2012 Secretary of Defense Environmental Award
"SUSTAINABILITY – INDIVIDUAL or TEAM "
Fleet Readiness Center Southwest (FRCSW), San Diego, California

INTRODUCTION

The Fleet Readiness Center Southwest (FRCSW) is an industrial facility providing aviation maintenance, repair and overhaul support to the US and allied warfighters. FRCSW performs a complete range of depot level maintenance and repair on aircraft, aircraft components, aircraft carrier catapult and arresting systems, and marine gas turbine engines. In addition, FRCSW provides aerospace engineering services and assists operational commands in the resolution of aircraft maintenance and logistics issues. In FY2012 FRCSW provided 275 aircraft to the fleet, including 104 F/A-18, 41 H-60s, 36 H-1, 10 E-2, 6 C-2 (above a C-2 and an E-2 fly in formation) 12 EA-6B, 6 8 AV-8B, 12 H-53 and 50,000 components.

The facility is located on 358 acres in the City of San Diego. It is bordered on the north and east by the San Diego Bay, on the South by the residential neighborhoods of the City of Coronado, and on the west by the Pacific Ocean. The largest of thirty-two tenants of Naval Air Station North Island, FRCSW occupies eighty-one buildings including over two million square feet of workspace, and employs approximately 850 active duty military, 2,500 civilians and 700 contractors.

FRCSW is submitting an individual nominee, Mr. Matthew J. Schreck, who serves as the Command's Energy and Water Conservation Manager. Mr. Schreck exemplifies the Command's commitment to the reduction of both energy and water usage. Mr. Schreck is well suited for this role as his background includes experience in energy management in both the military and private sectors. Mr. Schreck is a disabled veteran who served in the U.S. Navy's nuclear and information technology communities. As a Navy civilian, Mr. Schreck brings a passion for energy conservation and efficiency that was developed while on active duty. Mr. Schreck is a Certified Energy Manager and a Certified Energy Auditor. Mr. Schreck is ultimately responsible for FRCSW meeting its energy and water goals and as a consequence enhancing overall mission readiness via increased energy security.

Ms. Caroline Winn, Vice President of Customer Service for SDG&E, Capt. John Smajdek, Commanding Officer, FRCSW and Mr. Matthew Schreck accept a $600,000 rebate from SDG&E for the successful implementation of an array of energy projects.

In addition, Mr. Schreck has served as the Navy Region's public face for community involvement and energy management. Please see http://www.sdge.com/business/energy-showcase/2011-energy-champions scroll right to find the U.S. Navy video icon.

PROGRAM MANAGEMENT

Mr. Schreck approaches project management with an open mind for energy savings opportunities from many perspectives and potential sources. In response to a new concept, he researches technologies and engineering solutions, accomplishes economic viability via business case analysis, networks with government and industry colleagues, researches funding sources, and makes a feasibility determination. The deployment of new energy technologies takes great skill as it requires the close coordination with NAVFAC, local utilities, contractors and government personnel. These deployments are especially challenging because they must be achieved while minimizing any disruptions to depot workload production. Mr. Schreck is able to overcome the inevitable challenges of change in these activities by his unique ability to convey and frame the long term energy benefits to the many stakeholders.

In aggregate, Mr. Schreck has directed the investment of over $10 million of Energy Conservation Investment Project (ECIP), Utility Energy Service Contract (UESC) and Sustainment, Restoration and Modernization (SRM) funds to realize more than $800,000 and 17,820 MBTUs of annual energy savings. These projects have spanned a multitude of energy intensive industrial processes and equipment in a variety of applications including: painting, abrasive blasting, chemical stripping, electroplating, chemical cleaning and degreasing, jet engine testing, machining, non-destructive testing, composite repair, heat treating and metal foundry. These processes require the use of industrial sized facilities which in turn utilize significant electricity, natural gas, HVAC, steam, process heating, space heating, motors, lighting, process and irrigation water and much more.

To ensure NAVAIR and COMFRC strategic alignment, Mr. Schreck employs a balanced scorecard approach as illustrated in Table I below. This tool enables all levels of the Command and the community to review the objective priorities, targets and results which the energy program has adopted and how the projects are currently progressing. This not only helps achieve broad based sustainability, but more important, provides a means to institutionalize the energy program and assure that the organization completes projects and continues to identify new savings opportunities.

Mr. Schreck's work ensures that the organization performs in conformance to the energy and security drivers which include a combination of directives and constraints such as Executive Orders, OPNAV instructions, the DoD Strategic Sustainability Performance Plan, financial performance goals, schedule performance, strategic planning and ultimately warfighter mission alignment.

Table I – Scorecard for Energy Program Strategic Alignment

Strategy	Objective	Target	Results
Environmental Stewardship	1. Maintain conformance to DoD, DoN, NAVAIR, OPNAV 4100.5 and FRCSW 11300.2F energy directives 2. Maintain performance to Executive Orders (EO) 13148, 13423 and 13514	1. Maintain conformance 2. Meet or exceed EO target reduction goals of 3% per year for energy and 2% per year for water through 2015	1. Zero non-conformances 2. Exceeding target energy reductions goals – 21% reduction since 2005
Community and Stakeholder Relations	1. Deploy energy projects consistent with DoD's Strategic Sustainability Performance Plan 2. Community involvement	1. Increase energy security 2. Regularly attend professional meetings and public events for positive community relations	1. Broad based project implementations which increased energy security 2. Participated in Energy Awareness Week and hosted public events at FRCSW
Financial Performance	1. Deploy energy projects which reduce usage, increase efficiency and lower costs	1. Ensure projects have positive return on investment (ROI) above opportunity and money costs	1. Aggregated projects achieving a 14% ROI

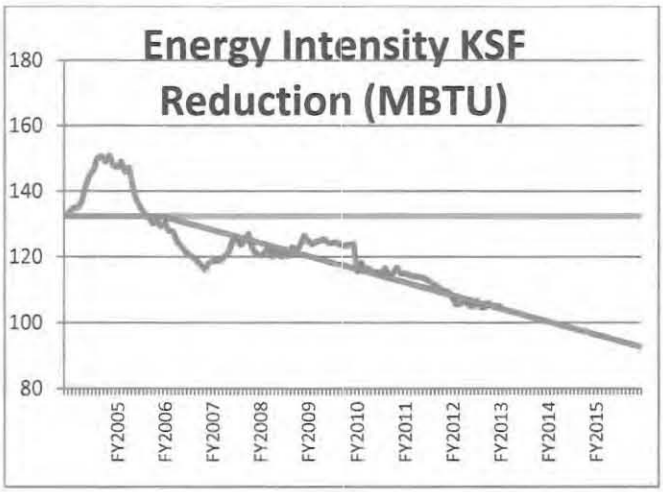
TECHNICAL APPROACH

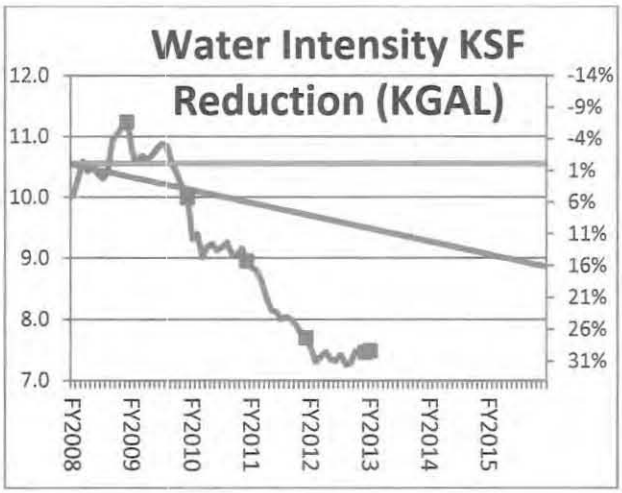
The rooftop of FRCSW Bldg 65, provided a suitable surface and existing windows which made the addition of photovoltaic (PV), daylight harvesting and smart lighting controls cost effective.

In selecting technologies Mr. Schreck explains "I research what's available and look for good fits with our existing infrastructure." He further explains that the projects must demonstrate innovation, productivity enhancement and be quantifiable in their business case benefit. "After finding a technological fit, I do an initial calculation to determine if the project pencils out using simple Return on Investment (ROI) and if so, then it advances for a more detailed technology and cost benefit analysis. Sometime at this point the project isn't suitable for us to continue."

Energy and Water Intensity

At FRCSW Mr. Schreck uses an index of energy consumption based on British Thermal Units (BTUs) per square foot, called Energy Intensity. It can be misleading to only evaluate an energy program based on changes to the electric bill. Closing/opening a building or fluctuations in energy rates can make it appear that an energy program is making progress or struggling based on issues that are completely out of its control and contrary to actual energy use or conservation. A similar index, Water Intensity, is used to measure thousands of gallons of water per square foot. By establishing indices of energy and water intensity the actual energy/water used per square foot is evaluated on a continual basis. Often times this metric identifies anomalies of energy/water usage which makes it easier to remedy issues before they lead to increased costs. The charts below detail the results and illustrate how the nominee substantially contributes to mission readiness at FRCSW.

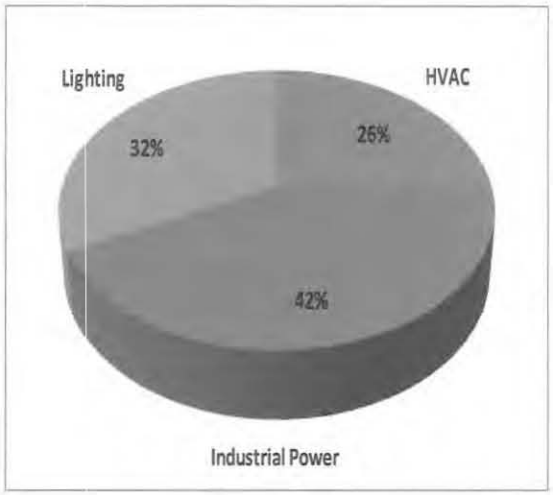




The above reduction charts represent FRCSW's performance relative to Executive Orders 13423 and 13514. As shown, Mr. Schreck's efforts have resulted in on-track performance for conservation and reduction. The green line represents the Executive Order's baseline, the blue line is the annual 3% energy and 2% water reduction targets and red represents FRCSW's actual performance towards a combined 30% energy and 20% water reduction by 2015.

Energy Security

The distribution of energy projects, based upon investment dollars, necessary to realize FRCSW's reductions (shown right) were also planned to achieve energy security as identified in the FY2011 DoD Strategic Sustainability Performance Plan. It is key that the efforts be broad based and the focus not strictly be on one technology or process. This directly supports military readiness and civil workforce productivity and is thus pivotal to long-term mission sustainability



"Energy efficiency and conservation is fundamental to National Security."

VADM David Dunaway
Commander, NAVAIR

An on-going project scheduled for completion in FY2013 is the addition of variable frequency drives for the Paint Complex which is anticipated to save nearly 1,000,000 KWh of electricity annually.

Synergy and Collaboration

Table II is a list of recently completed or nearly completed energy projects which were directly initiated and managed by Mr. Schreck. These projects have local utilities as partners and enjoy rebates and incentives in addition to their inherent cost and energy savings value.

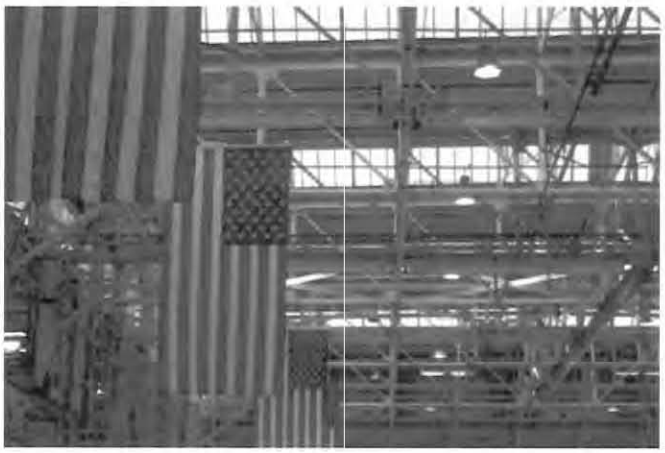
High value projects currently underway and being managed by Mr. Schreck include the last four items of the table below. One of the projects, for the Paint Complex (pictured left), provides the infrastructure necessary to realize an order of magnitude of efficiency improvement and cost savings once complete. The savings will come from a shorter heated drying cycle for painting aircraft, in conjunction with more efficient variable frequency fan drives. To execute a lower heating cycle time and reduce costs, the Paint Complex's centralized steam will be replaced by local area boilers. These boilers will operate at lower temperatures but still provide the necessary process heat. Mr. Schreck summarizes, "...think of them as *instant-on* hot water heaters you would install at home, but on an industrial scale".

In this case, Mr. Schreck learned about the savings potential not on his own, but had been able to take a page from lessons learned at Warner Robbins AFB and their large aircraft painting operation. The fact that the nominee both provides knowledge as well as deploys knowledge gained from other DoD entities amplifies the Command's energy effectiveness.

An additional energy saving project Mr. Schreck collaborated on was the introduction of Precision Chrome Plating. The use of computer controlled conforming anodes for electroplating improves product quality, the principal focus of the project, and also requires significantly less energy.

Mr. Schreck continues to seek out new project opportunities and identifies the funding source directly for them as is the case with the ECIP, UESC or SRM funded projects, or as synergistic collaborations as detailed above with precision electroplating.

ACCOMPLISHMENTS



As a consequence of the projects completed to date, FRCSW has already received over $600,000 from the regional utility San Diego Gas & Electric (SDG&E) with additional rebate monies anticipated. These achievements clearly demonstrate the effectiveness of the technical approach and project management lead by Mr. Schreck.

The hangar bay of Bldg 94, aka, the Hornet's Nest, is where F/A-18 depot maintenance is accomplished. This building circa 1940 was an ideal candidate where Mr. Schreck deployed smart lighting control technology to augment its existing daylight harvesting design.

Table II – FRCSW Energy Projects

Project Description	Status	Sustainability Scorecard Accomplishments		
		Financial	Energy/Water Reduction	Financial Source; Pay Back Period
Bldg 65 Photovoltaic System	Completed FY12	$7,000 annual savings	50 KWh saved annually	ECIP; >10 yr
Bldg 65 Light Fixtures and Daylight Harvesting	Completed FY12	$55,000 annual savings	340,000 KWh saved annually	ECIP; 4 yr
Bldg 250 Skylights, Occupancy Sensors and Control System	Completed FY12	$135,000 annual savings	850,000 KWh saved annually	ECIP; 5 yr
Bldg 472 Daylight Harvesting	Discontinued FY12	Potential savings analysis not sufficient to proceed.		
Bldg 378 High Bay Lighting Replacernent	Completed FY12	$40,000 annual savings and $19,000 SDG&E Incentive Payment	265,000 KWh saved annually	UESC; 1.5 yr
Bldg 460 Daylight Harvesting	Discontinued FY12	Potential savings analysis not sufficient to proceed.		
Bldg 460 High Bay Lighting Replacernent	Completed FY12	$25,000 Annual Savings and $13,500 SDG&E Incentive Payment	190,000 KWh saved annually	UESC; 2.3 yr
Bldg 443 High Bay Lighting Replacernent	Completed FY12	$4,600 annual savings and $2,300 SDG&E Incentive Payment	30,000 KWh saved annually	UESC; 1.2 yr
Bldg 397 High Bay Lighting Replacernent	Completed FY12	$1,400 annual savings and $675 SDG&E Incentive Payment	9,500 KWh saved annually	UESC; 9.3 yr
Bldg 94 High Bay Light Replacement and Daylight Harvesting	Completed FY12	$100,000 annual savings and $47,000 SDG&E Incentive Payment	670,000 KWh saved annually	UESC; 2.3 yr

Bldg 378 Chilled Water Plant	Completed FY12	$114,000 annual savings and $93,000 SDG&E Incentive Payment	560,000 KWh saved annually	UESC; 8.1 yr
Bldg 378 HVAC	Completed FY12	$94,000 annual savings and $27,000 SDG&E Incentive Payment	380,000 KWh & 281 MBTU (Steam) saved annually	UESC; 7.8 yr
Bldg 378 Hot Water Boiler Plant	Completed FY12	$39,000 annual savings	650 MBTUs (Steam) saved annually	UESC; >10 yr
Bldg 378 Upgrade 1st Floor Lab Chilled Water	Completed FY12	$800 annual savings	-	UESC; >10 yr
Bldg 378 Convert 2nd Floor Lab Air Handler to Variable Frequency Drive (VFD)	Completed FY12	$4,600 annual savings and $2,800 SDG&E Incentive Payment	28,000 KWh saved annually	UESC; 3.3 yr
Bldg 378 Vacuum System Controls	Completed FY12	$8,500 annual savings and $5,500 SDG&E Incentive Payment	55,500 KWh saved annually	UESC; 0.6 yr
Bldg 469 Replace Air Handing Units AH-1 through AH-8	Completed FY12	$132,000 annual savings and $153,000 SDG&E Incentive Payment	930,000 KWh saved annually	UESC; 2.6 yr
Bldg 469 Re-commission Chilled Water Plant	Completed FY12	$9,500 annual savings and $6,400 SDG&E Incentive Payment	64,000 KWh saved annually	UESC; 4.6 yr
Bldg 469 Re-commission DX ACU Air Handing Units	Completed FY12	$9,800 annual savings and $5,700 SDG&E Incentive Payment	58,000 KWh saved annually	UESC; 2.9 yr
Bldg 469 Retrofit Hot Water Plant	Completed FY12	$15,400 annual savings	970 MBTUs (Natural Gas) saved annually	UESC; >10 yr
Bldg 472 Daylight Harvesting	Discontinued FY12	Potential savings analysis not sufficient to proceed.		
Bldg 472 Clean Room Air Handing Unit Reduction	Completed FY12	$61,000 annual savings and $13,200 SDG&E Incentive Payment	132,000 KWh & 731 MBTU (Steam saved annually	UESC; 2.0 yr
Bldg 472 Chiller Plant Upgrades	Completed FY12	$76,000 annual savings and $42,348 SDG&E Incentive Payment	423,000 KWh saved annually	UESC; 5.4 yr
Bldg 472 Air Handling Units and Lighting Control Re-commission	Completed FY12	$16,480 annual savings and $6,900 SDG&E Incentive Payment	67,000 KWh & 124 MBTU (Steam) saved annually	UESC; 2.4 yr
Bldg 378 New Clean Room Air Hander	Completed FY12	$12,800 annual savings	~250 hrs operational cost savings	UESC; >10 yr
Centennial Park Xeriscape Water Conservation Demonstration Project	Completed FY2011	$1,500 annual savings	120 KGAL water saved annually	PIP; >10 yr
Bldg 469 DDC Lighting Controls	Scheduled for Completion FY2013	$36,000 annual savings and $1,600 SDG&E Incentive Payment	192,870 KWh saved annually	Incentive only; 2.8 yr
Bldg 460 DDC Lighting Controls and Isolation Valve	Scheduled for Completion FY2013	$10,000 annual savings in natural gas and compressed air	400 therms & 1,670,000 cubic feet of compressed air saved annually	Rebate only; 4.8 yr
Bldg 378 DDC Lighting Controls	Scheduled for Completion FY2013	$1,200 annual savings	7,500 kWh saved annually	UESC; 3.7 yr
Bldg 464-468 Paint Complex Variable Frequency Drives (VFD) for Air Handlers	Scheduled for Completion FY2013	$157,000 annual savings and $120,000 SDG&E Incentive	981,825 KWh saved annually	PIP; 3 yr

STAKEHOLDER VALUE PROPOSITION

FRCSW's cultural tradition includes the long term participation and support of numerous community organizations and groups. The Command participates in the *Math Engineering and Science Achievement Internship Program* administered by San Diego State University. This program supports under represented students going into the fields of science, math and engineering. Every year the environmental office sponsors two engineering student interns for the summer and participates in the annual Shadow Day. This past year Mr. Schreck took on the challenge of mentoring an intern and spent significant hours teaching her the skills of energy auditing and program management. This intern has since been hired and is now the energy program's newest Environmental Engineer.

Centennial Park (xeriscape) smart landscaping water conservation demonstration project saves 120,000 gallons of water annually. The static display is of a Curtiss A-1 Triad, the first aircraft purchased by the U.S. Navy. Mr.Schreck was able to incorporate this plane which commemorates the 100th anniversary of naval aviation into the park by teaming with NAVFAC personnel.

An effective energy program must work continually with the utility companies in the surrounding community. Mr. Schreck has developed a professional relationship with the local utilities including SDG&E, City of San Diego Water department and the Naval Facilities Command (NAVFAC).

Mr. Schreck has always taken the time to explain the complexities of energy projects to interested parties, including ambitious shop personnel with "out-of-the-box" ideas, colleagues who approach him with new technologies and senior leadership which has unique perspectives. He takes on each inquiry with unbiased enthusiasm and adopts an immediate "why not" perspective to communicate that he has heard the idea and will pursue it to its fullest potential. At times these ideas end up as nonstarters and he follows up to explain the economics of the situation to the individual. Ideas which have merit are promoted through his process and are adjusted to fit FRCSW's needs and often times become energy projects, which go on to save the Navy energy and tax dollars.

As a member of the, FRCSW's Environmental Program Office, Mr. Schreck has actively participated in the *San Diego Regional Sustainability Partnership* a coalition of local City, County, State and Federal agencies as well regional businesses, industry, non-profits, which develop sustainability goals and metrics with the intent of improving overall regional sustainability. The energy projects that Mr. Schreck has pioneered have been presented to external organizations as examples of how FRCSW and the U.S. Navy have evolved to become sustainable members of the community. Mr. Schreck's efforts are also presented at events such as the annual *San Diego Earth Works' EarthFair* which draws over 50,000 San Diegans and area visitors, the annual *Coronado Flower Show* which is held immediately outside the NAS North Island and provides face time with our Coronado neighbors to exchange information and ideas of the energy program.

Mr. Schreck has also hosted an FRCSW energy program booth at San Diego's *Energy Awareness Week* to highlight the Command's energy and water conservation programs. This Navy event in San Diego County draws approximately 10,000 employees from the region. To keep the entire workforce engaged and participating he also presents conservation information and project summaries at the annual *Employee Appreciation Day* which is attended by all levels of FRCSW personnel.