

FOUNDATIONS OF  
2010 **readiness**

JOURNAL OF THE ARMY NATIONAL GUARD INSTALLATIONS DIVISION



*The Poplarville Readiness Center in Mississippi*



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### FOUNDATIONS OF READINESS

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# Welcome!

Photo by Claus Rebler



Welcome to the second issue of *Foundations of Readiness*, the Journal of the Army National Guard (ARNG) Installations Division (ILI). ARNG-ILI is made up of six branches (Strategic Plans and Education; Resource Management; Construction; Real Estate; Design;

and Facilities Management), which support the National Guard in 50 states, three territories, and the District of Columbia. We provide guidance to the Installations community, and serve as a liaison to commands outside the ARNG. Our division's mission—the acquisition and distribution of resources, construction execution, and real property support—is critical for the Nation's defense.

Since 9/11, ARNG has transformed from a strategic reserve to an operational force. Combat veterans now make up 60 percent of our members. With the organizational shift comes increased usage of our facilities. That means increased utility costs, and more wear and tear—and shortfalls in facilities operations funding. An increased number of construction projects mean an increased workload. Despite this, we have surpassed expectations by executing our Military Construction (MILCON) projects at rates higher than all the other components of the Army. Last year, we were the only component in the Army to execute 100 percent of the Base Realignment and Closure (BRAC) projects tasked to us. We were also the only component to execute our initial MILCON projects under the American Recovery and Reinvestment Act of 2009 (ARRA) by the end of fiscal year 2009. Again this year, our BRAC execution rate will be 100 percent. All ARNG projects will meet the BRAC law, which requires occupancy by September, 2011.

At ILI, it's our job to make the tools available so that Construction and Facility Management Officers (CFMOs) around the country can be successful in their tasks. Key to our organization's success is our continued improvement of our education programs and the certification of CFMOs. The program is unique within the Armed Forces in that it is peer-driven, with peers training peers. Each state has only one CFMO, and the support from peers who do the same thing is therefore crucial. It's not enough to just train the people at the top. In order to grow our organization we have to grow at all levels. In addition to the CFMO Certification course we also organize CFMO University (CFMO-U), a one-week training program run for two consecutive weeks. Around 1000 installation management support personnel participate in CFMO-U each year, attending a selection of the 70 courses offered. We strive for continuity and predictability, but because of multiple deployments—most of our installation management employees are also Soldiers who belong to operational force units—staffing is not as robust as it could be at the state level. Our goal is to grow a workforce at the national and state levels that is capable of securing the resources and providing the high-quality services that our mission requires. Thanks to the CFMO Certification course and CFMO-U, we have a highly-skilled workforce.

We continue the improvement of our internal business practices with the completion of Lean Six Sigma (LSS) projects, which document—and improve—our practices. LSS is a business improvement methodology that maximizes stakeholder value by achieving the fastest rate of improvement in customer satisfaction, cost, quality, process speed, and invested capital. The Installations Division is International Standards Organization (ISO) 9000 certified. The ISO process requires business processes to be documented and efficient. We are also looking to implement a cost culture within ARNG. As funds get more limited, we need to look for places where we can cut costs. The way we operate is more cost-effective

than the other branches of the Army, but we have redundancy in some places and we need to make sure our organization is as lean as possible. We have streamlined our processes and we have an excellent information technology (IT) infrastructure, with innovative programs that help us respond to MILCON requests faster than ever before. Our premier system, Planning Resource Infrastructure Development and Evaluation (PRIDEWeb), is a Web-based facility management program for tracking projects and real property inventory.

Disruption of energy supplies would harm the Army's ability to accomplish its missions. The development of alternative energy sources is therefore a top priority. ARRA created unprecedented opportunities for us to obtain federal funding for renewable energy projects. It provided a way to meet government requirements of energy reduction, and to relieve a backlog of energy projects. By increasing the use of alternative energy sources, ARNG will be able to assure access to energy supplies, while at the same time reducing adverse impacts on the environment. While cost reduction is the immediate goal of these projects, our long-term goal is to change user behavior and create a culture of individual accountability.

While the budget request for ARNG MILCON funding was the largest in our organization's history this year, the Army's plan for future years declines precipitously. This coming year, ARNG will conduct a comprehensive nationwide study on the state of our Readiness Centers. Many of our Readiness Centers were built in the 1950s, at a time when America's population was a lot more rural. The study will identify underserved areas, and facilities with diminished rationale because of demographic shifts. It will collect and analyze data on these facilities' adequacy in terms of location and size, and role in training and converting ARNG to an operational force. In addition, the study will determine the potential costs and benefits of shared use of ARNG facilities with other local, state or federal agencies, based on documentation of such experiences

in the past. Once this study is concluded, we will have a better understanding of where we stand—we will know how much it will cost to bring existing Readiness Centers up to standard, and we will be able to draft a plan for the construction of facilities necessary for our mission.

Without the proper funding, we can't provide adequate facilities and services, thereby negatively affecting the readiness of the force. For fiscal year 2011, the amount programmed for ARNG MILCON projects is \$874 million. Together with congressional earmarks—construction projects, outside the President's budget, pushed through the approval process in Congress on the initiative of a congressional member—our budget will likely exceed \$1 billion. The outlook for fiscal year 2012 is about the same as for 2011, but after 2012 funding is significantly decreased. It's the task of my division to secure sufficient construction and sustainment funding to build and maintain the facilities required to support readiness over the long-term. Without proper funding, we will not be able to maintain the readiness of the force.

I thank you for your interest in the ARNG Installations Division!



COL RICHARD G. NORD  
DIVISION CHIEF  
ARMY NATIONAL GUARD INSTALLATIONS DIVISION  
An ISO 9001-2000 Certified Organization



The image shows a construction site with soldiers in camouflage uniforms in the foreground. They are standing on a metal structure, possibly a scaffolding or a platform. In the background, there are workers wearing hard hats and safety vests, engaged in construction work. A red ladder is visible in the middle ground. The scene is brightly lit, suggesting a sunny day. The overall atmosphere is one of active construction and military readiness.

build

FACED WITH THE CHANGING REQUIREMENTS OF A CHANGING REALITY, THE ARMY NATIONAL GUARD BUILDS, SUSTAINS AND OPERATES FACILITIES THAT ARE RELEVANT, RELIABLE, AND READY. THESE INSTALLATIONS ARE INTIMATELY LINKED TO OUR NATION'S READINESS AND SUPPORT A YOUNG, YET EXPERIENCED, FORCE WHERE 60 PERCENT OF ARMY NATIONAL GUARD MEMBERS ARE COMBAT VETERANS.

# RELEVANT AND READY INSTALLATIONS

# REQUISITES FOR READINESS

A NATION-WIDE INVENTORY EVALUATES THE STATE OF READINESS CENTERS—AND THEIR IMPACT ON READINESS

Barracks in need of renovation at Fort Chaffee, Arkansas.

AS THE ARMY NATIONAL GUARD TRANSFORMS FROM A STRATEGIC RESERVE TO AN OPERATIONAL FORCE, THE DEMANDS PLACED ON READINESS CENTERS ARE RAPIDLY CHANGING. ABOUT 40 PERCENT OF READINESS CENTERS DO NOT MEET REQUIREMENTS FOR THE FULL RANGE OF MISSION-ESSENTIAL TASKS. THE ARMY NATIONAL GUARD NOW MAKES UP 51 PERCENT OF THE ARMY'S COMBAT STRENGTH, BUT IT WAS ALLOCATED A MERE 10.2 PERCENT OF THE TOTAL FISCAL YEAR 2010 ARMY MILITARY CONSTRUCTION BUDGET.



At the ARNG Maneuver Training Center at Fort Pickett, Virginia, the lead paint is peeling on the walls. There are cracks in the walls and floors, and the roof is leaking. In Carlisle, Pennsylvania, the Co B 328th Brigade Support Battalion (BSB) - Combat Recovery Team is housed in a converted stable built in 1930 for a horse-drawn artillery unit. The battalion headquarters functions out of an old converted farmhouse. At an ARNG military police unit

in California, members must travel to a number of weapons storage locations to collect their required equipment, slowing down their response time in an emergency. These are just a few examples of the obstacles the Soldiers and civilians working for the ARNG face daily, and the conditions that impede our nation's readiness.

The ARNG relies on an inventory of 3,000 Readiness Centers (formerly known as armories) spread across all 50 states, three territories, and the District of Columbia as the primary facilities to support unit training and state operations. The average age of ARNG's Readiness Centers is 40.2 years. Around 40 percent of ARNG facilities are over 50 years old. If the trend continues, the average age of ARNG's Readiness Centers will be 67 years in 2035. About 40 percent of Readiness Centers do not adequately meet requirements for the

support of training for the full range of mission-essential tasks. Based on the current force structure of the ARNG, there is a deficit in Readiness Centers of 14.2 million square feet—19.6 percent of the Readiness Center requirements. Built at a time when the United States was more rural, many Readiness Centers are located in areas that are not ideally positioned for recruiting and retention. All these factors have a detrimental impact on the readiness of the ARNG, at a time when the high operational tempo of deployments to Iraq and Afghanistan is already taking a significant toll on the ARNG.

ARNG has a total personnel strength of 358,200, compared to 547,400 for the Active Army and 205,000 for the United States Army Reserve (USAR). Since 9/11, ARNG has been transformed from a strategic reserve to an operational force. As of August, 2010, 55,000 ARNG Soldiers are deployed in Iraq and Afghanistan. The ARNG has 32 percent of the force structure and 22 percent of the facilities. In fiscal year 2010, it was allocated 10.2 percent of the total Army MILCON budget.

The ARNG budget request for fiscal year 2011 includes 48 military construction projects in 32 states and territories. The total budget for these projects is \$874 million—a 105 percent increase from the amount requested in the budget request for fiscal year 2010. This is a necessary increase to address the severe backlog of work needed to upgrade ARNG facilities. However, the amount for ARNG MILCON funding included in the Future Year Defense Program (FYDP) accompanying the

budget request for 2011 drops off significantly to a proposed amount of \$354 million in fiscal year 2015, with less than \$180 million per year dedicated to the replacement or modernization of ARNG facilities. Put in perspective, \$354 million will buy five Readiness Centers, three maintenance facilities and two barracks—a drop in the bucket when divided up between 50 states, three territories, and the District of Columbia. “While the budget request for ARNG MILCON funding was the largest in our organization's history this year, the Army's plan for future years declines precipitously. Even at this level, the funding will not effectively address the 14.2 million square foot shortfall in Readiness Centers, or the 3.4 million square foot shortfall in maintenance facilities,” said COL Richard Nord, Chief of ARNG-ILI. “Also, the military construction funds may not be addressing the most urgent requirements in the ARNG, due to the need for matching State funds.”

“The States are challenged by declining budgets over the past three years, making it difficult to secure the state match for some Readiness Center projects,” said LTC Donald McFadden, Branch Chief of Strategic Plans and Education at ILI. “By statute, Title 10 United States Code sections 18233 and 18236, States are required to pay for 25 percent of the construction costs of Readiness Centers built on state land, or built on federal land using state contracting procedures. The shortfall in the State funding match has resulted in the movement of FYDP projects to out-years, because they cannot



Due to runway extensions and the increased size of commercial airliners, the safety zone between the apron of the Army Aviation Support Facility (AASF) in Kankakee, Illinois and the adjacent Greater Kankakee Airport taxiway has become so short that the wings of commercial aircraft enter into the AASF apron air space while taxiing. This is considered to be a high safety risk for Soldiers and civilians. In addition, training capabilities are hindered due to the short apron air space. The existing 48,161-square foot AASF was built in 1940.



The 40 to 50-year old buildings that house the Regional Training Institute at Camp Minden, Louisiana are plagued with failing sheet rock, leaky plumbing systems, and cracked floors. The lack of adequately-sized classrooms makes meeting accreditation requirements difficult. The existing administrative and classroom space is less than 40 percent of the space authorized. There are also an inadequate number of billets for students, and most billets have group restrooms and showers.

execute in the year they were originally programmed. States may also feel forced to defer some projects until the fiscal condition of their state improves to the point where the state match is available,” LTC McFadden continued.

As facilities age, they require costly maintenance and repair to keep them operating effectively. Older facilities are often poorly insulated and energy inefficient, which means higher energy costs. The Department of the Army, HQDA, has a facility rating system, the Installation Status Report (ISR), which measures facilities, quality, quantity and impact on mission. Facilities’ deficits fall into three broad categories: quantity, quality, and mission. The quantity of facilities refers to the currently available space compared to the space required to perform the mission. The mismatch between space and requirements can arise over time, as older facilities were often built for different units with fewer people and less or smaller equipment. A building built to house horses, for example, is not likely to be properly sized for a modern motorized unit. Lack of space hinders operations as occupants have to find ways to work with inadequate space. Quality problems can include inadequate electric service, poor HVAC systems, failing roofs, failing pavements, and other systems that can fail as they age. Facilities modernization is the degree to which facilities are properly designed to support their current—not past—missions, and to incorporate sustainable design and energy efficient building systems. Soldiers and civilians do their best to work around facilities’ deficits, but this takes time and energy that could be used in other, more productive, ways.

“Quality is a readiness issue as it relates to recruitment, retention and morale. Inadequate barracks are a clear area of concern,” COL Nord said. “Many of the barracks Reserve Component Soldiers use for annual training, mobilization and post-mobilization activities were constructed as temporary facilities for World War II. Common problems associated with deteriorated facilities are asbestos, mold, lead, other hazardous materials, poor lighting, and crowded work and storage areas. For aviation, spalling and improperly configured pavement are safety problems.”

#### A nation-wide inventory of facilities

DoD’s latest Quadrennial Defense Review (QDR), released in February, 2010, stated that the ARNG should be a force that can serve in an operational capacity—available, trained and equipped for routine deployment, as well as a Homeland Response Force, responsible for providing regional immediate response capability within the United States. Addressing the organization’s facilities, the QDR stated, “Today’s National Guard and Reserve men and women volunteer knowing that they will periodically serve on active duty. They also serve expecting to be...provided the right training and equipment to complete the mission. The Department will work to meet these expectations.”

This coming year, ARNG will conduct a comprehensive nationwide study on the state of its Readiness Centers and the effect of the coming years’ funding decrease. The study will identify underserved areas, and facilities with diminished usefulness because of demographic shifts. The study will collect and analyze data on these facilities’ adequacy in terms of location and size, and role in training and converting ARNG to an operational force. In addition, the study will determine the potential costs and benefits of shared use of ARNG facilities with other local, state or federal agencies, based on documentation of such experiences in the past. “This study will help us determine how much it will cost to bring existing Readiness Centers up to standard, and we will be able to draft a buyout plan for facilities deemed necessary for our mission,” COL Nord said.



The interior of a World War II-era barrack in dire need of renovation at Fort Indiantown Gap, Pennsylvania.

“Congress directed NGB, through the Secretary of the Army, to provide a report to the Congress on the condition of ARNG Readiness Centers. The report provides an independent evaluation of ARNG Readiness Centers to understand current condition, develop an investment strategy, and identify Readiness Center projects by priority. The true requirement to transform Readiness Centers is unknown. In the past seven years the ARNG projects programmed in the FYDP have moved to out-years to fund initiatives like BRAC. The result has been the inability to replace facilities critical to the states, frustration of the adjutants general, and facilities that continue to deteriorate,” LTC McFadden said.

More specifically, the study will evaluate and determine standards for facility size, configuration and equipment for the range of missions and training supported by Readiness Centers. It will conduct an assessment of each Readiness

Center to objectively measure and determine the current facility condition and capability to support authorized manpower, unit training, and operations, as well as an assessment of supporting facilities and functions, including equipment storage, classrooms, force protection, utilities, maintenance, administration, and proximity of support and training facilities. The study will give recommendations for the placement of new Readiness Centers and the relocation of existing ones to position the ARNG in current or projected population centers, as well as recommendations for enhanced use of Readiness Centers to facilitate ARNG family support programs. It will deliver an analysis of the feasibility, potential costs and benefits of shared use of ARNG Readiness Centers with other local, state, or federal agencies to improve response to local

emergencies. Finally, it will develop an investment strategy and proposed funding amounts in a prioritized project list to correct the most critical facility shortfalls across the inventory of ARNG Readiness Centers.

“What we need is an investment strategy for Readiness Centers that will keep pace with our aging facilities,” LTC McFadden said. “The average age of an ARNG Readiness Center is 40 years old. If ARNG MILCON funding is straight-lined using FY 2015 as the baseline, the ARNG will replace five Readiness Centers a year along with maintenance and range projects. As a result, by 2035 the average age of a Readiness Center will be 67 years. At this point the facility has exceeded its useful life expectancy. In a state like New York, or even California, the average age of a Readiness Center will reach 67 years at a much faster pace, in about five and 25 years respectively,” he added.

### How did we get here?

Structures built long ago were nearly always designed to support different functions, and sometimes even different organizations. Simulators, computers, and other office equipment make uninterrupted power supply and HVAC systems more important than in the past. Terrorism concerns have necessitated increased physical security, including facilities setback requirements. Female latrines are necessary to accommodate an increasingly gender-balanced workforce. Greater accessibility for physically disabled employees and visitors are statutory design requirements based on the Americans with Disabilities Act of 1990.

The estimated cost to replace the current facility inventory is referred to as the Plant Replacement Value (PRV). The PRV for the ARNG is \$40.5 billion. Facilities have a finite life, which varies by facility type and the level of maintenance. Facilities are designed to last a minimum of 30 years. DoD has



**Above left: A typical stairwell in a World War II-era barracks at Fort Indiantown Gap, Pennsylvania. Above right: A cracking floor at Fort Chaffee, Arkansas.**

used 67 years as an average facility life. With proper maintenance, the facilities can last up to 100 years.

Facilities sustainment provides funds for maintenance, major repairs or replacement to keep the inventory of facilities in good working order. Sustainment prevents deterioration, maintains safety, and preserves performance over the life of a facility. Full sustainment funding will ensure that the facility will last to its expected life, but it will not change the overall scope for the facility. "For sustainment, three funding figures are important: the amounts programmed, appropriated and executed. Ultimately the amount executed is what matters. Migration from sustainment into other accounts, such as

utilities and municipal services, in the year of execution has been a perennial problem," COL Nord said.

ARNG MILCON appropriations (in current year dollars) have varied over time, from a low of \$78 million in 1995, to highs in 2009 of \$883.3 million. Up until the year 2000, MILCON funding averaged \$250 million a year for the ARNG. Although stable, the funding level was too low to sustain facilities infrastructure, and the funds did not keep pace with costs. The result of past inadequate funding is—no surprise—today's inadequate facilities. "The reserve components have tended to rely on congressional earmarks for a substantial portion of the MILCON program," COL Nord said. "The projects funded with earmarks may not always address the highest needs of the service, as political considerations steer what projects are funded. The money from earmarks has a tendency to cluster in a few states," he added. During the period 1996-2006, 49 states received earmarks for the USAR and ARNG, but 11



states received half the funding for earmarks. The percent of the USAR and ARNG MILCON program from earmarks has tended down over the last few years, from a high of over 90 percent in 1995, to below 40 percent in 2009. "The reserve components' readiness would be enhanced with a MILCON program adequately funded by the President's budget that does not rely on earmarks," COL Nord remarked.

### The prospects for improving facilities

The Army defines unit readiness as the ability of a unit to deliver output for which it was designed. Readiness is influenced by a complex and dynamic combination of factors. Key amongst those factors is facilities. Facilities impact readiness by supporting functions such as training, logistics, administration, and housing—functions that can't be supported if the facilities are degraded, too small, improperly configured, or

**The Harford County NE Readiness Center in Havre de Grace, Maryland only minimally meets standards to house the two Maryland ARNG units stationed there, and it does not meet modern force protection standards. The 36,423-square foot facility was constructed in 1924 as a clubhouse for a racehorse track. The HVAC, mechanical and electrical systems are too old to be adequately repaired.**

non-existent. "Without the proper funding, we can't carry out our mission, thereby negatively affecting the readiness of the force. Soldiers and civilians do what they can to work around facilities' deficits, but that takes time and energy, and often money, which could be used in other, more productive ways," COL Nord said. "Only during the years with the heaviest BRAC funding was the backlog significantly reduced."

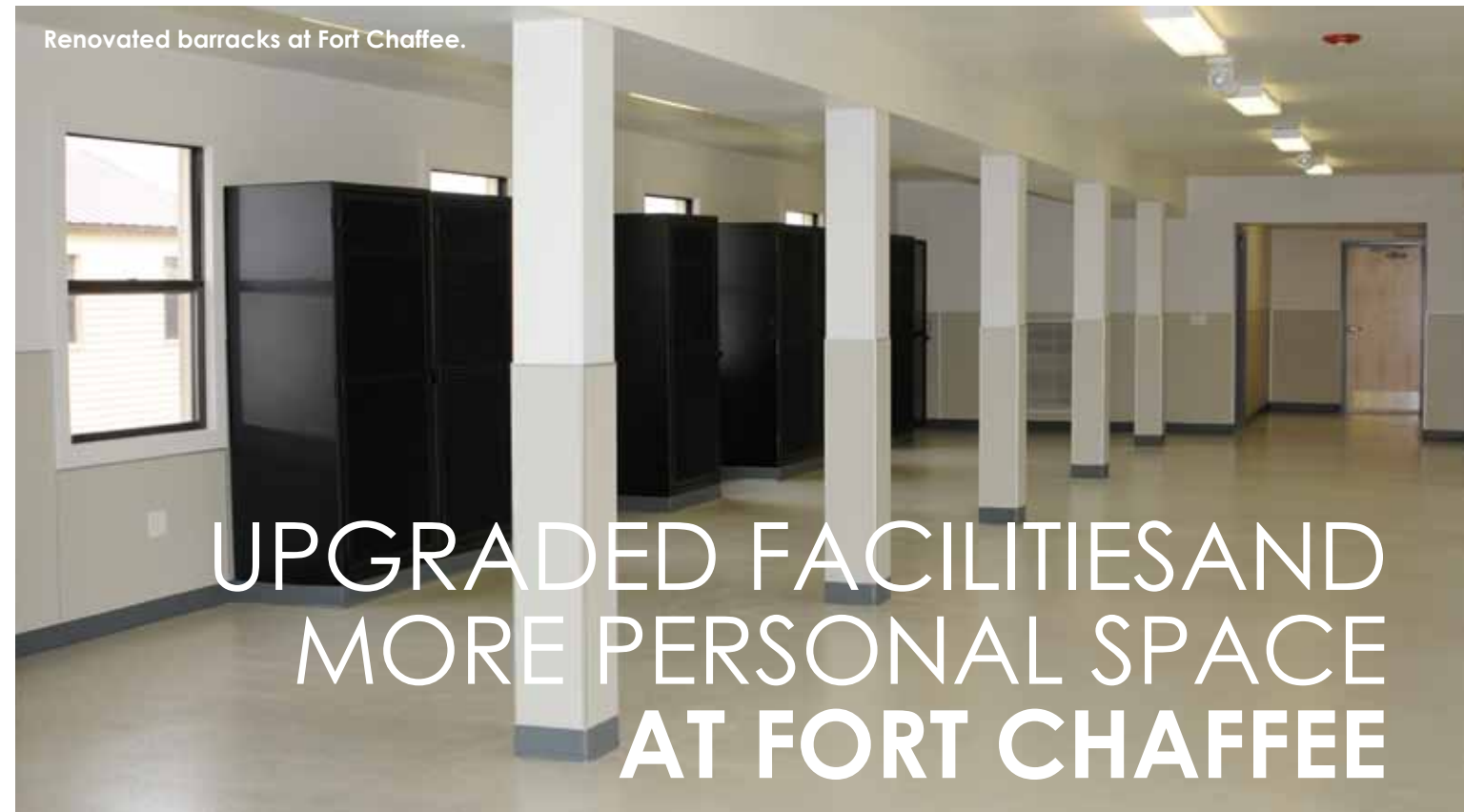
The current high level of engagements around the world has created increased demand on the reserve components. Now more than in the past, the inefficiencies caused by inadequate facilities are incongruent with the demands made by the nation. "The ARNG suffers from inadequate facilities, which undermines readiness. The situation results from the lack of a well-defined and well-funded strategy for managing the facility stock. Inadequate investment in sustainment has led to faster deterioration and shortened facility life. Construction dollars have not been adequate to recapitalize and modernize the facility stock. The level of programmed MILCON funding for the out years of the current Program Objective Memorandum (POM) is simply inadequate to address the backlog of old and degraded facilities, let alone to meet yearly requirements for recapitalization. Sustainment funding set at 90 percent of the requirement is a bright spot. However, pressure to take funds from sustainment, either in the program years or in the year of execution, makes the higher levels of funding far from a certainty. The facilities stock is aging, short of space, deteriorated, and in need of modernization. Readiness is at risk if the senior leaders of DoD, the Army, and its reserve components don't dedicate the required resources to facilities," COL Nord concluded. ■

**Middle: The facilities that house the Talladega Readiness Center are rated the worst in Alabama. Failing electrical systems create fire hazards, and plug load demands far exceed the antiquated electrical system's capacity. Sewer systems back up frequently. Roof and structural leaks cause significant life, safety and health issues, while structural decay creates unsafe working conditions in admin and logistics areas.**

**Bottom: The United States Property and Fiscal Office (USPFO) Warehouse at Camp Hartell, Connecticut is currently located in a series of temporary WWII wood and brick structures built between 1943 and 1956. The facilities are in poor condition, and costly to maintain and operate. None of the Hartell facilities meet current building codes.**



## SPOTLIGHT ON ARKANSAS



SOLDIERS TRAINING AT FORT CHAFFEE MANEUVER TRAINING CENTER WILL EXPERIENCE A MUCH MORE PLEASANT STAY DURING THEIR NEXT VISIT TO THE POST. FORT CHAFFEE IS NEARING COMPLETION OF PHASE ONE OF AN EXTENSIVE BARRACKS RENOVATION PROJECT THAT INVOLVED THE OVERHAUL OF 35 STRUCTURES.

BY CPT HEATH ALLEN

**T**he upgraded facilities at Fort Chaffee are much improved from the conditions in which the Soldiers training at the post have been accustomed. "I'm an old-time Soldier and I've been coming here since 1978," said CSM Thomas Parks. "I've lived in these old barracks the old way. I think once the Soldiers see these new barracks they will feel like the Arkansas Army National Guard (AR-ARNG) cares not just about their quality of training, but their quality of life. That's going to be the biggest impact. When they see this they will realize someone spent a lot of money and went to a lot of work to give them a better place to live while training."

CSM Parks, who is the project manager for the AR-ARNG Deputy Chief of Staff, Engineering and also Fort Chaffee's post command sergeant major, said his office budgeted \$10.5

million to renovate 35 barracks. The American Recovery and Reinvestment Act of 2009, informally referred to as the Stimulus Package, provided an opportunity for AR-ARNG to submit candidate projects for consideration and funding that exceeded the base budget. Projects that demonstrated a potential reduction in energy consumption and improved the quality of life for Soldiers received the highest priority consideration.

Arkansas submitted a plan to renovate 35 barracks in seven groups of five, with an estimated cost of \$1.5 million per group. The average actual cost, however, was \$1.2 million per five barracks. The NGB authorized "reprogramming" of bid savings, which permitted the remodeling of eight additional barracks. CSM Parks said the work on the final eight barracks will begin after the initial 35 have been completed.

Phase one of the barracks renovation was completed in time for the traditional annual training cycle in late May, 2010. While many units from around the country train at Fort Chaffee, the AR-ARNG is the primary group using the facilities.

"These improvements represent our commitment to the continual improvement of Fort Chaffee and will positively impact Soldier readiness and morale," said COL Bob Embrey, Fort Chaffee Commander and CFMO for Arkansas. "We should also see a significant reduction in energy consumption, which will lower the operational costs of the training site." CSM Parks echoed COL Embrey's sentiments, adding that the objective was to focus on projects that would help improve the AR-ARNG, while also conserving energy.

The renovation project was extensive and included additional insulation, as well as the replacement of outdated plumbing fixtures, installation of new energy-efficient light fixtures, water fountains and reconfigured entries, stairwells, interior walls and floor coverings. New, spacious wall lockers and sundry life-safety features were also installed. The restoration project placed a high priority on the Soldiers' well-being, personal space and privacy. Open-bay showers, which were originally constructed in 1942, were replaced with three separate shower stalls, each equipped with curtains.

"Before, in our old barracks, we had to put as many as 70 Soldiers in them," CSM Parks said. "Now there will be only 34 Soldiers in each building. We wanted to improve the quality of



life here for our Soldiers while on post because we feel that they deserve that."

In the past, as many as 40 Soldiers were forced to share 22 wall lockers in the downstairs open-bay area. The AR-ARNG remedied that issue by installing new individual wall lockers throughout the barracks. Now every soldier will have a secure place to store personal belongings. "We tried to give them more space and make things more convenient for the Soldiers when they're not training," CSM Parks said.

### AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009

On Feb. 13, 2009, Congress passed the American Recovery and Reinvestment Act of 2009 at the urging of President Barack Obama, who signed it into law four days later. The Recovery Act is a direct response to the economic crisis. In addition to offering financial aid directly to local school districts, expanding the Child Tax Credit, and underwriting a process to computerize health records to reduce medical errors and save on health care costs, the Recovery Act is targeted at infrastructure development and enhancement. For instance, the Act plans investment in the domestic renewable energy industry and the weatherizing of 75 percent of federal buildings as well as more than one million private homes around the country.

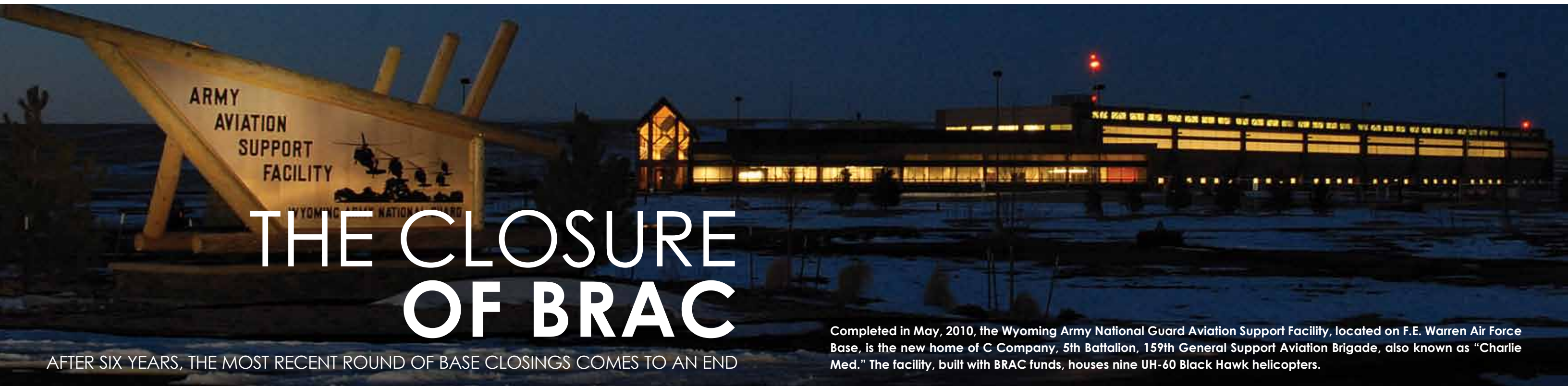
That also included providing one electrical wall outlet per Soldier. "Before there were a limited amount of outlets for the Soldiers and they had to share them," CSM Parks said. "In this day and age, just about every Soldier has a laptop and a cell phone. Now everyone will have the ability to plug in their electrical devices."



"These improvements represent our commitment to Soldier care and to the continual improvement of Fort Chaffee," COL Embrey said. "The renovations and improved layout provide more space per individual Soldier and offer a higher degree of privacy. Our Soldiers will now have a safe, clean and comfortable place to rest and relax after a hard day of training." ■

*CPT Heath Allen is an Arkansas Air National Guard Public Affairs Officer*





# THE CLOSURE OF BRAC

AFTER SIX YEARS, THE MOST RECENT ROUND OF BASE CLOSINGS COMES TO AN END

Completed in May, 2010, the Wyoming Army National Guard Aviation Support Facility, located on F.E. Warren Air Force Base, is the new home of C Company, 5th Battalion, 159th General Support Aviation Brigade, also known as "Charlie Med." The facility, built with BRAC funds, houses nine UH-60 Black Hawk helicopters.

FOR THE ARMY NATIONAL GUARD, THE BASE REALIGNMENT AND CLOSURE ACT OF 2005 PROVIDED AN OPPORTUNITY TO REDUCE ITS NUMBER OF SUBSTANDARD AND UNDERSIZED FACILITIES AND TO MODERNIZE ITS INVENTORY TO HELP GUARD UNITS BETTER MEET CURRENT AND FUTURE OPERATIONAL REQUIREMENTS. BY THE TIME THE SEPTEMBER 15, 2011 DEADLINE ARRIVES, THE ARMY NATIONAL GUARD WILL HAVE CLOSED 211 INADEQUATE FACILITIES AND COMPLETED CONSTRUCTION OF 125 MODERN INSTALLATIONS THAT MEET ANTI-TERRORISM AND FORCE-PROTECTION REQUIREMENTS.



(in 1988, 1991, 1993, and 1995).

The most recent round of BRAC began in May, 2005, when the Secretary of Defense forwarded his recommendations

base Realignment and Closure (BRAC) is a Department of Defense (DoD) program to close excess military installations and realign the remaining installations to reduce expenditures and increase efficiency. More than 350 installations were closed in the first four BRAC rounds

for realignments and closures to the BRAC Commission, an independent nine-member panel appointed by the President. In November, 2005 the list was given to Congress, which voted it into law. By this law, the realignments and closures of the affected bases must be completed by September 15, 2011.

The BRAC 2005 round was different from previous rounds in several important aspects. It was the first BRAC round focused on military force transformation, and not solely on infrastructure reduction. It was the only round to be part of a worldwide defense infrastructure review that included U.S. installations overseas. And it was the first BRAC round to include the National Guard.

Unlike previous rounds, the 2005 round called for the realignment and closures of numerous National Guard installations.

By the time BRAC 2005 ends in September, 2011, 211 ARNG facilities around the country will have been closed.

BRAC 2005 was different from previous rounds in another important aspect as well: while previous BRAC rounds focused on infrastructure reduction, the latest round included substantial new construction. For the ARNG, that meant a total 56 MILCON projects with a combined budget of \$1.7 billion. Adding in 69 USAR-led projects, furniture, fixtures, equipment, and information technology and intrusion detection systems, the total Reserve Component BRAC budget jumps to \$3.2 billion over five years.

The majority of the 56 projects were new construction; all were multi-component projects, in cooperation with other reserve components. Most of the projects were new construction of Armed Forces Reserve Centers (AFRC) with multiple components, together with the USAR, the Marine Corps Reserve (USMCR), and the Navy Reserve. Close to 21,800 ARNG Soldiers and civilian personnel are assigned to these new facilities. Adding the other reserve components, the total number of Soldiers and civilian personnel directly affected by the realignment comes to 43,600.

In total, 39 states and territories participated in ARNG's BRAC program. "The Adjutants General (TAGs) in each state could opt in or out of the program. Some TAGs didn't like the idea of joint facilities, or there simply wasn't a need in their state," said Bill Pulket, Facilities Management Engineer at ARNG-ILI. "The program was good for us—it gave us

infrastructure that it would have taken years to build through the regular MILCON program. In the end, we have 39 happy Adjutants General, and 15 that are not so happy."

### Making a list, checking it twice

The Chairman of the Joint Chiefs of Staff at the time, GEN Richard Myers, said the list of recommended realignments and closures forwarded from the Secretary of Defense to the BRAC Commission had several objectives, including better integration of active and reserve units; a more flexible and agile military; improved cooperation between military service branches while training and fighting; and the conversion of unneeded capacity into war-fighting capability.

The Commission's objectives for the reserve components were to transform these components' facilities into multi-functional installations that will enhance unit readiness, increase training opportunities, and generate operational efficiencies, to help the components better meet current and future operational requirements. "The objectives of ARNG's BRAC program are to reduce the number of substandard and undersized facilities—we still had facilities that didn't accommodate female Soldiers—and to promote recruiting and retention. The program also sought to reduce the number of federal leases, and enhance anti-terror/force-protection and homeland defense capabilities," said COL(R) Tibor Lanczy, Program Manager in ILI's CFMO MILCON Support team. "These new facilities will also improve Soldier readiness processing by

fostering home station mobilization. Before, we had to bring the Soldiers somewhere else for processing before deployment. Now, we're a one-stop shop."

To reach these goals, the Department of the Army consolidated multiple Army Reserve Centers and, where possible, ARNG Readiness Centers into modern AFRCs. It also provided an opportunity for local, state, or federal organizations to partner with the reserve components to enhance homeland security and homeland defense at a reduced cost to the ARNG and participating agencies. In keeping with ARNG's



**The roof (in the foreground) of the Armed Forces Reserve Center and Field Maintenance Shop in Mount Carmel, Tennessee is covered with vegetation to help cool the building and keep utility costs down.**

mission as a community-based organization, about a dozen of the new facilities also have community involvement, serving as community centers on the days the facilities are not used for training.

Deciding on which facilities to close, and where to locate the new joint facilities was not an easy task. A team of functional experts from the Department of the Army, the Army Directorate, the NGB, the Office of the Commander of the Army Reserve (OCAR), the offices of State Adjutants General, and the Army Reserve Regional Readiness Commands (RRC) conducted military value assessments of all state-owned and Army Reserve sub-threshold facilities. The facilities were assessed in their ability to support joint stationing options that enhance Army and DoD transformation, and on variables such as age, operating costs and energy efficiency. "It was pure economics. With dwindling state and federal dollars it didn't make economic sense to keep small Readiness Centers that were not cost-effective," Pulket said.

In the end, the team of experts presented a list that included 211 ARNG closures in 32 states, five ARNG leases unobligated, and 175 Reserve closures. The team also

presented a list of 125 new Joint Readiness and Training Facilities. The sites selected for the new facilities were chosen to optimize ARNG's ability to recruit and retain Soldiers, and to train and mobilize units.

As of July, 2010, 41 of the 56 projects are still under construction. By the September 15, 2011 deadline, all 56 ARNG BRAC projects will be completed. Since the beginning of the program, ARNG has had an execution level of 100 percent each year—the only Army component to maintain 100 percent execution. A few projects had a project lead change from USAR to ARNG when USAR couldn't find the land on which to build, but even in those cases ARNG managed to execute on time. Most projects have been carried out using Design-Build—a delivery vehicle in which a single entity (a builder or an architect) is responsible for both design and construction—which has helped speed up the construction phase. "I would attribute the success to good management, timely design reviews, and contract support. The BRAC MILCON support team served as a liaison between the Army BRAC office and NGB. That success resulted in a similar support team being set up for our regular MILCON program," COL(R) Lanczy said.

#### **An addition at Arlington Hall**

In ARNG, BRAC has been felt across the board, from the smallest unit all the way to the top. Even the NGB headquarters at Arlington Hall in Arlington, Virginia is affected: a \$104 million addition, just south of the existing ARNG Readiness Center, is part of the program and financed with BRAC funds. Around 1,300 people work at Arlington Hall. When the new building is finished in April, 2011, 1,180 Guard personnel will relocate from rental property in Crystal City, Virginia to Arlington Hall.

The building will be Leadership in Energy and Environmental Design (LEED) Silver certified by the U.S. Green Building Council through highly efficient HVAC and plumbing systems, and innovative solutions that include a green roof. The central point of the HVAC system is a cooling and heating plant that will include high-efficiency water-cooled water chillers and high-efficiency hot water boilers. The chillers will be specified with LEED-compliant "green" refrigerants and the boilers will use natural gas as the fuel source. The cooling towers serving the chillers will be of the induced-draft type to maximize energy efficiency. Similarly, the variable primary pumping systems that serve the chillers and boilers will be provided with variable frequency drives (VFDs) to maximize energy efficiency. Together, these solutions add up to estimated energy cost savings of \$77,000 a year.

The plumbing system will incorporate sustainable solutions such as waterless urinals, men's toilets with automatic sensors, dual-flush women's toilets with valves, and low-flow aerators in all sinks to meet water use reduction goals.

The lighting system will include automated time controls and occupancy sensors for office areas, and dual-level switching or dimming systems in areas where automation is not possible.

In total, the building will cover 250,000 square feet and combine both below-grade floor spaces, referred to as the plaza levels, and above-grade tower space to maximize the useable areas of the site. The roof of the lower plaza podium level will form a green roof, covered with small, flowering trees, hedges and grass varieties to preserve the green park-like feeling that now exists at Arlington Hall.



**The new Armed Forces Reserve Center in Mt. Vernon, Illinois is heated with geothermal heat pumps.**

#### **A new home for Charlie Med**

Most of ARNG's BRAC projects are new construction of AFRCs and Field Maintenance Shops (FMS), but the project list also includes other types of facilities, such as Joint Forces Headquarters (JFHQ) in Montgomery, Alabama and Cheyenne, Wyoming, and a Regional Maintenance and Training Complex in Columbus, Ohio.

In May, 2010, the C Company, 5th Battalion, 159th General Support Aviation Brigade, also known as "Charlie Med," moved into the new Wyoming Army National Guard Army Aviation Support Facility (AASF) on F.E. Warren Air Force Base. The 98,000-square-foot, \$44 million facility was built with BRAC funds and provides space for nine UH-60 Black Hawk helicopters and approximately 150 personnel, including pilots, crews and maintenance personnel. Adjacent to the new building is a 305,000-square-foot concrete apron that provides a main taxiway and parking spaces for eight additional helicopters.

By using sustainable building materials, a geothermal heating system, and by maximizing the use of natural light through daylighting, the facility earned a LEED Silver certification. The hangars use a geothermal heating system that consists of 112 vertical wells, each dropping 400 feet deep, with over nine

miles of tubing—153 loops in total, with each loop measuring 300 feet long—underneath the hangar slab. The floor maintains a constant temperature of 72 degrees Fahrenheit in the heated bays, heating the hangars entirely—and the rest of the facility partially—with clean, renewable geothermal heat.

#### **"Failure was never an option"**

The Army National Guard acquires land in four ways: it builds on federal land, on state land, on land that belongs to local municipalities, and it leases land from private landowners. In the

cases where the now-closed facilities were located on land that belonged to local municipalities, the land—and the facilities—were returned to those communities. The communities have found new uses for these often-historic structures. One Readiness Center is now a roller-skating rink. Another was turned into a shirt factory. A third has been converted into a library.

Measured in square footage, the BRAC program resulted in a 4 percent reduction in facility inventory for ARNG. There are no figures yet on what this will mean in terms of savings, but utility cost savings will with certainty exceed 4 percent, since old, drafty facilities were replaced with new, energy efficient structures. Then there is the savings that comes with shared facilities. "Joint facilities mean we don't build redundant facilities, and utility costs are shared," said Gary Widner, ARNG BRAC Coordinator at ILI. "Our main goal was to improve infrastructure and save money. I think we achieved that."

The ARNG BRAC program has been so successful it not only reached 100 percent execution every year, it also resulted in \$130 million in savings, which was returned to the Army for redistribution. "Initially, BRAC was harder to do, since there were no written rules, but we've learned a lot, and we'll be able to take what we've learned and apply it to our MILCON program," Pulket said. He also adds the cooperative spirit from the states to the reasons for the program's success. For Pulket and his team, the success comes as no surprise. "Failure was never an option," he said. ■

# THE GUARD'S FIRST STRYKER BRIGADE

THE CONVERSION OF THE PENNSYLVANIA ARMY NATIONAL GUARD'S 56TH BRIGADE TO THE NATIONAL GUARD'S FIRST STRYKER BRIGADE COMBAT TEAM LAUNCHES THE LARGEST CONSTRUCTION PROGRAM IN THE STATE'S HISTORY.



asked to describe the decision to field the Army National Guard's first—and so far only—Stryker Brigade in the nation in his state, COL John Buffington, Pennsylvania Army National Guard's (PA-ARNG) CFMO, calls it "A once-in-a-lifetime opportunity to modernize many of

our facilities to house a major brigade combat team."

In 2001, PA-ARNG 56th Brigade was selected as one of six brigades at that time to become a Stryker Brigade Combat Team (SBCT)—now the Army has seven SBCTs in total. It was the only ARNG unit chosen—the other brigades are all Active Army units. For PA-ARNG, the designation meant national recognition that it has achieved the highest levels of strength and readiness. It also marked the beginning of the largest construction program in PA-ARNG's history.

The PA-ARNG is one of the largest National Guard programs in the nation—it has the nation's largest ARNG and fourth-largest Air National Guard (ANG)—and it's one of Pennsylvania's top-ten employers. About 3,000 of its members serve full-time, and the remaining 16,000 serve part-time at facilities in some 90 communities across the state.

The 13 SBCT-related projects at Fort Indiantown Gap, PA-ARNG's largest installation, and the 27 other projects around

the state—from the Ohio border to the shores of the Delaware River—add up to a \$362 million investment. For the many communities hit hard by recession, that's a welcome influx of money and job opportunities for architects, engineers, and construction workers. "There is no state in the nation that comes close to Pennsylvania's construction program," said Doug Patterson, Facilities Management Engineer at ILI. He added, "It is the Stryker Brigade that makes the big difference."

## Filling a combat niche

The SBCT is made up of more than 4,000 Soldiers, and it shares its name with the Stryker vehicles—19-ton, armored combat vehicles that come in ten variants and support a broad range of combat operations. The eight-wheeled, all-wheel drive vehicles are produced by General Dynamics Land Systems at a production cost per vehicle of roughly \$1.4 million, and are based on the Canadian LAV III light-armored vehicle, which in turn was based on the Swiss MOWAG Piranha III 8x8. The Stryker was the U.S. Army's first new armored vehicle since the M2/M3 Bradley Fighting Vehicle in the 1980s.

The Stryker Brigade is a rapidly deployable, versatile, and sustainable method of troop transport. It employs the latest computer technology and takes Soldiers safely and accurately to different environments—from combat to humanitarian assistance. It also allows combat teams to report anywhere in the world within 96 hours. With each Stryker putting nine dismounted Soldiers on the ground, an SBCT is capable of covering areas three times larger than a regular Army brigade. The brigade's speed, mobility and agility make it a prime weapons system for post-9/11 warfare.

## Across the state, a construction boom

The \$1.5 billion program purchased more than 1,000 vehicles—including 300 Strykers—and funded 40 MILCON projects across Pennsylvania. Before a single shovel hit the dirt, PA-ARNG's Environmental Office conducted an Environmental Impact Statement (EIS) for the overall Stryker program. "This was the most wide-ranging environmental document I have ever worked on. It covered construction of buildings and ranges, new training and equipment fielding, and relocation of units throughout the state. It also included facilities in New Jersey, Ohio and Virginia," said PA-ARNG Environmental Program Manager John Fronko, who oversaw the environmental process. The EIS process took about two years to complete and the 1,800-page, three-volume document was approved in the spring of 2006.

The EIS helped identify suitable sites for construction—one of the first challenges in the construction process. To minimize cost, PA-ARNG first looked for suitable sites among Commonwealth of Pennsylvania property holdings and at Fort Indiantown Gap, also known as "the Gap." The Gap, located in Annville, has 17,000 acres with 140 training areas. In some

cases, land had to be purchased from private land owners, at fair market value. Each project was thoroughly reviewed and approved by local community organizations and citizens.

The Gap's 13 projects include a sniper field fire range, multi-purpose machine gun and grenade ranges, a live-fire shoot house, and a battalion training complex. The projects also included a 50-acre model village. The \$11 million village, or Combined Arms Collective Training Facility (CACTF), completed in March, 2008, consists of a number of different structures that simulate an urban environment. In the village, military personnel train to engage the enemy under numerous scenarios, all under the watchful eye of 80 cameras. In 2013, construction will begin on an \$8 million addition that will enhance the training environment. Aside from ARNG units, local, state and federal law enforcement agencies and other military units and international military personnel also train at Fort Indiantown Gap.

At Fort Indiantown Gap, the Director of Public Works and his team leveraged Army Corps of Engineers standard designs for most of the 13 range and building projects and used the traditional design-bid-build delivery method. All 13 projects were executed at record-speed in the first year of congressional appropriation.

The other 27 projects, in 20 communities scattered across Pennsylvania, were made up of new Readiness Centers,



The 50-acre Combined Arms Collective Training Facility (CACTF) at Fort Indiantown Gap consists of 11 concrete buildings that simulate an Iraqi village—complete with a mosque, a police station, a gas station and a dormitory. Photo by Robert Smith.

Competitors in the first All-Guard Sniper Tryouts look downrange at Fort Indiantown Gap.

Readiness Center additions or alterations, and new Field Maintenance Shops (FMS). For these 27 projects, the Commonwealth of Pennsylvania passed a one-time law to let PA-ARNG use the Design-Build project delivery process, otherwise not allowed in Pennsylvania, thereby allowing PA-ARNG to bypass the state's four-point contractor system. Design-Build is a delivery process in which a single entity (a builder or an architect) is responsible for both design and construction. This contracting method shortens the delivery schedule by overlapping the design and construction phases of a project and minimizes potential conflicts between architect and builder. According to the Design-Build Institute of America, Design-Build is legal, to varying degrees, in all but three states.

Pennsylvania's United States Property and Fiscal Office (USFPO) awarded a delivery order contract for generation of Requests for Proposals. These bridging documents included preliminary site design and engineering data, and building concept designs for the follow-on Commonwealth Department of General Services Design-Build contracts.

Thanks to the Design-Build process, 24 of 27 projects were awarded on time (land actions delayed three of the projects). As of June, 2010 construction of all but one Readiness Center is complete. The modern classrooms, improved information technology systems and skills training systems at each of these facilities will substantially improve Soldier training, emergency responses, and support of Homeland Security operations.

Sustainable design was a key factor in each project. Mid-way through the SBCT construction project, the National Guard Bureau transitioned from the Sustainable Project Rating Tool (SPiRiT) system to the U.S. Green Building Council's LEED. Leadership in Energy and Environmental Design (LEED) provides a suite of standards for environmentally sustainable construction. Depending on how many sustainable solutions they incorporate, buildings can earn up to 100 possible base points, plus an additional six points for Innovation in Design and four points for Regional Priority, placing them in one of the four levels of certification—Certified (40-49 points), Silver (50-59 points), Gold (60-79 points) and Platinum (80



**A rebirth for the Gap—and for Pennsylvania**

Above Fort Indiantown Gap, Shadow unmanned aerial vehicles share the sky with Lakota helicopters—the Army's latest

**The Commander of the Pennsylvania National Guard, MG Jessica Wright, cuts the ribbon at the Chambersburg Readiness Center on March 11, 2010. Although many of the centers were complete before then, the Chambersburg Readiness Center was the first to celebrate its opening after the return of the 56th Stryker Brigade from its deployment to Iraq. Photo by SGT Matt Jones.**

Founded in 1879, PA-ARNG's 28th Infantry Division is recognized as the oldest continuous serving division in the U.S. Army. In January, 2009, the 56th Stryker Brigade Combat Team, 28th Infantry Division deployed to Iraq, taking the newly transformed Brigade from the Army's oldest division into the country's most recent war. When the Brigade returned, they did so to new or renovated facilities, and to new, modern ranges at Fort Indiantown Gap.

"These projects have greatly enhanced our capabilities on a number of fronts," said LTC John Saufley, PA-ARNG's Stryker Brigade construction and facilities management



**Above: Two Stryker vehicles train at Fort Indiantown Gap. Opposite page: An aerial view of the Battalion complex at Fort Indiantown Gap (the brown roofs), the Unit Storage Site (the green roofs next to the Battalion buildings), and the Battle Command Training Complex (the green roofs across the street from the Unit Storage Site). These were all Stryker Brigade Combat Team projects constructed between 2006 and 2008.**



points and above). Sustainable building materials and energy efficient HVAC systems make up the bulk of the points, but simple solutions such as bike racks and electrical outlets for hybrid cars earned points as well. All of the 56 new SBCT facilities have achieved, or will achieve, a minimum of LEED Silver. At Fort Indiantown Gap, 11 of the 13 projects achieved SPiRiT Gold rating (the majority of these projects were designed during the time of the SPiRiT requirements).

helicopter—as well as Black Hawks, Chinooks and Apaches. In addition to the Stryker Brigade, the Gap is home to the Eastern Army National Guard Aviation Training Site (EAATS), which was awarded the entire Lakota training program, and which will eventually lead to some 18 Light Utility Helicopters being stationed at the base. Together, the EAATS and the Stryker Brigade add up to the largest investment in the Gap since World War II.

officer. "Future generations will look back on this period and see that it was by far the most significant construction period in our entire history."

"It took a tremendous team effort to make all these facilities and ranges a reality," PA-ARNG commander MG Jessica Wright added. "These projects make Fort Indiantown Gap and our facilities across the commonwealth viable now and vital for future roles and missions." ■

Attendees at CFMO University in San Diego, California.  
Bottom: Construction Facility Management Officers from across the nation gather for a group shot.



AT CFMO UNIVERSITY, CONSTRUCTION AND FACILITIES MANAGEMENT PERSONNEL LEARN THE SKILLS THEY NEED TO CARRY OUT THEIR MISSIONS.

In December, 2009, a thousand construction and facilities management personnel from across the country attended CFMO-U in San Diego, California. The one-week training program runs for two consecutive weeks and offers over 70 courses—all peer-driven—at different levels. ARNG-ILI coordinates and provides instructors for CFMO-U, which is open to all personnel responsible for performing installation management missions. This time, a record-breaking total of 40 industry exhibitors also took part in the event. “It’s not enough to just train the people at the top. In order to grow our organization we have to grow at all levels,” said COL Richard Nord, Chief of ARNG-ILI. “Key to our organization’s success is the continued improvement of our education programs and the certification of Construction Facility Management Officers (CFMOs). At ILI, it’s our job to make the tools available so that CFMOs and their staff can be successful in their tasks.”

Since 2004, ILI has been sponsoring a CFMO certification course for CFMOs and their deputies. The course was an



initiative by the Iowa National Guard (IA-ARNG), and it was developed by BG (R) Dave Rogers and Marcia Burbank of IA-ARNG, in cooperation with the Facility Engineer Advisory Council (FEAC).

Over the course of 14 months, CFMOs and their deputies complete seven one-week sessions that roughly follow the cycle of a construction project—from planning and budgeting, construction, maintenance and services, to disposal. Each class is one week, or 40 hours, and covers contract support; planning, programming and real property; design and project management; facilities management; and resource management. Many of the classes start with three days of lectures, and close with two days of case studies. The classes focus on the rules of the federal government, since each of the 50 states, three territories, and the District of Columbia has its own set of rules, and teaching the varying laws of each state or territory would be nearly impossible. There’s no requirement to take the course, but most CFMOs go through the program, which educates 35 to 40 people at a time.

The CFMO Certification course trains the top two construction managers in each state or territory—the CFMO and his or her deputy. Because of multiple deployments—most installation management employees are also Soldiers who belong to operational force units—staffing is not as robust as it could be at the state level.

“We strive for continuity and predictability, and while deployments usually carry an advance notice of a year—enough time to train a replacement—that doesn’t always happen, and we sometimes have to send contractors to states to fill the gap. At the state level, staffing is barely one-deep, and new staff must learn quickly,” COL Nord said.

For CFMOs, the CFMO Certification course shortens the learning curve, so that they can hit the ground running. It allows them to increase their execution rate and it teaches them to ask the right questions of their staff, of ILI staff, and of contractors. Through CFMO-U, their support personnel learn the tools they need to work more efficiently, which reduces waste and results in greater savings.

The CFMO Certification program is unique within the Armed Forces in that it is peer-driven, with peers training peers. There’s only one CFMO in each state, and the support from peers who do the same thing and the guidance of new CFMOs by mentors in the community is therefore crucial.

“It’s our goal to grow a workforce at the national and state levels that is capable of securing the resources and providing the high-quality services that our mission requires. Thanks to the CFMO Certification course and CFMO-U, we have a highly-skilled workforce. The positions that these people fill require highly specialized skill sets—we couldn’t hire people with these skills off the street, or rely on native intelligence,” COL Nord said. “These programs impart skills and build friendships across states, and open communication at the national level.” ■



A thousand construction and facilities management personnel from across the country attended CFMO University in San Diego, California, in December, 2009 to learn the tools they need to carry out their missions more efficiently. The one-week training program runs for two consecutive weeks and offers over 70 courses at different levels. This time, a record-breaking 40 industry exhibitors also took part in the event.

# TOP PERFORMER

WITH A NEAR-PERFECT SCORE, NEBRASKA TAKES HOME THE 2010 FRED ARON AWARD

Outperforming 53 states and territories, the Nebraska Army National Guard Construction and Facilities Management Office was awarded the 2010 Fred Aron Award for excellence in facilities programs at the annual Construction and Facilities Management conference in Atlanta, Georgia in May. The Fred Aron Award is presented to the top performer—based on criteria such as accuracy, effectiveness and timeliness of submissions, and prudent execution of federal funding—in nine areas: MILCON Program Execution, Financial Management, Budget Estimate, Facilities Inventory and Support Plan (FISP) Certification, TAG Narrative Submittals, CFMO Certification, Energy Management, ESS Program, and Installations Status Report Submission. The award was accepted by Nebraska's CFMO, COL Timothy Zegers. *Foundations of Readiness* had a chance to speak with COL Zegers after the ceremony.

► **Foundations of Readiness:** The Fred Aron Award recognizes the best-performing facilities program in the nation. With many good facilities programs around the country, what set Nebraska apart from the competition?

► **COL Zegers:** I'd say it's the quality of our staff. We are blessed with excellent State and Federal employees. They have the unique ability to multitask, and because of our comprehensive cross-training program they are able to backfill for each other. As I like to say, we have a deep bench. In addition, several outstanding State employees have taken over as branch chiefs during recent deployments of our Federal-Technicians. We also have the support of our leadership. Our Adjutant General and our Chief of Staff understand the type of resources needed, and they make sure we have the personnel and funding we need to sustain the program.

► **Foundations of Readiness:** The winner of the Fred Aron Award is calculated by a point system, with a maximum score of 1000 points. Nebraska scored 930 points in FY09—a near perfect score. In which areas are there still room for improvement?

► **COL Zegers:** That's a little bit difficult to say without seeing the tabulation, but every program can always improve. One area where I think we can improve is database coordination, and our understanding of the relationships between various databases and how they affect the raw data. The suspense dates for database submissions are always changing, and missing any one of them can affect the data for other databases.

► **Foundations of Readiness:** What MILCON projects did your office complete in FY09, the year for which you received the award?



Nebraska CFMO COL Timothy Zegers (left) receives the 2010 Fred Aron Award from COL Richard Nord, Chief of ARNG's Installations Division.



The Greenlief Training Site—an Armed Forces Reserve Center—was constructed at an approximate cost of \$13 million.

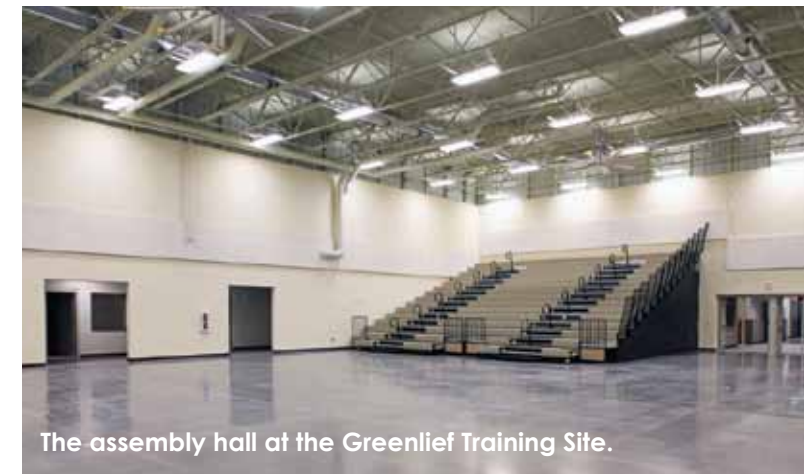
► **COL Zegers:** We completed two AFRC projects—a \$13 million AFRC at the Greenlief Training Site in Hastings and an alteration in Kearney. We also completed a \$21 million Army Aviation Support Facility in Grand Island.

► **Foundations of Readiness:** Did Nebraska carry out any projects through ARRA, also known as the Stimulus Package?

► **COL Zegers:** We did 13 ARRA projects in Nebraska, at a total of \$6.4 million. The largest project was the construction of a \$3.1 million dining facility (DFAC) at Camp Ashland. Most of the projects were small energy projects to improve energy efficiency and operational projects to improve training sites. We are also working on a \$2 million HVAC system replacement project to improve the conditions in one of our Readiness Centers. This project was only possible with matching funds from the State of Nebraska's Department of Administrative Services' Task Force for Building Renewal. Hats off to them...

► **Foundations of Readiness:** The ARNG is now an operational force, with combat veterans making up 80 percent of the organization's membership base. How has this organizational shift affected Nebraska and your task to ensure that Nebraska's installations meet readiness requirements?

► **COL Zegers:** In Nebraska, and in the ARNG in general, there is an increased emphasis on doing training at home station. We have put forth a great deal of effort upgrading ranges and training sites to meet the training needs of our Soldiers. We built a Combat Pistol Military Police Qualification Course (CPMPQC) that is used by thousands of Soldiers for qualification with the 9mm combat pistol. We have upgraded our zero range to increase throughput, making qualification with M4 assault rifle much more efficient. We also built a Tactical Training Base (TTB), which our entire force—3800 Guard members in total—and our Regional Training Institute (RTI) will use to train basic soldiering skills.



The assembly hall at the Greenlief Training Site.

► **Foundations of Readiness:** Nebraska is a scarcely populated state. What particular challenges does Nebraska face in maintaining inventory and ensuring access for Guard members?

► **COL Zegers:** The changing demographics of our state are driving new business practices. Our Joint Force Headquarters (JFHQ), where our Construction and Facilities Management Office is located, is in the eastern part of the state, but we maintain facilities throughout the state. We currently dispatch maintenance teams from our JFHQ to locations as far away as 400 miles. We are pursuing a regional approach that would locate additional Construction and Facilities Management Offices in other parts of the state—decreasing travel time and increasing maintenance activities.

► **Foundations of Readiness:** What are your goals as CFMO of Nebraska's Army National Guard?

► **COL Zegers:** Our Adjutant General's goal—which my staff and I support—is to provide world-class training sites, Readiness Centers, and logistical facilities for our Soldiers and their families, in support of the citizens of Nebraska and the United States.



sustain

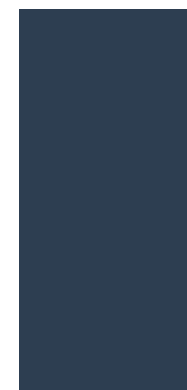
UNDER THE ENERGY POLICY ACT OF 2005, ALL FEDERAL GOVERNMENT AGENCIES ARE REQUIRED TO USE SOME RENEWABLE ENERGY. FOR THE ARMED FORCES, THERE IS ANOTHER OBJECTIVE—TO REDUCE DEPENDENCY ON FOREIGN OIL. THROUGH INNOVATIVE USE OF ALTERNATIVE ENERGY SOURCES, THE ARMY NATIONAL GUARD HAS MANAGED TO SURPASS THE GOVERNMENT REQUIREMENT, WHILE AT THE SAME TIME LOWERING ITS ENERGY COSTS. IN SOME INSTANCES, IT HAS MANAGED TO TAKE ENTIRE INSTALLATIONS COMPLETELY OFF THE GRID.

TOWARDS A  
**GREEN FUTURE**



# THE POWER OF ONE

FOR THE ARMY NATIONAL GUARD, FUNDS FROM THE AMERICAN RECOVERY AND REINVESTMENT ACT PROVIDED A WAY TO MEET GOVERNMENT REQUIREMENTS OF ENERGY REDUCTION AND TO RELIEVE A BACKLOG OF ENERGY PROJECTS. ACROSS THE COUNTRY, ENERGY MANAGERS ARE PUSHING ENERGY PROJECTS FORWARD, WHILE AT THE SAME TIME EDUCATING THEIR COLLEAGUES IN ENERGY REDUCTION. WHILE COST REDUCTION MIGHT BE THE IMMEDIATE OBJECTIVE OF THESE PROJECTS, THE LONG-TERM GOAL IS TO CHANGE USER BEHAVIOR AND CREATE A CULTURE OF INDIVIDUAL ACCOUNTABILITY WHERE EVERY SOLDIER FEELS THAT HE OR SHE CAN MAKE A DIFFERENCE.



In the past, the Army operated with the assumption that low-cost energy would continue to be readily available. Today, reliable access to affordable, stable energy supplies has come to pose a challenge for the Army and its branches. In addition, there is the threat of enemies disrupting

these supplies as a form of attack. "Interfering with our grid system is a very possible way for enemies to attack and threaten our defense system," said Ronald Diehl of the Facilities Policy Division of the Department of the Army's Office of the Assistant Chief of Staff for Installations Management (ACSIM).

Disruption of energy supplies would harm the Army's ability to accomplish its missions. The development of alternative energy sources that would reduce the reliance on traditional energy sources is therefore a top priority for President Barack Obama's administration.

In February, 2009, in an effort to stimulate the United States economy, President Obama signed the American Recovery and Reinvestment Act of 2009 (ARRA). While ARRA affects numerous sectors, it created unprecedented

opportunities to obtain federal funding for renewable energy projects. In total, ARRA distributed \$787 billion. The amount appropriated for the ARNG for Facilities, Sustainment, Restoration and Modernization (FSRM) projects—the budget bracket in which most energy projects fall—was \$266.3 million. For an underfunded ARNG, the ARRA funds are much welcome indeed.

### For the Guard, a much-needed addition of funds

The average age of ARNG facilities is 42 years old. Forty percent of ARNG facilities are over 50 years old and a remarkable 38 facilities are over 100 years old. Across the country, only 274 ARNG facilities were built within the last decade.

"This means outdated electrical systems that can't handle modern information technology needs; outdated safes and security systems; nonexistent female latrines; facilities that are hot in the summer and cold in the winter; insufficient sprinklers and walls that would burn in less than three minutes," said LTC Don McFadden, Branch Chief of ARNG-ILI Strategic Plans and Education Branch.

In some parts of the country the situation is worse than in others; in the northeast, the average facility is 67 years old. Such an aging inventory of installations means 86 percent of ARNG's construction dollars go into existing buildings. The problem is there simply aren't enough funds to maintain these facilities, and to construct the facilities necessary to accomplish ARNG's mission. "Readiness Centers are underfunded. That means that they are inadequate to support the operational force and strategic reserve missions of ARNG," LTC McFadden said.

The transformation of the ARNG from a strategic to an operational force has put new demands on ARNG installations—there is now an increased need for training facilities, shooting ranges, storage space and other facilities connected to the readiness of the force. With these new, urgent requirements, it's easy for energy projects to get pushed aside, even though a presidential order clearly states that energy projects are a priority.

By order from the president, all federal offices must reduce their energy consumption by three percent a year, using 2003 as a baseline. For the ARNG, the ARRA funds meant an opportunity to meet that requirement through energy projects long proposed and renovation needs long neglected. The ARNG carried out 15 MILCON energy projects, adding up to a total \$5.6 million, through ARRA in 2009. It also has some 700 energy-related Sustainment, Restoration and Modernization (SRM) projects at various stages of completion. SRM projects have a funding cap of \$750,000, while any construction project above \$750,000 is classified as MILCON. The projects include energy efficiency improvements, such as replacements of HVAC systems and roofs, and projects to develop alternative sources of energy, such as ground source heat and photovoltaic projects.

The project carried out at the Wendell H. Ford Regional Training Center (WHFRTC) in Greenville, Kentucky, is a good example of ARNG's energy-related ARRA projects. There, ARRA funds financed an 84 kilowatt (kW) photovoltaic system made up of 400 solar panels, which will produce approximately 100,000 kW hours of renewable green energy a year. The system will reduce greenhouse emissions by 79.2 tons, which is equal to the carbon dioxide emissions from the consumption of 8,078 gallons of gasoline. The \$553,500 project was completed in February, 2010. The 400 solar panels are tied to the local grid, and any excess power will flow back onto the grid, running the facility power meter backwards and creating a credit.

Some 250 miles southeast of the Greenville installation, at the Harold L. Disney Training Center (HLDTTC) in Artemus, Kentucky, another 84 kW photovoltaic system made up of 396 solar panels mounted on the administration building and two of the center's barracks will produce approximately 90,000 kW hours of electricity. Just like in Greenville, the \$553,500 system will be grid-tied.

"We had both of these projects on our wish list," Kentucky ARNG Energy Manager Chuck Ammons said. "However, with limited modernization funds and unable to transfer more than 10 percent of our sustainment budget it would have been impossible to carry out these projects without ARRA."



**At the Wendell H. Ford Regional Training Center in Greenville, Kentucky, ARRA funds financed a \$553,500, 84 kW photovoltaic system made up of 400 solar panels, which will produce approximately 100,000 kW hours of renewable green energy a year. The 400 solar panels are tied to the local grid, and any excess power will flow back onto the grid, running the facility power meter backwards and creating a credit.**



Ammons said his office researched the potential of using wind as a renewable resource, but decided against this method since the sustained winds in Kentucky are too low to generate consistent power, and since the payback time would exceed 20 years. Both projects were completed using Design-Build process, a project delivery process in which a single entity (a builder or an architect) is responsible for both design and construction, which shortens the delivery schedule by overlapping the design and construction phases of a project and minimizes potential conflicts between architect and builder.

Cost savings will range between \$30,000 and \$50,000 per site, per year—a number based on the reduced purchase of commercial power, potential flow back credits to the utility companies, and the sale of renewable energy credits on the open market. “The system we installed at WHFRTC is a small drop in the bucket; it accounts for less than three percent of

Both solar initiatives were driven by Kentucky’s Comprehensive Energy Plan, released by Kentucky Governor Steve Beshear, and Presidential Executive Orders 13423 and 13514. Both directives strive for a greener environment and reduced carbon dioxide emissions through the use of renewable energy sources. “I want to commend the Kentucky National Guard for their stewardship of the land, as well as the taxpayer’s dollars,” said Governor Beshear. “These new solar installations are a significant step toward providing quality training facilities for our troops, while relieving the financial burden for the state.”

The ARRA funds reach further than energy projects. According to COL(R) Raymond J. Barnard, Facility Management Analyst at ILI, ARNG has a total 894 ARRA SRM projects. Out of those, 833 projects had been awarded as of July, 2010. Examples of the projects include a water line



**A \$553,500 photovoltaic system the Harold L. Disney Training Center in Artemus, Kentucky will produce approximately 90,000 kW hours of electricity a year. The 84 kW system, financed with ARRA funds, is made up of 396 solar panels mounted on the administration building and two of the center’s barracks. The grid-tied system will produce approximately 45 percent of the installation’s total requirements.**

site energy requirements. The HLDTC system, however, will produce approximately 45 percent of total requirements,” Ammons said.

renovation project at the Rickenbacker training site in Ohio; improvements to various building electrical systems and a unit supply room in Illinois; the installation of a new efficient boiler at a maintenance facility in Maine; and reconstruction of a barracks facility at Indiana’s Camp Atterbury training site. To decide which projects get funded, ILI looks at project executability; the project’s ability to reduce energy costs, to upgrade utility infrastructure, and to include the use of alternative energy sources; whether the project brings quality of life improvements in facilities, especially in barracks; and whether the project will reduce the backlog of facility maintenance and repair.

### The funds are at hand, yet out of reach

The Active Army’s installations are funded solely with federal funds. An ARNG installation, on the other hand, can be funded in four different ways, depending on how the installation was initially programmed. It can be funded solely by federal funds, funded solely by state funds, or it can be split 75/25 or 50/50 between federal and state funds. How a project at an existing facility is funded depends on how the building was initially coded—if a building is partially owned by the state, the state has to contribute its share to any new project.

Finding the state match for energy upgrades and other renovation projects is especially difficult in states with negative state budgets, and as a result, installations with split funding requirements tend to lag behind in repair in these states. Looking at the total square footage of ARNG installations, 70 percent is federally supported, and in general, these



**Two of the New Jersey Army National Guard’s facilities use an online HVAC management system that can be controlled off-site, or through kiosks like the one pictured above. Since the system gives a clear on-screen overview, it’s easy to maintain and trouble-shoot. Measuring usage is important to track usage patterns and to identify usage spikes, which could indicate malfunctioning equipment.**

installations tend to be better maintained. “The state match is killing us,” said COL(R) Charles Ragucci, Director of NJ-ARNG’s CFMO. “Some states, like New Jersey and

California, just don’t have the money. We can go to the governor and ask for the state match, but we know it’s not going to happen. So instead we put our energy projects at 100 percent federally-supported installations.”

In other words, energy projects are not carried out at the installations that need them most, but at installations that are coded in a way that the state Guard office can find the funds. In a few cases, ARRA energy projects fell flat because the states couldn’t come up with the funding. “It’s very hard for us to tap into federal energy funds,” COL(R) Ragucci said. “We tried, but we couldn’t get a waiver of the state match requirement on ARRA projects. It’s what the law says.”

For CFMOs and their staff, the road from project proposal to execution is long and arduous. The states list their proposed construction projects in what is called the Long Range Construction Plan (LRCP). The Adjutant General (TAG) in each state submits his or her two top projects from the LRCP to ARNG-ILI, where they end up in ILI’s internal working budgetary process, the Infrastructure Requirements Plan (IRP), which results in a prioritized 1-N list. The projects then go through an extensive evaluation process where ILI assigns the project points according to a detailed priority rating system. The nine different categories of the rating system include: support of force modernization; support of joint use; health and safety or environmental issues; equitable distribution of projects; replacement of facilities in poor condition; TAG/Director, Army National Guard (DARNG) priority; project cost growth containment; prompt execution; and force structure allowance goals. Most importantly, however, the project must make strategic sense for the Army. The projects with the most points are submitted to the FYDP, which is the DoD’s five- to six-year appropriation plan for programmed projects above \$750,000. In the end, only a small portion of the proposed projects are funded.

### Key word: shovel-ready

Even with a changed review process that favors energy projects and with a change in the way buildings are programmed, states must do their part in making sure they are ready when special programs like ARRA come along. “When the Stimulus Package popped up, we weren’t ready. We did a very bad job at leveraging these funds,” said CW4 Thomas Comyack of NJ-ARNG. “We need to complete our designs and have these projects shovel-ready. For energy projects, we need to conduct audits and have these projects ready to go. Auditing is key: less than 10 percent of installations nationwide have been audited.”

An energy audit is an assessment of a building’s efficient use of energy. It starts by examining the envelope of the building—meaning the walls and the roof—to identify problem areas where air is entering and escaping the building to eliminate waste. Then, the inside of the building

is audited to make sure lighting and heating solutions are the most efficient, and to make sure that all equipment is working properly.

An executive order requires that buildings be audited once a year, but according to CW4 Comyack, this is rarely done: "We're supposed to have the money for these audits already, but states are paying their bills with the money." For cash-strapped Guards, it's easy to fall into the trap of paying bills with money earmarked for other purposes, such as audits

Engineers in New York told an audience of energy managers gathered at an energy summit hosted by the NJ-ARNG.

These are worthy goals indeed, but—with the current funding levels of the ARNG—hard to achieve, and herein lies the catch: the upfront investment would mean cost savings in the long run and money left over for other programs. For states that do find the funding for alternative energy projects, cost savings is usually the biggest incentive. "Utility costs are usually the biggest motivator," said CW3 Christopher

in states like New Jersey and Nevada, where utility costs are higher and the states have programs where individual producers can sell excess energy, power generation can turn out to be highly profitable. "With the new executive order, there will be increased tracking, and it may affect utility rates," CW3 Swihart said. "In that case, there will be more incentive to install alternative energy."

Construction and Facilities Management Offices around the country can't rely solely on military funds, but must find

to balance its budget once a year. Because of this requirement, state agencies in these states can't participate in energy programs, as the return on the upfront investment will not be seen until after the end of the budget year. Because of the same budget requirement, cooperation with private companies is also not allowed.

The development of alternative energy sources and increased efficiency in buildings and appliances are just two components of increased energy security. More important,



and sustainment. "It's very shortsighted to use sustainment money to pay bills," said LTC Merle London, Branch Chief of ILI's Facilities Management Branch. "The amount migrated will be deducted from next year's budget, and our sustainment funds will steadily dwindle."

#### **The way of the future: alternative solutions, private partnerships and individual accountability**

"Per the Assistant Secretary of the Army for Installations and Environment (ASAIE) Sustainable Design and Development (SDD) Policy Update of January, 2006, all military construction projects starting in FY08 must achieve LEED Silver level of new construction. As of 2007, all lighting must be ENERGY STAR. New and renovated federal buildings must reduce fossil fuel use by 55 percent from 2003 levels by 2010, and by 80 percent by 2020. All new federal buildings must be carbon neutral by 2030," Matt Emigholz of the U.S. Army Corps of

**The 84 kW photovoltaic system at the Wendell H. Ford Regional Training Center in Greenville, Kentucky will reduce greenhouse emissions by 79.2 tons, which is equal to the carbon dioxide emissions from the consumption of 8,078 gallons of gas.**

Swihart, Utility Operations and Maintenance Technician in the ARNG Installations Division's Facility Management Branch. "With limited budgets, states need to do what they can to cut utility costs."

Before funding is granted for a project, an Energy Conservation Investment Program (ECIP) analysis must be completed to make sure the project makes economic sense. For solar panel installations for example, the payback time cannot exceed 25 years. That means every dollar spent must mean a dollar saved over a period of 25 years. In the mid-west utility costs are so low that solar installations are not profitable, but



alternative sources to supplement these funds, CW3 Swihart said: "States need to seek out alternative funding streams and leverage state and federal programs. There are a multitude of them out there. The funds available through regular military appropriation are just not enough. But oftentimes, states have mirror programs."

The ARRA funds provided a welcome opportunity to carry out backlogged projects, but what will ARNG do after the program finishes? The solution may lie with the private sector. Partnerships to supply the commercial grid with excess power from ARNG installations could provide income opportunities for state Guards. Combined, the savings from changed user patterns and the income from power generation could mean additional funds that could be spent on programs to further ARNG's mission.

These partnerships would be easier to develop in some states than in others. In some states, laws require the state

perhaps, is changed user behavior. "Even with good management practices, we still have to reduce consumption," CW3 Swihart said. Across the country, energy managers are pushing energy projects forward, while at the same time educating their colleagues in energy reduction. By thinking outside-the-box, these managers show that despite funding challenges they can make these projects happen and that with a bit of persistence they can make their colleagues take responsibility for their energy usage.

By increasing the use of alternative energy sources, ARNG will be able to assure access to energy supplies, while at the same time reducing adverse impacts on the environment. Enhancing energy security is the responsibility of every ARNG Soldier and the initiative's success lies in the individual accountability of each Soldier. By changing his or her user behavior, each and every Soldier has the power to make a difference. ■

Photovoltaic panels on top of the roof of an Army National Guard facility in New Jersey. (Photo courtesy of NJ-ARNG)

# GREENING THE GARDEN STATE

WHAT DO YOU DO WHEN FACED WITH A SCARCITY OF LAND AND HIGH ENERGY PRICES? SOMETIMES THE SOLUTION IS RIGHT ABOVE YOU.



On top of the roof of the Joint Training and Training Development Center at Fort Dix, New Jersey, a major training installation for New Jersey Army National Guard (NJ-ARNG), reserve, and active duty troops, 13,000 square feet of photovoltaic panels absorb the sun's light and

generate enough energy during the day to power 150 homes.

New Jersey is the country's most densely populated state, and in a few years' time it will likely become the first state to face buildout, with no more undeveloped land available. Organizations like NJ-ARNG must make the most of the land they have. The installation at Fort Dix—the first of its kind for NJ-ARNG—shows an innovative use of an oftentimes unused asset: roofs. "Ninety percent of our roofs are flat," said Mr. John Hastings, Energy Program Manager at the New Jersey Department of Military and Veterans Affairs (NJ DMVA). "They're ideal for solar panels."

Under the Energy Policy Act of 2005, all federal government agencies are required to use some renewable energy. In the years 2010 through 2012, no less than 5 percent of energy consumption must come from renewable sources; in 2013, that requirement jumps to 7.5 percent. With energy prices that are among the nation's highest, there's a great incentive in New Jersey to develop alternative energy sources. The NJ-ARNG, on the initiative of Mr. John Hastings and Plans and Programming Manager CW4 Thomas Comyack, has managed to surpass that government requirement, while at the same time lowering its energy costs.

The NJ-ARNG was one of the first participants in New Jersey's innovative Solar Renewable Energy Certificate (SREC) program, which lets solar system owners profit from the energy they generate. Under New Jersey law, electric companies must produce 10 percent renewable energy, or buy certificates from a producer who does. Solar system owners who are connected to the public power grid and who generate over 1,000 kilowatts (kW) of electricity per year receive certificates. These certificates are then publicly traded, enabling New Jersey businesses and individuals to use solar power without building solar power installations themselves. The profit is returned to the solar system owners. Designed to optimize efficiency, conserve natural resources, and reduce dependency on foreign energy sources, the program has put New Jersey second in the nation in solar energy usage, after California.

NJ-ARNG's first project was a 952-panel, 181 kW system at Fort Dix, funded by New Jersey's Clean Energy Program and by federal funds at a 60/40 split. The installation provides roughly 10 percent of the facility's energy needs, and has cut

the electricity bill by \$22,000 a year. "The main goal for us was always to save money," Mr. Hastings said. The environmental benefits, however, are substantial. The installation reduces carbon dioxide, nitrogen oxide, and sulphur dioxide emissions, which are major contributors to smog, acid rain and global warming. Over 30 years, the panels will reduce carbon dioxide emissions by 2,000 tons. Put in perspective, that is the equivalent of planting 590 acres of trees, or not driving 5 million miles on the roadways of New Jersey.

The system is a lightweight building-integrated photovoltaic roofing assembly installed over an existing roof membrane. The photovoltaic panels use high-efficiency solar cells made of solid-state semiconductors to convert sunlight into direct current (DC) electricity. The DC output from the photovoltaic modules is converted by inverters into usable alternating current (AC) electricity that is then fed into the facility's electrical distribution system. In addition to generating electricity, the system protects the roof and provides thermal insulation, reducing heating and cooling energy costs. Tilted at a 30-degree angle, the panels can withstand 145-mile per hour winds.

The installation, completed in 2005, was the NJ-ARNG's first solar project, and was quickly followed by another installation at the New Jersey Homeland Security Center of Excellence in Lawrenceville. There, the roof wasn't sound, and NJ-ARNG had to spend \$300,000 to repair the roof, before it could complete the 321 kW installation, which was made up of 1,648 panels and covers an area of 30,000 square feet.

"If you install photovoltaic panels on an existing roof that is not in great shape, you will most likely have to remove these panels in the future to repair the roof as it gets old and leaks," Mr. Hastings said. "This can be very expensive and time consuming. The system will also add weight to the existing roof, increasing its deterioration. But if the roof is good, the construction phase is only six to nine months." By selling five years' worth of credit, the NJ-ARNG was able to raise \$300,000 to finance the project at Lawrenceville.

A parking lot is rarely seen as a resource, but in New Jersey, even asphalt is put to use. After the two roof installations, the NJ-ARNG completed two open-panel, solar power carport projects—one at the JFHQ at Fort Dix, and the other at the National Training Facility Headquarters at Sea Girt.

The steel carport structures, built above two existing parking lots, stand 16 feet above the pavement and are supported by web steel joists and joist girders. On top of the structures, over a thousand modular photovoltaic panels absorb the sun's light. Just like with the roof installations, the solar panels' DC is fed into an inverter that transforms it into AC at a higher voltage, which is then sent to the main transformers of the two buildings, less than 200 feet away from the parking lots. "Proximity is important," Mr. Hastings said. "If the photovoltaic panels are too far away from the building you lose too much energy in transportation."

The panels are placed at an angle—a 25-degree angle at Fort Dix and a 15-degree angle at Sea Girt—for optimal performance and to facilitate runoff of rain and snow. The open-panel design prevents debris from accumulating on the carport and it doesn't add the weight of a solid ceiling, which would require a stronger and more expensive structural support. Once installed, the panels require very little maintenance, and they have minimal impact on the environment. As an added bonus, the panels also provide shade for the vehicles on the parking lots.

The carport structures are each roughly the size of a football field. The Fort Dix installation generates about 240 kW

4 million kW hours per year and power all of Sea Girt, taking the installation completely off the grid. In fact, together, the solar installations and the wind turbine will generate more electricity than the training center requires, at the benefit of the surrounding communities.

Construction will start in July, 2011, and it will take less than a year to get the 320-foot tall turbine up and running. Unlike solar power, wind power comes with some environmental concerns. "With wind turbines there are always concerns, such as the impact on bird and bat populations, ice throw, and radar interference," said Matt Emigholz of the U.S. Army Corps of Engineers in New York. The environmental studies



**Today, renewable energy makes up 10 percent of the New Jersey Army National Guard's total energy consumption. The goal is to increase that figure to 50 percent by 2020. Here, a carport installation at the National Training Facility Headquarters at Sea Girt. (Photo courtesy of NJ-ARNG)**

and the Sea Girt installation about 238 kW, which equals 40 percent of the Fort Dix building's peak energy needs and 80 percent of the Sea Girt building's needs. Since the NJ-ARNG's solar power system is tied to the public power grid, any excess power can be shared with the community. Combined, the two installations save the NJ-ARNG about \$116,000 a year in electricity costs, and earn about \$350,000 from the SREC program. Because of the credits, the payback on a solar installation is only 12 years in New Jersey.

#### **Power of the wind**

Several of NJ-ARNG's installations have solar energy systems, but in terms of self-sufficiency, the National Training Facility Headquarters at Sea Girt has come the furthest. The training center already has two solar installations, and has won Defense Department backing for a \$5.1 million wind turbine. The 1.5 megawatt (mW) turbine will produce

are often very costly. NJ-ARNG paid \$600,000 for a two-year study to see how the wind turbine at Sea Girt would affect birds and bats in the area.

And then there's the issue of public relations. "By law we don't have to tell the neighboring communities," Mr. Hastings said, "but we employ a good neighbor policy." The turbine will be surrounded by a 750-foot buffer, the equivalent of two football fields—enough space, Mr. Hastings said, to address concerns of noise and accidents. Some states require a buffer zone of three times the height of the turbine in all directions, but in most states, including New Jersey, the requirement is two times the height of the turbine.

The wind turbine at Sea Girt will be of the traditional, three-blade, horizontal-turning design, but new advances in technology have brought turbines that sidestep the problems of birds, bats, ice and noise. Birds and bats see Vertical Axis Wind Turbines as solid structures, and because of the way the

blades spin the turbines have no impact on radar signals. Vertical Helical Wind Turbines—aesthetically beautiful—operate in wind from any direction and are virtually noiseless.

The wind turbine at Sea Girt, combined with the solar projects, will make Sea Girt a Net Zero installation, meaning it can operate if the grid goes down. The advantages are clear—the lone wind turbine will power roughly 150 buildings, and even at a \$5.1 million investment, the payback time is only five years. "We're struggling to do the same thing at other, larger installations," said Ronald Diehl of the Facilities Policy Division of the Department of the Army's Office of the ACSIM.

The NJ-ARNG has won one energy award for its Lawrenceville installation, and two for its installations at Sea Girt. "Sea Girt drew a lot of attention and a lot of approval from people," Diehl said during a visit to New Jersey in February, 2010. "It was a picture perfect job. So clean. So nicely done." Diehl wants expedited funding approval for solar expansions at the NJ DMVA facility in Lawrenceville and at the Joint Forces Headquarters at Fort Dix. "It's a matter of national security," Diehl said. "If the grid goes down, we will have a lot of problems meeting our defense needs."

#### **Energy conservation**

Alternative energy generation can mean substantial cuts in utility bills, but when it comes to saving money, energy conservation is just as important as energy generation. Since only a small percentage of ARNG's real estate inventory is new construction, the real challenge is to retrofit existing buildings to make them more energy-efficient. A simple audit of an existing building can make huge improvements in energy consumption. CW3 Christopher Swihart, Utility Operations and Maintenance Technician in the ARNG-ILI Facility Management Branch, says the first thing to look for is the ways that heat enters or escapes from the building exterior and to reduce that heat transfer. This includes installing more energy-efficient windows and doors, as well as sealing leaks in the foundation and attics of a building. Identifying HVAC equipment that doesn't work properly and making sure that set-points are set correctly can often achieve energy savings of 20 to 30 percent.

On each desk at the Homeland Security Center of Excellence in Lawrenceville there is a \$39 smart strip that turns off all electric devices at the end of the day—a simple investment with a payback time of less than a year. In the bathrooms and in the cafeteria, old light bulbs have been replaced with energy-efficient Light Emitting Diodes (LED) and compact fluorescent bulbs and occupancy sensors switch off the lights when no one is there. "Just the sensors in our cafeteria alone add up to annual savings of \$3,000," Mr. Hastings said. LEDs are two to four times more expensive than T8 fluorescent lights—the most common lights on the market. Despite the up-front cost, replacing traditional bulbs with LED lighting can provide

significant cost savings long-term, as LEDs consume less energy and require less maintenance. And because they consume less energy, the lights reduce carbon emissions. LED technology is so new, however, that many of its claims have yet to be validated. With this in mind, NJ-ARNG has decided to enter the LED market cautiously, with a test installation in a high-bay Field Maintenance Shop (FMS) to compare the energy and maintenance costs and payback time of LEDs to traditional T8 fluorescents.

The biggest change for NJ-ARNG, however, is an online HVAC management system that can be controlled off-site. The system, which currently controls two buildings, means



**The direct current (DC) output from the photovoltaic modules at Sea Girt is converted by inverters into usable alternating current (AC) electricity that is then fed into the facility's electrical distribution system. (Photo courtesy of NJ-ARNG)**

temperatures are centrally controlled, taking away the individual ability to raise or lower temperatures. By setting standard days off, NJ-ARNG can now turn off the system completely on certain days. The system automatically switches on the lights at five in the morning on weekdays, and shuts them off at five in the afternoon. When something is not working, the system sends a warning message, in addition to the regular reports generated at 15-minute intervals. Since the system gives a clear on-screen overview, it's also easier to maintain and trouble-shoot. According to NJ-ARNG's William Hutchison, it costs around \$75,000-100,000 to install an online control system. The HVAC system at Lawrenceville is 20 years old, and NJ-ARNG spent \$38,000 on a heating system upgrade. Modifying the off-the-shelf software to create the computerized control system cost the NJ-ARNG around \$60,000. The system was created by Peterson Mechanical, and built by

Sunpower. "Advanced metering means we know exactly what we are using," Mr. Hastings said. "All these savings mean that maintenance dollars can go to more critical assets."

The AZ-ARNG was the first to install such a system, and New Jersey and Ohio were quick to follow. CW3 Swihart at ILI says the goal is to have all ARNG buildings controlled digitally, and networked together. In Arizona, 38 of the AZ-ARNG's 120 buildings are digitally controlled. AZ-ARNG Energy Manager Jeff Seaton estimates that his state's system has saved the Arizona ARNG over \$90,000 a year in maintenance costs over the past 10 years, and \$140,000 a year in electricity and natural gas savings. Over the 10 years since the system was installed, that adds up to a cost avoidance of more than \$2.3 million.

Measuring usage is important to track usage patterns and to identify usage spikes, which could indicate malfunctioning



**Construction of a \$5.1 million wind turbine at the National Training Facility Headquarters at Sea Girt will start in July, 2011. The 1.5 mW turbine will produce 4 million kW hours per year—roughly 15 percent of the New Jersey Army National Guard's total energy needs—and take Sea Girt completely off the grid. (Illustration courtesy of NJ-ARNG)**

equipment, and keeping track of cost savings is necessary to justify the system investment. "You can't manage power without measuring it," said Frank Clark of E-MON, the company that provided the metering equipment for NJ-ARNG's solar projects. Developing alternative energy sources and increasing the efficiency of buildings and appliances are just two components of cost savings. Equally important is changing user behavior. Oftentimes, you can change behavior just

by letting users know that they are being monitored. "Once people find out they are being monitored, their usage goes down by five to 30 percent," Clark said.

#### **Cars of the future**

It's not just buildings that are going green. By August, 2010 NJ-ARNG will receive 25 electric cars, out of a total 4,000 electric vehicles the U.S. Army is distributing to installations around the country. The cars have a top-speed of 35 miles per hour, and will be recharged with solar energy at five major locations at NJ-ARNG bases.

"As we move ahead we will look for more opportunities to take gasoline-powered vehicles off the road and replace them with electrical systems," former Army Secretary Pete Geren said at the unveiling of the first six cars at a ceremony at Fort Myer, Virginia in January, 2010. "This is the first step. Across all of our vehicles we are looking at ways to achieve greater fuel efficiency, not just on installations which these are used for, but for deployed forces." In total, the 4,000 vehicles, made by Chrysler subsidiary Global Electric Motorcars, are projected to save 11.5 million gallons of fuel over the next six years.

#### **Towards a greener future, one project at a time**

In total, the NJ-ARNG's energy consumption is 20 mW a year. Today, renewable energy makes up 10 percent of that consumption, and the goal is to increase that figure to 50 percent by 2020. The wind turbine at Sea Girt alone will produce 15 percent of the NJ-ARNG's total energy needs. Even when it doesn't have the funds to implement a project immediately, NJ-ARNG thinks ahead: a new Army Aviation Support Facility scheduled for completion in 2012 was designed with solar projects in mind, even though there are no funds to implement these projects at the moment.

Solar panel-covered roof tops, parking lots, and walls—the solutions are endless. What the ideas fall on is funding. "We have no budget," Mr. Hastings said. "Without the credit program we wouldn't have been able to do most of these projects." The NJ-ARNG invests the profit it receives from the certificates directly into new renewable energy projects, with its leadership's approval. "Our TAG and Director, Army National Guard are both behind these initiatives. If you don't have the upper management's support it's impossible," CW4 Comyack said. Federal funds, in form of funds allocated through the ARRA, will finance two new projects, which will inch NJ-ARNG closer to its goal of half of its consumption coming from renewable sources by another 500 kW.

In April, 2010, NJ-ARNG's CW4 Comyack and Mr. Hastings invited other ARNG energy managers and industry representatives to New Jersey for a two-day energy summit to exchange ideas and experiences. Through innovative thinking and information exchange, NJ-ARNG finds solutions that cut costs and let us all breathe a little easier—one project at a time. ■

## SPOTLIGHT ON COLORADO

# KEEPING SUSTAINABILITY IN MIND



The Rocky Mountains

USING HAND-HELD SCANNERS, PERSONNEL AT MAINTENANCE AND AVIATION FACILITIES AROUND COLORADO CONDUCT MONTHLY INVENTORIES OF HAZARDOUS CHEMICALS. THE RESULTS ARE THEN UPLOADED TO AN ONLINE DATABASE. THE PRACTICE HAS RESULTED IN BETTER ACCOUNTING OF HAZARDOUS CHEMICALS AND IS JUST ONE EXAMPLE OF THE PRACTICAL IMPLEMENTATION OF COLORADO ARMY NATIONAL GUARD'S SUSTAINABILITY INITIATIVE.

BY ELIZABETH A. MCCANE

In Army terms, sustainability means finding ways to accomplish today's mission, while still allowing for the accomplishment of future missions. The Colorado Army National Guard's (CO-ARNG) military mission faces many challenges, including urban growth, air quality, energy source depletion, threatened and endangered species, and demands for land. The CO-ARNG began to integrate sustainability into its strategic planning process in 2008, and the following year it conducted several strategic planning/sustainability workshops, which resulted in sustainable action plans. Through efforts such as environmental compliance and stewardship, environmentally preferable purchasing, the implementation of an environmental Management System (eMS), and partnerships with communities to avoid encroachment, the CO-ARNG is beginning to eliminate some of its challenges.

CO-ARNG's CFMO requires that all of its new construction and major renovation projects be built to LEED Silver standards. Colorado, like much of the western United States, has a tenuous relationship with both its energy and water resources. Building with mindfulness of these concerns is vital to the CO-ARNG's values, and essential to ensure the longevity of the CO-ARNG's mission. Examples of CO-ARNG's sustainability efforts include the construction of a Grid-Tied Photovoltaic Energy System at Field Maintenance Shop # 3 in Grand Junction; the initiation of a comprehensive Energy & Water Awareness Program (EWAP) and Solid Waste Reduction & Recycling Program (SWRRP); usage reduction of

ozone-depleting substances and products with high Global Warming Potential (GWP); reduction of the amount of hydrochlorofluorocarbons (HCFCs) used in existing HVAC systems, as well as the requirement that all future HVAC systems use Environmental Protection Agency (EPA)-approved HCFCs.

The CO-ARNG has also developed an online hazardous chemical inventory system. All of the CO-ARNG's maintenance and aviation facilities and USPFO warehouses conduct monthly hazardous chemical inventories using hand-held scanners. The data is then uploaded to an online inventory database. The result is better accounting of hazardous chemicals, and a reduction in the amount of hazardous waste generated by CO-ARNG operations.

It is the CO-ARNG's obligation to ensure that Soldiers today and the Soldiers of the future have the land, water and air resources they need to train, and a healthy environment in which to live. The CO-ARNG is working hard to move away from the "silo effect"—the tendency of directorates to focus on their own areas, without communication or collaboration with other directorates, and with little consideration for the context in which they operate. Integration broadens viewpoints by increasing communication and collaboration, and it opens people to opportunities. The CO-ARNG is well on its way to integrating sustainability into the consciousness of all CO-ARNG and Department of Military and Veterans Affairs personnel. ■

*Elizabeth A. McCane is an Environmental Compliance Manager for the COARNG and DMVA*

A soldier in camouflage and a red helmet is working in a snowy forest. The soldier is wearing a red safety vest and is looking down at something in their hands. The background is a dense forest of evergreen trees covered in snow. The overall scene is in black and white, with the soldier's gear and the snow providing the only color.

operate

ACROSS THE UNITED STATES, THE ARMY NATIONAL GUARD  
MAINTAINS A TOTAL 38,156 STRUCTURES IN 3,122 LOCATIONS.  
THERE IS NO STANDARD FACILITY; THE STRUCTURES ARE TAILORED  
TO MEET THE UNIQUE NEEDS OF THE UNITS TO SUPPORT  
READINESS AND MISSION EXECUTION.

# OPERATING THE GUARD

# GEORGIA

## A NEW NGB-FUNDED LANGUAGE TRAINING CENTER TO ENHANCE LANGUAGE SKILLS AND CULTURAL AWARENESS PRIOR TO DEPLOYMENT

At the new Georgia Language Training Center (EAST), National Guard Soldiers will enhance their language proficiency and receive cultural awareness training prior to deployment. The center, hosted by the Georgia Army National Guard (GA-ARNG) at the Clay National Guard Center (CNGC) in Marietta, will serve as the premiere language training and enhancement facility for the National Guard Bureau (NGB). One of only two such facilities supported by the NGB, the school will be stationed at and assigned to the 560th Battlefield Surveillance Brigade. NGB will use the center for language refresher and conduct immersion courses, under the Total Army Language Program (TALP). GA-ARNG started the six-month renovation of a former Child Development Center, which will house the center, in January, 2010. The total cost of the project, funded by NGB, is \$239k. The GA-ARNG Regional Training Institute, which is also stationed at CNGC, will have the opportunity to use the center to continue its training and enhance the readiness of its students.



# ALASKA

## NEW BETHEL READINESS CENTER BUILT TO WITHSTAND ARCTIC TEMPERATURES, HEAVY WINDS AND EARTHQUAKES

Built on permafrost land, the new 23,000-square-foot Bethel Readiness Center will rest on a freeze-back system, which, combined with an anti-siphon system, will keep the ground underneath the facility frozen to prevent shifts and heaving in the foundation. In this part of Alaska, all buildings are either built on pilings or—if built directly on the ground—include an anti-siphon system. Pockets of peat moss in the ground are another concern, as the depths of these pockets are impossible to predict until after the excavation has begun. Extra insulation will protect the facility from the arctic environment, and like most structures in Alaska, the \$16 million facility is designed to handle earthquakes and heavy winds. The new armory, scheduled for completion in July, 2011, will accommodate personnel not only from Bethel, but also the outlying Yukon, Kuskokwim, and Delta areas. The facility will include six class rooms, a distance learning center, a physical fitness area, a library and storage areas for military police, infantry and airborne units.

# NEBRASKA

## THE NEW ARMY AVIATION SUPPORT FACILITY AT GRAND ISLAND TO BE SUPPORTED BY A NEW READINESS CENTER

The recently completed Army Aviation Support Facility (AASF) #2, located at the Grand Island Regional Airport, is the major hub of central Nebraska's Army National Guard aviation community. Combined, the AASF and maintenance hangar provide nearly 125,000 square feet of space and can house up to six Chinooks and four Black Hawks simultaneously. The project was completed in April, 2009 under the Aviation Transformation program, and will be supported by a Readiness Center projected for construction in 2012.





## NORTH DAKOTA

### PHASE ONE OF THE REGIONAL TRAINING INSTITUTE AT CAMP GRAFTON TRAINING CENTER COMPLETED AHEAD OF SCHEDULE

Phase one of the North Dakota Army National Guard's new Regional Training Institute (RTI) facility at Camp Grafton Training Center in Devils Lake, North Dakota, was completed in July, 2010. The new 182,825-square-foot facility will house the 164th Regiment. The 164th RTI is the SME and a center of excellence for Engineer 10, 30, and 40-level re-classification training with an average student load of 2,800 students per year. Currently, the 164th RTI is spread across 34 different facilities on Camp Grafton Training Center. The new facility will provide 38,439 square feet of administrative space, 47,159 square feet of educational space, 59,323 square feet of storage space and 35,263 square feet of billeting space under one roof, and will greatly enhance the Regiment's ability to train Engineer Soldiers from across the country.

## MICHIGAN

### COMBAT LEADERS FACE EVER-CHANGING SCENARIOS AT "REAL-WORLD" TRAINING FACILITY AT CAMP GRAYLING

According to the Joint IED Defeat Organization's (JIEDDO) mission statement "The Joint Improvised Explosive Device Defeat Organization shall focus (lead, advocate, coordinate) all Department of Defense actions in support of Combatant Commanders' and their respective Joint Task Forces' efforts to defeat improvised explosive devices as weapons of strategic influence." From this mission statement, the Michigan Army National Guard developed a "real-world" training facility at Camp Grayling that focuses on the decision-making process of deploying combat leaders. The 154-acre training area was completed in June, 2009 and consists of a traffic circle, a pedestrian overpass, a road network system, and ten single- and multi-story buildings, including a mosque. The training area presents combat leaders with ever-changing scenarios, which teaches them to adapt their plans to meet the mission's goal.



## VIRGINIA

### NEW READINESS CENTER NAMED AFTER TWO SOLDIERS KILLED IN THE LINE OF DUTY

In May, 2009, the Virginia National Guard completed the 51,183-square-foot, \$10 million Winchester Armory. A 13,665-square-foot, \$3.6 million Field Maintenance Shop is collocated with the Armory. Both facilities were designed and constructed to LEED silver requirements. The armory's conditioned space is provided by a geothermal system. On Aug. 14, 2009, Gov. Timothy M. Kaine announced that the Readiness Center will be named the Cherry-Beasley Readiness Center in honor of Staff Sgt. Craig W. Cherry and Sgt. Bobby E. Beasley, two Virginia Army National Guard Soldiers killed in the line of duty in 2004 while serving in Afghanistan.





## COLORADO

### A NEW HIGH-ALTITUDE ARMY NATIONAL GUARD AVIATION TRAINING SITE FACILITY TO SUPPORT PILOT TRAINING AT ALTITUDES OVER 14,000 FEET

The Colorado Army National Guard is constructing a new 101,637-square-foot facility to support the High-Altitude Army National Guard Aviation Training Site (HAATS). The HAATS, located 130 miles west of Denver on the grounds of the Eagle County Airport, has been training aviators in power management since 1986. Currently, HAATS meets the high-altitude aviation training requirements of the National Guard, active Army, Department of Defense, and NATO. The project will include a limited Army Aviation Support Facility, a classroom training facility, and billeting for 36 students. Colorado is proud to own HAATS, which is the only Department of Defense location that provides pilot training at altitudes over 14,000 feet. The construction start date is December, 2010, with an estimated completion date of October, 2012.

## WEST VIRGINIA

### THE SUMMERSVILLE READINESS/CONVENTION CENTER BRINGS A WEST VIRGINIA COMMUNITY TOGETHER

Many of West Virginia's smaller communities do not have the financial means to construct and maintain their own civic centers or community gathering places. At the Summersville Readiness/Convention Center, completed in 2007, public and private interests came together to create a center for Soldiers and members of the community. A private entrepreneur donated the land and the city, county and state contributed roughly half of the \$15.2 million construction cost. The 46,020-square-foot Readiness Center was enhanced by 27,250 square feet to provide a 2,800-person auditorium; changing space and expanded lavatory facilities for athletic events and concerts; a sit-down conference area for 300 people; and a separate 1,200-square-foot kitchen. Since completion, the Summersville Convention & Visitors Bureau has hosted over 700 events at the center, including trade shows, concerts, wedding receptions, business conferences, and company picnics. The successful concept will serve as a template for future centers in Fairmont, Ripley, Parkersburg and Bluefield.



## HAWAII

### KEAUKAHA MILITARY RESERVATION ARMED FORCES RESERVE CENTER ON SCHEDULE FOR JANUARY, 2011 COMPLETION

On March 25, 2010 Hawaii's Adjutant General MG Robert G.F. Lee and Construction Facility Management Officer LTC Marjean Stubbert conducted the 50 percent completion inspection of the Keaukaha Military Reservation Armed Forces Reserve Center in Hilo. The 2008 Base Realignment and Closure (BRAC) project will consolidate Hawaii Army National Guard and U.S. Army Reserve units located at Hilo. The center was designed as six separate buildings to blend in with the smaller-scale architecture of Hilo. Tilt-up, precast concrete exterior walls were chosen for their energy conservation properties, and because they are faster to erect than traditional masonry. The project is on schedule for January, 2011 completion.

# SOUTH DAKOTA

## THE NEW JOINT FORCE HEADQUARTERS AT CAMP RAPID BREAKS GROUND

On May 26, 2010, United States Senator Tim Johnson, United States Representative Stephanie Herseth-Sandlin and Rapid City Mayor Alan Hanks attended the groundbreaking ceremony for the new \$29 million Joint Force Headquarters Readiness Center at Camp Rapid. The 132,000-square-foot building will consolidate the State Headquarters directorates and staff, and is expected to be completed in two years. Once finished, it will meet LEED Silver standards by incorporating recycled materials, natural lighting, and energy conservation. Left to right: Qusi Al-Haj, Jim Scull, Jeff Reuppel, Stephanie Herseth-Sandlin, MG Steven Dooehen, Tim Johnson, Alan Hanks, COL Kit Cline, and BG Theodore Johnson.



# ARKANSAS

## CLASSES AT CAMP ROBINSON'S GENERAL EDUCATION DEVELOPMENT TRAINING COMPLEX PROVIDE A FUTURE FOR SOLDIERS

The National Guard Bureau Professional Education Center's (NGB-PEC) new General Education Development (GED) Training Complex, located on Camp Robinson, supports the Secretary of Defense's "Grow the Force" initiative by providing all entry-level recruits with the opportunity to obtain a GED prior to entering basic training. The training complex includes a dining facility, barracks, classrooms, and support areas.

# CALIFORNIA

## IN SACRAMENTO, A FLEXIBLE READINESS CENTER MEETS CHANGING NEEDS

In 2004, the architect of the new Sacramento Readiness Center and the adjacent Field Maintenance Shop was tasked with coming up with a design that would not only meet the Soldiers' needs, but also stand out from previously built armories. Walking through the front door of the 50-foot wide building, which encompasses more than 100,000 square feet, Soldiers are greeted by an expansive drill floor flooded with natural light from large skylights. Adjacent to the drill floor is a complete clinic, which will allow Northern California units to conduct all pre- and post-deployment medical and dental screenings locally. Six units will call the new building home. The building's features stem from the idea that "flexibility rules," and that the building needs to accommodate the dynamic mission of the National Guard.



# NEW YORK

## QUEENSBURY READINESS CENTER COMPLETED

In August, 2009, the 466th Area Medical Company and 1427th Transportation Company moved in to the New York Army National Guard's newest Readiness Center, the Queensbury Readiness Center, two years after the start of construction. Designed with twin turrets to resemble New York's many historic armories, the Readiness Center, which is located in the Adirondack Region, comprises 45,000 square feet and cost a total of \$11.5 million.

# MISSISSIPPI

## BUILT WITH KATRINA DAMAGE FUNDS, THE POPLARVILLE READINESS CENTER CAN WITHSTAND A CATEGORY 5 HURRICANE

In July 2009, the Mississippi Army National Guard completed the 32,269-square-foot Poplarville Readiness Center. The facility is home to CO B, 1-155th Combined Arms Battalion, which enhances its mobilization readiness through training with state-of-the-art equipment at the center. The \$12 million project was financed through the Katrina damage funds, appropriated to repair and, when necessary, replace facilities that were damaged when Hurricane Katrina hit the Mississippi Gulf Coast in 2005. Designed to withstand a Category 5 hurricane, the Poplarville Readiness Center also acts as a local shelter and emergency headquarters.



# IOWA

## IOWA ARMY NATIONAL GUARD COMPLETES THE CAMP DODGE FREEDOM CENTER

The Iowa Army National Guard has completed the \$34 million Camp Dodge Freedom Center, part of the FY 2006 BRAC program. The project was Iowa's first design-build project, and went from award to occupation in two years. The 31-acre campus includes three buildings: a 13,000-square-foot Army Recruiting Battalion building, a 27,000-square-foot Military Entrance and Processing Station, and a 170,000-square-foot Readiness Center. The Readiness Center consolidated 14 units, which previously occupied various outdated buildings at Camp Dodge. The project was programmed prior to transformation, but the design-build process allowed for changes throughout the project to accommodate changing requirements.



# MINNESOTA

## PLANS PROCEED TO TURN ARDEN HILLS ARMY TRAINING SITE INTO A 'NET ZERO' INSTALLATION

The Minnesota Army National Guard (MNARNG) plans to turn the Arden Hills Army Training Site (AHATS) into the National Guard Bureau's (NGB) first sustainable training installation. The 1,490-acre AHATS is the MNARNG's second-largest training facility, after Camp Ripley. Because of its proximity to the Twin Cities and its potential for recruitment and retention, the site is of high strategic value to the Guard. Currently, an old Operational Maintenance Shop (OMS) and some storage buildings are the only existing facilities. Based on MNARNG stationing and operational requirements, a site development plan was developed in 2006. The plan proposes approximately 900,000 square feet of facilities within a new 300-acre cantonment area to the south, in accordance with the lease that requires MNARNG to maintain the majority of AHATS in its natural undeveloped state. MNARNG wants to position AHATS as a test bed for "green" practices that would eventually become the established norm across all statewide facilities and operations. To reach this goal, MNARNG is exploring partnership opportunities with stakeholders such as City of Arden Hills, Xcel Energy (a regional utility company), NGB, US Army Reserve, and federal, state and local governments.



# ARKANSAS

## ARKANSAS ARMY NATIONAL GUARD AND U.S. ARMY RESERVE BUILD A JOINT MAINTENANCE FACILITY ON FORT CHAFFEE

The Base Realignment and Closure Act (BRAC) of 2005 allowed the Arkansas Army National Guard (AR-ARNG) the opportunity to build nine joint facilities with the U.S. Army Reserve (USAR)—a partnership that strengthened an already close relationship. One of those projects combined an AR ARNG Field Maintenance Shop (FMS) and with a USAR Army Maintenance Sub Activity (AMSA) Shop and Equipment Concentration Site (ECS) to create a Combined Maintenance Facility (CMF). The facility is located on Fort Chaffee, a 64,000-acre federally licensed AR ARNG training site, adjacent to Fort Smith, Arkansas. The \$30 million CMF includes 15 acres of military parking, a 47,000-square-foot maintenance facility, and a 110,000-square-foot ECS.



# SOUTH DAKOTA

## CAMP RAPID GETS AN APPEALING NEW ENTRANCE AND RECEPTION CENTER

Fiscal Year 2009 proved to be a record year for construction for South Dakota Army National Guard. The year began with the dedication of a \$2.4 million entrance and reception center at Camp Rapid, designed to improve access and upgrade security. The new entrance features a reception center, a guard house, a covered area for vehicle search, and a rejection loop. The designers maintained the camp's historic look by matching the native stone walls and columns built in 1938. The 3.8-acre entrance was dedicated in November, 2008 and the new 2,000-square-foot reception center in May, 2009.

# CONNECTICUT

## FROM CAMP TO CAMPUS: A NEW REGIONAL TRAINING INSTITUTE AT CAMP RELL

Phase one of the \$28 million Army National Guard Regional Training Institute at Camp Rell broke ground in April, 2010. The new 83,000-square-foot facility will house the 169th Regiment Leadership Training Brigade and will continue a transformation of the installation from camp to campus, underscoring its important and expanding role in the training of future military leaders. The move will consolidate ten different buildings into one, and provide state-of-the-art classroom, dining, billeting and auditorium facilities, as well as administrative functions. The LEED Silver facility is scheduled to be completed in October, 2011.

# OREGON

## OREGON ARMY NATIONAL GUARD BUILDS LARGEST FACILITY TO-DATE AT CAMP WITHYCOMBE

When complete in August, 2011, The 41st Infantry Division Armed Forces Reserve Center at Camp Withycombe in Clackamas will be the largest facility built by the Oregon ARNG. The \$74 million, 250,000-square-foot facility—part of the Base Realignment and Closure (BRAC) program—will be home to more than 1,300 Oregon ARNG and United States Army Reserve Soldiers. The facility is dedicated to the memory of the 41st Infantry Division and its Soldiers, which gained recognition for their sacrifice and service during WWII.





## ALABAMA

### PHASE ONE OF A NEW READINESS CENTER AT THE HISTORIC FORT MCCLELLAN COMPLETED

In June, 2009, the 167th Theater Support Command moved in to its new headquarters at the Fort McClellan Readiness Center. Phase one of the construction of the 197,521-square-foot facility began in December, 2006 and the design is in keeping with the historic architecture of the old post headquarters. Phase two of the construction is scheduled to begin in late 2010, with estimated completion in 2012. Phase two will add 88,229 square feet to the Readiness Center and house the 167th Support Operations section. The 167th Theater Support Command is the only two-star logistics command in the National Guard, and has a unique mission supporting United States Northern Command (NORTHCOM).

## PENNSYLVANIA

### A NEW COMBINED ARMS COLLECTIVE TRAINING FACILITY SIMULATES AN IRAQI VILLAGE

The Pennsylvania Army National Guard finished phase one of an \$11 million, 50-acre Combined Arms Collective Training Facility (CACTF) in March, 2008. The CACTF consists of 11 concrete buildings—including a church, police station, gas station and dormitory—that simulate an Iraqi village. In the village, military personnel train to engage the enemy under numerous scenarios, all under the watchful eye of 80 cameras. Phase two is a \$8 million addition that will enhance the training environment to include facilities and structures that units would likely encounter in Afghanistan. Construction for phase two is set to begin in 2013.



## MISSOURI

### ARMED FORCES RESERVE CENTER TO PROVIDE MUCH-NEEDED MODERN SPACE AT JEFFERSON BARRACKS

Chosen by explorer William Clark in 1826 as the perfect location for a new post on the Western Frontier, Jefferson Barracks has been a strategic United States military site for almost 200 years. A new Armed Forces Reserve Center currently under construction will provide much-needed modern space to the site. The state-of-the-art facility complements the unique architectural features of the historic site, while incorporating the latest technologies to ensure effective training and readiness of the units assigned to Jefferson Barracks. The LEED Silver facility consists of approximately 130,000 square feet of administrative, training, supply storage, classroom, locker, latrine, fitness, and food preparation areas.



## WYOMING

### THE NEW ARMY AVIATION SUPPORT FACILITY ON F.E. WARREN AIR FORCE BASE IS READY FOR OCCUPANCY

In May, 2010, the new Army Aviation Support Facility (AASF) on F.E. Warren Air Force Base in Cheyenne was ready for occupancy. The new 103,000-square-foot facility replaces the old AASF, housed in outdated World War II hangars, at Cheyenne Municipal Airport, as part of the 2005 Base Realignment and Closure Act (BRAC). Along with a new Joint Force Readiness Center (JFRC) scheduled for completion in December, 2010, the \$44 million AASF is Wyoming's largest military construction project to-date. Both the AASF and the JFRC are LEED Silver certified, with sustainable solutions such as maximum use of natural light, high-efficiency lighting fixtures, maximum insulation, and a geothermal heating and cooling system. The facility will support nine UH-60 Black Hawk helicopters.

## ARNG INSTALLATIONS

### ACROSS THE UNITED STATES, A TOTAL 38,156 STRUCTURES IN 3,122 LOCATIONS

The Army National Guard (ARNG) maintains facilities in all 50 states, three territories, and the District of Columbia. The number of facility locations total 3,122, and there are 38,156 structures and 26,955 buildings on those facilities. There is no standard facility, as all structures are tailored to the unique needs of the units using the facilities. The 3,122 locations include 2,999 Readiness Centers, 12,490 Training Facilities, 902 Ground Vehicle Maintenance Buildings, 336 Aviation Support Buildings and 423 USPFO Buildings. Together, these facilities total over 167 million square feet.



## NEVADA

### SUPER-SOLAR PROJECT BRINGS GREEN ENERGY AND SHADE TO NEVADA SOLDIERS

Photovoltaic panels installed onto overhead shade structures at three locations throughout Nevada will provide 70 to 80 percent of the power consumption at those facilities, giving each of those locations a solar energy production capacity just short of one megawatt. Once completed, Soldiers will enjoy the side benefit of covered parking during the hot Nevada summer. Most importantly, this project will help Nevada meet the requirements of Executive Order 13423, which stipulates that 50 percent of energy consumption should come from renewable sources by 2015, well ahead of the deadline.



### ARNG INSTALLATIONS DIVISION (ARNG-ILI)

From left: Branch Chief of Facilities Management (ARNG-ILI-F) LTC Merle London, Deputy Chief (ARNG-ILI) Hallet Brazelton, Jr., Branch Chief of Real Estate (ARNG-ILI-E) Ken R. Parks, Division Chief (ARNG-ILI) COL Richard G. Nord, Branch Chief of Strategic Plans and Education (ARNG-ILI-S) LTC Donald L. McFadden, Branch Chief of Construction (ARNG-ILI-C) LTC Amelia A. Calder and Branch Chief of Resource Management (ARNG-ILI-R) LTC Dale E. Oldham. Missing is Branch Chief of Design (ARNG-ILI-D) Elvin L. Shields.

