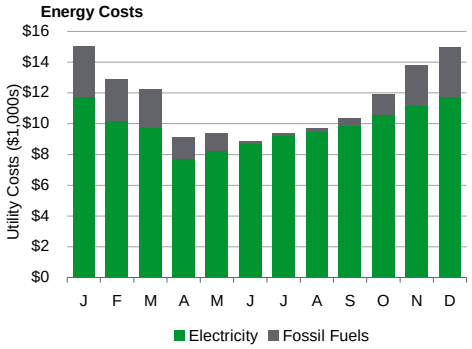
ENERGY SUMMARY

Baseline Energy Consumption

Establishing the baseline energy use is the vital first step to developing an energy savings project as it allows us to identify the magnitude of the savings opportunity and patterns of energy use. We use the baseline energy consumption to compare the existing energy use against energy benchmarks of buildings with similar characteristics. The summary of this baseline analysis for the nine facilities included in this audit is indicated below:

	Electricity			Fossil Fuels		Energy Total		
Month	Energy Use	Billed Demand	Cost	Energy Use	Cost	Energy Use	Billed Demand	Cost
mmm	*kWh*	*kW*	*$*	*Mbtu*	*$*	*Mbtu*	*kBtu/hr*	*$*
Jan	193,178	491	$11,783	372	$3,254	1,032	1,677	$15,037
Feb	162,023	470	$10,176	309	$2,707	862	1,605	$12,883
Mar	156,501	455	$9,769	285	$2,494	819	1,552	$12,263
Apr	137,296	467	$7,768	155	$1,371	624	1,593	$9,140
May	145,012	473	$8,231	133	$1,178	628	1,613	$9,409
Jun	141,180	560	$8,680	14	$145	496	1,910	$8,824
Jul	165,477	543	$9,239	14	$141	579	1,854	$9,380
Aug	172,730	539	$9,472	23	$219	612	1,840	$9,690
Sep	153,908	515	$9,910	49	$445	574	1,756	$10,355
Oct	166,237	537	$10,566	153	$1,349	720	1,833	$11,915
Nov	176,378	527	$11,198	301	$2,635	903	1,799	$13,834
Dec	189,619	482	$11,757	370	$3,233	1,017	1,647	$14,990
Year	**1,959,538**	**6,059**	**$118,549**	**2,178**	**$19,170**	**8,866**	**20,680**	**$137,719**





The following table shows the annual energy use and utility spend for each of the facilities included in this audit.

Annual Energy Summary - Per Site							
	Electricity			Natural Gas		Total	
Building Title	Energy Use	Actual Demand	Cost	Energy Use	Cost	Energy Use	Cost
Name	*kWh*	*kW*	*$*	*MCF*	*$*	*Mbtu*	*$*
C & I1 Buildings	242,138	737	$16,196	0	$0	826	$16,196
D, K, & M-1 Buildings	178,271	727	$13,640	0	$0	608	$13,640
Health Science Center	702,054	2,451	$36,331	331	$3,059	2,734	$39,390
I2 Building	34,168	244	$2,846	0	$0	117	$2,846
N Building	107,853	379	$8,330	0	$0	368	$8,330
W Building	695,053	1,522	$41,206	1,805	$16,111	4,213	$57,317
Total	**1,959,538**	**6,059**	**$118,549**	**2,136**	**$19,170**	**8,866**	**$137,719**

ENERGY SAVINGS POTENTIAL

After establishing the baseline energy use for each building and benchmarking its performance against industry standards, we are able to determine the energy savings potential. This is accomplished by predicting how well the building could realistically perform after implementing an energy efficiency project. This establishes the boundary conditions for the project so that realistic expectations may be set and overstated savings are avoided.

Based on the findings of this preliminary analysis for **Columbia Basin College**, Schneider Electric estimates potential cost savings from implementing an energy efficiency project to be 9%, or $12,460 annually. The graphic below shows the potential energy savings for selected facilities in terms of utility energy units and costs. The savings were determined from a preliminary survey of the type and condition of the existing building mechanical, lighting, and control systems.

Annual Utility Savings - Per Site

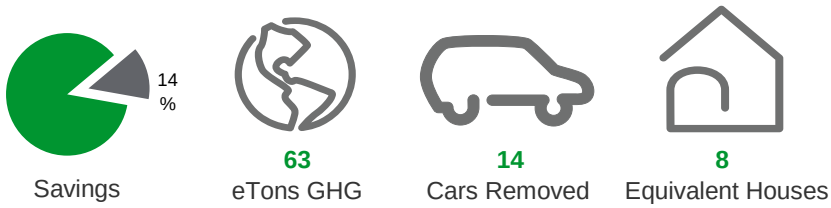
	Electricity		Fossil Fuels	
Site	Energy Use	Actual Demand	Energy Use	Total Cost
Name	*kWh*	*kW*	*Mbtu*	*$*
C & I1 Buildings	34,865	34	0	$1,644
D, K, & M-1 Buildings	4,416	0	0	$175
Health Science Center	16,731	0	0	$511
I2 Building	14,060	34	0	$1,047
W Building	2,601	236	871	$9,083
Total	**72,672**	**304**	**871**	**$12,460**

In order for Schneider Electric to finalize estimates of the energy savings analysis and energy conservation opportunities, an Investment Grade Audit (IGA) must be performed. During the IGA, Schneider Electric will analyze and refine the Energy and Efficiency Measures (EEMs) identified during the preliminary audit, and evaluate their interactions along with any additional facility improvements requested by the College.

ENVIRONMENTAL IMPACT

The following graphic illustrates the environmental benefits of implementing this project with Schneider Electric:

Environmental Benefits			
	Scope 1	Scope 2	Scope 3
Total Energy (Mbtu)	2,178	6,688	-
Total Emission (Tons CO_2e)	127	327	-
Total Savings (Tons CO_2e)	51	12	-



* Emissions factors are derived from EPA eGrids database and represent the State of WA
Totals include 6 Project Sites and a total of 10 ECMs

Scope 1 emissions reflects the direct emissions
Scope 2 emissions are indirect emissions

BUILDING SUMMARY

This table summarizes the existing lighting systems, energy management systems, and HVAC systems at each of the sites that were audited. Additionally, the table illustrates recommended EEM's at each facility.

Building ID	Area	Existing Lighting Systems	Existing Control Systems	Existing Heating Systems	Existing Cooling Systems	Existing Distribution Systems	Domestic Hot Water
C-Security	4,765	T12 Lamps/Magnetic Ballast	T-stat	-	-	Package DX/Elec Heat	Electric DHW
D-Classroom Bldg	4,920	T-8 Lamps/Electronic Ballast	Automated Logic DDC	-	-	(2) Heat Pump/ 2nd stage Elec Heat	Electric DHW
I-Industrial Complex	19,550	Print Shop (T-8) Apprentice (T-12) Diesel (T-12 w/ office T-8)	T-stat	-	-	Package DX/Elec Heat	Electric DHW
K-Kartchner Ag. Tech. Bldg	2,235	T-8 Lamps/Electronic Ballast	T-stat	-	-	Wall Unit AC/Elec Heat	Electric DHW
M1- Maintenance Annex	1,865	Incandescent Bulbs	T-stat	-	-	(2) Heat Pumps	Electric DHW
N-Ag Technology Center	6,090	T8 Lamps/ Electronic Ballast, T-12 Classrooms	T-stat	-	-	Heat Pump	Electric DHW
W- Technology Center	35,000	T8 Lamps/ Electronic Ballast	Automated Logic DDC	(2) Local Aerco HW Boilers	DX Cooling	(2) Multi-zone Units Split Systems	Gas DHW
Health Science Center	66,000	T8 Lamps/ Electronic Ballast	Automated Logic DDC	(2) Fire Tube HW Boilers	(1) McQuay Air Cooled Chiller	(4) Multi-zone Units (1) AHU for Data Centers	Gas DHW
TOTAL	**140,425**	Industrial Building (I3) is included in this square footage, but not in the energy analysis.					

ENERGY EFFICIENCY MEASURES

The following table summarizes the recommended scope for this project.

Building / EEM	C – Security	D – Classroom Bldg	Health Science Center	I – Industrial Complex	K- Kartchner Ag. Tech.	M1 – Maint. Annex	N – Ag Tech Center	W – Technology Center
EEM 1.1 – Interior Lighting Upgrades	X			X				
EEM 1.2 - Lighting Control Upgrades	X			X	X	X		X
EEM 1.3 – Parking Lot Lighting			X					
EEM 5.1 – Controls Upgrade				IGA			IGA	
EEM 6.1 – HVAC Upgrade								X

X –Indicates general facility-wide application
IGA – Indicates EEM to be researched further during the IGA
Refer to below tables for corresponding ECM operating strategy.

EEM 1.1 – Interior Lighting Upgrades

Observations

Buildings C and I still have some T12 fluorescent lamps and magnetic ballasts. The remaining buildings either have T8 lighting that was installed in phase 1 or prior.

Opportunity

Retrofitting the existing T12 lamps to T8 lamps in Buildings C and I shall save energy and reduce electric demand at each site.

Benefits

Installation of the new lighting systems will reduce the electrical demand and energy use. The physical changes that will result from the proposed lighting upgrade will improve the quality of the illumination provided. There will be some ancillary aesthetic improvements where new fixtures are installed, and the system load will be significantly reduced as a result of the reduced current draw of the lighting circuits.

Other Considerations

The net maintenance requirements will be reduced by the implementation of this measure. The light will have a higher color rendering index (CRI) which will enable the occupants to better recognize color

variations - a feature that is often of particular importance in several educational and technical environments. Utility companies will soon not be accepting rebates for going from T12 to T8.

EEM 1.2 – Lighting Control Upgrade

Observations

Lighting schedules do not match occupancy schedules in various rooms. Lights are being left on when spaces are unoccupied. Some areas suited for occupancy sensor lighting control are not currently equipped. Occupancy sensors will be added to the designated spaces.

Opportunity

Occupancy sensors will be added to control interior lighting in intermittently occupied spaces that are practical for control and are not already equipped with occupancy sensors. This measure recommends installing occupancy sensors to match lighting schedules to occupancy schedules, thereby reducing the number of run hours of the lights. Classrooms, Offices, Storage, Hallways, Restrooms – Lighting control by ceiling or wall mounted single (offices, hallway) or dual (classroom, restrooms) technology occupancy sensors. Buildings C, I, K, M1, and W included in lighting controls upgrade.

Benefits

The run times of the lighting systems will be reduced by the use of controls in designated areas to turn lights off when the spaces are not occupied.

Other Considerations

None

EEM 1.3 – Parking Lot Lighting Upgrade

Observations

The parking lot lighting at the Health Science Center was observed to be high pressure sodium fixtures similar to those that were at the main campus prior to phase 1.

Opportunity

Exterior parking lot lighting can be upgraded to high bay T5 lamps and fixtures similar to that done for the parking lot at the main campus during phase 1, which maximizes energy savings.

Benefits

Installation of the new controls will reduce the electrical demand and energy use.

Other Considerations

None

ECM 6.1: HVAC Upgrade

Observations

The W building has two large three deck multi-zone units on the roof that are hot water and direct expansion cooling. These units were put in around 1996 and do have damper issues as well as difficulty

cooling spaces when only a few zones are calling for cooling. The customer has temperature issues and has expressed a desire to upgrade the HVAC system.

Opportunity

A new high efficiency water source heat pump system would provide superior thermal comfort and reduced maintenance. These water source heat pumps would be placed on the two curbs from the existing multi-zone units with a water source heat pump serving each zone. A cooling tower would also either need to be placed on the roof or somewhere on the ground around the building depending on structural requirements.

Benefits

New HVAC equipment has higher heating and cooling efficiencies, which reduces the overall energy consumption. It also provides better temperature control in the classrooms, offices, and special use areas, in addition to decreasing the amount of maintenance required on older units.

Other Considerations

None

TO RESEARCH FURTHER DURING IGA:

EEM 5.1 – Controls Upgrade

Observations

The main industrial building I1 and building N are currently not on the campus BAS as well as a few of the other smaller buildings. During the IGA phase we can look at these buildings further to determine if it makes sense to put these buildings on the campus BAS or not. Some of these buildings do have a higher energy use per square foot, but the overall energy use if low compared to larger buildings.

UTILITY RATE SUMMARY

Utility Meter Data
The following table summarizes the utility meters for each facility at Columbia Basin College; this includes the customer account number, meter number, meter multiplier, rate schedule, utility type, and utility company. The rate structures for each rate type are shown on the following pages.

UTILITY METER SUMMARY						
Meter Name	**Account #**	**Meter #**	**Mult**	**Rate**	**Utility Type**	**Utility Co.**
Site #1:	***Building W (CH2M Hill Technology Center)***					
Meter #1	818 671 0000	472233886	-	504-General Commercial	Gas	Cascade Natural Gas
Meter #2	16878	43081	80	General Medium	Electric	Franklin Co. PUD
Site #2:	***Buildings C and I (Print/Classroom Building)***					
Meter #1	16881	37225	80	General Medium	Electric	Franklin Co. PUD
Site #3:	***Buildings D, K, and M-1***					
Meter #1	16882	28726	80	General Medium	Electric	Franklin Co. PUD
Site #4:	***Building N***					
Meter #1	41773	34920	-	Small General	Electric	Franklin Co. PUD
Site #5:	***Building I2***					
Meter #1	16886	31125	-	Small General	Electric	Franklin Co. PUD
Site #6:	***Health Science Center***					
Meter #1	918 971 0000	472293301		504-General Commercial	Gas	Cascade Natural Gas
Meter #1	932183	1942	160	Large General Service	Electric	City of Richland

FUEL RATE STRUCTURES			
Name of Utility:	***Cascade Natural Gas***		
Rate Schedule:	***504 General Commercial***		
Component	**Charge**	**Unit**	**Description**
Basic Charge:	$10.00	Per Billing Period	Basic Service Charge
Consumption Charge:	$0.800079	Per Therm	WACOG portion of the consumption

			charge changes Margin: $0.23179 WACOG: $0.568289
Other Charges:	8.5%	Total Charge	Taxes
Other Rate Details:			

ELECTRIC RATE STRUCTURES			
Name of Utility:	***Franklin County PUD***		
Rate Schedule:	***Small General Service***		
Component	**Charge**	**Unit**	**Description**
Customer Charge:	$23.26	Per Billing Period	
Consumption Charge:	$0.0686	Per kWh	Billing Period
Other Charges:	8.5%	Total Charge	Taxes
Other Rate Details:			
Name of Utility:	***Franklin County PUD***		
Rate Schedule:	***Medium General Service***		
Component	**Charge**	**Unit**	**Description**
Customer Charge:	$44.96	Per Billing Period	
Demand Charge:	$7.15	Per Billed kW	Adjusted based on power factor
Consumption Charge:	$0.0316	Per kWh	Billing Period: April-August
	$0.0399	Per kWh	Billing Period: September-March
Other Charges:	8.5%	Total Charge	Taxes
Other Rate Details:			
Name of Utility:	***Franklin County PUD***		
Rate Schedule:	***Large General Service***		
Component	**Charge**	**Unit**	**Description**
Customer Charge:	$161.78	Per Billing Period	
Demand Charge:	$7.31	Per Billed kW	Adjusted based on power factor
Consumption Charge:	$0.0307	Per kWh	Billing Period: April-August
	$0.0383	Per kWh	Billing Period: September-March
Other Charges:	8.5%	Total Charge	Taxes
Other Rate Details:			

Name of Utility:	***City of Richland***		
Rate Schedule:	***Large General Service***		
Component	**Charge**	**Unit**	**Description**
Customer Charge:	$50.00	Per Billing Period	Multi-phase service
Demand Charge:	$5.70	Per Billed kW	First 50 kW/month no charge; Excess above 50 kW/month charged at this rate
Consumption Charge:	$0.0431	Per kWh <20,000 kWh	Billing Period: September-March
	$0.0324	Per kWh >20,000 kWh	Billing Period: September-March
	$0.0374	Per kWh <20,000 kWh	Billing Period: April-August
	$0.0235	Per kWh >20,000 kWh	Billing Period: April-August
Other Charges:	6.5%	Total Charge	Taxes
Other Rate Details:			

BUILDING DESCRIPTIONS

Health Science Center

Address: 891 Northgate Dr., Richland, WA
Size (ft²): 66,000
Built: 2006
Use: Education
Floors: 4

Building Schedule:
Weekday (M-Sat): 6:00am - 10pm
Sunday/Holiday: Closed

Operating Schedule: 6:00am - 10pm

HVAC Systems

Air-side equipment

Quantity	Type	Nameplate Data [Manuf/Model#]	Age (yrs)	Notes
4	3-Deck Multizone CHW/HW; McQuay		2006	Serves Each Floor; has VFDs
1	AHU	McQuay/OAH017GDDC	2006	Serves Data Centers on each floor; VAV

Water-side equipment

Quantity	Type	Nameplate Data [Manuf/Model#]	Cooling (Tons)	Heating (MBH)	Heating Efficienc	Age (yrs)	Notes
1	Air-Cooled Chiller	McQuay\AGS230B27-ERIO	230	-	-	2006	2 Compr, 12 Cond
2	Fire Tube Boilers	Sellers/C-40W Model 15 Commodor	-	,339/1674	80%	2006	

Pumps

Quantity	Type	HP	GPM	Head (ft)
2	CHW Pumps	15		
2	HW Circ Pumps	2	90	40
2	HW Distribution Pumps	5		

Picture: Air Cooled Chiller

Picture: Multi-zone Unit

Picture: Parking Lot Lighting

Lighting Systems

Primary T8 Lamps/Electronic Ballast
Secondary 400W HPS Parking Lot Lighting

Primary Controls

Brand Automated Logic — Setpoints 68/76
Type Electronic
Age 2006
Condition Good

Domestic Hot Water

HW Fuel
Htg Size
Htg Volume

Envelope

Type	Description	Condition
Exterior	CMU	Good
Glazing	Double Pane Tinted	Good; though still issue with heat gain
Roof	Built-up	Good

Other Resource Consuming Systems

- Medical Devices for practice patients
- Computers

Comments and Observations

- Main issue seems to be solar heat gain from windows throwing off T-stats located near by
-

Recent/planned work

- Fixing windows on 3rd Floor
-

W Building (Technology Center)

Address: 2600 N. 20th Ave, Pasco, WA
Size (ft²): 35,000
Built: 1996
Remodeled 2003
Use: Education
Floors: 1

Building Schedule:
Weekday (M-Sun): 6:00am - 10pm
Holiday: Closed

Operating Schedule: 6:00am - 10pm

HVAC Systems

Air-side equipment

Quantity	Type	Nameplate Data [Manuf/Model#]	Cooling (Tons)	Heating (MBH)	Fan Volume (CFM)	Fan Size (HP)	OSA	Age (yrs)	Notes
1	AC-1	Carrier/38AH-64-600; La Salle/TDMZ28-R	60	807	14,305/6,000	20 S/	6,455	1996	3 Deck MZU; HW/DX
1	AC-2	Carrier/38AH-074-600; La Salle/TDMZ36-F	70	988	17,960/7,000	25 S/ 20 R	8,000	1996	3 Deck MZU; HW/DX
3	SS	Libert	3	6.5kW	1250.0	0.5		1996	Server Rooms
1	RTU	TCC018F-100BA	1.5					1996	
2	UH	Modine/HS-8	-	11	340.0	0.016		1996	
5	EF	Cook						1996	115W; 0.17 to 1/3 HP

Water-side equipment

Quantity	Type	Nameplate Data [Manuf/Model#]	Cooling (Tons)	Heating (MBH)	Cooling Efficiency	Heating Efficiency	Outside Air	Age (yrs)	Notes
2	HW Boilers	Aerco /KC1000GWB	-	930/1000	-	93		1996	Full Modulate;35% PGlycol

Pumps

Quantity	Type	Nameplate Data [Manuf/Model#]	HP	GPM	Head (ft)	RPM	Age (yrs)	Notes
2	HWP	B&G	3	185.0	25	1750	1996	Hydronic Loop
2	HWP	B&G	0.5	62.0	15	1750	1996	Secondary Loop

Picture: Aerco Boilers

Picture: Multi-zone Unit

Lighting Systems

Primary T8 Lamps/Electronic Ballast

Primary Controls

Brand Automated Logic
Type Electronic
Age 1995
Condition Good

Setpoints

Domestic Hot Water

HW Fuel Gas
Htg Size 88 MBH
Htg Volume 100 gal

Envelope

Type	Description	Condition
Exterior	Styrophome/Metal/Sheetrock	Fair
Glazing	Double Pane	Good
Roof	Builtup white membrane	Good

Other Resource Consuming Systems

Comments and Observations

- Exterior lighting controls based on latitude and longitude for on/off
- Chunks missing from styrophome wall
- Exhaust mode damper failed on AC-2.

Recent/planned work

Potential Opportunities

- Replace Multizone units with Water Source Heat Pumps

Buildings C, D, I, K, M-1, N

Address: 2600 N. 20th Ave, Pasco, WA
Size (ft²): 39,425 Combined

Building Schedule:
Weekday (M-Sun): 6:00am - 10pm
Holiday: Closed

Operating Schedule: 6:00am - 10pm

HVAC Systems

Air-side equipment

Quantity	Type	Nameplate Data [Manuf/Model#]		Notes	
1	Heat Pump	Lennox/CHA16-633-5Y		Building C	
1	Heat Pump	Carrier/50HJQ012-M-531NB		Bldg D	
1	Heat Pump	Carrier/50HJQ008-521NB		Bldg D	
1	Heat Pump	Carrier/50HJQ012-M-531NB		Bldg I (Print Shop)	
1	Heat Pump	Carrier/50HJQ008	Picture: C Building	Bldg I (Classrooms)	
1	Heat Pump	Trane WCC036F300BB		Bldg I - West	
2	Unit Heaters w/ fan (Electric)			Bldg I - West	
2	Unit Heaters w/ fan (Electric)			Bldg I - East	
3	Ceiling Fans			Bldg I - East	
2	Unit Heaters w/ fan (Electric)		Picture: I1 Building Thermostat	Bldg K	Hallway
1	Baseboard (Electric)			Bldg K	Office
1	Wall Cooler (Electric)			Bldg K	Office
1	FCU (Hotel style - Electric)			Bldg K	Classroom
2	Heat Pump	Carrier/50HJQ005		M-1	
1	Mini - Water Heater (Elec)		Picture: I1 Building Heat Pump	Bldg N	
1	Heat Pump	Carrier/50HJQ016--511SA		Bldg N	
2	Exhaust Fans	RESTROOM USE ONLY - turned on with light switch		Bldg N	
19	Workstations	2 monitors w/ 1 PC towe in Computer Room		Bldg N	

Lighting Systems

	Location
Primary	T-12/ Magnetic
Secondary	T-8/ Electronic

Primary Controls

		Setpoints
Brand	-	77 / 67
Type	T-stat	
Age	-	
Condition	Fair	

Domestic Hot Water

HW Fuel Elec
Htg Size Small
Htg Volume 2 restrooms max

Fixtures 1.6 gpf mostly

Envelope

Type	Description	Condition
Exterior	Wood or Metal	
Glazing	Single Pane mostly	
Roof	Metal	

Other Resource Consuming Systems

GLOSSARY OF TERMS

Btu - British Thermal Units - a measurement of energy consumption. More specifically, the quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit.
Note: MBtu = 1,000 Btu; MMBtu = 1,000,000 Btu

EEM - Energy Efficiency Measure – any measure that will save energy or water including but not limited to: Lighting retrofit, air conditioning/heating repair or replacement, adding or upgrading HVAC controls, or replacing toilets or urinals with low-flow fixtures.

EMS - Energy Management System – the controls that are used to operate the HVAC and/or lighting equipment. Also may be referred to as Building Automation System (BAS).

Emissions – The Greenhouse Gas Protocol divides emission standards into 3 categories: 1) Scope 1 – Direct – emissions from the combustion of fuel in stationary equipment such as boilers, furnaces, and power generators. Also included are emissions from refrigerant used in mechanical cooling. 2) Scope 2 – Indirect – emissions from the use of procured energy that is generated off-site such as electricity, College chilled water, and College steam. 3) Scope 3 – Other Indirect – emissions from the consumption of energy in non-stationary equipment such as air travel, campus vehicles, commuters, or farm animals.

ESCO – Energy Services Company

GHG tons – Greenhouse Gas tons – these are the equivalent carbon tons of carbon dioxide, methane, and nitrous oxide emissions from burning fuels on site or using electricity. 1 ton of carbon dioxide = 1 carbon ton; 1 ton of methane = 23 carbon tons; 1 ton of nitrous oxide = 1 carbon ton. Emissions based on electricity generation are dependant upon the utility provider's fuel source for generating electricity, which varies by region.

HVAC – Heating/Ventilation/Air Conditioning – also referred to as mechanical equipment.

kW – Kilowatt. This is the unit of measurement for electrical demand. The highest amount of electric draw in a 15-minute interval sets the demand for the month.

kWh – Kilowatt hour. This is the unit of measurement for electrical consumption. One kWh is equivalent to the energy consumed by ten 100-watt light bulbs burning for one hour.

LED – Light-emitting Diode – a semi-conductor or 'solid state' light source. LEDs can produce a very bright light for a small amount of power

PPA – Power Purchase Agreement

PV – Photovoltaic

REC – Renewable Energy Credit. This is the environmental value of the energy produced by a solar PV system. RECs are gaining popularity, and in many places these have an actual financial value.

Therm – A unit of heat equal to 100,000 British thermal units.

Ton (T) – One ton is equivalent to 12,000 Btu/hr. A ton of refrigeration produces the same amount of cooling energy as one ton of ice melting in a 24-hour period

26 July 2010

Kirsten Wilson, PE, CEM, CMVP, LEED AP
Department of General Administration
206 General Administration Building
Olympia, Washington 98504-1012

SUBJECT: Ephrata School District Investment Grade Audit Proposal
REFERENCE: A) State of Washington, Department of General Administration, Agreement No 2009-151 H (8), dated March 18, 2009

Dear Ms. Wilson,

Schneider Electric is pleased to provide this proposal to execute an Investment Grade Audit for Ephrata School District to determine the scope of work, guaranteed savings amount, energy efficiency measures, and project price for a comprehensive facility improvement program for Ephrata SD. This information will be ultimately be presented in a final energy services proposal that will include the following:

- A list of energy efficiency measures planned for each facility
- A description of how the energy efficiency measures would interact with the existing equipment in the facilities
- Financial analysis of the effect on annual cash flow by the energy efficiency measures
- Guaranteed energy savings for the facilities
- Utility analysis demonstrating effect of installed energy efficiency measures
- Performance Assurance Support Services (PASS) Plan for the facilities
- Project pricing for a turnkey installation of the proposed project scope that shall be firm for 60 days.

This Investment Grade Audit will consist of analyzing the existing use of energy in the Ephrata SD buildings, identifying needs and desires for the facilities long term, and conceptualizing value-added energy and water efficiency measures. Consideration will also be given to total available funds including utility incentives, energy-savings financing, and other district funds (if any) for both the purposes of preparing grant applications for the Department of Commerce or OSPI ESPC grant programs and also determining the viability of a project without the grant funds, in case no funds are awarded.

Client is under no payment obligation for the Investment Grade Audit Agreement, provided at least one of the following conditions is met:

- Schneider Electric determines there is no scope of work to be recommended for Ephrata School District to implement using an energy saving performance contract.
- Schneider Electric is unable to deliver a project that meets the cost effectiveness criteria established by Ephrata SD at the "Client Kickoff Meeting". The standard cost effectiveness criteria is: "The loan term may not exceed the economic life of the EEM or ten (10) years whichever is greater, unless otherwise approved by the owner and GA."

This audit will be considered complete when one of the conditions exists:

1) Grant funding runs out without Ephrata SD being awarded grant funds
2) Ephrata SD receives grant funds and proceeds with a project
3) Ephrata SD decides to proceed with a project without grant funding

At the conclusion of this audit, if a project meeting their pre-determined cost-effectiveness criteria has been developed, but Ephrata SD decides not to proceed, the "buy out" fee of $70,000 would be due to Schneider Electric. However, if a guaranteed performance-based contract with Schneider Electric is executed within sixty (60) days after receiving the Investment Grade Audit report, the IGA fee will be part of the overall cost of the construction contract.

Schneider Electric
Buildings Business – Energy Solutions
95 South Jackson St. – Suite 300
Seattle, WA 98104
Tel. (360) 823-3040 Fax (866) 908-2510

Ephrata School District agrees to provide the following:

A) Complete access to Client's Facilities for ESCO's staff for the purpose of performing the energy efficiency analysis, measuring actual energy use, taking equipment inventory, determining operating schedules, identifying known operational deficiencies, building modeling, etc.;
B) Access to key personnel to discuss operating requirements; and
C) The loan of building plans for the purpose of facilitating understanding of the facility characteristics and the current sequences of operation.

Client agrees that, until the audit is paid for or client executes a guaranteed performance-based building improvement program with Schneider Electric, the engineering, data, and recommendations developed are the intellectual property of Schneider Electric and may not be shared with any third parties (WA Dept of GA Staff are not considered third parties) without the written permission of Schneider Electric.

The following is the list of facilities to be audited:

Beezley Springs School – 23,619 sq ft
Grant Elementary School – 31,566 sq ft
Columbia Ridge Elementary School – 35,644 sq ft
Parkway School – 27,266 sq ft
Ephrata Middle School – 51,164 sq ft
Ephrata High School – 82,000 sq ft
Ephrata Old High School – 27,950 sq ft
Fine Arts Building (Perf Arts) – 4,175 sq ft

At this time, potential EEMs have not yet been identified. The district has elected to move directly into an IGA, bypassing a preliminary audit, for the purposes of meeting a specific grant application deadline. It is our understanding the district desires a variety of HVAC, control, lighting, and building envelope measures, but the potential scope is still yet to be clearly defined.

In finding this proposal acceptable, please provide Schneider Electric with an Energy Services Agreement followed by a notice to proceed. On behalf of our project team, we look forward to this opportunity to work with you and Ephrata School District to provide lasting improvements to the district facilities.

I will be responsible for all further contract negotiations for Schneider Electric.

Respectfully,

Jordan Lerner
Regional Director of Sales and Engineering

Schneider Electric
Buildings Business – Energy Solutions
95 South Jackson St. – Suite 300
Seattle, WA 98104
Tel. (360) 823-3040 Fax (866) 908-2510

Ephrata School District

Investment-Grade Audit Report

Scoping Version

August 23, 2010

95 South Jackson Street, Suite 300
Seattle, WA 98104
www.schneider-electric.com/buildings

TABLE OF CONTENTS

1. Executive Summary 1

2. Project Overview 2

3. Facility Site Assessment 4

4. Utility & Energy Analysis 12

5. Energy Efficiency Measures 17

6. Savings & Cost Analysis 31

EXECUTIVE SUMMARY

This report contains the results of an investment-grade energy audit of the energy savings opportunities at Ephrata School District. This audit was completed as part of the relationship between Department of General Administration's Energy Team and Schneider Electric (formerly TAC Americas) as a result of the approval of Ephrata School District's Directors on July 26, 2010.

Through an ESPC agreement, Schneider Electric partners with school districts to develop projects that meet their current financial, environmental, specific improvement, and operational goals. The project is then delivered turn-key (fully operational) to the District along with a guarantee that a certain amount of annual energy savings will materialize from the implementation of the project. In the event the project does not perform, as identified in the monthly tracking of the utility bills post-project, Schneider Electric will be contractually responsible to reimburse the School District for the savings not realized. The 3rd party security of an ESPC allows the District to utilize specialized financing vehicles to reallocate the energy savings amount as all or part of an annual payment on debt service which funded the required construction up front. Through this financing, the District can leverage funds currently going to waste in the form of excess energy usage and minimize the capital cost of facility and infrastructure improvements.

This report details the various energy and water efficiency measures evaluated, with the ultimate goal being a collection of energy efficiency measures (EEMs) meeting the goals outlined by the district in the audit kickoff meeting. Schneider Electric believes the measures will provided the desired benefits to the district while fitting within the financial criteria of being funded by outside sources with a maximum of $400,000 in capital invested by the district and energy-savings financing for a term of 12-15 years. Schneider Electric selected the recommended EEMs to meet the goals of cost savings, however also putting a strong emphasis on replacing specific equipment past the end of its useful life, and optimizing the learning environment for students and staff. As a result, there are three plausible combinations of scope items from Schneider Electric's perspective, only one of which meeting the district's financial criteria set forth above.

Schneider Electric is excited about the opportunities for energy savings and environmental improvements that exist for Ephrata School District. We look forward to a long, mutually beneficial relationship as the District's energy conservation partner. Thank you for the opportunity to complete and present this investment-grade audit and we hope the district agrees this project is worthwhile and chooses the scope combination that best aligns with the district's long term goals.

David Palmer
Schneider Electric Energy Solutions – Account Executive

PROJECT OVERVIEW

Background

The purpose of this Investment-Grade Audit study was to develop a comprehensive project throughout the district to improve comfort and reduce energy usage through infrastructure upgrades in the facilities while taking advantage of leveraged energy savings and the OSPI grant program. Several key systems were identified as requiring upgrade by ESD, including replacing the chiller at the HS with a Variable Frequency Drive (VFD) equipped new chiller system, improve air filtration at the HS, finish the lighting retrofit at the HS, and upgrade HVAC controls throughout the district.

This report is broken into the following sections:

An overview of the proposed project, facilities investigated,

Facility observations;

Utility and energy analysis;

Description of the measures evaluated and recommended in addition to a summary of measures not recommended (if any) accompanied by an explanation of why the measures are not recommended

Detailed description of the project options, savings and costs

<u>Next Steps</u>
Upon review and the selection of the scope package deemed to be most in line with the district's goals, Schneider Electric will revise the report focused on the recommended project with an explanation of why the other measures are being passed over at this time. This final report will provide the data needed to apply for the OSPI Energy and Operational Savings Grant due August 27, 2010.

Scope of Audit

The following is the list of facilities audited:

- Beezley Springs School – 23,619 sq ft
- Grant Elementary School – 31,566 sq ft
- Columbia Ridge Elementary School – 35,644 sq ft
- Parkway School – 27,266 sq ft
- Ephrata Middle School – 51,164 sq ft
- Ephrata High School – 82,000 sq ft
- Ephrata Old High School – 27,950 sq ft
- Fine Arts Building (Perf Arts) – 4,175 sq ft

A complete facility description report is located in the section of this report labeled **Facility Site Assessment**.

Schneider Electric evaluated the buildings and each system within the buildings in terms of age, condition, and performance. At a minimum, the following was investigated for each building (if applicable):

- Lighting systems (controls and fixture retrofit)
- Building envelope (windows, doors, insulation, etc)
- Building automation/Direct digital controls/Stand-alone HVAC control systems
- Air handling systems
    - Zone/Area isolation and shutdown
    - Heat recovery
    - Outside air economizer
    - Return air conversion
    - Improved filtration
    - Testing and balancing needs
- Equipment/System Modifications
    - Plant automation (Variable Frequency Drives)
    - Chiller upgrade
    - Glycol removal (for improved efficiency and reduced maintenance costs)

It should be noted that each system was evaluated for feasibility based on explicit needs of the district in addition to energy savings. Additionally, if Ephrata School District were not so fortunate as to have some of the lowest utility rates in the country, significantly more work could be funded by the savings created from this project. The utility conservation incentives available help temper that handicap somewhat, but still many measures are not cost effective simply because energy is so inexpensive.

Each measure, specifically the equipment and type of system, recommended is something readily available with a long expected life and high level of reliability to the best of the Schneider Electric development team's knowledge. It is expected that none of the recommended measures would be rendered useless by any future building renovation projects. All work is expected to be performed with contractors based within a reasonable distance from Ephrata who can provide long-term support and warranties for their portions of the scope implemented.

FACILITY SITE ASSESSMENT

Building Description

Ephrata School District

High School

Size (ft^2): 82,000
Built: 1985
Renovations: N/A
Primary Use: High School
Floors: 2
Electric Tariffs: Grant County Public Utility District
Fuel Tariffs: N/A

Building Operating Schedule

Day Type	Occupacy	HVAC
Weekday	7:00 am - 10:00 pm	Continuous
Weekend	Varies	Continuous
Holiday	N/A	Continuous

HVAC System

Plant Equipment

Plant	Age	Type	Model	Size	Fuel	Eff
CHW Pump	1985	Chilled Water Pump	Bell & Gossett BE 10-1/4 BF	416 GPM	Electric	N/A
Chiller	1985	Air Cooled Recipricating	Trane CGACD204	200 Tons	Electric	1.75 kW/ton

Air-side Equipment

ID	Type	Control	Total Fan HP	OA	Pres Cond.	Areas Served
VAV AHU	Variable Air Volume Air Handler with Reheat	Thermostat	200	25%	Poor	Majority of School
CV AHUs	Constant Volume Air Handler	Thermostat	33	25%	Fair	Gymnasium
Heat AHUs	Heating Only Air Handler	Thermostat	42	25%	Fair	VOAG & Locker Rooms
Mini Splits	Mini Split Condensing Units	Thermostat	N/A	0%	Good	Computer Rooms

Lighting Systems

Primary: Fluorescent T-12
Secondary: Metal Halide
Exterior:
Exit Signs:

Energy Management System

Brand: Johnson Controls
Type: Pneumatics
Age: 1985
Condition: Poor

Setpoints
Heating: *70* F
Cooling: *74* F

Domestic Water Systems

DHW Fuel: Electric
DHW Size: 270 kW
Toilets: Standard
Faucets: Standard

Building Envelope

Type	Description	Condition
Exterior	Face Brick & Blocks	Good
Windows	double pane	Fair
Roof	White EPDM	Fair

Utility Meters

Type	Account Number	Area Served	Mult.
Elec.	X65480	Entire Building	600

Comments and Observations

> Volume control for the large VAV air handler is being controlled inefficiently by discharge air dampers and the system is having pressurization problems
> Many of the fan-powered reheat boxes have been convered to non-fan powered reheat boxes
> The air cooled chiller has approximately 50% gylcol which is used for freeze protection, but reduces capacity and efficiency of the chilled water system
> Because of indoor air quality issues the outdoor air flow has been increased to 25%, which has increased the buildings cooling load and energy consumption
> A water hose has been wrapped around the air cooled chiller to spray the condenser coils and increase its capacity

Facility Photos

200 Ton Air Cooled Chiller

Gym Air Handling Unit

Typical Pneumatic Thermostat

ECM Opportunities and Facility Upgrades

> Install a DDC energy management control system
> Remove the glycol from the chiller water system and install heat tracing for freeze protection
> Replace the existing chiller with a larger, more efficient air cooled chiller
> Retrofit existing T-12 lighting fixtures and magnetic ballasts with T-8 fluorescent fixtures and electronic ballasts
> Retrofit existing metal halide fixtures with high bay fluorescent fixtures
> Implement supply static pressure and air temperature reset controls for the VAV air handler
> Install a variable speed drive on the chilled water pump to reduce pumping energy
> Implement demand control ventilation for the gymnasium air handler
> Install variable speed drives on the VAV air handler and gym unit to decrease fan energy consumption during part-load conditions
> Install dynamic air filters to reduce the required amount of ventilation air, thus reducing energy consumption

Building Description

Ephrata School District

High School

Size (ft^2): 51,164
Built: 1961
Renovations: N/A
Primary Use: Middle School
Floors: 1
Electric Tariffs: Grant County Public Utility District
Fuel Tariffs: N/A

Building Operating Schedule

Day Type	Occupacy	HVAC
Weekday	7:00 am - 10:00 pm	Varies
Weekend	Varies	Off
Holiday	N/A	Varies

HVAC System

Plant Equipment

Plant	Type	Model	Size	Fuel	Eff
CHW Pump	Chilled Water Pump	Bell & Gossett	95 GPM	Electric	N/A
Chiller	Air Cooled Recipricating	Trane CGAA100	100 Tons	Electric	1.75 kW/ton

Air-side Equipment

ID	Type	Control	Total Fan HP	OA	Pres Cond.	Areas Served
FCUs	Chilled Water Fan Coil Units with Electric Heat	Thermostat	1-5	25%	Good	Interior Spaces
Unit Vents	Chilled Water Unit Ventilators with Electric Heat	Thermostat	5-10	25%	Good	Exterior Spaces
Heat AHUs	Heating Only Air Handler	Thermostat	1-5	25%	Good	Gymnasium

Lighting Systems

Primary: Fluorescent T-8
Secondary: High Bay Fluorescent T-5
Exterior:
Exit Signs:

Energy Management System

Brand:
Type: Pneumatics
Age:
Condition: Poor

Setpoints
Heating: *70* F
Cooling: *74* F

Domestic Water Systems

DHW Fuel: Electric
DHW Size: 258 kW
Toilets: Standard
Faucets: Standard

Building Envelope

Type	Description	Condition
Exterior	Face Brick & Blocks	Good
Windows	Double Pane	Good
Roof	White EPDM	Good

Utility Meters

Type	Account Number	Area Served	Mult.
Elec.	X48489	Middle School	400
Elec.	X57274	Middle School	1

Comments and Observations

> All of the HVAC equipment is currently being controlled by pneumatic time clocks with various setback temperatures
> The gymnasium lighting has already been retrofitted with efficient T-5 high bay fluorescent fixtures
> The air cooled chiller has approximately 50% gylcol which is used for freeze protection, but reduces capacity and efficiency of the chilled water system
> Although the HVAC equipment is being scheduled, there are no setup temperatures implemented to help save energy during the cooling season
> The existing chiller is old and inefficient and needs to be replaced with a more efficient chiller

Facility Photos

100 Ton Air Cooled Chiller

Typical Unit Ventilator

Existing Chilled Water Pump

ECM Opportunities and Facility Upgrades

> Install a DDC energy management control system
> Remove the glycol from the chiller water system and install heat tracing for freeze protection
> Replace the existing chiller with a more efficient air cooled chiller
> Install a variable speed drive on the chilled water pump to reduce pumping energy
> Implement demand control ventilation for the gymnasium air handler

Building Description

Ephrata School District

Old High School

Size (ft^2): 32,125
Built: 1951
Renovations: 1995
Primary Use: Gymnasium & Auditorium
Floors: 2
Electric Tariffs: Grant County Public Utility District
Fuel Tariffs: N/A

Building Operating Schedule

Day Type	Occupacy	HVAC
Weekday	7:00 am - 10:00 pm	Continuous
Weekend	Varies	Continuous
Holiday	N/A	Continuous

HVAC System

Plant Equipment

Plant	Type	Model	Size	Fuel	Eff
N/A	N/A	N/A	N/A	N/A	N/A

Air-side Equipment

ID	Type	Control	Total Fan HP	OA	Pres Cond.	Areas Served
RTUs	Heat Pump Rooftop Units	Thermostat	1-5	0%	Good	Auditorium
Uhs	Electric Unit Heaters	Thermostat	1-5	0%	Good	Remaining Areas of Building

Lighting Systems

Primary: Fluorescent T-12
Secondary: Metal Halide
Exterior:
Exit Signs:

Energy Management System

Brand: N/A
Type: N/A
Age: N/A
Condition: N/A

Setpoints
Heating: *70* F
Cooling: *72* F

Domestic Water Systems

DHW Fuel: N/A
DHW Size: N/A
Toilets: Standard
Faucets: Standard

Building Envelope

Type	Description	Condition
Exterior	Face Brick & Blocks	Good
Windows	Varies	Good

Utility Meters

Type	Account Number	Area Served	Mult.
Elec.	X63811	Auditorium	80
Elec.	X68439	Gymnasium	240

Comments and Observations

> The unit heaters are currently operating to maintain 70ºF space temperature year round
> Most of the heat generated by the unit heaters in the gymnasium is not being used efficiently because it rises to the top of the room due to room stratification
> Originally the heat pump rooftop units had DDC controls installed, but the controls were removed and now the units operated off programmable thermostats
> Insulation has been added to the wrestling room walls which has helped to improve the thermal efficiency of the room
> The heat pump rooftop units have the capability to bring in outdoor air, but during the site visit several of the outdoor air dampers appeared to be closed

Facility Photos

Typical Gym Metal Halide Fixtures

Typical Rooftop Heat Pump

Typical Unit Heater

ECM Opportunities and Facility Upgrades

> Install a DDC energy management control system
> Install weather strips around exterior doors to improve building thermal efficiency
> Install destratification fans for the gymnasium to reduce heating energy
> Retrofit existing T-12 lighting fixtures and magnetic ballasts with T-8 fluorescent fixtures and electronic ballasts

Building Description

Ephrata School District

Grant Elementary

Size (ft^2): 32,666
Built: 1957
Renovations: 1985, 1986
Primary Use: Elementary School
Floors: 1
Electric Tariffs: Grant County Public Utility District
Fuel Tariffs: N/A

Building Operating Schedule

Day Type	Occupacy	HVAC
Weekday	7:00 am - 6:00 pm	6:00 am - 6:00 pm
Weekend	Varies	Off
Holiday	N/A	6:00 am - 6:00 pm

HVAC System

Plant Equipment

Plant	Type	Model	Size	Fuel	Eff
CHW Pump	Chilled Water Pump	Bell & Gossett	120 GPM	Electric	N/A
Chiller	Air Cooled Recipricating	Trane CGABC60	60 Tons	Electric	1.75 kW/ton

Air-side Equipment

ID	Type	Control	Total Fan HP	OA	Pres Cond.	Areas Served
FCUs	Chilled Water Fan Coil Units with Electric Heat	Thermostat	1-5	25%	Good	Interior Spaces
Unit Vents	Chilled Water Unit Ventilators with Electric Heat	Thermostat	5-10	25%	Good	Exterior Spaces
Heat AHUs	Heating Only Air Handler	Thermostat	1-5	25%	Good	Gymnasium
Mini Split HP	Mini Split Heat Pump	Thermostat	1	0%	Good	Kitchen

Lighting Systems

Primary: Fluorescent T-8
Secondary: High Bay Fluorescent
Exterior:
Exit Signs:

Energy Management System

Brand: Robertshaw
Type: Pneumatics
Age:
Condition: Poor

Setpoints
Heating: *70* F
Cooling: *74* F

Domestic Water Systems

DHW Fuel: Electric
DHW Size: 15 kW
Toilets: Standard
Faucets: Standard

Building Envelope

Type	Description	Condition
Exterior	Face Brick & Blocks	Good
Windows	Double Pane	Good
Roof	White EPDM Roof	Good

Utility Meters

Type	Account Number	Area Served	Mult.
Elec.	X68864	Portable Buildings	20
Elec.	X57860	Main Building	160

Comments and Observations

> All of the HVAC equipment is currently being controlled by pneumatic time clocks with various setback temperatures
> The gymnasium lighting has already been retrofitted with efficient high bay fluorescent fixtures
> The air cooled chiller has approximately 50% gylcol which is used for freeze protection, but reduces capacity and efficiency of the chilled water system
> Although the HVAC equipment is being scheduled, there are no setup temperatures implemented to help save energy during the cooling season
> The existing chiller is old and inefficient and needs to be replaced with a more efficient chiller

Facility Photos

Multipurpose High Bay Fluorescent Fixtures

Typical Classroom Unit Vent

Existing Pneumatic Time Clock

ECM Opportunities and Facility Upgrades

> Install a DDC energy management control system
> Remove the glycol from the chiller water system and install heat tracing for freeze protection
> Replace the existing chiller with a more efficient air cooled chiller
> Install a variable speed drive on the chilled water pump to reduce pumping energy
> Implement demand control ventilation for the gymnasium air handler

Building Description

Ephrata School District

Columbia Elementary

Size (ft^2): 35,644
Built: 1951
Renovations: 1985
Primary Use: Elementary School
Floors: 1
Electric Tariffs: Grant County Public Utility District
Fuel Tariffs: N/A

Building Operating Schedule

Day Type	Occupacy	HVAC
Weekday	7:00 am - 6:00 pm	6:00 am - 6:00 pm
Weekend	Varies	Off
Holiday	N/A	6:00 am - 6:00 pm

HVAC System

Plant Equipment

Plant	Type	Model	Size	Fuel	Eff
CHW Pump	Chilled Water Pump	Bell & Gossett	180 GPM	Electric	N/A
Chiller	Air Cooled Recipricating	Trane CGAA080	80 Tons	Electric	1.75 kW/ton

Air-side Equipment

ID	Type	Control	Total Fan HP	OA	Pres Cond.	Areas Served
FCUs	Chilled Water Fan Coil Units with Electric Heat	Thermostat	1-5	25%	Good	Interior Spaces
Unit Vents	Chilled Water Unit Ventilators with Electric Heat	Thermostat	5-10	25%	Good	Exterior Spaces
Heat AHUs	Heating Only Air Handler	Thermostat	1-5	25%	Good	Gymnasium

Lighting Systems

Primary: Fluorescent T-8
Secondary: High Bay Fluorescent
Exterior:
Exit Signs:

Energy Management System

Brand: Robertshaw
Type: Pneumatics
Age:
Condition: Poor

Setpoints
Heating: *70* F
Cooling: *74* F

Domestic Water Systems

DHW Fuel: Electric
DHW Size: 18 kW
Toilets: Standard
Faucets: Standard

Building Envelope

Type	Description	Condition
Exterior	Face Brick & Blocks	Good
Windows	Double Pane	Good

Utility Meters

Type	Account Number	Area Served	Mult.
Elec.	X43387	Portable Buildings	160

Comments and Observations

> All of the HVAC equipment is currently being controlled by pneumatic time clocks with various setback temperatures
> The gymnasium lighting has already been retrofitted with efficient high bay fluorescent fixtures
> The air cooled chiller has approximately 50% gylcol which is used for freeze protection, but reduces capacity and efficiency of the chilled water system
> Although the HVAC equipment is being scheduled, there are no setup temperatures implemented to help save energy during the cooling season
> The existing chiller is old and inefficient and needs to be replaced with a more efficient chiller

Facility Photos

Typical Fan Coil Unit

Existing Air Cooled Chiller

Gym Air Handling Unit

ECM Opportunities and Facility Upgrades

> Install a DDC energy management control system
> Remove the glycol from the chiller water system and install heat tracing for freeze protection
> Replace the existing chiller with a more efficient air cooled chiller
> Install a variable speed drive on the chilled water pump to reduce pumping energy
> Implement demand control ventilation for the gymnasium air handler

Building Description

Ephrata School District

Beezley

Size (ft^2): 22,269
Built: 1937
Renovations: N/A
Primary Use: High School / District Office
Floors: 1
Electric Tariffs: Grant County Public Utility District
Fuel Tariffs: N/A

Building Operating Schedule

Day Type	Occupacy	HVAC
Weekday	7:00 am - 10:00 pm	Continuous
Weekend	Varies	Continuous
Holiday	N/A	Continuous

HVAC System

Plant Equipment

Plant	Type	Model	Size	Fuel	Eff
N/A	N/A	N/A	N/A	N/A	N/A

Air-side Equipment

ID	Type	Control	Total Fan HP	OA	Pres Cond.	Areas Served
RTUs	Rootop Units with DX Cooling and Electric Heat	Thermostat	1-5	10%	Poor	Varies
RTU HPs	Heat Pump Rooftop Units	Thermostat	1-5	10%	Good	Varies
UHs	Electric Unit Heaters	Thermostat	1	0%	Good	Gymnasium

Lighting Systems

Primary: Fluorescent T-12
Secondary: Incandescent
Exterior:
Exit Signs:

Energy Management System

Brand: N/A
Type: N/A
Age: N/A
Condition: N/A

Setpoints
Heating: *68* F
Cooling: *73* F

Domestic Water Systems

DHW Fuel: Electric
DHW Size:
Toilets: Standard
Faucets: Standard

Building Envelope

Type	Description	Condition
Exterior	Face Brick	Good
Windows	Double Pane	Good
Roof	White EPDM	Good

Utility Meters

Type	Account Number	Area Served	Mult.
Elec.	X38317	Entire Building	160

Comments and Observations

> Two of the rooms had programmable thermostats that had schedules implemented, the remaining HVAC equipment runs continuously
> The unit heaters are currently operating to maintain 70ºF space temperature year round
> The lighting fixtures in the building are T-12 fixtures with magnetic ballasts which need to be replaced with T-8 fixtures and electronic ballasts
> Several of the rooftop units are over 20 years old and have passed the end of their expected life
> The building has a pneumatic time clock that was once used for the old boiler system, but it is no longer being used

Facility Photos

T-12 Gymnasium Lighting Fixtures

Existing Rooftop Units

Typical Room Thermostat

ECM Opportunities and Facility Upgrades

> Install a DDC energy management control system
> Retrofit existing T-12 lighting fixtures and magnetic ballasts with T-8 fluorescent fixtures and electronic ballasts

Building Description

Ephrata School District

Parkway Elementary

Size (ft^2): 30,100
Built: 1947
Renovations: 1961
Primary Use: Elementary School
Floors: 1
Electric Tariffs: Grant County Public Utility District
Fuel Tariffs: N/A

Building Operating Schedule

Day Type	Occupacy	HVAC
Weekday	7:00 am - 6:00 pm	6:00 am - 10:00 pm
Weekend	Varies	Off
Holiday	N/A	6:00 am - 10:00 pm

HVAC System

Plant Equipment

Plant	Type	Model	Size	Fuel	Eff
N/A	N/A	N/A	N/A	N/A	N/A

Air-side Equipment

ID	Type	Control	Total Fan HP	OA	Pres Cond.	Areas Served
RTUs	Rootop Units with DX Cooling and Electric Heat	Thermostat	1-5	10%	Poor	Varies
RTU HPs	Heat Pump Rooftop Units	Thermostat	1-5	10%	Poor	Varies
Heat AHUs	Heating Only Air Handler	Thermostat	2	0%	Good	Gymnasium
UHs	Electric Unit Heaters	Thermostat	1	0%	Good	Stage

Lighting Systems

Primary: Fluorescent T-8
Secondary: High Bay Fluorescent
Exterior:
Exit Signs:

Energy Management System

Brand: N/A
Type: N/A
Age: N/A
Condition: N/A

Setpoints
Heating: *68* F
Cooling: *73* F

Domestic Water Systems

DHW Fuel: Electric
DHW Size:
Toilets: Standard
Faucets: Standard

Building Envelope

Type	Description	Condition
Exterior	Face Brick	Good
Windows	Double Pane	Good

Utility Meters

Type	Account Number	Area Served	Mult.
Elec.	X40039	New Building	60
Elec.	X41729	Old Building	80

Comments and Observations

> Most of the rooms have programmable thermostats and the HVAC equipment appears to be schedules from 6am to 10pm
> The HVAC systems were designed so that each rooftop unit serves multiple rooms, which is causing problems with comfort control
> The gymnasium lighting has already been retrofitted with efficient high bay fluorescent fixtures
> Several of the rooftop units are over 20 years old and have passed the end of their expected life
> Each of the classrooms has a thermostat to control duct heaters for individual heating control

Facility Photos

Gymnasium Air Handler

Existing Rooftop Unit

Typical Thermostat Arrangement

ECM Opportunities and Facility Upgrades

> Install a DDC energy management control system
> Implement HVAC scheduling with setup and setback control to reduce energy consumption

Building Description

Ephrata School District

Transportation Building

Size (ft^2): Approx. 10,000
Built:
Renovations:
Primary Use: Maintenance Facility
Floors: 1
Electric Tariffs: Grant County Public Utility District
Fuel Tariffs: N/A

Building Operating Schedule

Day Type	Occupacy	HVAC
Weekday	6:00 am - 5:00 pm	Continuous
Weekend	N/A	Continuous
Holiday	N/A	Continuous

HVAC System

Plant Equipment

Plant	Type	Model	Size	Fuel	Eff
N/A	N/A	N/A	N/A	N/A	N/A

Air-side Equipment

ID	Type	Control	Total Fan HP	OA	Pres Cond.	Areas Served
WU	Packaged DX Window Unit	Manual	< 1	0%	Fair	Office
SS Furnace	Split System Electric Furnace	Thermostat	1	0%	Fair	Office
SC	Swamp Cooler	Manual	1	0%	Fair	Maintenance Shop
UHs	Electric Unit Heaters	Thermostat	<1	0%	Fair	Shop Areas

Lighting Systems

Primary: Metal Halide
Secondary: Fluorescent T-12
Exterior:
Exit Signs:

Energy Management System

Brand: N/A
Type: N/A
Age: N/A
Condition: N/A

Setpoints
Heating: *68* F
Cooling: *73* F

Domestic Water Systems

DHW Fuel:
DHW Size:
Toilets: Standard
Faucets: Standard

Building Envelope

Type	Description	Condition
Exterior	Varies	Good
Windows	Single Pane	Fair

Utility Meters

Type	Account Number	Area Served	Mult.
Elec.	X56048	Entire Building	160

Comments and Observations

> The building has a large amount of infiltration contributing to the load due to the bay doors constantly opening and closing throughout the day
> The bus maintenance shop has a waste oil heater that burns waste oil from district vehicles to help heat the shop
> The shop contains T-12 and metal halide fixtures, both of which are less energy efficient then high bay T-8 fixtures.

Facility Photos

Typical Metal Halide Fixtures

Existing Window Unit

Existing Waste Oil Heater

ECM Opportunities and Facility Upgrades

> Install an energy management control system
> Implement HVAC scheduling with setup and setback control to reduce energy consumption
> Retrofit existing T-12 lighting fixtures and magnetic ballasts with T-8 fluorescent fixtures and electronic ballasts
> Retrofit existing metal halide fixtures with high bay fluorescent fixtures

UTILITY & ENERGY ANALYSIS

Utility Analysis Assumptions

Establishing the baseline energy use is imperative to developing an energy savings project, as it allows us to identify the magnitude of the energy and cost savings opportunity, develop energy indices for comparison to similar facilities, identify patterns of energy use, and calibrate the simulation models.

The baseline energy use of the Ephrata School District has been derived from utility billing data from the previous two years. This data has been weather-normalized and averaged together to eliminate outliers due to atypical conditions. The following table provides a summary of the utility meters at Ephrata School District:

Utility Meter Summary — **Ephrata School District**

Resource	Utility	Rate/Tariff	Units	Account Number	Meter Number	Buildings Served
Electricity (1)	Grant County Public Utility District	Large General	kWh, kW	8659200000	X48489	Middle School
					X65480	High School
		General Service	kWh	8659200000	X57274	Middle School
					X63811	Old High School
					X68439	Old High School
					X43387	Columbia Elementary
					X56048	Transportation
					X38317	Beezely
					X40039	Parkway Elementary
					X41729	Parkway Elementary
					X68864	Grant Elementary
					X57860	Grant Elementary

Notes: (1) Some of the facilites are on accounts that are being charged demand (kW) and others are being charged on an electric utility rate that takes into account only consumption charges.

Utility Rate Schedule — **Ephrata School District**

Resource	Utility Name	Rate Tarriff Name	Description		Charge	Unit
Electricity (1)	Grant County Public Utility District	Large General	Customer Charge	$	110.00	Per Meter
			First 50,000 kWh	$	0.0195	Per kWh
			All Remaining kWh	$	0.0116	Per kWh
			Demand Charge	$	4.1000	Per kW
			Power Factor Correction(2)	$	4.1000	Per kW
			City Tax	%	6.00	
		General Service	Customer Charge	$	18.60	Per Meter
			First 8,000 kWh	$	0.0402	Per kWh
			All Remaining kWh	$	0.0246	Per kWh
			City Tax	%	6.00	

Notes: (1) Some of the facilites are on accounts that are being charged demand (kW) and others are being charged on an electric utility rate that takes into account only consumption charges.
(2) Power Factor Correction is charged to the difference in kW between the Billed Demand and Actual Demand when Power Factor is less than 95%

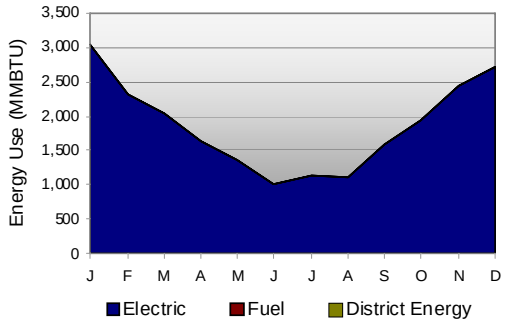
Baseline Building Performance

The graph labeled "Baseline Energy Consumption" is a stacked area graph which shows the total annual energy consumption of Ephrata School District. The graph labeled "Baseline Energy Demand" is also a stacked area graph which shows the month-to-month peak electrical demand. The center table lists the quantities of energy consumed, as well as cost indices for each of the facilities analyzed in this project scope.

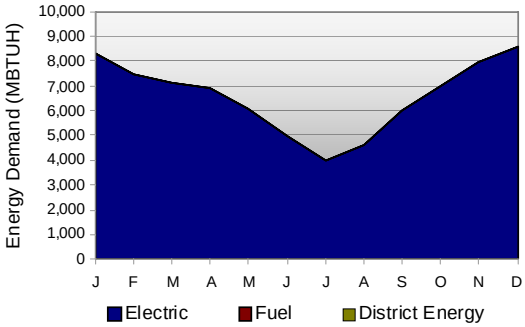
Facility Energy Consumption and Expenditures Summary — **Ephrata School District**

Energy Use

Baseline Energy Consumption

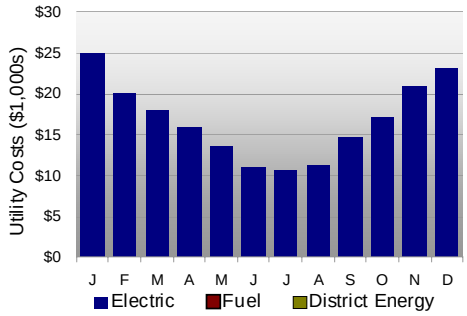


Baseline Energy Demand

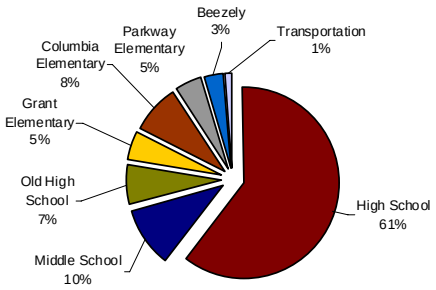


	Energy Use		Energy Demand	Cost	Baseline Annual Energy Indicies		
	Electric	Total	Electric	Total	Energy Use Intensity	Cost per ft2	Load Factor
Building	*MMBTU*	*MMBTU*	*MBTUH*	*$/year*	*kBTU/sf-yr*	*$/sf-yr*	*%*
High School	9,607	9,607	28,174	$76,807	117.2	$0.94	46.7%
Middle School	3,236	3,236	14,960	$37,210	63.2	$0.73	29.6%
Old High School	1,701	1,701	5,619	$16,184	52.9	$0.50	41.5%
Grant Elementary	1,724	1,724	8,884	$15,588	52.8	$0.48	26.6%
Columbia Elementary	2,177	2,177	7,446	$18,425	61.1	$0.52	40.0%
Parkway Elementary	1,786	1,786	6,607	$17,248	59.3	$0.57	37.0%
Beezely	912	912	3,451	$8,779	41.0	$0.39	36.2%
Transportation	1,211	1,211	4,003	$11,007	121.1	$1.10	41.4%
All Total	**22,352**	**22,352**	**79,144**	**$201,248**	**75.5**	**$0.68**	

Baseline Energy Costs



Building Impact



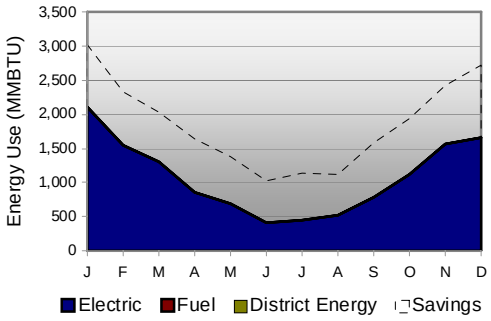
Energy Savings

The table and graphs below list the monthly utility and monetary savings Ephrata School District can accrue if the modeled Energy Efficiency Measures are implemented. These savings projections were calculated using US DOE's eQuest Energy Modeling tool for most buildings. On the graphs, the dotted lines show the baseline energy savings, the solid areas indicate the usage after a project, and the difference is the energy savings.

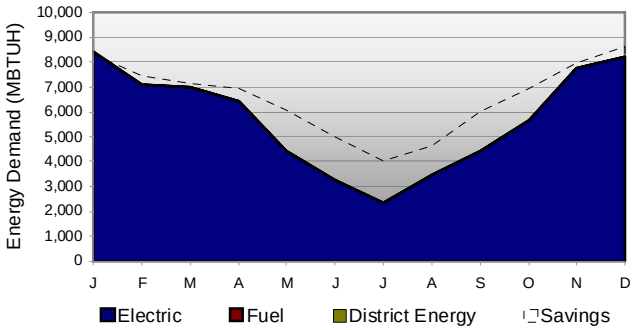
Facility Energy Consumption and Demand Savings Summary — **Ephrata School District**

Energy Use

Energy Consumption Savings



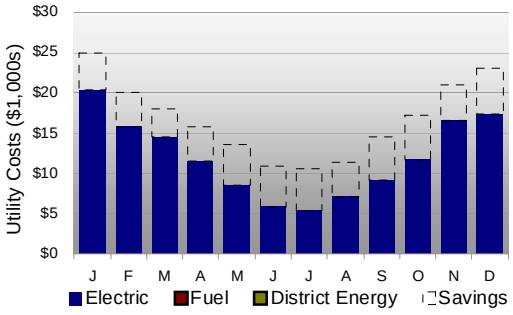
Energy Demand Savings



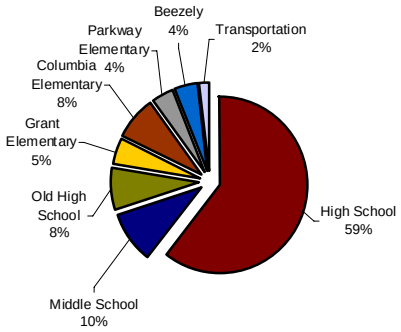
	Energy Savings		Demand Savings	Cost Savings	Post Annual Energy Indicies		
	Electric	Savings Total	Electric	Savings Total	Energy Use Intensity	Cost per ft2	Load Factor
Building	*MMBTU*	*MMBTU*	*MBTUH*	*$/year*	*kBTU/ft²*	*$/sf-yr*	*%*
High School	5,614	5,614	5,689	$27,389	48.7	$0.60	24.3%
Middle School	888	888	2,612	$7,098	45.9	$0.59	26.0%
Old High School	711	711	161	$5,936	30.8	$0.32	24.8%
Grant Elementary	444	444	922	$3,508	39.2	$0.37	22.0%
Columbia Elementary	719	719	1,284	$5,524	40.9	$0.36	32.4%
Parkway Elementary	409	409	5	$3,314	45.7	$0.46	28.6%
Beezely	388	388	37	$3,296	23.5	$0.25	21.0%
Transportation	147	147	0	$1,145	106.4	$0.99	-
All Total	**9,321**	**9,321**	**10,709**	**$57,210**	**44.0**	**$0.49**	

Note: The total above doesn't inlcude savings associated with computer power management. Implementing power management will net an addition $340 in savings.

Energy Costs Savings



Building Impact



Baseline Energy Usage

All of the buildings' utility bills were analyzed in order to develop a baseline energy usage for each facility. The table below shows the baseline energy usage for each facility.

Facility Electricity Baseline Usage by Month and Building — **Ephrata School District**

Electrical Usage - Monthly Consumption by Building

	January	February	March	April	May	June	July	August	September	October	November	December	Total Annual
	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh
High School	263,654	239,462	243,021	212,713	228,714	170,055	196,149	181,131	270,229	272,851	260,920	275,835	**2,814,735**
Middle School	150,571	105,558	87,698	71,221	51,023	41,594	43,067	46,296	64,152	77,834	103,588	105,511	**948,113**
Old High School	84,431	57,101	44,444	31,689	14,712	12,412	11,807	12,311	18,522	46,134	72,571	92,236	**498,369**
Grant Elementary	92,870	64,303	50,756	38,116	22,504	17,484	16,244	18,834	23,541	35,176	60,841	64,332	**505,001**
Columbia Elementary	104,844	75,809	62,589	48,454	33,719	22,872	22,004	25,677	36,557	51,185	75,840	78,256	**637,806**
Parkway Elementary	78,953	60,745	47,706	32,434	25,815	16,554	23,615	24,667	29,612	38,820	60,461	83,836	**523,218**
Beezely	53,302	33,255	23,777	17,687	9,808	9,203	12,018	12,581	12,672	18,281	31,236	33,379	**267,200**
Transportation	59,890	44,668	35,531	28,310	16,139	9,299	6,339	6,536	9,947	28,667	47,235	62,220	**354,780**
Total	**888,514**	**680,900**	**595,522**	**480,626**	**402,436**	**299,473**	**331,243**	**328,034**	**465,230**	**568,948**	**712,691**	**795,606**	**6,549,222**

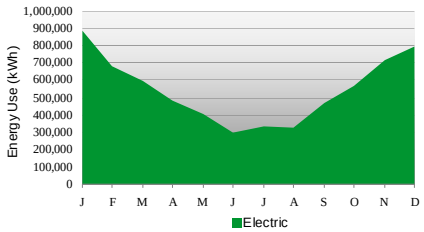
Electrical Demand - Monthly Demand by Building

	January	February	March	April	May	June	July	August	September	October	November	December	Total Annual
	kW	*kW*	*kW*	*kW*	*kW*	*kW*	*kW*	*kW*	*kW*	*kW*	*kW*	*kW*	*kW*
High School	688	650	657	725	746	672	541	632	772	726	722	722	**8,255**
Middle School	483	439	426	403	345	230	190	230	321	393	455	468	**4,383**
Old High School	210	188	158	127	81	92	47	53	89	159	197	243	**1,646**
Grant Elementary	299	255	253	273	197	149	141	131	169	205	252	279	**2,603**
Columbia Elementary	247	212	194	170	146	135	124	148	174	189	226	216	**2,182**
Parkway Elementary	222	185	178	149	124	89	70	94	143	178	226	277	**1,936**
Beezely	120	102	87	81	55	43	42	52	66	94	119	150	**1,011**
Transportation	167	154	137	101	83	50	21	21	35	97	142	166	**1,173**
Total	**2,437**	**2,187**	**2,090**	**2,030**	**1,777**	**1,460**	**1,176**	**1,362**	**1,768**	**2,040**	**2,339**	**2,523**	**23,189**

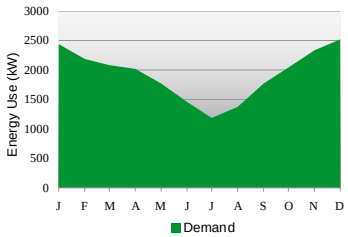
Electrical Usage - Monthly Costs by Building

	January	February	March	April	May	June	July	August	September	October	November	December	Total Annual
	$	*$*	*$*	*$*	*$*	*$*	*$*	*$*	*$*	*$*	*$*	*$*	*$*
High School	$6,759	$6,296	$6,370	$6,295	$6,581	$5,543	$5,290	$5,503	$7,205	$7,036	$6,871	$7,056	**$76,807**
Middle School	$4,503	$3,761	$3,484	$3,185	$2,685	$1,997	$1,851	$2,094	$2,742	$3,221	$3,803	$3,885	**$37,210**
Old High School	$2,502	$1,790	$1,461	$1,129	$606	$536	$500	$516	$742	$1,505	$2,193	$2,705	**$16,184**
Grant Elementary	$2,663	$1,893	$1,535	$1,195	$773	$641	$606	$677	$806	$1,110	$1,795	$1,894	**$15,588**
Columbia Elementary	$2,881	$2,125	$1,781	$1,413	$1,030	$747	$725	$820	$1,104	$1,484	$2,126	$2,189	**$18,425**
Parkway Elementary	$2,359	$1,885	$1,546	$1,148	$976	$717	$919	$946	$1,075	$1,314	$1,878	$2,486	**$17,248**
Beezely	$1,539	$1,018	$771	$612	$407	$392	$465	$479	$482	$628	$965	$1,021	**$8,779**
Transportation	$1,711	$1,315	$1,077	$889	$572	$394	$290	$298	$411	$898	$1,381	$1,771	**$11,007**
Total	**$24,917**	**$20,083**	**$18,025**	**$15,866**	**$13,630**	**$10,967**	**$10,645**	**$11,334**	**$14,566**	**$17,197**	**$21,012**	**$23,007**	**$201,248**

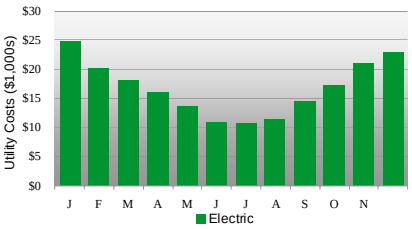
Electric Consumption Baseline Usage



Electric Demand Baseline



Electric Baseline Costs



Post Project Energy Usage

After the computer energy modeling, the energy efficiency measures for each building the results were used to create post-project energy usages for each facility. The table below shows the post project energy usage for each facility.

Facility Electricity Savings by Month and Building — **Ephrata School District**

Electrical Savings - Monthly Consumption Savings by Building

	January	February	March	April	May	June	July	August	September	October	November	December	Total Annual
	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh
High School	130,576	128,177	128,433	132,557	143,116	103,221	121,646	114,984	172,384	153,899	143,758	172,010	**1,644,761**
Middle School	32,933	20,686	17,335	21,727	13,794	24,100	25,965	18,521	16,760	18,138	22,471	27,842	**260,273**
Old High School	27,365	21,798	18,466	17,512	10,318	9,240	6,208	6,795	10,843	21,241	26,198	32,351	**208,334**
Grant Elementary	19,279	12,418	10,408	11,986	6,047	9,160	9,117	6,928	6,361	8,885	13,167	16,435	**130,192**
Columbia Elementary	28,024	19,304	16,449	18,495	11,204	16,134	15,337	12,192	11,697	15,936	20,996	24,811	**210,579**
Parkway Elementary	10,844	9,704	9,854	11,153	8,231	9,551	11,274	6,690	6,202	10,187	11,044	15,243	**119,980**
Beezely	14,625	11,722	9,346	10,866	7,631	5,920	6,746	6,793	8,172	9,725	11,248	11,030	**113,826**
Transportation	7,259	5,414	4,306	3,431	1,956	1,127	768	792	1,206	3,474	5,725	7,541	**43,000**
Total	**270,904**	**229,224**	**214,599**	**227,727**	**202,297**	**178,453**	**197,062**	**173,695**	**233,625**	**241,486**	**254,608**	**307,265**	**2,730,944**

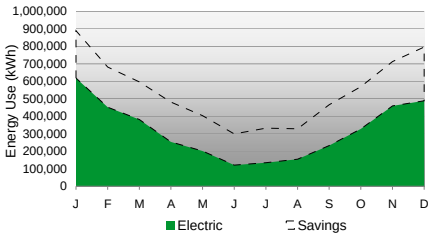
Electrical Savings - Monthly Demand Savings by Building

	January	February	March	April	May	June	July	August	September	October	November	December	Total Annual
	kW	*kW*	*kW*	*kW*	*kW*	*kW*	*kW*	*kW*	*kW*	*kW*	*kW*	*kW*	*kW*
High School	-131	4	-60	19	337	313	345	226	326	301	-32	19	**1,667**
Middle School	64	61	60	78	58	86	66	51	63	55	63	61	**765**
Old High School	6	6	5	4	3	2	0	1	1	5	6	7	**47**
Grant Elementary	7	6	6	28	40	54	43	32	38	5	6	8	**270**
Columbia Elementary	28	24	23	22	34	51	39	40	43	22	26	25	**376**
Parkway Elementary	0	0	0	0	1	0	0	0	0	0	0	0	**1**
Beezely	1	1	1	1	1	0	0	1	1	1	1	1	**11**
Transportation	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**-25**	**102**	**35**	**152**	**475**	**506**	**492**	**350**	**472**	**389**	**70**	**121**	**3,138**

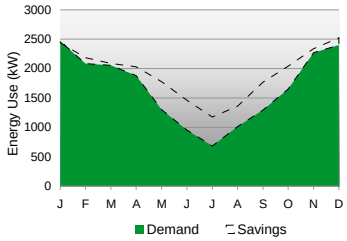
Electrical Savings - Monthly Cost Savings by Building

	January	February	March	April	May	June	July	August	September	October	November	December	Total Annual
	$	*$*	*$*	*$*	*$*	*$*	*$*	*$*	*$*	*$*	*$*	*$*	*$*
High School	$1,030	$1,587	$1,311	$1,707	$3,219	$2,626	$2,988	$2,389	$3,527	$3,192	$1,623	$2,190	**$27,389**
Middle School	$680	$518	$475	$611	$528	$793	$766	$605	$504	$461	$548	$608	**$7,098**
Old High School	$712	$567	$481	$519	$379	$361	$222	$242	$376	$553	$682	$842	**$5,936**
Grant Elementary	$517	$332	$280	$322	$162	$247	$263	$186	$171	$237	$351	$440	**$3,508**
Columbia Elementary	$729	$502	$428	$481	$292	$441	$421	$317	$304	$415	$546	$646	**$5,524**
Parkway Elementary	$282	$253	$256	$290	$214	$379	$354	$174	$161	$265	$287	$397	**$3,314**
Beezely	$381	$305	$243	$302	$295	$232	$221	$213	$271	$253	$293	$287	**$3,296**
Transportation	$189	$141	$112	$89	$51	$29	$33	$34	$31	$90	$149	$196	**$1,145**
Total	**$4,520**	**$4,205**	**$3,587**	**$4,322**	**$5,140**	**$5,109**	**$5,267**	**$4,161**	**$5,346**	**$5,466**	**$4,481**	**$5,606**	**$57,210**

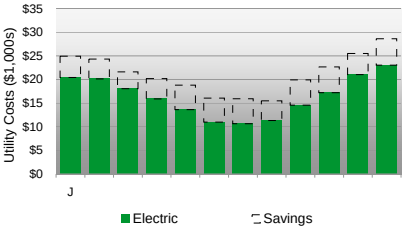
Electric Consumption Savings



Electric Demand Savings



Utility Dollar Savings



ENERGY EFFICIENCY MEASURES (EEMS)

Detailed Scope

The following EEMs have been developed and recommended for inclusion in the project.

EPHRATA HIGH SCHOOL

EEM 1.1 – HS Air Systems Efficiency Measures

- Replace the existing V-belt drives of the supply and return air fans of three (3) air handling units (AHU-1,2&3) serving gymnasium, classrooms and locker rooms with new synchronous belt drives. The synchronous belt drives will reduce fan motor energy usage and electric demand charges. The positive tooth/groove engagement of synchronous belt drives will eliminate belt slipping and retensioning adjustment. The synchronous belt drives will last 3 - 4 times longer than the existing V-belt drives.

- Replace the existing standard efficiency supply and return fan motors of three (3) air handling units (AHU-1,2 &3) serving gymnasium, classrooms and locker rooms with premium efficiency fan motors. The premium efficiency motors will reduce fan motor energy usage, electrical demand charges and motor wear and tear.

- Install a new supply air duct silencer and 4 inch thick double walled acoustical panels in the supply air fan casing of the high pressure Variable Air Volume (VAV) air handling unit (AHU-2) serving classrooms and commons areas for sound attenuation.

- Replace the existing “throw-away” fiberglass air filters of the high pressure Variable Air Volume (VAV) air handling unit (AHU-2) serving classrooms and commons areas with a new one inch thick V-bank “Dynamic” air cleaners to reduce ventilation air requirements and improve indoor air quality. The “Dynamic” air cleaners will remove dangerous airborne particles including odors, bacteria, allergens, fine dust, mold, pollen and volatile organic compounds (VOCs) without producing any harmful ozone. The “Dynamic” air cleaner media pad will need replacement only once in 2 years.

- Implement air side modifications to the high pressure Variable Air Volume (AHU-2) duct system to improve comfort levels, reduce excessive air pressures and sound levels as well as provide proper airflows based on current thermal loads. The air side modifications will involve duct modifications, replacement of some diffusers and couple of VAV boxes, installation of additional return air grilles and balancing dampers and rebalance of VAV system.

EEM 1.2 – HS Chilled Water Systems Efficiency Measures

- Replace the existing 25 year old inefficient air cooled reciprocating chiller with a new energy efficient air cooled screw chiller with variable speed drive to maximize chiller part load efficiency. The new chiller will reduce energy usage and maintenance cost.

- Drain the chilled water containing approximately 50% ethylene glycol from the chilled water piping system and properly dispose it from site. Flush the chilled water piping system thoroughly to remove all residual glycol. Fill the chilled water piping system with city water and chemicals to protect the piping from scale and corrosion. Heat trace and re-insulate all exterior chilled water piping for freeze protection. Install an electric duct heater in the outside air intake duct of AHU-2 air handling unit to preheat the outside air for freeze protection of chilled water coil. Removal of ethylene glycol from chilled water piping system will reduce energy usage and maintenance cost as well as increase chiller cooling capacity.

- Replace the existing 25 year old inefficient chilled water pump and motor with a new high efficiency chilled water pump with an inverter duty motor. The new chilled water pump will reduce energy usage and wear tear.

EEM 1.3 – HS Building Automation Systems Efficiency Measures

- Install a Direct Digital Control (DDC) system to replace the existing pneumatic controllers for all HVAC equipment. Existing pneumatic actuators will be left in place and electro pneumatic transducers will be installed to integrate DDC controllers with the pneumatic actuators.

- Implement HVAC schedules to control HVAC equipment to setup and setback temperatures during times when spaces are unoccupied.

- Install Variable Frequency Drives (VFD) for the supply and return fans of the large Variable Air Volume (VAV) air handler serving the high school and decommission the existing air volume control devices for this air handler.

- Install an airflow measuring station in the outside air intake duct of the high pressure Variable Air Volume (VAV) air handler to continuously monitor outside airflow for compliance with ventilation air requirements.

- Install Variable Frequency Drives (VFD) for the supply and return fans of the gymnasium air handler and implement and new control sequence to reduce fan energy consumption.

- Implement a Demand Control Ventilation (DCV) strategy in the gymnasium by installing CO_2 sensors to measure occupancy levels control the outdoor air damper to provide adequate amounts of ventilation air based on occupancy.

- Convert the chilled water pumping system to a variable flow system by installing a VFD for the chilled water pump and controlling its speed based on cooling demand.

- Increase delta-T of chilled water system by resetting the operating set points of chiller.

- The networked computers will be augmented with a specialized software package to enable the IT staff to automate and schedule the computers from a centralized point. This will standardize the operational hours of the networked computers and allow the district to have much better control of the idle power consumption of the approximately 150 computers in the school.

EEM 1.4 – HS Lighting Systems Efficiency Measures

- Retrofit Existing T12 lighting systems to high-efficiency T8 lamps with electronic ballasts. This will decrease the energy use of the lighting systems in the building and increase the lighting quality of the spaces.

- Convert gymnasium lighting to high-efficiency T5 high-bay fixtures. This will reduce energy use in this space and at the same time, improve lighting quality.

- Control commons architectural lighting with daylight sensors so that lamps facing the ceiling will not illuminate when there is sufficient natural light entering the space. Below certain light levels, these lights will be enabled so as to supplement the lamps that are directed downward.

- Existing LED exits signs with incandescent lamps will be retrofitted to LED technology.

EPHRATA MIDDLE SCHOOL

EEM 2.1 – MS Chilled Water Systems Efficiency Measures

- Replace the existing 25 year old inefficient air cooled reciprocating chiller with a new energy efficient air cooled scroll chiller with 70% fewer moving parts. The new chiller will reduce energy usage and maintenance cost.

- Drain the chilled water containing about 50% ethylene glycol from the chilled water piping system and properly dispose it from site. Flush the chilled water piping system thoroughly to remove all residual glycol. Fill the chilled water piping system with city water and chemicals to protect the piping from scale and corrosion. Heat trace and re-insulate all exterior chilled water piping for freeze protection. Removal of ethylene glycol from chilled water piping system will reduce energy usage and maintenance cost as well as increase chiller cooling capacity.

- Replace the existing 25 year old inefficient chilled water pump and motor with a new high efficiency chilled water pump with an inverter duty motor. The new chilled water pump will reduce energy usage and wear tear.

EEM 2.2 – MS Building Automation Systems Efficiency Measures

- Install a Direct Digital Control (DDC) system to replace the existing pneumatic controllers for all HVAC equipment. Existing pneumatic actuators will be left in place and electro pneumatic transducers will be installed to integrate DDC controllers with the pneumatic actuators.
  Implement HVAC schedules to control HVAC equipment to setup and setback temperatures during times when spaces are unoccupied.

- Implement a Demand Control Ventilation (DCV) strategy in the gymnasium and multipurpose room by installing CO_2 sensors to measure occupancy levels control the outdoor air damper to provide adequate amounts of ventilation air based on occupancy.

- Convert the chilled water pumping system to a variable flow system by installing a VFD for the chilled water pump and controlling its speed based on cooling demand.

- Implement a control schedule for the domestic hot water circulating pump to disable the pump when the building is unoccupied.

- Increase delta-T of chilled water system by resetting the operating set points of chiller.

- The networked computers will be augmented with a specialized software package to enable the IT staff to automate and schedule the computers from a centralized point. This will standardize the operational hours of the networked computers and allow the district to have much better control of the idle power consumption of the approximately 75 computers in the school.

OLD HIGH SCHOOL (FINE ARTS/GYM)

EEM 3.1 – Old HS Air Systems Efficiency Measures

- Install a variable speed 24’ diameter destratifying fan in the Gymnasium to reduce temperature stratification and energy usage as well as improve comfort levels.

EEM 3.2 – Old HS Building Automation Systems Efficiency Measures

- Install a Direct Digital Control (DDC) system to control the existing HVAC equipment.

- Implement HVAC schedules to control HVAC equipment to setup and setback temperatures during times when spaces are unoccupied.

- The networked computers will be augmented with a specialized software package to enable the IT staff to automate and schedule the computers from a centralized point. This will standardize the operational hours of the networked computers and allow the district to have much better control of the idle power consumption of the approximately 6 computers in the school.

EEM 3.3 – Old HS Building Envelope Efficiency Measures

- Install weather stripping material for the exterior doors on the East side of the building to reduce infiltration from existing leakage.

EEM 3.4 – Old HS Lighting Systems Efficiency Measures

- Convert gymnasium lighting to high-efficiency T5 high-bay fixtures. This will reduce energy use in this space and at the same time, improve lighting quality.

- Any remaining T12 fixtures will be retrofitted to T8 lamps with electronic ballasts.

BEEZLEY SPRINGS / DISTRICT OFFICES

EEM 4.1 – Beezley Building Automation Systems Efficiency Measures

- Install a Direct Digital Control (DDC) system to control the existing HVAC equipment.

- Implement HVAC schedules to control HVAC equipment to setup and setback temperatures during times when spaces are unoccupied.

- The networked computers will be augmented with a specialized software package to enable the IT staff to automate and schedule the computers from a centralized point. This will standardize the operational hours of the networked computers and allow the district to have much better control of the idle power consumption of the approximately 17 computers in the building.

EEM 4.2 – Beezely Lighting Systems Efficiency Measures

- Convert gymnasium lighting to high-efficiency T5 high-bay fixtures. This will reduce energy use in this space and at the same time, improve lighting quality.

- Any remaining T12 fixtures will be retrofitted to T8 lamps with electronic ballasts.

COLUMBIA RIDGE ELEMENTARY

EEM 5.1 – Columbia Ridge ES Chilled Water Systems Efficiency Measures

- Replace the existing 25 year old inefficient air cooled reciprocating chiller with a new energy efficient air cooled scroll chiller with 70% fewer moving parts. The new chiller will reduce energy usage and maintenance cost.

- Drain the chilled water containing about 50% ethylene glycol from the chilled water piping system and properly dispose it from site. Flush the chilled water piping system thoroughly to remove all residual glycol. Fill the chilled water piping system with city water and chemicals to protect the piping from scale and corrosion. Heat trace and re-insulate all exterior chilled water piping for freeze protection.. Removal of ethylene glycol from chilled water piping system will reduce energy usage and maintenance cost as well as increase chiller cooling capacity.

- Replace the existing 25 year old inefficient chilled water pump and motor with a new high efficiency chilled water pump with an inverter duty motor. The new chilled water pump will reduce energy usage and wear tear.

EEM 5.2 – Columbia Ridge ES Building Automation Systems Efficiency Measures

- Install a Direct Digital Control (DDC) system to replace the existing pneumatic controllers for all HVAC equipment. Existing pneumatic actuators will be left in place and electro pneumatic transducers will be installed to integrate DDC controllers with the pneumatic actuators.

- Implement HVAC schedules to control HVAC equipment to setup and setback temperatures during times when spaces are unoccupied.

- Implement a Demand Control Ventilation (DCV) strategy in the gymnasium by installing CO_2 sensors to measure occupancy levels control the outdoor air damper to provide adequate amounts of ventilation air based on occupancy.

- Convert the chilled water pumping system to a variable flow system by installing a VFD for the chilled water pump and controlling its speed based on cooling demand.

- Increase delta-T of chilled water system by resetting the operating set points of chiller.

- The networked computers will be augmented with a specialized software package to enable the IT staff to automate and schedule the computers from a centralized point. This will standardize the operational hours of the networked computers and allow the district to have much better control of the idle power consumption of the approximately 74 computers in the school.

GRANT ELEMENTARY

EEM 6.1 – Grant Elementary Chilled Water Systems Efficiency Measures

- Replace the existing 25 year old inefficient air cooled reciprocating chiller with a new energy efficient air cooled scroll chiller with 70% fewer moving parts. The new chiller will reduce energy usage and maintenance cost.

- Drain the chilled water containing about 50% ethylene glycol from the chilled water piping system and properly dispose it from site. Flush the chilled water piping system thoroughly to remove all residual glycol. Fill the chilled water piping system with city water and chemicals to protect the piping from scale and corrosion. Heat trace and re-insulate all exterior chilled water piping for freeze protection.. Removal of ethylene glycol from chilled water piping system will reduce energy usage and maintenance cost as well as increase chiller cooling capacity.

- Replace the existing 25 year old inefficient chilled water pump and motor with a new high efficiency chilled water pump with an inverter duty motor. The new chilled water pump will reduce energy usage and wear tear.

EEM 6.2 – Grant Elementary Building Automation Systems Efficiency Measures

- Install a Direct Digital Control (DDC) system to replace the existing pneumatic controllers for all HVAC equipment. Existing pneumatic actuators will be left in place and electro pneumatic transducers will be installed to integrate DDC controllers with the pneumatic actuators.

- Implement HVAC schedules to control HVAC equipment to setup and setback temperatures during times when spaces are unoccupied.

- Implement a Demand Control Ventilation (DCV) strategy in the multipurpose room by installing CO_2 sensors to measure occupancy levels control the outdoor air damper to provide adequate amounts of ventilation air based on occupancy.

- Convert the chilled water pumping system to a variable flow system by installing a VFD for the chilled water pump and controlling its speed based on cooling demand.

- Increase delta-T of chilled water system by resetting the operating set points of chiller.

- The networked computers will be augmented with a specialized software package to enable the IT staff to automate and schedule the computers from a centralized point. This will standardize the operational hours of the networked computers and allow the district to have much better control of the idle power consumption of the approximately 72 computers in the school.

PARKWAY ELEMENTARY

EEM 7.1 – Parkway Elementary Building Automation Systems Efficiency Measures

- Install a Direct Digital Control (DDC) system to control the existing HVAC equipment.

- Implement HVAC schedules to control HVAC equipment to setup and setback temperatures during times when spaces are unoccupied.

- The networked computers will be augmented with a specialized software package to enable the IT staff to automate and schedule the computers from a centralized point. This will standardize the operational hours of the networked computers and allow the district to have much better control of the idle power consumption of the approximately 38 computers in the school.

MAINTENANCE & TRANSPORTATION BUILDING

EEM 8.1 – Maint & Transportation Building Automation Systems Efficiency Measures

- Implement HVAC schedules to control HVAC equipment to setup and setback temperatures during times when spaces are unoccupied.

- Implement power saving strategy that will disable electric unit heaters if bay doors remain open for extended periods of time. Generally, the bay doors will open and close periodically as vehicles are moved in and out. This tends to flush the hot air from the building and the electric unit heaters must reheat the air. If the doors remain open, the best strategy is to disable the heaters until the doors close, reducing wasted heat energy.

EEMS EVALUATED, BUT NOT INCLUDED

Old High School – Additional Roof Insulation

- The gym roof currently does not have visible insulation on the underside of the structure. It does have a foam-insulated roof coating, which provides very good insulation against heat loss. Because of this, adding insulation underneath the roof on the inside of the gym did not prove to be effective in creating significant energy savings. For this reason it was not deemed to be a good value to include in the project.

All Schools – Lighting Systems

- Exterior lighting strategies were developed, however at this time it appears that, because of extremely low electric rates, the payback was too long to be seriously considered as a good value to the district.

- Motion and occupancy sensors were developed for integration with the lighting and HVAC systems in all of the buildings. In most cases, this can create significant energy savings because the sensors will disable lights as well as HVAC systems when the rooms are empty. In the case of this district, the utility rates are too low to justify the extra expenditure in exchange for the relatively few energy dollars saved.

- Similar to the gyms, high-bay lighting in the Maintenance and Transportation building would increase energy efficiency and improve the quality of light in the bay areas. Again, due to the low utility rates, lower occupancy times and smaller physical area of the building, the payback was not justifiable for inclusion in this project.

Key Operating Strategies

Building / EEM	High School	Middle School	Old High School	Beezley Springs	Columbia Ridge	Grant Elementray	Parkway Elementary	Maintenance & Transportaiton
Glycol Removal	X	X			X	X		
Chilled Water System Upgrades	X	X			X	X		
Install Destratifying Fan			X					
Install VFDs & Premium Efficiency Motors For AHU Fans	X							
VAV Optimization & Upgrade	X							
Demand Control Ventilation	X	X			X	X	X	
HVAC Scheduling	X	X	X	X	X	X	X	X
DHW Pump Scheduling		X						
Improved Insulation			NF					
Weather Stripping			X					
Lighting Retrofits	X		X	X				
Noise Attenuation	X							

X –Indicates recommended general facility-wide application.
NF – Indicates non-feasible EEM due to financial or technical constraints
Refer to below tables for corresponding EEM operating strategy.

Ephrata School District			
Operating Strategy	**Concept**	**Performance Metric**	**Primary Variables Impacting Performance**
Glycol Removal			
Remove ethylene glycol from chilled water piping system	Drain chilled water containing ethylene glycol from chilled water piping system. Flush and refill piping with city water and chemicals for scale and corrosion protection. Electrically heat trace and reinsulate exterior chilled water piping for freeze protection. Run chilled water pump continuously when outside air temperature is below 35 + or - 2 deg. F. Install an electric duct heater to preheat outside air for freeze protection of chilled water coil of VAV air handler in High School.	Reduced energy required for cooling and chilled water pumping due to increased heat transfer from cooling coil and reduced pump head.	Maintenance of ongoing water treatment of chilled water piping system
Chilled Water System Upgrades			
A - Installation of New Chillers			
Install new energy efficient chiller	Replacing existing aging chiller with a new energy efficient chiller.	Reduced energy required for cooling due to higher full load and part load efficiency of new chiller. Reduced maintenance cost as new chiller is more reliable with 70% fewer moving parts.	1) Manual override of chiller controls 2) Maintenance of chiller
B - Implement Variable Speed Pumping			
Install variable primary chilled water system	Replace existing chilled water pump with a new high efficiency chilled water pump and inverter duty motor. Install a VFD for chilled water pump to provide a variable primary chilled water system. The chilled water pump speed will be varied to match building cooling load and preset chilled water operating pressure set point.	Reduced energy required for chilled water pumping as chilled water pump speed will be varied to match building cooling load.	Manual override of VFD pumping controls
C - Increase Delta T			
Increase delta T of chiller	Reset the chiller operating control set points to provide a chilled water delta T of 12 deg..F or higher (adjustable). The new chilled water delta T will be set at 43-55 deg. F	Reduced energy required for chilled water pumping due to reduced chilled water flow.	Manual override of chiller operating control set points
Install De-stratification Fan			
Install destratifying fan in Gymnasium	Install a new 24' diameter,10 blade variable speed destratifying fan in the center of Gymnasium.	Reduced heating requirements for Gymnasium due to reduced temperature stratification. Improved comfort levels due to reduced temperature stratification and high volume of airflow.	Maintenance of destratifying fan

Ephrata School District			
Operating Strategy	**Concept**	**Performance Metric**	**Primary Variables Impacting Performance**
Install VFDs & Premium Efficiency Motors For AHU Fans			
Install VFDs and premium efficiency motors for AHU fans	Replace the supply and return air fan motors of the two (2) air handlers serving Classrooms & Gymnasium with new premium efficiency fan motors. Install VFDs for the supply and return air fans of the two (2) air handlers serving Classrooms & Gymnasium VFD controls will vary the fan airflows to match space cooling and heating loads.	Reduced energy required for space cooling and heating as well as fan energy due to operation of the two (2) AHUs as a VAV system.	Manual override of VFD fan controls.
VAV Optimization & Upgrade			
A - Supply Air Temperature Reset			
Minimize VAV Reheat by Resetting Supply Air Temperature	Control the supply air temperature to maintain cooling set point in the worst-case zone. Zone temperatures will be monitored and the supply air temperature set point will be increased to highest temperature it can supply while still maintaining all room cooling set points.	Simultaneous heating and cooling will be reduced because the air handler will be supplying warmer air during part-load cooling conditions. This will result in less energy consumption by the zone reheat coils.	Manual override of the supply air temperature set point.
B - Static Pressure Reset			
Minimize Fan Energy Consumption by Resetting the Static Pressure Set point	Control the supply fan VFD to maintain the lowest fan speed required so that one VAV box requiring the most supply air is 90% open. If a box damper opens more than 90% the VFD shall increase the fan speed until the box with the highest demand is open 90%.	Fan energy will be saved by allowing the VFD to lower the fan speed beyond speeds it would achieve with a constant static pressure set point.	1) Manual override of the supply fan speed. 2) Box damper controls not functioning correctly. 3) Maintenance of control system.
C – VAV system Upgrade			
Upgrade VAV System	Upgrade the existing VAV system. This will involve recalculation of space thermal loads, modifying duct work for proper airflows and reduced pressure drops, installing additional return air grilles, replacing some diffusers and VAV boxes, installing new sound attenuators and Dynamic air filters, and rebalancing of VAV system.	Reduced energy required for space cooling and heating as well as fan energy and noise levels due to VAV system upgrade	Maintenance of VAV system
Demand Control Ventilation			
Demand Controlled Ventilation	Equip HVAC units serving gym areas with carbon dioxide sensor to match outside air introduced to the space with outside air requirements due to occupancy.	Reduced energy required to condition ventilation air.	1) Manual override of Demand Controlled Ventilation strategy, 2) Maintenance of carbon dioxide sensors. 3) Poor performance of AHUs/FCUs.

Ephrata School District			
Operating Strategy	**Concept**	**Performance Metric**	**Primary Variables Impacting Performance**
HVAC Scheduling			
A – Setpoints			
HVAC Systems	Minimize occupied heating setpoints and maximize occupied cooling set points on all equipment while maintaining proper temperature control. Disable unfavorable local occupant control to maximize energy savings.	Maintain winter space temperature set point at **68°**F occupied and **55°**F unoccupied. Maintain summer space temperature set point at **74°**F occupied and **90°**F unoccupied.	1) Override of set points
B – Schedule Optimization			
HVAC Equipment Scheduling	Aggressively schedule equipment occupied / unoccupied by evaluating typical operating hours. Four hours of use were modeled each weekend for each facility to allow for manual override operation.	**Elementary Schools & Transportation Building:** Occupied Weekdays: 0600 – 1600 Unoccupied: Weekends: All Hours Weekdays: 1600 – 0600 **Elementary School Gyms** Occupied Weekdays: 0600 – 1800 Unoccupied: Weekends: All Hours Weekdays: 1800 – 0600 **High School, Beezley, Middle School & Old High School** ***Classrooms*:** Occupied Weekdays: 0600 – 1800 Unoccupied: Weekends: All Hours Weekdays: 1800 – 0600 ***Gyms/Auditoriums*:** Occupied Weekdays: 0600 – 1700 Unoccupied: Weekends: All Hours Weekdays: 1700 – 0600	Override of equipment occupied and unoccupied hours outside the range recommended
DHW Pump Scheduling			
Schedule the Domestic Hot Water Circulating Pump	Schedule the operation of the domestic hot water circulating pump and disable the pump when the building is unoccupied	The domestic hot water pump shall be enabled and disabled to the following schedules: Enabled: Weekdays: 0600 – 2000 Disabled: Weekdays: 2000 – 0600 Weekends: All Hours	Override of equipment occupied and unoccupied hours outside the range recommended

Ephrata School District			
Operating Strategy	**Concept**	**Performance Metric**	**Primary Variables Impacting Performance**
Improved Insulation			
Install Additional Roof Insulation	Install additional insulation to improve the thermal efficiency of the roof and reduce the buildings heating loads. Additional insulation shall be added to improve the roof's thermal efficiency by an R value of 6.	Heating energy will be reduced due to a increase in thermal efficiency of the building envelope	The insulation is removed after installation
Weather Stripping			
Install Weather Stripping for exterior Doors	Install weather stripping material around exterior doors to reduce infiltration and improve building thermal efficiency	Heating energy will be reduced due to a increase in thermal efficiency of the building envelope and the decrease in infiltration	The weather stripping material is removed or becomes damaged
Lighting Retrofits			
Reduce connected lighting wattage	Use lamps with higher lumen output per watt.	Lighting density equivalent to corresponding EWCM Summary's Post-EWCM density.	Change in use or occupancy of space

SAVINGS & COST ANALYSIS

The following tables depict the three possible project scope combinations from Schneider Electric's perspective. Although only one meets the cost effectiveness criteria (the 3rd option), we believe the first two are a better fit for the specific scope items desired by the district. It is unfortunate that when we completed our calculations for savings from the chiller replacement and addition of VFDs to the chiller system at the High School using the district's current utility rate, the savings do not come close to the $16K put forth in the LNS Engineering report.

The tables are broken out by each EEM at each school, with the subcontractor costs, savings, and rebate for each EEM shown. The management and other professional service costs and fees below the actual EEM pricing are pre-negotiated through the Department of General Administration's Energy Program.

Please note that all figures are still somewhat tentative and will not truly be finalized until after our discussion in the board work session on 8-23-2010.

This table represents all Energy Efficiency Measures (EEMs) investigated as part of the Investment Grade Audit. The implementation of this project would address all current and foreseen facility needs for many years to come, including replacing all aged chillers throughout the district. However, the selection of this scope, even with 15 year savings financing, would require a total of **$1.15M** in capital (including the $400K already committed) or the reallocation of approximately **$69,000** annually to augment the savings in repaying financing. These figures are after the effects of the OSPI grant being matched at 1.6:1.

SCHNEIDER ELECTRIC OPEN BOOK PRICING
EPHRATA SCHOOL DISTRICT
ALL EEMS

			ALL EEMS - ADDRESSING ALL CURRENT FACILITY NEEDS		
EEM DESCRIPTION	EEM SUBCONTRACTOR COST	SAVINGS	PAYBACK (YRS) BASED ON HIGH COST RANGE	REBATE	PAYBACK (YRS) AFTER REBATE
1.1 HS - Air Systems	**$ 258,727**	**$ 8,455**	**30.6**	**$ 23,837**	**27.8**
1.21 HS - Chilled Water Systems - Glycol Removal	**$ 18,519**	**$ 2,148**	**8.6**	**$ 10,530**	**3.7**
1.22 HS - Chilled Water Systems - New Chiller & Pumping	**$ 335,169**	**$ 3,010**	**111.4**	**$ 19,125**	**105.0**
1.3 HS - Control Systems	**$ 182,886**	**$ 11,969**	**15.3**	**$ 121,924**	**5.1**
1.4 HS - Lighting Systems	**$ 97,499**	**$ 6,707**	**14.5**	**$ 48,660**	**7.3**
2.11 MS - Chilled Water Systems - Glycol Removal	**$ 18,082**	**$ 892**	**20.3**	**$ 4,214**	**15.5**
2.12 MS - Chilled Water Systems - New Chiller & pumping	**$ 173,113**	**$ 1,847**	**93.7**	**$ 9,550**	**88.6**
2.2 MS - Control Systems	**$ 111,909**	**$ 4,359**	**25.7**	**$ 38,290**	**16.9**
3.1 Old HS - Air Systems	**$ 18,148**	**$ 668**	**27.2**	**$ 5,138**	**19.5**
3.2 Old HS - Control Systems	**$ 22,294**	**$ 3,777**	**5.9**	**$ 14,862**	**2.0**
3.3 Old HS - Building Envelope	**$ 263**	**$ 52**	**5.0**	**$ 175**	**1.7**
3.4 Old HS - Lighting Systems	**$ 16,760**	**$ 1,478**	**11.3**	**$ 7,129**	**6.5**
4.1 Beezley - Control Systems	**$ 39,033**	**$ 2,324**	**16.8**	**$ 16,608**	**9.6**
4.2 Beezley - Lighting Systems	**$ 20,214**	**$ 1,224**	**16.5**	**$ 10,346**	**8.1**
5.11 Columbia - Chilled Water Systems -Glycol Removal	**$ 16,903**	**$ 370**	**45.7**	**$ 2,841**	**38.0**
5.12 Columbia - Chilled Water Systems - New Chiller & Pumping	**$ 159,998**	**$ 911**	**175.6**	**$ 7,001**	**167.9**
5.2 Columbia - Control Systems	**$ 119,905**	**$ 4,243**	**28.3**	**$ 32,274**	**20.7**
6.11 Grant - Chilled Water Systems - Glycol Removal	**$ 15,846**	**$ 270**	**58.7**	**$ 2,017**	**51.2**
6.12 Grant - Chilled Water Systems - New Chiller & Pumping	**$ 126,256**	**$ 643**	**196.4**	**$ 4,796**	**188.9**
6.2 Grant - Control Systems	**$ 106,887**	**$ 2,595**	**41.2**	**$ 19,225**	**33.8**
7.1 Parkway - Control Systems	**$ 38,513**	**$ 3,314**	**11.6**	**$ 23,996**	**4.4**
8.1 Maint & Transport - Controls	**$ 11,576**	**$ 799**	**14.5**	**$ 6,000**	**7.0**
9.1 Network Computer Power Management	**$ 3,637**	**$ 340**	**10.7**	**$ 4,330**	**(2.0)**
TOTAL	**$ 1,912,134**	**$ 62,395**	**30.6**	**$ 432,868**	**23.7**

SUBCONTRACTOR COST	$ 1,912,134
SITE SUPERINTENDENT	$ 123,876
ESCO DIRECT CONSTRUCTION COSTS	$ 197,683
SUBTOTAL DIRECT CONSTRUCTION COST	$ 2,233,693
2% OF CONSTRUCTION FOR COST FOR BONDING	$ 44,674
WSST (7.9%) FOR DIRECT CONSTRUCTION COSTS	$ 179,991
CONTINGENCY (3% OF CONST. & PROF. SVCS.)	$ 94,702
SUBTOTAL DIRECT CONSTRUCTION COST	$ 2,553,060
10% OF SUBCOST FOR DESIGN SERVICES	$ 191,213
8% OF CONSTRUCTION FOR CONSTRUCTION MANAGEMENT	$ 178,695
18% OF CONSTRUCTION COST FOR OVERHEAD & PROFIT	$ 402,065
IGA FEE	$ 70,000
PASS - 1st YEAR M&V	$ 36,400
SUBTOTAL OF ESCO PROFESSIONAL SERVICES	$ 878,374
WSST (7.9%) FOR PROFESSIONAL SERVICES	$ 69,392
SUBTOTAL PROFESSIONAL SERVICES	$ 947,765
CONSTRUCTION COSTS + PROFESSIONAL SERVICES	**$ 3,156,741**
GUARANTEED MAX PRICE	**$ 3,500,825**
GA PROJECT MANAGEMENT FEE *Not yet confirmed by GA	$ 52,800
TOTAL CONTRACT FUNDING AUTHORIZATION	**$ 3,553,625**
EPHRATA SCHOOL DISTRICT CAPITAL	**$ (1,150,000)**
OSPI GRANT (Matching Ratio of 1.6:1)	**$ (1,358,852)**
UTILITY REBATES	**$ (432,868)**
DIFFERENCE BETWEEN AVAILABLE FUNDING AND SALE PRICE	**$ 20,611**

Savings-Paid Principal:	($591,294.74)
Rate	0.04
Term (yrs)	15
Annual Maint/Other Contribution:	$0
Additional Principal:	$0.00

For the following project cost/savings table, it was also calculated with 15 year financing and using an additional **$32,000** annually of district funds – presumably from the maintenance and operations budgets. This money may or may not accurately represent true budgetary savings, although it is possible the Ephrata SD Maintenance team will enjoy financial benefits beyond energy savings through this project. This figure was used to show that with a small injection of annual funds the majority of the scope, and all of the most important system improvements for the building occupants, are actually within reach at this time.

SCHNEIDER ELECTRIC OPEN BOOK PRICING
EPHRATA SCHOOL DISTRICT
RECOMMENDED PROJECT

			RECOMMENDED EEMS - ADDRESSING MOST CURRENT FACILITY NEEDS		
EEM DESCRIPTION	EEM SUBCONTRACTOR COST	SAVINGS	PAYBACK (YRS) BASED ON HIGH COST RANGE	REBATE	PAYBACK (YRS) AFTER REBATE
1.1 HS - Air Systems	**$ 258,727**	**$ 8,455**	**30.6**	**$ 23,837**	**27.8**
1.21 HS - Chilled Water Systems - Glycol Removal	**$ 18,519**	**$ 2,148**	**8.6**	**$ 10,530**	**3.7**
1.22 HS - Chilled Water Systems - New Chiller & Pumping	**$ 335,169**	**$ 3,010**	**111.4**	**$ 19,125**	**105.0**
1.3 HS - Control Systems	**$ 182,886**	**$ 11,969**	**15.3**	**$ 121,924**	**5.1**
1.4 HS - Lighting Systems	**$ 97,499**	**$ 6,707**	**14.5**	**$ 48,660**	**7.3**
2.11 MS - Chilled Water Systems - Glycol Removal	$ -	$ -	0.0	$ -	0.0
2.12 MS - Chilled Water Systems - New Chiller & pumping	$ -	$ -	0.0	$ -	0.0
2.2 MS - Control Systems	**$ 111,909**	**$ 4,359**	**25.7**	**$ 38,290**	**16.9**
3.1 Old HS - Air Systems	**$ 18,148**	**$ 668**	**27.2**	**$ 5,138**	**19.5**
3.2 Old HS - Control Systems	**$ 22,294**	**$ 3,777**	**5.9**	**$ 14,862**	**2.0**
3.3 Old HS - Building Envelope	**$ 263**	**$ 52**	**5.0**	**$ 175**	**1.7**
3.4 Old HS - Lighting Systems	**$ 16,760**	**$ 1,478**	**11.3**	**$ 7,129**	**6.5**
4.1 Beezley - Control Systems	**$ 39,033**	**$ 2,324**	**16.8**	**$ 16,608**	**9.6**
4.2 Beezley - Lighting Systems	**$ 20,214**	**$ 1,224**	**16.5**	**$ 10,346**	**8.1**
5.11 Columbia - Chilled Water Systems -Glycol Removal	$ -	$ -	0.0	$ -	0.0
5.12 Columbia - Chilled Water Systems - New Chiller & Pumping	$ -	$ -	0.0	$ -	0.0
5.2 Columbia - Control Systems	**$ 119,905**	**$ 4,243**	**28.3**	**$ 32,274**	**20.7**
6.11 Grant - Chilled Water Systems - Glycol Removal	$ -	$ -	0.0	$ -	0.0
6.12 Grant - Chilled Water Systems - New Chiller & Pumping	$ -	$ -	0.0	$ -	0.0
6.2 Grant - Control Systems	**$ 106,887**	**$ 2,595**	**41.2**	**$ 19,225**	**33.8**
7.1 Parkway - Control Systems	**$ 38,513**	**$ 3,314**	**11.6**	**$ 23,996**	**4.4**
8.1 Maint & Transport - Controls	**$ 11,576**	**$ 799**	**14.5**	**$ 6,000**	**7.0**
9.1 Network Computer Power Management	**$ 3,637**	**$ 340**	**10.7**	**$ 4,330**	**(2.0)**
TOTAL	**$ 1,401,937**	**$ 57,462**	**24.4**	**$ 402,449**	**17.4**

SUBCONTRACTOR COST	$ 1,401,937
SITE SUPERINTENDENT	$ 123,876
ESCO DIRECT CONSTRUCTION COSTS	$ 184,418
SUBTOTAL DIRECT CONSTRUCTION COST	$ 1,710,231
2% OF CONSTRUCTION FOR COST FOR BONDING	$ 34,205
WSST (7.9%) FOR DIRECT CONSTRUCTION COSTS	$ 137,810
CONTINGENCY (3% OF CONST. & PROF. SVCS.)	$ 73,071
SUBTOTAL DIRECT CONSTRUCTION COST	$ 1,955,317
10% OF SUBCOST FOR DESIGN SERVICES	$ 140,194
8% OF CONSTRUCTION FOR CONSTRUCTION MANAGEMENT	$ 136,818
18% OF CONSTRUCTION COST FOR OVERHEAD & PROFIT	$ 307,842
IGA FEE	$ 70,000
PASS - 1st YEAR M&V	$ 36,400
SUBTOTAL OF ESCO PROFESSIONAL SERVICES	$ 691,254
WSST (7.9%) FOR PROFESSIONAL SERVICES	$ 54,609
SUBTOTAL PROFESSIONAL SERVICES	$ 745,863
CONSTRUCTION COSTS + PROFESSIONAL SERVICES	**$ 2,435,690**
GUARANTEED MAX PRICE	**$ 2,701,180**
GA PROJECT MANAGEMENT FEE *Not yet confirmed by GA	$ 52,800
TOTAL CONTRACT FUNDING AUTHORIZATION	**$ 2,753,980**
EPHRATA SCHOOL DISTRICT CAPITAL	**$ (400,000)**
OSPI GRANT (Matching Ratio of 1.6:1)	**$ (1,064,320)**
UTILITY REBATES	**$ (402,449)**
DIFFERENCE BETWEEN AVAILABLE FUNDING AND SALE PRICE	**$ (13,253)**

Savings-Paid Principal:	($544,674.79)
Rate	0.04
Term (yrs)	15
Annual Maint/Other Contribution:	$32,000
Additional Principal:	($355,788.40)

This project represents what Schneider Electric believes to be the project best matching the District's Cost-Effectiveness Criteria and mandatory scope items. It is highly likely that this project will be covered using savings financing (for 12 years), utility rebates, $400,00 in capital (or less if the loan term is extended), and the OSPI grant at a matching ratio of 1.6:1). However, beyond the obvious scope exclusions, the air system improvements at the HS also need to be reduced to only the addition of sound attenuation and the necessary VAV modifications for noise control. The addition of balancing dampers, advanced filtration, etc does not fit within the cost effectiveness criteria along with the rest of the mandatory scope.

SCHNEIDER ELECTRIC OPEN BOOK PRICING
EPHRATA SCHOOL DISTRICT
PROJECT MEETING COST EFFECTIVENESS CRITERIA

PROJECT MEETING COST-EFFECTIVENESS CRITERIA AND MANDATORY SCOPE ITEMS					
EEM DESCRIPTION	EEM SUBCONTRACTOR COST	SAVINGS	PAYBACK (YRS) BASED ON HIGH COST RANGE	REBATE	PAYBACK (YRS) AFTER REBATE
1.1 HS - Air Systems	**$ 62,579**	**$ 8,455**	**7.4**	**$ 23,837**	**4.6**
1.21 HS - Chilled Water Systems - Glycol Removal	**$ 18,519**	**$ 2,148**	**8.6**	**$ 10,530**	**3.7**
1.22 HS - Chilled Water Systems - New Chiller & Pumping	**$ 335,169**	**$ 3,010**	**111.4**	**$ 19,125**	**105.0**
1.3 HS - Control Systems	**$ 182,886**	**$ 11,969**	**15.3**	**$ 121,924**	**5.1**
1.4 HS - Lighting Systems	**$ 97,499**	**$ 6,707**	**14.5**	**$ 48,660**	**7.3**
2.11 MS - Chilled Water Systems - Glycol Removal	$ -	$ -	0.0	$ -	0.0
2.12 MS - Chilled Water Systems - New Chiller & pumping	$ -	$ -	0.0	$ -	0.0
2.2 MS - Control Systems	$ -	$ -	0.0	$ -	0.0
3.1 Old HS - Air Systems	$ -	$ -	0.0	$ -	0.0
3.2 Old HS - Control Systems	**$ 22,294**	**$ 3,777**	**5.9**	**$ 14,862**	**2.0**
3.3 Old HS - Building Envelope	**$ 263**	**$ 52**	**5.0**	**$ 175**	**1.7**
3.4 Old HS - Lighting Systems	**$ 16,760**	**$ 1,478**	**11.3**	**$ 7,129**	**6.5**
4.1 Beezley - Control Systems	**$ 39,033**	**$ 2,324**	**16.8**	**$ 16,608**	**9.6**
4.2 Beezley - Lighting Systems	**$ 20,214**	**$ 1,224**	**16.5**	**$ 10,346**	**8.1**
5.11 Columbia - Chilled Water Systems -Glycol Removal	$ -	$ -	0.0	$ -	0.0
5.12 Columbia - Chilled Water Systems - New Chiller & Pumping	$ -	$ -	0.0	$ -	0.0
5.2 Columbia - Control Systems	$ -	$ -	0.0	$ -	0.0
6.11 Grant - Chilled Water Systems - Glycol Removal	$ -	$ -	0.0	$ -	0.0
6.12 Grant - Chilled Water Systems - New Chiller & Pumping	$ -	$ -	0.0	$ -	0.0
6.2 Grant - Control Systems	$ -	$ -	0.0	$ -	0.0
7.1 Parkway - Control Systems	$ -	$ -	0.0	$ -	0.0
8.1 Maint & Transport - Controls	$ -	$ -	0.0	$ -	0.0
9.1 Network Computer Power Management	**$ 3,637**	**$ 340**	**10.7**	**$ 4,330**	**(2.0)**
TOTAL	**$ 798,852**	**$ 41,484**	**19.3**	**$ 277,526**	**12.6**

SUBCONTRACTOR COST	$ 798,852
SITE SUPERINTENDENT	$ 80,868
ESCO DIRECT CONSTRUCTION COSTS	$ 98,064
SUBTOTAL DIRECT CONSTRUCTION COST	$ 977,784
2% OF CONSTRUCTION FOR COST FOR BONDING	$ 19,556
WSST (7.9%) FOR DIRECT CONSTRUCTION COSTS	$ 78,790
CONTINGENCY (3% OF C)	$ 42,938
SUBTOTAL DIRECT CONSTRUCTION COST	$ 1,119,068
10% OF SUBCOST FOR DESIGN SERVICES	$ 79,885
8% OF CONSTRUCTION FOR CONSTRUCTION MANAGEMENT	$ 78,223
18% OF CONSTRUCTION COST FOR OVERHEAD & PROFIT	$ 176,001
IGA FEE	$ 70,000
PASS - 1st YEAR M&V	$ 29,818
SUBTOTAL OF ESCO PROFESSIONAL SERVICES	$ 433,927
WSST (7.9%) FOR PROFESSIONAL SERVICES	$ 34,280
SUBTOTAL PROFESSIONAL SERVICES	$ 468,207
CONSTRUCTION COSTS + PROFESSIONAL SERVICES	**$ 1,431,267**
GUARANTEED MAX PRICE	**$ 1,587,275**
GA PROJECT MANAGEMENT FEE *Not yet confirmed by GA	$ 52,800
TOTAL CONTRACT FUNDING AUTHORIZATION	**$ 1,640,075**
EPHRATA SCHOOL DISTRICT CAPITAL	**$ (400,000)**
OSPI GRANT (Matching Ratio of 1.6:1)	**$ (631,142)**
UTILITY REBATES	**$ (277,526)**
DIFFERENCE BETWEEN AVAILABLE FUNDING AND SALE PRICE	**$ (893)**

Savings-Paid Principal:	($332,300.59)
Rate	0.04
Term (yrs)	12
Annual Maint/Other Contribution:	$0
Additional Principal:	$0.00

EXECUTIVE SUMMARY

Schneider Electric is pleased to present this proposal for the implementation of energy efficiency measures at Ephrata School District. The enclosed Energy Services Proposal (ESP) follows the requirements contained in the Conditions of the Energy Services Agreement No. 2009-151. As such, the enclosed ESP presents the contractual terms under which Schneider Electric and the State of Washington will work together over the term of the project. This enclosed ESP describes the services rendered, payment methods, guarantees and other aspects of the project.

INTRODUCTION

In July of 2010, Ephrata School District's Directors and Administrators authorized an Investment-Grade Audit with Schneider Electric through the Washington Department of General Administration. This audit was to identify, quantify, and solidify an energy conservation project that could take advantage of the OSPI energy conservation grant program and submit an application on August 27. This IGA report and application were awarded a grant, prompting the creation of an ESP to proceed with the project. Due to concerns with alignment of this project with the long-term plan of the district, a revised ESP was later created to include only the scope and improvements determined to be needed by the Ephrata SD facility planning process. This proposal outlines Schneider Electric's proposed Energy Efficiency Measures (EEMs), corresponding savings, final pricing, and paybacks of each EEM for the final project.

Schneider Electric's findings include:

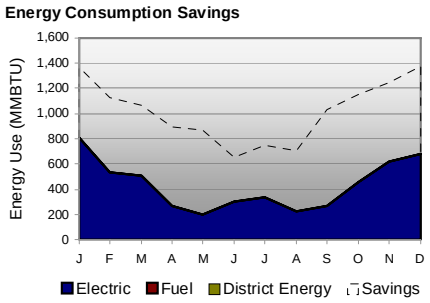
Projected Utility Cost Savings	**$ 34,991**
Guaranteed Utility Cost Savings	**$ 28,906**
Carbon Footprint Reduction (GHG)	**507 tons**
Utility Rebates	**$ 241,551**

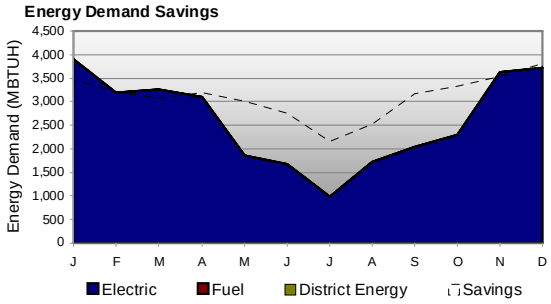
UNIT SAVINGS SUMMARY

The following table illustrates the composite savings Ephrata School District based on the energy efficiency measures Schneider Electric is recommending to Ephrata SD. A breakdown of each school's energy savings is found in Appendix 3.

Facility Energy Consumption and Demand Savings Summary — **Ephrata School District**

Energy Use





	Energy Savings		Demand Savings	Cost Savings	Post Annual Energy Indicies		
	Electric	Savings Total	Electric	Savings Total	Energy Use Intensity	Cost per ft2	Load Factor
Building	*MMBTU*	*MMBTU*	*MBTUH*	*$/year*	*kBTU/ft²*	*$/sf-yr*	*%*
Ephrata High School	6,738	6,738	5,748	$31,656	35.0	$0.55	17.5%
Old High School	162	162	28	$1,308	47.9	$0.46	37.7%
Beezley Administration	130	130	37	$1,042	35.1	$0.35	31.4%
All Total	**7,031**	**7,031**	**5,813**	**$34,007**	**38.0**	**$0.50**	

PROJECT SUMMARY

Schneider Electric proposes the following scope of work for Ephrata School District. A more detailed description of the scope is found in Schedule A.

Building / ECM	High School	Middle School	Old High School	Beezley Springs	Columbia Ridge	Grant Elementray	Parkway Elementary	Maintenance & Transportaiton
Glycol Removal	X							
Chilled Water System Upgrades	X							
Install Destratifying Fan								
Install VFDs & Premium Efficiency Motors For AHU Fans	X							
VAV Optimization & Upgrade	X							
Demand Control Ventilation	X							
HVAC Scheduling	X							
DHW Pump Scheduling								
Improved Insulation								
Weather Stripping								
Lighting Retrofits	X		X	X				
Noise Attenuation	X							

The total funding authorization of the above scope of work is $1,892,646.78. The project's open book pricing, which includes recommended EEMs that the district approved based on payback is found in Appendix 2.

SCOPE OF SERVICES

The scope of services under this ESP includes the design and construction of the proposed measures and as detailed in Schedule A.

GUARANTEES

Schneider Electric is providing two guarantees under this proposal. First, the guaranteed max price for this project is $1,712,284.87 which includes State-held contingency. Second, Schneider Electric guarantees annual energy savings of $28,906 for the project.

ENERGY SERVICES PROPOSAL

This is an Energy Services Proposal by Schneider Electric Buildings Americas, Inc. ("ESCO") for Ephrata School District No. 165/55J, Acting through the Department of General Administration, Division of Facilities Engineering and Architectural Services ("Customer"), whereby ESCO agrees to provide and perform the energy efficiency measures set forth in the attached schedules which are listed below and incorporated herein as if fully copied and set forth at length, subject to the terms and conditions set forth herein:

Schedule A, Scope of Work
Schedule B, Performance Assurance Support Services Agreement
Schedule C, Performance Guarantee
Schedule D, Methodology and Baseline
Schedule E, Payment Schedule
Schedule F, Project Specific Customer Responsibilities
Appendix 1: Project Schedule
Appendix 2: Pricing Sheet and Cash Flow Analysis
Appendix 3: Audit Review Forms (CEMA)

DEFINITIONS

1. "Project" refers to Energy Efficiency Improvements, as set forth in Schedule A: Scope of Work, made to facilities of Customer.
2. "Date of Commencement" is the latest signature date above.
3. The "Contract Documents" consist of this Proposal with conditions set forth herein, the Schedules identified above, Agreement 2009-151 H(8) between the State of Washington Department of General Administration and Schneider Electric, other documents listed in the Proposal and any modification issued after execution of the Contract. The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the work by ESCO. The Contract Documents are complimentary, and ESCO'S performance shall be required only to the extent consistent with the Contract Documents.
4. "Work" means the services required by the Contract Documents, whether completed or partially completed and, includes all labor, materials, equipment and services provided or to be provided by ESCO to fulfill ESCO'S obligations. The Work may constitute the whole or a part of the Project.
5. "Substantial Completion" refers to and shall mean the date the efficiency measures are sufficiently implemented in accordance with the Contract Documents that Customer may utilize the Project for the use for which it is intended, and is fully complete except for minor items, adjustments and/or corrections.
6. The term "day" as used herein shall mean calendar day unless otherwise specifically designated.
7. The term "Change Order" is defined as a written change in the Project executed by both parties.
8. "Implementation Contract" means those portions of this Proposal that refer to the Project.
9. "Financing Agreement" means the financing arrangement that Customer will utilize to provide the funds to pay the Proposal Sum. (See Article 2)
10. "Savings Guarantee Commencement Date" means the first day of the first utility billing period following the month in which ESCO delivers to Customer the Project Warranty Letter.

TERMS AND CONDITIONS OF IMPLEMENTATION PORTION OF AGREEMENT

ARTICLE 1 – DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

1.1 ESCO projects it will achieve Substantial Completion of the entire Work within 365 days from date of commencement, subject to adjustments of this Agreement Time as provided in the Contract Documents.

ARTICLE 2 –SUM AND PAYMENTS

2.1 IMPLEMENTATION CONTRACT PAYMENTS - The total of all Implementation Contract Payments shall be $1,742,269.72 including Washington State Sales Tax, as noted below. These payments shall be made as scheduled in Schedule E: Payment Schedule. If any payment is over thirty (30) days late Customer shall pay to ESCO a 1% late penalty per month and ESCO reserves the right to terminate the Contract due to non-payment upon seven days prior written notice.

Direct Construction Costs	
Direct Subcontractor Costs	$929,773.00
Site Superintendent	$95,722.01
ESCO Direct Construction Costs	$98,249.30
Bonding	$22,474.89
Contingency	$96,577.06
Subtotal for Direct Construction Costs	$1,243,796.26
Professional Services	
Design Services	$92,977.30
Construction Management	$78,662.10
Overhead & Profit	$202,273.98
IGA Fee	$70,000.00
Pass 1st & 2nd Year M&V	$24,575.23
Subtotal of Professional Services	$468,488.61
Washington State Sales Tax	$127,561.92

2.2 PERFORMANCE ASSURANCE SUPPORT SERVICES PAYMENTS – If desired, Customer shall pay annual payments for the PASS Agreement (including M&V) of the amounts listed below. Such extension of this service will require an amendment to the contract between Schneider Electric and State of Washington, Department of General Administration relating to this project at Ephrata School District..

Year One	Included in price, as noted in 2.1
Year Two	Included in price, as noted in 2.1
Year Three	$12,737 (annually renewable through contract amendment as noted above)
Year Four and beyond	Prior year modified by the last 12 months change in CPI.

The initial two-year PASS Agreement begins on the Savings Guarantee Commencement Date.

Payment for each subsequent year's PASS Agreement is due within 30 days of the end of that year's agreement. Customer may cancel the PASS agreement on any anniversary date or at the end of Customer's fiscal year. If Customer cancels the PASS agreement, ESCO reserves the right to cancel the guarantee contract.

ARTICLE 3 – CUSTOMER

3.1 Except for permits and fees, which are the responsibility of ESCO under the Contract Documents, Customer shall secure and pay for necessary approvals, easements, assessments and charges required for the use or occupancy of permanent structures or permanent changes in existing facilities.

3.2 If ESCO fails to correct Work which is not in accordance with the requirements of the Contract Documents or persistently fails to carry out the Work in accordance with the Contract Documents, Customer, upon seven days prior written notice to ESCO, may order ESCO to stop the Work, or any portion thereof, until the cause for such order has been eliminated. However, the right of Customer to stop the Work shall not give rise to a duty on the part of Customer to exercise this right for the benefit of ESCO or any other person or entity.

3.3 Customer agrees to repair or replace as necessary any defective existing equipment that is intended to be reused.

3.4 Information under Customer's control shall be furnished by Customer with reasonable promptness.

The foregoing are in addition to other duties and responsibilities of Customer enumerated herein and especially those in respect to Work by Customer or by a separate contractor, payments and completion, and insurance.

ARTICLE 4 – ESCO

4.1 ESCO shall supervise and direct the Work, using ESCO'S skill and attention. ESCO shall be solely responsible for and have control over means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless Contract Documents give other specific instructions concerning these matters.

4.2 Unless otherwise provided in the Contract Documents, ESCO shall provide and pay for labor, materials, tools, equipment and machinery necessary for the proper execution and completion of the Work.

4.3 ESCO shall enforce strict discipline and good order among ESCO'S employees and other persons carrying out the Contract.

4.4 ESCO warrants to Customer that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform to the requirements of the Contract Documents. ESCO'S warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by Customer, ESCO shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

4.5 Unless otherwise provided in the Contract Documents, ESCO shall pay sales, consumer, use, and other similar taxes which are legally enacted when bids are received or negotiations concluded, whether or not effective or merely scheduled to go into effect, and shall secure and

pay for the building permit and other permits, licenses and inspections necessary for proper execution and completion of the Work.

4.6 ESCO shall comply with and give notices required by laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on performance of the Work.

4.7 ESCO shall keep the premises and surrounding areas free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, ESCO shall remove from and about Project waste materials, rubbish, ESCO'S tools, equipment, machinery and surplus material.

4.8 ESCO shall provide Customer access to the Work in preparation and progress wherever located.

4.9 ESCO shall pay all royalties and license fees; shall defend suits or claims for infringement or patent rights and shall hold Customer harmless from loss on account thereof.

4.10 ESCO shall provide a site superintendent for onsite coordination and supervision. This superintendent shall be on site as deemed appropriate by the ESCO during periods of actual construction.

4.11 ESCO shall provide and implement a project schedule from the execution of the contract to final completion. An outline of that schedule is included in Appendix 1. A more detailed schedule will be completed within 30 days of Notice to Proceed.

4.12 Contractor shall defend, indemnify, and hold Owner and A/E harmless from and against all claims, demands, losses, damages, or costs, as defined by 5.22 of the General Conditions for Washington State Facility Construction, dated March 20, 2003.

ARTICLE 5 – ARBITRATION

5.1 Any controversy or claim arising out of or relating to the Contract, or the breach thereof, shall be settled in accordance with the provisions of the Conditions of the Master Energy Agreement for State of Washington Facilities and Municipalities, dated March 18, 2009.

5.2 Should arbitration be invoked by either party, the hearing location shall be in Pierce County, Washington.

ARTICLE 6 – SUBCONTRACTS

6.1 A Subcontractor is a person or entity who has a direct contract with ESCO to perform a portion of the Work at the site.

6.2 Unless otherwise stated in the Contract Documents or the bidding requirements, ESCO if requested in writing by Customer, shall furnish in writing to Customer the names of the Subcontractors to whom ESCO plans to award work. Contracts between ESCO and Subcontractors shall (1) require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to ESCO by the terms of the Contract Documents, and to assume toward all the obligations and responsibilities which ESCO, by the Contract Documents, assumes toward Customer, and (2) allow to the Subcontractor the benefit of all rights, remedies and redress afforded to ESCO by these Contract Documents.

ARTICLE 7 – CHANGES IN THE WORK

7.1 Customer, with ESCO'S consent, may order changes in Work consisting of additions,

deletions or modifications, the Contract Sum and Contract Time being adjusted accordingly. Such changes in the Work shall be authorized by written Change Order signed by Customer and ESCO.

7.2 The Contract Sum and Contract Time shall be changed only by Change Order.

7.3 The cost or credit to Customer from a change in the Work shall be determined by mutual agreement and, in the absence of such agreement, shall be decided by arbitration as provided in Article 5.

ARTICLE 8 – TIME

8.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Contract, ESCO confirms that the Contract Time is a reasonable period for performing the Work.

8.2 The date of Substantial Completion is the date certified by ESCO in accordance with Paragraph 9.3.

8.3 If ESCO is delayed at any time in progress of the Work by changes ordered in the Work, by labor disputes, fire, unusual delay in deliveries, abnormal adverse weather conditions not reasonably anticipatable, unavoidable casualties or any other causes which are beyond the control of ESCO, then the Contract time shall be extended by Change Order.

ARTICLE 9 – PAYMENTS AND COMPLETION

9.1 Payments shall be made as provided in Article 2 of the Agreement.

9.2 Payments may be withheld on account of (1) defective Work not remedied, (2) claims filed by third parties, (3) failure of ESCO to make payments properly to the Subcontractors or for labor, materials or equipment, (4) persistent failure to carry out the Work in accordance with the Contract Documents.

9.3 Upon substantial completion, ESCO will issue a Certificate of Substantial Completion.

9.4 Final payment shall not become due until ESCO has delivered to Customer a complete release of all liens arising out of the Contract covering all labor, materials, and equipment for which a lien could be filed, or a bond satisfactory to Customer to indemnify Customer against such lien.

9.5 The making of final payment shall constitute a waiver of claims by Customer except those arising from (1) Liens, claims, security interests or encumbrances arising out of the Contract and which are unsettled; (2) Failure of the Work to comply with the requirements of the Contract Documents; or (3) Terms of special warranties required by the Contract Documents.

ARTICLE 10 – PROTECTION OF PERSONS AND PROPERTY

10.1 ESCO shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract. ESCO shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to (1) Employees on the Work and other persons who may be affected thereby; (2) The Work and materials and equipment to be incorporated therein; and (3) Other property at the site or adjacent thereto.

ESCO shall give notices and comply with applicable laws, ordinances, rules, regulations and

lawful orders of public authorities bearing on safety of persons and property and their protection from damage, injury or loss. ESCO shall promptly remedy damage, injury or loss at the site caused in whole or in part by ESCO, a subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which ESCO is responsible under Subparagraphs 10.1 and 10.2, except for damage or loss attributable to acts or omissions of Customer or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of ESCO. The foregoing obligations of ESCO are in addition to ESCO'S obligations under Paragraph 4.10.

10.2 The scope of work or service to be performed by ESCO pursuant to the Contract, and the compensation to be paid to ESCO hereunder for work or services performed, expressly exclude any work or service of any nature associated or connected with the identification, abatement, cleanup, control or removal of environmentally hazardous materials beyond what is specifically defined and identified in Schedule A of the Contract. "Hazardous Materials" to include, but not be limited to, asbestos and PCBs discovered in or on the premises. Customer agrees that all duties and obligations in connection with any hazardous materials located in or on the premises, other than those defined in Schedule A, are strictly Customer's. Customer warrants and represents to the best of Customer's knowledge there are no hazardous materials in or on the premises which will affect, be affected by, come in contact with, or otherwise impact upon or interfere with the work to be performed by ESCO pursuant to this Agreement.

Should ESCO become aware or suspect the presence of hazardous materials beyond those to be addressed in Schedule A during performance of its work under this Agreement, ESCO will be authorized to cease work in the affected area immediately, and will promptly notify Customer of the conditions discovered. Should ESCO stop work because of the discovery or suspicion of hazardous materials, the time for performance of ESCO'S work or service will be extended to cover the period required for abatement, cleanup, or removal of the hazardous materials. ESCO will not be held responsible for any claims, damages, costs, or expenses of any kind associated with the period during which ESCO has stopped work as a result of hazardous materials. If appropriate, ESCO will be entitled to an equitable adjustment of the contract price for any increased costs or other charges incurred by ESCO in connection with the existence of its rights under this paragraph.

Customer will be responsible for taking all necessary steps to correct, abate, clean up, or control hazardous materials not addressed by ESCO in Schedule A in accordance with all applicable statutes and regulations. Customer specifically agrees, to the extent allowed by state law, to indemnify and to hold ESCO, its officers, agents and employees harmless from and against any and all claims, demands, damages, or causes of action in any way arising out of the release of hazardous materials into the air, soil, or any water system or water course, or any actions taken in connection with same, or any failure to act.

ARTICLE 11 – INSURANCE

11.1 ESCO shall purchase from and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, insurance for protection from claims under workers' or workmen's compensation acts and other employee benefit acts which are applicable, claims for damages because of bodily injury, including death, and from claims for damages, other than to the Work itself, to property which may arise out of or result from ESCO'S operation under the Contract, whether such operations be by ESCO or by a Subcontractor or anyone directly or indirectly employed by any of them. This insurance shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater, and shall include contractual liability insurance applicable to ESCO'S obligations under Paragraph 4.10. Certificates of such insurance shall be filed with Customer prior to commencement of the Work.

11.2 Waivers of Subrogation, as defined by 2.06C of the General Conditions for Washington State Facility Construction, dated March 20, 2003.

ARTICLE 12 – CORRECTION OF WORK

12.1 ESCO shall promptly correct Work rejected by Customer for failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed, and shall correct any Work found to be not in accordance with the requirements of the Contract Documents within a period of one year from the date of Substantial Completion of the contract or by terms as an applicable special warranty required by the Contract Documents. The provisions of this Article 12.1 apply to Work done by Subcontractors as well as to Work done by direct employees of ESCO.

12.2 Nothing contained in this Article 12 shall be construed to establish a period of limitation with respect to other obligations, which ESCO might have under the Contract Documents. Establishment of the time period of one year as described in Paragraph 12.1 relates only to the specific obligation of ESCO to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish ESCO'S liability with respect to ESCO'S obligations other than specifically to correct the Work.

ARTICLE 13 – MISCELLANEOUS PROVISIONS

13.1 The Contract shall be governed by the laws of the state of Washington.

13.2 As between Customer and ESCO, any applicable statute of limitation shall commence to run and any alleged cause of action shall be deemed to have accrued (1) Not later than the date of Substantial Completion for acts or failures to act occurring prior to the relevant date of Substantial Completion; (2) Not later than the date of the relevant act or failure to act by ESCO for acts or failures to act occurring after the date of Substantial Completion.

13.3 Should either party to the Contract suffer injury or damage to person or property because of any act or omission of the other party, notification shall be made in writing to such other party within a reasonable time after first observance of such injury or damage.

ARTICLE 14 – TERMINATION OF THE CONTRACT

14.1 If Customer fails to make payments to ESCO as set forth in Schedule E: Payment Schedule, through no fault of ESCO, ESCO may take action as defined by Section 15 of the Conditions of the Master Energy Agreement for State of Washington Facilities and Municipalities, dated March 18, 2009.

14.2 If Customer fails to maintain the equipment and systems responsible for generating the Guaranteed Savings to the point of failure or gross noncompliance with the equipment manufacturer's operating and maintenance manuals through no fault of ESCO, ESCO may, upon seven days' written notice to Customer, terminate the Contract.

14.3 If ESCO defaults or persistently fails or neglects to carry out the Work in accordance with the Contract Documents or fails to perform a provision of the Contract, Customer, after seven days' written notice to ESCO and without prejudice to any other remedy Customer may have, may make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due ESCO.

ARTICLE 15 – OTHER CONDITIONS OR PROVISIONS

15.1 If any provision of this Agreement shall be held to be invalid, illegal, or unenforceable, the validity, legality and enforceability of the remaining provisions shall not be affected or impaired thereby.

15.2 Customer is responsible to provide a stable, high bandwidth IP network and provide ESCO remote access to allow monitoring of system to document contract compliance.

15.3 Notwithstanding any provision to the contrary, payment and performance bonds associated with the contract guarantee only the performance of the installation portion of the contract, and shall not be construed to guarantee the performance of: (i) any efficiency or energy savings guarantees, (ii) any support or maintenance service agreement, or (iii) any other guarantees or warranties with terms beyond one (1) year in duration from the completion of the installation portion of the contract.

SCHEDULE A: SCOPE OF WORK

ENERGY MANAGEMENT SYSTEM SCOPE OF WORK

A Building Automation System (BAS) is to be installed at the facilities listed below. The BAS system will include control and monitoring parameters as outlined below for each facility. The BAS will be controllable from a central workstation located on Ephrata School District's WAN/LAN, which will provide continuous access to the system with a user-friendly graphical Windows interface. Control zones will be programmed for temperature setup and temperature setback. Permanent scheduling, holiday scheduling, and temporary scheduling capabilities for each control zone will be provided. Building KWh will be monitored and trended in the BAS system.

High School

- New DDC controls will be installed on AHU1. Existing pneumatic damper actuators shall be replaced with electronic actuators and all pneumatic valves will be controlled from an electro-to-pneumatic interface. A new Variable Frequency Drive (VFD) on both the supply and return fans will be installed to adjust for building loads and occupancy levels. Ventilation air will also be adjusted to match occupancy levels based on carbon dioxide levels monitored in accordance with ASHRAE guidelines.

- New DDC controls will be installed on AHU2. Existing pneumatic damper actuators shall be replaced with electronic actuators and all pneumatic valves will be controlled from an electro-to-pneumatic interface. A new VFD on both the supply and return fans will be installed to adjust for building loads and occupancy levels. The unit shall reset the supply air temperature and required fan static pressure to match the worst case of the VAV boxes thus reducing the amount of supplied air and need to heat and cool simultaneously.

- New DDC controls will be installed on AHU3. Existing pneumatic damper actuators shall be replaced with electronic actuators. The unit's economizer will be controlled to allow for "free cooling" when outside conditions are acceptable.

- New DDC controls will be installed on AHU4. Existing pneumatic damper actuators shall be replaced with electronic actuators. The unit's economizer will be controlled to allow for "free cooling" when outside conditions are acceptable. Controls will be in place to monitor exhaust air fan 28 to allow for the heat recovery damper to function properly.

- New DDC controls will be installed on AHU5. Existing pneumatic damper actuators shall be replaced with electronic actuators. The units economizer will be controlled to allow for "free cooling" when outside conditions are acceptable.

- New DDC controls will be installed on all VAV boxes. Each VAV Box will report back its position to AHU1 to allow for supply air temperature and supply air static pressure resets. Existing pneumatic dampers will remain in place and controlled through and electro-to-pneumatic interface.

- New DDC controls will be installed on the chilled water system as well as a new VFD being installed on the chilled water pump. Pump speed and chilled water supply temperature shall be reset based on building loads and occupancy levels.

- Selected exhaust fans shall be enabled and disabled according to the occupancy of their air handling units.

Exclusions

- The following items are excluded from Schneider Electric's scope of work:
- Asbestos abatement of any kind.
- Air flow testing and balancing on HVAC equipment will not be included as part of controls work. **Rebalancing of AHU-2 only is included under mechanical scope, but is not part of the controls scope of work.**
- Repair of existing HVAC and control equipment beyond the Scope of Work is excluded. Schneider Electric will reuse existing equipment for the execution of this contract, and assumes the equipment or devices are in good working order. Should the equipment or devices need repair or replacement, this will be the responsibility of the customer. Schneider Electric will create an EDR (equipment deficiency report) to give customer written notification if such equipment or devices are found.
- Schneider Electric will not add or control any window units via the building automation system.
- Schneider Electric will not control any self-contained units (units with integral control, not for remote control) via the building automation system.
- Exhaust fans controlled by occupancy sensors or local switches and exhaust fans that do not exhaust to the exterior of the building will not be integrated with the building automation system.
- Schneider Electric is not responsible for existing safeties on equipment or any life safety equipment. If Schneider Electric is to replace a starter with a VFD, Schneider Electric will tie-in existing safety circuit into the VFD safety circuit. Schneider Electric will not be responsible for the functionality of the existing safety devices. Pre and post testing of these smoke, fire, and life safety systems will be the responsibility of the customer and the sequence will be provided to Schneider Electric.
- Where life safety equipment utilizes compressed air (pneumatics), the source of the air, logic, and actuators will not be removed or modified within the execution of the project.
- Schneider Electric will only control equipment and/or devices shown in the Scope of Work, unless devices are not suitable for automated control. Equipment and devices not in the Scope of Work are excluded.
- If equipment/devices controlled by the existing EMS are not in the Scope of Work, Schneider Electric is not responsible for their functionality.
- Conduit will only be used from controller panels to the lower of a finished ceiling or 8' for all low voltage wiring, and shall be in compliance with local codes and authorities having jurisdiction.
- Schneider Electric will make the final decision for controller selection, point configurations, and end devices selection based on current standards and engineering practices of Schneider Electric.
- Schneider Electric will not be responsible for any modification or extension of the existing WAN/LAN for execution of this project.
- Schneider Electric will not be responsible for controlling the HVAC equipment located in buildings without WAN/LAN network communication. These buildings are excluded from the scope of work.
- Costs of providing access, access control, or security escorts not specified in the Scope of Work are excluded.
- Matching of paint color or ceiling tile color and pattern shall be limited by current commercial availability. Variations in replacement paint color and ceiling tile color due to age, wear, and dirt shall be minimized where possible. Similar or complementary tiles shall be provided where exact matches are not available. Custom paint colors and custom tiles are excluded.

- Any repair patching of existing walls, sheetrock, plaster, brick, wood, etc due to the removal of existing thermostats (for retrofit with DDC Sensor or new thermostat) will be performed by the owner. *(In the rare event that there would be a need for patching or painting (most common when replacing a horizontal thermostat with a vertical-style temperature sensor), it is usually the simplest approach to let the client make these repairs because the client generally already has matching paint and the staff to complete such tasks. This is generally the preferred approach by both Schneider Electric and the client to avoid the added cost and complexity of hiring a paint contractor for very minor work.)*
- Unless specified in the controls scope or in the mechanical scope, the repair or replacement of non-functional actuators, dampers, and valves are the responsibility of the owner.
- Demolition of the existing EMS will be performed as needed to implement the new DDC system (reuse of enclosures, wire, and end devices will be determined by SCHNEIDER ELECTRIC), the total demolition will be the responsibility of the owner, unless otherwise stated.

MECHANICAL SYSTEMS SCOPE OF WORK

INSTALL HIGH EFFIENCY AIR-COOLED SCREW CHILLER

General: This ECM involves replacing the existing 25 year old 200 ton Trane air cooled reciprocating chiller with a new high efficiency 225- 250 ton air-cooled screw chiller with VFD in the same location at the High School.

Schneider Electric will perform the following scope of work:

1. Disconnect and isolate electrically and hydraulically the existing air cooled chiller prior to any demo work.
2. Demo and properly remove from site the existing reciprocating chiller including refrigerant and compressor oil per EPA guidelines.
3. Furnish and install a new high efficiency screw chiller with VFD. **Final equipment selection pending final design engineering, discussion, and approval by Ephrata SD Maintenance Staff.**
4. Furnish and install flex connectors, air vent, strainer, pressure gauges, thermometers and drain for new chiller.
5. Furnish and install flow switch in chilled water supply piping to confirm water flow prior to chiller start up.
6. Install rental chiller piping connections for emergency tie-in.
7. Connect the new chiller to existing chilled water supply/return piping. Modify existing chilled water piping as necessary to match new chiller piping configuration.
8. Insulate the new chilled water supply/return piping with 2” inch thick fiberglass insulation with vapor barrier and weatherproof aluminum jacket.
9. Reconnect existing electrical power wiring (with new fused disconnect) to the new chiller.
10. Provide a separate 120 volt, 20 amp, single-phase electrical service for chiller evaporator heat tape for freeze protection.
11. Provide start-up and commissioning of new chiller.

CONVERT HIGH SCHOOL CHILLED WATER SYSTEM FROM CONSTANT FLOW TO VARIABLE PRIMARY FLOW

General: This ECM involves conversion of existing constant flow chilled water system to variable flow including replacing the existing 25 year old 15-hp chilled water recirculation pump and motor with a new pump and high efficiency motor located in mechanical room of High School.

Schneider Electric will perform the following scope of work:

1. Disconnect and isolate electrically and hydraulically the existing based mounted, end suction, chilled water centrifugal recirculation pump prior to any demo work.

2. Demo and properly remove from site the existing chilled water recirculation pump and associated valving/accessories.
3. Furnish and install a new high efficiency, end suction, base mounted chilled water circulation pump with a 15-20 hp inverter duty motor.
4. Furnish and install suction diffuser; flex connectors, butterfly isolation valves, pressure gauges, thermometers, Pete's plugs and pressure taps.
5. Connect the new chilled water pump to existing chilled water supply/return piping.
6. Install a chilled water bypass line between chilled water supply and return piping to maintain minimum chilled water flow requirements during part load conditions. Install a 2-way control valve in the chilled water bypass line.
7. Insulate the new chilled water supply/return piping and chilled water pump with 1 1/2" inch thick fiberglass insulation with vapor barrier and vinyl jacket.
8. Reconnect existing electrical power wiring (with new fused disconnect) to the new chilled water recirculation pump.
9. Provide start-up and commissioning of new chilled water recirculation pump.

INSTALL PREMIUM EFFICIENCY FAN MOTORS

General: This ECM involves replacing the existing supply and return fan motors of three (3) High School air handling units serving classrooms, gymnasium and locker rooms with new premium efficiency fan motors

Schneider Electric will perform the following scope of work:

1. Remove the existing supply and return air fan motors of AHU-1 (serving gymnasium), AHU-2 (serving classrooms) and AHU-3 (serving boys and girls' locker rooms).
2. Furnish and install new premium efficiency supply and return air fan motors for existing air handling units AHU-1 (25 hp supply fan motor, 7.5 hp return fan motor), AHU-2 (125 hp supply fan motor, 75 hp return fan motor) and AHU-3 (10 hp supply fan motor, 7.5 hp return fan motor).
3. Provide start-up and commissioning of new premium efficiency supply and return air fan motors.

INSTALL SYNCHRONOUS BELT DRIVES

General: This ECM involves replacing the existing supply and return air fan v-belt drives of three (3) High School air handling units serving classrooms, gymnasium and locker rooms with new synchronous belt drives. The positive tooth/groove engagement of synchronous belt drives will eliminate belt slipping and re-tensioning adjustment.

Schneider Electric will perform the following scope of work:

1. Measure the existing supply and return air fan motor RPMs of air handling units AHU-1, AHU-2 and AHU-3 prior to demolition.
2. Remove the existing supply and return air fan v-belt drives of AHU-1 (serving gymnasium), AHU-2 (serving classrooms) and AHU-3 (serving boys and girls' locker rooms).
3. Furnish and install new supply and return air fan synchronous belt drives for existing air handling units AHU-1 (25 hp supply fan motor, 7.5 hp return fan motor), AHU-2 (125 hp supply fan motor, 75 hp return fan motor) and AHU-3 (10 hp supply fan motor, 7.5 hp return fan motor).
4. Adjust the AHU-3 supply and return air fan motor RPMs to match RPMs prior to demolition.
5. Provide start-up and commissioning of new supply and return air fan synchronous belt drives.

REMOVE ETHYLENE GLYCOL FROM CHILLED WATER SYSTEM

General: This ECM involves removal of ethylene glycol from existing chilled water piping system presently used for freeze protection. The exterior chilled water piping will be electrically heat traced instead. Removal of ethylene glycol will result in significant energy savings due to increased heat transfer. This scope of work will be performed at Ephrata High School.

Schneider Electric will perform the following scope of work:

1. Chilled water containing ethylene glycol will be drained from existing chilled water piping system and collected in drums for safe disposal in accordance with EPA guidelines.
2. Chilled water piping system will be thoroughly flushed with water to remove residual ethylene glycol.
3. Chilled water piping system will be filled with water, purged of air, and initially treated with chemicals to inhibit scale and corrosion.
4. Thermo wells will be installed in exterior chilled water supply/return piping for mounting chilled water supply/return temperature sensors.
5. Existing exterior chilled water supply and return piping insulation will be removed.
6. Electrical heat tracing will be installed on exterior chilled water supply and return piping with thermostatic controls for freeze protection.
7. Exterior chilled water supply and return piping will be re-insulated with 2" inch thick fiberglass insulation with vapor barrier and weatherproof aluminum jacket.

INSTALL HIGH EFFICIENCY AIR CLEANING SYSTEM FOR HIGH SCHOOL AHU-2

General: This ECM involves replacing the existing throwaway fiberglass filters of AHU-2 serving classrooms with new 1 inch thick V-bank high efficiency air cleaning system to improve indoor air quality and to reduce the amount of outside air needed for ventilation.

Schneider Electric will perform the following scope of work:

1. Remove existing throwaway fiberglass filters and filter rack from AHU-2.
2. Furnish and install new 1 inch thick V-bank high efficiency air cleaning system including filter rack for AHU-2.
3. Install high efficiency air cleaning system control panel adjacent to AHU-2.
4. Connect plug-in interconnecting wiring from control panel to high efficiency air cleaning system.
5. Provide a new 120 volt single phase electrical power service for control panel for high efficiency air cleaning system.
6. Provide start-up and commissioning of high efficiency air cleaning system.

INSTALL SUPPLY AIR DUCT SILENCER FOR HIGH SCHOOL AHU-2

General: This ECM involves replacing the existing supply air duct silencer downstream from High School AHU-2 with a new silencer (in same location) to reduce current AHU-2 noise levels (refer to existing mechanical drawings and photos).

Schneider Electric will perform the following scope of work:

1. Remove and properly dispose of existing AHU-2 supply air duct silencer.
2. Furnish and install a new AHU-2 supply air duct silencer.
3. The supply air duct silencer will be approximately 9-feet long, 60-inch round silencer with galvanized steel casing.

INSTALL ACOUSTICAL WALL PANELS FOR HIGH SCHOOL AHU-2 SUPPLY FAN

General: This ECM involves installing double-walled acoustical panels in the four walls and ceiling of existing AHU-2 supply air fan housing for sound attenuation.

Schneider Electric will perform the following scope of work:

1. Furnish and install 4-inch thick double walled galvanized sheet metal acoustical wall panels in the 4-walls and ceiling of existing AHU-2 supply air fan housing.

INSTALL ELECTRIC DUCT HEATER FOR HIGH SCHOOL AHU-2

General: This ECM involves installing a vertical slip-in electric duct heater in the outside air intake duct of AHU-2 for preheating the outside air for freeze protection of chilled water coil.

Schneider Electric will perform the following scope of work:

1. Furnish and install a vertical electric duct heater in the existing 140"X 54" (approx) outside air intake duct (upstream from motorized outside air control dampers) of AHU-2.
2. Mount the remote control panel for electric duct heater adjacent to AHU-2.
3. Provide new 460/3/60 electrical power service for electric duct heater.

4. Electric duct heater will be integrated into the control system.

INSTALL OUTSIDE AIR MEASURING STATION FOR HIGH SCHOOL AHU-2
General: This ECM involves installing an outside air measuring station in the existing outside air intake duct of AHU-2 for measuring the outside air flow for complying with ventilation air requirements.
Schneider Electric will perform the following scope of work:

1. Furnish and install an airflow measuring station in the existing 140" X 54" (approx) outside air intake duct (between and electric duct heater and motorized outside air control dampers) of AHU-2 per manufacturer's installation instructions, SMACNA and ASHRAE Standards.
2. Air measuring station will be integrated into the control system.

AIR SIDE MODIFICATIONS TO HIGH SCHOOL AHU-2 VAV DUCT SYSTEM
General: A single large air handler variable air volume (VAV) AHU-2 serves several zones mainly classrooms. Each zone has a non-fan assisted VAV box with electric heat. The system is plenum return. This ECM involves air side modifications to the high pressure AHU-2 VAV duct system to improve comfort levels, reduce excessive air pressures and sound levels as well as provide proper airflows based on current thermal loads.
Schneider Electric will perform the following scope of work:

1. Provide air side modifications involving supply air duct modifications, replacement of some supply air diffusers and 2 VAV boxes as required.
2. Furnish and install additional balancing dampers and return air grilles as required.
3. Rebalance AHU-2 VAV system to new airflows.

INSTALL COMBINATION AIR AND DIRT SEPARATOR IN HIGH SCHOOL
General: This ECM involves installing a new combination air and dirt separator in the existing chilled water piping system to remove 100% of free and entrained air, 99.6% of dissolved air and dirt up to 5 micron size. The combination air and dirt separator will reduce energy usage and maintenance cost.
Schneider Electric will perform the following scope of work:

1. Furnish and install a new in-line combination air and dirt separator in the existing chilled water piping (adjacent to chilled water pump) in High School per unit manufacturer's installation instructions.

LIGHTING SYSTEMS SCOPE OF WORK

Schneider Electric will retrofit existing T12 lighting fixtures to T8 lighting fixtures, replacing existing fixtures with new and re-lamping some existing incandescent lamps with compact fluorescent. The following scope of work will be performed:

Ephrata Gym/Fine Arts (Old HS)

- Remove existing T12 lamps and ballast (including tombstones) in approximately 65 fixtures, Install new tombstones, T8 lamps and electronic ballasts.
- Remove 3 incandescent lamps and replace with compact fluorescent
- Remove 20 existing HID fixtures and replace with 20 new T5 HO Fixtures
- Remove 10 existing T12 fixtures and replace with 10 new T5 HO Fixtures
- Remove one (1) incandescent fixture and replace it with one (1) new T5 HO fixture
- Remove 10 Incandescent exit signs and replace with 10 new LED Exit signs

Beezley Administration

- Remove existing T12 lamps and ballast (including tombstones) in approximately 180 fixtures, Install new tombstones, T8 lamps and electronic ballasts.
- Remove 22 existing T12 fixtures and replace with 22 new T5 HO Fixtures

- Remove two (2) incandescent lamps and replace with compact fluorescent
- Remove 13 Incandescent exit signs and replace with 13 new LED Exit signs

Ephrata High School

- Remove existing T12 lamps and ballast (including tombstones) in approximately 1029 fixtures, Install new tombstones, T8 lamps and electronic ballasts.
- Remove 60 existing HID fixtures and replace with 60 new T5 HO Fixtures
- Remove 27 Incandescent exit signs and replace with 27 new LED Exit signs

Exclusions:

- Exterior Lighting
- Dimming Lighting
- Existing T8, T5, and Compact Fluorescent

SCHEDULE B: PERFORMANCE ASSURANCE SUPPORT SERVICES AGREEMENT

PERFORMANCE ASSURANCE SUPPORT SERVICES (PASS)

ESCO'S Performance Assurance Support Services (PASS) group will assist Customer and its facility personnel in achieving efficient operation of Customer's facilities. This effort has two primary objectives: achieving the guaranteed savings and assisting Customer in maintaining functionality of the buildings and their systems. Achieving these objectives will require a partnership and communication as described below between Customer's staff and their designated representative of the PASS group. These objectives will be achieved via several means:

A Designated PASS Consultant
To provide support and achieve the best possible savings results, ESCO will assign an individual PASS consultant to Customer. The PASS consultant provides Customer with a point of contact for support and guarantee management that is involved in their project before construction is completed. The designated PASS consultant will be familiar with the project scope and M&V plans along with any unique performance goals or benchmarking efforts included in the project. A partnership between the PASS consultant and Customer's staff is vital to helping the project be successful over the long term.

Performance Assurance Functions:

- **Monitoring**

The PASS group will monitor Customer's facilities, their systems, and their vital signs through a combination of remote and on-site efforts. These efforts will be combined with training Customer's staff during and at the conclusion of project implementation on efficient facility operation and how to use building systems to gather data on building performance characteristics and benchmarking parameters. These parameters can then be used to help identify potential problems with the mechanical, electrical, air-distribution, and other systems critical to achieving the desired building performance and guaranteed savings as well as work with the facility staff to enhance and implement energy efficiency programs.

- **Utility Accounting**

By tracking the measurements and data defined in Schedule D, PASS will measure the performance of the project's efficiency measures in accordance with the M&V approach defined in Schedule D.

- **Reporting**

Customer will receive performance-tracking reports via ESCO'S eSavings online energy management dashboard. This report will detail current monthly savings, year to date savings, and guaranteed savings in both dollars and utility units. The reporting will also encompass environmental benefits associated with the project's performance.

Support Services Functions:

- **Real-Time Technical Support**

The PASS group will provide Customer with technical support, troubleshooting assistance, and operational consultation to help ensure proper performance of the project scope as defined in Schedule A and ensure that savings are achieved. ESCO and Customer agree that achieving the

goals and guarantees set forth for this project will require clear, consistent communication by both parties. Customer can maintain communication and access support from their PASS consultant or other members of the PASS group in multiple ways.

- ESCO'S PASS Line (800-274-5551 + 4 or 972-323-5300) offers support for urgent issues that arise. Live PASS representatives answer this line during business hours (central time). In the event all representatives are busy, Customer may leave a message and expect a response within 1 hour during business hours (central time). After-hours calls will be responded to within 4 hours by an on-call PASS consultant.
- PASS@buildings.schneider-electric.com is a centralized email communication portal to which all PASS consultants have access. This tool is a vehicle to obtain answers to general questions or non-urgent items.
- ESCO'S eSavings energy management dashboard also provides email communication with Customer's designated PASS consultant.

In a further effort to provide responsiveness and accountability to Customer's needs, ESCO'S PASS group has developed a Customer Assistance Tracking System to log Customer calls and track the development of solutions to issues with building performance or savings achievement. CATS or another system will be used for these purposes.

- **EEM consulting**

Should Customer experience further facility improvements, additions, new construction, or other building modification at some point in the term of the contract, ESCO'S PASS group will be available to provide guidance and recommendations on a wide variety of building attributes from system types to operational strategies and building construction types for an additional fee. Design oversight and consultation are available as well as utility master planning and capital improvement master planning. Any necessary fees for consulting beyond standard PASS agreement levels will be negotiated between Customer and ESCO prior to commencement of any work.

- **Site Visits**

As part of ensuring that Customer's staff is trained to operate the systems in a manner consistent to achieve the savings guarantee and functionality of buildings and systems, the PASS Consultant will visit the facilities as they deem appropriate. Site visits to assist in troubleshooting issues pertinent to warranty or other service will also be conducted as deemed appropriate.

- **Ongoing training**

Savings guarantees are not achievable unless Customer maintains, repairs, and operates the buildings and systems in an efficient and effective manner. Training for Customer's staff by ESCO'S project installation and PASS personnel will occur during project installation and during the guarantee period as deemed appropriate by ESCO. Training requirements beyond the scope of ESCO'S standard construction and PASS training is available with additional fees to be negotiated between Customer and ESCO.

SCHEDULE C: PERFORMANCE GUARANTEE

ESCO guarantees that Customer will save a total of $443,084 over the 15 year term of the contract. This equates to an annual savings amount of $29,539 in Total Dollar Savings, which consists of tracked savings of $28,906 and $633 in stipulated savings, calculated as shown herein. In the event the annual savings are less than the amount stated above, ESCO will pay Customer the Net Present Worth of the series of annual savings reconciliations, each calculated as the difference between the guaranteed amount and the annual Achieved Savings amount, calculated as shown herein. ESCO will make this one-time payment for any savings shortfall to Customer within 30 days of the Savings Reconciliation.

The procedure used to calculate savings is described in Schedule D Section I - Performance Tracking Methodology.

GUARANTEED SAVINGS RECONCILIATION

The guarantee term and **Savings Measurement Period** will commence on the first day of the first utility billing period following the month in which ESCO delivers to Customer the Project Warranty Letter. This date is referred to as the **Savings Measurement Period Commencement Date**.

Within sixty (60) days of receiving pertinent utility bills after the Savings Reporting Period Commencement Date, ESCO will determine the Total Dollar Savings for the immediately preceding period.

The savings generated during the period from the “Date of Commencement” to the Savings Measurement Period Commencement Date will be referred to as “Implementation Period Savings”. Implementation Period Savings will be included in the Total Achieved Savings for reconciliation purposes. In the event that additional savings above guarantee are achieved in any year during the guarantee period, these savings can be used to offset shortfalls in savings of other years.

Net present worth calculations will use an annual rate of return of 5%.

SCHEDULE D: METHODOLOGY AND BASELINE

SECTION I - PERFORMANCE TRACKING METHODOLOGY

A. Description
B. Baseline Definition
C. Determination of Normalized Baseline and Reporting Period Energy
D. Other Savings
E. Determination of Energy Units Saved
F. Determination of Energy Dollars Saved
G. Determination of Total Achieved Savings

A. Description

The method of determining energy savings described in this section uses "Option C – Main Meter Measurement" as described in the International Measurement and Verification Protocol (IPMVP), Concepts and Options for Determining Energy and Water Savings, Volume 1, April 2007. In brief, the energy savings resulting from this project will be measured as follows:

Total Achieved Energy Savings will be measured by comparing 12 months of the Savings Measurement Period's total energy consumption and demand to the energy consumption and demand for the 12 month base year period. This Savings Reporting Period energy and demand will be adjusted for differences in facility operation and facility modifications to estimate how much energy would have been used in the base year period if the energy conservation measures had not been implemented. Weather Normalizing the energy and demand of the savings reporting and the base year periods will account for differences in weather. The energy saved is the difference between the normalized base year consumption and the normalized reporting period consumption. The demand saved is the difference between the normalized base year demand and the normalized reporting period demand. Total Achieved Energy Savings is the consumption and demand savings from the savings reporting period multiplied by the duration of the guarantee plus any savings in the Implementation Period. Energy cost savings is the difference between the cost of the base year consumption and demand and the guarantee period consumption and demand. This process will be followed for each fuel type involved in the guarantee.

B. Baseline Definition

The Base Year is the period of time, as agreed to in this document, which establishes the pre-retrofit conditions used as the point of reference for determining guaranteed savings. The Measurement Period is any one or more billing periods during the 24 months following the Savings Period Reporting Commencement Date during which guaranteed savings are measured.

The baseline is that set of parameters that describes both the energy consumed in the base year and the conditions that caused that consumption to occur. This set of parameters includes utility consumption, facility use information, weather data and other information as may be necessary to describe the base year conditions. In addition, the baseline includes certain mathematical values, calculated by a model, that are used to correlate the base year energy consumption with the factors that caused that consumption. The baseline to be used for this project is fully defined in Schedule D Section II, paragraphs A through I. Customer agrees to accept modifications to this baseline that are necessary to account for changes in the facilities and their use which may have occurred prior to the execution of this agreement but come to the attention of Schneider Electric after the execution of this agreement.

C. Determination of Normalized Baseline and Reporting Period Energy

Base year consumption is normalized to estimate what the annual consumption would have been if no energy conservation measures had been implemented and the weather had been a Typical Meteorological Year as defined by the National Oceanic and Atmospheric Administration using 30-year average (TMY2) weather. Reporting period consumption is normalized to estimate what the annual consumption would have been after the energy conservation measures have been implemented and the weather had been a Typical Meteorological year. This is accomplished by adjusting for these factors:

- Differences in weather between a Typical Meteorological Year and base and reporting periods
- Prorating baseline and reporting period utility usage to calendar months
- Changes in facility use between the base and reporting periods
- Modifications to the facility between the base and reporting periods

Normalized consumption is calculated as follows for each fuel type:

$Q = C_D * (T_i – T_{i-1}) + C_H * HDD_i + C_C * CDD_i + O_i + M_i$, or

Normalized Consumption = Weather Independent Consumption + Weather Dependent Consumption + Offset + Use and Modification Adjustments

Where:

Q = weather normalized period consumption

C_D = a constant representing units of consumption per billing period day as calculated by model

T_i = ending date of current billing period

T_{i-1} = ending date of previous billing period

C_H = a constant representing units of consumption per heating degree day as calculated by model

HDD_i = TMY heating degree days based on the measurement billing period

C_C = a constant representing units of consumption per cooling degree day as calculated by model

CDD_i = TMY cooling degree days based on the measurement billing period

O_i = offset for the measurement billing period

M_i = other adjustments for the measurement billing period

Normalized period demand is calculated with a slightly different formula as follows:

$D = D_{WI} + D_H *(HDD_i / (T_i – T_{i-1})) + D_C * (CDD_i / (T_i – T_{i-1})) + O_i + M_i$, or

Normalized Demand = Weather Independent Demand + Weather Dependent Demand + Offset + Use and Modification Adjustments

Where:

D = adjusted base year demand

D_{WI} = a constant representing units of weather independent demand per billing period day as calculated by model

D_H = a constant representing units of demand per heating degree day as calculated by model

D_C = a constant representing units of demand per cooling degree day as calculated by model

The Reporting Period Annual Consumption will be equal to the savings measured for twelve (12) contiguous months designated by Schneider Electric during the Savings Reporting Period.

Weather Independent Consumption
Because utility meters are not always read on the same day of the month, the number of days in a meter's billing period frequently varies. The term, $C_D * (T_i – T_{i-1})$, in the above equation is used to account for this difference, where $(T_i – T_{i-1})$, gives the number of days in either the baseline or measurement billing period or the month. Thus, Weather Independent Consumption is the consumption per day times the number of days in the billing period or month.

Weather Normalized Consumption
Because the energy usage in many facilities is affected by the weather, and the weather during the base year and the reporting year periods are most likely different and not typical, the difference in energy use caused by weather in these two periods affects the accuracy of a direct comparison between the two periods. The term $C_H * HDD_i + C_C * CDD_i$ in the above equation accounts for these differences by determining what the energy use in the facility would have been during a typical year. Weather Dependent Consumption is consumption per degree-day times the number of degree-days in the Typical Meteorological Year for the metered billing period. A cooling degree-day is the difference between the average daily temperature and the balance point temperature (AvgTemp – BalanceTemp). A heating degree-day is the difference between the balance point temperature and the average daily temperature (BalanceTemp – AvgTemp). Degree-days are either positive numbers or zero. If the degree-day calculation yields a negative number, the period is considered to have zero degree-days of that type. The balance point temperature is different for each building and for each fuel type. The balance point temperatures used for this project are defined in Schedule D Section II-A. The weather station used to determine daily temperatures is specified in Schedule D Section II-D.

Demand is treated similarly. The exception being that "degree-days per day" is substituted for total degree-days. This provides a measure of average daily weather intensity.

Offset
Offset is that portion of the energy consumption that cannot be accounted for with the Weather Independent and Weather Dependent consumption. It is mostly attributable to seasonal changes in facility use such as summer shutdown and holidays. An Offset figure is defined for each billing period in the base year. Offset for the base year is defined in Schedule D Section II-A. Since the guarantee period may overlap two or more base year billing periods, the guarantee period offset will be the weighted average of the base year offset for the corresponding guarantee year period. Offset for the guarantee period is determined with this equation:

$$O_i = O_1 * dG_1/dB_1 + O_2 * dG_2/dB_2 + \ldots O_n * dG_n/dB_n$$

Where:

O_i = current guarantee period offset
O_1 = base year period 1 offset
O_2 = base year period 2 offset
O_n = base year period n offset
dG_1 = days in guarantee period that overlap base year period 1
dG_2 = days in guarantee period that overlap base year period 2
dG_n = days in guarantee period that overlap base year period n
dB_1 = days in base year period 1
dB_2 = days in base year period 2
dB_n = days in base year period n
n = number of base year periods overlapped by guarantee year period

Other Adjustments
Additional adjustments to the base year may be made to compensate for modifications and

additions to a facility or to compensate for changes in how a facility is used. A list of known Causes for Adjustment is shown in Schedule D Section II-F along with means to determine the magnitude of these adjustments.

The total adjustment for any given period will be determined with this equation:

$$M_i = Adj_1 + Adj_2 + \ldots Adj_n$$

Where Adj_1, Adj_2 and Adj_n are all of the adjustments determined to be necessary for the guarantee period. The sign of the adjustment will be positive when the change will cause an increase in energy and the sign of the adjustment will be negative when the change will cause a decrease in energy. Upon request, Schneider Electric will provide an explanation of the derivation of these adjustments to Customer.

If additional changes occur, other than those listed in Schedule D Section II-F, Schneider Electric will document to Customer how adjustments will be determined for said changes. Any such adjustment will be added to the term M_i in the equation above.

D. Other Savings

Other Energy Savings
Both Customer and Schneider Electric agree to add Stipulated Savings and Other Energy Savings to any measured savings according to the Other Energy Savings Schedule in Schedule D Section III-B.

Maintenance\Other Savings
As a result of implementing Energy Conservation Measures, additional non-energy savings may accrue towards this contract's guaranteed savings. These savings will be measured as follows:

$$\$O = \$O_B - \$O_R$$

Where;

$\$O_B$ = Base year maintenance\other cost
$\$O_R$ = Reporting period maintenance\other cost

Any base year maintenance\other costs to be used for this purpose are defined in Schedule D Section III-A. Guarantee period maintenance\other costs will be determined from Customer's records that reflect savings that occur due to the implementation of the Energy Conservation Measures.

E. Determination of Energy Units Saved

Energy and demand units saved will be determined by the following equation:

$$E_A = E_B - E_R$$

Where;

E_A = Annual Energy (or demand) Units Saved
E_B = Normalized Base Year Consumption
E_R = Normalized Reporting Period Consumption

F. Determination of Energy Dollars Saved

For the purposes of this contract's guarantee, energy dollars saved will be determined as follows:

$$\$E_A = (\$E_B - \$E_R) + \$E_S + \$O_O + \$O_M$$

Where:

$\$E_A$ = Energy Dollars Saved
$\$E_B$ = Cost of Normalized Base Year Energy, for All Fuel Types
$\$E_R$ = Cost of Normalized Reporting Period Energy, for All Fuel Types

$\$E_S$ = Stipulated Energy Savings
$\$O_O$ = Other Energy Savings
$\$O_M$ = Maintenance\Other Savings

The cost of energy in any period will be determined by applying the energy rates, as defined in schedule D section II-E, or the actual energy rates during the performance measurement period, at the discretion of SCHNEIDER ELECTRIC, to the energy used in a given period for each fuel type.

G. Determination of Total Achieved Savings

For the purposes of the guarantee contained in this contract, the Total Achieved Savings will be determined as follows:

$$\$_T = [(\$E_A)_1 + (\$E_A)_2 + . . . + (\$E_A)_T]$$

Where:

$\$_T$ = Total Achieved Savings

And $(\$E_A)_1$, $(\$E_A)_2$ and $(\$E_A)_T$ are the total achieved savings for each year of the guarantee.

SECTION II - BASELINE & SUPPORTING INFORMATION

A. Meter Tuning Contracts
B. Meter List
C. Building List
D. Weather Source
E. Energy Rates
F. Causes for Adjustment
G. Calendar and Schedules
H. Standards of Service and Comfort
I. Other Information

A. Meter Tuning Contracts

The purpose of meter tuning is to establish a relationship between the weather and the consumption and demand measured by a particular meter. Tuning consists of identifying relationships between "historic" utility performance and weather (heating degree days and/or cooling degree days). The end result is a set of coefficients, which will be used in modeling the energy use of a facility to calculate the energy savings or penalty associated with weather normalizing energy usage.

During the project installation, the PASS department will select the twelve (12) month baseline period (12 months prior to the beginning of installation typically) for each guarantee meter and determine the baseline meter tuning coefficients. These coefficients will be submitted to the customer for review prior to the start of the savings measurement period.

At the end of the savings measurement period, the PASS department will select a twelve (12) month reporting period (12 months of the savings measurement period) for each guarantee meter and determine the reporting period meter tuning coefficients. These coefficients will be included in the savings reconciliation report.

B. Meter List

Guarantee Meters

The following meters will be used to measure actual energy consumption for both the base year and measurement periods.

Electric Meters

Meter Name	Account Number	Utility Co.	Rate	Units
New High School	8659200003	Grant County PUD	Large General	kWh, kW
Old High School	8659200004	Grant County PUD	General Svc	kWh
Old High School	8659200005	Grant County PUD	General Svc	kWh
Beezley Springs Elementary	8659200000-C	Grant County PUD	General Svc	kWh

C. Building List

The following table(s) lists the buildings that were served by guarantee meters during the base year period.

Bldg No.	Building Name	Area (ft^2)	Comments
1	New High School	82,000	
2	Old High School	32,125	
3	Beezley Springs Elementary	22,269	

D. Weather Source

Weather Data Source

Data for weather compensation adjustments will be Daily High-Low Temperatures obtained from the National Weather Service Station at Ephrata, WA. In the event the specified weather station is de-activated, weather data will be collected from the nearest weather station with suitable observations. If the data source becomes unavailable or a superior source is identified, Schneider Electric may select an alternative data source with Customer's approval.

E. Energy Rates

Electricity

Utility Rate Schedule — **Ephrata School District**

Resource	Utility Name	Rate Tarriff Name	Description		Charge	Unit
Electricity [1]	Grant County Public Utility District	Large General	Customer Charge	$	110.00	Per Meter
			First 50,000 kWh	$	0.0195	Per kWh
			All Remaining kWh	$	0.0116	Per kWh
			Demand Charge	$	4.1000	Per kW
			Power Factor Correction[2]	$	4.1000	Per kW
			City Tax	%	6.00	
		General Service	Customer Charge	$	18.60	Per Meter
			First 8,000 kWh	$	0.0402	Per kWh
			All Remaining kWh	$	0.0246	Per kWh
			City Tax	%	6.00	

Notes: (1) Some of the facilites are on accounts that are being charged demand (kW) and others are being charged on an electric utility rate that takes into account only consumption charges.
(2) Power Factor Correction is charged to the difference in kW between the Billed Demand and Actual Demand when Power Factor is less than 95%

For the purposes of the determining savings, energy rates will be escalated 2% annually, starting with Performance Year 2.

F. Causes for Adjustment

Cause	Action	Responsibility
Addition of New Building, or Renovation/Addition to Existing Building w/ Independent Utility Metering and HVAC Service	1. None required. Building is independently metered. No effect on savings tracking of other buildings.	1. N/A
Addition of New Building or New Energy User on Existing Utility or HVAC Service **	1. Customer will notify SCHNEIDER ELECTRIC when additions are planned. 2. SCHNEIDER ELECTRIC will review the addition plans and determine if the addition is likely to increase energy use, demand, or HVAC capacity above the threshold limits. * 3. If the addition is expected to exceed any of the threshold limits and Client and SCHNEIDER ELECTRIC mutually agree, then all incoming utilities (consumption and demand) and HVAC service will be sub-metered. 4. If the addition is below all of the threshold limits, it is not economical to sub-meter per above, or CLIENT opts not sub-meter, SCHNEIDER ELECTRIC will estimate the energy consumption of the addition using manual calculations or a ratio of the baseline building energy consumption obtained from sub-meter data, energy simulations and/or utility invoices, or stipulate savings based on previously established performance. Computerized building energy simulation may be available as a service.	1. Customer 2. SCHNEIDER ELECTRIC 3. Customer 4. SCHNEIDER ELECTRIC
Addition to Existing Building on Existing Utility or HVAC Service **	1. Customer will notify SCHNEIDER ELECTRIC when additions are planned. 2. SCHNEIDER ELECTRIC will review the addition plans and determine if the addition is likely to increase energy use, demand, or HVAC capacity above the threshold limits. * 3. If the addition is expected to exceed any of the threshold limits, sub-meter the addition, just as for a new building. 4. If the addition is below all of the threshold limits, it is not economical to sub-meter per above, or CLIENT opts not sub-meter, SCHNEIDER ELECTRIC will estimate the energy consumption of the addition using manual calculations or a ratio of the baseline building energy consumption obtained from sub-meter data, energy simulations and/or utility invoices, or stipulate savings based on previously established performance. Computerized building energy simulation may be	1. Customer 2. SCHNEIDER ELECTRIC 3. Customer 4. SCHNEIDER ELECTRIC

	available as a service.	
Renovation / Modification of an Existing Building on Existing Utility or HVAC Service **	1. Customer will notify SCHNEIDER ELECTRIC when building renovations are planned. 2. SCHNEIDER ELECTRIC will review the renovation plans and determine if the renovations are likely to cause a change in energy use that would exceed the threshold limits. * 3. If the renovations are expected to raise or lower energy consumption more than the threshold limits, the renovation will be sub-metered for both pre and post renovation periods until the effect on energy has been determined. 4. If the expected changes are less than the threshold limits, it is not economical to sub-meter per above, or CLIENT opts not to sub-meter, SCHNEIDER ELECTRIC will estimate the energy consumption using manual calculations, or a ratio of the baseline energy consumption obtained from sub-meter data, energy simulations and/or utility invoices, or stipulate savings based on previously established performance. Computerized building energy simulation may be available as a service.	1. Customer 2. SCHNEIDER ELECTRIC 3. Customer 4. SCHNEIDER ELECTRIC
Demolition / Abandonment of an Existing Building on Existing Utility or HVAC Service **	1. Customer will notify SCHNEIDER ELECTRIC when a demolition or abandonment is planned. 2. SCHNEIDER ELECTRIC will determine if the demolition/abandonment is likely to decrease energy use more than the threshold limits. * 3. If the expected decrease is more then the threshold limits, the building will be sub-metered for both pre and post demolition periods until the effect on energy has been determined. 4. If the expected changes are less than the threshold limits, it is not economical to sub-meter per above, or CLIENT opts not to sub-meter, SCHNEIDER ELECTRIC will estimate the effect on energy using manual calculations, or a ratio of the baseline energy consumption obtained from sub-meter data, energy simulations and/or utility invoices, or stipulate the savings based on previously established performance, or at Customer's option, ignored.	1. Customer 2. SCHNEIDER ELECTRIC 3. Customer 4. SCHNEIDER ELECTRIC
Change in Occupancy, Occupancy Hours, Calendar or Set-points Reference Schedule D Section II-G and Section II-H for baseline conditions.	1. Customer will maintain records of occupancy levels, operating hours and operating calendar and apprise SCHNEIDER ELECTRIC of the latest figures at least annually. 2. If at any point during the guarantee term any of these values change more than 5% of its baseline value, SCHNEIDER ELECTRIC may estimate the impact of this change and adjust the baseline accordingly.	1. Customer 2. SCHNEIDER ELECTRIC
Re-commissioning of Out-of-Service Buildings **	1. When a building is scheduled to be re-commissioned, sub-metering equipment will be installed to measure; a) the building's energy use in its out-of-service condition, and b) the building's energy use after re-commissioning.	1. Customer 2. SCHNEIDER ELECTRIC

	2. SCHNEIDER ELECTRIC will use the metered values to adjust the base year for the increased energy consumption. If it is not economical to sub-meter as above or if CLIENT opts not to sum-meter SCHNEIDER ELECTRIC will estimate the effect on energy using manual calculations, or a ratio of the of the baseline energy consumption obtained from sub-meter data, energy simulations and/or utility invoices, or stipulate the savings based on previously established performance.	
Customer Initiated ECMs	1. If a CLIENT initiated ECM or group of ECMs are estimated to save less than 5% of the annual guaranteed energy savings contained in this contract, no adjustment will be made to the savings measured under this contract. 2. To measure savings from a CLIENT initiated ECM or group of ECMs that are estimated to save greater or equal to 5% of the annual guaranteed energy savings of this contract, CLIENT will provide SCHNEIDER ELECTRIC energy analysis estimating savings, and CLIENT will develop a separate M&V plan to track the ECMs savings. Pending agreement from SCHNEIDER ELECTRIC, the resulting savings from the CLIENT initiated ECM(s) will be subtracted from this contract's savings. 3. In no event will the original M&V plan's current year measured savings be reduced below the immediately preceding year's savings due to a customer initiated ECM.	1. N/A 2. Customer 3. N/A
Missing bills	1. Customer agrees to send applicable utility invoices to SCHNEIDER ELECTRIC in a timely manner to ensure prompt measurement of project savings. 2. If utility invoices are not received by SCHNEIDER ELECTRIC within 90 days of the end of the service period, SCHNEIDER ELECTRIC will estimate the savings based on projected savings or previously achieved savings at the discretion of SCHNEIDER ELECTRIC	1. Customer 2. SCHNEIDER ELECTRIC
Other Causes	1. Other causes for adjustment may occur due to changes in certain baseline conditions. These causes include, but are not limited to, those described in Schedule D Section II-I.	1. SCHNEIDER ELECTRIC

* Threshold Limits:

Area –	1% of base year area as shown in Schedule D Section II-C
Electricity –	1% of highest annual peak demand resulting from the Meter Tuning Contract discussed in Schedule D Section II-A
Natural Gas –	1% of installed base year gas-heating capacity
Other Fuel –	1% of installed base year maximum capacity
Air Conditioning –	1% of installed base year air-conditioning capacity

** Reference Schedule D Section II-B and Section II-C for the associated meters and facilities included in the baseline.

G. Calendar and Schedules

2010 – 2011 Calendar

Date(s)	Event
8/26/	First Day of School
9/6	Labor Day – No School
11/11	Veteran's Day – No School
11/25-26	Thanksgiving – No School
12/20-1/2	Winter Break
1/3	School Resumes

Date(s)	Event
1/17	MLK Day – No School
2/21	Pres. Day – No School
3/4	Make up day – No School
4/4 – 8	Spring Break – No School
5/6	Make up day – No School
6/9	Last Day of School

Schedules / Occupancy

Facility Type	Schedule Type	Daily Schedule
New High School Classrooms/Offices	Weekday	Occupied: 0600—1800
	Weekday	Unoccupied: 1800—0600
	Weekend	Unoccupied: All Hours
	Holiday	Unoccupied: All Hours
New High School Gyms/Auditoriums	Weekday	Occupied: 0600—1700
	Weekday	Unoccupied: 1700—0600
	Weekend	Unoccupied: All Hours (Up to 8 hours occupied over-ride allowed per weekend)
	Holiday	Unoccupied: All Hours

Start Times	1 hour prior to scheduled event for area in question
Stop Times	After scheduled event for area in question
Special Requirements	As demanded for given area in question, adjustment required, unless demanded in base year.

H. Standards of Service and Comfort

Customer agrees to operate the conditioned spaces in the facilities listed in Schedule D Section II-C within the temperature ranges scheduled in the Temperature Control Table below. SCHNEIDER ELECTRIC reserves the right to adjust the baseline for operating conditions outside the range specified in this table.

In the event that an adjustment to the baseline is made, SCHNEIDER ELECTRIC shall submit the baseline adjustments to the customer and describe the reasons for the adjustment.

Temperature Control Table

	Heating Set-point	Cooling Set-point
Occupied	68°F +/-2°F	74°F +/-2°F
Unoccupied	55°F	90°F

I. Other Information

Other Key Baseline Conditions
Following are key baseline conditions and calculation assumptions. Significant deviation from any or all of these conditions constitutes a cause for adjustment. In the event a cause for adjustment occurs, SCHNEIDER ELECTRIC will use an appropriate means to estimate the effect of the change and add or subtract the adjustment for the current billing period. All calculations will be made available to Customer upon request.

- The guaranteed savings assume that no significant increase or decrease, in quantity or capacity, will occur in installed equipment and plug loads such as fans, space heaters, pumps, lighting, copiers, computers, monitors, televisions, printers, ovens, refrigerators, vending machines, etc. SCHNEIDER ELECTRIC reserves the right to adjust for changes in quantity and/or capacity of any of these items. Customer agrees to provide to SCHNEIDER ELECTRIC access to Customer's premises and/or records for purposes of determining the occurrence and/or magnitude of any such changes.

SECTION III - SAVINGS

Baseline Maintenance\Other Cost Savings

Facility	Annual Amount	Explanation
Ephrata High School	$404	Synchronous belts reduce frequency of belt wear and replacement
Ephrata High School	$229	Eliminating cost of throw-away filter media

END OF SCHEDULE D

SCHEDULE E: PAYMENT SCHEDULE

Construction progress payments shall be made to ESCO monthly based on the percentage completion of items delineated on a Schedule of Values, in an amount equal to the value of services rendered since the last interim payment. The Schedule of Values will be developed by ESCO and provided to Customer at the beginning of project implementation. The Schedule of Values will be based upon the project cost.

SCHEDULE F: PROJECT SPECIFIC CUSTOMER RESPONSIBILITIES

Customer agrees to maintain the Energy Efficiency Measures in original condition with allowance for normal wear and tear. If an Energy Efficiency Measure becomes non-operational after the warranty, Customer agrees to repair the measure promptly. If Customer chooses not to repair the failed measure, ESCO reserves the right to adjust the amount of guaranteed savings associated with that measure in the yearly savings guarantee.

Customer must maintain all parts of the Project Site(s). Customer must comply with the general maintenance requirements specified by equipment manufacturers and/or the Maintenance Tasking guidelines that follow.

Equipment must be maintained in proper working condition in all cases where the performance of said equipment affects or could affect the guarantee. Should Customer refuse to perform the required maintenance as per Schedule F, ESCO will adjust the guaranteed savings associated with that equipment,

GENERAL RESPONSIBILITIES

Customer agrees to: a) provide, or cause its suppliers to provide, periodic utility invoices to ESCO in a timely manner; b) execute all Customer responsibilities as scheduled in Schedule D Section II-F; c) provide to ESCO reasonable access to all Customer facilities and information necessary for ESCO to perform its responsibilities. Access will include, but is not limited to, the following items:

- All buildings listed in Schedule D Section II-C.
- All buildings served by the meters listed in Schedule D Section II-B.
- All mechanical equipment rooms in the above buildings
- All temperature control and energy management systems which control part or all of any of the above buildings
- Personnel with responsibility for operating and/or managing any of the above buildings
- Monthly utility invoices and billing history for all of the meters listed in Schedule D Section II-B.
- Construction documents, equipment inventories, and other documents that may be helpful in evaluating a cause for adjustment as listed in Schedule D Section II-F.
- Any data from meters or sub-meters relevant to M&V associated with the contract.

Telephone/Network Communications:

Customer will be responsible for providing communications and or network interface to all buildings for operation and PASS support.

Installation Material Storage:

ESCO will be responsible for providing off-site storage for installation materials at each work site.

MAINTENANCE TASKING FOR MECHANICAL EQUIPMENT

As part of this agreement, Customer and ESCO concur that proper maintenance is an essential part of a complete energy conservation program. Therefore; Customer agrees to maintain all new and existing mechanical equipment involved with the Performance Contract to insure maximum operating efficiencies. Standard preventative maintenance procedures should be followed to improve equipment performance and extend equipment life.

As the energy savings guarantee agreement progresses with time, Customer will be responsible to provide to ESCO annual documentation that proper maintenance of equipment has been performed. This condition will be in effect throughout the duration of this agreement. In the event, ESCO finds that the mechanical systems are not being maintained, ESCO retains the right to adjust the performance assurance report to recapture any lost energy savings from a lack of mechanical maintenance.

MAINTENANCE TASKING FOR ENERGY MANAGEMENT SYSTEM AND AUTOMATIC TEMPERATURE CONTROL SYSTEM

Customer will perform all general maintenance of the energy management system and automatic temperature control systems to insure proper performance and energy savings at each facility of Customer, for the full term of the performance guarantee. Standard preventative maintenance procedures and repairs should be followed.

Customer will perform daily facilities monitoring and review alarm summaries.

Following project completion, Customer will be responsible to provide to ESCO evidence that proper maintenance of equipment has been performed. This documentation will be provided annually to ESCO for the duration of this agreement.

ESCO will make periodic spot checks, during the term of the contract, to ensure that the energy management system and automatic temperature control systems have been maintained and are fully functional. In the event ESCO finds that the systems have been modified or non-functional, ESCO retains the right to adjust the performance assurance report to recapture any lost energy savings from the changes, and to continue making these adjustments until the changes are corrected.

APPENDIX 1

The table below is an example of the project's schedule. A more detailed schedule will be developed and presented for approval prior to beginning of construction:

PHASE/PROCESS	RESPONSIBLE	TIMEFRAME
Executable Contract		
Board Vote on ESP	Ephrata School District	November 15, 2010
Contract signatures and NTP	Ephrata School District, GA and Schneider Electric	November 15, 2010 – December 20, 2010
Construction		
Sub-contractor negotiations complete	Schneider Electric	January 31, 2011
Sub-contractors NTP	Schneider Electric	January 1, 2011 – February 1, 2011
Substantial Completion (i.e. Beneficial use of equipment and systems by the Ephrata School District)	Schneider Electric	August 2011
Project Commissioning & Closeout	Schneider Electric	September 2011
Final Completion (i.e. Acceptance of installed equipment and systems by the Ephrata School District)	Schneider Electric	September 2011
Performance Assurance Support Services		
Begin performance guarantee period	Schneider Electric	September 2011

APPENDIX 2

The following a breakdown of proposed EEMs and their corresponding payback in addition to all other items making up the total funding authorization amount for this project.

SCHNEIDER ELECTRIC OPEN BOOK PRICING
EPHRATA SCHOOL DISTRICT
FINAL PROJECT - HS & HS CAMPUS LIGHTING

			APPROVED EEMS		
EEM DESCRIPTION	EEM SUBCONTRACTOR COST	SAVINGS	PAYBACK (YRS)	REBATE	PAYBACK (YRS) AFTER REBATE
1.1 HS - Air Systems	**$ 258,727**	**$ 8,455**	**30.6**	**$ 23,837**	**27.8**
1.21 HS - Chilled Water Systems - Glycol Removal	**$ 18,519**	**$ 2,148**	**8.6**	**$ 10,530**	**3.7**
1.22 HS - Chilled Water Systems - New Chiller & Pumping	**$ 335,169**	**$ 3,010**	**111.4**	**$ 19,125**	**105.0**
1.3 HS - Control Systems	**$ 182,886**	**$ 11,969**	**15.3**	**$ 121,924**	**5.1**
1.4 HS - Lighting Systems	**$ 97,499**	**$ 6,707**	**14.5**	**$ 48,660**	**7.3**
2.11 MS - Chilled Water Systems - Glycol Removal	$ -	$ -	0.0	$ -	0.0
2.12 MS - Chilled Water Systems - New Chiller & pumping	$ -	$ -	0.0	$ -	0.0
2.2 MS - Control Systems	$ -	$ -	0.0	$ -	0.0
3.1 Old HS - Air Systems	$ -	$ -	0.0	$ -	0.0
3.2 Old HS - Control Systems	$ -	$ -	0.0	$ -	0.0
3.3 Old HS - Building Envelope	$ -	$ -	0.0	$ -	0.0
3.4 Old HS - Lighting Systems	**$ 16,760**	**$ 1,478**	**11.3**	**$ 7,129**	**6.5**
4.1 Beezley - Control Systems	$ -	$ -	0.0	$ -	0.0
4.2 Beezley - Lighting Systems	**$ 20,214**	**$ 1,224**	**16.5**	**$ 10,346**	**8.1**
5.11 Columbia - Chilled Water Systems -Glycol Removal	$ -	$ -	0.0	$ -	0.0
5.12 Columbia - Chilled Water Systems - New Chiller & Pumping	$ -	$ -	0.0	$ -	0.0
5.2 Columbia - Control Systems	$ -	$ -	0.0	$ -	0.0
6.11 Grant - Chilled Water Systems - Glycol Removal	$ -	$ -	0.0	$ -	0.0
6.12 Grant - Chilled Water Systems - New Chiller & Pumping	$ -	$ -	0.0	$ -	0.0
6.2 Grant - Control Systems	$ -	$ -	0.0	$ -	0.0
7.1 Parkway - Control Systems	$ -	$ -	0.0	$ -	0.0
8.1 Maint & Transport - Controls	$ -	$ -	0.0	$ -	0.0
9.1 Network Computer Power Management	$ -	$ -	0.0	$ -	0.0
TOTAL	**$ 929,773**	**$ 34,991**	**26.6**	**$ 241,551**	**19.7**

SUBCONTRACTOR COST	$	929,773.00	**Guaranteed Savings:**	**$28,906.00**
SITE SUPERINTENDENT	$	95,722.01		
ESCO DIRECT CONSTRUCTION COSTS	$	98,249.30	Financing Amount:	$378,361.78
			APR:	4.00%
SUBTOTAL DIRECT CONSTRUCTION COST	$	1,123,744.31	Term (Years, 2 pmts per year):	15
2% OF CONSTRUCTION FOR COST FOR BONDING	$	22,474.89	**Annual Payment:**	**($33,787.65)**
CONTINGENCY	$	97,577.06		↓
SUBTOTAL CONSTRUCTION COSTS	$	1,243,796.26	**Financing payment on utility incentives:**	**($21,570.47)**
			Energy-Savings Financing:	**($12,217.18)**
10% OF SUBCOST FOR DESIGN SERVICES	$	92,977.30		
7% OF CONSTRUCTION FOR CONSTRUCTION MANAGEMENT	$	78,662.10		
18% OF CONSTRUCTION COST FOR OVERHEAD & PROFIT	$	202,273.98	Total amount expended for scope of work above:	
IGA FEE	$	70,000.00	**Capital:**	**$421,690**
PASS - 2 YRS OF M&V AND SUPPORT	$	24,575.23	Up-Front Value of Energy Savings (discounted for interest):	$136,811
SUBTOTAL PROFESSIONAL SERVICES	$	468,488.61	Utility Rebates:	$241,551
			OSPI Grant:	$1,092,595
CONSTRUCTION COSTS + PROFESSIONAL SERVICES	**$**	**1,614,707.81**		$1,892,647
GUARANTEED MAX PRICE	**$**	**1,712,284.87**		
WASHINGTON STATE SALES TAX (7.9%)	$	127,561.92		
GA PROJECT MANAGEMENT FEE	$	52,800	Total District Cont. - **15 years of payments** + **Capital**:	(928,505)
			Total Lifetime Project Expense:	(2,021,100)
TOTAL CONTRACT FUNDING AUTHORIZATION	**$**	**1,892,646.78**		↓
EPHRATA SCHOOL DISTRICT CAPITAL	**$**	**(421,690)**	**OSPI Grant:**	**54.06%**
ENERGY-SAVINGS FINANCING (85% of savings as pmt)	**$**	**(136,811)**	**District Capital:**	**20.86%**
FINANCING	**$**	**-**	**Utility Rebates:**	**16.01%**
UTILITY REBATES	**$**	**(241,551)**	**Reduced Energy Costs:**	**9.07%**
OSPI GRANT (ORIGINAL AWARD AMOUNT)	**$**	**(1,092,595)**		

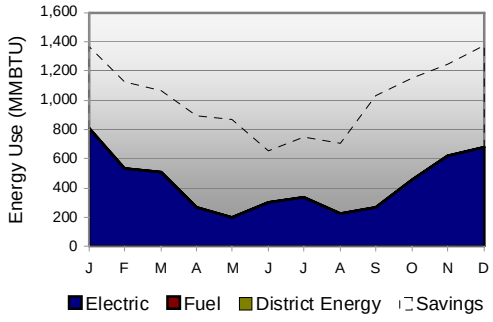
APPENDIX 3

The graphic shows energy savings expected at each school.

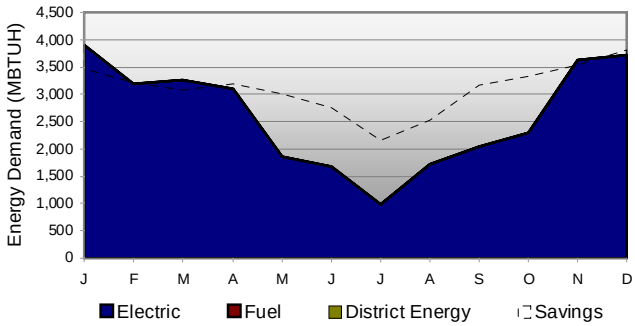
Facility Energy Consumption and Demand Savings Summary — **Ephrata School District**

Energy Use

Energy Consumption Savings

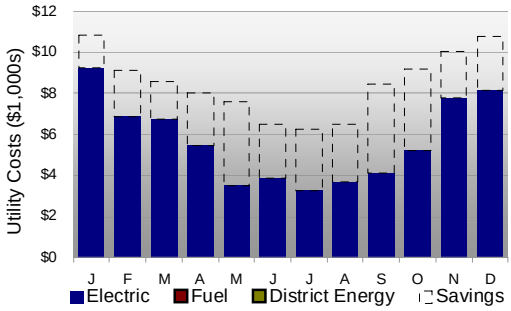


Energy Demand Savings

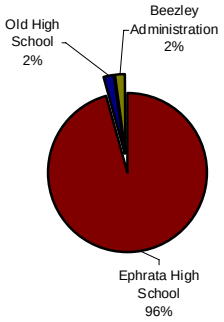


	Energy Savings		Demand Savings	Cost Savings	Post Annual Energy Indicies		
	Electric	Savings Total	Electric	Savings Total	Energy Use Intensity	Cost per ft2	Load Factor
Building	*MMBTU*	*MMBTU*	*MBTUH*	*$/year*	*kBTU/ft²*	*$/sf-yr*	*%*
Ephrata High School	6,738	6,738	5,748	$31,656	35.0	$0.55	17.5%
Old High School	162	162	28	$1,308	47.9	$0.46	37.7%
Beezley Administration	130	130	37	$1,042	35.1	$0.35	31.4%
All Total	**7,031**	**7,031**	**5,813**	**$34,007**	**38.0**	**$0.50**	

Energy Costs Savings



Building Impact



Ephrata SD

Periodic Savings Report

Prepared By Performance Assurance Support Services

February 14, 2013

Schneider Electric

Periodic Project Overview

This report includes important information regarding the performance of the energy conservation measures that were implemented at Ephrata School District's (Ephrata SD) facilities. With adjustments, Ephrata SD saved $65,014 through December 2012. Please be sure to reference the environmental impact summary on the fifth and sixth pages of the report and share your achievements with your community.

The project at Ephrata SD continues to exceed the guaranteed savings in year 1. Schneider Electric would like to commend the Ephrata SD staff for collaborating with the Schneider Electric PASS team and communicating any deficiencies that may impact the energy consumption and operating costs at the sites. Most recently, a joint exercise between the PASS team and Ephrata SD staff was conducted to optimize the night setback or unoccupied temperature setpoint by utilizing the instantaneous power data from the submeter at the new high school. The exercise was conducted to reduce the startup electric demand. A large portion of Ephrata SD's utility costs are determined by the monthly peak metered demand. Therefore, a balance between consumption and demand is required to maximize the savings potential.

The PASS team also conducts regular building automation reviews and communicates any deficiencies to the Ephrata SD staff. The Ephrata SD staff should review the monthly reports and resolve any issues immediately to avoid energy waste that can occur if any items are left unresolved. In a recent building automation system review it was noted that AHU2 at the new high school has been set to run 24/7. AHU2 is a 50,000 CFM unit that is controlled using the duct static pressure status. Therefore, a significant amount of energy waste will be avoided. However, if any of the variable air volume boxes out in the spaces are manually forced open then the fan will be forced to supply substantial amounts of air and cooling 24/7. The Ephrata SD staff should work with the PASS team to resolve any air flow or "catch up" issues in the spaces to avoid a 24/7 operation.

Please contact your Schneider Electric PASS representative with any questions regarding the performance of the project or the opportunities presented in this report.

Your Improvement Opportunities

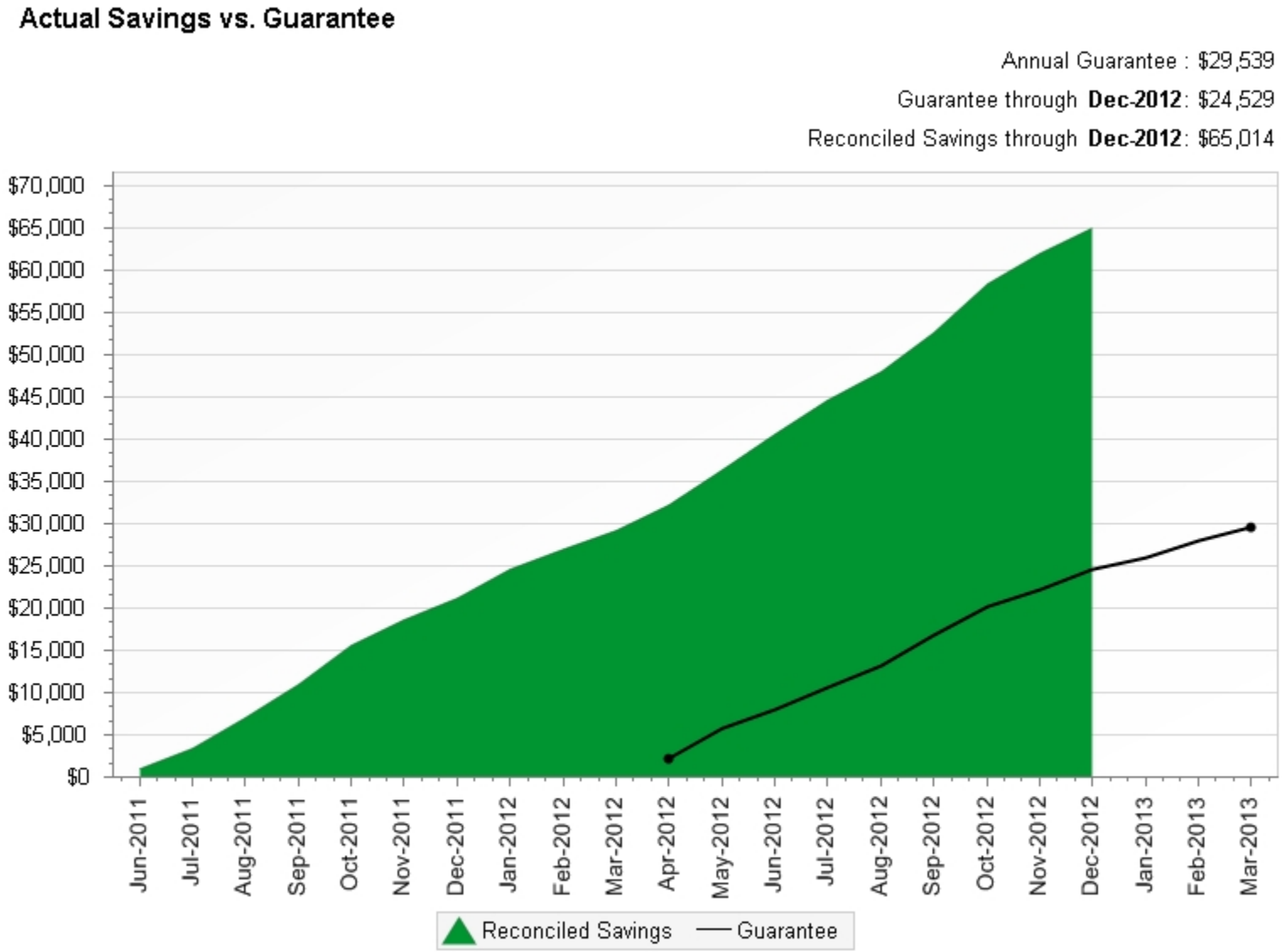
- Resolve any air flow or "catch up" issues in the areas served by AHU2 at the new high school.

Recent Success Stories

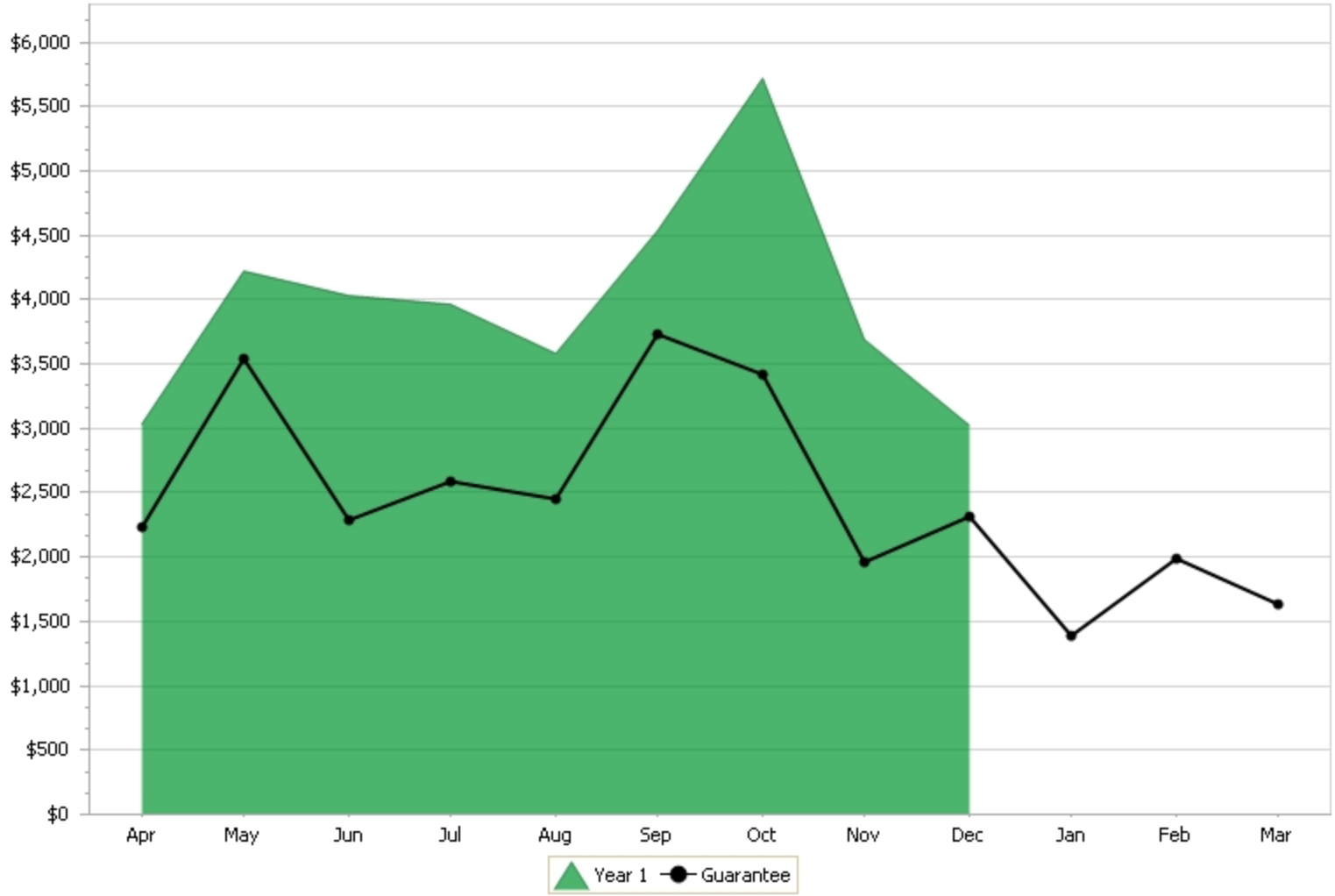
- Savings continue to look great!
- Recently optimized the night setback or unoccupied space temperature setpoints to avoid demand spikes!

Cumulative Savings Performance

This graph represents total savings to date relative to total guarantee to date. Savings are reconciled on an annual basis indicated by the larger dots on the guarantee line. Reconciliation is based on cumulative savings relative to cumulative guarantee. The savings shown in this graph are based on rates as defined in the M&V plan.



Annual Savings Performance



The graph above illustrates the month to month cost savings from previous project year to current project year for the entire project. The savings are based on rates as defined in the M&V plan. The black line represents the fixed guarantee while the solid areas are the monthly cost savings. The goal is for the monthly savings to exceed the monthly guarantee and to sustain or improve on the year to year performance.

Environmental Impact

In one year and seven months, the Ephrata SD project has saved...

kWh: 2,543,192
kW: 4,173

Reduced CO_2 Emissions
1,679 Tons

381 Cars Removed for 1 Year

519 Acres of Trees Planted

Tons of CO2 are the equivalent emissions based on the reduction in consumption. Cars for a year is the equivalent number of cars removed from the road based on the reduction in consumption. Acres of trees is the equivalent quantity of trees required to absorb the CO2 that would have been emitted during the production of the energy that was saved.

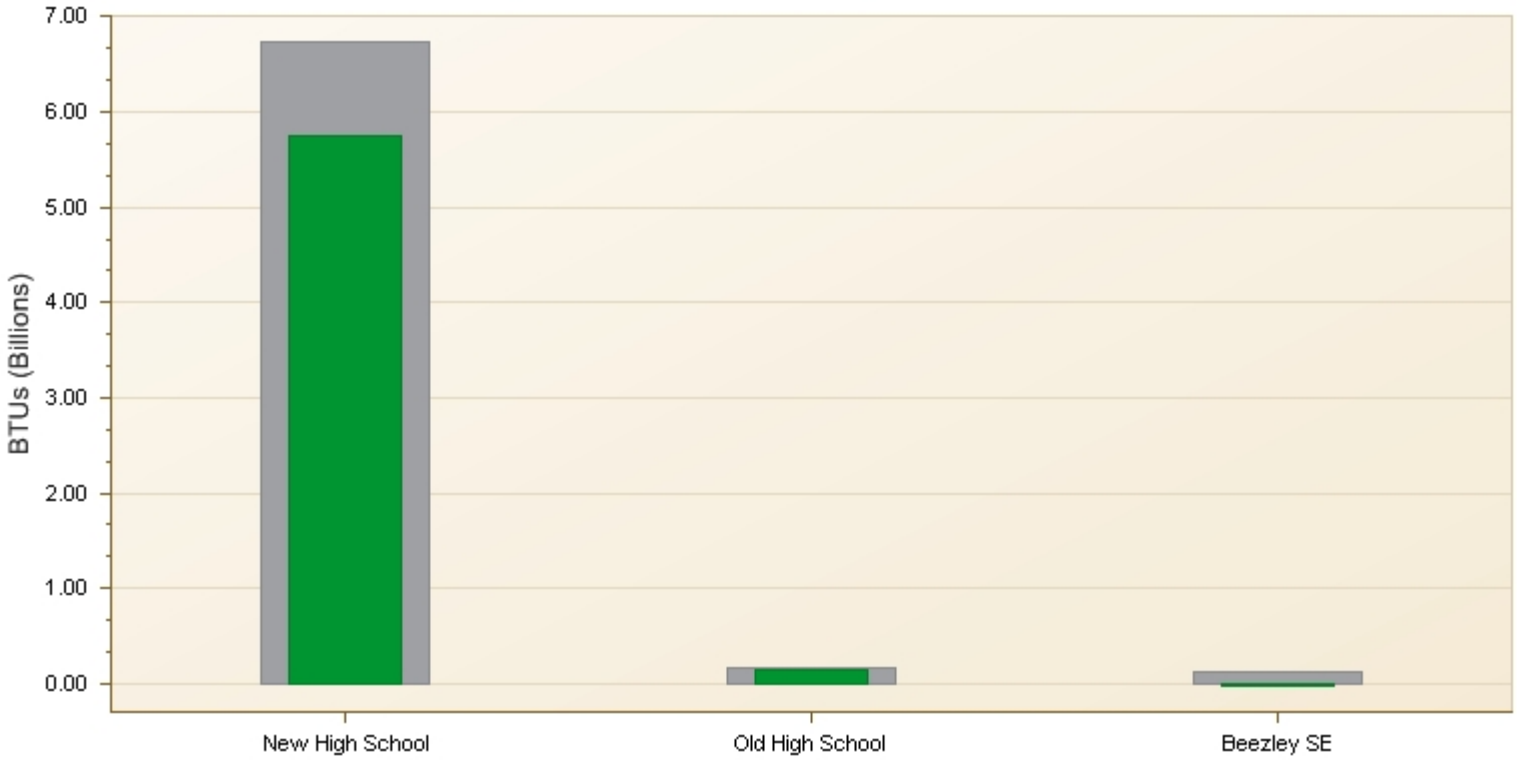
Commercial buildings in the United States used an estimated 18 Quadrillion BTU's in 2008. That's equivalent to 5,983 Million tons of CO2 emissions.

*Based on data from the US Energy Information Administration at http://www.eia.doe.gov . All data is based on industry averages.

**The numbers above reflect all applicable adjustments.*

In the last 12 months, you have saved ...

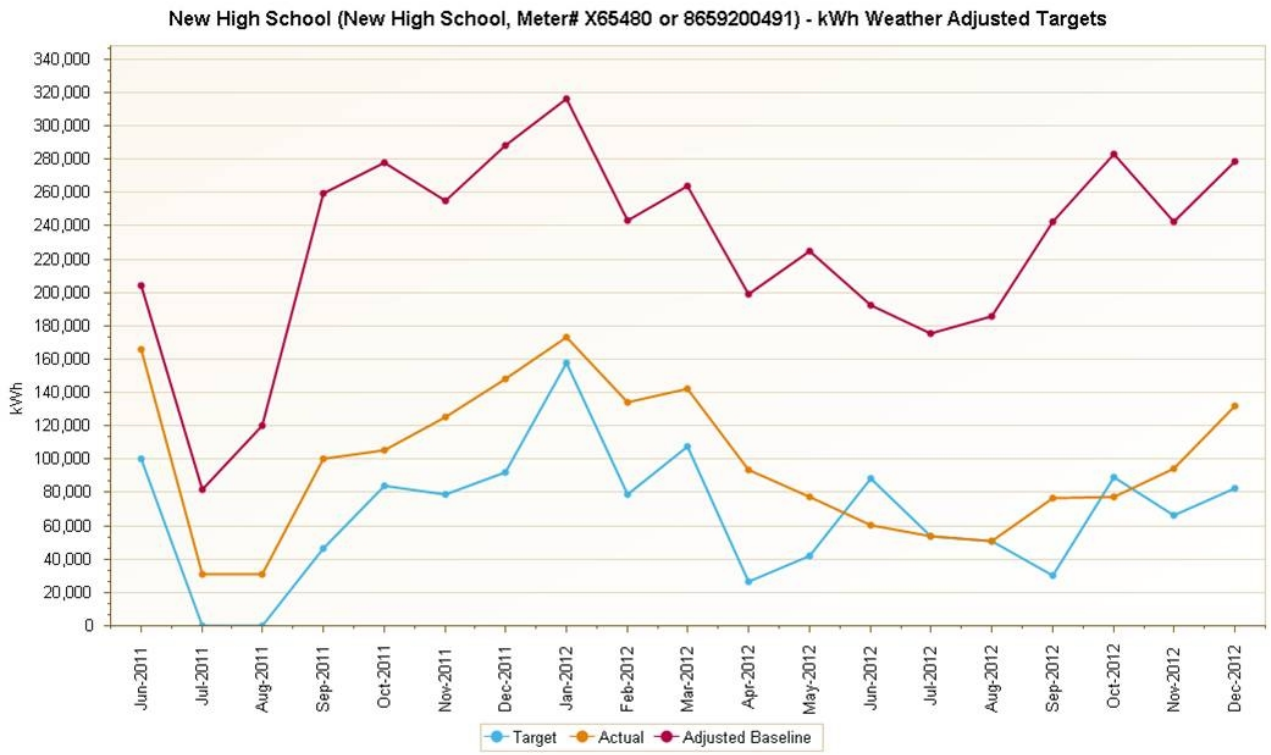
Projected Savings vs. Actual Savings (BTUs)



	New High School	Old High School	Beezley SE
BTUs (billions)	5.74	0.14	-0.02
Tons of CO2	1,110	28	-2.90
Cars for a Year	252	6.27	-0.66
Acres of Trees	343	8.53	-0.90

Schneider Electric

Targets


New High School (New High School, Meter# X65480 or 8659200491) - kWh Weather Adjusted Targets
kWh
340,000
320,000
300,000
280,000
260,000
240,000
220,000
200,000
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
Jun-2011
Jul-2011
Aug-2011
Sep-2011
Oct-2011
Nov-2011
Dec-2011
Jan-2012
Feb-2012
Mar-2012
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Jun-2012
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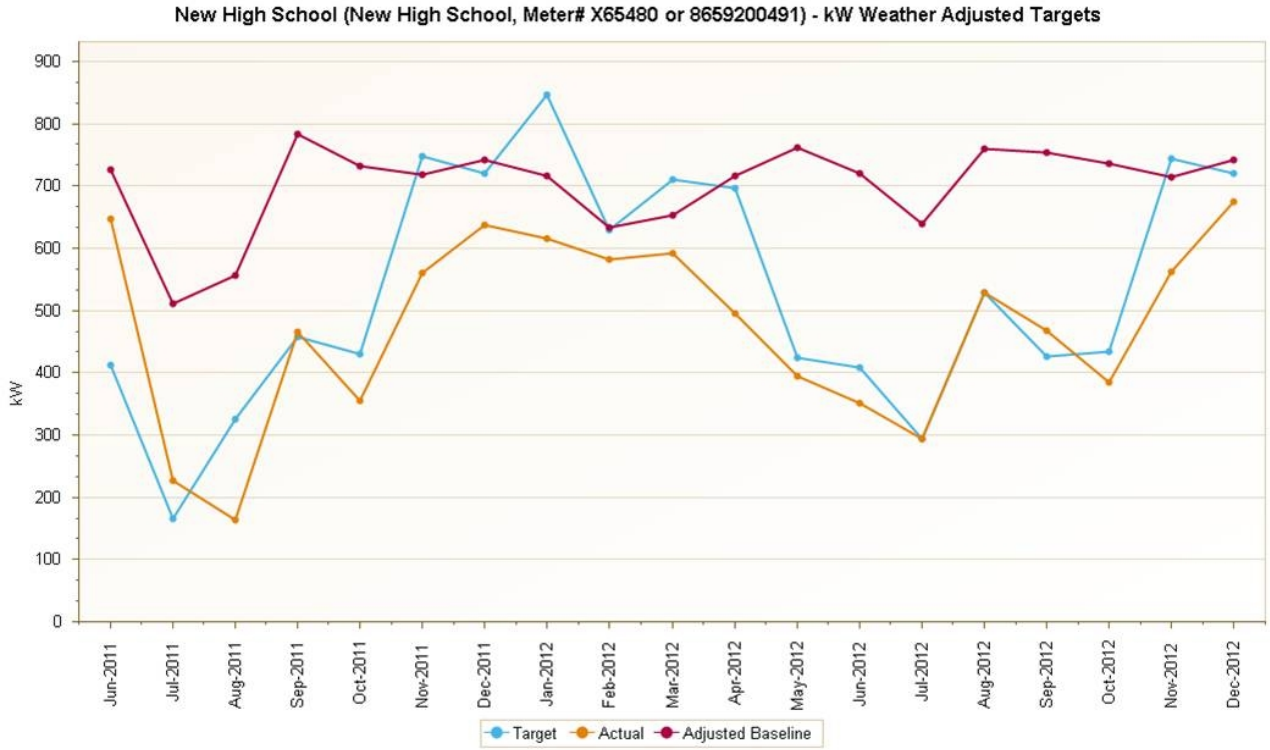
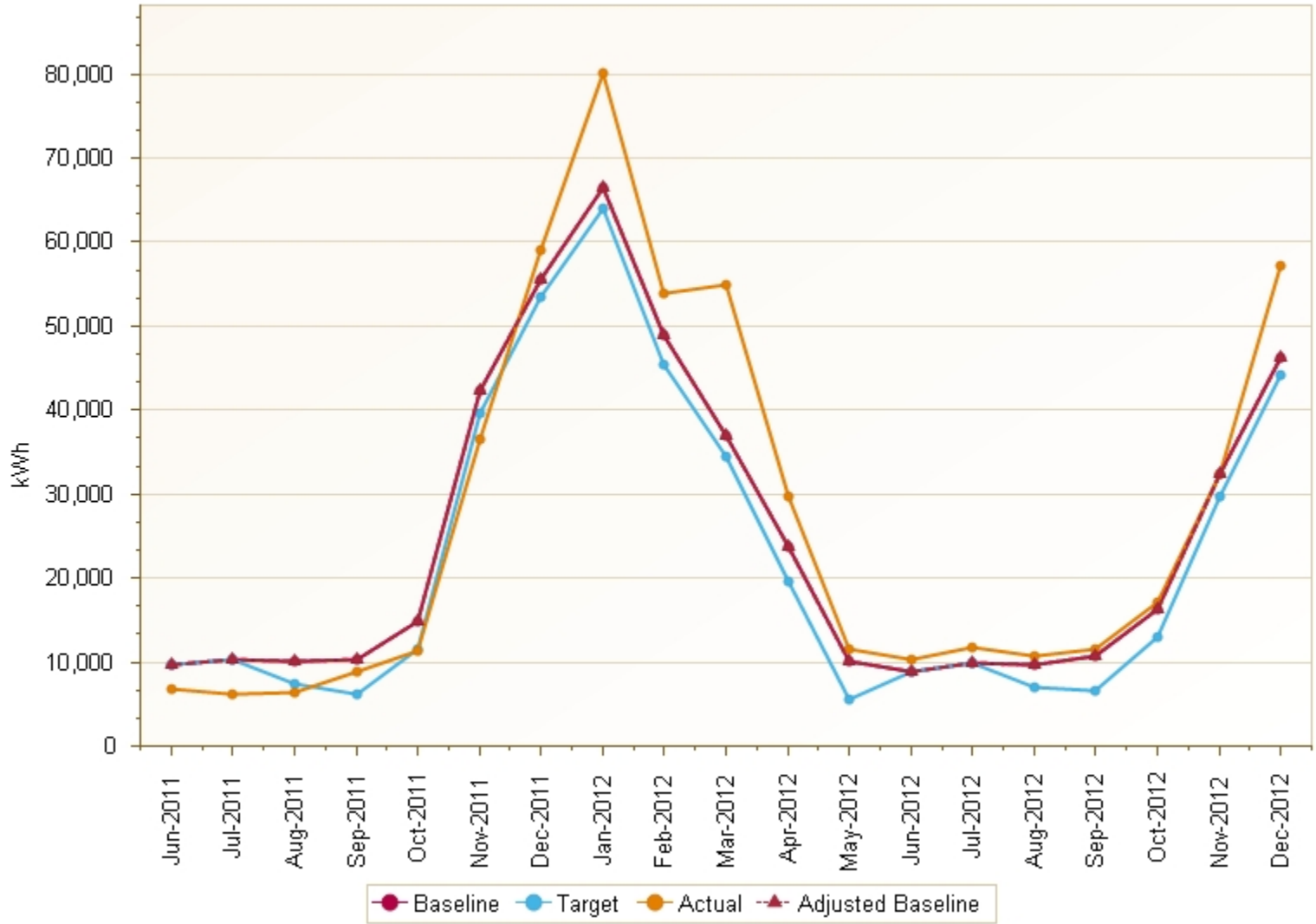
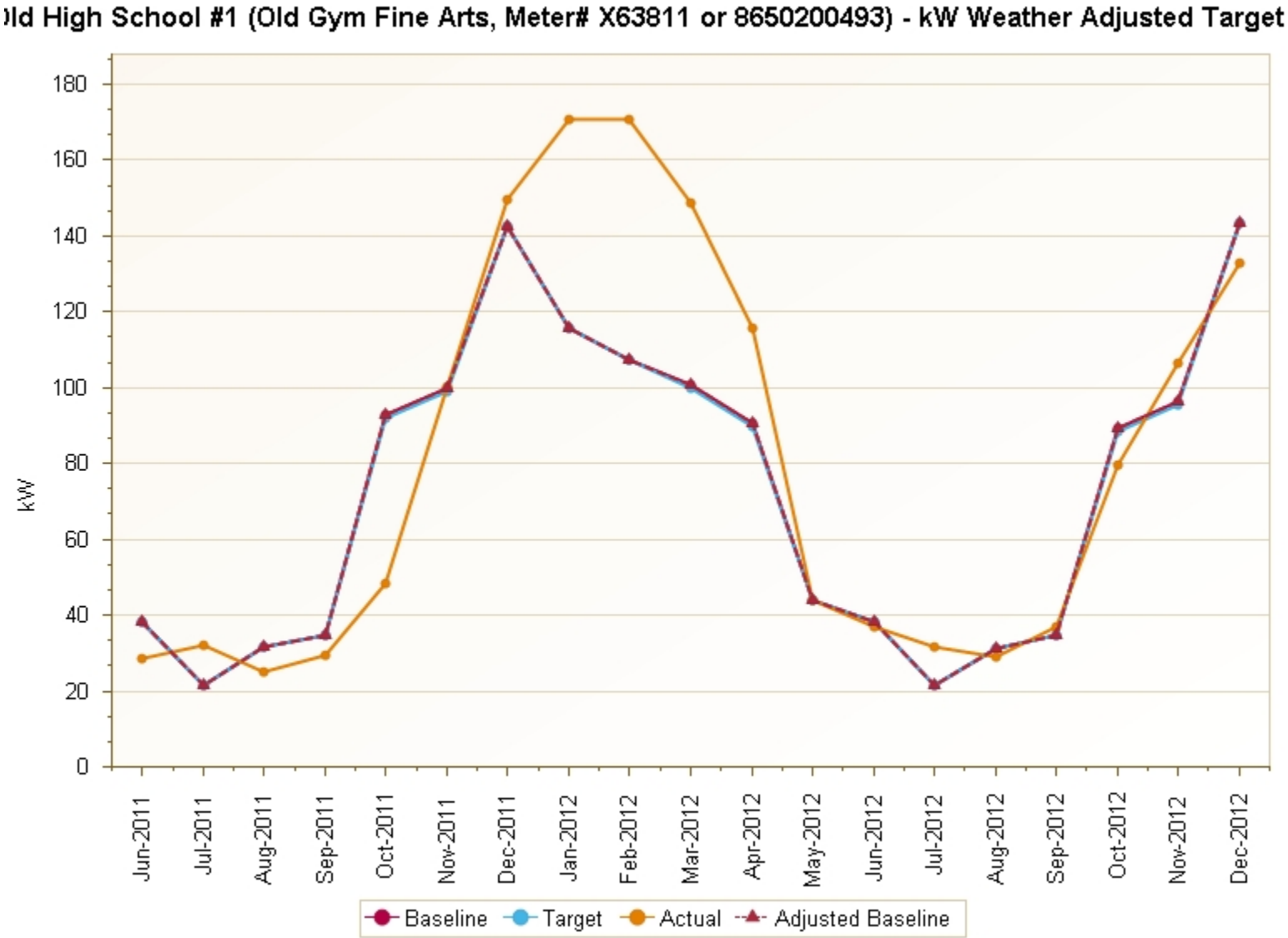
Aug-2012
Sep-2012
Oct-2012
Nov-2012
Dec-2012
Target
Actual
Adjusted Baseline


New High School (New High School, Meter# X65480 or 8659200491) - kW Weather Adjusted Targets
kW
900
800
700
600
500
400
300
200
100
0
Jun-2011
Jul-2011
Aug-2011
Sep-2011
Oct-2011
Nov-2011
Dec-2011
Jan-2012
Feb-2012
Mar-2012
Apr-2012
May-2012
Jun-2012
Jul-2012
Aug-2012
Sep-2012
Oct-2012
Nov-2012
Dec-2012
Target
Actual
Adjusted Baseline

Id High School #1 (Old Gym Fine Arts, Meter# X63811 or 8650200493) - kWh Weather Adjusted Targe



Schneider Electric


Old High School #1 (Old Gym Fine Arts, Meter# X63811 or 8650200493) - kW Weather Adjusted Target
kW
180
160
140
120
100
80
60
40
20
0
Jun-2011
Jul-2011
Aug-2011
Sep-2011
Oct-2011
Nov-2011
Dec-2011
Jan-2012
Feb-2012
Mar-2012
Apr-2012
May-2012
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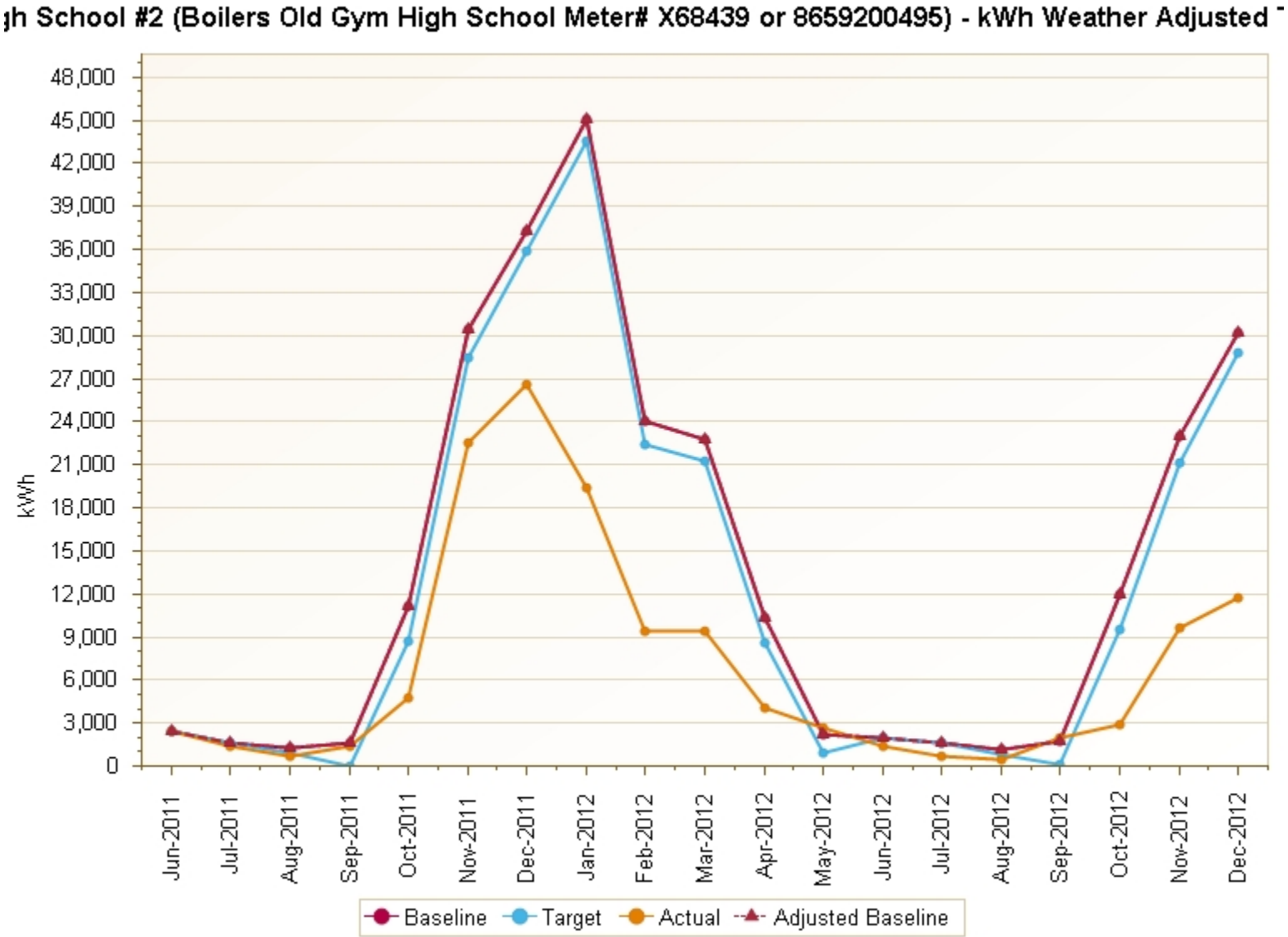
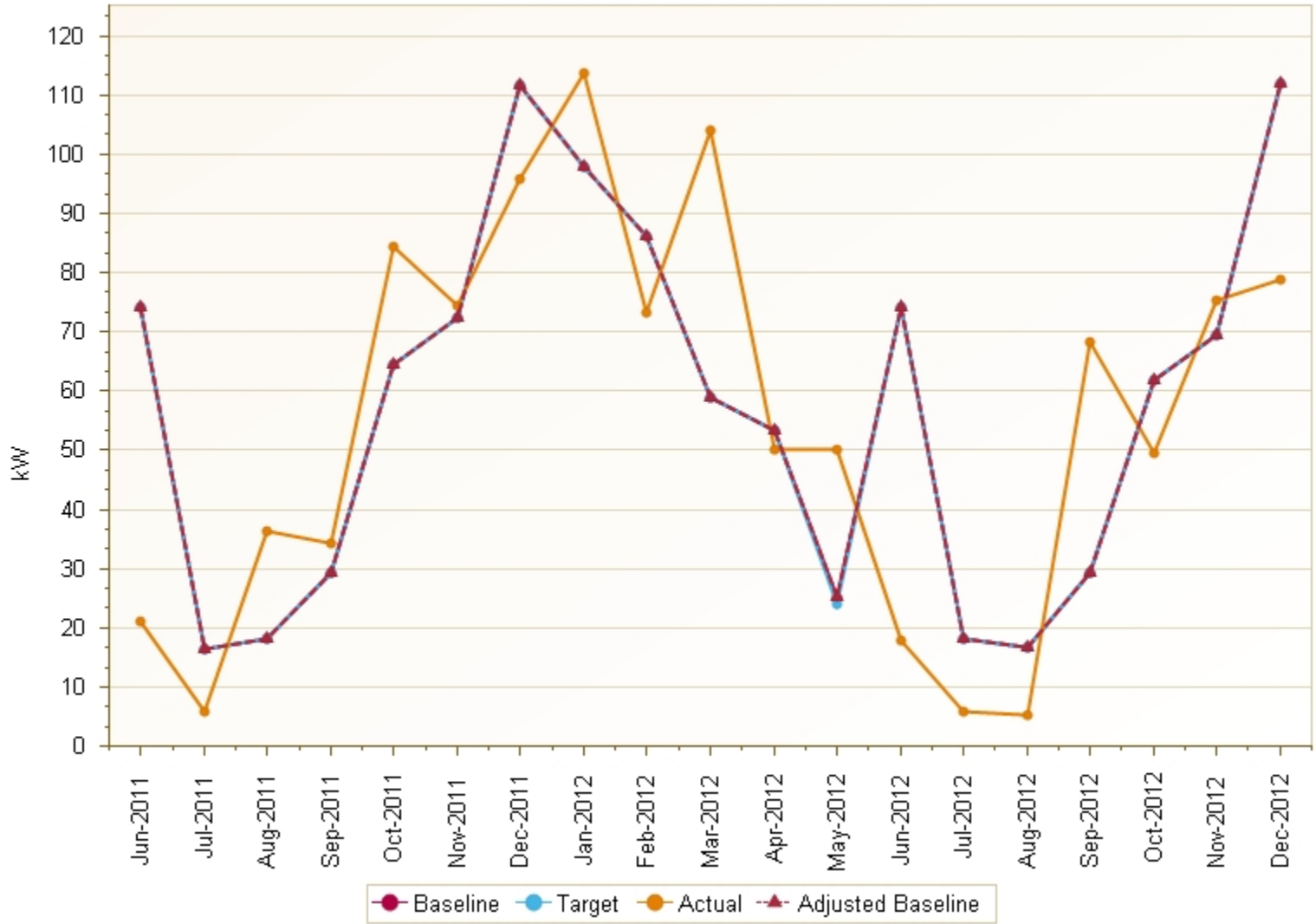
Oct-2012
Nov-2012
Dec-2012
Baseline
Target
Actual
Adjusted Baseline

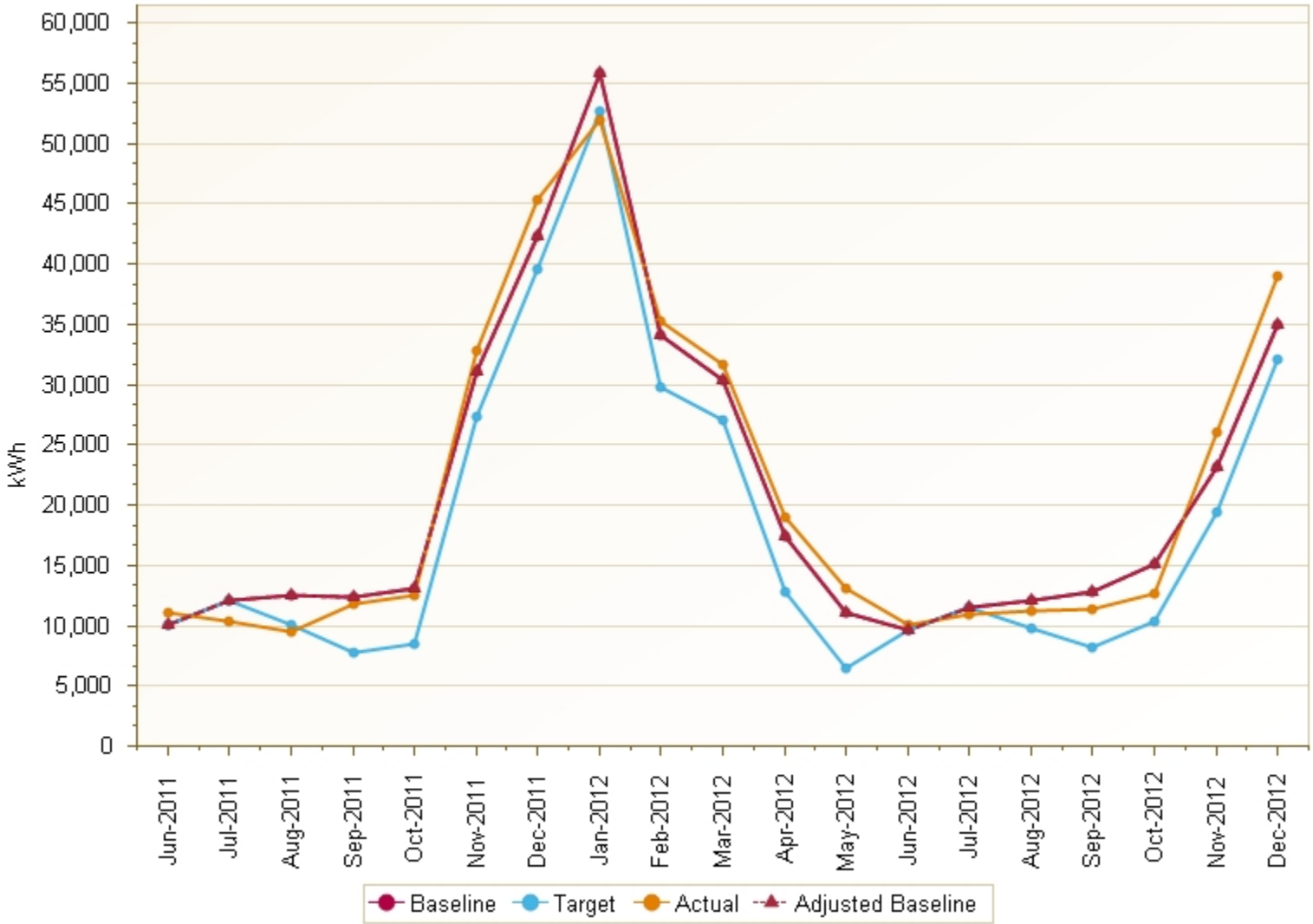


Schneider Electric

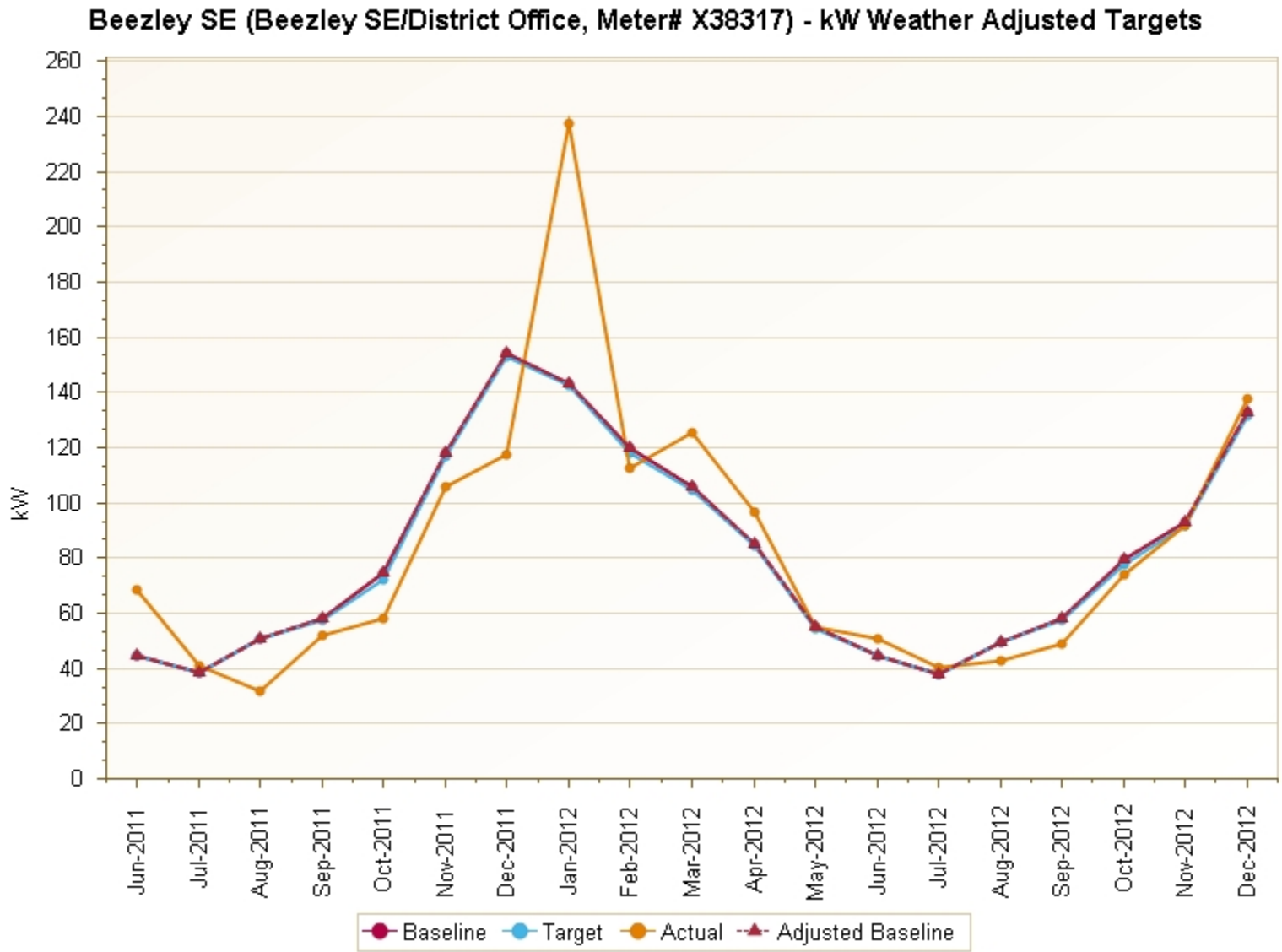
gh School #2 (Boilers Old Gym High School Meter# X68439 or 8659200495) - kW Weather Adjusted T



Beezley SE (Beezley SE/District Office, Meter# X38317) - kWh Weather Adjusted Targets



Schneider Electric



Schneider Electric

Trust in Performance Assurance Support Services

- Verifiable and measurable savings performance
- Client focused support to ensure sustained performance and comfort
- Partnership to achieve Energy Management goals
- Proactive system review to optimize operations and maintenance
- Consistent communication and visibility to empower maximum performance

Please contact one of the following Schneider Electric representatives with any questions or comments:

Performance Manager

The Performance Manager is your energy management partner to ensure the projects success and to assist you with achieving your energy savings and performance objectives. They consistently evaluate the projects performance and communicate opportunities for improvement. This is your contact for questions or concerns related to the project's performance or if you are interested in additional services

Frederick McCandless
Phone: +1 206 396 1668 | **Mobile:** +1 206 396 1668 | **Fax:** +1 206 583 8826
Email: Fred.McCandless@schneider-electric.com

Project Support

In order to achieve sustained performance, it is critical that you and your staff have a path for quick resolution of issues and support. PASS has designated personnel experienced in highly responsive support of the operations and maintenance of the building automation systems. For critical after-hours issues, please leave a message and your phone call will be returned in less than 4 hours.

Phone: +1 800 274 5551 x4 | **Hours:** Monday - Friday, 7 am - 6 pm Central

Our Vision:
"A world where we can all achieve more while using less of our common planet"

Schneider Electric

APPENDIX 2 – KEY PERSONNEL RESUMES

Martin Pape, PE

Engineering Manager

Responsibilities and Expertise

Engineering Manager, South-Central Region
Schneider Electric
Energy Solutions
Lenexa, KS
2008 - Present

Responsibilities include allocating and managing design engineering resources as required for project application. Participate in the development of design engineering standards. Perform quality control reviews of mechanical engineering design documents. Mentor mechanical engineers and technicians.

Representative Project Highlights

- Chicago Public Schools Administration Building, Chicago, IL
- Mountain Empire Community College, Big Stone Gap, VA
- Hendrix College, Conway, AR
- Luther Public Schools, Luther OK
- Eudora Elementary School, Eudora, KS
- Eudora K-12, Eudora, KS
- Oklahoma Juvenile Authority, Tulsa, OK
- Fredericktown Public Schools, Fredericktown, MO

Past Experience

Senior Mechanical Engineer
Schneider Electric
Lenexa, KS
2006 - 2008

Responsibilities include analyzing existing mechanical systems for energy conservation opportunities, evaluating alternatives, and designing modifications to such systems.

Mechanical Engineer
Black & Veatch
Engineers
Overland Park, KS
1985 - 2006

Responsible for the design of mechanical systems including HVAC, plumbing, fire protection, compressed air, and chemical gas scrubbers. HVAC experience includes chilled water, steam, heating water, humidification and dehumidification, VAV and constant volume air handling, and control systems. Facilities include commercial buildings, water and wastewater plants, central heating and cooling plants, and laboratories. Presented training sessions to department personnel. Performed quality control reviews of contract documents and mentored engineers and technicians.

Professional Certifications

- Professional Engineer (PE), Arizona, Arkansas, California, District of Columbia, Illinois, Iowa, Kansas, Maryland, Michigan, Minnesota, Missouri, Nebraska, Nevada, Oklahoma, Oregon, Rhode Island, Virginia, Washington, and Wisconsin.
- Member of American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE)
- Member American Society of Plumbing Engineers (ASPE)

Education and Training

- B.S. Mechanical Engineering Iowa State University, 1985
- Electrician Trade Technical Program Northeast Iowa Technical Institute, 1976

David Palmer, PMP, LEED AP

Program Manager

Responsibilities and Expertise

Schneider Electric
Pacific Northwest
2006-present

Responsible for prospecting, qualifying, and managing the long-term relationship with potential energy saving performance contracting clients. Part of that role consists of conducting preliminary energy audits of facilities for project feasibility, but primarily consists of communicating the intricacies of a performance contract to help a potential client determine if it is a good fit for their situation and goals.

Key to David's success has been his ability to understand issues and concerns from the clients' perspective, assist the Schneider Electric project devolvement team with creative and realistic ways of implementing solutions, and communicate these proposed solutions and their benefits to the client for approval. David is also thoroughly experienced in the selection of qualified financing, grants, incentives, and rebates for energy projects.

Representative Project Highlights

- Oregon Department of Corrections – Santiam Correctional Institution
- Columbia Basin College
- Omak School District
- Methow Valley School District
- Odessa School District
- Clark County, WA, Biomass
- Ephrata School District
- Granger School District
- Colville School District
- Pendleton School District
- Fife School District
- Goldendale School District
- Touchet School District

Past Experience

Student Staff & Team Leader
Young Life
Vancouver, WA
2001-2005

Responsible for organizing fundraising and middle and high school student events, managing a team of volunteers, recruitment, and activities, and mentoring youth in the Hockinson School District. Promoted from volunteer to staff after 3 years of involvement.

Residential Roofer & Crew Leader/Foreman
Amer-X/Premier Roofing
Vancouver, WA
2003-2005

Responsible for leading tear-off and installation crews, organizing tool and labor dispersion, and training new and inexperienced crew members. Also enlisted new team members. Was recognized as a top performer in productivity and quality.

Professional Certifications

- Project Management Professional (PMP)
- LEED Accredited Professional (LEED AP)
- Energy Management Professional
- Member – Association of Energy Engineers, Project Management Institute

Education and Training

- B.A. Business Administration, Washington State University
- A.A. Business Administration, Western Baptist College
- HVAC, HVAC Controls, Lighting, Lighting Controls System Trainings
- Certified Energy Manager Preparation Course

Rami Nadershahi

Senior Estimator

Responsibilities and Expertise

Schneider Electric
Buildings Business
Energy Solutions
Los Angeles, CA
2008-present

National responsibilities in financial analysis, energy conservation measure/scope development and qualification, cost estimating, project cost control, scheduling, procurement of equipment and subcontractors.

Extensive expertise in national level developing and executing energy savings performance contracts, as well as construction contracting that includes: mechanical, electrical, plumbing, and general disciplines for clients including health care/medical, government, military, and institutional.

Representative Project Highlights

- Columbia Basin College
- Omak School District
- Methow Valley School District
- Ephrata School District
- Wahluke School District
- Granger School District
- Royal School District
- Touchet School District
- Evan's Hospital
- Fitzsimmons
- JPL
- Disney
- Arizona State University
- Los Angeles Community College District
- Federal Super ESPC Projects - USA and Territories
- Veterans Administration Medical Centers – USA and Territories

Past Experience

Manager of Estimating & Pre-Construction Coordinator
Honeywell, Inc
Los Angeles, CA
2006-2008

Manager of the estimating department, Western and Gulf regions. Directly involved with cost estimating, vendor and contractor negotiations, and contracts.

Manager of Estimating & Pre-Construction Coordinator
Sempra Energy Solutions, Inc
Los Angeles, CA
2001-2006

Manager of the estimating department, Western and Gulf regions. Directly involved with cost estimating, vendor and contractor negotiations, and contracts. Directly involved in more than $240M in energy projects.

Director of the Engineering and Estimating Department
All Temperatures Controlled, Inc
Chatsworth, CA
1994-2001

Direct contact to related departments, and the president. Directly involved with marketing, meetings with clientele to establish cost/budgets of various projects. Negotiated contracts, change orders/purchase orders with the clients, subcontractors, and vendors.

Professional Associations

- Project Management Institute (PMI)
- American Association of Cost Estimators (AACE)

Education and Training

- Executive Management Program, UCLA (accelerated MBA program)
- B.A. California State University, Northridge
- A.A. Pierce College

Fred McCandless, CEM, CMVP, CDSM

Senior Performance Assurance Consultant

Responsibilities and Expertise

Schneider Electric
Seattle, WA
1993-1997,
2002-present

Primary duties include developing, designing and implementing energy conservation monitoring and support programs for multiple projects. Serves as the main contact within Schneider Electric throughout the performance period of a project, measuring and verifying the actual performance of the project and presenting the results regularly to the client, also responsible for ensuring client can operate the systems easily, understands the operating strategies for the energy conservation measures, and can perform independent savings calculations to verify savings.

Possesses in-depth knowledge of control systems/systems analysis, outstanding diagnostic and computer skills, collaborative management style; effectively analyzes risks and develops solutions. Increases productivity by training, process improvement, and documenting standards. (has also performed as Project Manager for Schneider Electric)

Representative Project Highlights

- Omak School District, WA
- Odessa School District, WA
- Oregon Dept of Corrections
  – Santiam Correctional Institution
- Columbia Basin College
- Colville School District
- Ephrata School District
- Helen Hayes Hospital
- Central Washington University
- USN – Navy Base Kitsap (formerly Subbase Bangor)
- Chicago Public Schools

Past Experience

Regional Technical Services Director — Jones Lang LaSalle, 1997-2002

Directed all functions and staff involved in managing Technical Services in three states for international financial institution commercial real estate portfolio.

Automation Systems Manager — Wright, Runstad & Company, 1985-1993

Managed technical and support staff providing automation system repair and maintenance service for 5 million+ square feet. Engineered, designed, installed, programmed, repaired, and troubleshot multiple automation systems controlling HVAC, fire alarm, and access control/security systems.

Energy Management System Design Engineer/Commissioning Agent — Bouillon, Christofferson & Shirer Engineers, 1983-1985

Designed energy management systems. Performed field-testing and balancing of air and hydronic systems for multiple projects.

Professional Certifications

- Certified Measurement and Verification Professional (CMVP)
- Certified Energy Manager (CEM), Certified Demand-Side Manager (CDSM) Association of Energy Engineers
- Building Commissioning Association - Member

Education and Training

- B.A. English Seattle University (cum laude)

J. Brandon Bedford, CEM

Project Development Project Manager

Responsibilities and Expertise

Responsible for managing Project Development teams throughout the development and engineering phase of a performance contract. Duties include generating and maintaining project schedules and budgets, interviewing customers, managing development efforts of energy and mechanical engineers and subcontractors, and supporting sales presentations.

Schneider Electric
Carrollton, TX
July 2008-present

Representative Project Highlights

- Touchet School District (WA)
- Goldendale School District (WA)
- Houston ISD
- City of Houston, TX
- City of Washington, NC
- Purdue University Calumet Campus
- Little Cypress-Mauriceville CISD
- Southern Methodist University
- TX Health and Human Services Comm.
- Kountze ISD
- Perry Public School District
- Avoyelles Parish School Board Cedars Sinai Medical Center
- Eagle Mountain - Saginaw ISD
- Northwestern Oklahoma State Univ.
- Elgin ISD
- Luling ISD
- Edcouch - Elsa ISD
- City of Harlingen
- Needville ISD
- Graham ISD, JH Gym
- Princeton High School
- Lindale ISD

Past Experience

Project Development Project Engineer
Responsible for performing energy audits and developing utility and energy reduction solutions utilizing available building environment technology. Includes the simulation of a facility's energy usage utilizing computer models, analyzing historical facility utility data, designing and estimating cost for proposed solutions.

Schneider Electric
Carrollton, TX
July 2004-July 2008

Installation Project Engineer
Responsible for the software application programming, final commissioning and startup of the TAC Energy Management System. Duties include software design, validation, commissioning, troubleshooting, system service and customer training.

Schneider Electric
Carrollton, TX
January 2003-July 2004

Professional Certifications

- Certified Energy Manager

Education and Training

- B.S. Electrical and Computer Engineering from Baylor University, Eta Kappa Nu – Electrical and Computer Engineering Honor Society
- Americas Management Development Program I, II and III
- Project Manager Development Program
- TAC Courses: LonWorks Technology & TAC Xenta, TAC Vista & System Integration, TAC Menta Application
- Carrier Courses: Hourly Analysis Program Advanced Training Seminar
- TRANE Courses: VSD's and Their Effect on System Components, Energy Saving Strategies for Rooftop VAV Systems, Waterside Heat Recovery

Brian Toce

Construction Services Manager

Responsibilities and Expertise

Schneider Electric – Energy Solutions
Various Locations
2002 - Present

Identification and evaluation of subcontractors through the development and construction process focusing on scope, schedule, budget and expectations. Implement subcontracts and evaluate with respect to project budget and scope of work. Administer the project billings, forecasts and financial reviews. Personally accountable for all project financials and responsible for all aspects of projects from inception through warranty.

Typical projects include major mechanical upgrades, lighting retrofits, envelope upgrades, and building management system implementations. Has performed as project manager (site level supervision), construction manager (managing a portfolio of projects), and project engineer.

Representative Project Highlights

- Columbia Basin College
- Virginia Military Institute, VA
- Kittitas Valley Comm. Hospital, WA
- Oregon Department of Corrections – Santiam Correctional Institution
- Clark County, WA, Biomass
- National Institute of Standards and Technology, MD
- Texas Parks and Wildlife Department
- Granger School District
- Methow Valley School District
- Colville School District

Past Experience

Schneider Electric
Carrollton, TX
2004 - 2006

Senior Project Engineer - In addition to the duties of Project Engineer, was responsible for the design and verification of complex HVAC systems. Also responsible for setting branch standards for system design and checkout. Responsible for training project engineers in TAC project implementation. Responsible for customer training.

Schneider Electric
Dallas, TX
2002 - 2004

Project Engineer - Responsible for the final commissioning and startup of the TAC Energy Management System. Duties included hardware and software design, validation, commissioning, troubleshooting, and system service.

Professional Certifications

- TAC Management and Development Programs I and II
- TAC Project Manager Development Program
- Square D Variable Frequency Drive Certification
- OSHA 10-hour

Education and Training

- Bachelor of Business Administration – Marketing
- Texas A&M University - 1999

Jeff Coles, PE

Senior Project Development Manager - Federal

Responsibilities and Expertise

Schneider Electric
Seattle, WA
2009 - Present

- Produce sustainable business results through leadership and management of technical and construction professionals delivering turn-key projects to sophisticated clients.
- Skills summarized as follows; 1) Simplify systems and their complex interactions. 2) Relate analytical to the physical to deliver practical solutions. 3) Implement meaningful metrics to deliver visible and sustainable performance. 4) Institutionalize behavior through leadership and communication. 5) Develop and implement project and technical management systems to institutionalize best practices and build corporate capability. 6) Develop/grow project management and technical professionals. 7) Solve problems utilizing organization, discipline and innovation.

Representative Project Highlights

- General Services Administration Region 7
- Federal ESPC Proposal
- Virginia Commonwealth University
- Providence St. Peter Hospital
- Virginia Commonwealth University
- Providence St. Peter Hospital

Past Experience

Schneider Electric
Formerly TAC Americas
Seattle, WA
2005 - 2009

West Region Project Development Manager –

- Led team of professionals responsible for developing Energy Saving Performance Contracts in the Northwest Region (WA, OR, CA, UT). Accountable for 1) On-time delivery of project plan that includes a proposal, construction plan, and measurement and verification plan, 2) Variance from estimate for total cost of developing project plan, 3) Accuracy of each project's construction plan as measured by variance between project's estimated and actual construction cost, and 4) Accuracy of measurement and verification plan as measured by variance between estimated and actual performance during each project's multi-year performance period.
- Major contributor to creation of business process and associated processes/procedures for delivering performance contracting projects.
- Primary architect of template(s) for Project Program that is utilized as a tool for defining and managing project Scope, Schedule, Budget, Expectations, and Requirements throughout performance contract's project life cycle.
- Participant in Engineering Review Board accountable for institutionalizing mechanical/electrical/plumbing engineering/design best practices across a national performance contracting business unit generating $120 million in annual revenue.
- Led, managed, and grew team of professionals delivering energy engineering, mechanical/electrical/plumbing/controls engineering/design, and technical project management

services. .

Director Development Engineering & Acting Director Performance Assurance Services –

Schneider Electric formerly Abacus Engineered Systems
Seattle, WA
2003 – 2004

- Led the team of professionals responsible for delivering development engineering (i.e. Energy Analysis, Life Cycle Cost Analysis, Conceptual Design, and Cost Estimating), commissioning, and performance measurement and verification services in support of a performance contracting business generating annual revenues of $25-35 million.
- Managed Abacus's multi-million dollar performance contracting energy savings guarantee portfolio.
- Member of the due diligence team that represented Abacus throughout acquisition by TAC/Schneider Electric. Primary role was representing Abacus's multi-million dollar performance guarantee portfolio and corporate capabilities of development engineering, commissioning, and measurement and verification of performance.
- Developed Abacus's corporate capabilities of documenting functional and technical requirements of integrated and individual systems in Intent Documents and commissioning systems to verify performance per Intent Documents. Deployed corporate capabilities across multi-region performance contracting business line generating annual revenues of $25-35 million for the purpose of scope, risk, and quality management. Led the team of professionals that applied these corporate capabilities to Abacus's first combined heat and power plant project, an 8$ million steam plant renovation that included a 300 psi steam production and a 500kW backpressure steam turbine.

Director Performance Assurance Services –

Schneider Electric formerly Abacus Engineered Systems
Seattle, WA
2000 - 2003

- Led the team of professionals delivering $200 - 300K of third-party commissioning services as part of a consulting engineering business generating annual revenues of $4 - $5 million. Team commissioned several LEED certified buildings including the first LEED certified fire station in the United States.
- Managed AES's multi-million dollar performance guarantee portfolio including delivery of associated commissioning and measurement & verification services.
- Key member of the team that developed Abacus's corporate capability of retro-commissioning existing building systems, thereby providing a low cost alternative to replacement of poor performing building systems that had not reached their economic useful life. This corporate capability became a key differentiator for Abacus annually procuring $15-25 million in performance contracts in the Northeast Region

Senior Engineer and Co-Owner –

Coles Consulting
Seattle, WA
1997 – 2000

- Developed and executed turn-key projects to eliminate the root cause of problematic mechanical and electrical infrastructure by providing project management, construction management, development engineering, and mechanical/electrical/control

system design. Services provided primarily for hospitals ranging in size from 100,000 – 2,000,000 square feet.

- Developed and executed prime mechanical/electrical/controls consulting and third-party commissioning services. Services provided primarily for mechanical and electrical infrastructure of hospitals and municipality owned light industrial and waste water facilities. Major projects summarized as follows; 1) Commissioned the $25 million expansion of a hospital from 125,000 to 250,000 square feet. At the conclusion of project's construction phase deployed a continuous commissioning program that has been successfully utilized by operations and maintenance staff over a period of six years to maintain a reduction in hospital energy use from 230 kBtu/sq ft/ yr pre-expansion to 140 kBtu/sq ft/yr post-expansion. 2) Commissioned $110 million expansion of a 2,000,000 square foot hospital. Project included construction of a 12 story medical tower that included 1 floor of birthing suites, 3 floors of ICU, 6 floors of general patient care, and a 2 story mechanical/electrical room. Central plant scope included expansion of an existing 1200 ton chilled water plant to 3000 tons, the addition of 12 automatic transfer switches to a 7.5 MW emergency power system with 60 existing automatic transfer switches, and replacement of an existing domestic water booster system.
- Managed company A/P, A/R, line of credit, and IT/IS infrastructure.

Schneider Electric formerly Abacus Engineered Systems
Seattle, WA
1989 - 1996

Mechanical Engineer - Calculation of heating and cooling loads by hand and with the aid of computer programs. Sizing, selection, and layout of HVAC and hydronic equipment including coordination of space, maintenance access, and code-required clearances with other disciplines. Technical specification writing. Creation of sequence of operations. Cost estimating. predict the energy use of existing and new buildings with varying types of HVAC and lighting systems installed. Analysis of electric, gas, and water conservation measures.

Mechanical Designer - Employed part-time while in engineering school; also worked as a CAD drafter, general office assistant, and computer programmer.

Professional Certifications

- Professional Engineer – 1997 WA

Education and Training

- B.S. Mechanical Engineering, University of Washington, 1992

ARCHITECT – ENGINEER QUALIFICATIONS

PART I – CONTRACT SPECIFIC QUALIFICATIONS

A. CONTRACT INFORMATION

1. TITLE AND LOCATION *(City and State)*
ESCO Prequalification for Future Energy Savings Performance Contracting Projects, statewide, Washington State

2. PUBLIC NOTICE DATE
1/23/2013

3. SOLICITATION OR PROJECT NUMBER
Project No. 2013-133

B. ARCHITECT – ENGINEER POINT OF CONTACT

4. NAME AND TITLE
David Palmer, Program Manager

5. NAME OF FIRM
Schneider Electric Buildings Americas, Inc

6. TELEPHONE NUMBER
360-823-3040

7. FAX NUMBER
866- 894-4428

8. E-MAIL ADDRESS
david.b.palmer@schneider-electric.com

C. PROPOSED TEAM

(Complete this section for the prime contractor and all key subcontractors.)

	(Check) PRIME	J-V PARTNER	SUBCON-TRACTOR	9. FIRM NAME	10. ADDRESS	11. ROLE IN THIS CONTRACT
a.	X			Schneider Electric Buildings Americas, Inc [X] CHECK IF BRANCH OFFICE	95 South Jackson Street, Suite 300 Seattle, WA, 98104	Performance Contracting
b.	X			Schneider Electric Buildings Americas, Inc CHECK IF BRANCH OFFICE	105 West Main Street, Suite 210 Battle Ground, WA, 98604	Performance Contracting
c.				CHECK IF BRANCH OFFICE		
d.				CHECK IF BRANCH OFFICE		
e.				CHECK IF BRANCH OFFICE		
f.				CHECK IF BRANCH OFFICE		

D. ORGANIZATIONAL CHART OF PROPOSED TEAM **[X]** *(Attached)*

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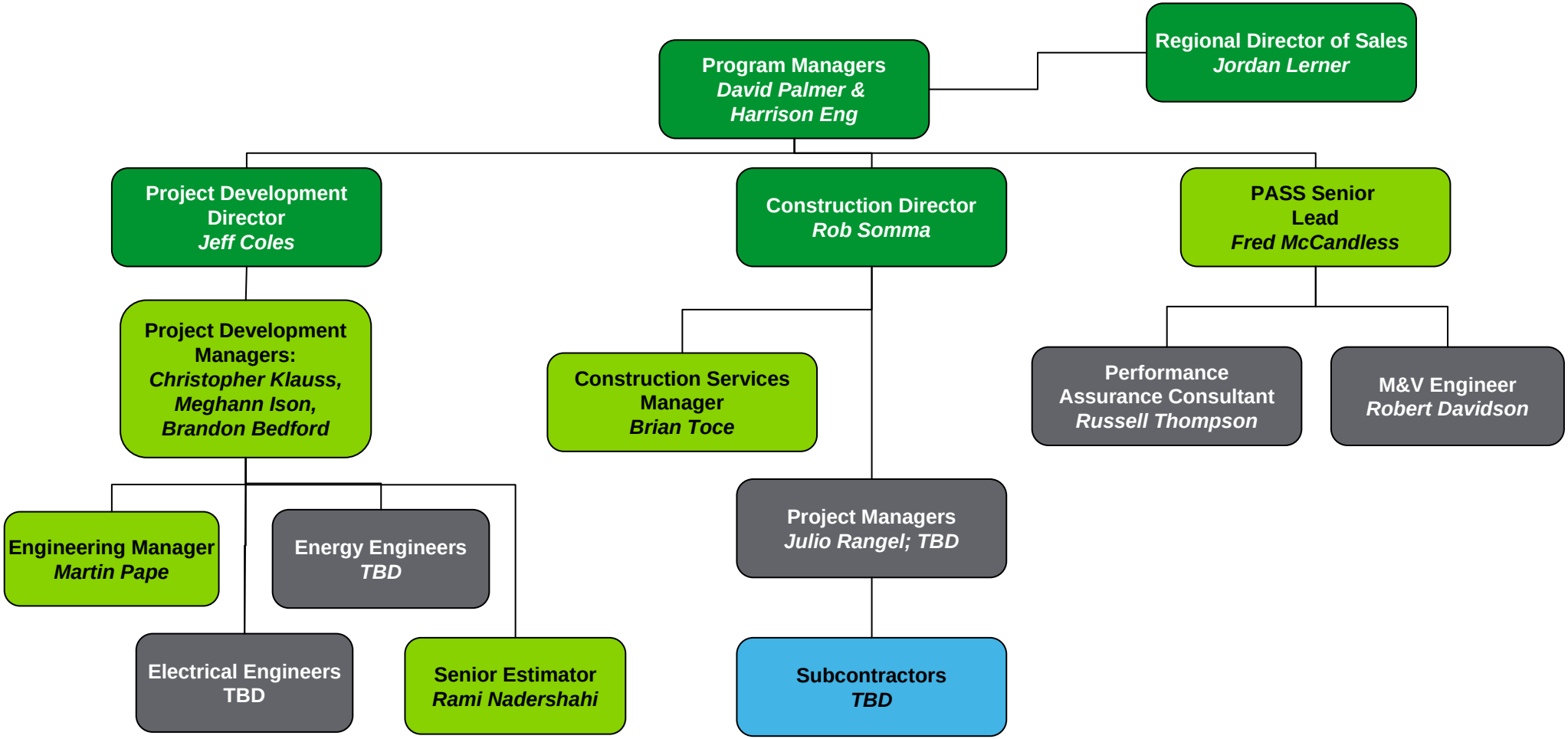
Regional Director of Sales
Jordan Lerner
Program Managers
David Palmer &
Harrison Eng
Project Development Director
Jeff Coles
Construction Director
Rob Somma
PASS Senior Lead
Fred McCandless
Project Development Managers:
Christopher Klauss,
Meghann Ison,
Brandon Bedford
Construction Services Manager
Brian Toce
Performance Assurance Consultant
Russell Thompson
M&V Engineer
Robert Davidson
Engineering Manager
Martin Pape
Energy Engineers
TBD
Project Managers
Julio Rangel; TBD
Electrical Engineers
TBD
Senior Estimator
Rami Nadershahi
Subcontractors
TBD