EDWARD W. WILSON, III
FEMP AWARD NOMINATION SUMMARY

Mr. Ed Wilson has more than 25 years of experience as Los Angeles Air Force Base's (LAAFB) Installation Energy Manager. In this capacity, he acts as utility engineer, project developer, energy program visionary, and project manager. He provides comprehensive energy and water conservation program development to meet the base's energy and water reduction requirements and increase utilization of renewable energy. His experience includes conducting energy and water conservation assessments, project development, design, cost estimating, construction management, and strategic planning. He is singularly responsible for the development of the installation's energy construction standard directive to establish guidelines for energy efficiency and sustainable, green construction practices for all new construction and major facility renovations. In his career and for the duration of the award period, Ed Wilson has successfully managed and implemented a broad range of projects, including the use of recycled water for irrigation and sanitary sewer use, privatization of the electric utility distribution system to local utility providers, and installation of a base-wide energy management control system for LAAFB's Heating, Ventilation and Air Conditioning (HVAC) system.

Capturing Renewable Energy

Solar energy is the most robust renewable energy technology in the energy industry, and Ed Wilson has pushed LAAFB's energy program to incorporate as much solar energy production as economically possible. Capitalizing on both Los Angeles' developed economy and temperate weather, Ed has executed three major solar projects at LAAFB and developed plans for three more.

Ed Wilson's efforts in fiscal year 2012 have added 320 kW of solar power generation to the installation. He oversaw conception, development, programming, award and construction of a photovoltaic project that spans the rooftops of LAAFB's three major facilities. After successfully navigating the installation of the array through its three-month construction period, Ed championed the project with local utility providers, overcoming significant obstacles in successfully connecting the arrays to the grid. Now energized, the array generates enough power to offset the energy consumption of the base fitness center--a reduction that translates to a savings of $100,000 in annual utility costs. Leveraging the success of this effort, he proactively advocated for another solar power generation project that will generate an additional 400 kWh of solar power and save $111,000 in annual utility expenses at the installation. This project, currently in development, incorporates five photovoltaic arrays atop the base parking canopies and will result in an additional 15% reduction of the total energy usage of LAAFB. Once completed, LAADB will generate over 1.2MWs of solar energy.

Ed Wilson's commitment to renewable energy goes beyond only the projects he develops and executes--he applies his years of knowledge to outside organizations as well. This was best demonstrated in his close collaboration with LAAFB's military family housing privatization partner, Tierra Vista Communities. Ed selflessly assisted in the development of plans to install a 1 MW photovoltaic system spanning the rooftops of 207 privatized homes. To date, 300 kWh of energy production has been energized on this project. Once the housing project is completed, the project will lock resident utility rates at a competitive rate for the next twenty years. These savings will have far reaching effects by lowering operating costs, thereby increase available

income to spend on the redevelopment of much needed Quality of Life initiatives such as new basketball courts, roadway repairs, and additional community amenities.

Not only do these initiatives save the Federal government money in utility costs, they have the benefit of improving our environment. Ed Wilson's total effort for fiscal year 2012 alone resulted in a reduction of 6,000 tons of annual carbon emissions. His collaboration in the housing project yielded an additional reduction of 10,000 tons of carbon emissions. For the five arrays in development, the anticipated reduction will be 15,000 tons of carbon emissions annually. Ed Wilson's visionary development of LAAFB's energy program may one day achieve a net zero energy balance.

Steward of the Secretary of the Air Force's Electric Vehicle Initiative

While the solar energy industry is well developed and accessible, other emergent technologies are entering the energy conservation market that warrants exploration. Ed Wilson thoroughly evaluates each energy savings opportunity. In his greatest recent effort, Ed teamed with the Office of the Secretary of the Air Force to implement the Federal government's first vehicle-to-grid plug-in hybrid electric vehicle fleet. During the project inauguration, Undersecretary of the Air Force Erin Conaton said, "The 100% Electric Base Initiative is a critical first step in this direction and will help guide the way for broader fleet electrification." Ed was able to advocate to replace LAAFB's diverse general purpose vehicle fleet with plug-in hybrid electric vehicles that utilize groundbreaking "vehicle-to-grid" (V2G) technology.

The V2G technology uses the vehicles' batteries as storage, moving power back and forth between parked vehicles and the local utility grid. Unlike commercial electric vehicle fleets, LAAFB's electric vehicles will charge during off-peak hours and collectively contribute up to 500 kilowatts back to the grid during peak demand hours, while retaining the capability to serve the installation's official government business needs. This initiative is expected to reduce overall fleet expenses while meeting mission capabilities and achieving energy and environmental objectives. More importantly, the project will serve as a model for future efforts to integrate electric vehicles into Federal vehicle fleets and the incorporation of vehicles into the power grid in a more meaningful way than only as energy sinks. Ed led the coordination with 10 different agencies to trail-blaze the implementation of this zero-emission initiative. Once the vehicle fleet starts operating, the base-oil consumption will be reduced to 20,000 gallons which translates to $80K in annual savings. In a city already plagued with high vehicle emissions, his efforts in zero-emission vehicle use have furthered Los Angeles Air Force Base's reputation as a sustainability minded community partner.

Optimizing Energy Management

Ed Wilson enabled the connection of three additional facilities to the installation Energy Management Control System (EMCS). The EMCS project was prompted by the installation's requirement to comply with the Energy Policy Act of 2005, which requires energy reduction in the Federal sector. Ed spearheaded the $120K project, which synchronizes data transmission system with motor controls, communication and interface devices. To populate an effective system, Ed collected two years worth of data on occupant loads, office equipment, and the heating and/or cooling demands of all facilities on LAAFB. Leveraging this data, he was able to determine the ideal demand for each facility across a total combined area of 80,000 square feet. The new graphical user interface system runs smarter; less heating/cooling time saves $39,000 per year, and reduces the base's energy consumption by 3.34 million BTUs. Beyond the fiscal

and resource savings, this project helped make employee working conditions more comfortable, increasing employee satisfaction and productivity.

Additionally, Ed Wilson coordinated the replacement of antiquated electrical distribution infrastructure at historic Fort MacArthur. Fort MacArthur is a 96-acre property located approximately 20 miles south of the main base. The Fort serves as the main housing area for military personnel who work at LAAFB and hosts many of the community functions supporting the installation (e.g., community center, chapel, lodging, youth programs, base pool, etc.). The existing electrical distribution system at the Fort was constructed in 1942 and has degraded significantly. Operations at Fort MacArthur have been impacted by reduced transmission capability and increased outages and line breaks. Ed Wilson's $5.5 million energy-efficient electrical infrastructure investment included the replacement of these aged underground cable facilities, network transformers and relays, as well as cable and transformer upgrades. The immediate result of this effort is a 5% reduction in Fort MacArthur's energy consumption due to fewer loses in electrical transmission. This effort also incorporates smarter practices identified in the LAAFB Facility Infrastructure Investment Program. By implementing high-tech "Smart Grid" technology, maintenance operators can isolate problems and repair them remotely, enabling quick and resilient recovery from extreme weather outages, and thereby increasing employee productivity. Furthermore, the project will reduce overtime costs required for the base maintenance team to respond to emergency outages by approximately $500 per month. Finally, Ed also demonstrated attention to detail when he quickly reacted to incorporate newly published arc flash prevention requirements into the project scope at no additional cost.

Targeting Additional Energy Reductions Through Efficiency

To continue LAAFB's pursuit of the reduction goals set forth by Executive Order 13423, Ed Wilson championed the repair by replacement of the HVAC systems on the rooftops of the installation's three major facilities. This $5 million critical energy efficiency upgrade incorporates new technologies in the systems' furnaces, boilers, air conditioners and heat pumps; all exceeding energy efficiency standards. During the project development stage, Ed was instrumental in identifying key project scope by inspecting ducting systems, joints, and connections for leaks and holes. He also inspected the building insulation, to include interior and exterior walls, ceilings, and weather-stripping. Another critical aspect of Ed Wilson's HVAC upgrade project is to include internal sensors strategically located throughout the facilities. All told, the old HVAC system carried an estimated 25% loss in system efficiency. Ed Wilson identified this critical energy efficiency requirement and was able to capitalize on fiscal year-end funding to award the project to install corrosive-resistant high-efficiency units. This effort is estimated to yield an annual savings of $225,000 and 2 million kWhs; a reduction of more than 10% of the base's total energy consumption.

LAAFB was recently assigned stewardship of the Defense Contract Management Agency (DCMA), West office in Carson, CA. DCMA employs 265 people in a two-story 88,000 square office facility. In 2012, Ed Wilson spearheaded the site visit and facility assessment. He led the evaluation of necessary energy measures for the sprawling office complex. From his assessment, he identified several cost savings measures, the most critical of which is the repair and retrofit of the existing light fixtures with T-8, 28-watt lamps and high-efficiency ballasts. The existing lighting system of the facility operates with old lamps, which are inefficient and costly. This project will provide and enhance energy by replacing the 32-watt fluorescent lamps in 6,000

fixtures, reducing the overall lighting energy demand of the DCMA facility. The resultant savings for this project are projected at $12,765 in annual costs and 147.6 MBTUs in usage.

In addition to lighting retrofits at DCMA, Ed Wilson evaluated the requirements at the main LAAFB campus and the Fort MacArthur housing annex. Between these two locations, Ed identified other major lighting projects. At the LAAFB campus, he replaced the lighting fixtures across 650,000 square feet of office space to capture a savings of 160K kWh per year. At Fort MacArthur, he pushed a lighting and boiler retrofit project that replaced those systems in 25 facilities, achieving an energy savings equivalent to 327,000K BTUs per year. These two efforts have saved the installation over $150,000 per year in energy costs.

Conserving Life's Resource—Water Reduction

With Ed Wilson's stewardship, LAAFB has already surpassed the water reduction provisions of Executive Order 13423. To minimize water consumption, Ed championed a project to install irrigation controls across LAAFB's 148-acre Fort MacArthur annex, which includes the installation's historic parade field. The system regulates irrigation based on data received from ambient weather sensors, ensuring water is only expended on irrigation when necessary. As part of this effort, he collaborated with the grounds maintenance supervisor to identify the critical locations of the sprinkler heads in order to maximize the watering capacity of the irrigation system. Ultimately, this effort achieved an annual savings of 28 million gallons of water. Furthermore, Ed Wilson is targeting additional reductions at Fort MacArthur by evaluating the benefits of allowing the parade field to return to a native state. Ed Wilsons's calculations have determined that a 75% reduction in the watering of the parade grounds alone will save $105,000 in annual utility bills. These proactive and far-reaching efforts are what make Ed Wilson a true visionary and respected leader in his field.

Another water reduction effort helmed by Ed Wilson is the replacement of 38,000 cubic feet of grass and subsoil with the 89 foot by 195 foot artificial turf athletic field now used as LAAFB's primary recreation area. The synthetic "Tiger Turf" system is constructed using a secondary backing made of renewable resources, and provides a pristine athletic area for physical training. This action reduced water consumption by 117,000 gallons annually, eliminated the associated use of pesticides and fertilizer (which are known carcinogens and represent a potential storm water compliance risk) and saves the base $47,000 in annual utility and maintenance fees.

Furthermore, Ed Wilson programmed and executed the xeriscaping of 138,000 square feet of the installation grounds. Working in close coordination with the installation's grounds maintenance team and landscaping expert, Ed Wilson incorporated native California drought-resist species. This effort beautified the installation, reduced maintenance and pesticide use, and reduced base water consumption by an additional 15%. Beyond improvements in irrigation, Ed orchestrated the replacement of all fixtures in the installation's restrooms with low-flow fixtures. This effort replaced 196 flushing mechanisms, in three major facilities, capturing the facility services for 80% of the installation population. This effort saves 1.2 million gallons of water annually. These major water reduction projects enabled LAAFB to meet its Executive Order 13423 reduction goal seven years ahead of schedule. Currently, the installation has achieved a reduction of over 30% in water consumption since its 2007 baseline usage.

Mr. Ed Wilson is as passionate about energy and water management as he is triumphant at implementing innovative projects. Suffice it to say, he is the catalyst for the installation's many energy and water reduction successes and is truly deserving of this recognition.